Final Evaluation Report of California's Delivery System Reform Incentive Payments (DSRIP) Program

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Executive Summary

The Delivery System Reform Incentive Payments (DSRIP) program aimed to improve care delivery and performance of designated public hospitals (DPHs) throughout California through the use of financial incentives. California received approval for DSRIP under the §1115 Medicaid "Bridge to Reform" waiver. DSRIP goals included incentivizing innovation and integrated care delivery redesign at hospital systems serving a disproportionate share of low-income patients, creating and sustaining medical homes to manage chronic diseases, delivering proactive primary care services, and reducing health disparities. California was the first state in the nation to implement a DSRIP program.

DSRIP was implemented from November 1, 2010, or Demonstration Year (DY) 6, and was initially scheduled to end on October 31, 2015, at the end of DY 10. DSRIP was subsequently extended to December 31, 2015. A total of $3.3 billion in federal funds were available to DPHs to implement projects that developed infrastructure, implemented innovation and redesign, tracked population-focused measures, and implemented urgent improvements in care. Ten DPHs also implemented Category 5 projects, which focused on ensuring that persons diagnosed with HIV have access to high-quality, integrated, and coordinated care in the outpatient setting. Category 5 projects were implemented for a total of 18 months, from the start of DY 8 in July 2012 through the first six months of DY 9, ending in December 2013.

The University of California, Los Angeles Center for Health Policy Research (UCLA) was selected by the California Department and Health Care Services (DHCS) to evaluate the DSRIP program. The evaluation examined the progress of DPHs in implementing DSRIP projects, the implementation process, including challenges faced by DPHs, and whether DSRIP projects

impacted the Triple Aim of improving quality of care and patient outcomes, and increasing cost containment or efficiency. The following sources were used in the final evaluation:

- Proposed DSRIP plans and semi-annual and annual reports provided by the DPHs to DHCS;
- Data from the Office of Statewide Health Planning and Development (OSHPD);
- Two extensive questionnaires created by UCLA and completed by representatives of all participating DPHs;
- DPHs' comments on the challenges of DSRIP implementation, the overall impact of DSRIP, and recommendations for the DSRIP program in the next §1115 Medicaid waiver, gathered from structured follow-up interviews for Categories 1-5.

This report includes the overall impact of Categories 1-4 as well as separate findings from each of those categories. Category 5 is reported separately due to significant differences in the nature of those projects.

Findings

Overview of DSRIP Categories 1-4

DPH Characteristics

- Seventeen DPHs participated in DSRIP, including five University of California (UC) systems (academic-owned) and 12 county-owned and -operated systems.
- DPHs varied widely in size, structure, and other characteristics. Six DPHs had multiple acute care hospitals in their systems.
- Los Angeles County Department of Health Services was the largest system, with three acute care hospitals, more than 76,000 discharges, and 1.2 million outpatient visits.
- The academic-owned DPHs had higher case mix averages, indicating more complex care than the county-owned DPHs.

Participation in External Initiatives

- Many DPHs were participating in Meaningful Use EHR Incentive Program (15), CMS Hospital Engagement Networks (11), and CMS Hospital Quality Initiative (8) during DSRIP.
- Participation was longest for the CMS Hospital Quality Initiative on average (7.8 years) and shorter for the Meaningful Use Program (3.4 years). The Meaningful Use Program funding ranged from $4 million to $50 million. Implementation was systemwide in nine DPHs and in specific sites in six DPHs.

- Participants in the CMS Hospital Quality Initiative most often focused on projects that were synergistic with Category 4 measures but with different methodologies and timelines.
- Eleven DPHs reported participating in non-CMS initiatives, most often including quality improvement and patient-centered medical home projects that were either supportive of, or complementary to, DSRIP.

Health Information Technology (HIT) Infrastructure Development

- Most (13) DPHs implemented HIT systems during DSRIP and the rest had begun implementation before DSRIP. Some of the least frequently available features prior to DSRIP included hospital discharge summaries, inter-provider communication tools, electronic referral management systems, and clinical support tools (5).
- The HIT features implemented during DSRIP were most frequently electronic patient charts, electronic prescribing/order entry, and patient information documentation (11).

Project Selection

- The Categories 1-2 projects most frequently selected by the same DPHs included disease registries, primary care capacity, and medical homes.
- DPHs that selected disease registries also frequently selected primary care redesign and chronic care management. DPHs that selected primary care capacity also frequently selected physical and behavioral health integration and chronic care management.
- DPHs that selected medical homes also frequently selected workforce training.
- The most cited reasons for selecting optional Category 1, 2, and 4 projects were consistency with organizational goals (91%) and availability of champions (74%).

Status of Category 1-4 Projects Prior to DSRIP

- Category 4 projects were most often reported to be ongoing (79%) and Category 3 measures were least often collected (38%) prior to DSRIP.
- Category 1 (30%) and Category 2 (29%) projects were most frequently planned in the absence of DSRIP.
- The most frequently reported reason for not planning Categories 1-4 projects was lack of HIT (62%).

Outcomes

- DPHs achieved 3,643 milestones out of 3,764 milestones planned (97%) during DSRIP.

- The number of milestones nearly tripled from DY 6 to DY 8 but remained roughly the same in DY 9-10. The large increase in the number of milestones happened from DY 7 to DY 8 and was due to the full implementation of Category 3 measures in DY 8.
- In the interim period, DPHs reported that 56% of all DSRIP projects had the greatest impact on quality improvement, 36% had the greatest impact on improving patient outcomes, and 9% had the greatest impact on increasing cost containment/efficiency. The rates for these components of the Triple Aim varied slightly for Categories 1-4.
- DPHs reported similar results near the end of DSRIP and further reported that their perceptions were most frequently based on feedback and other observations or studies and least frequently based on direct measurement of costs.
- DPHs provided specific examples of studies or observations for cost (e.g., using lower-wage staff, diverting patients to urgent care, reduced hospitalizations, reduced ICU utilization), quality (e.g. reduced wait times, better Healthcare Effectiveness Data and Information Set (HEDIS) scores, reduced readmissions, registry reports, reduced inpatient length of stay), and outcomes (e.g., higher patient satisfaction, reduced mortality).
- DPHs reported synergies in implementation of DSRIP projects in different categories. Category 1 (infrastructure development) and Category 2 (innovation and redesign) were perceived as having the greatest impact on the other categories both in the interim and near the end of DSRIP.

DSRIP Category 1

Project Selection

- A total of 57 projects were implemented across the 17 DPHs for Category 1. Eleven DPHs implemented more than the required two projects, and the greatest number of projects implemented in a single DPH was five.
- The most frequently selected projects included primary care capacity (11 DPHs), disease registry, workforce training, specialty care capacity, cultural competency, and performance improvement.
- Eighty-six percent of the selected projects were chosen because of their consistency with organizational goals, 81% because of their synergy with existing projects, and 72% were selected because of the availability of champions.

Status of Category 1 Projects Prior to DSRIP

- Primary care capacity and disease registry were the most frequently (6 DPHs) ongoing projects prior to DSRIP. Quality data and risk stratification were not ongoing prior to

DSRIP in any of the DPHs. All Category 1 projects were ongoing or planned prior to DSRIP in at least one DPH.

- DPHs reported that DSRIP expanded ongoing or planned efforts to additional clinics or departments, including in seven of the 11 DPHs that implemented the disease registry project and five of the six DPHs that implemented the specialty care capacity project.
- DSRIP contributed to changes in the ways DPHs assessed improvement projects, including in three DPHs that used different methods to assess primary care and specialty care capacity and four DPHs that reported using new or different measures to assess primary care capacity and disease registry projects.
- The most frequently cited reason for not planning Category 1 projects prior to DSRIP was lack of health information technology (50%).

Implementation

- DPHs used evidence-based models in developing their Category 1 projects, in most cases with moderate modification (53% of projects) or no modification (23% of projects).
- Staff received training during implementation of 70% of Category 1 projects.
- DPHs reported high levels of stakeholder engagement during implementation of Category 1 projects, in part because of moderate to high levels of reorganization of personnel and care processes required for the majority of projects. On average, overall difficulty was rated as high to very high for all projects, requiring significant planning and resource investment to launch major primary care capacity expansion and disease registry data collection infrastructure.
- DPHs reported using Category 1 projects in quality improvement initiatives 75% of the time as well as using them to provide feedback to providers 84% of the time and to medical directors and administrators 70% of the time.

Outcomes

- DPHs reported achieving at least 90% of Category 1 milestones in all demonstration years, including 100% in DY 6 (98 of 98), 98% in DY 7 (150 of 153), 97% in DY 8 (138 of 142), 98% in DY 9 (117 of 119), and 90% in DY 10 (86 of 96).
- The proportion of improvement milestones increased over the course of the program, from just 7% of all Category 1 milestones in DY 6 to 69% in DY10, as DPHs gradually shifted from measuring implementation processes early in the program to measuring outcomes in the later years of the program as projects matured.
- Most improvement milestones with numerical and quantifiable values exceeded their annual targets in DY 9 (85%) and DY 10 (71%). Twenty-three percent of milestones in DY

9 and 17% of milestones in DY 10 were exceeded by at least 50% of their annual targets, including by as much as 875% in DY 9 and 398% in DY 10.

- In the interim period, eight Category 1 projects were anticipated to have a high to very high impact on improving quality of care and seven were anticipated to have a high impact on patient health outcomes. Primary and specialty care capacity and performance improvement projects were also expected to have a high impact on cost containment/efficiency. DPHs stated that the full impact of Category 1 projects would not be known until after DSRIP projects were completed and more data were available.
- Near the end of DSRIP, DPHs reported on how Category 1 projects impacted other categories. The greatest impacts were reported to be creating necessary infrastructure and providing data, particularly for Categories 2-3.
- Analysis of the impact of the disease registry project on select Category 3 measures showed mixed results, with DPHs that implemented the project performing better on mammography than DPHs that did not implement the project but less favorably on the diabetes LDL and HbA1c control measures.

Challenges and Lessons Learned

- DPHs cited challenges cited in implementing Category 1 projects related to staffing, including recruitment, retention, turnover, training, buy-in, and difficulty identifying the appropriate people for given tasks. DPHs solved these challenges by hiring and training staff and obtaining provider and stakeholder buy-in, among other efforts.

Sustainability of Category 1 Projects

- DPHs revealed plans to continue most Category 1 projects, including all 11 of the primary care capacity initiatives. The most frequently cited motivators were compatibility with an organization's priorities, ongoing support from leadership, the realization of benefits, and establishment of infrastructure. The projects most frequently identified with multiple reasons for sustainability included primary care capacity, workforce training, disease registry, and cultural competency.
- The most frequently cited barrier to sustainability was insufficient funding to support personnel and resources required to maintain the care expansion projects – primary care capacity, specialty care capacity, and workforce training.

DSRIP Category 2

Project Selection

- A total of 66 projects were implemented across the 17 DPHs for Category 2. Fifteen DPHs implemented more than the required two projects, and the greatest number of projects implemented in a single DPH was six.
- The most frequently selected projects included medical homes (13 DPHs), primary care redesign, chronic care management, physical and behavioral health care integration, and patient experience improvement.
- Ninety-two percent of the selected projects were chosen because of their consistency with organizational goals, 82% because of their synergy with existing projects, and 77% were selected because of the availability of champions.

Status of Category 2 Projects Prior to DSRIP

- About half of the Category 2 projects in participating DPHs were ongoing and a third of the projects were planned prior to DSRIP. However, most of these projects were either pilot programs and/or had not been implemented comprehensively or systemwide.
- Three of the seven DPHs implementing the primary care redesign project expanded ongoing or planned efforts to additional clinics or departments as a result of DSRIP.
- For 53% of the projects, DPHs listed lack of funding as a reason that Category 2 projects had not been planned prior to DSRIP, followed by lack of HIT (47%), and lack of staff (47%).

Implementation

- Over 40% of DPHs adopted an existing evidence-based model of care with moderate modification and more than 20% of DPHs adopted a model with extensive modifications. Another 20% of DPHs developed brand-new interventions for Category 2 projects.
- DPHs dedicated high levels of planning and resources, in some cases undertaking considerable levels of reorganization of care processes and personnel.
- DPHs invested extensively in staff training for the implementation of Category 2 projects. Only 9% of the projects did not involve any staff training or orientation. Staff received training during implementation for 83% of Category 2 projects and prior to implementation for 73% of projects.
- Most projects received "high" to "very high" overall difficulty ratings except for the chronic care management and real-time hospital-acquired infections systems projects.
- DPHs reported that DSRIP provided essential resources needed to launch and accelerate these projects, including funding, information systems, and needed staff.

- DPHs reported that 95% of all Category 2 projects used project measures to provide feedback and reports to medical directors and/or administrative and clinic staff to improve performance. Over 90% of the projects used project measures to provide information for quality improvement initiatives.

Outcomes

- DPHs achieved at least 91% of Category 2 project milestones in all demonstration years, including 100% in DY 6 (111 of 111), 98% in DY 7 (172 of 175), 96% in DY 8 (150 of 156), 91% in DY 9 (125 of 137), and 91% in DY 10 (115 of 126).
- The proportion of improvement milestones increased during DSRIP, from just 11% of all Category 2 milestones in DY 6 to 50% in DY 10.
- Analysis of improvement milestones with numerical and quantifiable values showed that most DPHs exceeded their annual targets, including over 93% in DY 9 and over 80% in DY 10. Over 71% of milestones in DY 9 and 60% in DY 10 were exceeded by double-digits.
- Almost all of the projects in Category 2 were perceived to have a high or very high impact on improving quality of care and patient health outcomes. Most projects were reported to have a medium to high impact on increasing cost containment and efficiency.
- Eleven DPHs reported that Category 2 created necessary infrastructure for Category 1, and 10 DPHs said the same for Category 3. Changed provider practice was also mentioned as an important component of Category 2's impact on the other DSRIP categories, especially on Categories 1 and 3.
- Difference-in-differences (DD) analyses showed significant DD values in favor of DPHs that implemented care transition projects for getting timely appointments (11.15%), influenza immunization (1.71%), smoking cessation rates (15.67%), reduction of uncontrolled diabetes rates (-0.1%) and an increase in LDL (7.15%) and HbA1c (5.2%) controls.
- DPHs implementing chronic care management projects also had significant DD values for greater increase in smoking cessation rates (15.67%), influenza immunization (1.71%), LDL control (7.15%), and HbA1c control (5.2%).

Challenges and Lessons Learned

- DPHs' challenges included the existence of competing priorities in primary care clinics and conflicts with productivity goals; staffing difficulties such as recruitment, retention, training, and buy-in; and involving and engaging patients.

- The challenges were resolved by hiring more mid-level practitioners and other staff, utilizing LEAN projects to streamline processes, implementing staff engagement interventions, increasing staff training forming workgroups to establish standards and definitions, focusing on employee satisfaction and providing cues, and using existing data sources to monitor compliance.

Sustainability of Category 2 Projects

- Ten of the 13 DPHs that implemented medical home projects planned to continue them entirely and the remaining three DPHs planned to continue them partially. Similarly, the majority of DPHs that implemented primary care redesign, patient experience, physical and behavioral health care integration, chronic care management, specialty care access/redesign referral process, and process improvement projects planned to continue them entirely or partially.
- Only one DPH reported that it would not continue its care transition project and another indicated it would not continue its flow in the ED/Rapid Medical Evaluation project.
- The most frequently cited reasons for sustainability included ongoing support from leadership (cited 46 times by DPHs across all Category 2 projects), compatibility with organization's priorities (45), the realization of benefits (40), and the establishment of infrastructure (39).
- The least frequently cited reasons for sustainability included operational funds available after DSRIP (30) and projects related to needs for other initiatives or programs (30).
- Category 2 projects for which multiple motivators were most frequently cited included medical homes and redesign primary care. Measures with the fewest cited motivators were patient care navigation and palliative care.

DSRIP Category 3

Status of Category 3 Measures Prior to DSRIP

- Diabetes HbA1c control, CHF readmissions, and tobacco cessation were most frequently (10 DPHs) measured prior to DSRIP. CG-CAHPS, COPD admissions, and optimal diabetes care were least frequently (two DPHs) measured. All Category 3 measures were planned prior to DSRIP by at least one DPH.
- DPHs reported that ongoing measures prior to DSRIP were not tracked uniformly or at the same scope as under DSRIP. Among DPHs that previously collected these measures, less than half expanded collection of these measures to other clinics/departments within the DPH.

- Changes in the methods of data collection included using EHRs and changing denominators or numerators to be consistent with DSRIP. DPHs' goals also varied and included incorporation of patient experiences in workflow, standardization of data collection across the organization, increased intensity of care management, linking patients to community resources, and improving collaboration among inpatient and primary care providers.
- The most frequently cited reason for not tracking Category 3 measures was lack of health information technology (66%).

Implementation

- DPHs reported use of extensive resources and high level of difficulty for tracking most of the Category 3 measures. Most effort was spent on ensuring better data collection approaches to capture more accurate data, specification, standardization, and automation of procedures to create regular reports. The overall level of difficulty was attributed to technically challenging tasks and the need for major culture change requiring stakeholder engagement.
- DPHs reported using Category 3 measures in quality improvement initiatives 80% of the time and used the measures to provide feedback to medical directors and administrators 75% of the time and to providers 70% of the time.

Outcomes

- DPHs reported achieving nearly all of the milestones in this Category.
- DSRIP overall rates for CG-CAHPS indicated that scores were highest for ability of the doctors to communicate with patients (83%) and lowest for getting timely appointments, care, and information (44%) in DY 10. These rates did not change from DY 8 to DY 10. However, the average rates masked improvements in rates for some DPHs and a decline in rates for others.
- Comparisons of multi-site vs. single-site DPHs and county-owned vs. academic-owned DPHs indicated some differences, particularly for better patient rating of the doctor in academic-owned (81% vs. 61% in county-owned DPHs) and multi-site DPHs (70% vs. 65% in single-site DPHs).
- Comparisons of overall DPH DY 10 rates with the CG-CAHPS West reporting region indicated lower rates for DPHs, but the comparison of academic-owned DPHs to university or academic medical center benchmarks was more favorable.
- Care coordination measures, assessing reductions in negative outcomes such as diabetes complications (0.44% in DY 7 and 0.33% in DY 10) or CHF admissions (0.56% in DY 8 and 0.40% in DY 10), were relatively rare occurrences that declined during DSRIP.

Academic-owned DPHs performed significantly better than county-owned DPHs on COPD. Single-site DPHs had favorable results to multi-site DPHs for COPD and uncontrolled diabetes, but less favorable results on diabetes complications. Comparisons of DY 10 benchmarks with existing national benchmarks indicated favorable or equal rates for DPHs on all measures except CHF.

- The rates of preventive health measures increased during DSRIP for mammography (54% in DY 7 to 68% in DY 10), child weight screening (62% in DY 8 to 83% in DY 10), and tobacco cessation (35% in DY 8 to 51% in DY 10), but influenza and pediatric BMI measures did not show the same large increases. The comparison between multi-site vs. single-site DPHs showed better rates for all measures in the latter group. Comparison of county-owned vs. academic-owned showed an advantage in pediatric BMI and tobacco cessation measures for county-owned DPHs and an advantage in mammography and influenza immunization for academic-owned DPHs. Comparison of these measures with national benchmarks showed better rates for DPHs on all rates except influenza immunization.
- All but one at-risk population measure improved during DSRIP, but improvement was modest. The largest improvement was for pediatric asthma care, which increased from 41% in DY 8 to 48% in DY 10. Comparisons between single-site and multi-site DPHs, and county-owned and academic-owned DPHs, indicated more favorable results for single-site and academic-owned DPHs on all measures except CHF readmission, for which differences were not significant. DPHs performed favorably to the national benchmarks for both diabetes control measures (higher or similar rates of control) and CHF readmission measure (fewer CHF readmissions). However, DPH rates for hypertension control and pediatric asthma prescriptions were not favorable.
- In the interim period, several Category 3 measures were anticipated to have a high impact on improving quality of care and patient health outcomes. However, no measures were expected to have a high or very high impact on cost containment/efficiency. Eight DPHs stated that it was difficult to measure impact on cost without data.
- Near the end of DSRIP, DPHs reported on how Category 3 measures impacted other categories. The greatest impact was reported to be providing data. Changing provider and care delivery practices was also frequently reported.

Challenges and Lessons Learned

- Challenges in implementation included lack of EHR systems, inconsistencies in data collection methods, and lack of clear instructions on gathering data. DPHs responded to these challenges by implementing EHRs, training staff, and improving documentation.

Sustainability of Category 3 Measures

- DPHs revealed plans to continue to gather all or some aspects of Category 3 measures. The most frequently cited motivators were compatibility with organization's priorities, existing data collection infrastructure, and ongoing support of DPH leadership. The measures most frequently identified with multiple motivators were CG-CAHPS, diabetes HbA1c control, and CHF readmission measures. The most frequently cited barriers to sustainability was lack of sufficient funding after DSRIP and the measures most frequently cited with multiple barriers were diabetes LDL control, optimal diabetes care, and diabetes complications.
- DPHs acknowledged that collecting population-level data similar to DSRIP measures would be expected in the future and had become the new norm and indicated that core competencies related to data systems and analytic infrastructure are sustainable, but they have to decide which metrics are helpful for their operations or consistent with their organizations' strategies.
- Some DPHs had embedded the Category 3 measures in registries or had established new processes of care based on these measures. Challenges to sustainability included the inadequacy of some measures in capturing other positive outcomes such as reduction in wait times not captured by CG-CAHPS or changes in clinical guideline that have led to obsolescence of some measures. DPHs expressed reservations in their ability to sustain very resource-intensive measures in the absence of DSRIP funding.

DSRIP Category 4

Project Selection

- All DPHs participated in required sepsis management and central line-associated bloodstream infection (CLABSI) prevention projects. The most commonly selected optional projects were surgical site infection (SSI) prevention and hospital-acquired pressure ulcer (HAPU) prevention (12), followed by stroke management (7) and venous thromboembolism (VTE) prevention (5).
- Consistency with organizational goals and synergy with existing projects were the most frequently cited reasons (97%) for selecting Category 4 optional projects, followed by availability of champions (71%).

Status of Category 4 Projects Prior to DSRIP

- For the two required projects, seven DPHs had ongoing sepsis management projects and all 17 had ongoing CLABSI prevention projects. For the optional projects, all participating

DPHs had ongoing HAPU prevention projects and nearly all had ongoing SSI prevention projects.

- DPHs most frequently expanded the scope of sepsis management projects to other departments (7 DPHs). Most DPHs (8 of 13 reporting) did not expand the scope of CLABSI prevention projects. Among optional projects, most DPHs did not expand SSI prevention (7 DPHs) or HAPU prevention (5 DPHs).
- Most DPHs (7 of 9 reporting) changed methods or measures for sepsis management projects, but most DPHs (6 of 16 reporting) used the same methods for CLABSI prevention.
- Lack of identification of the project as a problem (44%) and lack of HIT infrastructure to identify or manage the project (44%) were the two reasons most frequently cited by DPHs for not implementing Category 4 projects prior to DSRIP.

Implementation

- DPHs adopted an existing model for the project most frequently (72%) but found the models required at least moderate levels of modification. For 12% of the projects, modifications were described as extensive and in 10%, a new intervention was designed.
- DPHs undertook a variety of actions during implementation to analyze current processes, engage internal stakeholders, and implement formal tests of change and compliance.
- DPHs reported on the degree of staff training required for the project using a five-point scale from "very low" to "very high."
- Nearly 60% of DPHs reported staff had some previous training relevant to the project, but 69% reported intervention-related training prior to the intervention, and 82% reported training during the intervention.
- DPHs reported that obtaining stakeholder engagement and reorganization of care processes required especially high levels of effort or were most frequently characterized as very hard.
- DPHs also rated the level of planning, resource use, and overall difficulty as "high" to "very high."
- DPHs planned on providing feedback to medical directors or administrative leadership for 97% of the projects. However, DPHs intended to provide direct feedback to providers within clinics for only 66% of the projects.

Outcomes

- DPHs achieved 105 milestones (100% of total proposed) in DY 6, 256 (100%) in DY 7, 291 (96%) in DY 8, 320 (94%) in DY 9, and 335 (90%) in DY 10.
- DPHs overall achieved 280 milestones (98%) for sepsis management and 299 (93%) for CLABSI prevention. For optional projects, DPHs achieved 144 (95%) for SSI prevention,

176 (97%) for HAPU prevention, 150 (92%) for stroke management, 179 (93%) for VTE prevention, and 11 (92%) for falls prevention.

- On average, DPHs reported a consistent increase in sepsis bundle compliance from DY 8-10 from 59.9% to 73.4%, and a decline in sepsis mortality from septic shock or severe sepsis using the CMS definition from 21.0% in DY 8 to 17.0% in DY 10.
- DPHs reported an increase from baseline (95.4%) to DY 8 (96.6%) and further increases from DY 8 to DY 10, culminating in 98.7% adherence to central line insertion practices by the end of the program. This increase in adherence corresponded to a reduction in the aggregate rate of CLABSI from 1.27 per 1,000 central line days in DY 8 to 1.17 in DY 10.
- DPHs reported standardized infection ratios for SSI prevention, declining from 1.03 in DY 8 to 1.01 in DY 10, indicating improvement but remaining slightly higher than the predicted number of SSIs.
- HAPUs at stages III and IV consistently decreased over the course of measurement, from 2.19% in DY 8 to 1.46% in DY 9 and 1.08% in DY 10. An alternative aggregate rate of number of stage III or IV pressure ulcers per 1,000 adult discharges reported by only five DPHs also declined by more than half from DY 9 (0.98/1,000 discharges) to DY 10 (0.45/1,000 discharges).
- Stroke management bundle adherence rates reported by the five participating DPHs improved for six of seven measures at rates ranging from 90.8% to 100% in DY 10. Stroke mortality decreased consistently over the course of program reporting, from 7.6% in DY 8 to 6.9% in DY 9 and 5.2% in DY 10.
- The VTE prevention and treatment bundle, reported by five DPHs, improved for all five measures, ranging from 95.4% to 100% in DY 10. The number of perioperative pulmonary embolism or deep vein thrombosis per 1,000 adult discharges, reported by two DPHs, increased from DY 9 (6.66/1,000 discharges) to DY 10 (8.2/1,000 discharges).
- The two DPHs that selected falls prevention reported an overall reduction from DY 8 (0.82 falls with injuries per 1,000 inpatient days) to DY 10 (0.49 falls per 1,000 inpatient days).
- From DPH perspectives, Category 4 projects realized their greatest impact on improving quality of care and health outcomes.
- Most DPHs perceived that Category 4 projects had no impact on other categories. However, many DPHs reported that Category 4 projects provided data for other categories.
- DPHs reported that Category 4 projects helped to solidify a culture of performance improvement and robust and rigorous data collection, leading to overall systemwide changes.

Comparison of DPH Category 4 Project Outcomes with Other California Hospitals

- California rates of severe sepsis mortality declined significantly from 20.8% in 2009 to 18.1% in 2013. Similarly, the rate of falls with injury in California dropped significantly

from 0.23% in 2009 to 0.16% in 2013. But stroke mortality rates in California increased from 2009 (5.87%) to 2013 (6.18%). The rates for CLABSI, SSI, HAPU, and VTE in California did not change in this time period.

- Comparisons of DPHs participating in each Category 4 project with hospitals that were most similar showed an overall decline in severe sepsis mortality and similar trends between DPHs and similar hospitals from 2009 to 2013.
- CLABSI, SSI 30 days and 90 days post discharge, HAPU infection, stroke mortality, VTE, and falls with injury rates did not change in the same time period for DPHs or similar hospitals.

Challenges and Lessons Learned

- DPHs expressed frustration with how bundle compliance was defined, making it difficult for some DPHs to compare their outcomes with other DPHs; low volume and low incidence of some events; and prior high performance that required near-zero or zero event incidence during DSRIP. DPHs reported hiring additional staff to meet these high performance measures and increasing and intensifying surveillance in order to capture rare events.
- DPHs also noted that the evidence behind certain bundle elements for Category 4 measures was not conclusive, making it difficult to get buy-in from staff and conflicting with organizational goals.
- DPHs reported using significant amounts of information technology and nursing resources to correctly code and abstract data for Category 4 measures, especially challenging for those DPHs that were in the midst of implementing EHRs.
- DPHs identified stakeholder engagement, especially with physicians and front-line nursing staff, as one of the most significant implementation challenges. Several DPHs relied on effective physician champions, regular feedback to providers, outreach to additional stakeholders, and knowledge of the DSRIP financial incentives to address this challenge.

Sustainability of Category 4 Projects

- DPHs reported that they would continue all or some aspects of Category 4 projects after DSRIP and none reported discontinuing Category 4 projects after DSRIP concluded. Fourteen DPHs reported they would continue all aspects of sepsis management and CLABSI prevention projects. Among optional projects, nine reported plans to continue the entire HAPU prevention projects and seven planned to continue their entire SSI prevention projects.
- Compatibility with the organization's priorities (cited 49 times by DPHs across all Category 4 projects), projects being fully embedded in the organization's policies (49),

and the establishment of infrastructure (49) were the most frequently cited motivators of sustainability across all Category 4 projects.

- Category 4 projects for which multiple motivators were most frequently cited included sepsis management and CLABSI prevention.

DSRIP Category 5

Project Selection

- Category 5 interventions were designed specifically to improve the delivery of services to people living with HIV/AIDS (PLWHA) and facilitate the transition from Ryan White to the Low Income Health Program (LIHP) care sites. DPHs in Alameda, Contra Costa, Kern, Los Angeles, Riverside, San Diego, San Francisco, San Mateo, Santa Clara, and Ventura Counties implemented Category 5 interventions.
- Category 5A projects focused on improvements in infrastructure and program design, while Category 5B performance measures concentrated on improvements in clinical and operational outcomes. DPHs were required to select three (of seven) Category 5A interventions. All DPHs were required to report data on six Category 5B HIV core clinical performance measures. In addition, DPHs were required to select four performance measures from Groups 2, 3, and Medical Case Management, with at least one from each group.
- DPHs reported selecting Category 5A projects that were synergistic with organizational goals and other planned and existing projects. Projects were also selected because they aligned with the Federal Implementation Plan of the National HIV/AIDS Strategy and were complementary to DSRIP Category 1-4 projects.
- The most commonly selected Category 5A projects (six DPHs) were: empaneling patients into medical homes, developing a disease management registry, developing retention programs, and ensuring access to Ryan White wraparound services. The interventions were successfully launched across the ten DPHs.
- The most commonly selected Category 5B, Group 2 and 3 measures were hepatitis C and syphilis screening (four DPHs).
- DPHs that implemented medical homes also selected enhanced Ryan White wraparound services, and DPHs implementing disease management registries often also selected development of formal retention programs.

Implementation and Outcomes

- DPHs implemented Category 5 over 18 months and successfully met almost all milestones for 5A projects. DPHs reported on the successful impact of staff training and

reorganization, care process reorganization, engagement with stakeholders, and other collaboratives on implementation of projects.

- DPHs reported increasing numbers of PLWHA who are accessing services through DSRIP sites and being retained in care. Improvements in the transition were achieved through coordinated care, use of disease registries and electronic health records, and patient empanelment into HIV-specific medical homes.
- DPHs reported increases in all required Group 1 outcomes. Across the sites, the percentage of patients with at least two medical visits a year increased from 78.1% in the baseline period to 87.6%.
- Greater exposure to medical evaluation and management created opportunities to increase 5B performance measures. The proportion of patients who were on antiretroviral therapy (ART, sometimes referred to as Highly Active Retroviral Therapy, HAART) increased from 88.4% to 97.94%. Regular viral load monitoring increased from 56.7% to 78.4%, but receipt of CD4 T-cell counts grew only slightly from 70% to 76.8%. Viral load suppression grew to 89.4% of patients on ART from a baseline level of 84.2%. Among patients with CD4 T-cell counts below 200 cell/mm3, the proportion receiving Pneumocystis carinii pneumonia (PCP) prophylaxis rose from 75.4% to 94.19%.
- DPHs reported that empanelment of patients into medical homes with HIV expertise, implementation of a disease management registry, and development of retention programs were the three interventions with the greatest impact on retention.
- All five of the Category 5B performance measures with available outcome data showed significant increases. DPHs reported that disease management registries, clinical decision support tools, and linking patients to medical homes enabled them to increase screening for the targeted conditions such as sexually transmitted disease, tuberculosis, and mental health issues. In addition to reaching a greater share of PLWHA in their care with screening, DPHs reported large increases in the percentage of PLWHA who received vaccinations, increasing the vaccination rate for pneumonia from 29.1% to 77.4% of patients, for hepatitis B from 11% to 58%, and for influenza from 48.6% to 60.4% of all HIV patients from baseline (based on DY 8 first semi-annual reports) to the final data point (based on DY 9 first semi-annual reports).
- DPHs reported success in improving patient retention and adherence to medication. The major contributors to positive outcomes were empaneling patients into medical homes with HIV expertise, implementing a disease management registry and developing specific retention programs.
- Analysis of LIHP enrollment and claims data indicate that medical homes that implemented Category 5 exclusively were able to demonstrate relatively higher rates of compliance with the Health Resources and Services Administration (HRSA) HIV/AIDS

Bureau measures for medical visit and viral load testing after adjusting for patient characteristics.

Challenges and Lessons Learned

- DPHs faced many challenges, including short timelines, the need for staff training, physician compliance, and timeliness of inputting patient information in the electronic medical record system. The most frequently reported challenge was removing patient barriers to retention in care. DPHs also had concerns about sustainability of 5A projects after DSRIP funding ended. Despite the challenges, DPHs reported success in implementing the interventions and improving patient outcomes.

Overall Impact of DSRIP and DPH Recommendations

DPHs reported on the overall impact of Categories 1-4 on their organizations in the interim period. The summary of this impact includes:

- DSRIP led to systematic and major change and was considered as an investment in the future of DPHs. The focus of DSRIP on population-based measures and outpatient care was particularly valuable.
- DSRIP significantly transformed the operations and information technology in DPHs.
- DSRIP provided the resources and financial incentives to effectively implement the selected projects and obtain buy-in from executives and staff.
- DSRIP led to new collaborations between DPHs and sharing of innovations.

DPHs were asked to provide their recommendations for renewal of DSRIP under the next Medicaid §1115 Waiver. These recommendations included:

- Align DSRIP projects with other initiatives and organizational goals.
- Consider projects that prepare DPHs for the future.
- Reduce the number of projects and narrow the focus of the program.
- Provide DPHs with clear metrics, instructions, and direction.
- Reevaluate the relevance of some measures to ensure consistency with current evidence.
- Allow for flexibility so that projects can be aligned with organization goals and characteristics, but also increase standardization of some measures to reduce confusion and shifting goals.
- Improve measurement methods so that high-performing DPHs are not penalized for small marginal improvements.

- Better measure time and effort required to complete projects.
- Provide timely feedback from CMS and establish direct communication lines between CMS and DPHs.

Conclusions

The achievements of DSRIP can be assessed in terms of whether Categories 1-5 projects were implemented successfully, achieved the Triple Aim, and were sustainable over time. The answers to these questions were generally positive within the confines of the data available for the evaluation.

The evidence supporting success in the implementation of DSRIP projects was overwhelming. The evaluation uncovered numerous examples of specific achievements, a nearly perfect rate of achievement of project milestones, and evidence that milestones exceeded targets. The key to success of implementation of DSRIP projects was primarily synergies between DSRIP projects and DPH goals. Flexibility afforded to DPHs to select the type and number of specific projects from Categories 1, 2, 4, and 5 contributed to the ability to implement successful DSRIP projects. The infusion of resources was an effective incentive and an essential catalyst for change.

The evaluation results also provided evidence of progress of DPHs towards the Triple Aim. The evidence included exceeding milestone targets in Categories 1 and 2, improvements in selected DPH-reported Category 3 and Category 4 adherence and outcome measures, consistency of many of these measures with external benchmarks, and improvements in important Category 5 measures. DPHs' perceptions of progress towards achieving the Triple Aim was consistent with and confirmed self-reported data, primarily on improved quality of care and better patient outcomes. These results supported the conclusion that DSRIP succeeded in moving DPHs towards the Triple Aim of better care and better health. Impact on cost containment was not identified as a major impact and requires careful assessment using patient-level data.

Evaluation results also provided evidence of sustainability of DSRIP reform in California DPHs, as many projects were embedded in DPHs' infrastructure and care delivery processes. DSRIP led to increased development and incorporation of data gathering tools in EHRs, increased expertise in performance measurement, use of measures in quality improvement and provider performance review activities, and explicit acknowledgment that DSRIP transformations and systematic change were necessary investments in their organizations' futures. These statements were supported by DPHs' intentions to continue the majority of DSRIP projects once the program ended.

DPH recommendations for PRIME included alignment of future DSRIP projects with other initiatives and organizational goals; recommendations for adopting measures that promoted cost containment and promoted quality improvement; narrower focus on fewer projects to improve successful implementation and avoid change fatigue; and consistency and clarity in reporting requirements.

Introduction

In November 2010, California received approval for its §1115 Medicaid "Bridge to Reform" waiver. In preparation for health care reform under the Patient Protection and Affordable Care Act (ACA) of 2010, the waiver allowed California the flexibility to modify its Medicaid programs to implement innovative delivery reforms. The waiver included four main components: the Low Income Health Program (LIHP), which expanded eligibility for Medicaid-like coverage to low-income individuals prior to health reform; a program that moved seniors and persons with disabilities to Medicaid managed care organizations; programs to develop organized systems of care within the California Children's Services program; and the Delivery System Reform Incentive Payments (DSRIP) program, which was aimed at improving care delivery and performance of designated public hospitals and academic hospital systems throughout California through the use of financial incentives.(1)

One of the main goals of California's DSRIP program was to incentivize innovation and integrated care delivery redesign at hospital systems serving a disproportionate share of low-income patients, particularly in anticipation of the influx of newly insured patients as a result of the ACA. Additional goals included creating and sustaining medical homes to manage chronic diseases, delivering proactive primary care services, and reducing health disparities. California was the first in the nation to implement a DSRIP program, supporting transformative change through a performance-based structure. Since the implementation of California's waiver, seven additional states have created DSRIP or DSRIP-like programs, including Kansas, Massachusetts, New Jersey, New York, New Mexico, Oregon, and Texas.(2)

Participating DPHs

Participating institutions include all 17 designated public hospitals (DPHs) in California. Six DPHs are multi-hospital systems leading to 21 total hospitals. The DPHs that participated in DSRIP and the abbreviated names used throughout this report are included in Exhibit 1.

Exhibit 1: Participating Designated Public Hospitals

Full Designated Public Hospital Name	Abbreviated Name
1. Alameda Health System	Alameda
2. Arrowhead Regional Medical Center	Arrowhead
3. Contra Costa health Services	Contra Costa
4. Kern Medical Center	Kern
5. Los Angeles County Department of Health Services	Los Angeles
6. Natividad Medical Center	Natividad
7. Riverside County Regional Medical Center	Riverside
8. San Francisco General Hospital	San Francisco
9. San Joaquin General Hospital	San Joaquin
10. San Mateo Medical Center	San Mateo
11. Santa Clara Valley Medical Center	Santa Clara
12. University of California, Davis Medical Center	UC Davis
13. University of California, Irvine Medical Center	UC Irvine
14. University of California, Los Angeles Hospitals	UC Los Angeles
15. University of California, San Diego Health Systems	UC San Diego
16. University of California, San Francisco Medical Center	UC San Francisco
17. Ventura County Medical Center	Ventura

DSRIP Program Design

The first year of DSRIP implementation is referred to as Demonstration Year (DY) 6. DSRIP ended on December 31, 2015, at the end of DY 10. DPHs had the potential to receive up to $3.3 billion dollars in federal funds over the five years of the waiver. DPHs' DSRIP proposals focused on four categories of projects: develop infrastructure (Category 1), implement innovation and redesign (Category 2), track population-focused measures (Category 3), and implement urgent improvements in care (Category 4). Ten DPHs elected to participate in Category 5 projects, which focused on ensuring that persons diagnosed with HIV have access to high-quality, integrated and coordinated care in the outpatient setting. Category 5 projects were implemented for a total of 18 months, from the start of DY 8 in July 2012 through the first six months of DY 9 and ending in December 2013.

Each approved Category 1 and Category 2 project in the §1115 Medicaid waiver included multiple potential process and improvement measures; DPHs were required to select at least one measure of each type. Within each measure, DPHs were required to select an evidence-based metric and provide rationale and/or evidence to support the metric.

In their proposals, DPHs were required to submit a "Milestone and Metrics Table" for each Category 1 and Category 2 project, in which each milestone was specified as the improvement target for that specific year. For example, a milestone could be "Achieve at least a 10% or lower patient no-show rate for primary care medical homes" where the metric is the no-show rate and the milestone is 10% or lower.(3)

In their proposals, DPHs were also required to include a narrative that described the goals of the program, the challenges faced by the particular system and community, and the delivery reform aimed at addressing the stated challenges. The baseline for the projects was required to begin no earlier than July 2009. DPHs were also required to note how each project reinforced and supported efforts in other categories within the DSRIP plan. Below are the further descriptions of each DSRIP category.

Category 1: Infrastructure Development

Category 1 projects focused on infrastructure development. These activities resulted in investments in technology, tools, and human resources to strengthen the ability of DPHs to serve populations and improve services. DPHs were required to select at least two Category 1 projects but had complete flexibility in which projects they selected. DPHs were required to provide reasons for their selections based on the needs and circumstance of their population, the relative priority of the project for the organization, and baseline status. The full and abbreviated Category 1 project names used in the rest of this report are provided in Exhibit 2.

Exhibit 2: Category 1 Projects

Full Project Name	Abbreviated Name
1. Expand Primary Care Capacity	Primary Care Capacity
2. Increase Training of Primary Care Workforce	Workforce Training
3. Implement and Utilize Disease Management Registry Functionality	Disease Registry
4. Enhance Interpretation Services and Culturally Competent Care	Cultural Competency
5. Collect Accurate Race, Ethnicity, and Language (REAL) Data to Reduce Disparities	REAL Data
6. Enhance Urgent Medical Advice	Urgent Medical Advice
7. Introduce Telemedicine	Telemedicine
8. Enhance Coding and Documentation for Quality Data	Quality Data
9. Develop Risk Stratification Capabilities/Functionalities	Risk Stratification
10. Expand Capacity to Provide Specialty Care Access in the Primary Care Setting	Specialty Care in Primary Setting
11. Expand Specialty Care Capacity	Specialty Care Capacity
12. Enhance Performance Improvement and Reporting Capacity	Performance Improvement

Category 2: Innovation and Redesign

Projects in Category 2 were aimed at implementing innovative models and redesign of care. Selection of Category 2 project was similar to Category 1 explained above. Category 2 projects full name and the abbreviated name used in the rest of this report are provided in Exhibit 3.

Exhibit 3: Category 2 Projects

Full Project Name	Abbreviated Name
1. Expand Medical Homes	Medical Homes
2. Expand Chronic Care Management Models	Chronic Care Management
3. Redesign Primary Care	Primary Care Redesign
4. Redesign to Improve Patient Experience	Patient Experience
5. Redesign for Cost Containment	Cost Containment
6. Integrate Physical and Behavioral Health Care	Physical and Behavioral Health Care Integration
7. Increase Specialty Care Access/Redesign Referral Process	Specialty Care Access/Redesign Referral Process
8. Establish/Expand a Patient Care Navigation Program	Patient Care Navigation Program
9. Apply Process Improvement Methodology to Improve Quality/Efficiency	Process Improvement
10. Improve Patient Flow in the Emergency Department/Rapid Medical Evaluation	Flow in the ED/Rapid Medical Evaluation
11. Use Palliative Care Programs	Palliative Care
12. Conduct Medication Management	Medication Management
13. Implement/Expand Care Transitions Programs	Care Transitions
14. Implement Real-Time Hospital-Acquired Infections (HAIs) System	Real-Time Hospital-Acquired Infections (HAIs) System

Category 3: Population-Focused Improvement

Category 3 required tracking specific measures of care delivery for high-burden conditions in DPH systems focusing on population health improvement. Each DPH was required to gather six measures in DY 7, and to report all 16 measures during DY 8-10. DPHs without robust electronic health record systems were allowed to use a sampling approach to generate a statistically significant random sample using the methodology outlined in the Waiver Special Terms and Conditions. Category 3 measures are listed in Exhibit 4.

Exhibit 4: Category 3 Measures

Full Measure Name	Abbreviated Name
Patient or Care Giver Experience	
1. CG-CAHPS	CG-CAHPS
Care Coordination	
2. Diabetes, Short Term Complications	Diabetes Complications
3. Uncontrolled Diabetes	Uncontrolled Diabetes
4. Congestive Heart Failure	CHF Admissions
5. Chronic Obstructive Pulmonary Disease	COPD Admissions
Preventive Health	
6. Mammography Screening	Mammography
7. Influenza Immunization	Influenza Immunization
8. Child Weight Screening	Child Weight Screening
9. Pediatrics Body Mass Index	Pediatric BMI
10. Tobacco Cessation	Tobacco Cessation
At-Risk Populations	
11. Diabetes: LDL Control (<100 mg/dl)	Diabetes: LDL Control
12. Diabetes: HbA1c Control (<8%)	Diabetes: HbA1c Control
13. 30-Day CHF Readmission Rate	CHF Readmission
14. Hypertension: Blood Pressure Control (<140/90 mmHg)	Hypertension Control
15. Pediatrics Asthma Care	Pediatric Asthma Care
16. Optimal Diabetes Care Composite	Optimal Diabetes Care

Category 4: Urgent Improvement in Care

Category 4 projects were designed to make urgent improvements in the quality and safety of inpatient care and included specific evidence-based projects.(3) Each DPH was required to implement at least four projects, including two required projects on severe sepsis detection and management and central line-associated bloodstream infection prevention. DPHs were also required to select a minimum of two additional interventions from the following projects: surgical site infection prevention, hospital-acquired pressure ulcer prevention, stroke management, venous thromboembolism prevention and treatment, and falls with injury prevention. Improvement targets for Category 4 projects were based on baseline data starting no earlier than July 2009 or data based on 6-12 months of the project in DY 7. The state was tasked with setting a high performance level and a minimum performance level for central line insertion practices (CLIP) adherence, stroke management, and venous thromboembolism prevention and treatment, which will be used as guidelines to set targets for DY 9-10. Category 4 projects are provided in Exhibit 5.

Exhibit 5: Category 4 Projects

Full Project Name	Abbreviated Name
1. Severe Sepsis Detection and Management (Mandatory Project)	Sepsis Management
2. Central Line-Associated Bloodstream Infection (CLABSI) Prevention (Mandatory Project)	CLABSI Prevention
3. Surgical Site Infection (SSI) Prevention	SSI Prevention
4. Hospital-Acquired Pressure Ulcer Prevention	HAPU Prevention
5. Stroke Management	Stroke Management
6. Venous Thromboembolism (VTE) Prevention and Treatment	VTE Prevention
7. Falls with Injury Prevention	Falls Prevention

Category 5: HIV Transition Projects

Category 5 projects aimed at strengthening the ability of DPHs to serve individuals diagnosed with HIV, and focused on outpatient services. Category 5 proposals were required to demonstrate the infrastructure, programs and services that must be in place for HIV-positive individuals to receive high-quality, coordinated care. Category 5A focused on improvements in infrastructure and program design, while Category 5B concentrated on improvements in clinical and operational outcomes. DPHs were required to select three Category 5A interventions.

Category 5B projects were designed to focus on achieving discrete patient outcomes across several domains. All DPH systems were required to report data on six HIV Core Clinical Performance Measures for individuals enrolled in LIHP who access care through the DPH system and were also required to select and track four additional Performance Measures. For the additional measures, DPHs were required to select at least one measure from Groups 2, 3 and Medical Case Management. Hospital systems reported measures through the Health Resources and Services Administration HIV/AIDS Bureau (HRSA HAB). Upon collecting baseline data, DPHs were required to achieve performance improvement targets by the end of the Category 5 timeline in order to receive funding for each measure.

The following DPHs participated in Category 5 projects:

1. Alameda
2. Contra Costa
3. Kern
4. Los Angeles
5. Riverside
6. San Francisco
7. San Mateo
8. Santa Clara

9. UC San Diego
10. Ventura

Exhibit 6: Category 5A Projects

Full Project Name	Abbreviated Name
1. Empanel patients into medical homes with HIV expertise	Empanel Patients
2. Implement a Disease Management Registry module suitable for managing patients diagnosed with HIV	Disease Registry
3. Build clinical decision support tools to allow for more effective management of patients diagnosed with HIV	Clinical Decision Support
4. Develop retention programs for patients diagnosed with HIV who inconsistently access care	Retention Programs
5. Enhance data sharing between DPHs and County Departments of Public Health to allow for systematic monitoring of quality of care, disease progression, and patient and population level health outcomes	Data Sharing
6. Launch electronic consultation system between HIV primary care medical homes and specialty care providers	E-consult
7. Ensure access to Ryan White wraparound services for new LIHP enrollees	Ryan White Wraparound

Exhibit 7: Category 5B Required Core Clinical Performance Measures

Required Measures	Optional Measures		
Group 1	**Group 2**	**Group 3**	**Medical Case Management**
1. CD4 T-Cell Count	1. Adherence Assessment and Counseling	1. Chlamydia Screening	1. Care Plan
2. HAART	2. Cervical Cancer Screening	2. Gonorrhea Screening	2. Medical Visits
3. Medical Visits	3. Hepatitis B Screening	3. Hepatitis/HIV Alcohol Counseling	
4. PCP Prophylaxis	4. Hepatitis B Vaccination	4. Influenza Vaccination	
5. Viral Load Monitoring	5. Hepatitis C Screening	5. MAC Prophylaxis	
6. Viral Load Suppression	6. HIV Risk Counseling	6. Mental Health Screening	
	7. Lipid Screening	7. Pneumococcal Vaccination	
	8. Oral Exam	8. Substance Abuse Screening	
	9. Syphilis Screening	9. Tobacco Cessation and Counseling	
	10. TB Screening	10. Toxoplasma Screening	

Note: Designated public hospitals (DPHs) were required to report on six health outcome measures: CD4 T-cell count, ART, medical visits, PCP prophylaxis, viral load monitoring, and viral load suppression, designated as "Group 1" 5B outcomes. In addition, DPHs were asked to select four additional outcomes designated as "Group 2", "Group 3", and "Medical Case Management" outcomes with at least one metric from each group.

DPH Reporting

To receive funding under DSRIP, DPHs were required to submit reports to DHCS, which had to include progress reports and the incentive amounts requested by each DPH. DPHs were required to submit two semi-annual reports and one annual report per demonstration year. With the exception of DY 6, the first reporting period occurred from July 1 through December 31 of the demonstration year, with the report due March 31 and final incentive payments disbursed by April 30. The second reporting period occurred from January 1 through June 30 of the demonstration year, with the report due in September and the payment disbursed by

October 31. DPHs were also required to submit an annual, year-end report by October 31. The year-end reports had to include information from the two semi-annual reports, a year-end narrative, and descriptions of the DPHs' involvement in collaborations. Each report had to include data that supports milestone achievement.

DPHs were required to report achievement on the designated milestones to receive funding. Each milestone was given an achievement value between 0 and 1 (Exhibit 8). These achievement values were then summed to give a total achievement value for each "milestone bundle" for a particular length of time (full calculation available in *Attachment P* of the Waiver Special Terms and Conditions).

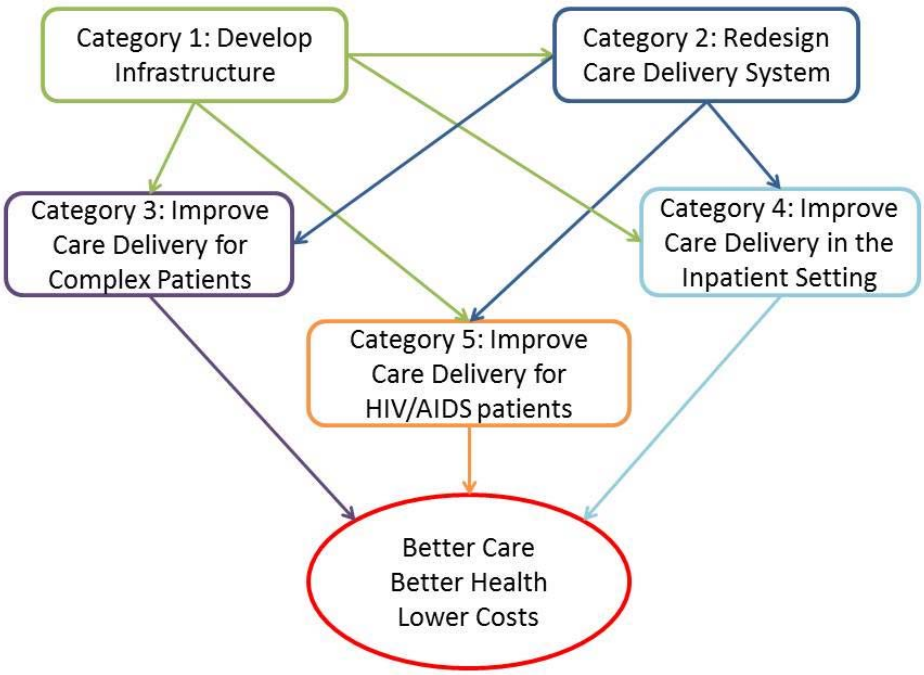
Exhibit 8: Achievement Values Relative to Actual Percentage Achievement

Achievement	Achievement Value
Full achievement	1
≥75%	0.75
74% to 50%	0.5
49% to 25%	0.25
≤24%	0

UCLA Evaluation

The University of California, Center for Health Policy Research (UCLA) was selected by the California Department and Health Care Services (DHCS) to evaluate the DSRIP program. The evaluation was designed to examine the progress of DPHs in implementing DSRIP projects, the process of implementation and challenges faced by DPHs, and whether DSRIP projects impacted the Triple Aim of improving quality of care and patient outcomes, and increased cost containment or efficiency. UCLA examined the implementation of each category as well as the impact of categories on each other as indicated in the conceptual framework in Exhibit 9. The evaluation also considered barriers to implementation, the best practices DPHs employed to overcome these challenges, and the sustainability of DSRIP projects after the demonstration period. This final evaluation report covers data from the entire program, DY 6-10. In DY 6-9, the evaluation is based on DPHs' annual reports. Given the time constraints for producing this final evaluation report, DY 10 data are from the second semi-annual report because the annual reports were not yet available.

Exhibit 9: Conceptual Framework for UCLA's Evaluation of the DSRIP Program



Research Questions

The following research questions are addressed to the degree possible and depending on availability of data:

- What were the predominant types of infrastructure and system redesign projects selected by DPHs? Why were these projects chosen?
- Did infrastructure and system redesign projects improve the ability of DPHs to enhance care delivery in the inpatient setting and for complex populations? How were these improvements accomplished?
- Did any projects have a greater impact on improving health, care delivery, or efficiency than others?
- What were the major challenges experienced by DPHs in implementing Categories 1-5 projects? What was the impact of these challenges on program sustainability?
- What were the lessons learned and innovations by DPHs in implementation of projects in Categories 1-5? How were implementation challenges addressed?
- Above and beyond the DSRIP milestones and requirements, did the Category 5 projects lead to smoother transitions for patients transitioning into LIHP, and in what ways?

- Did the Category 5 projects lead to improved health outcomes for HIV-positive LIHP enrollees? What impact has the provision of preventive care and screening services had on health outcomes for HIV-positive LIHP enrollees?
- How has the implementation of Category 5A projects improved coordination of services for patients diagnosed with HIV? How has the implementation of Category 5A projects improved retention and compliance for patients diagnosed with HIV?
- What trends are reported across DPHs on the obstacles to meeting performance improvement targets?

Data Sources

UCLA used four data sources in this final evaluation report:

- The DSRIP plans and annual DPH reports from DY 6 through DY 9, and the second semi-annual reports from DY 10. The annual reports from DY 10 were not available for this report, but few changes were anticipated between the second semi-annual and annual report. A timeline of plan and report submissions is presented in Exhibit 10 and Exhibit 11.
- Two rounds of extensive surveys completed by representatives of all participating DPHs. The surveys included open-ended and categorical closed-ended questions for a systematic set of responses from all respondents.
- Structured follow-up interviews conducted with all DPHs. Interviews were used to gather additional data to answer the evaluation questions, particularly when DPH reports did not sufficiently illustrate lessons learned and barriers or challenges to implementation of the program overall or for specific projects. Follow-up interviews were conducted by telephone with the individuals most knowledgeable about the specific areas of interest such as medical directors, administrators of the DSRIP projects and/or quality improvement initiatives, and clinicians. A more detailed explanation of the methodology implemented for the surveys and interviews is available in Appendix A: Survey and Interview Methodology.
- Data from the Office of Statewide Health Planning and Development (OSHPD) to describe the context in which DPHs deliver care in California and identify benchmarks for Category 4 DSRIP indicators and measures.

Exhibit 10: Timeline of DSRIP Plans and Reports, DY 6-10

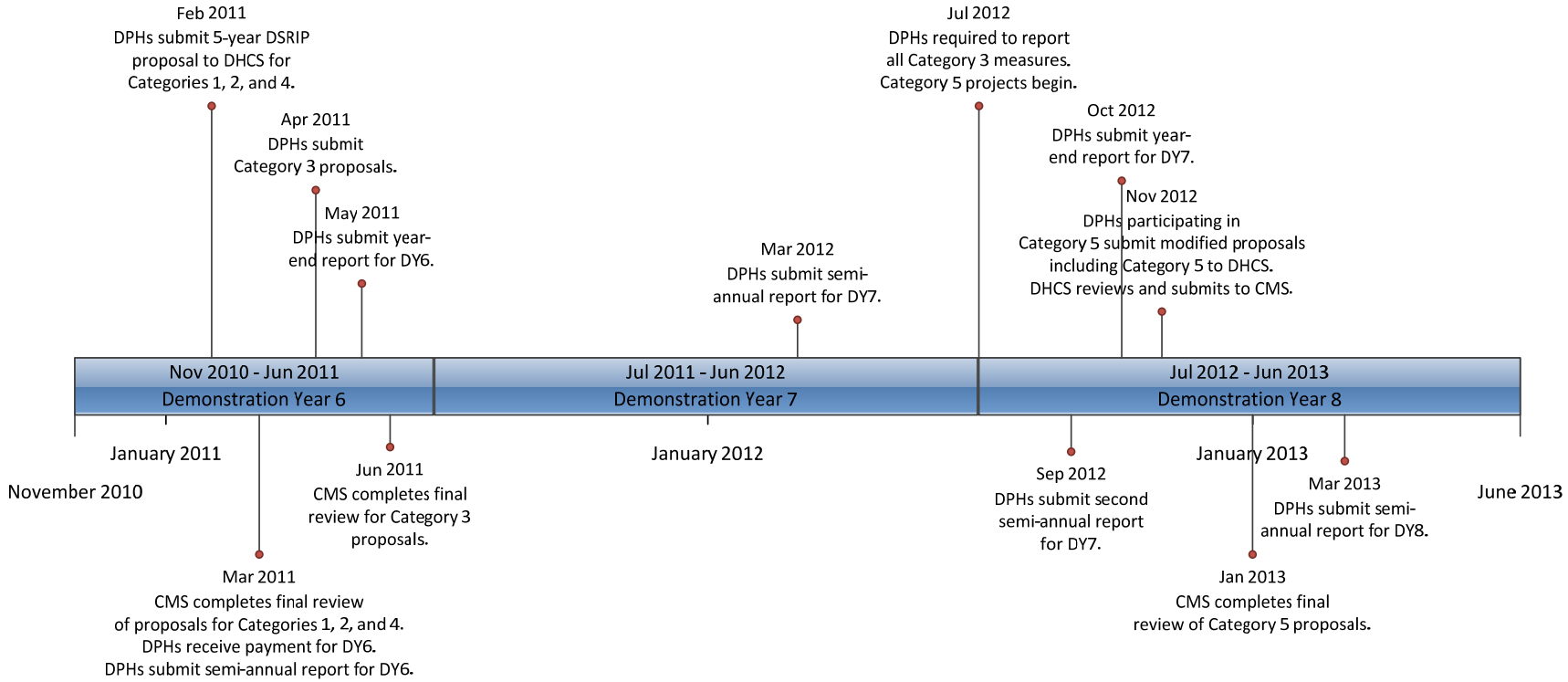
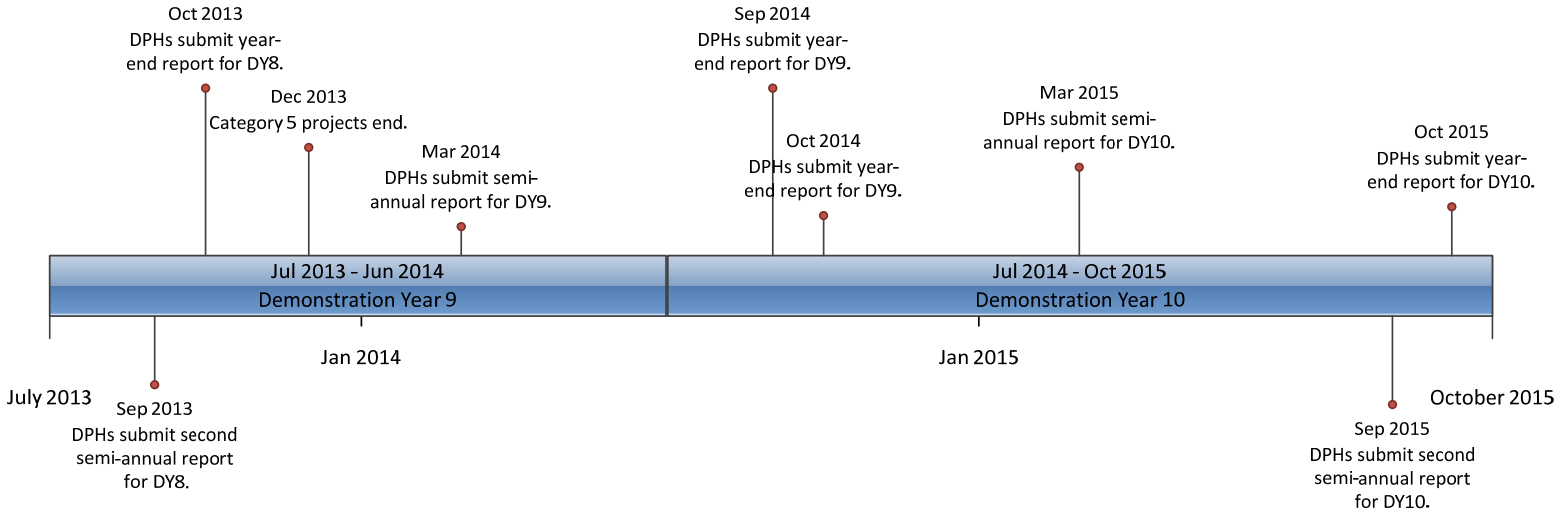


Exhibit 11: Timeline of DSRIP Reports, DY 6-10 (continued)



Overview of Categories 1-4

This chapter provides an overview of the implementation and impact of DSRIP Categories 1-4. Category 5 is reported separately due to significant differences in the nature of projects in that category. However, the discussion of the impact of projects from one category on another in this chapter includes the impact of Categories 1-4 on Category 5 projects.

DPH Characteristics

The 17 DPHs that participated in DSRIP included five University of California (UC) systems, referred to in this report as academic-owned, and 12 county-owned and -operated systems (Exhibit 12). These DPHs varied widely in size, structure, and other characteristics. Six of the DPHs had multiple acute care hospitals within their systems, and all said that DSRIP projects were consistently implemented across their facilities. Los Angeles was the largest system, with three acute care hospitals, more than 76,000 discharges, and 1.2 million outpatient visits. In terms of payer mix, the county-owned DPHs tended to have a larger percentage of discharges and outpatient visits covered by Medi-Cal and less coverage from third-party payers than academic-owned DPHs. The academic-owned DPHs had higher case mix averages than the county-owned DPHs, an indication of the more complex care provided by academic-owned DPHs. Most of the DPHs also shared some similarities. All DPHs had multiple primary care facilities participating in DSRIP. Sixteen of the DPHs (all except for San Mateo) were teaching hospitals and had residents on staff (data not shown).

Exhibit 12: Characteristics of Designated Public Hospitals Participating in DSRIP

Designated Public Hospital	Number of Hospitals*	Total Hospital Beds	FY 2010 Total Discharges	FY 2010 Outpatient Visits	Total Non Pediatric General Acute Care Beds	Percentage of Discharges With Medi Cal as Payer Source	Percentage of Discharges with Third Party Payer Source	Percentage of Outpatient Visits With Medi Cal as Payer Source	Percentage of Outpatient Visits with Third Party Payer Source	Number of Primary Care Facilities Participating in DSRIP	Case Mix**
County-Owned DPHs											
Alameda	1	475	13,816	424,224	236	51	3	39	3	4	1.04
Arrowhead	1	456	24,325	384,516	260	48	5	44	6	4	1.04
Contra Costa	1	163	9,658	486,551	123	54	9	51	13	10	0.91
Kern	1	222	11,878	147,603	173	61	11	55	8	4	0.95
Los Angeles	3	2,034	76,549	1,236,594	1,305	51	7	35	7	23	1.21
Natividad	1	172	7,904	194,084	138	60	16	36	12	2	0.86
Riverside	2	439	21,194	130,000	341	38	16	50	15	4	1.04
San Francisco	1	509	15,625	614,152	395	52	16	39	14	10	1.18
San Joaquin	1	196	8,601	220,458	181	63	8	50	9	3 to 6***	1.03
San Mateo	1	509	4,128	303,953	93	39	13	36	8	9****	1.19
Santa Clara	1	574	23,433	823,341	484	55	10	54	12	7	1.11
Ventura	2	272	13,893	860,589	213	42	24	31	38	17	1.01
Academic-Owned DPHs											
UC Davis	1	619	29,190	930,372	605	34	28	9	63	18	1.6
UC Irvine	1	422	16,389	412,552	345	27	32	20	37	5	1.53
UC Los Angeles	2	800	38,327	834,944	723	17	45	8	57	20	1.62
UC San Diego	2	600	23,706	482,693	479	26	32	23	42	8	1.58
UC San Francisco	2	580	29,244	953,070	635	23	43	13	48	5	1.85

Source: UCLA analysis of 2010 hospital financial and utilization data from the California Office of Statewide Health Planning and Development

*Does not include rehabilitation or psychiatric facilities.

**Case mix is a measure of the relative cost or resources needed to treat the mix of patients in each designated public hospital during the calendar year. Higher scores indicate greater level of complexity. Some of the factors that go into calculating case mix include: principal and secondary diagnoses, age, procedures performed, the presence of co-morbidities and/or complications, discharge status, and gender. A detailed explanation is available here: http://www.oshpd.ca.gov/HID/Products/PatDischargeData/CaseMixIndex/default.asp

***San Joaquin reported most measures from three primary care clinics, but reported mammography screenings from six clinics.

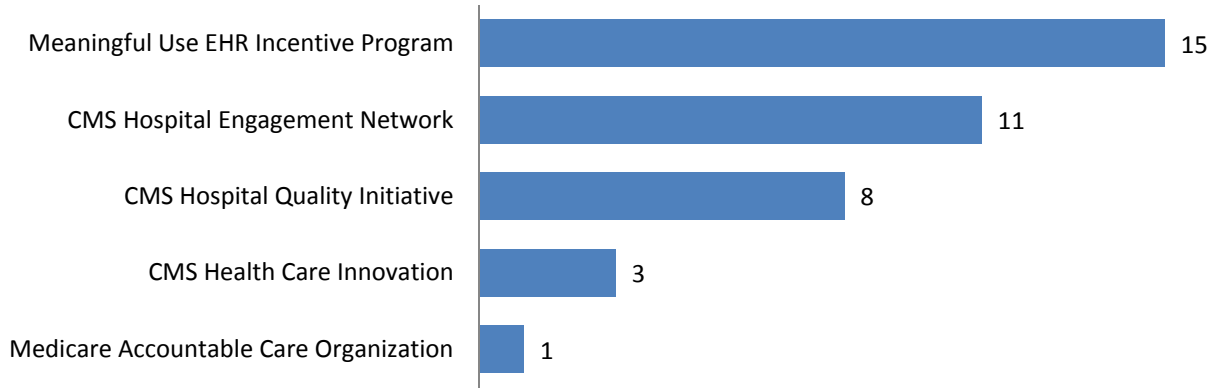
****San Mateo had 10 clinics participating in DSRIP until 2013 when one clinic closed down. It now has nine clinics participating in DSRIP.

Participation in External Initiatives

Non-DSRIP CMS Initiatives

DPHs were asked to report if they were participating in other CMS-related quality initiatives during DSRIP. The most commonly reported initiatives were the Meaningful Use EHR Incentive Program (15 DPHs), CMS Hospital Engagement Networks (11), and CMS Hospital Quality Initiative (8; Exhibit 13). Two DPH did not report participating in other CMS initiatives.

Exhibit 13: DPH Participation in CMS Initiatives Other than DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).

DPHs had been engaged in the CMS Hospital Quality Initiative Program longest at the time of the follow-up survey, but had spent significant time in other programs as well (Exhibit 14).

Exhibit 14: Average Years Participating in CMS Initiatives

Source: UCLA follow-up survey of designated public hospitals (DPHs).

Among DPHs that were participating in the Meaningful Use EHR Incentive Program at the time of the follow-up survey, most were in Stage 1 and one DPH reported participating at Stage 2. The level of Meaningful Use-related funding received during DSRIP ranged from $4 million to $50 million, depending on the scope of implementation and size of the organization. Nine DPHs reported implementation to be systemwide and inclusive of both inpatient and outpatient

departments. All DPHs participating in the Meaningful Use program acknowledged the importance of EHRs in their ability to collect measures and implement the DSRIP projects.

The CMS Hospital Engagement Networks were not generally associated with direct funding. Only two DPHs reported receiving limited funds ($21,000-$31,000) related to these networks. All but one DPH reported that the activities were related to Category 4 projects. The networks primarily provided opportunities for shared learning among hospitals, staff training, and developing structure for achieving improvements. Some reported improvement in their ability to streamline data collection, expand on DSRIP goals, or track additional administrative measures that improved the ability to achieve better outcomes.

DPHs reported participating in quality measures reporting, H-CAHPS, CG-CAHPS, and value-based purchasing activities under the CMS Hospital Quality Initiative, all related to Category 4 measures. These initiatives were synergistic with Category 4 measures but were focused on measures not included in DSRIP, had different scoring and reporting methods, or were started prior to DSRIP.

Two DPHs reported details of their Health Care Innovations grants, one focusing on community-based care transitions (funding: $650,000) and the other on access to community health programs for COPD patients (funding: $4.1 million). The first was aligned with and integrated into Category 2 projects. The latter was expected to lead to improvements in Category 3 measures. Only one DPH was participating in a Medicare ACO and did not provide additional details.

Other Initiatives

Eleven DPHs reported participating in non-DSRIP and non-CMS initiatives during DSRIP (Exhibit 15). Four DPH participated in two initiatives and one DPH participated in three. Most initiatives were related to quality improvement and involved participation in collaboratives, many of which were related to Category 4 projects that involved improving processes of care. Three DPHs had initiatives to develop and implement patient-centered medical home (PCMH) care processes or patient experiences, and one focused on improving access to care for HIV/AIDS patients. In general, these initiatives either complemented DSRIP projects or supported the ability to implement DSRIP projects.

Exhibit 15: Characteristics of Non-DSRIP Non-CMS Initiatives

Program type	Related to DSRIP Categories	Length in Years	Activities	Relationship to DSRIP
Access improvement	5	4	Empanelment of HIV patients	Complementary

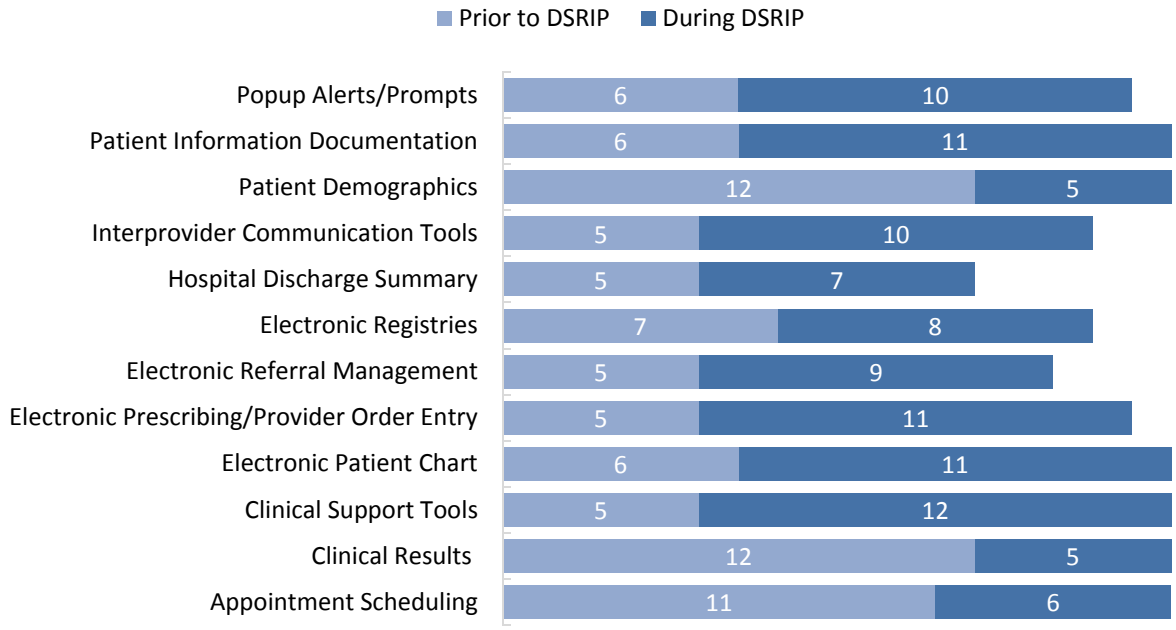
Program type	Related to DSRIP Categories	Length in Years	Activities	Relationship to DSRIP
Patient experience	3	2	Develop skills to communicate with patients with empathy to improve CG-CAHPS scores	Complementary
	3		Improve shared decision making and patient engagement	Complementary
	1, 2, 3		Improve patient experiences to improve CG-CAHPS scores	Supportive
Patient-centered medical home (PCMH)	1, 2	1	Improve management of diabetes patients through outreach and implement behavioral health screening	Complementary
	1, 2, 3		Collaborative on how to build medical homes and improve clinic staff skills	Supportive
	1, 2, 3	1	Provide urgent medical advice and appointments and use disease registry to increase outreach and health assessment	Complementary
Quality improvement	3	6 months	Training providers and staff to improve cycle time, medication reconciliation and conducting cancer screenings	Complementary
	4	4	Collaborative to prevent sepsis and improve outcomes	Supportive
	4		Collaborative to improve skills in stroke management and population awareness of risk factors and warning signs	Complementary
	4	2	Improving appropriate use of antibiotics in the inpatient setting	Supportive
	4	3	Collaborative to develop standardized nursing procedures on catheter placement to reduce CLABSI	Supportive
	1, 2, 3		Continuing efforts prior to DSRIP to use disease registry to manage chronic conditions	Supportive
	4		Improve cardiac surgery procedures	Supportive
	4	2	Collaborative to improve compliance with VTE prevention measures and crate a risk-assessment tool to be used in EHR	Supportive
	4	5	Early identification of sepsis cases, measure clinical indicators, and provide early treatment to reduce sepsis mortality	Complementary

Source: UCLA follow-up survey of designated public hospitals (DPHs).

Health Information Technology (HIT) Infrastructure Development

Four DPHs had implemented or begun implementation of their HIT systems prior to DSRIP and 13 implemented a comprehensive HIT during DSRIP (data not shown). Among the latter, limited HIT features were available prior to DSRIP (Exhibit 16). Overall, outpatient HIT capabilities were extensive particularly for clinical results such as lab tests and imaging, clinical support tools, and electronic patient charts. Features such as discharge summaries and referral management were less frequent.

Exhibit 16: EHR Outpatient Features and Implementation Timeline



Source: UCLA follow-up survey of designated public hospitals (DPHs).

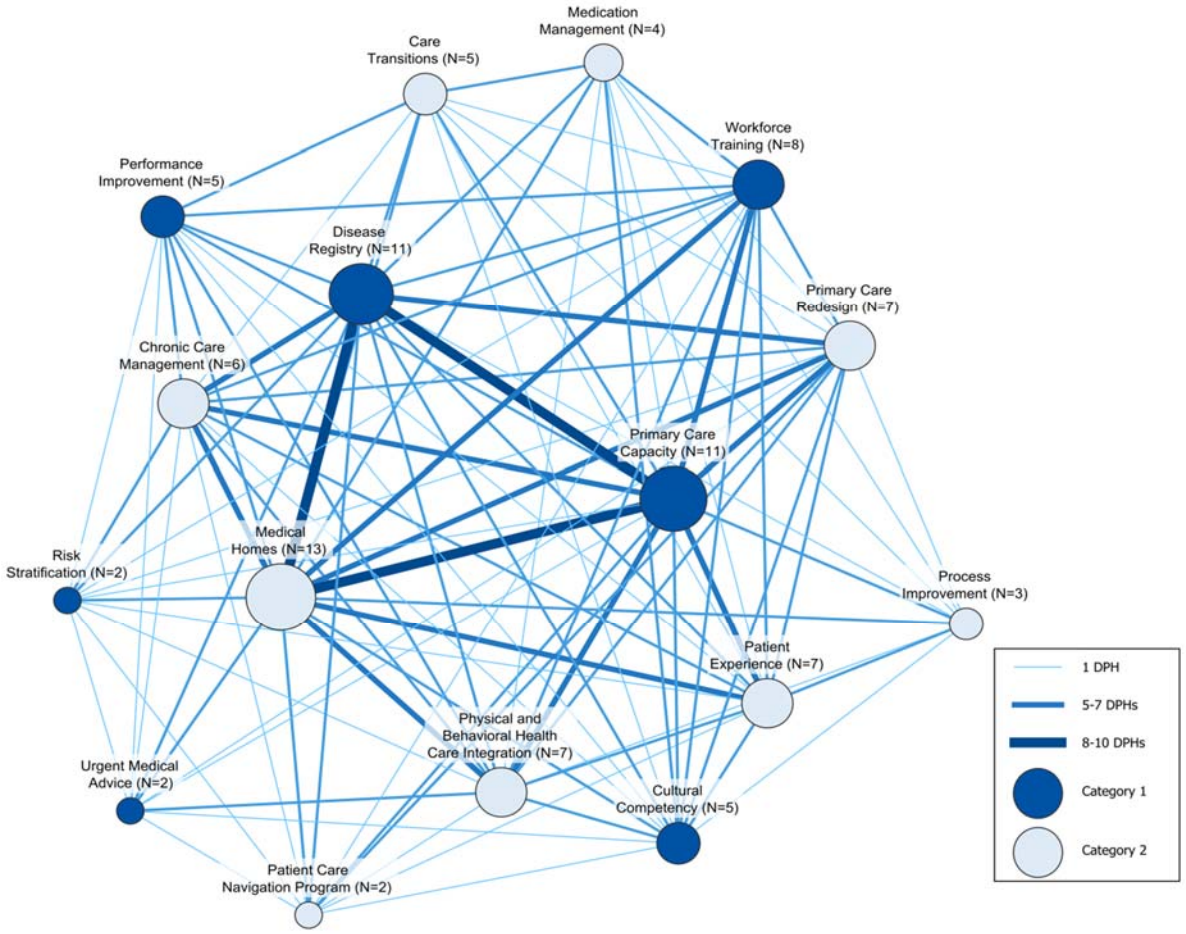
Many HIT capabilities were available to both hospital inpatient wards and emergency departments (EDs), but access to electronic registries (ED: 4/17, hospital: 8/17), referral management (ED: 9/17, hospital: 11/17), and appointment scheduling systems (ED: 8/17, hospital: 9/17) were far less frequent (data not shown).

Project Selection

Participating DPHs could choose a minimum of two from the 12 projects in Category 1 and the 14 projects in Category 2. DPHs had to track all Category 3 measures. Category 4 included two required projects and two optional projects from a total of seven projects. A complete table of all the projects selected by each DPH is provided in Appendix B: Project Selection by Demonstration Year.

The following diagram highlights the projects that were most frequently and concurrently chosen by DPHs in Categories 1 and 2 (Exhibit 17). The darker circles represent Category 1 projects and the lighter circles represent Category 2 projects. The larger circles represent projects most frequently selected by DPHs (the number of DPHs that selected each project is denoted by N). For example, the Category 1 disease registry project was selected by 11 DPHs and is represented by a large dark circle. Risk stratification was selected by two DPHs and is represented by a small dark circle. The lines between circles identify which projects were concurrently selected and the thickness of the line represents how many DPHs concurrently implemented the same project. For example, 8-10 DPHs selected both disease registry and medical home projects, while disease registry and chronic care management projects were concurrently selected by 5-7 DPHs. The diagram indicates that the DPHs that selected the disease registry and primary care capacity projects in Category 1 most frequently selected the medical homes project in Category 2. The second group of most frequently concurrent projects included workforce training from Category 1 with chronic care management, physical and behavioral health integration, and improving patient experiences from Category 2. The pattern of selection among the remaining projects was less pronounced or clear.

Exhibit 17: Concurrent Category 1-2 DSRIP Projects Selected by DPHs

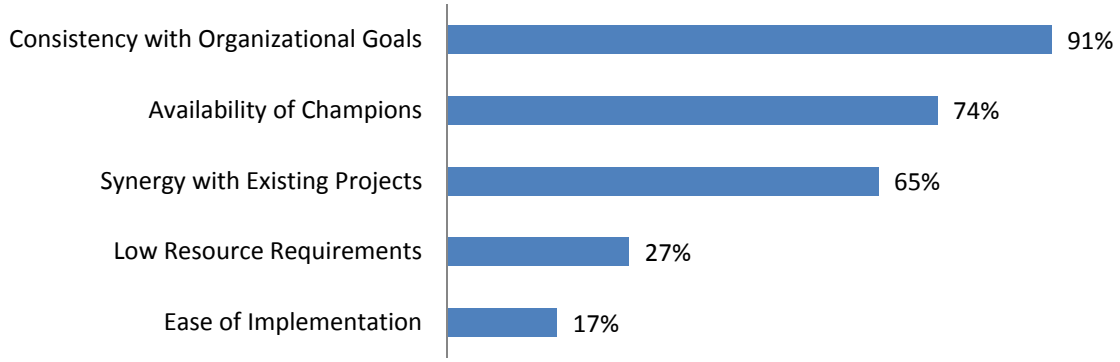


Source: UCLA analysis of designated public hospital (DPH) reports.
Notes: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that were concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented projects concurrently.

Rationale for Selecting Projects in Categories 1, 2, and 4

DPHs reported the reasons for selecting the projects included in their DSRIP plans. The three most common reasons were consistency with organizational goals, availability of project champions among existing staff, and synergy with existing projects (Exhibit 18). DPHs least frequently reported ease of implementation as a reason for selecting projects.

Exhibit 18: Reasons for Selecting Categories 1, 2, 4 DSRIP Projects

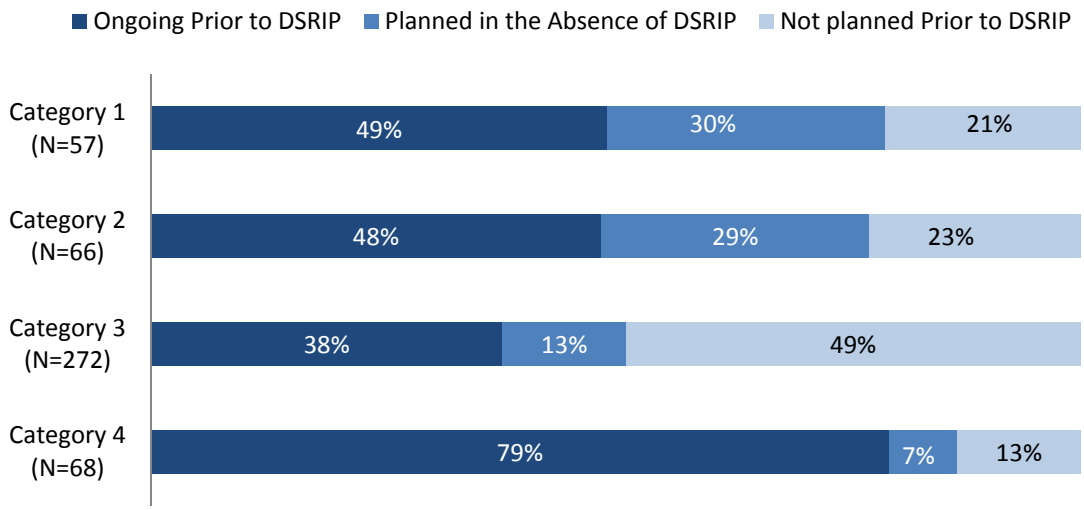


Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on a total of 157 projects selected by DPHs in Categories 1, 2, and 4. Category 3 was excluded because all projects were required. Total is greater than 100% because DPHs were allowed to select more than one reason per project.

Status of Category 1-4 Projects Prior to DSRIP

Many DPHs were implementing projects similar to those in DSRIP prior to their participation in the program (Exhibit 19). For example, of the 57 projects implemented in Category 1 during DSRIP, nearly half were ongoing prior to DSRIP. In most cases, participation in DSRIP substantially increased the scope of the existing work. Thirty percent of Category 1 projects were planned prior to DSRIP, but most were not attainable without DSRIP funding or had unidentified timelines. A large proportion (49%) of Category 3 measures were not planned prior to DSRIP.

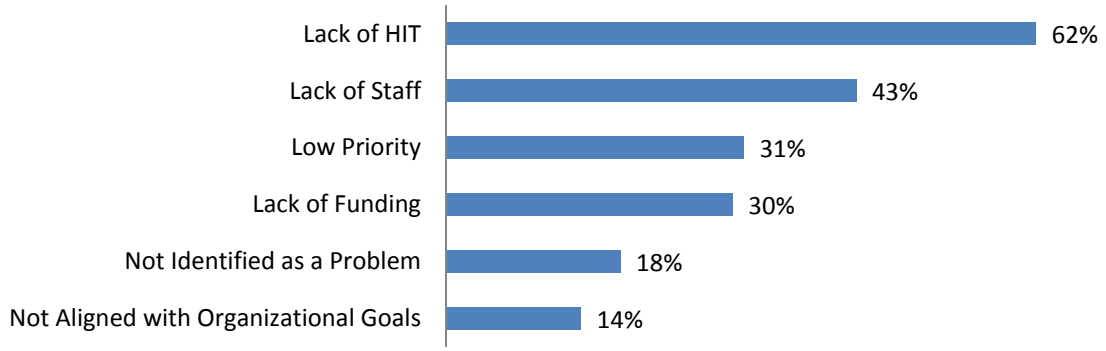
Exhibit 19: Status of Categories 1-4 Projects in DPHs Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

DPHs also reported reasons for not implementing specific DSRIP projects prior to their participation in the program. Lack of HIT was the most commonly cited reason for not having planned DSRIP-related projects (Exhibit 20), in part because many were Category 3 projects that were heavily dependent on availability of such technology. The least frequently cited reasons for not selecting DSRIP projects prior to the program were not identifying the related project topics as a problem (18%) and lack of alignment with organizational goals (14%).

Exhibit 20: Reasons That Category 1-4 Projects Were Not Planned Prior to DSRIP

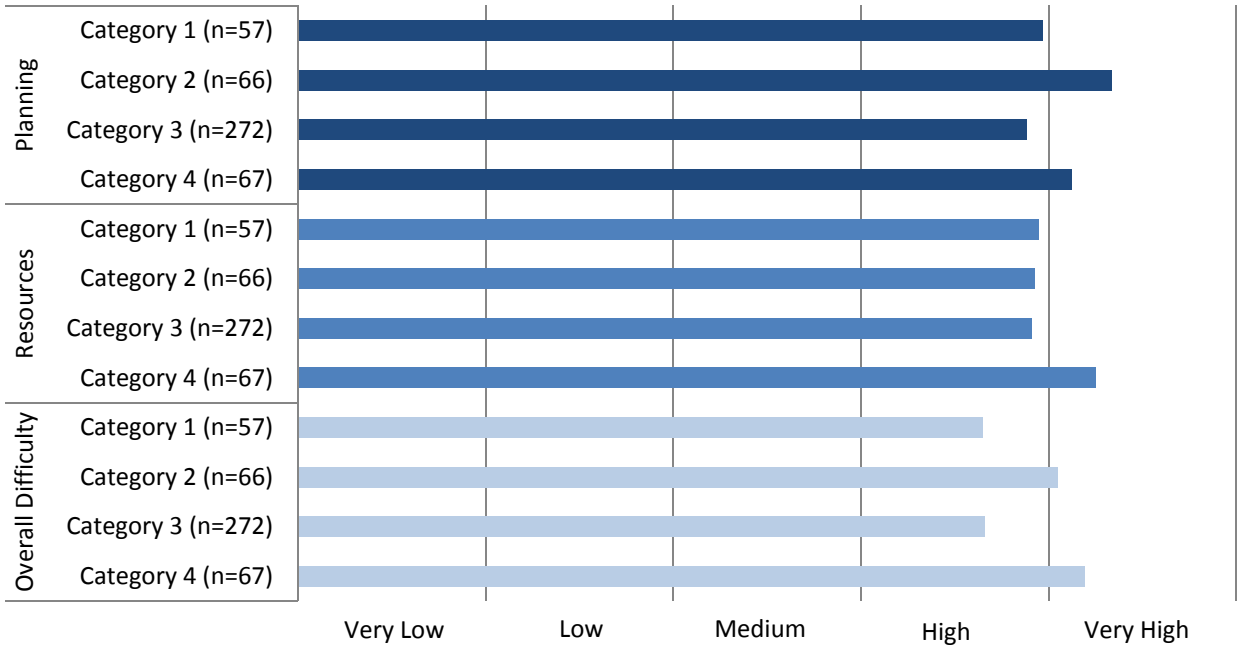


Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of projects selected that were not implemented or planned prior to DSRIP (n=169). Total is greater than 100% because DPHs were allowed to select more than one reason per project.

Implementation

DPHs reported on the level of effort and difficulty of implementing Category 1-4 projects in the interim period (Exhibit 21). DPHs reported that Category 2 required the highest level of planning followed by Category 4, on average. Category 4 required the highest level of resources and was reported as the most difficult set of projects to implement. In contrast, Category 1 and 3 were considered the least difficult projects or measures.

Exhibit 21: Amount of Effort and Overall Level of Difficulty in Implementing Categories 1-4



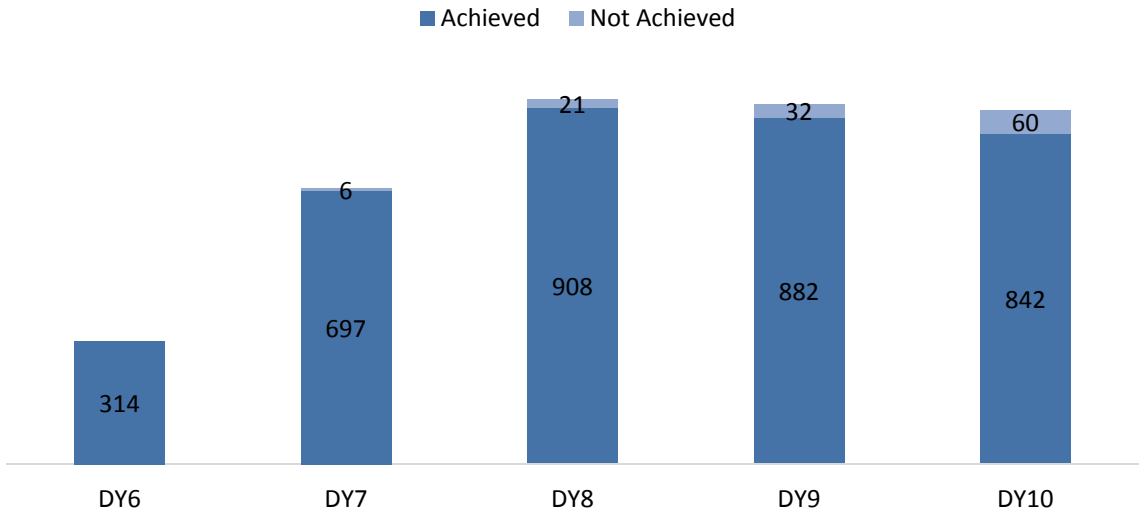
Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Outcomes

Project Milestones

DPHs achieved 3,643 of the 3,764 milestones they proposed in DY 6-10, an achievement rate of 97% as of the date of this report (data not shown). The number of milestones nearly tripled from DY 6 to DY 8 but remained roughly the same in DY 9-10 (Exhibit 22). The number of milestones not achieved increased from 6 in DY 7 to 60 in DY 10. Part of the increase in the number of total milestones from DY 7 to DY 8 is due to the full implementation of Category 3 measurement activities in DY 8. These numbers differ from those reported in the Safety Net Institute's (SNI) previous DSRIP aggregate reports based on participating DPHs' individual reports submitted to DHCS. The differences are primarily due to the timing of when the SNI reports were released. DPHs had the ability to carry forward the available incentive funding associated with that milestone bundle until the end of the following demonstration year.

Exhibit 22: Number of Milestones Achieved in Categories 1-4, by Demonstration Year



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 6-9 and second semi-annual reports from DY 10.

Further analyses of milestones not achieved was conducted and revealed that about half of the milestones not achieved had achievement value of 0, more than two thirds of DPHs had at least one milestone with an achievement value less than 1 for DY 8-DY 10, and the median number of milestones not achieved per DPH did not exceed 4 (Exhibit 23). Furthermore, milestones not achieved were noted for Categories 1, 2, and 4, but milestones not achieved were most common among Category 4 projects. Examining whether milestones not achieved were common showed that over half of milestones not achieved were similar for at least 2 DPHs, but this percentage was lower for DY 9 (33%) and DY 8 (22%).

Exhibit 23. Characteristics of Milestones Not Achieved in Categories 1-2 and 4, by Demonstration Year

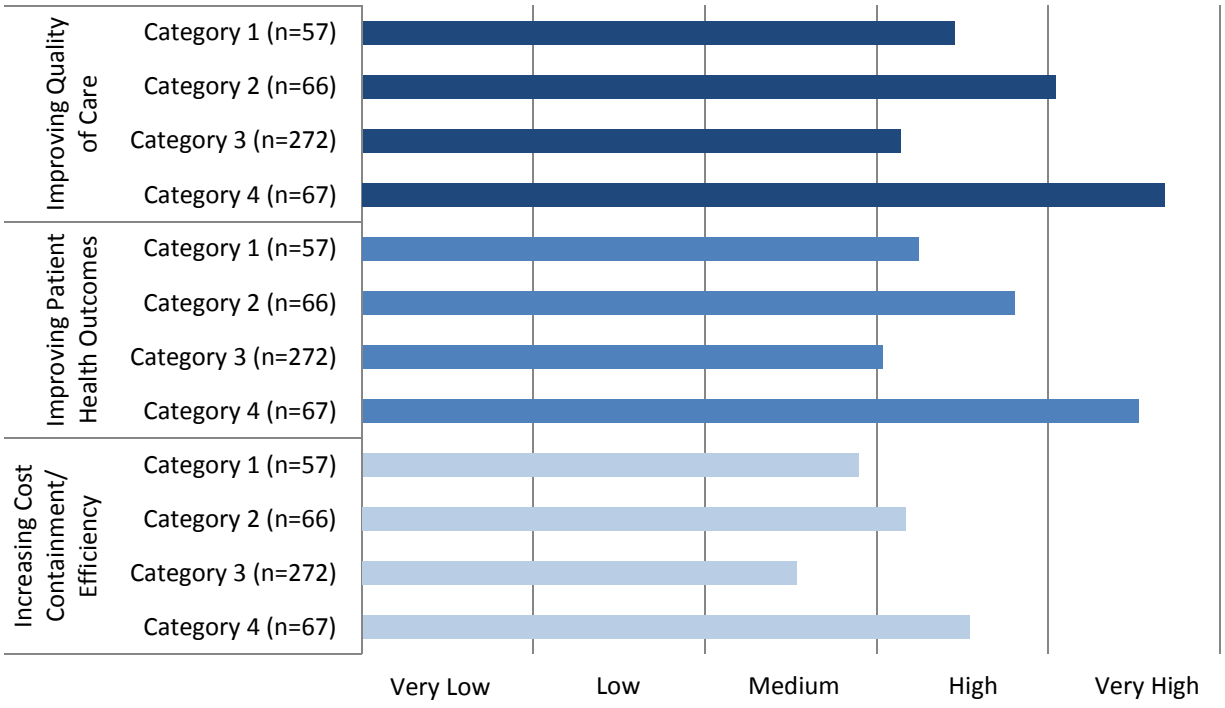
	DY 7	DY 8	DY 9	DY 10
Number of milestones with achievement value less than 1	6	21	32	60
Percent with achievement value of 0 (vs. greater than 0 but less than 1)	50%	57%	41%	52%
Number of DPH with at least one milestones not achieved	5	10	12	11
Median number of milestone not achieved per DPH	1	1	2	4
Range in number of milestones not achieved per DPH	1 to 2	1 to 5	1 to 7	1 to 8
Categories in which milestones were not achieved	1, 2	1, 2, 4	1,2,4	1,2,4
Most common Category with a milestone not achieved	Equal (3/6)	4 (11 out of 21)	4 (19 out of 32)	4 (38 out of 60)
Percent of milestones not achieved that were process measures (applied to Category1 and 2 projects only)	67%	45%	38%	14%

	DY 7	DY 8	DY 9	DY 10
Percent of projects with milestones not achieved that were common to 2 or more DPHs	0%	20%	33%	53%

Perceived Impact on Triple Aim

DPHs were asked to report their perceptions of the impact of DSRIP projects on the Triple Aim of improving quality of care, patient health outcomes, and cost containment/efficiency in the interim survey and near the end of DSRIP in a follow-up survey. DPHs reported on all projects by category in the interim survey, but reported on the overall category in the follow-up survey. In the interim survey, DPHs rated Category 4 projects as having the highest perceived impact on quality of care and Category 3 projects the lowest (Exhibit 24). The same pattern was observed for health outcomes and cost containment/efficiency.

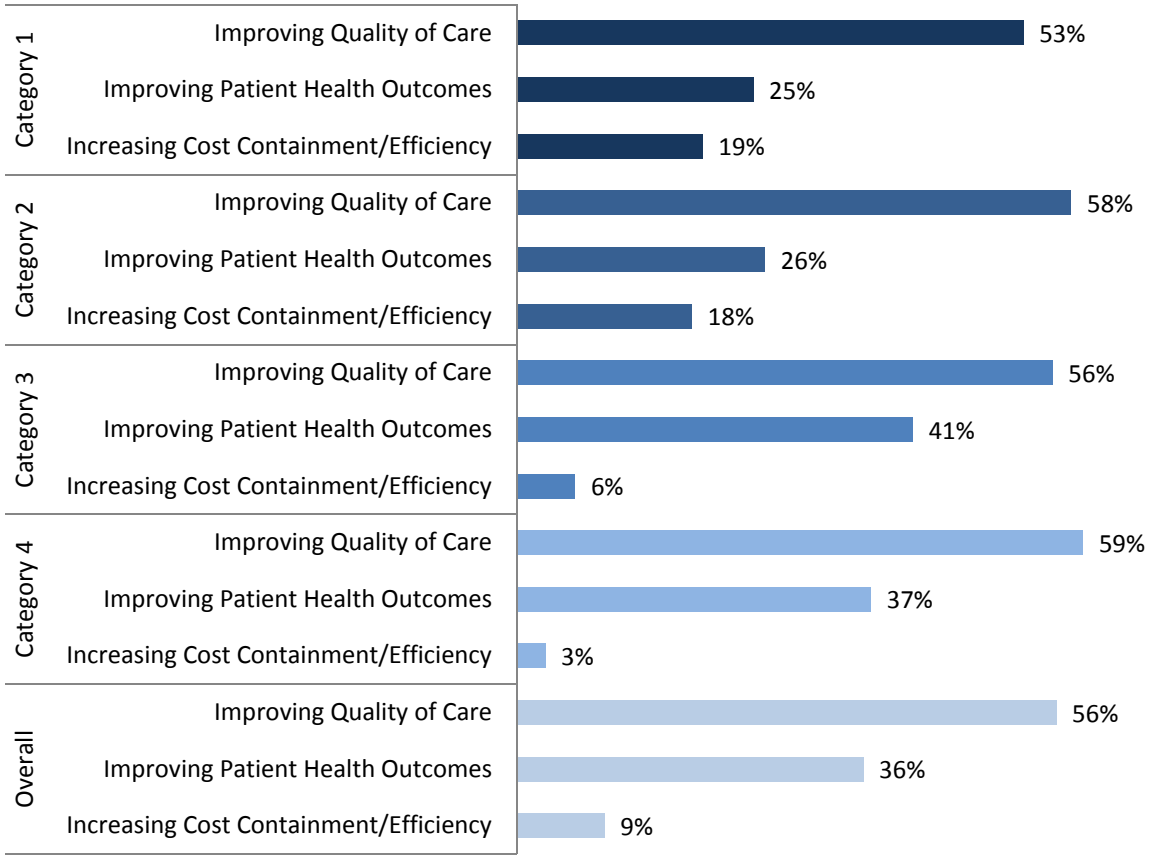
Exhibit 24: Perceived Impact of Categories 1-4 on Triple Aim of Quality of Care, Health Outcomes, and Increasing Cost Containment/Efficiency, Interim Period



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The total number of projects implemented in the category across all DPHs is provided in parentheses.

In addition, DPHs were also asked to rank each project in Category 1-4 in terms of impact on the Triple Aim. Overall, DPHs reported that 56% of DSRIP projects had the greatest impact on improving quality of care (Exhibit 25). Fewer projects (36%) had the greatest impact on improving patient outcomes and only 9% of projects had the greatest impact on increasing cost containment/efficiency. The same analysis by category showed similar results, with some variation. For example, 41% of Category 3 projects were perceived to have the greatest impact on improving patient outcomes and 6% were considered to have the greatest impact on increasing cost containment/efficiency. Ratings of individual projects are included in the subsequent chapters on each category.

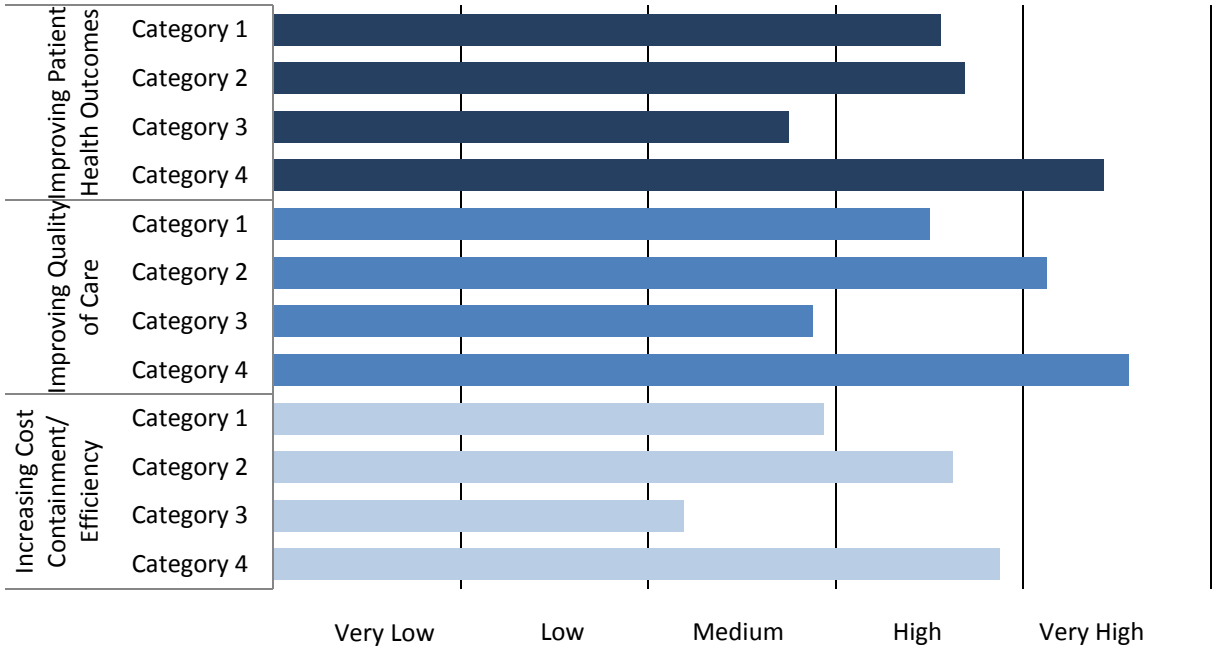
Exhibit 25: Percentage of Category 1-4 Projects Perceived to Have the Greatest Impact on Quality of Care, Health Outcomes, and Cost Containment/Efficiency, Interim Period



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: DPHs were asked to rank the relative impact of projects on the Triple Aim of quality of care, health outcomes, and cost containment/efficiency. The percentages in the chart show the proportion of projects for which each of the triple aims ranked as the highest-impact.

Near the end of the demonstration, DPHs reported similar results on the overall impact of DSRIP (Exhibit 26) as reported in the interim survey.

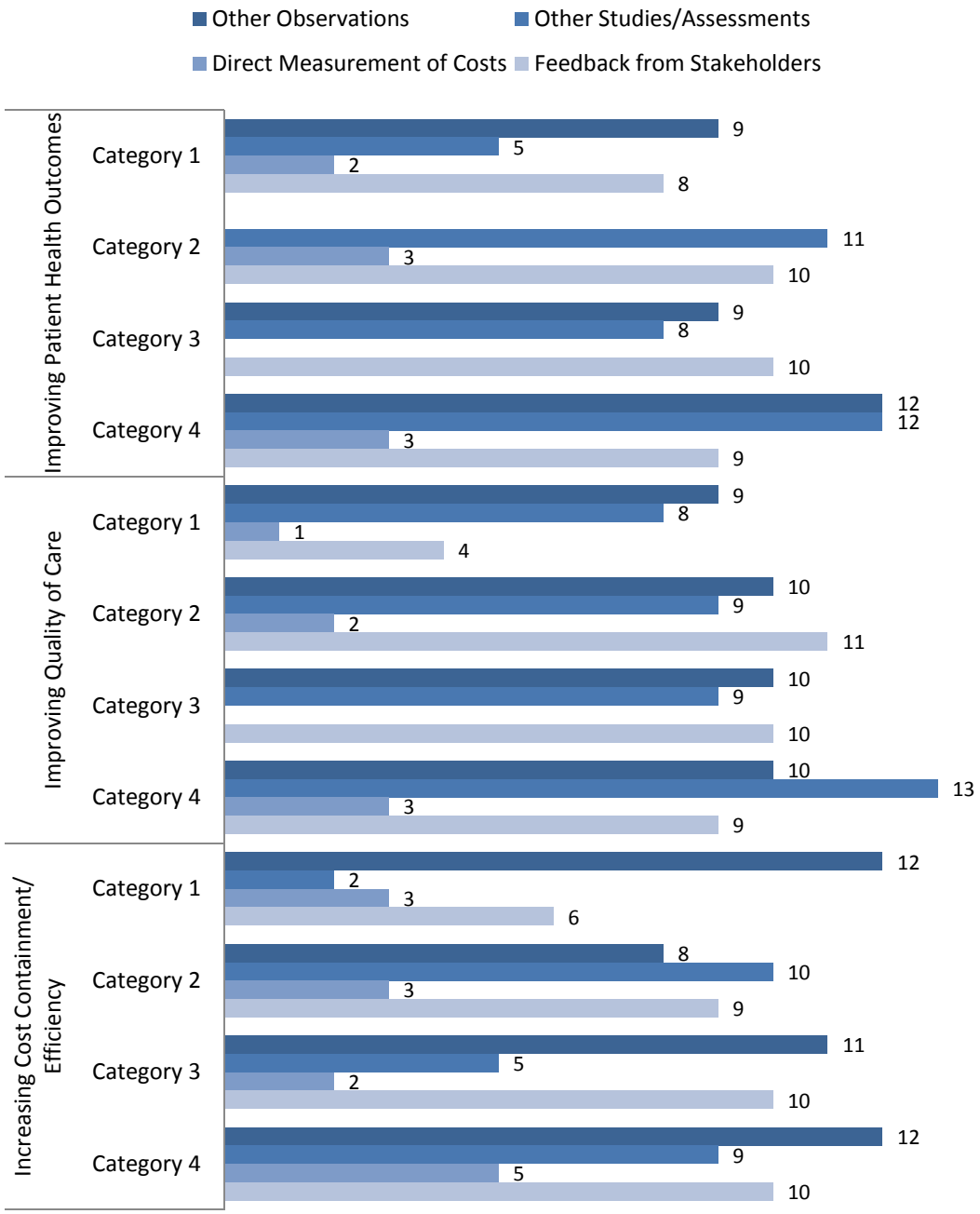
Exhibit 26: Perceived Impact of Categories 1-4 on Triple Aim of Quality of Care, Health Outcomes, and Increasing Cost Containment/Efficiency, Near the End of DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).

DPHs were asked to identify the basis of their ratings of perceived impact near the end of DSRIP. DPHs least frequently reported direct measurement of costs and most frequently reported feedback and other observations or studies as the basis of their perceptions of impact (Exhibit 27).

Exhibit 27: Basis of Perceived Impact of Categories 1-4 on Triple Aim of Quality of Care, Health Outcomes, and Increasing Cost Containment/Efficiency, Near the End of DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).

Examples of how DPHs formed their observations are provided in Exhibit 28. These examples highlight that some DPHs' observations of cost savings were based on reductions in mortality, hospitalization and emergency department use, length of stay, or changes in staffing and time

required for specific activities. Quality improvement perceptions in these examples were based on improved HEDIS scores or other process measures. Impressions of outcomes were often inferred from quality improvement, but also reductions in mortality or harm to patients.

Exhibit 28: Specific Examples of How DPHs Perceived an Impact for DSRIP Projects on Triple Aim of Quality of Care, Health Outcomes, and Increasing Cost Containment/Efficiency, by DSRIP Category, Near the End of DSRIP

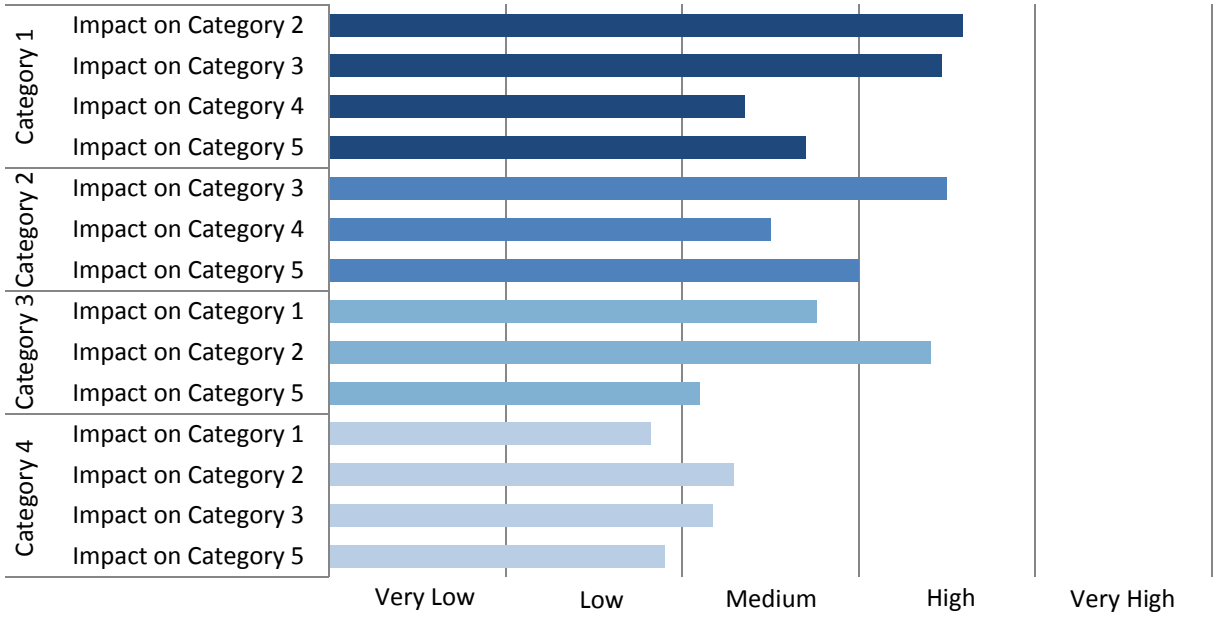
	Cost Savings	Quality	Outcomes
Category 1	Use of lower-wage staff instead of RNs	Reduced wait times for specialty care and improved cycle time	Higher patient satisfaction
	More patients seen by primary care providers	Better referral tracking, lower wait for medications, more screening	Better access or quality
	Diverting urgent care to primary care	Better HEDIS scores	
	Increased efficiency in data collection and analyses	Better patient satisfaction	
Category 2	Timely appointments	Improved access and screening	Better access
	Reduced hospitalizations & emergency department visits	Improved preventive care, care coordination, and care experience	Reductions in readmission rates
	Lowered costs per completed transitions of care	Improved HEDIS measure in diabetes care	
		Reduced readmission rates	
		Reduced error/harm to patients	
Category 3	More efficient data collection based on observations of workload and feedback from information technology leaders	Improved mammography screening led to increasing convenient mammography appointment	Improvement in metrics
		Registry reports and patient feedback	
		Quality leaders acted on low performance measures	
		Observed improvement in provider compliance rates	
Category 4	Projected cost saving	Reduction in SSI, sepsis, and CLABSI	Reduced mortality
	Decrease LOS and hospital acquired infections	Decrease LOS and hospital acquired infections	
	Reduction in SSI and CLABSI	Harm reduction	
	Less ICU utilization		

Source: UCLA follow-up survey of designated public hospitals (DPHs).

Perceived Impact of DSRIP Categories 1-4 on One Another and Category 5

DPHs were asked whether implementation of projects in each category impacted projects in other categories. In the interim survey, DPHs reported that Category 1 projects had a large impact on implementation of Category 2 and 3 projects and measures, but a medium impact on Category 4 and 5 projects (Exhibit 29). Category 2 projects also had a high impact on implementation of Category 3 projects but less of an impact on Category 4 and 5. Category 3 measures had the greatest impact on Category 2. Category 4 projects had medium or low impact on other categories.

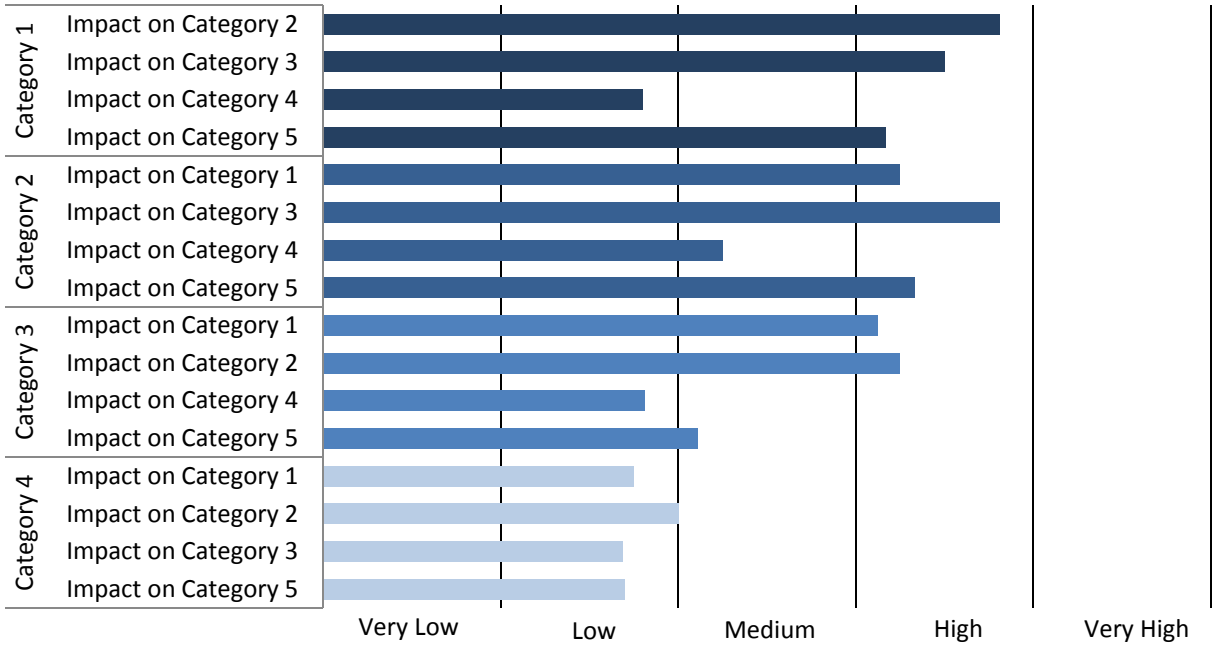
Exhibit 29: Impact of Categories 1-4 on One Another and on Category 5, Interim Period



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Data for the impact of Category 2 on Category 1 and Category 3 on Category 4 was not available.

Near the end of DSRIP, DPHs reported a relatively similar level of impact as they did in the interim survey, with some exceptions (Exhibit 30). The impact of Category 1 projects on Category 5 was rated as high. The impact of Category 2 and 3 projects on Category 1 was rated as high.

Exhibit 30: Impact of Categories 1 - 4 on One Another and on Category 5, Near the End of DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).

Summary

Seventeen DPHs of varied sizes and affiliations implemented a large number of projects through the DSRIP program from DY 6 through DY 10. Many DPHs were participating in Meaningful Use EHR Incentive Program (15), CMS Hospital Engagement Networks (11), and CMS Hospital Quality Initiative (8). Participation was longest for the CMS Hospital Quality Initiative on average (7.8 years) and shortest for the Meaningful Use Program (3.4). The Meaningful Use Program funding ranges from $4 million to $50 million and implementation was systemwide in nine DPHs. Participants in the CMS Hospital Quality Initiative most often focused on projects that were synergistic with Category 4 measures but with different methodologies and timelines. Some DPHs reported that they participated in non-CMS initiatives including quality improvement and PCMH projects which were either supportive or complementary projects.

Most (13) DPHs had implemented HIT systems during and the rest had begun implementation before DSRIP. The HIT features implemented during DSRIP were most frequently electronic patient charts, electronic prescribing/order entry, and patient information documentation (11).

Many DPHs opted to focus on specific and related projects in Categories 1 and 2, including expanding primary care capacity and implementing and utilizing disease management registries for their Category 1 infrastructure development, and expanding medical homes for their

Category 2 innovation and redesign initiatives. Nearly half of the projects that DPHs implemented were ongoing prior to their participation in DSRIP, though most were not implemented extensively or systemwide. DPHs cited consistency with organizational goals, availability of project champions among existing staff, and synergy with existing projects as principal reasons for selecting DSRIP projects, although DSRIP appeared to have rearranged priorities and focal areas in some cases.

DPHs achieved nearly all (97%) of their proposed milestones from DY 6-10. This success was achieved with high levels of planning, resource investment, and overall implementation difficulty. In the interim period, DPHs reported a high level of perceived impact on quality of care and health outcomes, two of the three components of the Triple Aim. The third component, cost containment/efficiency, rated lower in part because not enough time had elapsed to be able to see the full effect of program initiatives. DPHs reported similar results near the end of the demonstration. DPHs reported that their perceptions were least frequently based on direct measurement of costs and most frequently based on feedback and other observations or studies. DPHs provided specific examples of studies or observations for cost (e.g., using lower wage staff, divert urgent care, reduced hospitalizations, reduced ICU utilization), quality (e.g. reduced wait times, better HEDIS scores, reduced readmissions, registry reports, reduced LOS), and outcomes (e.g., higher patient satisfaction, reduced mortality).

DPHs reported synergies in implementation of DSRIP projects in different categories. Category 1 (infrastructure development) and Category 2 (innovation and redesign) were perceived as having the greatest impact on the other categories both in the interim and near the end of DSRIP.

Category 1: Infrastructure Development

Category 1 projects focused on infrastructure development. Project options for participating DPHs ranged from staff and physical space expansions to health information technology development to enhanced data collection strategies and new care delivery channels such as telemedicine and video interpretation services. DPHs could select from 12 different projects, each with several potential elements and related metrics.

Project Selection

None of the projects in Category 1 were mandatory, but each DPH was required to implement at least two projects. Eleven of the 17 DPHs selected more than two Category 1 projects (Exhibit 31). The most frequently implemented projects were expansion of primary care capacity (11 DPHs), implementation and utilization of disease management registry functionality (11), increased training of primary care workforce (8), and expanded specialty care capacity (6). The specific measures each DPH selected in each project, as defined by Attachment Q, are included in Appendix C: Attachment Q Measures Selected by DPHs, Exhibit 145.

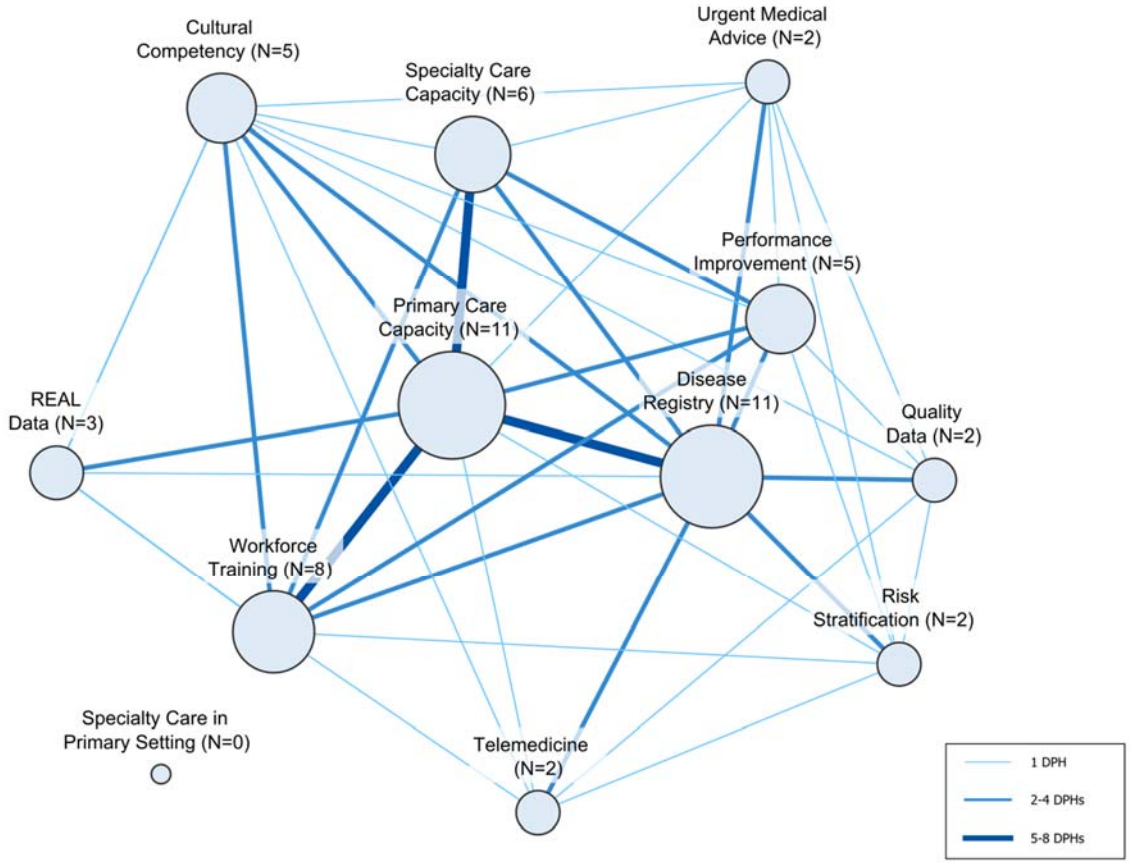
Exhibit 31: Projects Selected, by Designated Public Hospital, Category 1

Designated Public Hospital	Primary Care Capacity	Workforce Training	Disease Registry	Cultural Competency	REAL Data	Urgent Medical Advice	Telemedicine	Quality Data	Risk Stratification	Specialty Care in Primary Setting	Specialty Care Capacity	Performance Improvement	Total
Alameda	✓		✓								✓	✓	**4**
Arrowhead	✓	✓	✓								✓		**4**
Contra Costa	✓	✓		✓	✓								**4**
Kern	✓		✓	✓		✓					✓		**5**
Los Angeles			✓			✓		✓	✓			✓	**5**
Natividad		✓		✓									**2**
Riverside	✓	✓	✓								✓		**4**
San Francisco	✓	✓									✓	✓	**4**
San Joaquin	✓		✓										**2**
San Mateo	✓				✓								**2**
Santa Clara	✓		✓										**2**
UC Davis			✓		✓								**2**
UC Irvine	✓	✓	✓				✓		✓				**5**
UC Los Angeles		✓									✓		**2**
UC San Diego			✓	✓			✓	✓					**4**
UC San Francisco	✓		✓									✓	**3**
Ventura		✓		✓								✓	**3**
Total	**11**	**8**	**11**	**5**	**3**	**2**	**2**	**2**	**2**	**0**	**6**	**5**	**57**

Source: UCLA analysis of designated public hospital (DPH) reports.

Exhibit 32 indicates how frequently Category 1 projects were selected and which projects were most frequently selected concurrently. For example, primary care capacity (selected by 11 DPHs) and disease registry (selected by 11 DPHs) were concurrently selected by 5-8 DPHs. DPHs that selected primary care capacity also frequently (5-8 DPHs) selected projects to expand specialty care capacity and workforce training. The project to expand capacity to provide specialty care access in the primary care setting was not implemented by any of the DPHs.

Exhibit 32: Selection Frequency of Concurrent Category 1 DSRIP Projects

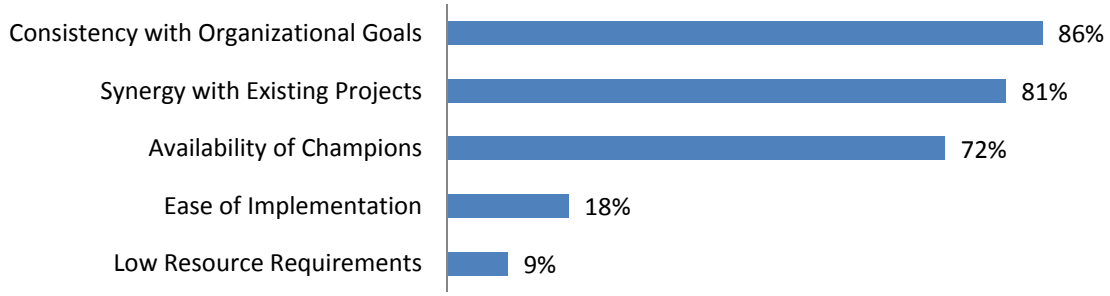


Source: UCLA analysis of designated public hospital (DPH) reports.
Note: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that are concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented the same projects concurrently.

Rationale for Selecting Category 1 Projects

DPHs reported the reasons for selecting Category 1 projects (Exhibit 33). Eighty-six percent of the selected projects were chosen because of their consistency with organizational goals, and 81% because of their synergy with existing projects. In contrast, ease of implementation and low resource requirements were least frequently cited as reasons for selecting Category 1 projects.

Exhibit 33: Reasons for Selecting Category 1 Projects



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 1 projects (n=57). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

During follow-up interviews, DPHs highlighted the importance of DSRIP in enabling projects that were already existing or planned but that could not previously be fully implemented due to lack of funding or other resources. Riverside, for example, had unsuccessfully applied for a grant to expand workforce training through its residency program, but was able to implement this plan under DSRIP. Participation in DSRIP also permitted Riverside primary care champions to persuade hospital and executive leadership to focus on primary care expansion, a goal that had long been proposed but had not previously garnered sufficient support. At San Joaquin, disease registry implementation preceded DSRIP but utilization stalled. DSRIP milestones and measures served as a catalyst to bring the disease registry and population health management to the forefront of operations.

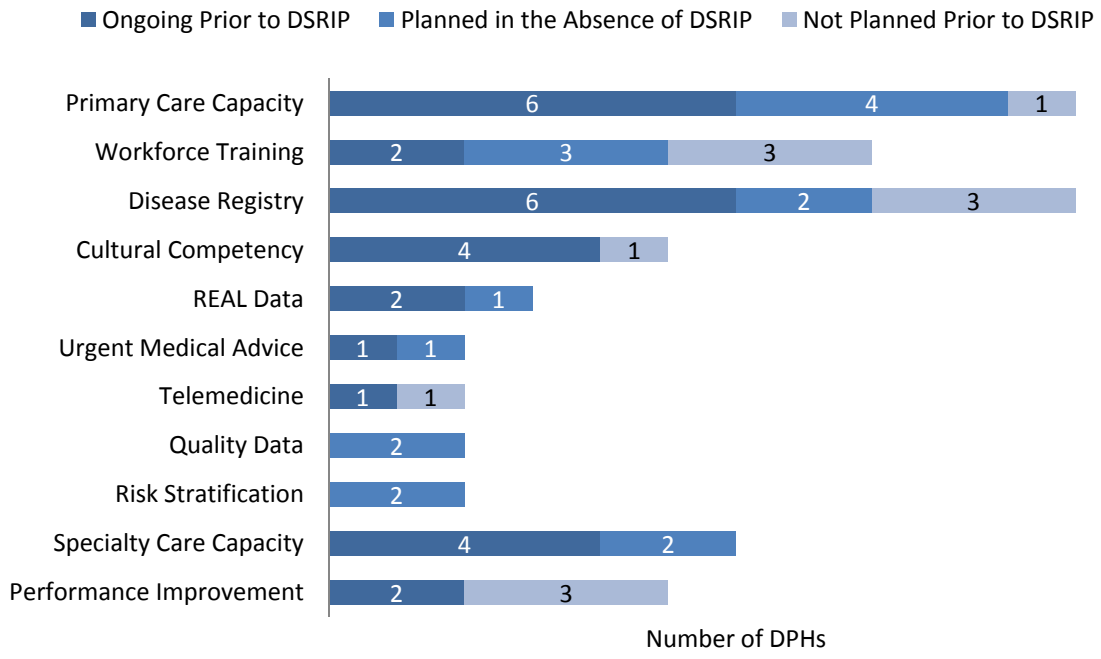
In other cases described during follow-up interviews, DSRIP advanced initiatives that were in line with organizational goals. For example, UC San Diego had in-person and telephone interpretation services prior to DSRIP but could not provide in-person interpreters in all languages and considered telephone interpretation to be inferior to interpretation with visual aids. DSRIP allowed UC San Diego to implement video interpretation that made round-the-clock visual interpretation services a possibility in more than 30 languages and for hearing-impaired patients.

Status of Category 1 Projects Prior to DSRIP

In the UCLA interim survey, DPHs were asked to report whether the Category 1 projects they selected were ongoing prior to DSRIP or previously planned. At least half of the DPHs that implemented the four most frequently selected projects – primary care capacity, disease

registry, workforce training, and specialty care capacity –had similar ongoing or planned projects prior to DSRIP (Exhibit 34). These ongoing projects were frequently limited in scope or lacked resources for implementation in the near future, and DSRIP funding provided the impetus for expanding these efforts.

Exhibit 34: Status of Category 1 Projects in DPHs Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Specialty Care in Primary Setting project was not included because it was not implemented by any of the DPHs.

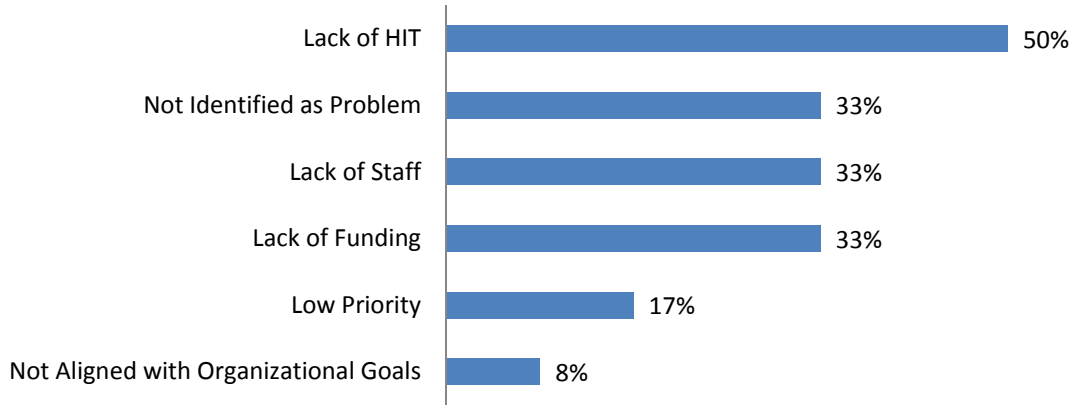
In the UCLA follow-up survey, DPHs were asked whether and how DSRIP projects expanded the scope of existing projects or had different goals or assessment methods. Seven of the 11 DPHs implementing the disease registry project and five of the six DPHs implementing the specialty care capacity project expanded ongoing or planned efforts as a result of DSRIP in additional clinics or departments (data not shown). Three of the DPHs implementing the disease registry project noted that DSRIP altered their goals to make them more standardized or to address additional populations or functionalities, for example by expanding registries to include patients with congestive heart failure where previously only diabetes had been covered. Two DPHs also said DSRIP helped to make existing work more goal-oriented for the REAL data (Contra Costa), and primary and specialty care capacity projects (San Francisco).

In addition to expanding existing plans or efforts, DSRIP contributed to changes in the ways DPHs assessed improvement projects. Three DPHs reported using different methods to assess the primary care and specialty care capacity projects. Four DPHs reported using different

assessment measures or starting to use measures where they did not previously exist for the primary care capacity and disease registry projects (data not shown). Two DPHs noted that these changes were spurred by DSRIP's specification and definition of metrics. Two DPHs also noted that EHR implementation through DSRIP led to enhanced and more accurate reporting structures.

In the UCLA interim survey, DPHs were also asked to report on the reasons for not previously planning or implementing the selected Category 1 projects. Half (50%) reported lack of HIT infrastructure as one reason (Exhibit 35). Other reasons included not having previously identified these as problem areas (33%), low priority (17%), or lack of alignment with organizational goals (8%).

Exhibit 35: Reasons That Category 1 Projects Were Not Planned Prior to DSRIP



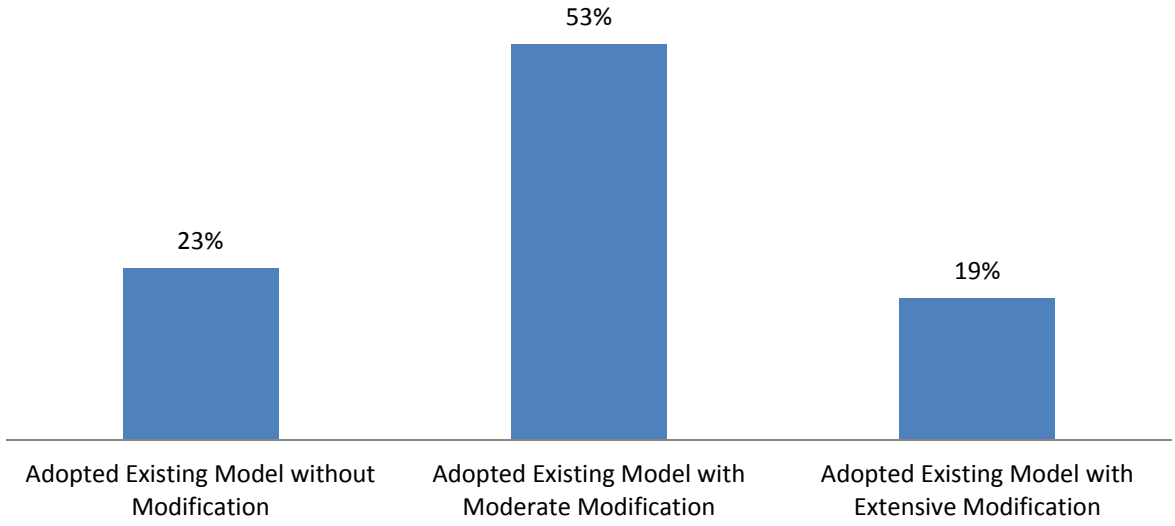
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of projects selected that were not implemented or planned prior to DSRIP (n=12). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

Implementation

Use of Evidence-Based Models

In the UCLA interim survey and follow-up interviews, DPHs were asked to indicate the extent to which the selected Category 1 projects were based on existing evidence-based models. DPHs reported that they adopted existing models with moderate modification to fit the DPHs' needs for 53% of the projects in Category 1 (Exhibit 36). For example, Contra Costa used a learning collaborative model based on the Institute for Healthcare Improvement's Breakthrough Series to support information and best practice sharing in Category 1 projects in its outpatient department. Contra Costa used distance learning via webinars to facilitate the collaborative across the system's outpatient sites, which in some cases were 100 miles apart.

Exhibit 36: The Proportion of Category 1 Projects That Used Evidence-Based Models, by Degree of Modification to the Model



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Analysis is based on the total number of Category 1 projects selected by DPHs (n=57). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could implement more than one model to complete a project.

Staff Training

DPHs reported in the UCLA interim survey on the level of staff training to complete Category 1 projects. DPHs trained staff during implementation for 70% of Category 1 projects (Exhibit 37). Forty percent of Category 1 projects also required training of staff prior to implementation, and only 25% of projects did not involve any training or orientation. In the follow-up interviews, DPHs reported that Category 1 projects launched or expanded as a result of DSRIP required significant training to ensure successful implementation. Kern's i2i disease registry was new to the system in DY 6 and required extensive training. Arrowhead maximized utility of its disease registry system by implementing ongoing and regular training and collaboration among information management developers and clinical staff. Natividad's expansion of its interpretation services to include dual-role bilingual staff required interpretation training for 60 employees across inpatient and primary care settings. Interpretation service expansion also required training of staff to understand and utilize new video interpretation technology. At UC San Diego, the need to train staff members on the new technology also provided the opportunity to reinforce cultural competence training and the importance of using professional interpreters rather than family members when working with limited English proficient patients.

Exhibit 37: Timing of Staff Training in Relation to DSRIP Implementation for Category 1 Projects

Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Analysis is based on the total number of Category 1 projects selected by DPHs (n=57). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could conduct multiple phases of staff training depending on the needs of the project.

Care Process and Personnel Reorganization and Stakeholders Engagement

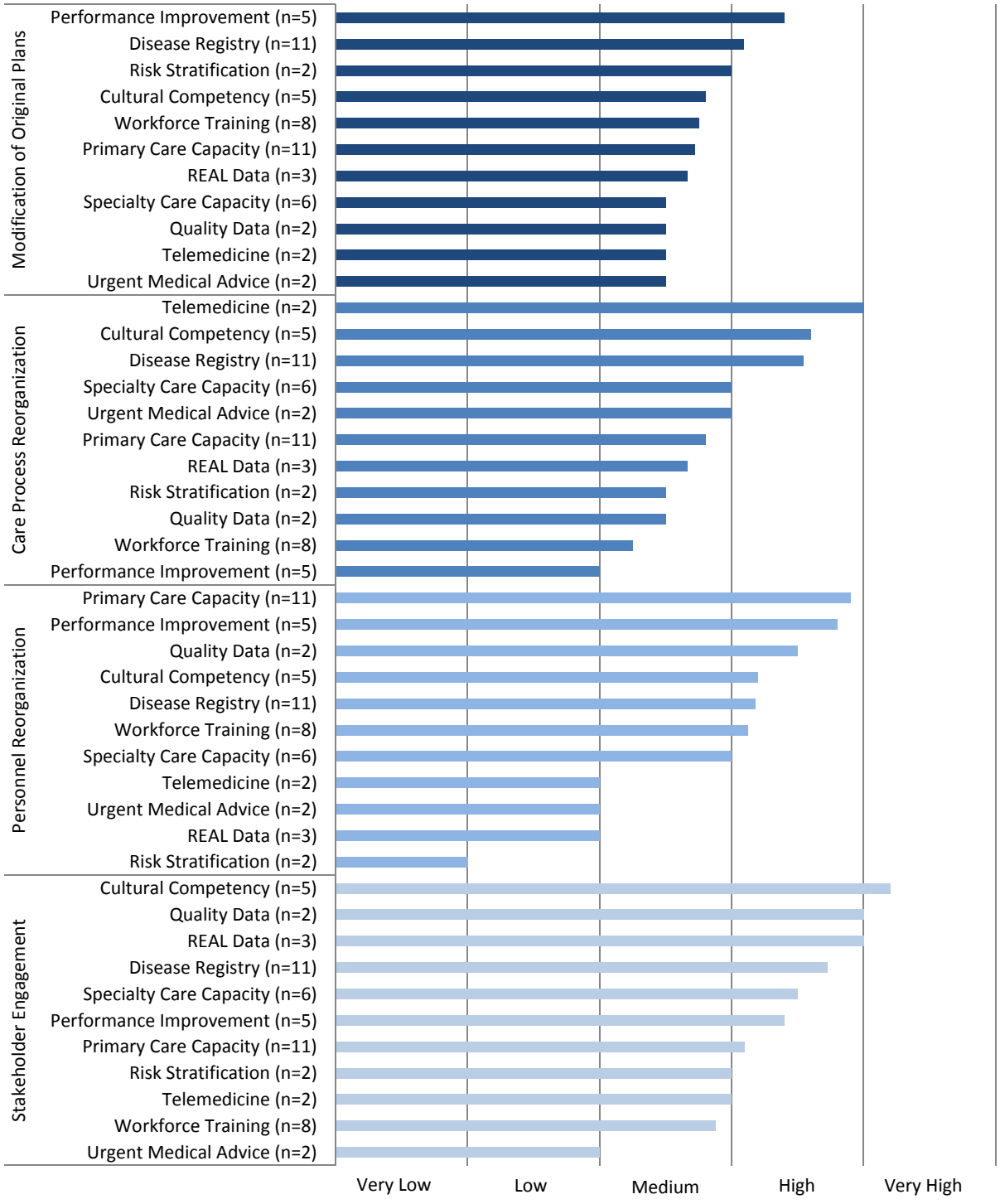
Through the UCLA interim survey, DPHs reported on how much revision, redesign, or modification of original project plans was required to successfully implement Category 1 projects on a scale of one to five, indicating very low to very high level of revision (Exhibit 38). DPHs reported that the majority of selected Category 1 projects required a medium level of modification to the original plan. However, performance improvement and disease registry projects required high levels of modification. As indicated in Arrowhead's follow-up interview, the initial process of electronic health record implementation had not accounted for population health management and disease registry functions. Unforeseen complications in migrating paper record data into a functional registry required major revisions in the organization's DSRIP disease registry plan.

DPHs reported on the level of reorganization of care processes and personnel using the same five-point scale in the UCLA interim survey and qualitatively in the follow-up interview. The reorganization of care processes was high for telemedicine, cultural competency, and disease registry projects. The resulting standardization of care processes was an important outcome of DSRIP. At Kern, specialty care guidelines had been established for select specialties, but DSRIP created a uniform template for disease and specialty care guidelines that became available electronically across the entire system. Reorganization of personnel was particularly high for

the primary care capacity expansion project. At Arrowhead, personnel reorganization involved a physical process of moving providers into "podlets" to encourage greater staff interaction and efficiency. Santa Clara highlighted the ongoing recruitment of advanced practice clinicians such as nurse practitioners as an important personnel reorganization concept. Riverside described a more comprehensive approach to workforce reorganization, including revisiting job classifications and reviewing and revising competencies of staff types throughout the system.

DPHs also reported in the UCLA interim survey on the level of effort required to engage internal stakeholders, such as identifying program champions or obtaining buy-in from opinion leaders and staff required to implement Category 1 projects. The projects requiring the highest levels of effort were cultural competency, enhanced coding and documentation for quality data, and collecting accurate REAL data to reduce disparities. Multiple DPHs, including UC Los Angeles, UC Irvine, and Natividad, singled out in follow-up interviews the importance of physician champions in promoting DSRIP-related work and achieving buy-in from staff members. Other DPHs found that project champions were able to extend the impact of DSRIP beyond internal staff processes. At UC Davis, champions for Category 1 projects, including the collection of REAL data, succeeded in bridging the gap between the organization's primary care delivery system and the university's Center for Reducing Health Disparities. Contra Costa viewed stakeholder engagement from the consumer viewpoint as well as the staff perspective, embedding patients and family members in most of the system's quality improvement teams.

Exhibit 38: Level of Modification of Original Plans, Reorganization of Personnel and Care Processes, and Stakeholder Engagement for Category 1 Projects



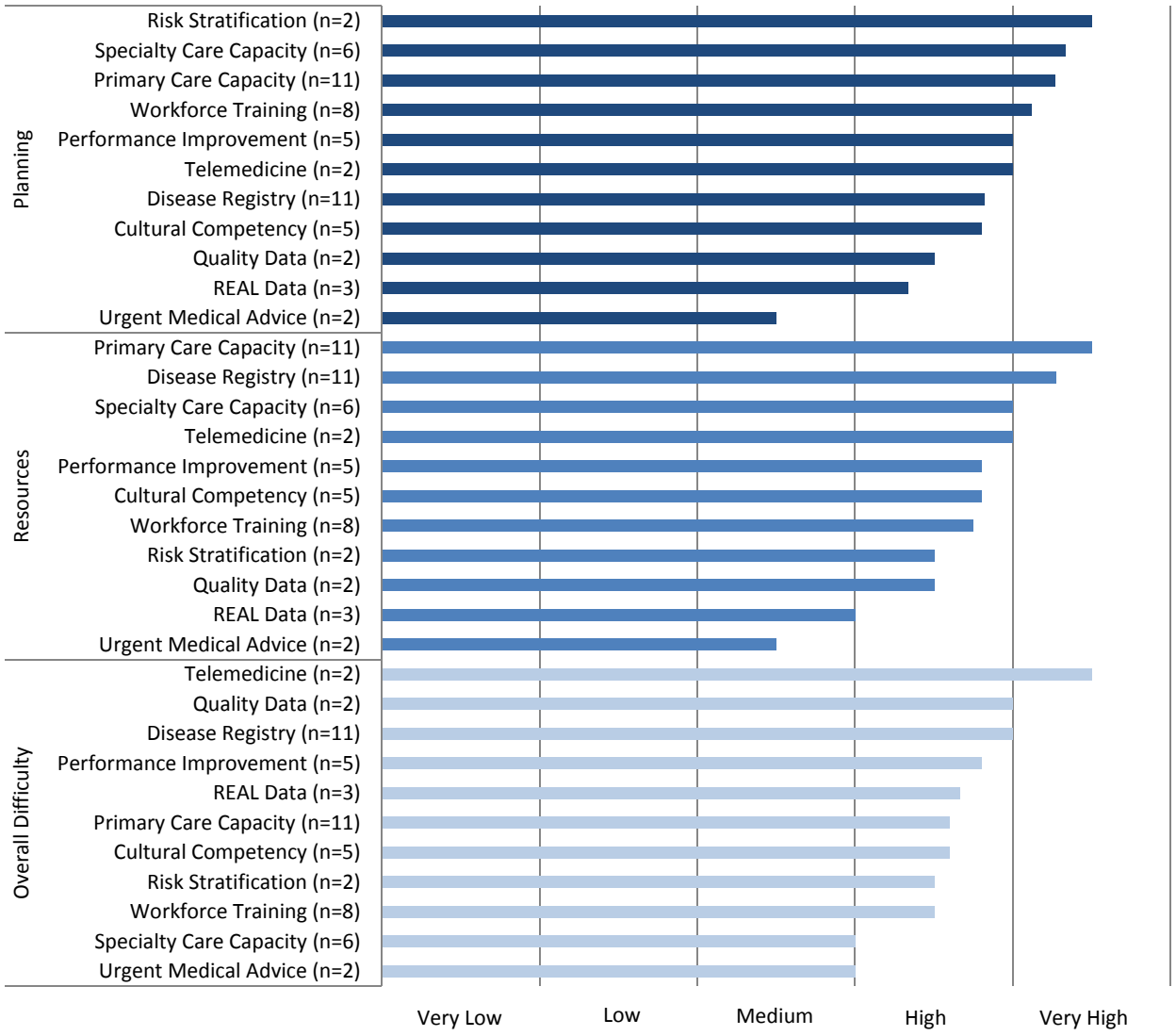
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Specialty Care in Primary Setting project was not included because it was not implemented by any of the DPHs. The Ns for each category represent the total number of projects implemented in the category across all DPHs.

DPHs reported in the UCLA interim survey that the level of planning, resources and overall difficulty for implementing Category 1 projects was either very high or high for the majority of the projects implemented (Exhibit 39). The level of planning required to develop risk stratification capabilities/functionalities was reported by most DPHs to have required the highest level of planning. Expanding primary care capacity was reported to require the highest amount of resources. Telemedicine was reported to be the most difficult project to implement overall.

During follow-up interviews, San Francisco reported that planning for the expansion of primary care for a low-income population with major medical, substance abuse, and housing needs was a complex process. To determine its ability to expand, San Francisco had to reconsider projections for support staff ratios to manage larger patient panels while also considering the effect of larger panel sizes on access to other services such as diagnostic imaging and urgent and specialty care.

The depth and breadth of DSRIP reporting requirements and technology upgrades were a major resource draw for many DPHs, according to follow-up interviews. Contra Costa created a new survey analytics department and quality and measurement infrastructure. Arrowhead highlighted the ongoing resource needs required to create new measures and reporting mechanisms. The implementation of newer, more complex disease registries at Kern and Riverside also required significant time and financial resources.

Exhibit 39: Amount of Effort and Overall Level of Difficulty in Implementing Category 1 Projects



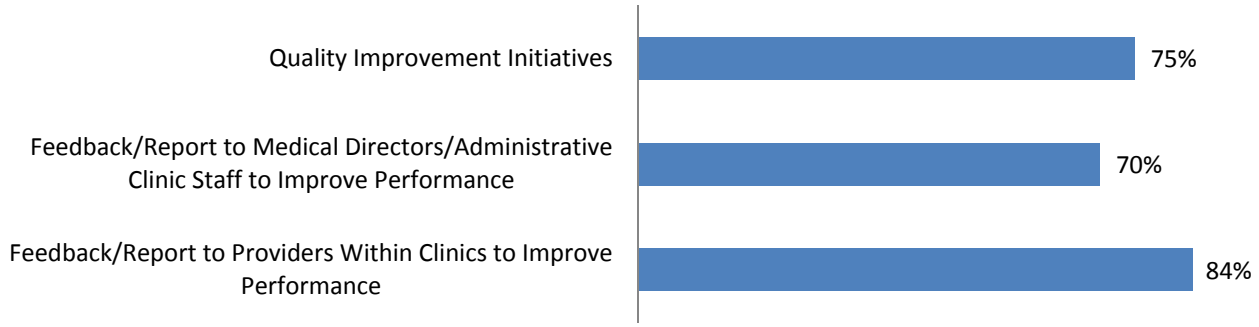
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Specialty Care in Primary Setting project was not included because it was not implemented by any of the DPHs. The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Incorporation of Category 1 Projects in Performance Improvement

In the UCLA interim survey and follow-up interviews, DPHs reported on how they used the information from Category 1 projects. DPHs reported that they incorporated this information most frequently in quality improvement activities (75%) and in feedback to medical directors or administrators (84%; Exhibit 40). The results were less frequently incorporated in performance improvement feedback given directly to providers (70%). Several project were always used for quality improvement initiatives including disease registry, REAL data, quality data, and

performance improvement projects. The remaining projects were less frequently used for this purpose.

Exhibit 40: The Proportion of Category 1 Projects that Used Project Measures for Quality Improvement Initiatives and Feedback



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 1 projects selected by DPHs (n=57). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

At Alameda, the performance improvement project led to greater integration of quality improvement initiatives into daily workflows. The organization has trained staff members at many levels in the continuous improvement process, allowing quality and performance improvement concepts to be widely disseminated. At UC San Francisco, the use of performance improvement information became so popular that there was a waiting list for training to use reporting tools and processes.

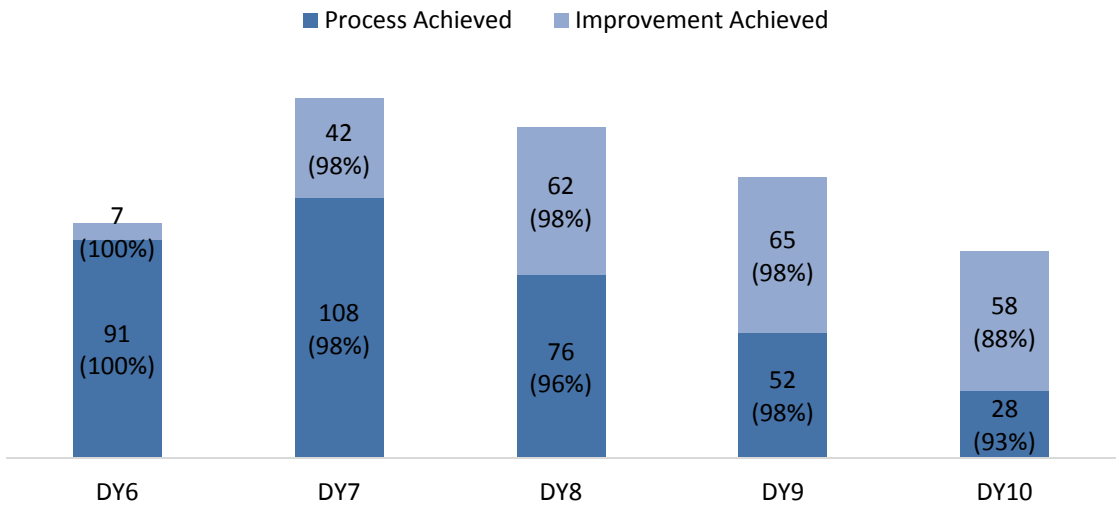
Outcomes

Project Milestones

According to DPH annual reports in DY 6-9 and second semi-annual reports in DY 10, as of the date of this report DPHs achieved at least 90% of Category 1 project milestone in all demonstration years, including 100% in DY 6 (98 of 98), 98% in DY 7 (150 of 153), 97% in DY 8 (138 of 142), 98% in DY 9 (117 of 119), and 90% in DY 10 (86 of 96; data not shown). An additional 13 milestones were partially achieved and 6 were not achieved during DSRIP. The proportion of improvement milestones increased over the course of the program, from just 7% of all Category 1 milestones in DY 6 to 69% in DY10 (data not shown). This trend indicated the gradual and deliberate shift from measuring implementation processes early in the program to measuring outcomes in the later years of the program as projects matured. While the percent of process and improvement milestones dropped slightly in DY 10 to 93% and 88%, respectively

(Exhibit 41), DPHs maintained high achievement even during the shift to more outcomes-oriented milestones.

Exhibit 41: Number of Milestones Achieved (Percent Achieved), by Process or Improvement Designation and Demonstration Year



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 6-9 and second semi-annual reports from DY 10.
Note: Numbers in parentheses indicate the percentage of process and improvement milestones fully achieved in each demonstration year, based on an achievement value of 1 in DPH reports.

Anticipated Effect of Category 1 Projects Based on Existing Literature

Category 1 projects focused on improving capacity of DPHs to deliver more effective primary care. This section describes the existing evidence for anticipated outcomes of the projects selected under Category 1.

Expanded primary care capacity was selected by 11 DPHs and is one of the building blocks for care delivery improvements targeted by other DSRIP projects, including medical homes and integration of primary care and behavioral health, as well as clinical improvements such as prevention and management of chronic conditions. Primary care expansion addresses the severe primary care shortage in California, where approximately 25 percent of the population lives in a Primary Care Health Professional Shortage Area.(4) Improved access to primary care is associated with better health outcomes and lower costs.(5-8) Specific strategies for primary care expansion selected by DPHs, including greater roles for non-physician practitioners and enhanced health information technology, have been linked to increased patient visit capacity.(9)

Implementation and utilization of disease management registry functionality was also selected by 11 DPHs and is an important tool in chronic care management. Disease registries help improve health outcomes and quality while lowering costs by enabling continuous quality improvement, care coordination, sharing of clinical best practices, and systematic dissemination of evidence-based guidelines to standardize care.(10-14)

Increased training of the primary care workforce was selected by eight DPHs and supports primary care expansion. One study estimated that California needs more than 8,000 additional primary care physicians by 2030 to maintain current utilization rates. (15) Expansion of primary care residency programs, a key strategy of DPHs with existing residency programs, is an important mechanism to meet this projected need.(16) Evidence indicates that governments must support development of the primary care workforce pipeline to alleviate current shortages that are particularly acute for underserved populations who rely more on primary care than other groups with better access to care.(5, 17, 18)

Expanding specialty care capacity was selected by six DPHs and is considered a major access barrier for underserved populations. In one survey, 85% of California federally qualified health center medical directors said that their patients "often" or "almost always" had difficulty accessing specialty care.(19) Hospitals play a particularly important role in providing specialty care for uninsured and publicly-insured populations, who often have access barriers due to difficulties experienced by Medicaid managed care plans in including specialists in their provider networks.(19, 20) Improved integration and coordination of services, both central to DSRIP implementation, are proven strategies to expand specialty care access to Medicaid patients and help prevent adverse outcomes, avoidable emergency department utilization, and hospitalization associated with lack of timely access to specialty care.(21)

Enhancing interpretation services and cultural competency was selected by five DPHs and is primarily concerned with improving communication between patient and provider where there may be language barriers. Studies have shown that improving cultural competency and interpretation services is associated with lower costs and better patient outcomes, such as reduced blood-glucose levels among diabetics.(22, 23)

Enhancing performance improvements and reporting capacity was selected by five DPHs and aims to implement systems, procedures, and technologies that facilitate performance improvement. Preliminary reviews looking at quality improvement methods have found better patient outcomes, including positive impacts on surgical care.(24)

Collecting race, ethnic, and language (REAL) data was selected by three DPHs and seeks to both identify and reduce disparities that exist between patient groups. Past quality improvement

programs that had similar goals proved to be successful in reducing disparities and bettering patient outcomes, such as improvements in blood pressure and blood glucose levels.(25, 26)

Developing risk stratification capabilities was selected by two DPHs with the goal of assigning specific risk levels to patients to provide commensurate levels of care and distribute workloads more evenly among providers. Studies have shown that risk stratification is associated with improved surgical outcomes, decreased costs, and decreased length of stay.(27, 28)

Enhancing coding and documentation for quality data was selected by two DPHs. Accurate and detailed data allow for better and more appropriate care. Improved documentation has been shown to have a meaningful impact on quality measures and revenue generation.(29)

Enhancing urgent medical advice was selected by two DPHs and attempts to provide medical guidance in situations where prompt, appropriate care is not available to patients. This advice is usually provided telephonically through nurse advice lines, which can direct patients to suitable treatment. Surveys have shown that patients are likely to follow the given advice, which can lead to reduced costs, particularly in cases in which patients switch to a lower intensity of care. (30)

Introducing telemedicine was selected by two DPHs and seeks to expand and improve access to primary and specialty care. Studies have indicated that telemedicine has the potential to reduce costs, hospitalizations, and emergency department visits.(31, 32)

Trends in Selected Improvement Milestones

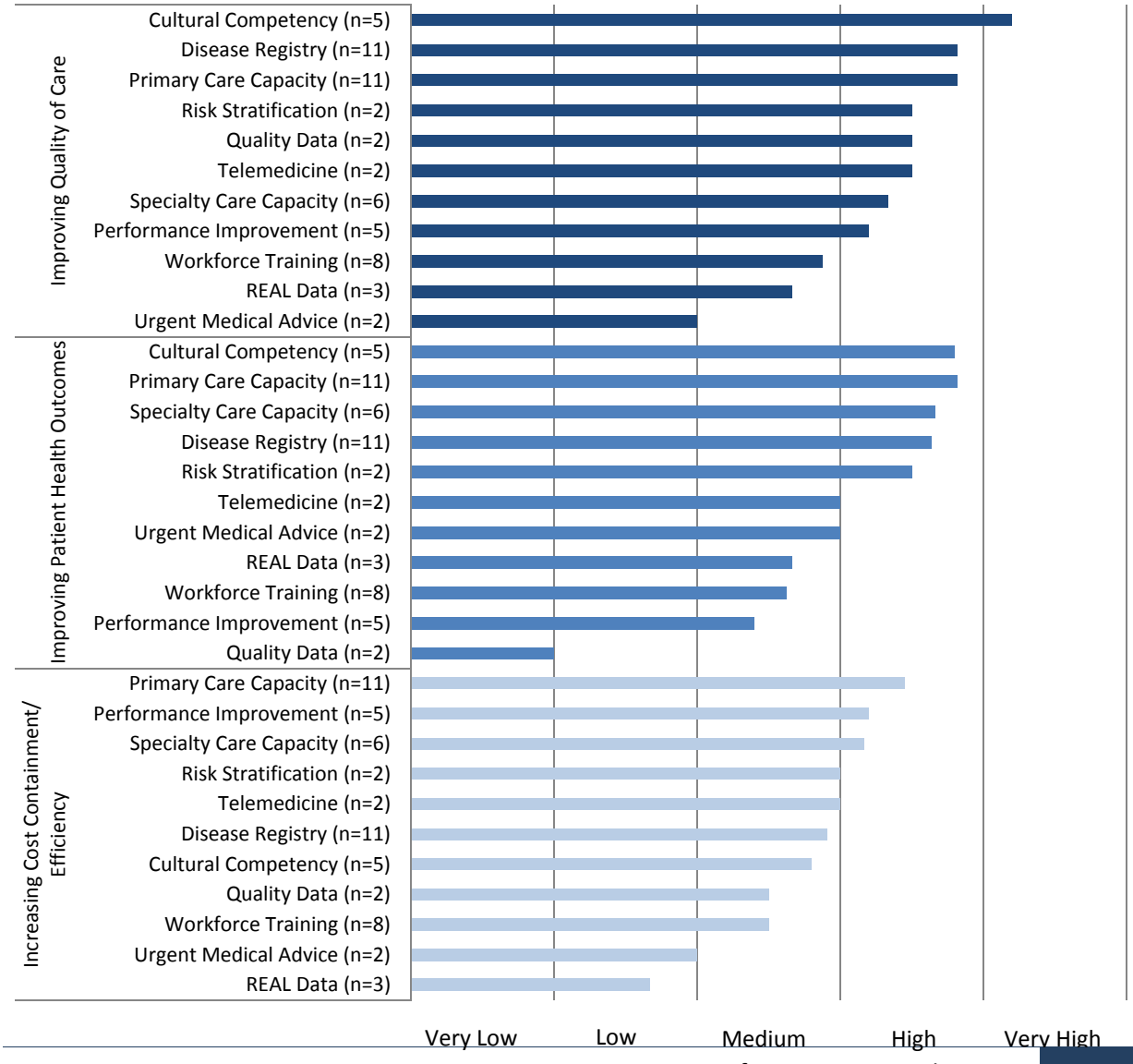
Improvement milestones with numerical and quantifiable values in DY 9 annual reports and DY 10 second semi-annual reports were examined to assess the level of change from the DPH-selected baseline period and annual target values. Detailed data on milestones for which there were sufficient information to measure achievement relative to annual targets is provided in Appendix D: Quantitative Improvement Measure Achievement, Categories 1-2, Exhibit 147 and Exhibit 148.

Most milestones exceeded their annual targets in DY 9 (85%) and DY 10 (71%). Twenty-three percent of milestones in DY 9 and 17% of milestones in DY 10 were exceeded by at least 50% of their annual targets. The amount by which DPHs exceeded their annual targets varied greatly, ranging from 1% to 875% in DY 9 and from 1% to 398% in DY 10. In both years, Arrowhead's CHF disease registry project milestone for number of patients with data entered into the registry achieved the greatest percentage exceeding its annual target.

Perceived Impact on Triple Aim

In the UCLA interim survey, DPHs were asked to assess the potential impact of each Category 1 project on the triple aim of improving quality of care, improving patient health outcomes, and increasing cost containment/efficiency using a five point scale from very low to very high. The average rating for each measure for each aim is reported in Exhibit 42. Overall, cultural competency was reported to have the highest impact on quality of care, followed by other projects such as implementation of disease registry and expanded primary care. Cultural competency was also perceived to have a high impact on health outcomes. Expanding primary care capacity was anticipated to have the highest impact on cost containment/efficiency. In the interim period, DPHs acknowledged that the full impact of Category 1 projects would not be known until after DSRIP projects were completed and data were available.

Exhibit 42: Perceived Impact of Category 1 Projects on Triple Aim of Improving Quality, Patient Health Outcomes, and Increasing Cost Containment/Efficiency

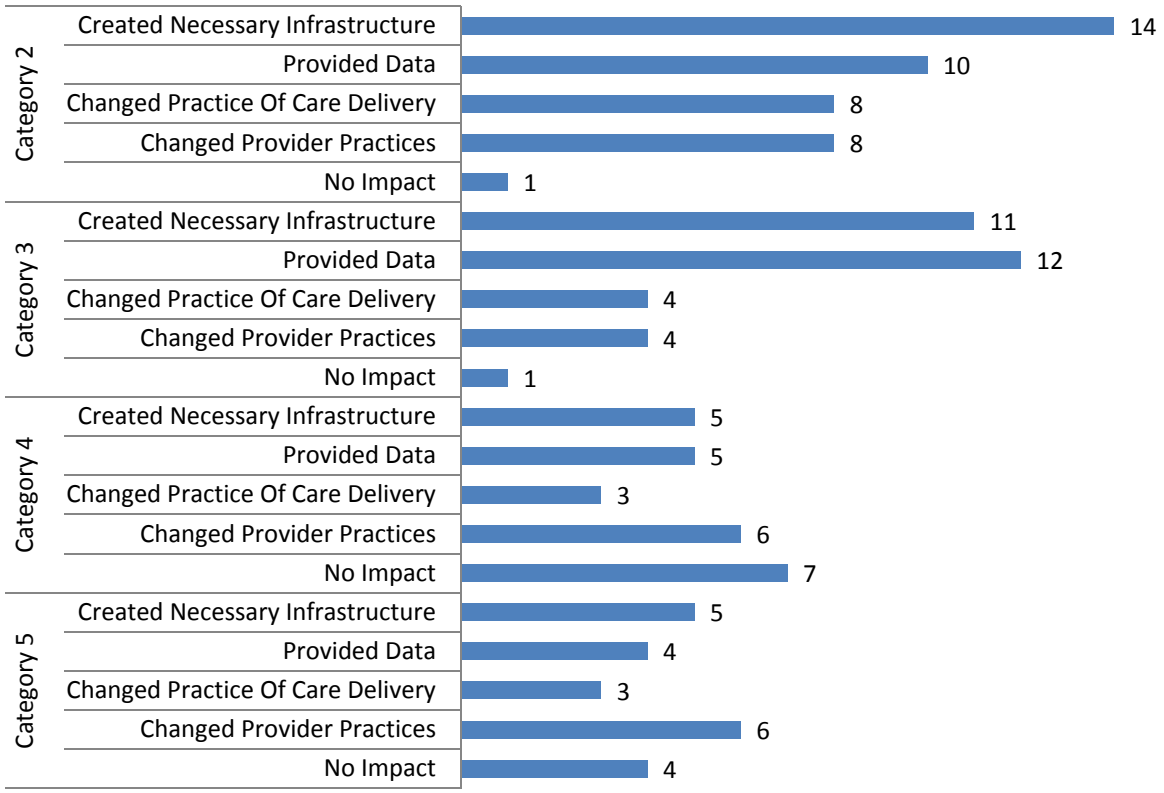


Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Specialty Care in Primary Setting project was not included because it was not implemented by any of the DPHs. The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Perceived Impact of Category 1 Projects on Other DSRIP Categories

DPHs were asked in the UCLA follow-up survey to consider the specific ways in which Category 1 projects impacted Categories 2-5. Category 1 projects focused on infrastructure development, and creation of necessary infrastructure was the most frequently cited impact of Category 1 on other categories (Exhibit 43). Fourteen DPHs reported that Category 1 created necessary infrastructure for Category 2, and 11 DPHs said the same for Category 3. Data provision was also an important impact of Category 1 on the other DSRIP categories, especially Category 3.

Exhibit 43: Type of Impact of Category 1 on Categories 2-5



Source: UCLA follow-up survey of designated public hospitals (DPHs).

Association of Category 1 with Category 3 Measures

UCLA used a difference-in-difference approach to compare the change in the rate of mammography screening and three diabetes-related measures (LDL control, HbA1c control, and the optimal care composite), between DPHs that implemented the disease registry project and those that did not, over time (DY8- DY 10; using DY 8-9 annual reports and the DY 10 second semi-annual reports). These Category 3 measures were selected because they were most likely to be impacted by implementation of disease registry projects. The disease registry project was selected because it was most likely to exert a direct influence on the selected Category 3 measures. Disease registries are essential tools in care coordination and patient care management and allow providers to identify patients who need reminders about needed care and provide quality measurement for population management to providers. Existing evidence indicate a positive relationship between use of registries and diabetes type II outcomes including higher likelihood of on time completion of appropriate tests such as HbA1c test, LDL-C test, nephropathy screening and dilated retinal exams.(33) significant differences at $p<0.05$ are noted in Exhibit 44.

The data show an upward trend in mammography screening from DY 8 to DY 10 for DPHs that implemented disease registry projects (4.05%) as well as among those that did not (2.49%). The former group had a significantly larger increase (1.56%) from DY8 and DY 10 than the latter group. In contrast, DPHs that implemented the disease registry project showed a slight decline in diabetes LDL (-2.58%) and HbA1c control (-2.21%) achievement rates from DY 8 to DY 10. But the rates for DPHs that did not implement disease registry projects improved or declined slightly. The DPHs that implemented the project experienced a larger decline than those that did not implement disease registry projects. While the optimal diabetes care measures improved for both DPH groups, the rate of improvement was nearly the same. Due to unavailability of patient level data, these analyses are inconclusive and do not account for important confounding issues, such as other projects implemented simultaneously that may have influenced the measures, lack of a baseline data on the status of disease registries in DPHs that elected not to implement the disease registry project, and other patient and DPH characteristics. However, these data are consistent with the expectation that disease registries would improve receipt of services associated with increased use of reminders and population quality management.

Exhibit 44: Association of Selected Category 3 Measures with Implementation of Disease Registry Projects

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY8 to DY10	Difference in differences
Mammography					
Implemented (n=8)	64.80%	70.10%	68.85%	4.05%	1.56%*

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY8 to DY10	Difference in differences
Did Not Implement (n=9)	64.60%	64.30%	67.09%	2.49%	
Diabetes: LDL Control					
Implemented (n=11)	39.10%	41.40%	36.52%	-2.58%	-2.86%*
Did Not Implement (n=6)	40.70%	41.10%	40.98%	0.28%	
Diabetes: HbA1c Control					
Implemented (n=11)	47.90%	50.70%	45.56%	-2.34%	-2.21%*
Did Not Implement (n=6)	53.80%	51.90%	53.67%	-0.13%	
Optimal Diabetes Care					
Implemented (n=11)	8.10%	9.60%	10.23%	2.13%	0.02%
Did Not Implement (n=6)	11.40%	16.30%	13.51%	2.11%	

*$p < 0.05$

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9 and second semi-annual report from DY 10.

Note: Numbers differ for mammography screening because three of the DPHs that implemented the disease registry project did not explicitly mention tracking mammography results in their annual reports.

Challenges and Lessons Learned

DPHs cited in follow-up interviews and DY 9 annual reports the top challenges in implementing the selected Category 1 projects and reported the solutions used to address these challenges and lessons learned.

The most commonly reported challenges were related to staffing, including recruitment, retention, turnover, training, buy-in, and difficulty identifying the appropriate people for given tasks. The shortage of primary care providers in safety net organizations caused complications for ambitious primary care expansion projects. Santa Clara faced the dual challenge of recruiting providers to an area with a relatively high cost of living without being able to offer commensurate salaries. The organization identified the long and complex hiring process for county hospitals as an additional barrier. While expanding residency programs was a popular strategy for DPHs that serve as teaching hospitals, Ventura noted that the overall national pool of residents and the allocation of residency slots to individual hospitals were limited.

Despite these challenges, DPHs found ways to expand their primary care workforce. Santa Clara was able to hire 12 primary care physicians during DY9 alone. San Joaquin was able to leverage DSRIP participation as a selling point to persuade the county Board of Supervisors to improve

the primary care physician compensation package. In addition to standard clinician recruitment mechanisms such as student loan forgiveness, UC San Francisco used a recruiting firm to improve primary care expansion efforts.

Other DPHs utilized strategies embedded in DSRIP Category 1 projects to address workforce challenges. For example, telemedicine served as an alternative to the complications of additional recruitment and hiring, particularly for specialty care. DSRIP allowed UC San Diego to build on an existing telemedicine program that offers audiovisual consultation for 10 different specialties.

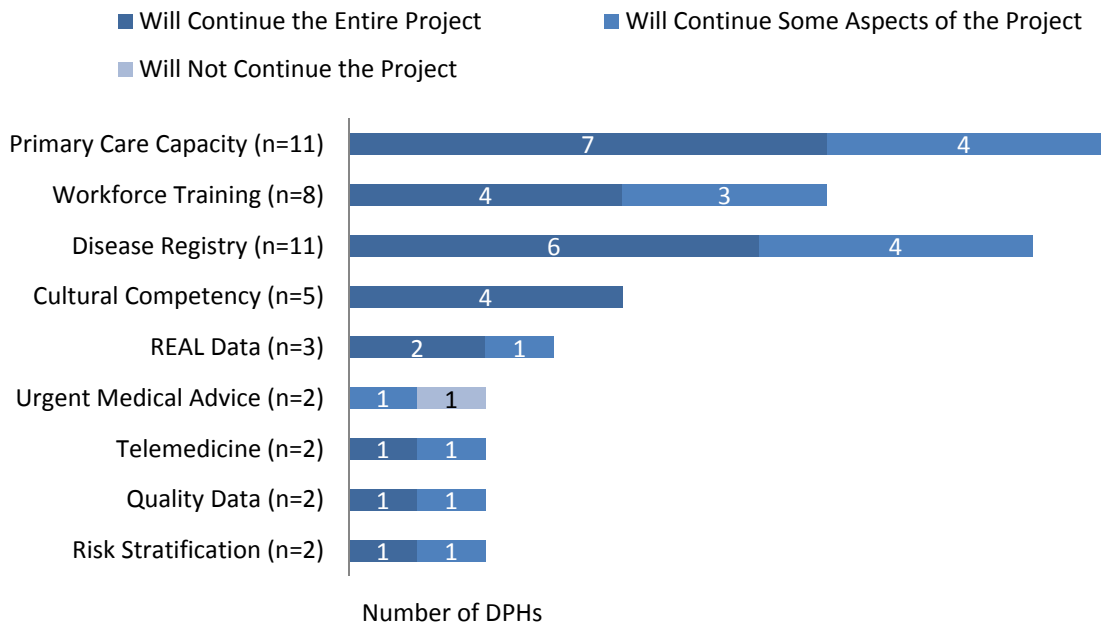
Workforce issues were closely related to space capacity problems at some DPHs. San Francisco and Natividad realized that it would be impossible to expand their residency programs without a significant investment to expand family medicine training sites. Kern wanted to add weekend hours to its primary care clinics but was unable due to the inability to coordinate expanded hours for critical onsite ancillary services such as pharmacy, lab testing, and radiology.

Change fatigue was a recurring theme in DPHs undergoing many simultaneous transformations under DSRIP. Organizations changed staff roles, processes, and cultures as a result of their participation in DSRIP projects, and required staff to undergo myriad training programs to implement redesigned care processes. In response to this challenge, DPHs engaged stakeholders more directly by involving them in change processes and worked to obtain buy-in by focusing on employee satisfaction and providing cues to action such as reminders about new technologies. At Arrowhead, training to use the new disease registry was incorporated into new employee training to ensure consistency throughout the organization and to avoid taking time away from overloaded clinical schedules. Kern worked with specific groups of providers, most notably pediatricians, to understand concerns about expanded clinic hours and reach compromises that ultimately led to staff buy-in and satisfaction, and ultimately greater access for patients.

Sustainability of Category 1 Projects

DPHs reported widespread confidence in the sustainability of their projects. In the UCLA interim survey, DPHs reported that they would continue all but one Category 1 projects in some form after the demonstration ends (Exhibit 45). DPHs reported that they will continue 32 of the projects in their entirety, including at least half of the primary care capacity, disease registry, workforce training, specialty care capacity, and performance improvement projects. The four cultural competency projects were also expected to continue in their entirety.

Exhibit 45: Continuation of Category 1 Projects after DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Numbers in parentheses represent the quantity of DPHs that implemented each project. Totals in exhibit do not always add up to numbers in parentheses because of missing data.

In the UCLA follow-up survey, DPHs identified significant challenges to sustainability, most prominently insufficient funding to support the personnel and resources required to maintain projects. This challenge was most frequently cited for the care expansion projects – primary care capacity (4), specialty care capacity (3), and workforce training (3; data not shown). Some DPHs used Category 1 infrastructure development projects for one-time capital investments or equipment purchases such as video interpreting equipment but many of the projects required ongoing investment and prioritization by DPHs to maintain an impact beyond the demonstration period and without the benefit of ongoing incentive payments.

However, DPHs emphasized more reasons that projects can and will continue than barriers to sustainability. The most frequently cited reasons for continuing projects after DSRIP included compatibility with an organization's priorities (cited 30 times by DPHs across all Category 1 projects), ongoing support from leadership (30), the realization of benefits (29), and establishment of infrastructure (27; Exhibit 46). For example, Contra Costa indicated that capital projects to expand physical space capacity would continue after the end of DSRIP to further the work started under the primary care capacity project. The least frequently cited reason was that the project was needed for another initiative/program (7). Among Category 1 projects, projects most frequently cited included primary care capacity (34), workforce training (26), disease registry (40), and cultural competency (24).

Exhibit 46: Most Frequently Cited Reasons for Continuing Category 1 Projects after DSRIP

Project	Compatible With Organization's Priorities	Operational Funding Available After DSRIP	Fully Embedded Through Policies	Benefits Are Realized	Needed For Another Initiative/ Program	Ongoing Leadership Support	Infrastructure Established	Data Collection Established
Primary Care Capacity	7	2	3	6	0	7	6	3
Workforce Training	4	2	4	4	1	4	4	3
Disease Registry	6	4	5	6	2	6	6	5
Cultural Competency	4	1	4	4	1	4	3	3
REAL Data	3	0	3	3	1	3	3	3
Telemedicine	1	1	0	1	0	1	1	0
Quality Data	1	0	0	1	1	1	1	0
Risk Stratification	1	1	1	1	1	1	1	1
Specialty Care Capacity	3	2	1	3	0	3	2	1
Performance Improvement	0	1	0	0	0	0	0	0
Most Frequently Cited (Total)	**30**	**14**	**21**	**29**	**7**	**30**	**27**	**19**

Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Urgent Medical Advice not included because no DPHs reported on reasons for continuing the project.

Summary

DPHs implemented 57 Category 1 projects designed to develop infrastructure, promote innovation, and redesign and improve care delivery. The most frequently selected projects included primary care capacity (11), disease registry (11), workforce training (8), and specialty care capacity (6). More than 75% of Category 1 projects were ongoing or had been planned prior to DSRIP. Program participation served to enhance existing work in many cases by expanding projects to additional departments or clinics, including in seven of the 11 DPHs that implemented the disease registry project and five of the six DPHs that implemented the specialty care capacity project. Most projects were selected because of their consistency with organizational goals (86%) and/or synergy with existing projects (81%).

To successfully implement these projects, DPHs undertook considerable levels of reorganization of care processes and personnel, and often required additional work to engage internal stakeholders. More than half (53%) of Category 1 projects required the adoption of an existing evidence-based model with moderate revision, but nonetheless required high levels of planning and resources. Telemedicine, quality data, and disease registry were considered the three most difficult projects to implement overall.

Over 96% of the 608 total proposed milestones in DY 6-10 were achieved, including 355 process milestones and 234 improvement milestones. Among the subset of 52 of these improvement milestones for which complete numerical data were reported, 85% exceeded their annual targets in DY 9 and 71% did so in DY 10. DPHs exceeded their annual targets by at least 50% for 23% of milestones DY 9 and 17% in DY 10. DPHs more consistently exceeded their targets, and exceeded them by larger margins, in DY 9 than DY 10. This may be an indication of diminishing returns as continued improvement became more difficult when building on the success of previous years. DPHs incorporated 75% of the project results into quality improvement initiatives and reported data to medical directors and administrators for 84% of Category 1 projects. The projects that were always incorporated into quality improvement initiatives included disease registry, REAL data, quality data, and performance improvement. This choice most likely reflects what DPHs might have considered as critical infrastructure elements for quality improvement.

DPHs considered many Category 1 projects to have had a high impact on improving quality of care, most prominently the cultural competency, disease registry, and primary care capacity projects. The overall perceived impact on improving health outcomes and increasing cost containment and efficiency were somewhat lower. DPHs also perceived Category 1 projects to

have had a high impact on other categories, particularly by creating necessary infrastructure for projects in other categories to succeed and by providing data to other categories.

UCLA examined whether the disease registry project was associated with improvements in specific diabetes and mammography measures in Category 3. The analyses indicated that DPHs that implemented the disease registry project showed a sharper improvement in the rate of mammography from DY 8 to DY 10 relative to DPHs that did not implement the project. But the former group showed a decline in diabetes LDL and HbA1c control over the same time period compared to the latter group. These analyses were not conclusive as the analyses did not control for confounding issues due to unavailability of patient level data.

The top challenges cited by DPHs in implementing Category 1 projects related to staffing, including recruitment, retention, turnover, training, buy-in, and difficulty identifying the appropriate people for given tasks. DPHs solved these challenges by hiring and training staff and obtaining provider and stakeholder buy-in, among other efforts.

While DSRIP incentive funding was a major catalyst for much of the Category 1 infrastructure development activity, DPHs reported widespread confidence about the sustainability of their projects beyond the demonstration period. Fifty-two of the 53 projects for which data were available were planned to continue in at least some respect, driven by compatibility with organizational priorities (30), ongoing support from leadership (30), and the realization of benefits (29). The projects most frequently reported to be continued in at least some aspects after DSRIP included primary care capacity (11), disease registry (10), and workforce training (7).

Category 2: Innovation and Redesign

Projects in Category 2 focused on innovative models of care by implementing and expanding medical homes and the Chronic Care Model, improving continuity and integration of care, enhancing patient experience and engagement, and promoting cohesive system change.

Project Selection

DPHs were required to select at least two Category 2 projects from 14 possible projects. Overall, a total of 66 projects were implemented across 17 DPHs (Exhibit 47). Fifteen DPHs implemented more than the required two projects, and the largest number of implemented projects in a single DPH was six. The specific measures each DPH selected in each project, as defined by Attachment Q, are included in Appendix C: Attachment Q Measures Selected by DPHs, Exhibit 146.

Exhibit 47: Projects Selected, by Designated Public Hospital, Category 2

Designated Public Hospital	Medical Homes	Chronic Care Management	Primary Care Redesign	Patient Experience	Cost Containment	Physical and Behavioral Health Care Integration	Specialty Care Access/Redesign Referral Process	Patient Care Navigation	Process Improvement	Flow in the ED/Rapid Medical Evaluation	Palliative Care	Medication Management	Care Transitions	Real-Time Hospital-Acquired Infections (HAIs) System	Total
Alameda	✓	✓		✓						✓			✓		5
Arrowhead	✓	✓	✓												3
Contra Costa	✓			✓		✓						✓			4
Kern	✓		✓			✓		✓							4
Los Angeles	✓	✓				✓									3
Natividad				✓					✓						2
Riverside	✓	✓	✓	✓			✓								5
San Francisco	✓					✓	✓								3
San Joaquin	✓		✓												2
San Mateo	✓		✓	✓		✓	✓		✓						6
Santa Clara		✓		✓	✓	✓									4
UC Davis	✓								✓			✓	✓		4
UC Irvine	✓	✓	✓	✓				✓						✓	6
UC Los Angeles	✓											✓	✓		3
UC San Diego			✓							✓	✓	✓	✓	✓	6

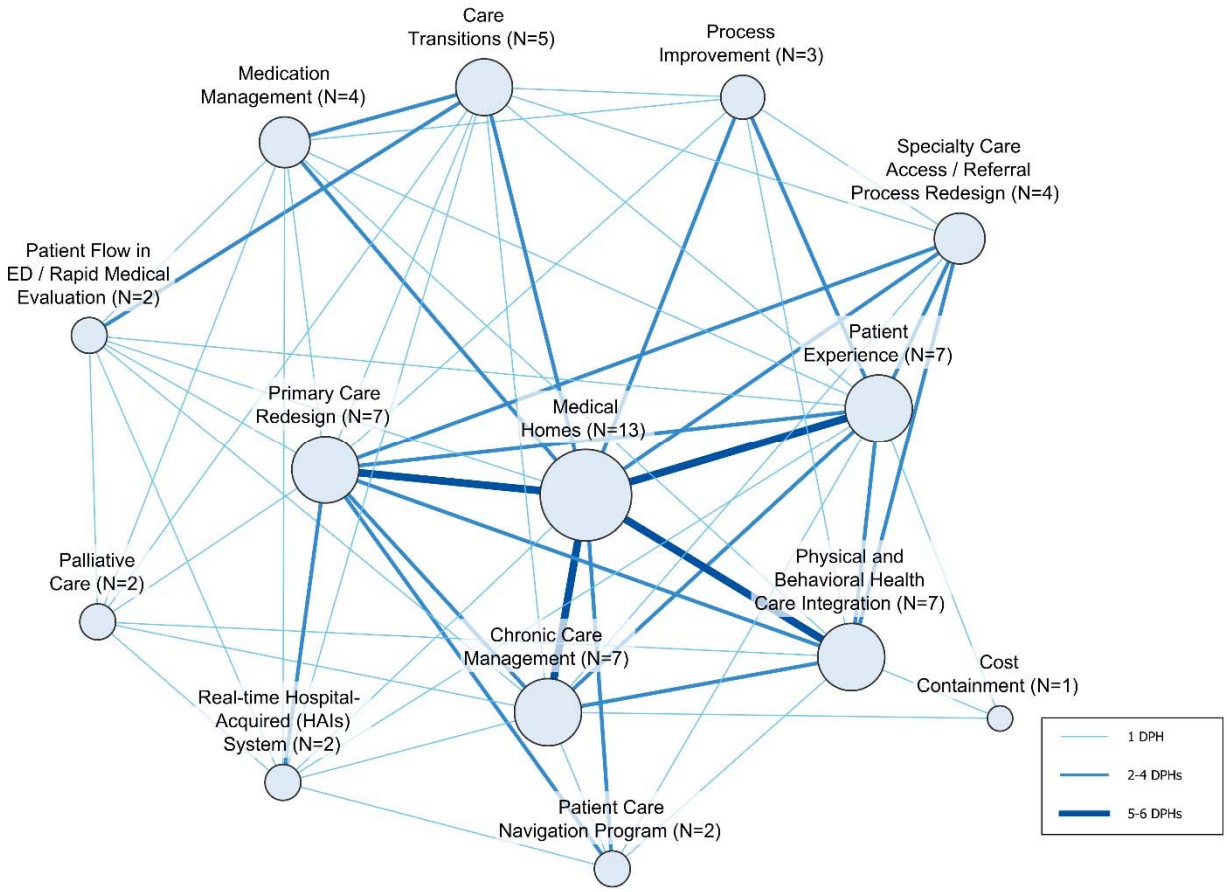
Designated Public Hospital	Medical Homes	Chronic Care Management	Primary Care Redesign	Patient Experience	Cost Containment	Physical and Behavioral Health Care Integration	Specialty Care Access/Redesign Referral Process	Patient Care Navigation	Process Improvement	Flow in the ED/Rapid Medical Evaluation	Palliative Care	Medication Management	Care Transitions	Real-Time Hospital-Acquired Infections (HAIs) System	Total
UC San Francisco	✓						✓						✓		**3**
Ventura		✓				✓					✓				**3**
Total	**13**	**7**	**7**	**7**	**1**	**7**	**4**	**2**	**3**	**2**	**2**	**4**	**5**	**2**	**66**

Source: UCLA analysis of designated public hospital (DPH) annual reports.

Note: UC Los Angeles implemented a pediatric medical home in addition to its adult medical home project.

Exhibit 48 identifies Category 2 projects that were most frequently and/or concurrently selected by DPHs. Medical home projects were selected by 13 of the 17 DPHs. DPHs that selected medical home projects concurrently selected primary care redesign, chronic care management, physical and behavioral health care integration, and patient experience projects more frequently than other projects.

Exhibit 48: Selection Frequency of Concurrent Category 2 DSRIP Projects

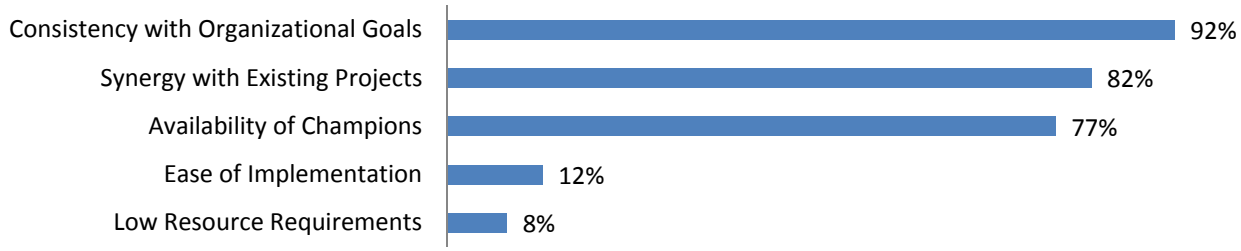


Source: UCLA analysis of designated public hospital (DPH) reports.
Note: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that are concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented the same projects concurrently.

Rationale for Selecting Category 2 Projects

In the UCLA interim survey, DPHs reported the top reasons for selecting Category 2 projects (Exhibit 49). Ninety-two percent of the selected projects were chosen because of their consistency with organizational goals, 82% because of their synergy with existing projects, and 77% were selected because of the availability of champions. Ease of implementation and low resource requirements were infrequently cited as reasons for selecting Category 2 projects.

Exhibit 49: Reasons for Selecting Category 2 Projects



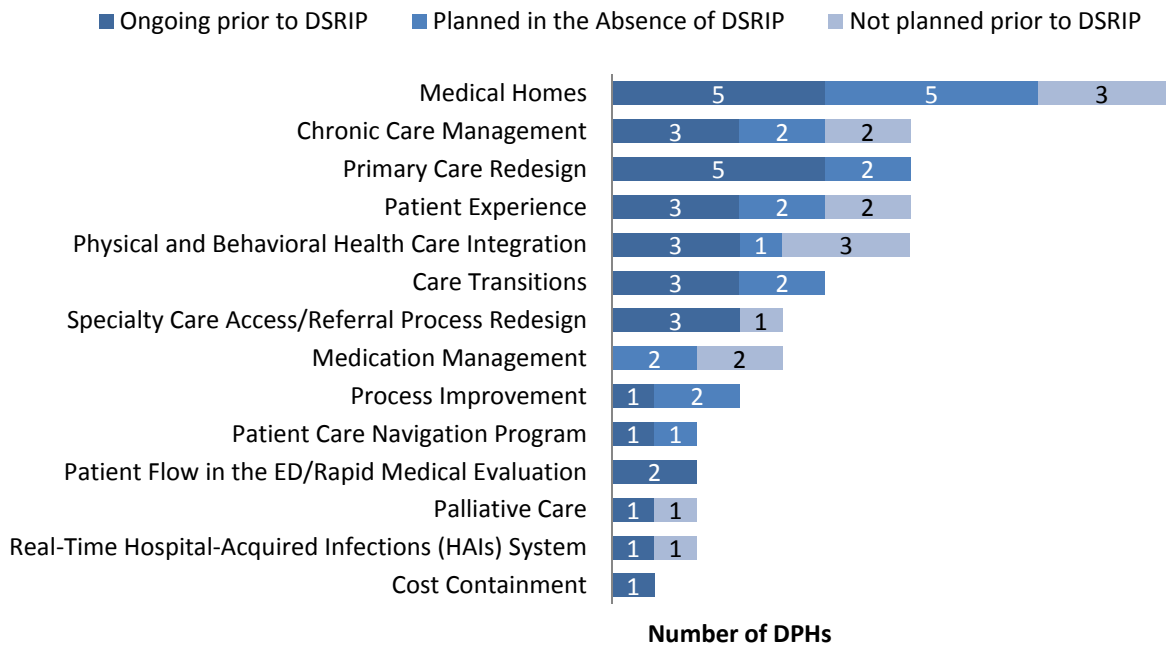
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 2 projects (n=66). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

Status of Category 2 Projects Prior to DSRIP

In the UCLA interim survey, DPHs reported on whether the Category 2 projects they selected were ongoing prior to DSRIP or previously planned (Exhibit 50). About half of the Category 2 projects in participating DPHs were ongoing and a third of the projects were planned prior to DSRIP. However, most of these projects were either pilot programs and/or had not been implemented comprehensively or systemwide. DPHs reported during follow-up interviews that DSRIP allowed them to expand and broaden many existing projects. For example, UC San Diego had existing palliative care and care transitions initiatives prior to DSRIP, but DSRIP funding and support allowed the DPH to expand the use and reach of these initiatives. San Francisco administrators reported that prior to DSRIP they had been working to turn their clinics into patient-centered medical homes, but DSRIP funding allowed them to offer more complex care management and enhanced access. Contra Costa noted that its previous medical home focus had been on empanelment and that during DSRIP the focus expanded to implementing the tenets of the patient-centered medical home, including hiring more than 20 health home coordinators to achieve this goal.

DPHs further reported that several external initiatives such as PCMH accreditation, CMS Meaningful Use, and FQHC conversion worked in synergy with DSRIP projects to improve patient care. DPHs also indicated that the rigor of the data collection and measurement as a result of DSRIP allowed them to compare safety, quality and access across departments and other health systems, which was not possible previously due to the lack of resources and coordination.

Exhibit 50: Status of Category 2 Projects Prior to DSRIP



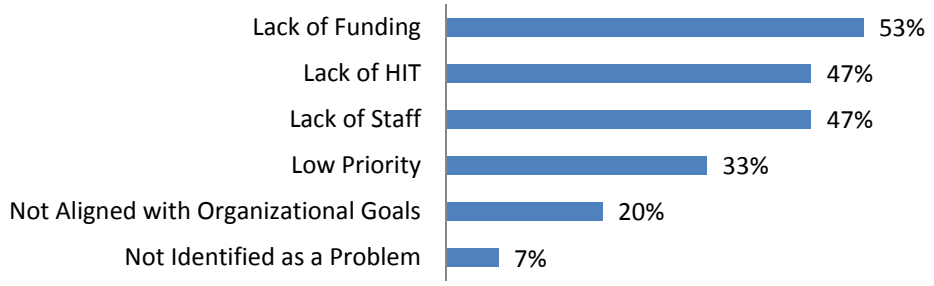
Source: UCLA interim survey of designated public hospitals (DPHs).

In the UCLA follow-up survey, DPHs were asked whether and how DSRIP projects expanded the scope of existing projects or had different goals or assessment methods. Examples of these efforts include Natividad, which indicated that the goals of the previous attempt to improve patient experience project were less specific and lacked defined outcome and process measures. Riverside noted that its previous diabetes chronic disease management project made use of a registry but was expanded under DSRIP to develop a database to programmatic initiatives such as improving inpatient glycemic control. San Francisco expanded its existing eReferral process to promote specific targets for increased capacity and response times with a goal of creating better access to specialty care for referring primary care providers. UC Davis reported that its existing medical home project did not establish any systemwide resources or standards and was not supported by its ambulatory care administration. Overall, DSRIP projects leveraged centralized resources for reporting, standards, roles, and leadership.

In addition to expanding existing plans or efforts, DPHs reported that DSRIP contributed to changes in the ways DPHs assessed improvement projects. Two DPHs reported using different methods to assess the primary care redesign projects. Four DPHs reported using different approaches for assessment through DSRIP, such as establishing disease-specific registries and implemented screening tracking metrics (data not shown).

In the UCLA interim survey, DPHs reported the reasons that Category 2 projects had not been planned prior to DSRIP. For 53% of the projects, DPHs listed lack of funding as a reason, followed by lack of HIT (47%), and lack of staff (47%; Exhibit 51).

Exhibit 51: Reasons that Category 2 Projects Were Not Planned Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of projects selected that were not implemented or planned prior to DSRIP (n=15). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

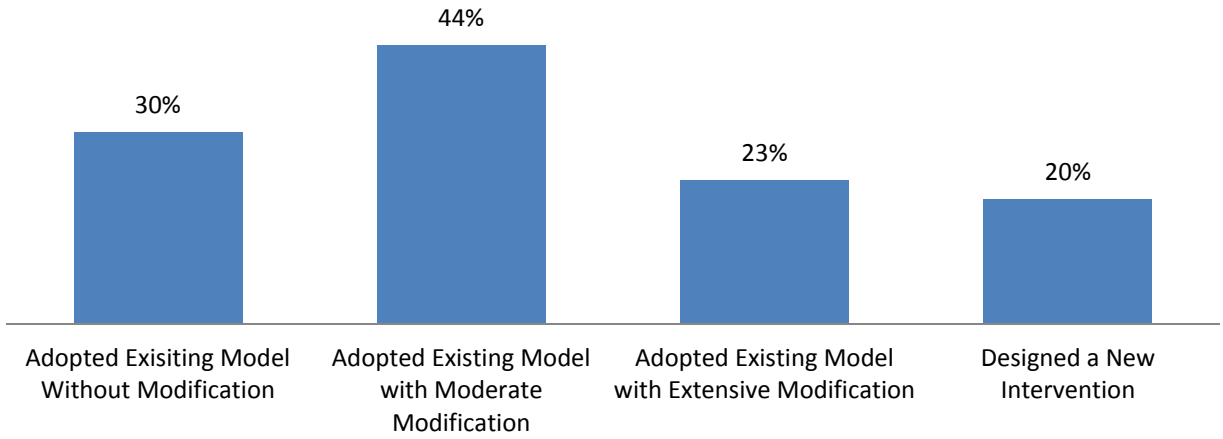
Approximately half of DPHs that participated in the physical and behavioral health integration project had done little to no work in this area prior to DSRIP. San Francisco reported during the follow-up interviews that although there had been interest in connecting these important areas of care prior to DSRIP, there had been no funding to undertake those tasks. As a result of DSRIP, there was exponential change in the ways in which the DPH had been able to support the project.

Implementation

Use of Evidence-Based Models

In the UCLA interim survey, DPHs reported whether they used evidence-based models for Category 2 projects and whether they modified these models. The majority of DPHs adjusted selected models to fit the needs of their organization. Over 40% of DPHs adopted an existing evidence-based model of care with moderate modification and more than 20% of DPHs adopted a model with extensive modifications (Exhibit 52). Another 20% of DPHs developed brand-new interventions for Category 2 projects.

Exhibit 52: The Proportion of Category 2 Projects That Used Evidence-Based Models, by Degree of Modification to the Model



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 2 projects selected by DPHs (n=66). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could implement more than one model to complete a project.

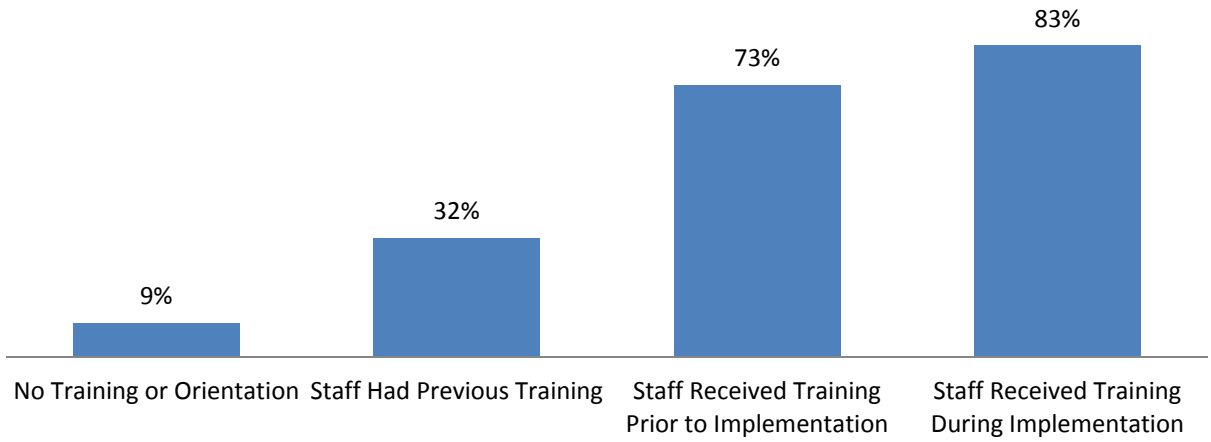
Staff Training

DPHs were also asked in the UCLA interim survey to assess the training initiatives related to quality and process improvements that were provided to staff prior to or during implementation of Category 2 projects (Exhibit 53). Examples of trainings given include Lean and Six Sigma. Training most frequently occurred during (83%) and prior (73%) to the

implementation of DSRIP projects. Only 9% of the projects did not involve any staff training or orientation.

Several DPHs noted during follow-up interviews that DSRIP allowed them to create an overall, comprehensive strategy aimed at improving quality and access in outpatient care. Contra Costa reported that prior to DSRIP they did not have a process to build capacity for the ambulatory departments or clinics. DSRIP provided the momentum to create a training system to bring together multi-disciplinary teams for learning sessions complemented by webinars and learning collaboratives.

Exhibit 53: Timing of Staff Training in Relation to DSRIP Implementation for Category 2 Projects



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 2 projects selected by DPHs (n=66). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could conduct multiple phases of staff training depending on the needs of the project.

Care Process and Personnel Reorganization and Stakeholders Engagement

In the UCLA interim survey, DPHs were asked how much revision, redesign, or modification of project plans from their original form were required to successfully implement Category 2 projects, using a scale from one to five, with five indicating a very high level of modification (Exhibit 54).

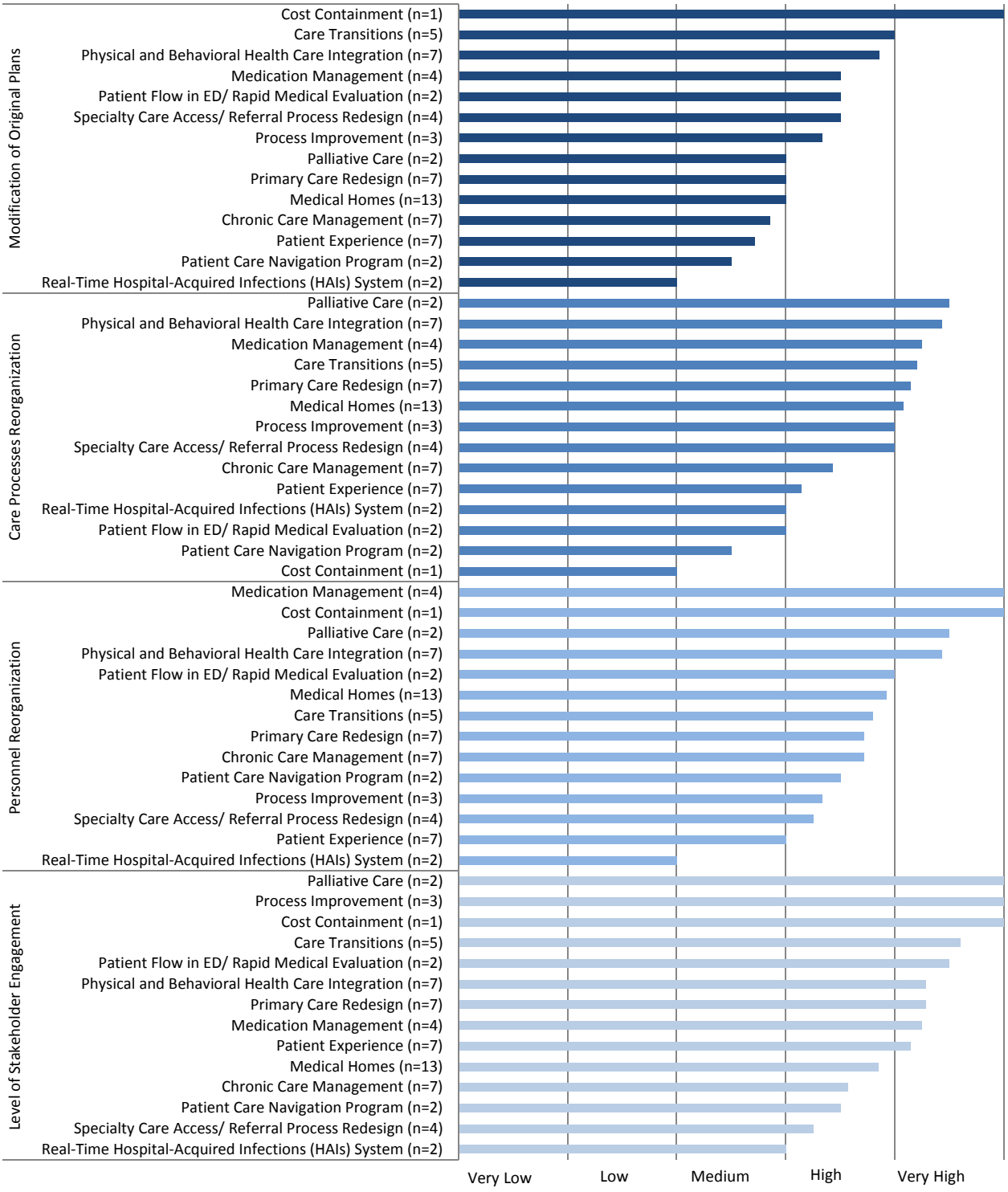
One DPH participated in the cost containment project and gave a rating of "very high" for the amount of modification of the original plan required for this project. Also rated as having "high" demands related to plan modification were projects in the areas of: care transitions, physical and behavioral health care integration, medication management, patient flow in the ED/Rapid Medical Evaluation, specialty care access/referral process redesign, and process improvement.

When DPHs were asked to rate the level of reorganization of care processes required to implement Category 2 projects, they reported that the majority of projects required a "high" or "very high" level of care process reorganization. Projects focused on palliative care, physical and behavioral health care integration, medication management, care transition, primary care redesign, and medical homes required the highest level of care process reorganization.

DPHs also rated the level of reorganization of personnel required to implement Category 2 projects. Projects requiring the highest level of personnel reorganization were medication management, cost containment, palliative care, and physical and behavioral health care integration. DPHs noted during follow-up interviews that projects that spanned multiple departments, such as the care transitions, ED flow, and physical and behavioral health integration projects, were particularly challenging. These projects required a high level of reorganization of care processes and stakeholder engagement. For example, Alameda noted that reducing the length of stay in the ED required systemic changes, including coordinating with pharmacy and nursing staff to streamline the discharge processes. UC San Diego noted that the primary care redesign project also required a high level of reorganization of care processes as their primary care clinics increased their use of registered nurses and other non-physician providers. The project required changes in workflows, EHR training, and overall culture change as physicians grew accustomed to giving more responsibilities to other providers.

DPHs rated the level of effort to engage internal stakeholders (e.g., identify and select a champion; obtain buy-in from opinion leaders, front-line staff, and others; collaborate on implementation) for the implementation of Category 2 project. They reported that projects related to palliative care, process improvement, and cost containment were the most demanding in terms of stakeholder engagement, and required a "very high" level of stakeholder engagement. Nevertheless, all the other projects except for the real-time hospital-acquired infections system project required high levels of effort to engage internal stakeholders.

Exhibit 54: Level of Modification of Original Plans, Reorganization of Personnel and Care Processes, and Stakeholder Engagement for Category 2 Projects



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

During the UCLA follow-up interviews, Riverside noted that engaging physicians proved to be challenging given many of the ongoing transformations in the health care arena. Riverside also reported that while some providers were excited about the transformation, others saw a lot of extra work for little or no reward, and another group was uncertain about whether the changes were going to be permanent.

Other DPHs noted that the DSRIP projects required a major organizational culture change, which made it challenging to implement. In one DPH, the specialty care referral project required engagement with both primary care physicians, who were concerned that they would be viewed as lacking professional knowledge, and specialty care physicians, who were wary of providing a consult for a patient they had not physically seen. UC San Francisco described how the changes in primary care practice required a level of culture change for medical assistants, many of whom required training in health coaching and using the EHR, and for the physicians, who needed to be comfortable engaging support staff in a different way.

During the follow-up interviews, DPHs also noted that changing patient expectations about care delivery proved to be a challenge. UC Davis found during a patient focus group that patients were comfortable with the traditional one-on-one relationship with their physicians and expressed fear about the use of team-based care. Focus group findings were used to educate and inform patients about the value of team-based care. Contra Costa ambulatory care nurses received training to help them become more comfortable asking questions about behavioral health issues – topics they had not broadly broached before.

Although DPHs reported high levels of effort to engage stakeholders, many also noted positive experiences. San Francisco reported that the physical and behavioral care integration project increased provider satisfaction because they were able to coordinate mental health care with an on-site behavioral health care team. San Francisco also reported that physicians responded positively to both the e-referral and telemedicine projects and described how the e-referral project afforded physicians the ability to co-manage patients without sending patients from one office to another. At UC San Diego, the palliative care program proved to be so successful that they expanded the project and added providers. UC San Diego also noted that the medication management program was viewed positively by physicians, who saw it as an added support to help manage patients with complex health needs. To identify gaps in patient care or services, Contra Costa reported substantial success recruiting patients and family members to its advisory councils and having these stakeholders participate in its rapid improvement exercises. Contra Costa also noted the success of using focus groups as a method of gathering feedback before implementing changes.

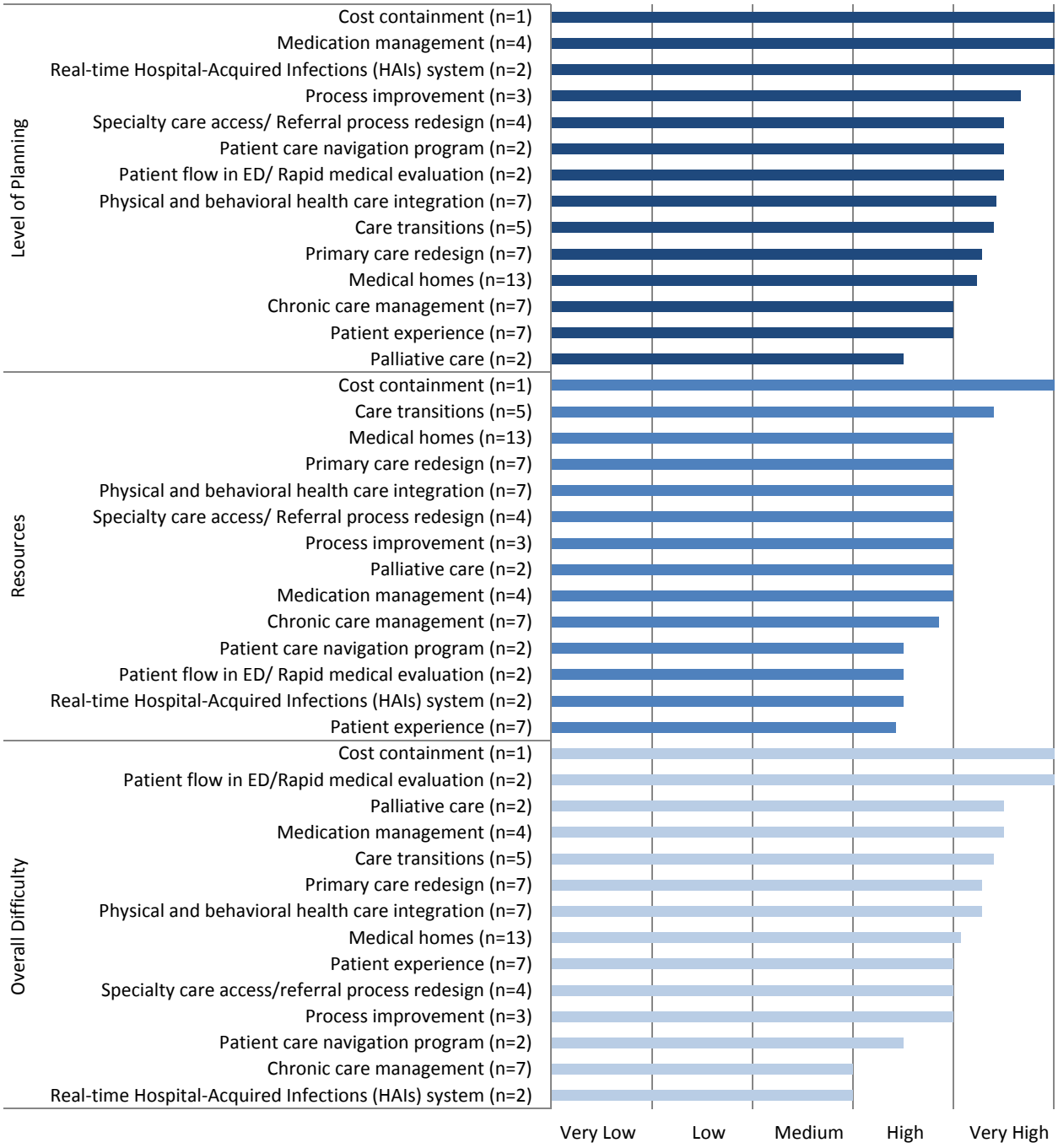
Planning

DPHs were asked in the UCLA interim survey to rate the amount of planning required to implement Category 2 projects (Exhibit 55). Among the 14 Category 2 projects, DPHs reported that the cost containment, medication management, and real-time HAI system projects required the greatest amount of planning (e.g., extensive and long-term formal planning). Notably, they rated all projects as having a "high" or "very high" level of planning required.

DPHs also rated the amount of resources (e.g., personnel, cost, time, training) required to implement Category 2 projects. DPHs that participated in cost containment and care transition projects reported that they required a "very high" level of resources to implement these projects. The other projects required at least a "high" level of resources.

Finally, DPHs rated each Category 2 project in terms of the overall level of difficulty in implementation. Among the 14 project types in Category 2, the cost containment and patient flow in the ED/Rapid Medical Evaluation projects received the highest rankings for overall difficulty in implementation. However, these project types were implemented by only one and two DPHs, respectively. All the other projects except for chronic care management and real-time HAI systems were rated as having a "high" or "very high" level of difficulty in terms of overall implementation.

Exhibit 55: Amount of Effort and Overall Level of Difficulty in Implementing Category 2 Projects

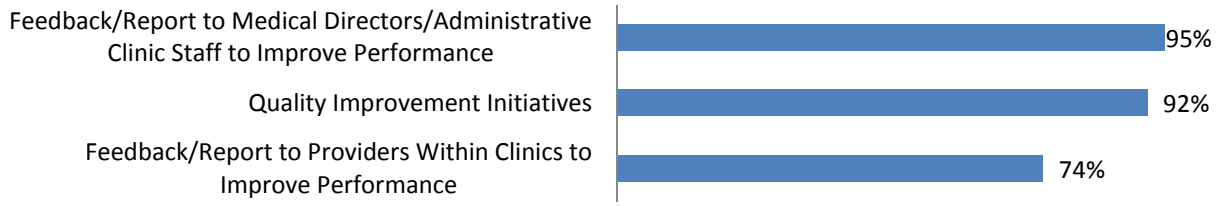


Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Performance Improvement

DPHs were asked in the UCLA interim survey if they incorporated Category 2 project results or information into quality improvement activities or performance improvement. Based on DPHs' responses, 95% of all Category 2 projects used project measures to provide feedback and reports to medical directors and/or administrative and clinic staff to improve performance (Exhibit 56). Over ninety percent of the projects used project measures to provide information for quality improvement initiatives. The project that were always used for quality improvement initiatives included primary care redesign, patient experience, cost containment, specialty care access/referral process redesign, patient care navigation program, patient flow in ED/rapid medical evaluation, medication management, care transitions, and real-time hospital acquired infections system. The remaining projects were less frequently used for this purpose.

Exhibit 56: The Proportion of Category 2 Projects that Used Project Measures for Quality Improvement Initiatives and Feedback



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 2 projects selected by DPHs (n=66). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

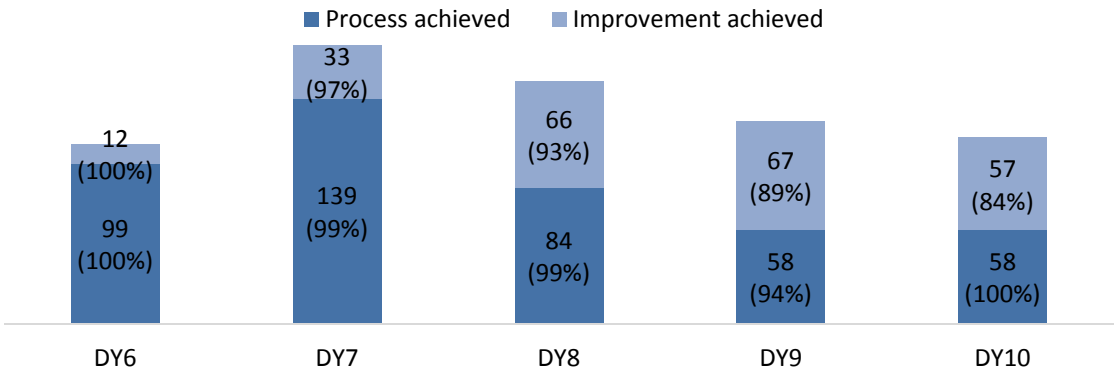
Outcomes

Project Milestones

According to DPH annual reports in DY 6-9 and second semi-annual reports in DY 10, as of the date of this report DPHs achieved at least 91% of Category 2 project milestone in all demonstration years, including 100% in DY 6 (111 of 111), 98% in DY 7 (172 of 175), 96% in DY 8 (150 of 156), 91% in DY 9 (125 of 137), and 91% in DY 10 (115 of 126). An additional 22 milestones were partially achieved during DSRIP and nine were not achieved. The proportion of improvement milestones increased during DSRIP, from just 11% of all Category 2 milestones in DY 6 to 50% in DY 10 (Exhibit 57). The increase in milestones from DY 6 to DY 7 reflects DSRIP's overall program design, with Category 2 primarily focusing on investments in new and

innovative models of care delivery. The patterns also reflect an intentional focus on more changing care delivery process projects in DY 6 and 7 and shifting to assessing actual improvements due to implementation of those projects in the later years as projects matured.

Exhibit 57: Number of Milestones Achieved (Percent Achieved), by Process or Improvement Designation and Demonstration Year



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 6-9 and second semi-annual reports from DY 10.
Note: Numbers in parentheses indicate the percentage of process and improvement milestones fully achieved in each demonstration year, based on an achievement value of 1 in DPH reports.

Anticipated Effect of Category 2 Projects Based on Existing Literature

Most of the models of care included in Category 2 projects have been tested in a variety of care delivery systems and have been found to be effective. These models have the potential to improve quality, patient satisfaction, and health outcomes. Participating DPHs implemented many innovative care models through their selected DSRIP projects, most frequently including medical home, chronic care management, primary care redesign, physical and behavioral health care integration, and patient experience. This section describes the existing evidence for anticipated outcomes of Category 2 projects.

The medical home projects were similar to the PCMH model of care delivery that focuses on physicians-directed and team-based method of care delivery, provides integrated whole patient care through coordinating among providers, delivers safe and high quality care, and improves access to patients using alternative strategies.(34, 35) PCMH care delivery model and principles have been rapidly adopted across the U.S.(36) The National Committee on Quality Assurance (NCQA) is the leading organization recognizing providers as PCMH based on six standards: patient-centered access, team-based care, population health management, care management and support, care coordination and care transitions, and the use of performance measurement and quality improvement.(37)

Evidence on the impact of various PCMH principles is emerging. In general, the PCMH model has been associated with improved patient satisfaction, reduced staff burnout, increased performance on quality measures and preventive screenings, increased use of tobacco screenings and assessments, reduced emergency service use and hospitalizations, fewer visits to specialists, and increased rates of primary care use.(38-40) The medical home model has been found to be effective in improving glycated hemoglobin (HbA1c), which measures blood glucose levels over a period of time, for patients with poor diabetes control.(41, 42) However, the evidence regarding its impact on cost containment is mixed, with some studies finding that medical homes can be cost-effective over the long term(41) and others finding no evidence of cost savings.(43) Assessing and comparing outcomes associated with2 PCMH has been challenging given the many definitions, designs and varied implementations of the model.(43)

Seven DPHs selected chronic care management projects, which are generally designed to promote care coordination, a proactive approach to care delivery, and patient empowerment and engagement through staff training. For example, the Chronic Care Model uses evidence-based clinical protocols and clinical information systems, health coaching and self-management support, and coordination with other providers. A 2013 meta-analysis found that elements of the Chronic Care Model were associated with improved HbA1c levels, blood pressure, cholesterol, weight, and psychosocial outcomes.(44) For example, institutionalizing the Chronic Care Model through leadership support led to HbA1c reductions of 1% or more. The same study found that individuals who received care through chronic care management programs had statistically significant changes in mean HbA1c levels, blood pressure, LDL cholesterol, and also experienced higher patient satisfaction.(44)

The DPH that implemented primary care redesign projects sought to reduce cycle time and no-show rates, which are sources of health care system inefficiencies that can lead to low patient satisfaction and reduce access to care.(45) Patient no-shows can disrupt the continuity of care for patients in need of follow-up appointments.(45) Various interventions such as telephone reminders and patient-centered scheduling have been shown to significantly reduce no-show rates.(46) A multi-stage intervention in one delivery system resulted in a decrease in the rate of no-shows among previously no-show patients from 30% to 18%.(45)

Another Category 2 project included implementing bundles of care for chronic conditions such as type 2 diabetes and chronic heart failure. Bundles of care (such as controlling blood pressure, assessing tobacco use, controlling HbA1c and cholesterol) have been found to improve quality of care. One intervention found that using a nine-item bundle of care reduced rates of heart attack, stroke and retinopathy.(47)

Seven DPHs focused on behavioral health integration through coordinated care efforts that have previously been associated with improved health outcomes. Providing comprehensive and integrated care is the emerging standard of care(48) because primary care clinicians have a unique opportunity to recognize and treat behavioral health problems as the patient's first point of contact with the health care system.(49) Additionally, behavioral health problems are common among people living with multiple chronic physical health conditions and can significantly affect physical health.(50) Behavioral care integration through efforts such as including behavioral health providers in primary care settings, using a shared medical and behavioral electronic health record, co-locating behavioral health providers in the same offices, and warm-hand off of patients from physical to behavioral health, can improve access and outcomes for patients with depression(51, 52) or improve the quality of treatment for mental health conditions.(53) One study examined the effectiveness of improving access to mental health care in a primary care clinic and found that more people were screened for depression, and those who screened positive received more rapid and higher-quality treatment.(54)

Seven DPHs also implemented projects to improve patient experience of care, which has been associated with improved adherence and engagement and resulted in better health care processes and patient outcomes.(55) One study found that individuals with HIV who felt that their provider knew them "as a person" were more likely to receive appropriate treatment, more likely to adhere to treatment, had fewer missed appointments, and reported lower levels of social stress.(56)

Care transition projects, implemented by five DPHs, focus on smooth transition of care from inpatient to outpatient settings. Studies have shown that care transition programs reached high levels of patient satisfaction and significantly improved participants' confidence with self-care.(57) Further, program evaluations have demonstrated a reduction in readmissions and been associated with cost savings.(57-61)

Specialty care access/referral process redesign programs, selected by four DPHs, have been associated with increased efficiencies and capacity and improved referral systems, allowing patients to receive needed specialty care in a timely manner. Studies have shown that these types of programs allow primary physicians to better communicate with specialists about patients, which can lead to improved continuity of care, access to specialists, convenience, and information transfer.(62)

Four DPHs implemented medication management programs with the aim of managing patients' medication use across the DPH systems in order to reduce medication errors and adverse effects. Studies have shown that patients receiving medication management services experienced improved clinical outcomes and lower total health expenditures.(63, 64)

Three DPHs implemented process improvement projects to improve efficiencies and patient experience, and reduce waste and redundancies. One recent study utilizing process improvement methodology showed that surgery patients can benefit from an improved, streamlined process with significant reduction in wait time and reduced cancellations.(65)

Two DPHs implemented patient care navigation expansion programs. The objective of this type of program was to provide assistance to patients in need of coordinated care navigation for necessary health care services. Patient navigation programs have been associated with a moderate benefit in improving timely cancer care, especially among those at higher risk for being lost to follow-up(66) Patient navigation interventions among minority patients with public health insurance have generated increased income to the health care institution, mainly through increased screening rates.(67)

Two DPHs implemented programs to improve patient flow in the ED/Rapid Medical Evaluation, which aim to reduce wait times in the ED so patients can receive care in a timely manner. Studies have demonstrated that implementation of such improvements to the ED resulted in shorter wait times, shorter length of stay, and fewer patients leaving without being seen, as well as higher patient satisfaction.(68, 69)

Two DPHS implemented palliative care programs to provide "dignified and culturally appropriate" end-of-life care that prioritizes pain control and respects social and spiritual care and patient/family choices. Palliative care for patients with advanced disease can result in lower costs of care and less utilization of intensive care compared to similar patients receiving usual care.(70) A recent meta-review and review of the literature found a clear pattern of cost-savings associated with inpatient palliative care programs.(71, 72)

Two DPHS implemented real-time hospital-acquired infections (HAI) systems to prevent HAIs, which are considered to be one of the most serious patient safety issues in today's healthcare environment. Infection control practices have been shown to decrease HAIs and hospital costs. A study that evaluated the outcomes associated with a global environmental cleaning program found that the hospital avoided an estimated 13 deaths and over $5 million in costs during a 1-year period.(73)

One DPH implemented a redesign for cost containment project, which was designed to calculate costs of each DSRIP initiative and produce documents to support milestone reporting. No compelling evidence was found in the literature that demonstrated the efficacy of these initiatives.

Trends in Selected Improvement Milestones

Improvement milestones with numerical and quantifiable values in DY 9 annual reports and DY 10 second semi-annual reports were examined to assess the level of change from the DPH-selected baseline period and annual target values. A detailed accounting of milestones for which there were sufficient data to measure achievement relative to annual targets is in Appendix D: Quantitative Improvement Measure Achievement, Categories 1-2, Exhibit 149 and Exhibit 150. Cost containment and process improvement projects did not have any numerical metrics.

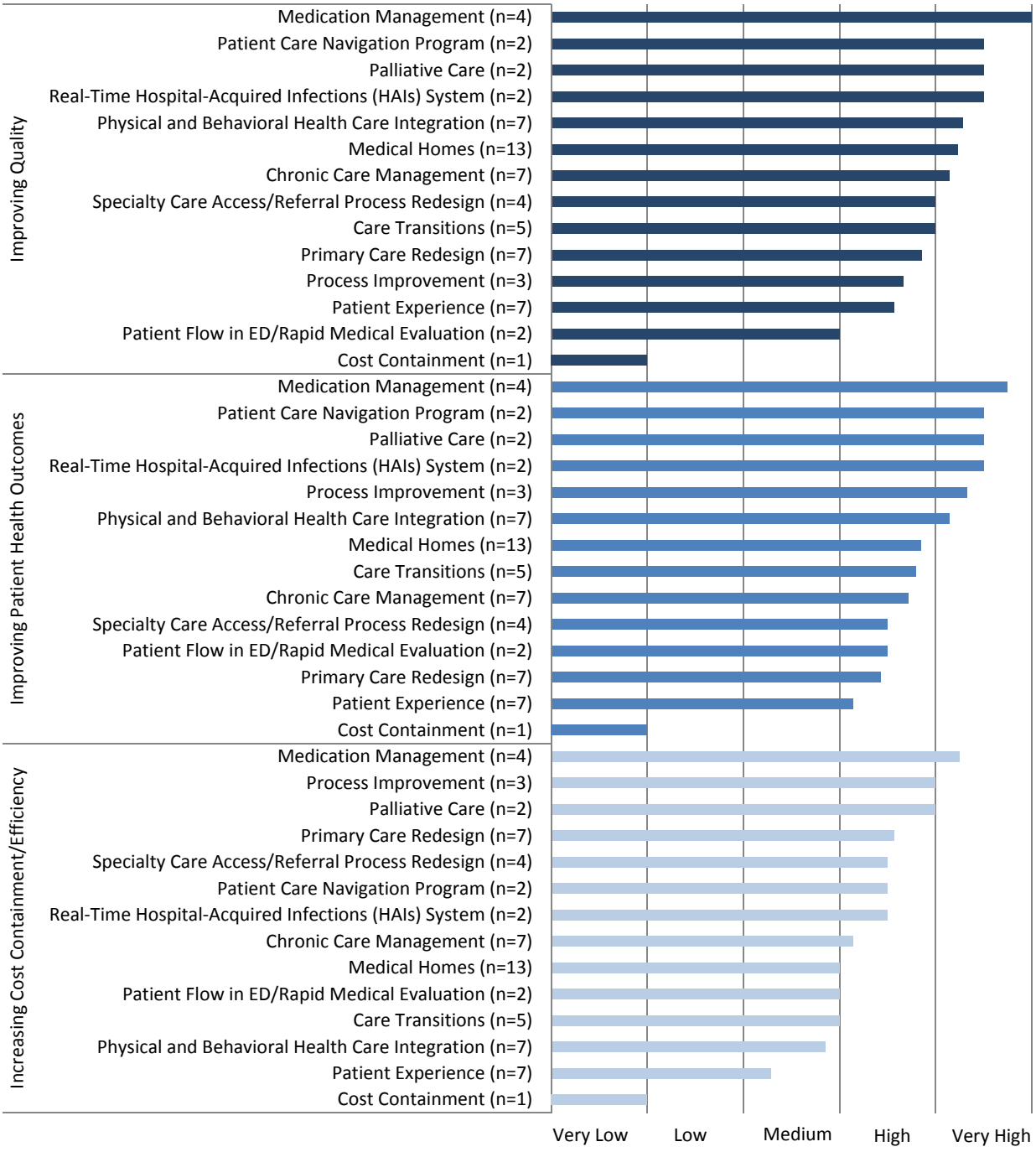
Most milestones exceeded their annual targets in DY 9 (85%) and DY 10 (71%). The amount by which DPHs exceeded their annual targets varied greatly, ranging from 1% to 1,457% in DY 9 and 2% to 2,666% in DY10. The largest value reported was by San Joaquin, which set its target to assign 750 patients to medical homes in DY 9 but ultimately assigned 11,677 patients that year. San Francisco set a target to assign 50 seniors and persons with disabilities to medical homes by DY 10 and managed to assign 1,383 individuals. Over 71% of milestones in DY 9 and 60% in DY 10 were exceeded by double-digits. In DY 9 and DY 10, the widest range was found in the medical home project's milestone for number of patients assigned to medical homes. DPHs were more likely to exceed their targets, and exceeded them by larger margins, in DY 9 than DY 10. This may be an indication of diminishing returns as continuous improvements became more difficult after the success of previous years.

Perceived Impact on Triple Aim

In the UCLA interim survey, DPHs were asked to report their perceptions of the impact of Category 2 projects on improving quality of care and patient health outcomes, as well as increasing cost containment or efficiencies (Exhibit 58). Medication management projects were rated as having the highest impact across all three aims. Conversely, the cost containment project was rated as having the lowest impact on all Triple Aims, although only one DPH implemented this project and its DY 8 and DY 9 milestones were not fully achieved. In general, DPHs reported that nearly all of the projects had a "high" or "very high" impact on quality of care and improving health outcomes. During follow-up interviews, most DPHs noted that there were not enough data to conclude that Category 2 projects had helped with cost containment or patient outcomes, particularly because while the investments were front-loaded, the realization of these outcomes would likely come in later years. However, some DPHs noted in their DY 9 annual reports that they had started to see changes in outcomes. San Francisco reported that patients enrolled in the complex care management project experienced a decrease in both hospital days and ED visits after enrollment in the program. San Francisco also reported that expanded use of chronic disease registries aided panel management of patients and improved preventive care, and integration of behavioral health into primary care improved care coordination and care experience. Contra Costa reported greater patient access through

empanelment, diabetes care medication management, and the roll-out of Screening, Brief Intervention, and Referral to Treatment (SBIRT) surveys to all clinics for behavioral health assessment.

Exhibit 58: Perceived Impact of Category 2 Projects on Triple Aim of Improving Quality, Patient Health Outcomes, and Increasing Cost containment/Efficiency

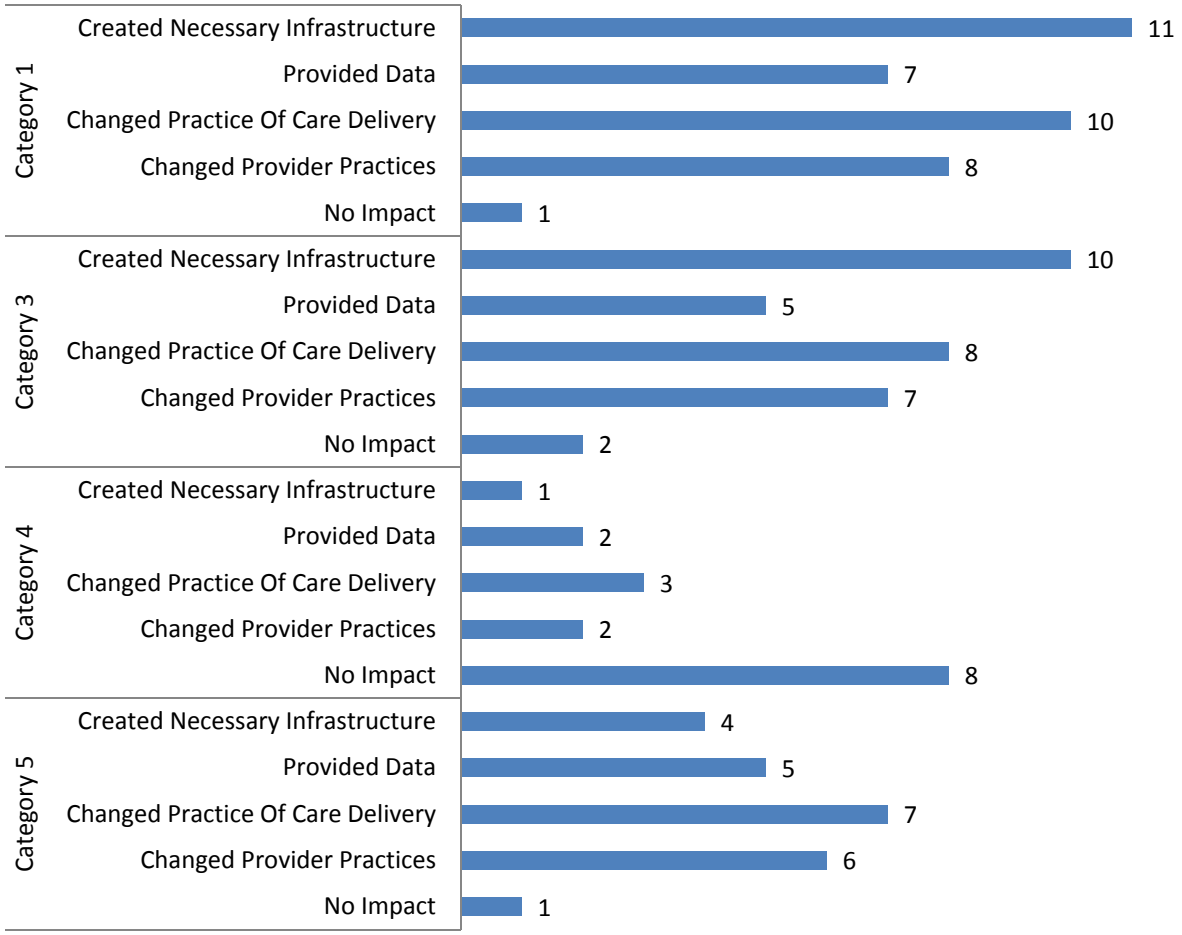


Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Perceived Impact of Category 2 Projects on Other DSRIP Categories

In the UCLA follow-up survey, DPHs were asked to consider the specific ways in which Category 2 projects impacted Categories 1-5. DPHs reported that Category 2 projects had the most impact on Categories 1 and 3 (Exhibit 59). The creation of necessary infrastructure and change of practice of care delivery were the most frequently cited impact of Category 2 projects on other categories. Eleven DPHs reported that Category 2 created necessary infrastructure for Category 1, and 10 DPHs said the same for Category 3. Changed provider practice was also mentioned as an important component of Category 2's impact on the other DSRIP categories, especially on Categories 1 and 3.

Exhibit 59: Type of Impact of Category 2 on Categories 1-5



Source: UCLA follow-up survey of designated public hospitals (DPHs).

In both DY 9 annual reports and UCLA follow-up interviews, DPHs reported that the synergy of projects in Categories 1 and 2 helped make important changes in the delivery of care. DSRIP Category 2 projects were described as impacting the delivery of care in several important ways, including helping to transform primary care delivery and design, building and reinforcing a culture of patient safety and performance improvement with more rigorous use of data, improving care coordination, leveraging technology to increase the management of population-based care, and shifting the ambulatory care environment to a patient-centered model. Alameda noted that the disease management registry and the medical homes projects bolstered the success of outreach projects and noted that the care transitions and ED flow projects were particularly impactful in improving care for the safety net population. During the care transitions project, Alameda developed relationships with community clinics and homeless shelters to improve care coordination and connect patients to primary care. UC Davis noted that the collection of REAL data helped to support PCMH and Meaningful Use efforts to identify and address health disparities and found that lessons learned about medication reconciliation in the inpatient setting were being applied to the outpatient setting in the medical homes.

Association of Category 2 with Category 3 Measures

UCLA used a difference-in-differences (DD) approach to compare the change in the rate of nine Category 3 measures between DPHs that implemented the medical home, chronic care management, and care transition projects and those that did not, over time (DY 8 to DY 10), using DY 8-9 annual reports and DY 10 second semi-annual reports. The nine Category 3 measures were selected because they were most likely to be impacted by implementation of the medical home, chronic care management, and care transition projects. Conversely, the three Category 2 projects were selected because they were most likely to exert a direct influence on the selected Category 3 measures, as described earlier in this chapter (see Anticipated Effect of Category 2 Projects Based on Existing Literature). Significant differences at $p<0.05$ are noted in Exhibit 60 and Exhibit 61.

Due to unavailability of patient-level data, the following analyses are not conclusive and do not account for important confounding issues such as other projects implemented simultaneously that may have influenced the Category 3 measures, lack of baseline data on the status of selected Category 2 projects in DPHs that elected not to implement them, and other patient and DPH characteristics.

The DD analyses of the association of medical home projects with Category 3 measures indicated an unfavorable difference in trends for CG-CAHPS measure of getting timely appointments, uncontrolled diabetes, influenza immunization, tobacco cessation, diabetes LDL and HbA1c control, and optimal diabetes care measures (data not shown). However, these

analyses were confounded by DPHs' efforts to apply for and obtain PCMH recognition from the National Committee for Quality Assurance. In the UCLA follow-up survey, DPHs reported whether they had received or applied for PCMH recognition. Of the 13 DPHs that participated in medical home projects, two had recognized clinics within their systems, two had submitted applications, and two planned to submit in the near future. Of the five non-participating DPHs, two had some clinics with PCMH recognition, and one planned to submit shortly. Furthermore, the DSRIP medical home projects varied among DPH and few projects were focused on comprehensive implementation of all principles of PCMH. Lack of a favorable findings most likely reflects this variation.

Exhibit 60 shows several significant differences in changes in selected Category 3 measures between DPHs that implemented and did not implement care transition projects. The results show significant DD values in favor of implementing DPHs for getting timely appointments (11.15%), influenza immunization (1.71%), smoking cessation rates (15.67%), reduction of uncontrolled diabetes rates (-0.1%) and an increase in LDL (7.15%) and HbA1c (5.2%) controls. In contrast, the DD values were more favorable for non-implementing DPHs that showed a greater increase in short-term diabetes complications (0.25%) and larger decline in optimal diabetes care composite rates (-4.73%) from DY 8 to DY 10.

Exhibit 60: Association of Category 3 Measures with Implementation of Care Transitions Projects

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY 8 to DY 10	Difference in differences
CG-CAHPS					
Getting Timely Appointments, Care, and Information					
Implemented	51.06%	54.03%	55.62%	4.55%	11.15%*
Did not implement	45.76%	39.06%	39.17%	-6.60%	
How Well Doctors Communicate With Patients					
Implemented	87.56%	87.34%	88.32%	0.76%	-2.37%
Did not implement	78.20%	72.59%	81.32%	3.12%	
Helpful, Courteous, and Respectful Office Staff					
Implemented	87.89%	88.56%	90.37%	2.47%	-1.96%
Did not implement	76.58%	73.15%	81.02%	4.43%	
Patients' Rating of the Doctor					
Implemented	74.38%	70.57%	76.07%	1.69%	5.40%
Did not implement	66.93%	59.74%	63.23%	-3.70%	

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY 8 to DY 10	Difference in differences
Shared Decision Making					
Implemented	62.34%	60.85%	62.48%	0.14%	1.64%
Did not implement	59.44%	61.56%	57.94%	-1.49%	
Diabetes, short-term complications					
Implemented	0.19%	0.36%	0.34%	0.16%	0.25%*
Did not implement	0.42%	0.35%	0.33%	-0.09%	
Uncontrolled diabetes					
Implemented	0.21%	0.28%	0.17%	-0.04%	-0.10%*
Did not implement	0.11%	0.16%	0.17%	0.06%	
Mammography screening					
Implemented	68.48%	69.08%	72.24%	3.77%	0.51%
Did not implement	62.70%	67.37%	65.96%	3.26%	
Influenza immunization					
Implemented	40.12%	44.81%	42.90%	2.79%	1.71%*
Did not implement	31.12%	35.82%	32.19%	1.08%	
Tobacco cessation					
Implemented	31.13%	25.21%	41.56%	10.44%	15.67%*
Did not implement	37.43%	36.95%	32.19%	-5.23%	
Diabetes: LDL control (<100mg/dl)					
Implemented	40.45%	42.29%	43.58%	3.14%	7.15%*
Did not implement	40.07%	42.26%	36.05%	-4.02%	
Diabetes: HbA1c control (<8%)					
Implemented	56.92%	58.18%	59.50%	2.58%	5.20%*
Did not implement	46.96%	48.82%	44.34%	-2.62%	
Optimal diabetes care composite					
Implemented	21.42%	20.72%	19.54%	-1.88%	-4.73%*
Did not implement	6.44%	9.28%	9.28%	2.85%	

*$p < 0.05$

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9 and second semi-annual report from DY 10.

Exhibit 61 shows significant differences in changes in selected Category 3 measures between DPHs that implemented and did not implement chronic care management projects. The results show significant DD values in favor of implementing DPHs indicated by greater increase in smoking cessation rates (15.67%), influenza immunization (1.71%), LDL control (7.15%), and

HbA1c control (5.2%). However, implementing DPHs also showed increases in diabetes short-term complications and decreases in optimal diabetes care composite rates that were unfavorable compared to non-implementing DPHs.

Exhibit 61: Association of Category 3 Measures with Implementation of Chronic Care Management Projects

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY 8 to DY 10	Difference in differences
CG-CAHPS					
Getting Timely Appointments, Care, and Information					
Implemented	43.54%	43.42%	39.91%	-3.63%	-0.53%
Did not implement	49.97%	42.73%	46.88%	-3.10%	
How Well Doctors Communicate With Patients					
Implemented	79.49%	78.66%	80.93%	1.43%	-1.69%
Did not implement	81.98%	74.66%	85.10%	3.12%	
Helpful, Courteous, and Respectful Office Staff					
Implemented	78.41%	78.66%	80.37%	1.95%	-3.24%
Did not implement	80.96%	76.04%	86.15%	5.19%	
Patients' Rating of the Doctor					
Implemented	65.16%	65.71%	66.64%	1.48%	6.11%
Did not implement	71.89%	59.92%	67.26%	-4.63%	
Shared Decision Making					
Implemented	55.99%	56.44%	55.47%	-0.52%	0.84%
Did not implement	63.30%	64.28%	61.94%	-1.36%	
Diabetes, short-term complications					
Implemented	0.36%	0.32%	0.34%	-0.02%	0.04%
Did not implement	0.38%	0.40%	0.32%	-0.06%	
Uncontrolled diabetes					
Implemented	0.12%	0.14%	0.14%	0.01%	-0.06%
Did not implement	0.14%	0.25%	0.22%	0.07%	
Mammography screening					
Implemented	60.37%	67.91%	64.74%	4.37%	1.76%*
Did not implement	68.60%	68.12%	71.21%	2.61%	
Influenza immunization					
Implemented	25.88%	28.28%	30.80%	4.92%	6.07%*

	Achievement Rate				
	DY 8	DY 9	DY 10	Change from DY 8 to DY 10	Difference in differences
Did not implement	42.05%	48.64%	40.89%	-1.16%	
Tobacco cessation					
Implemented	50.07%	34.96%	28.95%	-21.13%	-34.99%*
Did not implement	27.03%	32.04%	40.89%	13.87%	
Diabetes: LDL control (<100mg/dl)					
Implemented	37.49%	40.18%	35.86%	-1.63%	2.37%*
Did not implement	44.84%	45.59%	40.83%	-4.00%	
Diabetes: HbA1c control (<8%)					
Implemented	44.94%	48.15%	44.59%	-0.35%	2.12%*
Did not implement	55.52%	54.73%	53.04%	-2.48%	
Optimal diabetes care composite					
Implemented	5%	6%	8%	2.95%	1.75%*
Did not implement	15%	18%	16%	1.20%	

*p < 0.05

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9 and second semi-annual report from DY 10.

Despite the limitations of these analyses, the findings are consistent with the implementation of projects focused on improving care transition and management projects. The mechanism by which chronic care management projects could have led to the desired results include establishment of patient-centered goals, monitoring of patient progress, identifying delayed or foregone care, and training patients on self-management.(42) The impact of care transition projects may have been due to patient engagement in self-care and provider engagement in better management of at-risk patients.(59, 60)

Challenges and Lessons Learned

In their DY 9 annual reports, DPHs reported challenges in obtaining data, achieving milestones, and improving sustainability for Category 2 projects. Nevertheless, these challenges were resolved through a variety of creative solutions. For example, difficulties in tracking data from multiple systems, lack of an automated system for data abstraction, and a lack of timely/real-time data were resolved by developing EHRs that interfaced with multiple systems, training staff to document data consistently, developing record-keeping protocols and using real-time data tracking tools.

Challenges to achieving milestones and sustainability beyond DSRIP included the existence of competing priorities in primary care clinics and conflicts with productivity goals; staffing difficulties such as recruitment, retention, training, and buy-in; and involving and engaging patients. The challenges were resolved by hiring more mid-level practitioners and other staff, utilizing LEAN projects to streamline processes, implementing staff engagement interventions, increasing staff training forming workgroups to establish standards and definitions, focusing on employee satisfaction and providing cues, and using existing data sources to monitor compliance.

DPHs also reported during follow-up interviews that it was challenging to help with needs that existed outside of the health care system such as housing, substance abuse, and access to healthy foods. UC Davis reported that the care transitions project targeted frequent emergency department utilizers, which proved to be very challenging due to complex health care and psychosocial needs. They also reported that case managers were overtaxed and measuring success was challenging as patients dropped in and out of the system.

DPHs with residency programs reported challenges in balancing the needs of improvement efforts with training new primary care providers and residents. Kern found it challenging to increase productivity in the residency-based clinics for the primary care redesign project and eventually worked to modify their plan to exclude primary care residents from the cycle time numbers. UC San Francisco reported that the constant rotation of attending physicians made it challenging to coordinate care in the care transitions project. To confront this challenge, UC San Francisco created a system in which nurses called patients who had been discharged to connect them with their primary care doctor on the outpatient side or the team on the inpatient side, as needed.

County-owned systems also reported challenges in working with a civil service workforce. San Joaquin reported that increasing access to care was challenging in an environment in which schedules were less flexible. Larger systems such as Los Angeles reported that expanding projects to all of the system's hospitals and clinics proved to be challenging. For example, disseminating the chronic care management model to more than 25 primary care clinics proved to be difficult given the clinics' variable documentation practices.

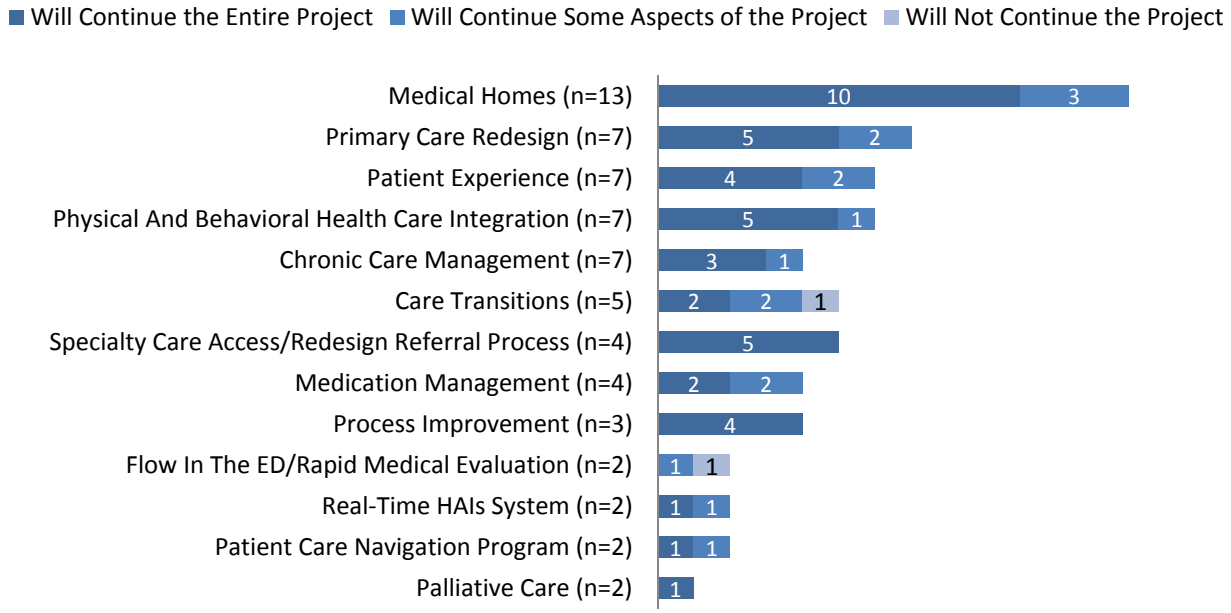
Sustainability of Category 2 Projects

In the UCLA follow-up interviews and DY 9 reports, DPHs discussed facilitators to sustaining Category 2 projects, including continued pressure from regulators and payers to report data and provide higher value care, the integration of Category 2 projects into the organizational strategy plan and agenda, and high levels of motivation from results experienced during DSRIP.

DPHs described using myriad strategies to sustaining Category 2 projects in the DY 9 annual reports. Alameda described conducting cost-effectiveness analyses for Category 2 projects to assess the business case for continuing the programs. Other DPHs also looked for ways to incorporate Category 2 projects into their organizational strategies or looked for outside funding. Ventura received a grant from the California HealthCare Foundation to further expand and sustain its palliative care program and joined a collaborative network of palliative care programs to share best practices. Four DPHs reported in the UCLA follow-up survey that their affiliated clinics received NCQA recognition as PCMHs. An additional three DPHs reported submitting applications for recognition, and two DPHs reported planning to submit applications.

In the UCLA follow-up survey, DPHs indicated their intentions to sustain Category 2 projects either entirely or partially after DSRIP ends. Ten of the 13 DPHs that implemented medical home projects planned to continue them entirely and the remaining three DPHs planned to continue them partially (Exhibit 62). Similarly, the majority of DPHs that implemented primary care redesign, patient experience, physical and behavioral health care integration, chronic care management, specialty care access/redesign referral process, and process improvement projects planned to continue them entirely or partially. Only one DPH each reported plans not to continue their care transition and ED flow projects.

Exhibit 62: Continuation of Category 2 Projects after DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Notes: Redesign for cost containment not included because only one DPH implemented the project and that DPH did not respond to the follow-up survey. Total may not add up to the number of DPHs that selected a specific Category 2 project due to question non-response. HAIs = hospital-acquired infections.

In the UCLA follow-up survey, DPHs were asked to explain reasons that Category 2 projects would be sustained after DSRIP. The most frequently cited reasons for sustainability included ongoing support from leadership (cited 46 times by DPHs across all Category 2 projects), compatibility with organization's priorities (45), the realization of benefits (40), and the establishment of infrastructure (39; Exhibit 63). The least frequently cited reasons for sustainability included operational funds available after DSRIP (30) and projects related to needs for other initiatives or programs (30). Category 2 projects for which multiple motivators were most frequently cited included medical homes and primary care redesign. Projects with the fewest cited motivators were patient care navigation and palliative care.

Three DPHs also identified a limited number of barriers to sustainability, including no or insufficient funding after DSRIP to support personnel or resources (one DPH), no or not fully established infrastructure (one DPH), and the burden of data collection (one DPH). During UCLA follow-up interviews, DPHs reported that one of the main challenges to sustaining Category 2 projects was whether funding was available to sustain the projects. For example, San Francisco noted that statewide changes in reimbursement would be needed to sustain the behavioral and physical health integration project. Similarly, UC Davis reported that many projects within DSRIP depended on moving to a bundled global payments or capitated system that allowed

more flexibility with patient care. These alternative payments are made to the provider on the basis of expected costs for clinically defined episodes that may involve several practitioner types, settings of care, and services or procedures over time. When designed to improve value, bundled payment usually includes clear quality metrics focused on desired clinical outcomes that providers must achieve to maximize their payment.

Exhibit 63: Most Frequently Cited Reasons for Continuing Category 2 Projects after DSRIP

	Compatible With Organization's Priorities	Operational Funding Available After DSRIP	Fully Embedded Through Policies	Benefits Are Realized	Needed For Another Initiative/ Program	Ongoing Leadership Support	Infrastructure Established	Data Collection Established
Medical Homes	10	7	8	9	7	11	11	10
Chronic Care Management	3	2	2	3	1	3	2	2
Primary Care Redesign	6	2	5	5	5	6	5	4
Patient Experience	4	2	3	3	3	4	4	4
Physical and Behavioral Health Care Integration	5	2	2	4	1	5	5	4
Specialty Care Access/Redesign Referral Process	4	4	3	4	3	4	2	3
Patient Care Navigation Program	1	1	0	0	1	1	0	0
Process Improvement	3	3	3	3	3	3	3	3
Medication Management	2	2	2	2	2	2	2	2
Palliative Care	1	1	1	1	1	1	1	0
Care Transitions	3	2	3	3	1	3	3	2
Real-Time Hospital-Acquired Infections (HAIs) System	1	1	1	1	1	1	1	1
Most Frequently Cited Reasons	**45**	**30**	**33**	**40**	**30**	**46**	**39**	**35**

Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: The total indicates the number of times DPHs cited the given reason across all Category 2 measures.

Summary

DPHs implemented a range of innovative models of care as part of their DSRIP programs. A total of 66 Category 2 projects were implemented across the 17 DPHs. Fifteen DPHs implemented more than the required two projects, and the greatest number of Category 2 projects implemented by a single DPH was six. The most frequently selected projects included medical homes (13 DPHs), primary care redesign, chronic care management, physical and behavioral health care integration, and patient experience improvement.

About half of the Category 2 projects in participating DPHs were ongoing and a third of the projects were planned prior to DSRIP. However, most of these projects were either pilot programs and/or had not been implemented comprehensively or systemwide. For instance, three of the seven DPHs implementing primary care redesign projects expanded ongoing or planned efforts to additional clinics or departments as a result of DSRIP. Three of the DPHs implementing the primary care redesign project noted that they altered the goals of their prior work as a result of DSRIP. Most projects (92%) were selected because of their consistency with organizational goals, synergy with existing projects and availability of champions. DPHs also reported the reasons that other Category 2 projects had not been planned prior to DSRIP, led by lack of funding (53%), HIT (47%), and staff (47%).

To achieve success, DPHs dedicated high levels of planning and resources, in some cases undertaking considerable levels of reorganization of care processes and personnel. Most projects received "high" to "very high" overall difficulty ratings except for the chronic care management and real-time HAIs systems projects. DPHs reported that DSRIP provided essential resources needed to launch and accelerate these projects, including funding, information systems, and needed staff.

DPHs reported the widespread adoption or adaptation of existing, evidence-based models. Over 40% of DPHs adopted an existing evidence-based model of care with moderate modification and more than 20% of DPHs adopted a model with extensive modifications. Another 20% of DPHs developed new interventions for Category 2 projects.

DPHs invested extensively in staff training for the implementation of Category 2 projects, conducting training on strategies such as Lean and Six Sigma for 91% of projects. Staff received training during implementation in 83% of Category 2 projects and prior to implementation in 73% of projects. DPHs reported using project data to provide feedback and reports to medical directors and/or administrative and clinic staff to improve performance in 95% of Category 2 projects. Over 90% of the projects used these data to provide information for quality improvement initiatives. The projects that were always incorporated into quality improvement

initiatives included primary care redesign, patient experience, cost containment, specialty care access/referral process redesign, patient care navigation program, patient flow in ED/rapid medical evaluation, medication management, care transitions, and real-time hospital acquired infections system. These choices are likely to reflect the critical care redesign interventions for quality improvement and depended on DPHs' performance in each area prior to DSRIP.

Based on DPH annual reports for DY 6-9 and second semi-annual reports for DY 10 reports, DPHs achieved at least 91% of Category 2 project milestones in all demonstration years, including 100% in DY 6 (111 of 111), 98% in DY 7 (172 of 175), 96% in DY 8 (150 of 156), 91% in DY 9 (125 of 137), and 91% in DY 10 (115 of 126). The proportion of improvement milestones increased during DSRIP, from just 11% of all Category 2 milestones in DY 6 to 50% in DY 10. Analysis of improvement milestones with numerical and quantifiable values showed that most DPHs exceeded their annual targets, including over 93% in DY 9 and over 80% in DY 10. Over 71% of milestones in DY 9 and 60% in DY 10 were exceeded by double-digits.

Almost all of the projects in Category 2 were perceived to have a high or very high impact on improving quality of care and patient health outcomes. Most projects were reported to have a medium to high impact on increasing cost containment and efficiency. Most DPHs cautioned that it was too early to gauge long-term impacts in these three areas. The creation of necessary infrastructure and change of practice of care delivery were the most frequently cited impact of Category 2 projects on other categories. Eleven DPHs reported that Category 2 created necessary infrastructure for Category 1, and 10 DPHs said the same for Category 3. Changed provider practice was also mentioned as an important component of Category 2's impact on the other DSRIP categories, especially on Categories 1 and 3.

Difference-in-differences analyses showed significant differences in favor of DPHs that implemented care transition projects for getting timely appointments (11.15%), influenza immunization (1.71%), smoking cessation rates (15.67%), reduction of uncontrolled diabetes rates (-0.1%) and an increase in LDL (7.15%) and HbA1c (5.2%) controls. DPHs implementing chronic care management projects also had significantly favorable difference-in-differences values for greater increase in smoking cessation rates (15.67%), influenza immunization (1.71%), LDL control (7.15%), and HbA1c control (5.2%).

In their DY 9 annual reports, DPHs reported many challenges in obtaining data, achieving milestones, and improving sustainability for Category 2 projects. These challenges were resolved through a variety of creative solutions. For example, difficulties in tracking data from multiple systems, lack of an automated system for data abstraction, and a lack of timely/real-time data were resolved by developing EHRs that interfaced with multiple systems, training

staff to document data consistently, developing record-keeping protocols, and using real-time data tracking tools.

Challenges to achieving milestones and sustainability beyond DSRIP included the existence of competing priorities in primary care clinics and conflicts with productivity goals; staffing difficulties, including recruitment, retention, training, and provider and staff buy-in; and involving and engaging patients. The challenges were resolved by hiring more mid-level practitioners and other staff, utilizing LEAN projects to streamline processes, implementing staff engagement interventions, increasing staff training forming workgroups to establish standards and definitions, focusing on employee satisfaction and providing cues, and using existing data sources to monitor compliance.

DPHs indicated their intentions to sustain Category 2 projects either entirely or partially after DSRIP ends. Ten of the 13 DPHs that implemented medical home projects planned to continue them entirely and the remaining three DPHs planned to continue them partially. Similarly, the majority of DPHs that implemented primary care redesign, patient experience, physical and behavioral health care integration, chronic care management, specialty care access/redesign referral process, and process improvement projects planned to continue them entirely or partially. Only one DPH reported that it would not continue its care transition project and another indicated it would not continue its ED flow project. The most frequently cited reasons for sustainability included ongoing support from leadership (46), compatibility with organization's priorities (45), the realization of benefits (40), and the establishment of infrastructure (39). The least frequently cited reasons for sustainability included operational funds available after DSRIP (30) and projects related to needs for other initiatives or programs (30). Category 2 projects for which multiple motivators were most frequently cited included medical homes and redesign primary care. Measures with the fewest cited motivators were patient care navigation and palliative care.

Category 3: Population-Focused Improvement

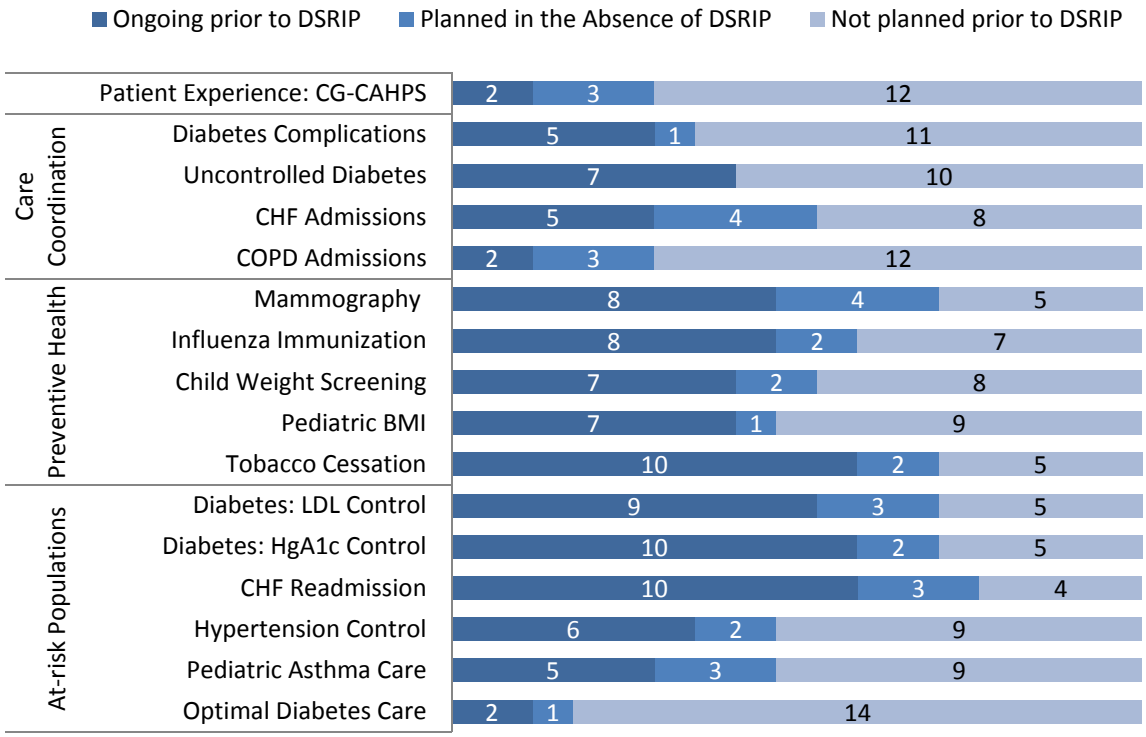
Category 3 measures were focused on tracking population-focused improvements in California DPHs. DPHs were required to track and report 16 measures in four different areas of patient care including patient or caregiver experience, care coordination, preventive health, and at-risk populations. Payment for this category was tied only to reporting these measures and DPHs were not held to specific performance standards.

Status of Category 3 Measures Prior to DSRIP

Exhibit 64 indicates the number of DPHs that were tracking Category 3 measures prior to DSRIP, had planned to do so but had not begun tracking these measures, or were not planning such activities. In the UCLA interim survey, all DPHs reported that they had gathered some Category 3 measures prior to DSRIP. However, these measures were either not tracked systemwide or differed in some respect from what was tracked under DSRIP.

Almost all of the DPHs had to introduce new measures as a result of DSRIP. During follow-up interviews, nine DPHs reported collecting similar measures with different specifications or somewhat different measures prior to DSRIP. DPHs had to expand their data collection efforts to capture measures based on DSRIP specifications. If DPHs had plans to track a given measure prior to DSRIP, their timeline was frequently uncertain. Some measures such as "chronic obstructive pulmonary disease" and "optimal diabetes care composite" were infrequently planned prior to DSRIP.

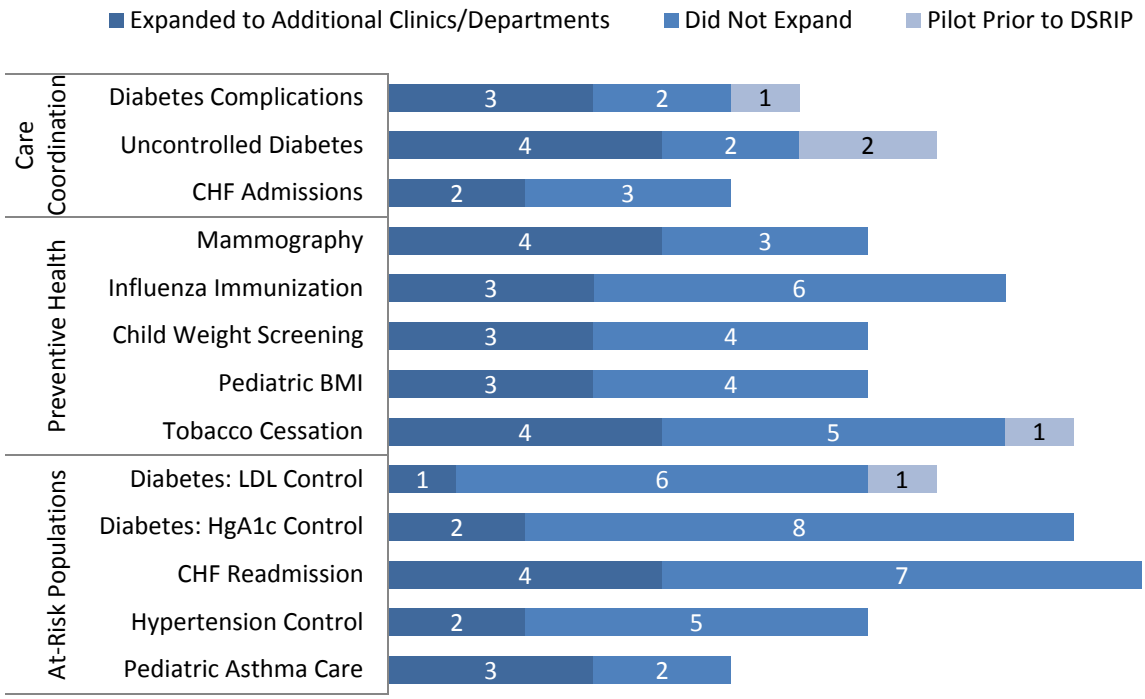
Exhibit 64: Status of Category 3 Measures in DPHs Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

In the UCLA follow-up survey DPHs reported specifics of how collection of Category 3 measures differed prior to DSRIP. Exhibit 65 shows that as many as four DPHs expanded specific measures (uncontrolled diabetes, tobacco cessation, mammography screening, and 30-day CHF readmission rates) to other clinics or departments within the organization. For some measures including diabetes HbA1c control (<8%), most DPHs did not expand the measure elsewhere in the organization. Three measures (uncontrolled diabetes, tobacco cessation, and diabetes LDL control (<100 mg/dl) were pilot projects prior to DSRIP implementation.

Exhibit 65: Number of DPHs That Expanded Collection of Category 3 Measures to Other Clinics or Departments



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Totals do not add up to 17 DPHs due to survey (Alameda) and item non-response. CHF = congestive heart failure. BMI = body mass index. The CG-CAHPS, COPD, and optimal diabetes care measures are not included because of item non-response by the two DPHs that indicated previous collection of data on these measures.

DPHs were also asked if the goals of previous measurements differed from DSRIP and to describe how they differed. Some reported no change. Others reported expansion or standardizing measurement organization-wide, setting targets, focusing on better documentation and requiring reports for performance evaluation, and using measures to provide feedback to providers. Others provided detail on changes (Exhibit 66).

Exhibit 66: Examples of Changes in Goals of Category 3 Measures during DSRIP

Measure	Definition
CG-CAHPS	During DSRIP, increased focus on patient experience by changing culture and developing new incentives and workflows, using CGCAPHS as key outcome measure.
Diabetes Complications	Now include navigator and care manager to avoid hospitalization.

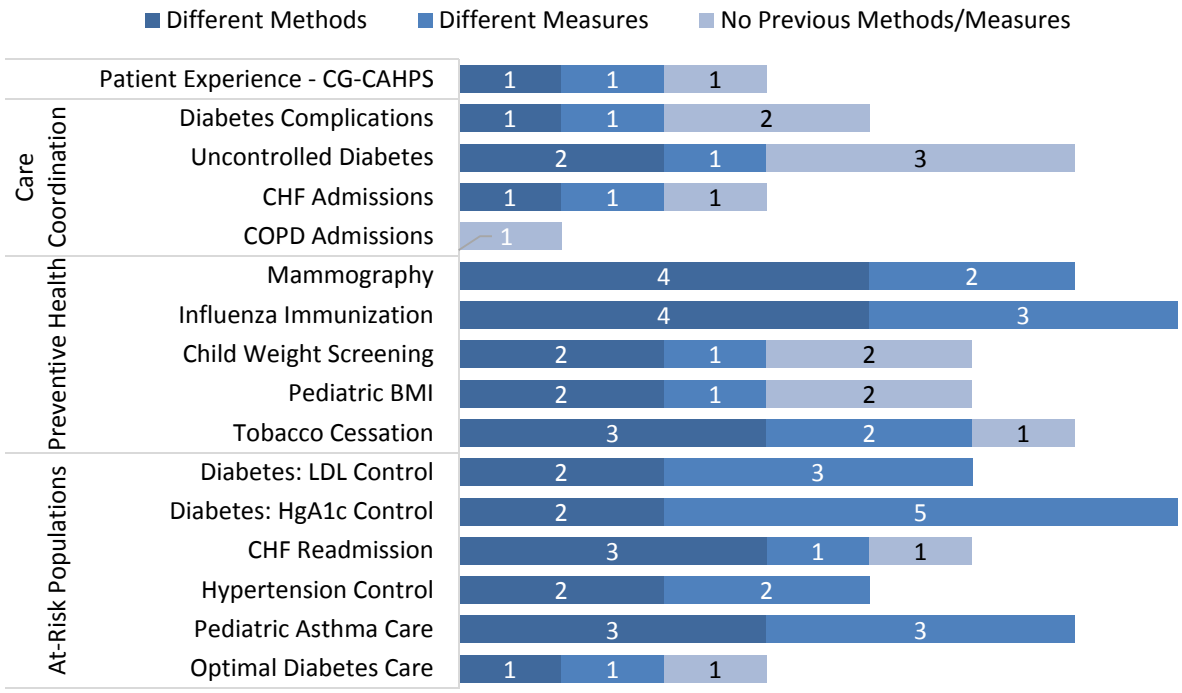
Measure	Definition
Uncontrolled Diabetes	More management of diabetes to avoid diabetes related hospitalization
Mammography and Influenza Immunization	Prior work provided data only for managed care patients and did not utilize the entire care team, standardized orders, or automated patient outreach.
Pediatric BMI	Limited clinic and population prior to DSRIP and lacked community resources for healthy eating for at-risk children.
Tobacco Cessation	DSRIP work included an electronic order to connect patients to the California Quit Line through the electronic health record and expansion of educational support for tobacco cessation provided by a certified smoking cessation nurse specialist. Practices also get a monthly report on counseling efforts by physician.
Diabetes: LDL Control and Hypertension Control	Did not previously embed pharmacists in primary care to address poorly controlled blood pressure and give providers monthly report of the diabetes patients with LDL >100 and those prescribed a statin or percentage of patients with BP>140/90. Also lacked an educational class to achieve blood pressure control in multiple locations.
CHF and CHF Readmission	Efforts prior to DSRIP reduced readmissions by 2013. Continued effort is a comprehensive approach to caring for heart failure patients with strong collaboration among hospital and primary care providers.
	Had not expanded outreach to 30 days of follow up. Was providing enhanced discharge planning and education instead.

Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. BMI = body mass index.

DPHs reported on whether they changed measurement methods during DSRIP. All measurement methods were changed by at least one DPH (Exhibit 67). The most frequent changes were for diabetes HbA1c, influenza immunization, mammography screening, tobacco cessation, and pediatric asthma measurement methods.

Some DPHs described how methods differed, including using different denominators or populations of patients, improving data collection process and accuracy in the absence of EHR, changing from claims-based methods, extracting data from EHR using DSRIP specification, and ensuring consistency of measurement methods across the system.

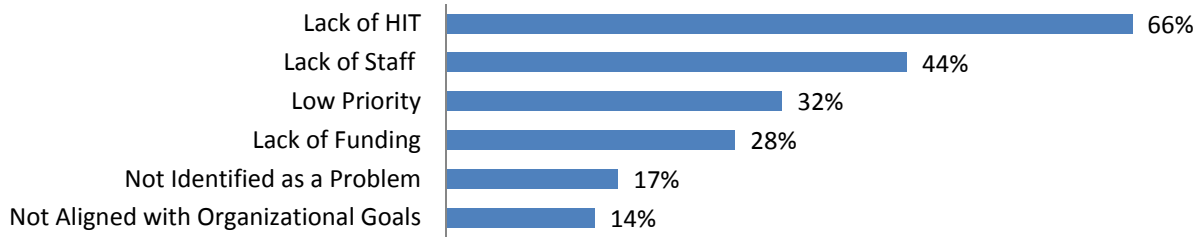
Exhibit 67: Number of DPHs That Used Different Methods or Measures Prior to Collection of Category 3 Measures



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Totals do not add up to 17 DPHs due to survey (Alameda) and item non-response. CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

In the UCLA interim survey, DPHs reported the reasons for not tracking Category 3 measures prior to DSRIP. The most frequently cited reasons (66%) were lack of sufficient HIT, followed by lack of staff (44%), and perceiving the measures as a low priority (32%; Exhibit 68).

Exhibit 68: Reasons Category 3 Measures Were Not Gathered Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).

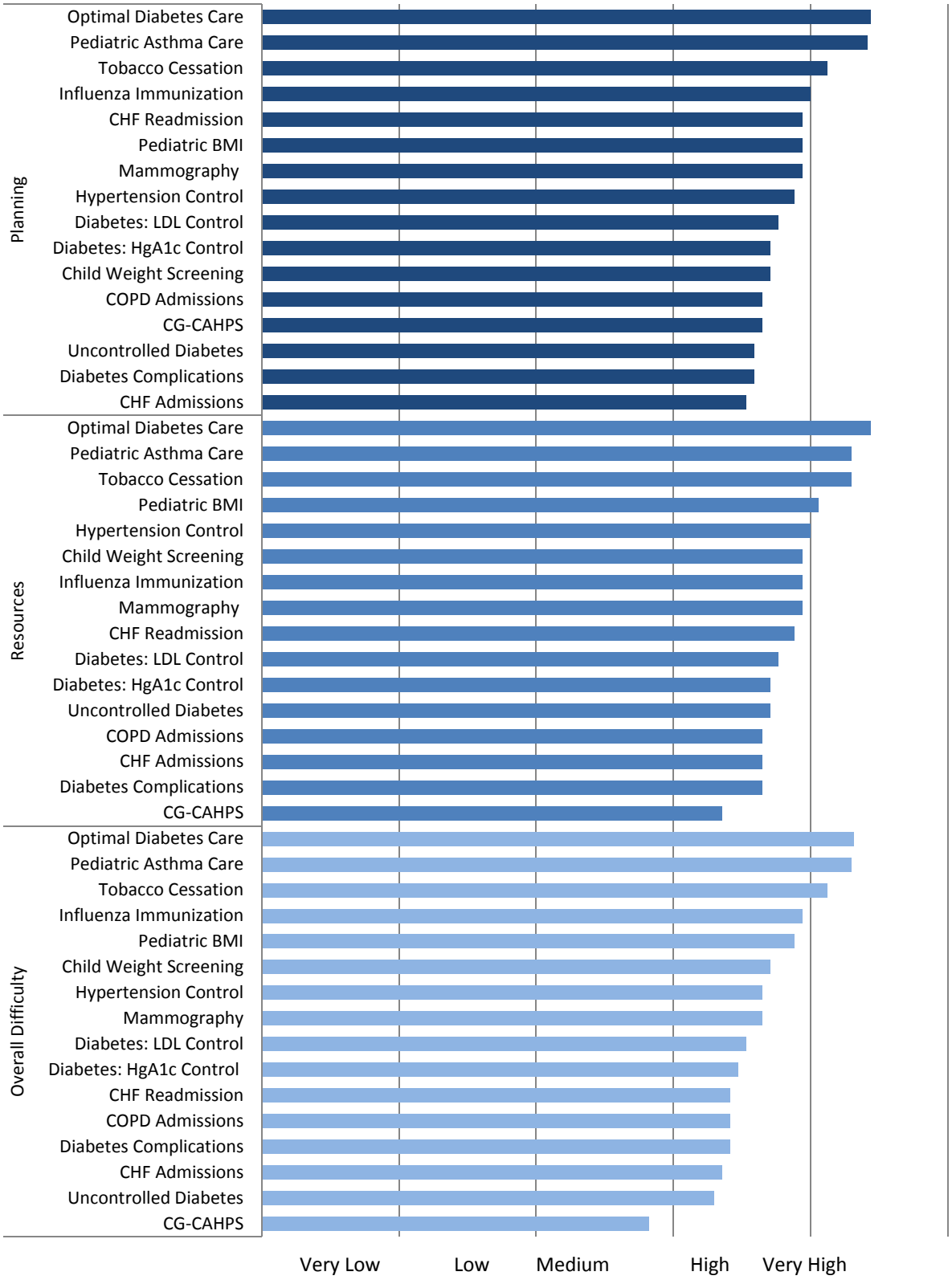
Notes: Analysis is based on the total number of measures that were not gathered prior to DSRIP (n=133). Total is greater than 100% because DPHs were allowed to select more than one response option per measure.

Implementation

Planning, Resource Use, and Overall Difficulty

DPHs reported on the level of effort and resources required to gather Category 3 measures using a five point scale from very low to very high. The average rating for each measure is reported in Exhibit 69. The data indicate that all measures required a high level of planning and resources. Three measures required very high levels of effort including the diabetes care composite, pediatric asthma care, and tobacco cessation. Similarly, tracking nearly all measures was reported to require a high or very high level of difficulty. Only tracking CG-CAHPS was reported to have a medium level of difficulty. DPHs reported using outside vendors to collect the CG-CAHPs measures, which required fewer personnel and resources on the part of the DPHs.

Exhibit 69: Amount of Effort and the Overall Level of Difficulty in Gathering Category 3 Measures



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

During the follow-up interviews, DPHs indicated that most of the implementation effort was spent on ensuring better data collection approaches to capture more accurate data, establishing electronic health records to gather data, and specification, standardization, and automation of procedures to create regular reports.

DPHs also highlighted the labor intensive nature of data collection due to reliance on chart reviews and manual discharge audits. DPHs indicated that some measures could not be easily extracted from existing systems that were slow or not integrated. New staff had to be employed or existing staff had to be retrained for data extraction or reporting tasks.

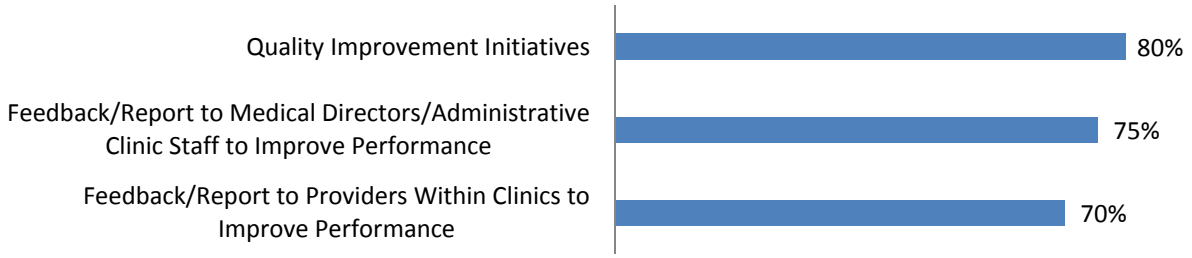
The overall level of difficulty was attributed to technically challenging tasks. Many DPHs indicated that DSRIP required a major culture change including buy-in from leadership and agreement of providers on DSRIP metrics.

UCLA examined DY 8-10 reports to identify changes in the sources of data used for reporting Category 3 measures. The analyses indicate an increased reliance on EHRs and electronic disease registries and a decline in manual data collection techniques for many of the Category 3 measures from DY 8 to DY 9 Appendix E: Sources of Category 3 Data.

Incorporation of Category 3 Measures in Performance Improvement

In the UCLA interim survey DPHs reported on whether and how they used Category 3 measures in various operations or activities. Category 3 measures were used most frequently in quality improvement initiatives (80%; Exhibit 70). These measures were also used to improve performance by sending feedback to medical directors or administrators (75%) as well as to clinicians providing direct care (70%). Several measures were used for quality improvement initiatives most frequently (88% to 94% of the time) including CG-CAHPS, Mammography screening, influenza immunization, tobacco cessation, diabetes LDL and A1c control, 30-day CHF readmission rate, and hypertension blood pressure control. The remaining projects were less frequently used for this purpose.

Exhibit 70: Proportion of Category 3 Measures Used for Quality Improvement Initiatives and Feedback



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Total is greater than 100% because DPHs were allowed to select more than one response option per measure.

Outcomes

Measure Milestones

DPHs had to achieve 119 milestones in DY 7 and 340 milestones in each of DY 8-10. With the exception of a single milestone in one DPH in DY 10, DPHs reported that they achieved all these Category 3 milestones in their respective annual reports (data not shown).

Trends in Category 3 Measures

Trends in CG-CAHPS

DPHs began reporting the results of their CG-CAHPS (Group Consumer Assessment of Healthcare Providers and Systems) surveys in their DY 8 reports. CG-CAHPS measures patient/care giver experiences. AHRQ established CG-CAHPS in 2007, and the National Quality Forum endorsed the survey in the same year.(74) Measures included in CG-CAHPS assess patients' experiences in ambulatory care settings based on patients' ratings of: their doctor or provider, the timeliness of care, provider communication, the degree to which office staff are helpful, courteous, and respectful, and shared decision making. Various healthcare professionals and organizations including insurers, clinicians, and accreditation bodies use CAHPS results to improve the delivery and quality of care.(74) Completion of CG-CAHPS by primary care or specialty physicians and their staffs in practices with at least 100 eligible professionals under one tax identification number are required by CMS for its Physician Quality Reporting System.(75) CG-CAHPS results have been used to provide performance reports to practices and individual providers, set improvement goals and targets for CAHPS measures with low scores, and justify the implementation of staff training programs that teach customer service and patient engagement.(76)

The weighted average rates of CG-CAHPS measures were calculated across all DPHs and for each demonstration year starting in DY 8 (Exhibit 71). DPHs did not report the denominators for the reported rates and no tests of statistical significance were possible.

On average, 82% to 83% of patients receiving care in the outpatient setting reported that their doctors communicate well with them frequently (usually or always explain things clearly, listen carefully, provide easy to understand information, knew important patient information, showed respect, and spent enough time) with little difference in these rates in the three years (Exhibit 71). However, individual DPH rates varied from 68% to 92% in DY 8 and from 67% to 93% in DY 10. Eleven DPHs reported an increase ranging from 1% to 7%. The largest increase for an individual DPH was from 75% in DY 8 to 82% in DY 10. The largest decrease for an individual DPH was from 92% in DY 8 to 90% in DY 10. One DPH indicated no change (data not shown).

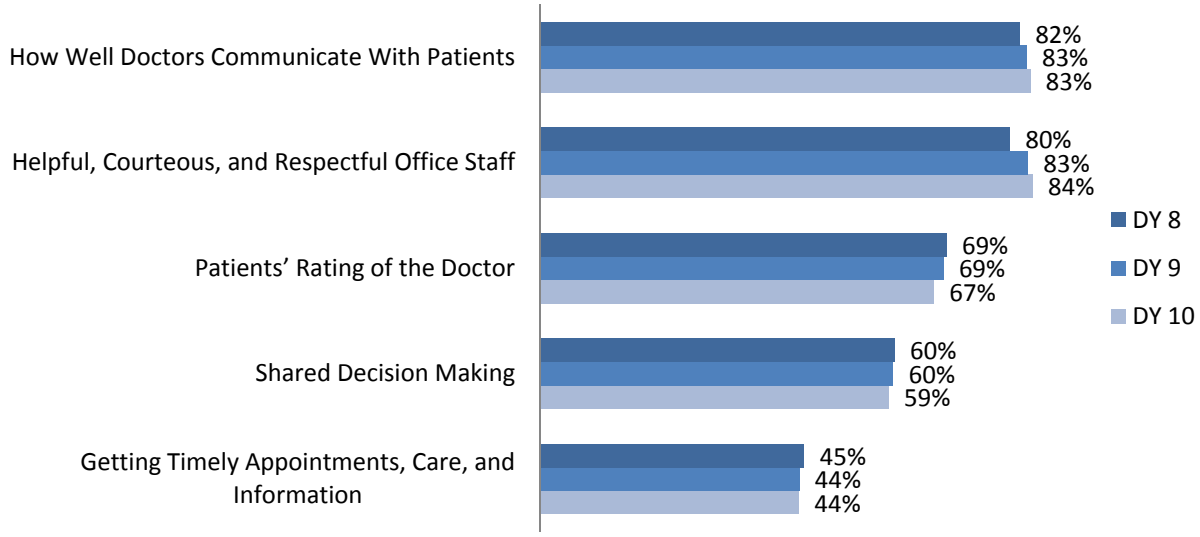
The weighted average rating of helpfulness, courtesy, and respectfulness of office staff was relatively high and increased from 80% in DY 8 to 84% in DY 10 (Exhibit 71). Similar to the previous measure, DPH rates varied. The lowest rate was 64% and the highest rate was 92% in DY 8 and corresponding rates in DY 10 were 72% and 92%. The largest decline was 3% and the highest increase was 19% (data not shown).

The majority of patients rated their providers as the best possible (on a scale of 0 or worst to 10 or best), though this rating declined slightly from DY 8 (69%) to DY 10 (67%; Exhibit 71). Individual DPH rates varied from 52% to 97% in DY 8 and from 45% to 85% in DY 10. The largest decline was 52% and the largest increase was 9% (data not shown).

Most patients reported usually or always engaging in shared decision making on use of prescription medications with the provider. However, these rates remained relatively similar from 60% in DY 8 to 59% in DY 9 (Exhibit 71). The rates varied from 49% to 98% in DY 8 and from 47% to 98% in DY 10. The largest decline was 16% and the largest increase was 3% (data not shown).

Getting timely appointments, care and information (including getting routine or urgent appointments, answers to question on the same day, and seeing providers within 15 minutes of appointment time) was reported less frequently by patients and this rate also remained relatively stable from 45% in DY 8 to 44% in DY 10 (Exhibit 71). The lowest rate was 30% and the highest rate was 98% in DY 8 and corresponding rates in DY 10 were 30% and 63%. The largest decline was 59% and the highest increase was 16% (data not shown).

Exhibit 71: Category 3 Patient or Caregiver Experiences (CG-CAHPS) Survey Results, DY 8-10



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9 and second semi-annual report from DY 10.
Note: The percentages represent the weighted average rates across all DPHs. CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems.

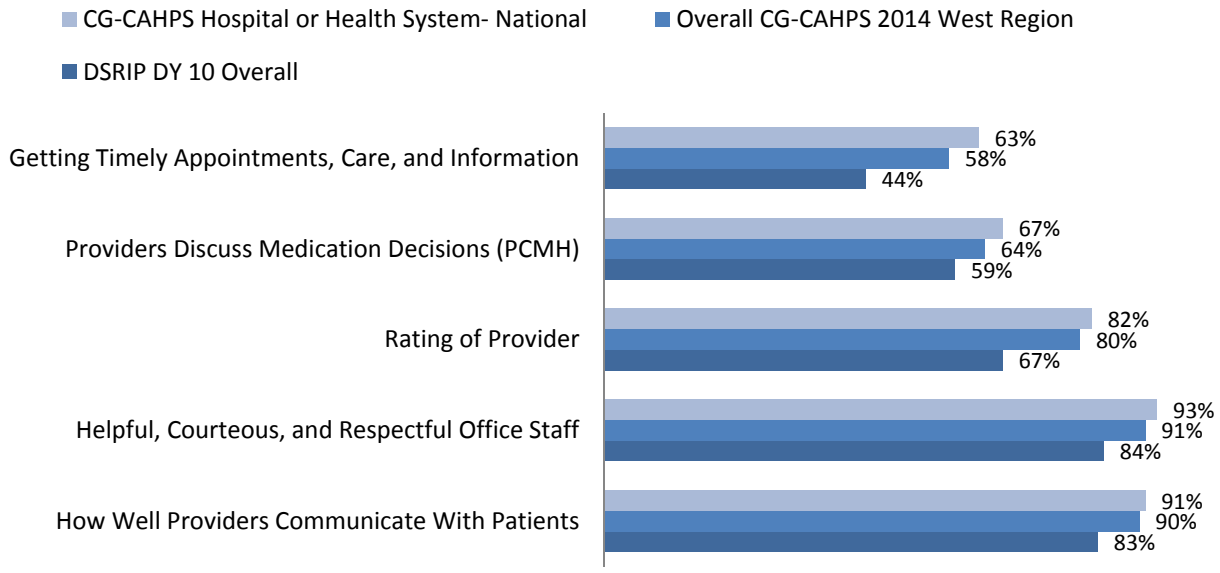
In the follow-up interviews, seven DPHs reported that they shared the CG-CAHPS data with their providers and staff. Several DHPs reported linking survey scores and improvements with physician incentives. Many stated that they planned to use the results to shape future targets for staff.

UCLA further calculated the weighted average rates of the CG-CAHPS measures for county-owned vs. academic-owned DPHs as well as DPHs that were part of multi-site vs. single-site DPHs, using DY 10 second semi-annual reports. These analyses indicated mostly similar or slightly different CG-CAHPS measures (Appendix F: Category 3 Comparisons by Ownership and Multi-Site vs. Single-Site, Exhibit 152). The largest observed difference was for patients' rating of the doctor, with more patients in academic-owned DPHs (81%) rating the doctor highly than those in county-owned systems (61%). Similarly, more patients in multi-site DPHs (70%) rated the doctor highly than those in single-site DPHs (65%). These differences did not account for patient characteristics or other factors that might determine patient experiences.

The DSRIP CG-CAHPS scores reported by DPHs were compared to the 2014 CG-CAHPS scores in the western region of United States and national scores for hospitals or health systems as well as university or academic medical centers (Exhibit 72 and Exhibit 73). Overall, DPH scores appear to be lower than CG-CAHPS scores. However, data were not available to adjust for demographic or health status differences in populations surveyed or served. Similarly, CG-

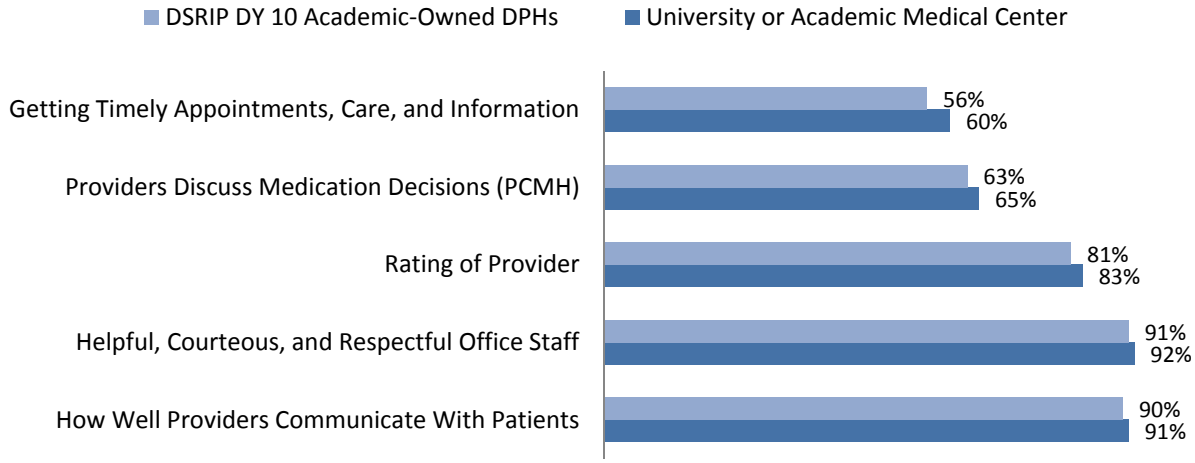
CAHPS scores include a variety of organizations (primary care and specialty practices, private hospitals and health system) and are subject to potential reporting bias since organizations voluntarily report their data.

Exhibit 72: Comparisons of DSRIP and National and Regional CG-CAHPS Scores



Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10 and the Agency for Health Care Research and Quality comparative data on CG-CAHPS.(77)
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems.

Exhibit 73: Comparison of DSRIP Academic-Owned DPHs and University or Academic Medical Center CG-CAHPS Scores



Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10 and the Agency for Health Care Research and Quality comparative data on CG-CAHPS.(77)
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems.

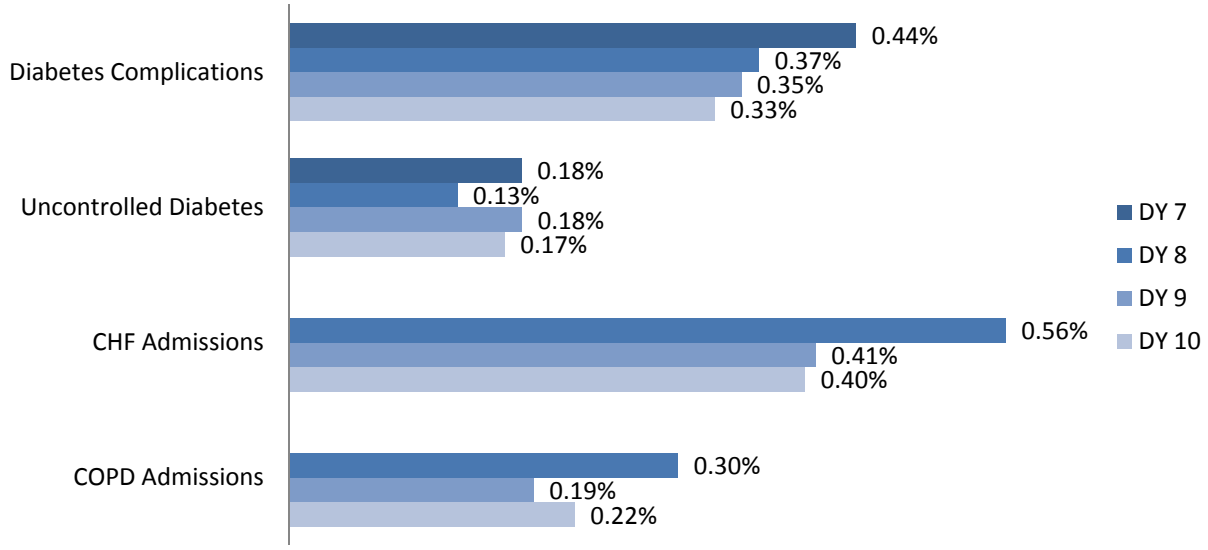
Trends in Care Coordination Measures

DPHs reported data for care coordination measures for DY 7-10, with variation in the number of years included (Exhibit 74). Diabetes complications and uncontrolled diabetes were reported starting in DY 7, while CHF and COPD were reported starting in DY 8.

Measures under the care coordination domain were similar to the AHRQ's Prevention Quality Indicators (PQIs). The AHRQ initially released the PQIs in 2001. The PQIs use ICD-9 codes from hospital inpatient discharge data to identify hospitalizations for ambulatory care sensitive conditions. In doing so, the PQIs help assess the quality of and access to outpatient healthcare services. Category 3 measures included PQIs for uncontrolled diabetes, diabetes with short-term complications, congestive heart failure, and chronic obstructive pulmonary disease. In 2009, the AHRQ funded a project that surveyed a panel of clinical experts to assess the validity of different uses of PQIs. The final report from the project suggested that PQIs could be used for internal quality improvement by provider organizations, comparative reporting across geographic areas, and pay for performance initiatives by payers.(78) Detailed definitions of these and all other benchmark measures used in this chapter are provided in Appendix G: Category 3 Benchmark Measure Descriptions.

Care coordination measure definitions from Attachment Q are provided in Appendix H: Category 3 Measure Definitions from Attachment Q. All measures indicated improvements in patient outcomes. For example, CHF and COPD measures assessed the number of discharges for CHF or COPD patients who had visited DPH clinics two or more times in the past 12 months. The weighted average rate for all four care coordination measures declined during DSRIP (Exhibit 74). The diabetes complications and CHF measure decreased consistently, but the pattern of decline for uncontrolled diabetes and COPD measures was inconsistent.

Exhibit 74: Trends in Category 3 Care Coordination Measures, DY 7 to DY 10

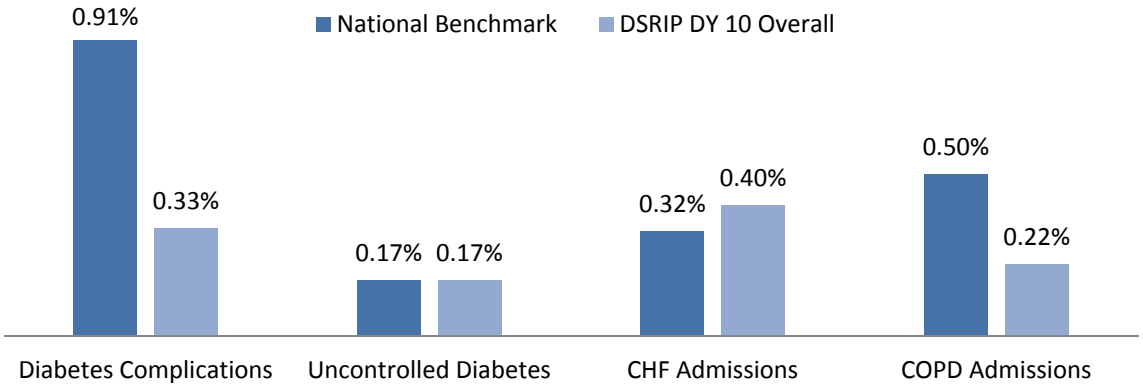


Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 7-9 and second semi-annual reports from DY 10.
Note: Decreases indicate improved outcomes for care coordination measures. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease.

The comparison of care coordination measures between county-owned and academic-owned DPHs as well as multi-site and single-site DPHs, using DY 10 second semi-annual reports, is provided in Appendix F: Category 3 Comparisons by Ownership and Multi-Site vs. Single-Site, Exhibit 153. Academic-owned DPHs had significantly lower rates than county-owned DPHs for COPD. Single-site DPHs had significantly lower rates than multi-site DPHs on uncontrolled diabetes and COPD, and significantly higher rates on diabetes complications.

Comparisons of DSRIP care coordination measures with existing national benchmarks are provided in Exhibit 75. The comparison of the weighted average rate for DSRIP calculated from DY 10 second semi-annual reports with national benchmarks indicated a lower rate of diabetes complications and COPD admissions for DPHs. However, rate of uncontrolled diabetes was similar and rate of CHF admissions was slightly higher for DPHs than national benchmarks. The direct comparison of care coordination measures with national benchmarks are subject to multiple limitations including variations in patient population, methodology, or organizational characteristics that might account for observed differences. See Appendix G: Category 3 Benchmark Measure Descriptions.

Exhibit 75: Comparisons of Category 3 Care Coordination Measures and National Benchmarks, DY 10



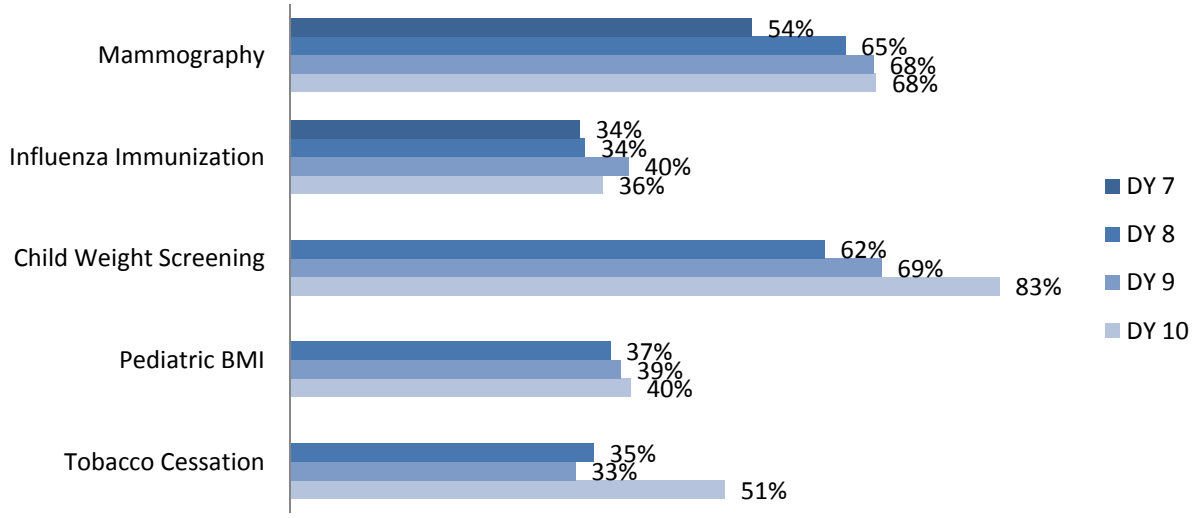
Source: UCLA analysis of designated public hospital (DPH) second semi-annual reports from DY 10 and national benchmarks from the Agency for Health Care Research and Quality Healthcare Cost and Utilization Project's State Inpatient Databases.(79)
Notes: The selected benchmarks are similar to care coordination measures in DSRIP but vary in some aspects such as the age of the populations included in the numerators or denominators. Descriptions of all benchmarks are included in Appendix G. Lower rates indicate better outcomes for care coordination measures. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease.

Trends in Preventive Health Measures

DPHs reported data for preventive health measures for DY 7 to DY 10, with variation in number of years included (Exhibit 76). Mammography and influenza immunization were reported starting in DY 7, while child weight screening, pediatric BMI, and tobacco cessation were reported starting in DY 8.

Overall, DPHs improved their performance on each of the five measures during DSRIP. The patterns of increase were consistent for mammography, child weight screening, and pediatric BMI. However, the pattern was not consistent for influenza immunization and tobacco cessation during DSRIP.

Exhibit 76: Trends in Category 3 Preventive Health Measures, DY 7 to DY 10



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 7-9 and second semi-annual reports from DY 10.
Note: Increases indicate improved performance on preventive health measures. BMI = body mass index.

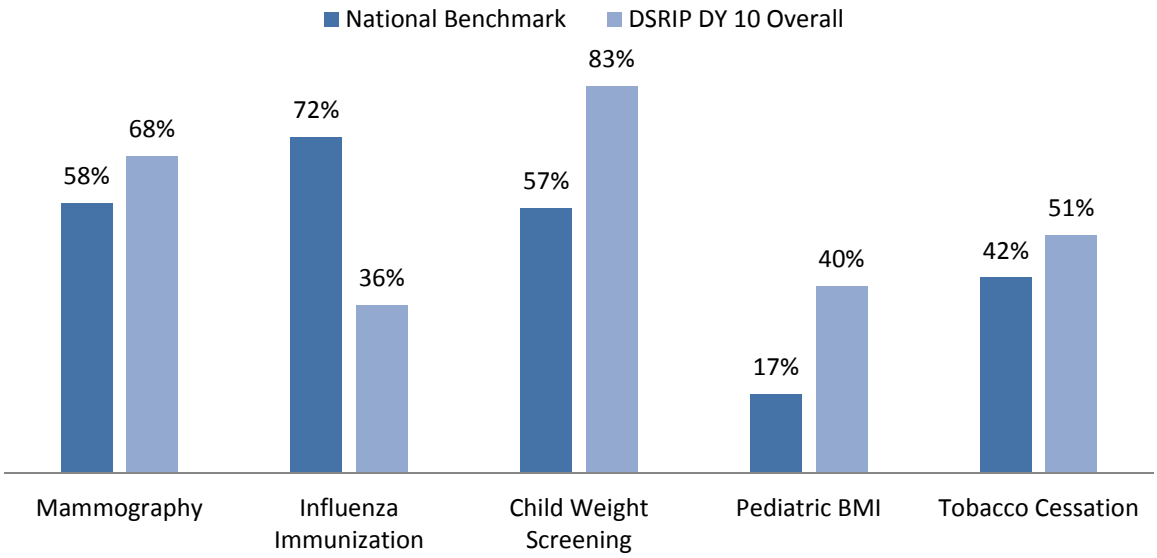
The comparison of preventive health measures between county-owned vs. academic-owned DPHs as well as multi-site vs. single-site DPHs using DY 10 second semi-annual reports indicated several significant differences (Appendix F: Category 3 Comparisons by Ownership and Multi-Site vs. Single-Site, Exhibit 154). The largest differences were observed in the tobacco cessation measure, which reached 54% of tobacco users in single-site DPHs compared with 37% in multi-site DPHs, and 59% of tobacco users in county-owned DPHs compared with 22% in academic-owned DPHs. County-owned DPHs also performed significantly better than academic-owned DPHs on pediatric BMI, but significantly worse on mammography and influenza immunization. Single-site DPHs significantly outperformed multi-site DPHs on all preventive health measures. These observed differences did not account for patient characteristics or other factors that might determine patient experiences.

Most Category 3 measures in the preventive health domain are consistent with HEDIS measures and used in national and state-level quality improvement initiatives. For example, The 2013 State of Health Care Quality Report developed by the National Committee for Quality Assurance (NCQA) reports national data on 4 of the 5 Category 3 preventive health measures including: breast cancer screening, flu shots, child weight assessment, and tobacco use consultation.(80) The NCQA uses these and other HEDIS measures to set national quality benchmarks and to promote preventive health screenings. On the state level, HEDIS measures for mammography and child weight screenings are included in DHCS's assessment of Medi-Cal

managed care plans.(81) These assessments are used to reinforce accountability, develop consumer guides, and grant annual quality awards to plans that demonstrate high performance and improvement. The detailed definition of the measures selected as benchmarks is provided in Appendix G: Category 3 Benchmark Measure Descriptions.

Comparison of preventive health measures with existing national benchmarks are provided in Exhibit 77. Based on overall rates from DY 10 second semi-annual reports, DPHs performed favorably to the national benchmarks for preventive health on all measures except influenza immunization. The direct comparison of preventive health measures with national benchmarks are subject to multiple limitations including variations in patient population, methodology, or organizational characteristics that might account for observed differences. See Appendix G for additional information on benchmark measure definitions.

Exhibit 77: Comparisons of Category 3 Preventive Health Measures and National Benchmarks, DY 10



Source: UCLA analysis of designated public hospital (DPH) second semi-annual reports from DY 10 and national benchmarks from the National Committee for Quality Assurance and the National Health and Nutrition Examination Survey.(37, 82)
Notes: The selected benchmarks are similar to preventive health measures in DSRIP but vary in some aspects such as the age of the populations included in the numerators or denominators. Descriptions of all benchmarks are included in Appendix G. Higher rates indicate better performance on preventive health measures. BMI = body mass index.

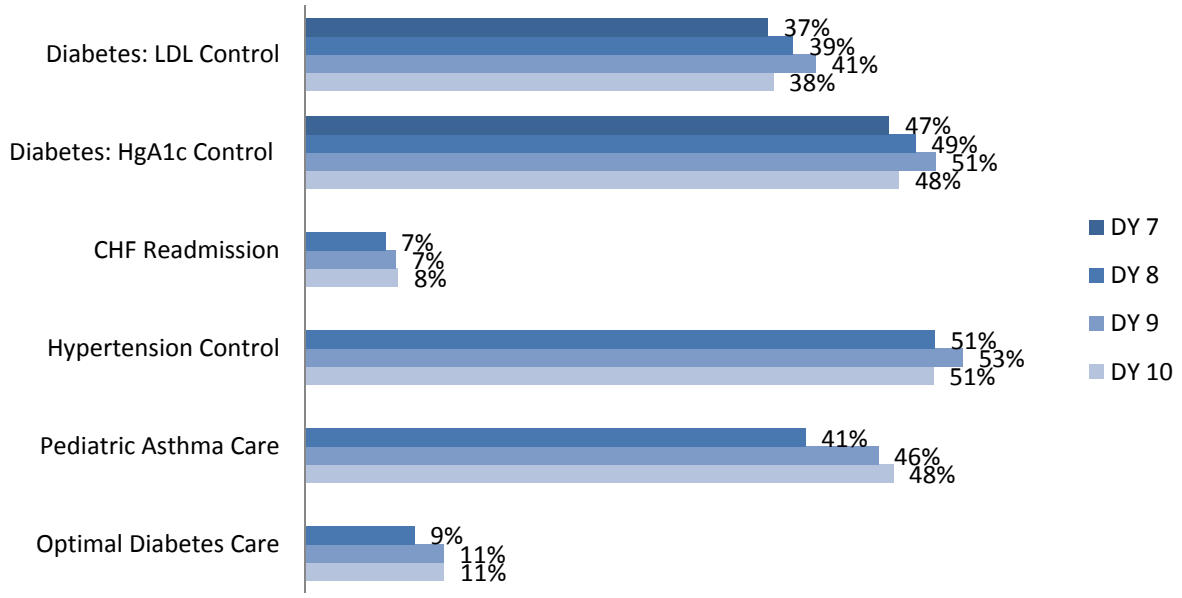
Trends in At-Risk Populations Measures

DPHs reported data for at-risk populations measures for DY 7 to DY 10, with variation in number of years included (Exhibit 78). Diabetes LDL control and HbA1c control were reported starting in DY 7, while the other measures were reported starting in DY 8.

At-risk populations measure definitions are provided in Appendix H: Category 3 Measure Definitions from Attachment Q. For all but one of the measures an increase in rates indicates better outcomes (e.g., improved diabetes control, prescription of pediatric asthma controller medication). For CHF readmissions, higher rates indicate worse outcomes.

All six at-risk populations measures either improved or remained the same over the course of DSRIP in terms of overall DPH rates. Pediatric asthma care exhibited the largest and most consistent improvement, increasing from 41% in DY 8 to 48% in DY 10. Performance on the diabetes LDL and HbA1c measures improved steadily from DY 7-9 and then dropped slightly in DY 10, but still ended one percentage point above their starting point.

Exhibit 78: Trends in Category 3 At-Risk Populations Measures, DY 7 to DY 10



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 7-9 and second semi-annual reports from DY 10.
Note: Increases indicate improved performance on at-risk populations measures, except for CHF readmissions where decreases indicate better outcomes. CHF = congestive heart failure.

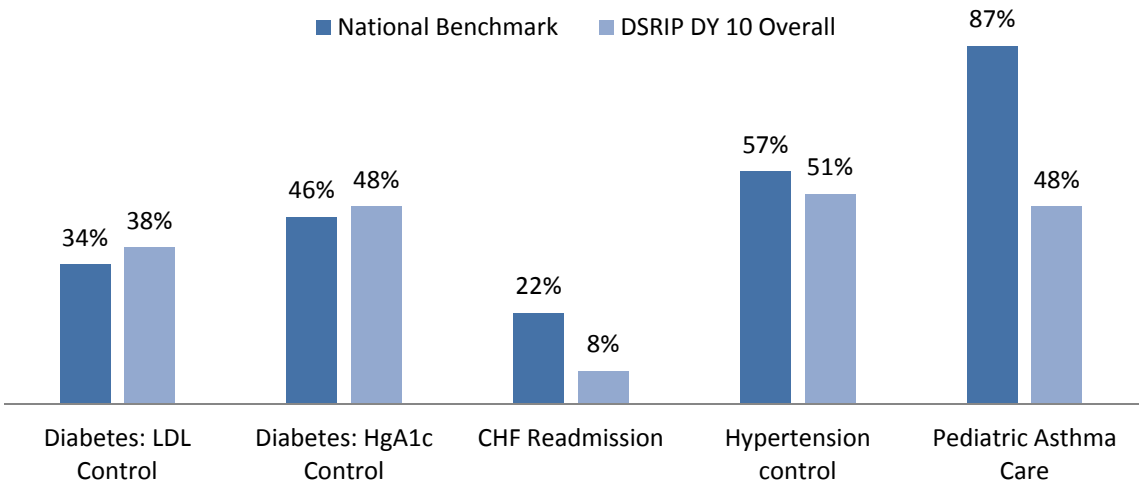
Comparing at-risk populations measures between single-site and multi-site DPHs using DY 10 second semi-annual reports indicated that the former reported significantly more favorable results on all measures except CHF readmission, where the difference was not significant

(Appendix F: Category 3 Comparisons by Ownership and Multi-Site vs. Single-Site, Exhibit 155). Comparing county-owned and academic-owned DPHs showed significantly better rates of control of at-risk populations in academic-owned DPHs across all measures except CHF readmission. These observed differences did not account for patient characteristics or other factors that might determine patient experiences.

At-risk populations measures were consistent with measures from different organizations. The measures on diabetes and hypertension management were based on HEDIS measures, which are used by the State of California Office of the Patient Advocate (OPA) to score and compare the quality of California's largest health plans. The measure on CHF comes from publicly available data supported by the Centers for Medicare and Medicaid Services' (CMS) Hospital Quality Initiative. The initiative seeks to encourage accountability and the delivery of patient-centered care among hospitals. The pediatric asthma care measure was based on similar measures developed by the NCQA and National Heart Lung, and Blood Institute. The NCQA HEDIS measure for the appropriate use of asthma medications is used for several purposes including: accreditation, internal quality improvement, and decision-making by businesses and consumers about health plan purchasing and choice.(83) The detailed definition of the measures selected as benchmarks is provided in Appendix G: Category 3 Benchmark Measure Descriptions

Comparison of at-risk populations measures with existing national benchmarks are provided in Exhibit 79. Based on overall rates from DY 10 second semi-annual reports, DPHs performed favorably to the national benchmarks for at-risk populations on both diabetes control measures (higher or similar rates of control) and CHF readmission measure (fewer CHF readmissions). However, DPH rates outcomes for hypertension control and pediatric asthma prescriptions were not favorable. The direct comparison of at-risk populations measures with national benchmarks are subject to multiple limitations including variations in patient population, methodology, or organizational characteristics that might account for observed differences.

Exhibit 79: Comparisons of Category 3 At-Risk Populations Measures and National Benchmarks, DY 10

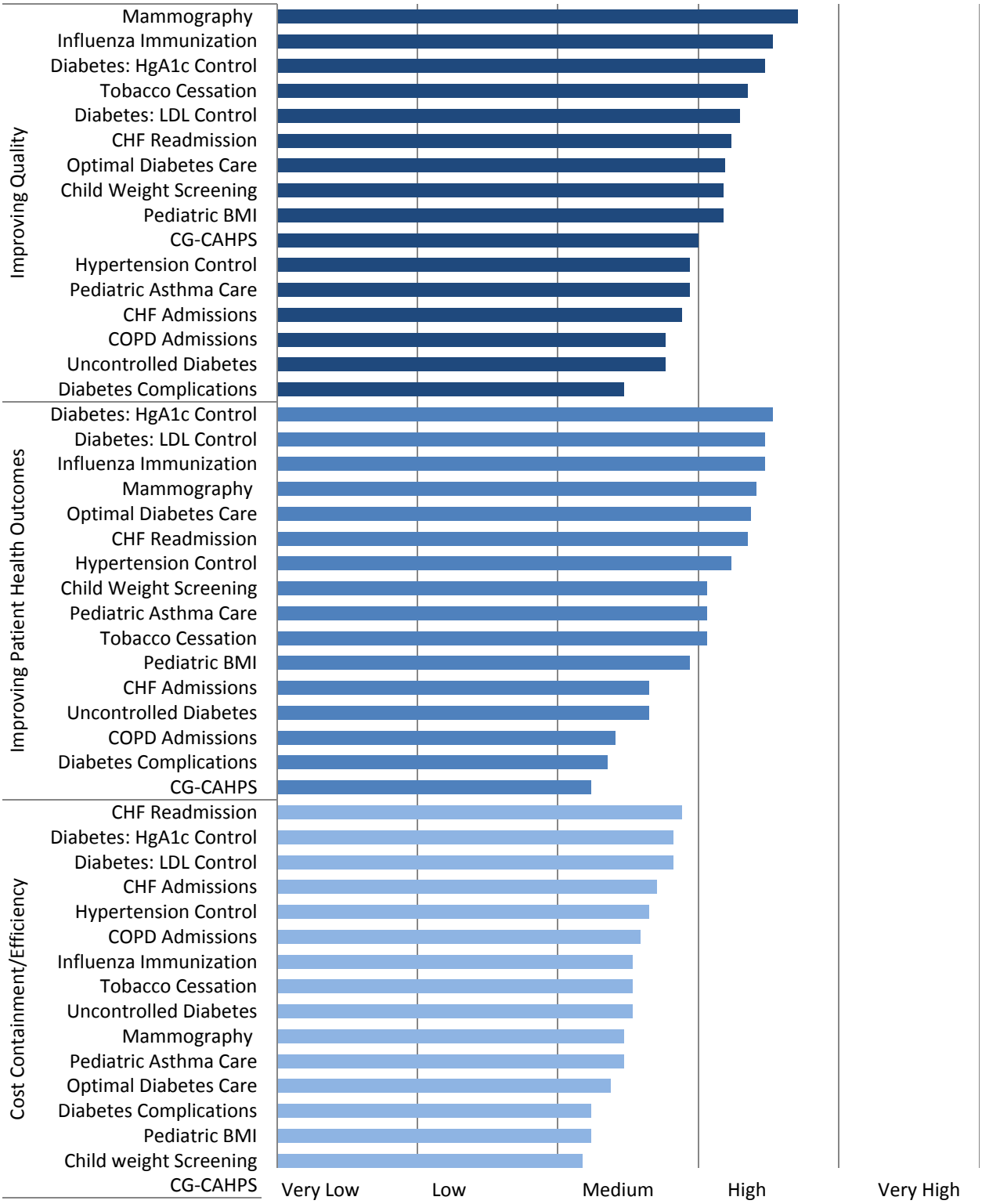


Source: UCLA analysis of designated public hospital (DPH) second semi-annual reports from DY 10 and national benchmarks from the National Committee for Quality Assurance and the Center for Medicare & Medicaid Services.(37, 84)
Notes: The selected benchmarks are similar to at-risk populations measures in DSRIP but vary in some aspects such as the age of the populations included in the numerators or denominators. There are two benchmarks for pediatric asthma care that cover the age of the DSRIP measure. The benchmark for ages 5-11 was used in this exhibit. Descriptions of all benchmarks are included in Appendix G. Optimal diabetes care was excluded because a national benchmark was not identified for the measure. Higher rates indicate better performance or outcomes for all at-risk populations measures, except for CHF readmissions where lower rates indicate better outcomes. CHF = congestive heart failure.

Perceived Impact of Category 3 Measures on Triple Aim

In the UCLA interim survey, DPHs were asked to assess the potential impact of each Category 3 measure on the Triple Aim of improving quality, patient outcomes and cost containment/efficiency using a five point scale from very low to very high. The average rating for each measure for each aim is reported in Exhibit 80. Overall, several Category 3 measures were anticipated to have a high impact on improving quality of care and patient health outcomes. However, no measures were expected to have a high or very high impact on cost containment/efficiency. Furthermore, the perceived impact of measures varied by each aim. For example, most DPHs perceived that mammography screening would have the highest impact on improving quality but a slightly lower impact on patient outcomes and a medium impact on cost containment/efficiency.

Exhibit 80: Perceived Impact of Category 3 Measures on Triple Aim of Improving Quality, Patient Health Outcomes, and Increasing Cost containment/Efficiency



Source: UCLA interim survey of designated public hospitals (DPHs).

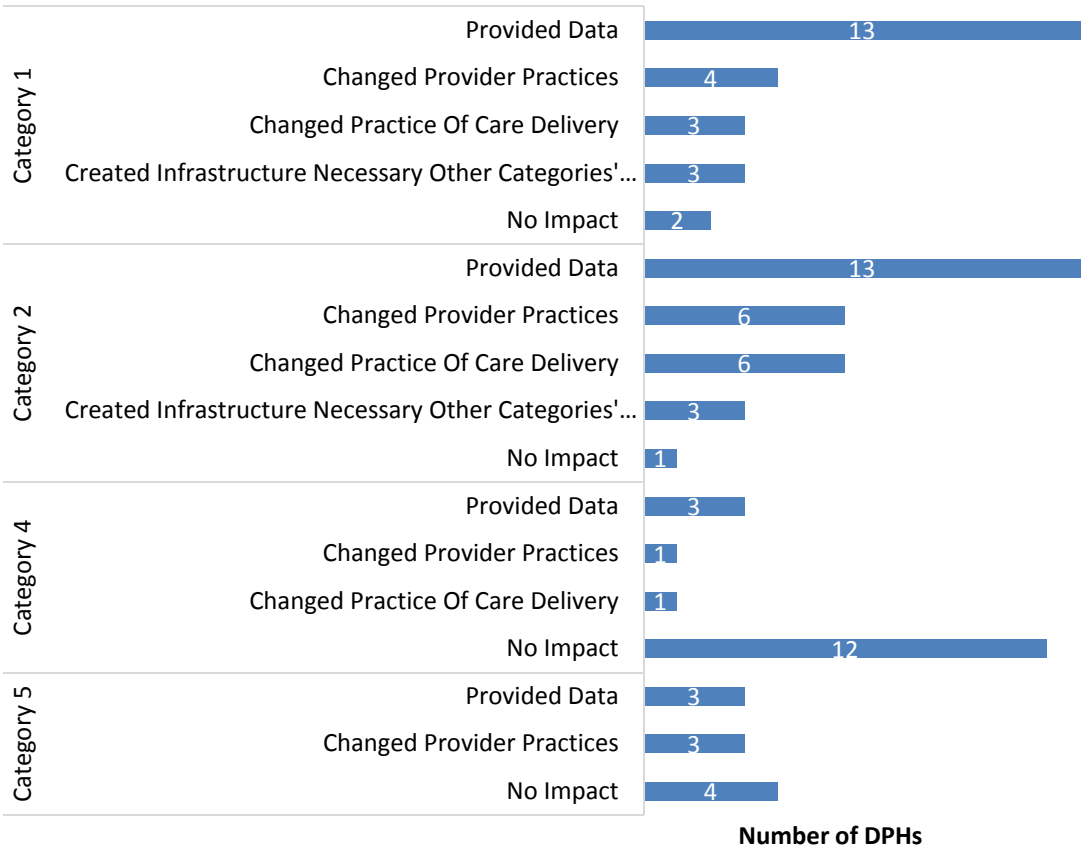
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

During follow-up interviews some DPHs indicated that Category 3 measures were used in quality improvement efforts and an improvement in some measures were noted subsequently. However, the great majority of DPH had not assessed the direct impact of Category 3 measures on costs and patient outcomes noting the difficulty of measuring such impact.

Perceived Impact of Category 3 Measures on Other DSRIP Categories

In the UCLA follow-up survey, DPHs were asked to consider the specific ways in which Category 3 measures impacted Categories 1, 2, 4, and 5. Most DPHs (12-13) reported that the greatest impact of Category 3 measures on Categories 1-4 was by providing data (Exhibit 81). Six DPHs reported Category 3 measures change provider practices and care delivery process during implementation of Category 2 measures. Twelve DPHs reported no impact on Category 4 measures. The reported impact of Category 3 on Category 5 measures was minimal. This was likely due to specific focus of Category 5 measures on transition and care of HIV/AIDS population.

Exhibit 81: Type of Impact of Category 3 on Categories 1-5



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Notes: Ten DPHs participated in Category 5 measures.

Only two DPHs elaborated on how Category 3 measures impacted other categories. One DPH (Contra Costa) reported that Category 3 measures provided the needed data for population health measurement that had not been available consistently prior to DSRIP. The other DPH (Los Angeles) used patient satisfaction scores in medical home implementation.

Challenges and Lessons Learned

DPHs reported the top two challenges in tracking each Category 3 measure during the UCLA interim survey and follow-up interviews. The great majority of DPHs identified issues related to data collection including inadequacies or lack of electronic systems and problems with definitions of measures as challenges. The most frequently cited challenges related to data collection and abstraction issues, which were generally resolved by implementing electronic medical records if they were not available before DSRIP or accelerating the process of implementation. The second most frequently cited challenge was inconsistency in data collection methods, which was resolved by additional staff training and by improving documentation. Changes in definitions of measures by DSRIP were also cited as challenges. The third most frequently cited reason was lack of sufficient staff for manual chart abstraction and data reporting, particularly before full implementation of EHRs or when EHRs lacked specific data. These challenges were resolved by hiring and training additional staff to complete the required tasks using DSRIP funding.

More specifically, San Joaquin and Ventura commented that gathering CG-CAHPS from their considerable patient populations with low education and literacy level was challenging because of the lengthy and cumbersome nature of the survey tools. The majority of DPHs began data collection through manual chart extraction and eventually moved to a combination of manual chart extraction and data from the EHR. Some DPHs developed comprehensive EHR systems, while others implemented partial systems. Category 3 measures were especially difficult when measure definitions were changed under DSRIP and DPHs had to adjust their data collection to reflect the new definitions. Almost all of the DPHs struggled with capturing measures as defined by DSRIP. Natividad used many resources in order to combine data from its own systems as well as the county in order to capture their whole population. Santa Clara indicated that in addition to the data collection effort, it had to use time and resources to review the data for accuracy and work with SNI to clarify definitions. UC Irvine struggled with low patient volume for some measures and subsequent instability in results over time. Ventura expressed concern about the inability to code or capture patients to fit the definition. For example, there were no ICD-9 codes to code a patient with persistent asthma or to distinguish patients with persistent asthma from those with mild intermittent asthma. UC San Francisco expressed concern in capturing child weight screening for patients who were a part of a specialty clinic (e.g., children's clinic for endocrine and weight disorders) rather than a primary care clinic.

UCLA identified specific examples of challenges, how they were addressed, and lessons learned from DY 9 reports (Exhibit 82). These reports were completed in the fourth year of DSRIP implementation and were considered to be relatively comprehensive in reporting these issues.

Exhibit 82: Examples of How Challenges Were Addressed and Lessoned Learned

DPH	Category 3 Measure Challenge	Ways in Which Challenges Were Addressed/Lessons Learned
Contra Costa	**Mammography**	Our participation in the Kaiser Permanente (KP) Improvement Institute has resulted in several noteworthy projects including our walk-in mammography clinic, and so far has resulted in two or three additional mammography screenings per day at Martinez clinic. We are now developing a "walk-in" field to add to the EHR to track data on walk-ins and develop more strategic programs to improve screening rates.
Kern	**Data Collection**	The disease registry was implemented as one project but is now used in almost all outpatient quality initiatives; by care teams to build clinical decision support tools, patient profiles and compliance checks lists; send proactive preventive health letters to patients; serves as a data repository for all Category 3 quality metric tracking and the backbone for patient coordination and clinical management of diseases. The disease registry implementation has fundamentally changed the way we provide care to our patient population.
Los Angeles	**Influenza Immunization and Pediatric Asthma Care**	Inability to capture rates of influenza immunization when it is received in other venues such as health fairs and pharmacies impact this Category 3 measure negatively. Also, for the pediatrics asthma care measure, our numbers are artificially low because existing DHS data systems do not capture prescriptions filled outside our system. Since most children have some type of coverage, use of private sector pharmacies is high in this population.
San Francisco	**CG-CAHPS**	Surveying primary care patients using the CG-CAHPS tool inspired our specialty clinics to move forward with collecting valuable feedback from patients using the CG-CAHPS Specialty survey. This data is included in the Specialty Clinic Dashboards, and assists with monitoring access to specialty care and referral response time.
	Diabetes: LDL Control	New LDL treatment guidelines were used to develop treatment algorithms for providers. Training on the algorithm was conducted, at each primary care clinic, by a SFGH Endocrinologist.
		The multi-disciplinary LDL team worked to expand Lab Access services, establishing a partnership with a local phlebotomy school to expand lab services. Interns co-located in primary care clinics supplemented existing lab services, reduced wait times for appointments and increased screening/testing rates from 64%-90% at clinics.
	Mammography	An analysis of radiology capacity resulted in a pilot testing of weekend and evening mammography appointments. Based on patient and provider feedback, this resulted in permanent expansion to Saturday appointment slots, a more patient centered approach to increasing access.

DPH	Category 3 Measure Challenge	Ways in Which Challenges Were Addressed/Lessons Learned
San Francisco		Many clinics developed a combination of medical assistant driven, in-reach and outreach processes to proactively identify and offer mammograms to those due for screening services. Staff and panel management trainings are scheduled to increase knowledge of how to accurately answer questions from patients about breast cancer screening and how to better engage patients who frequently don't show for appointments or have resistance to screening.
San Joaquin	**CG-CAHPS**	We have been challenged in motivating staff to learn how to use the Press-Ganey "official" clinic specific reports, which are posted on the Intranet and sent to the department managers on a monthly basis, or to utilize the performance improvement tools readily available. Recruitment of a Chief Medical Officer of the FQHC Clinic as "champion" is in process. In regard to patient satisfaction, clinic hours were extended to 7 PM and walk-ins have been allowed and encouraged. The "No One Left Behind" initiative has helped to remove patient access barriers. During our involvement in the California Health Care Safety Net Institute's Patient Experience Program, we realized significant improvement in patient satisfaction scores in many indicators especially in the Family Medicine Clinic.
UC San Francisco	**Mammography**	We have learned that targeted focused work on key areas can improve outcomes. For example, we have seen a robust improvement in mammography screening using targeted interventions like direct access scheduling into radiology, outreach panel management and targeted educational campaigns.
Ventura	**CHF Readmission**	The hospital staff send the appointment request and need for quick follow-up to the patient's out-patient provider through a system called "Message Center". This has improved post-acute follow up and decreased the readmissions of CHF and COPD patients. The "Transitions Clinic" has been developed collaboratively by Ambulatory Care and the Hospitalists team. The on-site clinic provides care for patients with both CHF and COPD along with other at-risk diagnosis as frequently as daily or as needed until the patient can return to their PCP at the next available appointment. This intervention has been successful and is being expanded to patients who have been seen in the VCMC Emergency Department but have not been admitted for acute care.
	Pediatric BMI	Systematic calculation of BMI has revealed a high rate of obesity among the County's children. The local schools have replaced cupcakes and punch for parties with fresh apples and water. Reporting of BMI to insurance companies has led to engaging patients by insurance companies in weight loss programs and allows VCMC medical providers to receive authorization to specialists for treatment of obesity for the patients.

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 9.
Note: Content is revised for brevity. CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. BMI = body mass index.

Sustainability of Category 3 Measures

During the UCLA follow-up interviews, DPHs acknowledged that collecting population-level data similar to DSRIP measures would be expected in the future and had become the new norm. The core competencies established under DSRIP, including data systems and analytic infrastructure, are sustainable, but DPHs have to decide which metrics are helpful for their operations or consistent with their organizations' strategies.

DPHs that have used Category 3 measures to improve provider performance in continued improvement activities have embedded the measures in registries or in their strategic goals, have established new processes of care based on these measures, or have negotiated with payers for pay-for-performance incentives, anticipated a high likelihood of sustainability for specific measures.

Challenges to sustainability included the inadequacy of some measures in capturing other positive outcomes such as reduction in wait times not captured by CG-CAHPS or changes in clinical guideline that have led to obsolescence of some measures. DPHs expressed reservations in their ability to sustain very resource-intensive measures in the absence of DSRIP funding. DPHs without the capacity to disaggregate Category 3 measures to the provider or medical home level also expressed concerns about the utility of the data to improve provider performance.

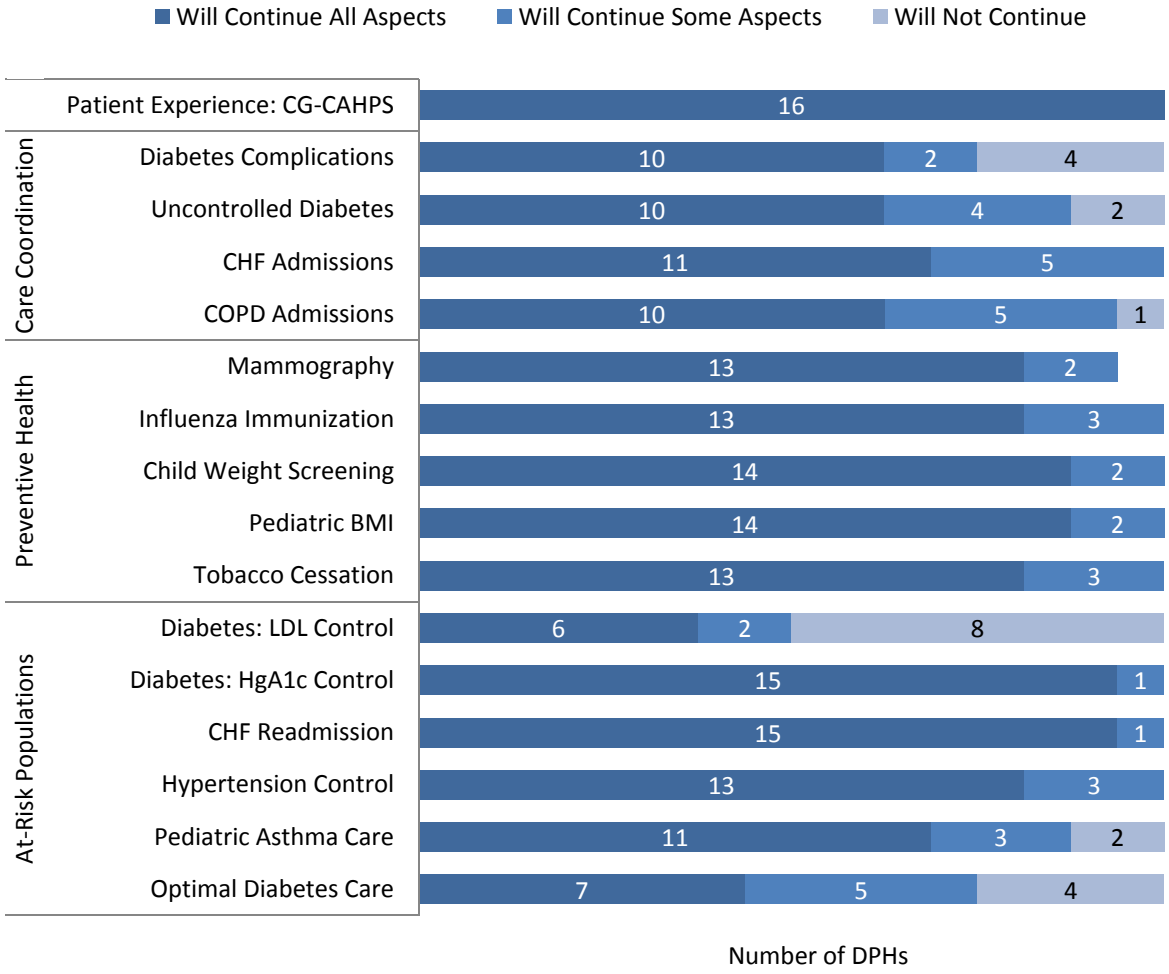
Six DPHs pointed out that they were unlikely to continue defining the measures in the same way as defined by DSRIP. Santa Clara indicated that physicians had disagreement with some DSRIP definitions, and guideline updates will further change such measurement. Kern stated that the diabetes measures and some others would be continued in part due to resources that were now available to collect such data.

In the UCLA follow-up survey, DPHs reported on the specific Category 3 measures that would be continued after DSRIP and why. All responding DPHs planned to continue the CG-CAHPS surveys without changes (Exhibit 83). All preventive health measures and some of the other measures would also be continued by all responding DPHs mostly without change and in some cases with some modifications. The diabetes LDL control measure was the only measure that was to be discontinued by eight DPHs. This was due to several DPHs noting that this guideline had been revised and was no longer relevant.

In DY 9 reports, two organizations further commented on plans for continuation of CG-CAHPS. Santa Clara and San Francisco both planned on expanding CG-CAHPS to additional ambulatory

care clinics as well as inpatient units (Santa Clara) and the emergency department (San Francisco). San Francisco also reported having embedded the survey in the provider network operations and budget.

Exhibit 83: Continuation of Category 3 Measures after DSRIP



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Notes: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

Factors that DPHs identified as contributors to sustainability are described in Exhibit 84. Compatibility with the organization's priorities (cited 166 times by DPHs across all Category 3 measures), existing data collection infrastructure and strategies (155), and the ongoing support of DPH leadership (151) were the most frequently cited motivators of sustainability across all Category 3 measures. The least frequently cited motivators were operational funding availability after DSRIP (77) and if the measure was needed for another program or initiative (88). Category 3 measures for which multiple motivators were most frequently cited included

CG-CAHPS, diabetes HbA1c control, and CHF readmission. Measures with the fewest cited motivators were diabetes LDL control and optimal diabetes care.

DPHs were also asked to identify barriers to sustainability. The most frequently cited barrier was lack of sufficient funding after DSRIP (24), followed by the measure not having been embedded through organization's policy (12), limited or no compatibility with organizational priorities and plans (9), and little to no benefit (8), and incomplete infrastructure (7; data not shown). The least frequently cited barrier was limited support from leadership (2). The specific category 3 measures most frequently cited with multiple barriers were diabetes LDL control (11), optimal diabetes care (10), diabetes complications (8), and uncontrolled diabetes (6).

Exhibit 84: Most Frequently Cited Reasons for Continuing Category 3 Measures after DSRIP

Measure	Compatible With Organization's Priorities	Operational Funding Available After DSRIP	Fully Embedded Through Policies	Benefits Are Realized	Needed For Another Initiative/Program	Ongoing Leadership Support	Infrastructure Established	Data Collection Established
CG-CAHPS	15	9	10	12	8	12	12	12
Diabetes Complications	8	3	5	6	5	7	6	7
Uncontrolled Diabetes	7	2	4	5	4	6	5	6
CHF Admissions	10	4	7	9	6	9	8	9
COPD Admissions	9	3	6	8	3	8	7	8
Mammography	12	6	6	10	6	12	11	12
Influenza Immunization	11	5	7	10	6	11	10	11
Child Weight Screening	12	6	7	9	5	11	10	11
Pediatric BMI	12	6	7	9	5	11	10	11
Tobacco Cessation	11	6	7	8	8	9	8	11
Diabetes: LDL Control	6	2	4	7	4	6	5	5
Diabetes: HbA1c Control	13	7	8	11	8	13	12	13
CHF Readmission	14	8	10	13	9	11	12	13
Hypertension control	12	5	6	9	6	11	10	12
Pediatric Asthma Care	9	4	4	7	3	9	7	9
Optimal Diabetes Care	5	1	2	3	2	5	4	5
Most Frequently Cited (Total)	**166**	**77**	**100**	**136**	**88**	**151**	**137**	**155**

Source: UCLA follow-up survey of designated public hospitals (DPHs).
Notes: The total indicates the number of times DPHs cited the given reason across all Category 3 measures. CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index.

Summary

The findings indicate that CG-CAHPS data were infrequently (2 DPHs) tracked prior to DSRIP. Preventive health measures and at-risk population measures, however, were tracked by more than half of DPHs. Care coordination measures were tracked by fewer than half of DPHs.

DPHs reported that most of these measures were not tracked uniformly or at the same scope as under DSRIP. Among DPHs that previously collected these measures, less than half expanded collection of these measures to other clinics/departments within the DPH. Some changed the methods of data collection most notable by using EHRs and changing denominators or numerators to be consistent with DSRIP. DPHs goals also varied including incorporation of patent experiences in workflow, standardization of data collection across the organization, increased intensity of care management, linking patients to community resources, and improving collaboration among inpatient and primary care providers. The most frequently cited reason for not tracking Category 3 measures was lack of HIT (66%).

DPHs reported use of extensive resources and high level of difficulty for tracking most of the Category 3 measures. Most effort was spent on ensuring better data collection approaches to capture more accurate data, specification, standardization, and automation of procedures to create regular reports. The overall level of difficulty was attributed to technically challenging tasks and the need for a major culture change and stakeholder engagement.

DPHs reported using Category 3 measures in quality improvement initiatives 80% of the time as well as using them to provide feedback to medical directors and administrators 75% of the time and providers 70% of the time. The projects that were most frequently (88% to 94% of the time) incorporated into quality improvement initiatives included CG-CAHPS, Mammography screening, influenza immunization, tobacco cessation, diabetes LDL and A1c control, 30-day CHF readmission rate, and hypertension blood pressure control. These choices are likely to reflect the data most critically needed for quality improvement by DPHs.

DPHs reported achieving nearly all of the milestones in this Category.

The weighted average rates for CG-CAHPS indicated that scores were highest for ability of the doctors to communicate with patients (83%) and lowest for getting timely appointments, care, and information (44%) in DY 10. These rates did not change from DY 8 to DY 10. However, the average rates masked improvements in rates for some DPHs and a decline in rates for others. Comparisons of multi-site vs. single-site DPHs and county-owned vs. academic-owned DPHs indicated some differences particularly for better patient rating of the doctor in academic-owned (81% vs. 61%) and multi-site DPHs (70% vs. 65%). Comparisons of overall DPH DY 10

rates with CG-CAHPS reported western region indicated lower rates for DPHs, but the comparison of academic-owned DPHs to university or academic medical center benchmarks was more favorable.

Care coordination measures, assessing reductions in negative outcomes such as diabetes complications (0.44% in DY 7 and 0.33% in DY 10) or CHF admissions (0.56% in DY 8 and 0.40% in DY 10), were relatively rare occurrences and they declined during DSRIP. No major differences were observed between county-owned and academic-owned DPHs as well as multi-site and single-site DPHs. Comparisons of DY 10 benchmarks with existing national benchmarks indicated favorable or equal rates for all but CHF admissions.

The rates of preventive health measures increased during DSRIP for mammography (54% in DY 7 to 68% in DY 10), child weight screening (62% in DY 8 to 83% in DY 10), and tobacco cessation (35% in DY 8 to 51% in DY 10), but influenza and pediatric BMI measures did not show the same large increases. The comparison between multi-site vs. single-site DPHs showed better rates for most measures for the latter group. Comparison of county-owned vs. academic-owned showed an advantage in pediatric BMI and smoking cessation measures for the county and an advantage for mammography and flu immunization for academic-owned DPHs. Comparison of these measures with national benchmarks showed better rates for DPH in all the rates except for influenza immunization.

All but one at-risk populations measure improved during DSRIP, but improvement was modest. The largest increase was for pediatric asthma care, increasing from 41% in DY 8 to 48% in DY 10. Comparing these measures between single-site and multi-site DPHs indicated more favorable results on nearly all measures for single-site and academic-owned DPHs. DPHs performed favorably to the national benchmarks for both diabetes control measures (higher or similar rates of control) and CHF readmission measure (less CHF readmissions). However, DPH rates outcomes for hypertension control and pediatric asthma prescriptions were not favorable.

In the interim period, several Category 3 measures were anticipated to have a high impact on improving quality of care and patient health outcomes. However, no measures were expected to have a high or very high impact on cost containment/efficiency. Eight DPHs stated that it was difficult to measure impact on cost without data.

Near the end of DSRIP, DPHs reported on how Category 3 measures impact other categories and the greatest impact was reported to be providing data. Changing provider and care delivery practices was also frequently reported.

Challenges in implementation included lack of EHR systems, inconsistencies in data collection methods, and lack of clear instructions on gathering data. DPHs responded to these challenges by implementing EHRs, training staff, and improving documentation.

DPHs revealed plans to continue to gather all or some aspects of Category 3 measures. The most frequently cited motivators were compatibility with organization's priorities, existing data collection infrastructure, and ongoing support of DPH leadership. The measures most frequently identified with multiple motivators were CG-CAHPS, diabetes HbA1c control, and CHF readmission measures. The most frequently cited barriers to sustainability was lack of sufficient funding after DSRIP and the measures most frequently cited with multiple barriers were diabetes LDL control, optimal diabetes care, and diabetes complications.

DPHs acknowledged that collecting population-level data similar to DSRIP measures would be expected in the future and had become the new norm and indicated that core competencies related to data systems and analytic infrastructure are sustainable, but they have to decide which metrics are helpful for their operations or consistent with their organizations' strategies. Some DPHs had embedded the Category 3 measures in registries or had established new processes of care based on these measures. Challenges to sustainability included the inadequacy of some measures in capturing other positive outcomes such as reduction in wait times not captured by CG-CAHPS or changes in clinical guideline that have led to obsolescence of some measures. DPHs expressed reservations in their ability to sustain very resource-intensive measures in the absence of DSRIP funding.

Category 4: Urgent Improvement in Care

Category 4 projects were designed to make evidence-based urgent improvements in the inpatient care setting. Each DPH was required to implement at least four projects related to inpatient care for Category 4. DPHs were required to select two projects: sepsis management and central-line associated bloodstream infection (CLABSI) prevention. DPHs were also required to select a minimum of two projects from the following five: surgical site infection (SSI) prevention, hospital-acquired pressure ulcer (HAPU) prevention, stroke management, venous thromboembolism (VTE) prevention and treatment, and falls prevention. Improvement targets for Category 4 projects were based on baseline data starting no earlier than July 2009 or data based on 6-12 months of the project in DY 7. DHCS was tasked with setting a high performance level and a minimum performance level for central line insertion practices (CLIP) adherence, stroke management, and VTE, which were to be used as guidelines to set targets for DY 9-10. In DY 6-7, DPHs implemented Category 4 projects and primarily reported process-oriented measures. In DY 8-10, DPHs began consistently reporting improvement measures, including adherence and outcomes.

Project Selection

Exhibit 85 presents the selection of projects by the DPHs. As required, all 17 DPHs worked on the sepsis management and CLABSI prevention projects. The most frequently selected optional projects were SSI prevention and HAPU projects, both of which were selected by 12 DPHs. The remaining projects were less frequently selected. Several DPHs added new projects after meeting DSRIP top performance targets on Category 4 projects (Appendix B, Exhibit 144).

Exhibit 85: Projects Selected, by Designated Public Hospital, Category 4

Designated Public Hospital	Sepsis Management	CLABSI Prevention	SSI Prevention	HAPU Prevention	Stroke Management	VTE Prevention	Falls Prevention	Total
Alameda	✓	✓	✓	✓				4
Arrowhead	✓	✓		✓	✓			4
Contra Costa	✓	✓		✓		✓		4
Kern	✓	✓		✓		✓		4
Los Angeles	✓	✓	✓		✓	✓		5
Natividad	✓	✓		✓		✓	✓	5
Riverside	✓	✓	✓		✓			4
San Francisco	✓	✓	✓			✓		4
San Joaquin	✓	✓	✓		✓			4
San Mateo	✓	✓	✓				✓	4
Santa Clara	✓	✓	✓	✓	✓			5
UC Davis	✓	✓	✓	✓				4
UC Irvine	✓	✓		✓		✓		4
UC Los Angeles	✓	✓	✓	✓				4
UC San Diego	✓	✓	✓	✓		✓		5
UC San Francisco	✓	✓	✓	✓				4
Ventura	✓	✓	✓	✓				4
Total	**17**	**17**	**12**	**12**	**5**	**7**	**2**	**72**

Source: UCLA analysis of designated public hospital reports.

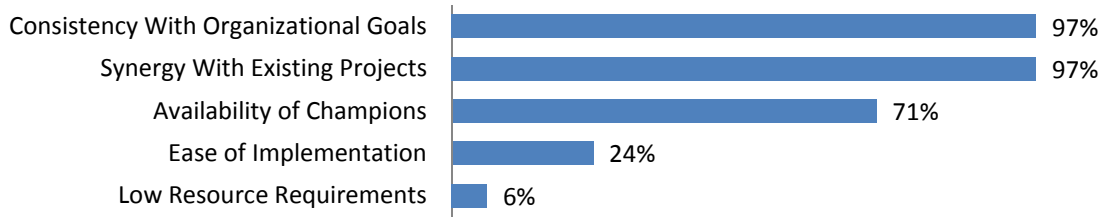
During the UCLA follow-up interviews, DPHs reported that DSRIP Category 4 projects advanced patient safety initiatives that were currently in place, particularly CLABSI and SSI prevention, both of which were reported to the Centers for Disease Control and Prevention (CDC) through the agency's voluntary National Healthcare Safety Network (NHSN). Additionally, DPHs reported that most Category 4 measures were already on their agenda given that they were part of other external initiatives such as the CMS Hospital Inpatient Quality Reporting Program and the CMS Meaningful Use program. As a result, DSRIP Category 4 projects worked synergistically with many ongoing efforts at DPHs.

Rationale for Selecting Category 4 Projects

During the UCLA interim survey, nearly all DPHs identified consistency with organizational goals and synergy with existing projects as reasons for selecting the optional Category 4 projects (Exhibit 86). Neither ease of implementation (24%), nor low resource requirements (6%),

appeared to be key considerations in choosing projects. Nearly three-quarter of the DPHs (71%) identified the availability of a local champion as a consideration in selecting projects.

Exhibit 86: Reasons for Selecting Optional Category 4 Projects



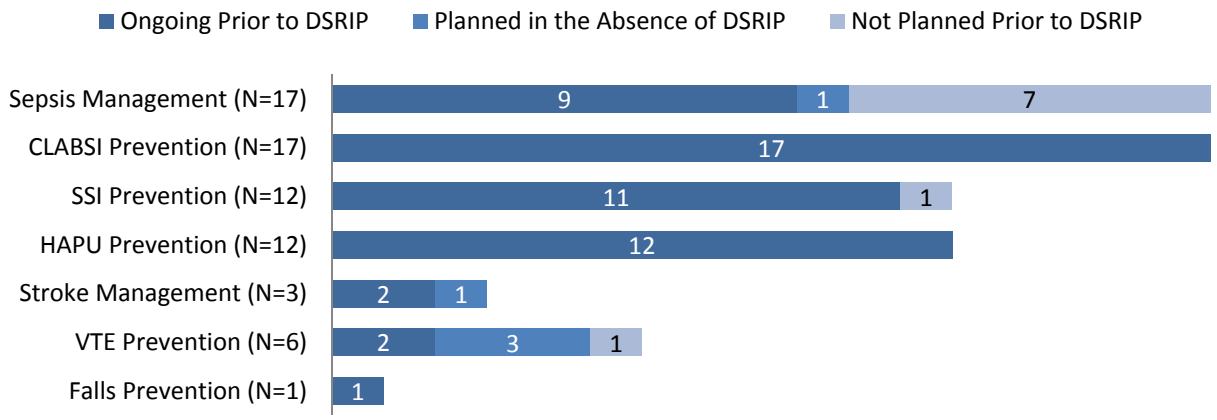
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 4 at the time of interim survey completion projects (N=69). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

Status of Category 4 Projects Prior to DSRIP

For almost all of the projects, DPHs selected projects they were either working on or that were in planning prior to DSRIP (Exhibit 87). The one notable exception to this pattern was the mandatory sepsis management project; seven of the 17 DPHs indicated that these projects were not implemented or planned prior to DSRIP. During follow-up interviews, several DPHs noted that sepsis management had not been a significant national safety goal prior to DSRIP and that the Category 4 project brought important attention and resources to this issue. At UC Los Angeles and UC San Diego, key informants reported that prior to DSRIP there had been some local clinician efforts dedicated to sepsis management but that DSRIP gave the project momentum and resources. Similarly, Ventura had planned to prevent and manage sepsis, but DSRIP created and crystallized a formal program.

This was in sharp contrast to the other mandated project, CLABSI prevention, for which all 17 DPHs indicated they had projects underway prior to DSRIP. For all the optional projects, DPHs indicated prior work was underway with two exceptions: the DPH that chose SSI prevention and the one of the DPHs that chose VTE prevention indicated that no work had been planned prior to DSRIP. DPHs differed in the extent of the infrastructure in place for Category 4 projects prior to DSRIP. Academic DPHs and those in larger metropolitan areas reported having more robust patient safety programs while smaller or mostly rural DPHs such as Alameda, Kern, and Natividad reported lacking much-needed quality improvement infrastructure and resources.

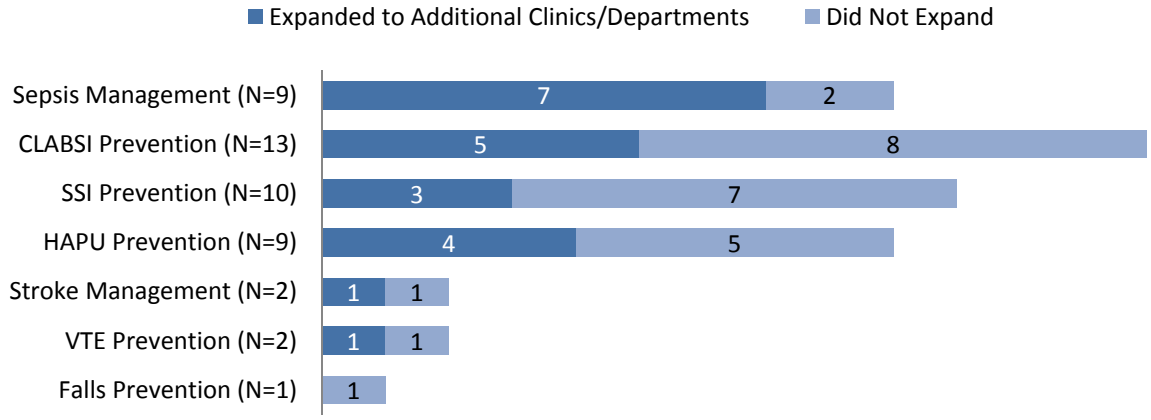
Exhibit 87: Status of Category 4 Projects in DPHs Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).

In the UCLA follow-up survey, DPHs that implemented Category 4 projects prior to DSRIP were asked whether they expanded the scope of those projects. Of the required projects, most (7) DPHs expanded sepsis prevention to other departments, but most (8) DPHs did not expand CLABSI prevention (Exhibit 88). Among optional projects, most DPHs did not expand SSI (7) or HAPU prevention (5). Contra Costa reported that sepsis management and HAPU prevention projects were previously pilots that were expanded more broadly during DSRIP.

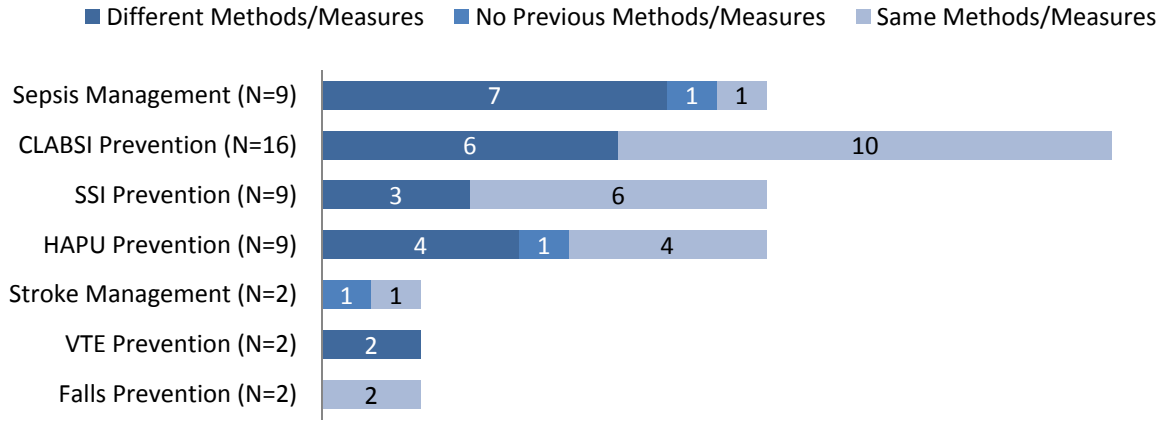
Exhibit 88: Number of DPHs That Expanded the Scope of Category 4 Projects to Other Clinics or Departments



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Total may not add up to the number of DPHs that selected a specific Category 4 project due to question non-response.

DPHs also reported on whether they changed the data collection or measurement method for Category 4 projects from existing projects (Exhibit 89). DPHs changed methods or measures for sepsis management most frequently (7) and used the same methods and measures most frequently for CLABSI prevention (10). HAPU prevention methods or measures were changed by nearly half of the DPHs that implemented this project.

Exhibit 89: Number of DPHs That Used Different Methods or Measures Prior to Collection of Category 4 Projects



Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Total may not add up to the number of DPHs that selected a specific Category 4 project due to question non-response.

DPHs were also asked if the goals of existing projects differed from DSRIP and to describe how they differed. DPHs mostly reported standardization of implementation across various departments, setting more rigorous or robust measurement standards, or more aggressive goals under DSRIP. Examples of changes are provided in Exhibit 90.

Exhibit 90: Examples of Changes in Goals of Category 4 Projects during DSRIP

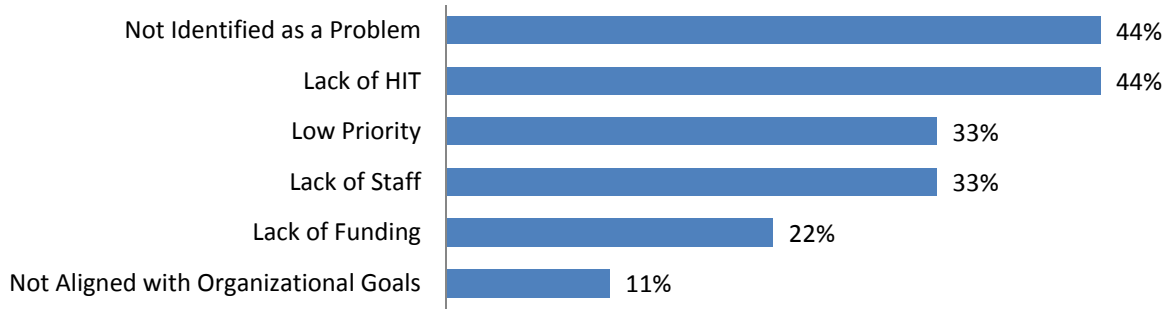
DPH	Examples of Changes in Goals
Sepsis Management	Did not include the INLP [integrated nurse leadership program] goals and Coded Data definitions prior to DSRIP. We were generally less structured in outcome measurement and adherence to sepsis bundle compliance before.
	Prior to DSRIP, the Sepsis goals focused on staff education of screening for sepsis and lactate draw. With DSRIP, a more formal Sepsis team was formed and established specific goals for adherence to the bundle of care, as well as establishing a goal for reducing sepsis mortality.
	Prior work addressed mortality and developing processes that focused primarily on clinical identification rather than prospective analysis of coded cases.

DPH	Examples of Changes in Goals
CLABSI Prevention	Prior to CLABSI work in the non-ICU adult inpatient units was formative, as non-ICU CLABSI surveillance began only a matter months before the start of DSRIP. DSRIP allowed for data-sharing and benchmarking with other SNI-collaborating hospitals for the purpose of defining SMART goals and objectives for this project.
	The DSRIP project highlighted the need to involve front-line staff and nursing department management. A multidisciplinary LEAN study of current practices illustrated the need for participation of management and staff in each inpatient care unit in developing processes to standardize practices of insertion and maintenance of central lines. This increased awareness of implemented infection prevention strategies and the ramifications of noncompliance with established best practices. The LEAN project also demonstrated the need for continued education to ensure all staff practiced the hospitals care bundles implemented to prevent CLABSIs.
	Different areas were trying to implement parts of the CLABSI practices. DSRIP provided a focus and resources for the organization to standardized approach for implement the project in a systematic way for the entire hospital.
	Did not have yearly structured improvement goals before DSRIP.
	DSRIP goals for the Central Line-Associated Bloodstream Infection Prevention project were greater in scale, more aggressive and included specific EHR development and configuration to support improvements in care.
SSI Prevention	Prior SSI work targeted non-risk based crude percentage reductions in SSI per-procedure rates for certain orthopedic and colon surgeries. DSRIP SSI goal included specific targets for adherence to perioperative CHG wipes, use of pre-operative time-out board), as well as risk-based SSI rate reductions (i.e., utilizing the NHSN to calculate a standardized infection ratio, or SIR) in the following procedures: colon, small bowel, total abdominal hysterectomy, hop prosthesis, knee prosthesis, and open reduction of long bone fractures.
HAPU Prevention	This intervention also began with a pilot that was tested on one unit with limited nursing pressure ulcer checks. DSRIP created need for standard work, use of a variety of tools and cooperation of all nurses on all units.
	The goal of the prior work and the present work has always been to decrease hospital acquired pressure ulcers (HAPU). However, the methods have changed significantly as an intervention for standardized education and documentation. This includes photos with inter-rater reliability for staging of pressure ulcers by nurses and physicians as present on admission.
	With DSRIP, a HAPU team formed and a physician champion was identified. The team started skin rounds with a focus on improved documentation, education and adherence to policy related to skin care.
Falls Prevention	Did not have the Essential Hospital Network collaboration and support.

Source: UCLA follow-up survey of designated public hospitals (DPHs).
Note: Responses are edited for brevity.

In the interim survey, DPHs offered a wide range of reasons why projects had not been planned or underway prior to DSRIP (Exhibit 91). Lack of identification of the project as a problem (44%) and lack of HIT infrastructure to identify or manage the project (44%) were the two reasons most frequently cited, with low priority relative to other areas, lack of staff, and lack of funding also cited as reasons.

Exhibit 91: Reasons that Category 4 Projects Were Not Planned Prior to DSRIP



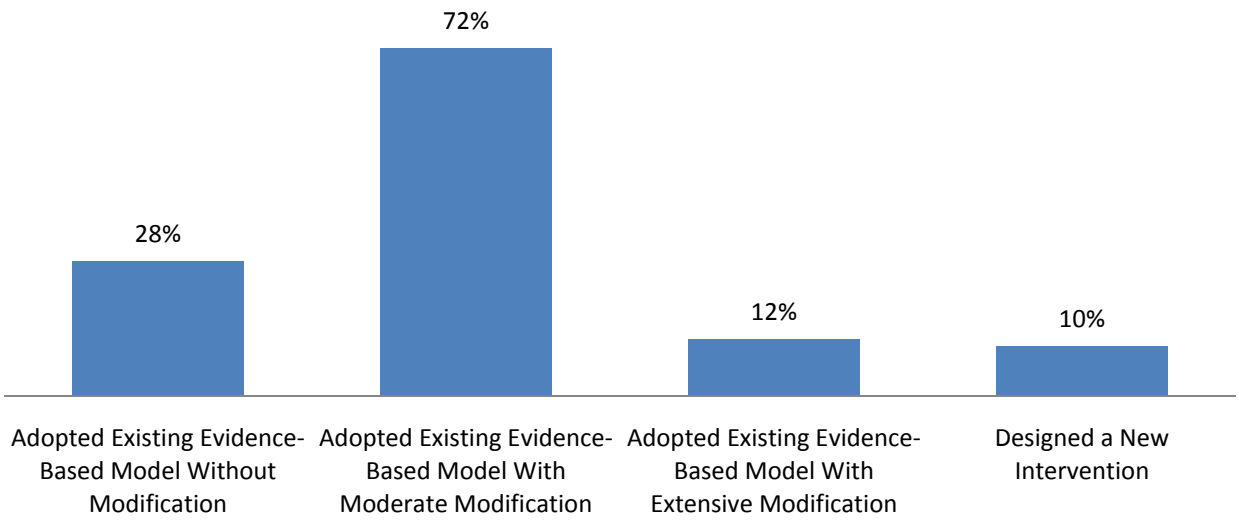
Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of projects selected that were not implemented or planned prior to DSRIP (n=9). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

Implementation

Use of Evidence-Based Models

In the interim survey, DPHs were asked whether they used evidence-based models of care for implementation of Category 4 projects and the extent to which they modified these models. Overwhelmingly, DPHs adopted an existing model for the project but found the models required at least moderate levels of modification (Exhibit 92). For 12% of the projects, modifications were described as extensive and in 10%, a new intervention was designed. Consistent with findings from the implementation research literature, simply adopting an intervention without any adaptation to local circumstances was not generally sufficient.

Exhibit 92: Proportion of Category 4 Projects That Used Evidence-Based Models, by Degree of Modification to the Model



Source: UCLA survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 4 projects selected by DPHs (n=68). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could implement more than one model to complete a project.

DPHs elaborated on their use of evidence-based models during follow-up interviews. Selected examples include using National Pressure Advisory Committee tools and best practices (Alameda) and Surviving Sepsis bundle added to the EHR system (UC Davis). Examples of modifications or new models included creating a sequence of antibiotic use and a sepsis monitoring practice (UC San Diego), and internally developed sepsis screening tools for specific patient populations (Kern).

In DY 9 annual reports, DPHs described a variety of actions undertaken during implementation to analyze current processes, engage internal stakeholders, and implement formal tests of change and compliance. General activities included partnering with quality departments to perform value stream analyses and Kaizen events; collecting and submitting data to the University Health Systems Consortium using methodologies, targets and medians; and conducting random audits and reviews to assess bundle compliance. Project-specific examples included using Plan-Do-Study-Act cycles to refine practices to increase compliance with the CLIP bundles or to test sequential compression device machine accessibility approaches and prophylactic antibiotic orders for SSI prevention, analyses of gaps in care for HAPU prevention, engaging patients and families for HAPU and falls prevention, assessing correlation of prevention interventions to reductions in HAPU to determine the most effective interventions,

and conducting webinars and coaching sessions to review recent patient falls, recent interventions tested, and barriers to intervention.

Staff Training

In the interim survey, DPHs reported on the degree of staff training required for the project using a five-point scale from "very low" to "very high." Nearly 60% of DPHs reported staff had some previous training relevant to the project, while 69% reported intervention-related training prior to the intervention and 82% reported training during the intervention (Exhibit 93). During follow-up interviews, some DPHs provided specific examples. San Francisco developed a 10-month patient safety academy focused on leadership development, quality improvement, and team formation with overarching goals that aligned with both the hospital's overall strategy as well as with DSRIP. Riverside adopted Lean methodology as part of an overall improvement model and applied it to DSRIP and non-DSRIP projects. Los Angeles sponsored training for several hospital staff teams for Six Sigma training. Several DPHs also reported contracting with the Institute for Healthcare Improvement for training programs and seminars.

Exhibit 93: Timing of Staff Training in Relation to DSRIP Implementation for Category 4 Projects

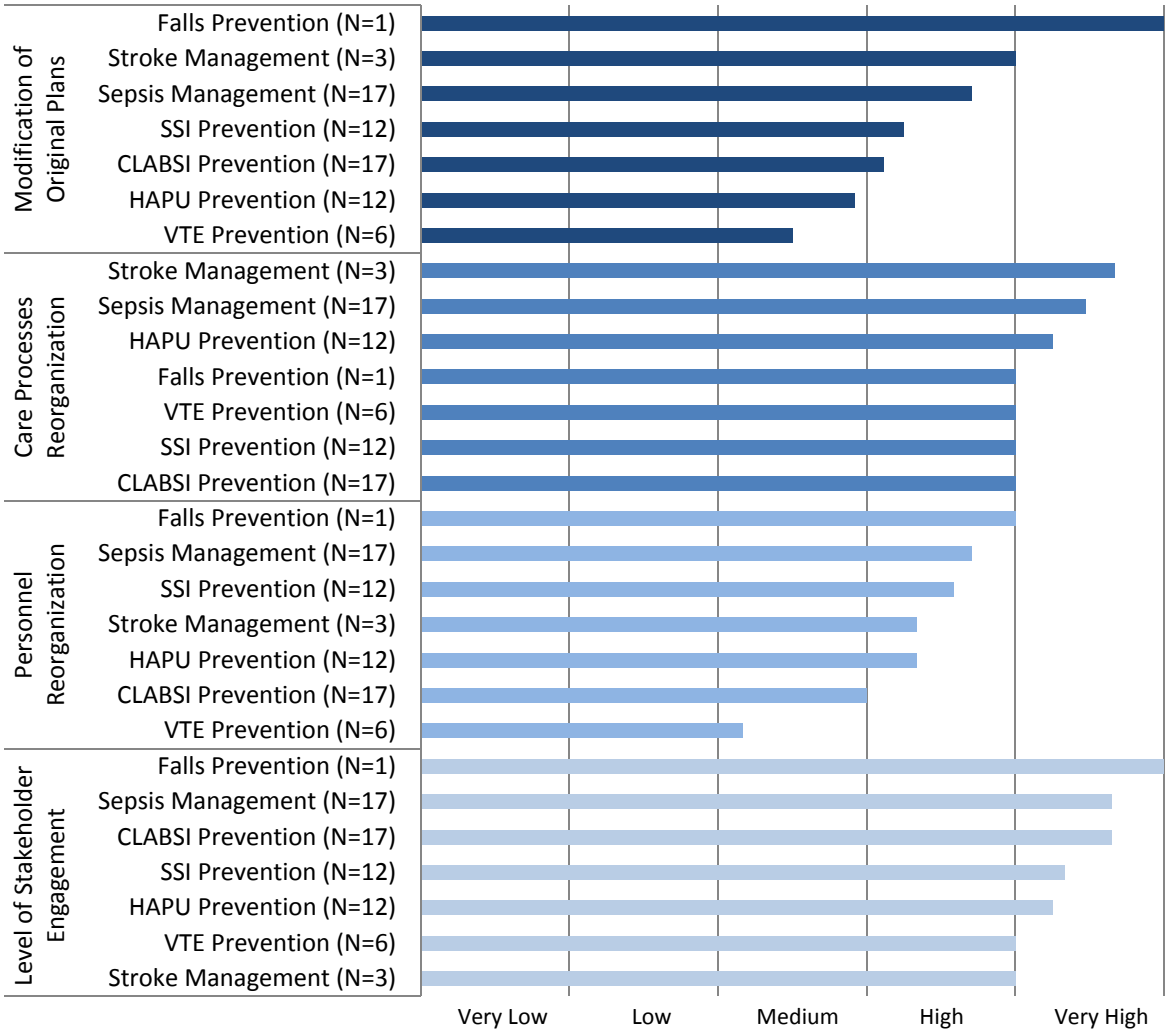
Source: UCLA survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 4 projects selected by DPHs (n=68). Total is greater than 100% because DPHs were allowed to select more than one response option per project. DPHs could conduct multiple phases of staff training depending on the needs of the project.

Care Process and Personnel Reorganization, Stakeholders Engagement, and Overall Difficulty

DPHs were also asked to rate the level of personnel and care process reorganization and stakeholder engagement using a five-point scale from "very low" to "very high." Challenges in

engaging stakeholders and reorganization of care processes required especially high levels of effort or were most frequently characterized as very hard in the interim survey. The exceptions were the degree to which plans needed to be modified for the VTE and HAPU prevention projects, where effort was characterized as moderate, and personnel reorganization for the VTE and CLABSI prevention projects (Exhibit 94).

Exhibit 94: Level of Modification of Original Plans, Reorganization of Personnel and Care Processes, and Stakeholder Engagement for Category 4 Projects

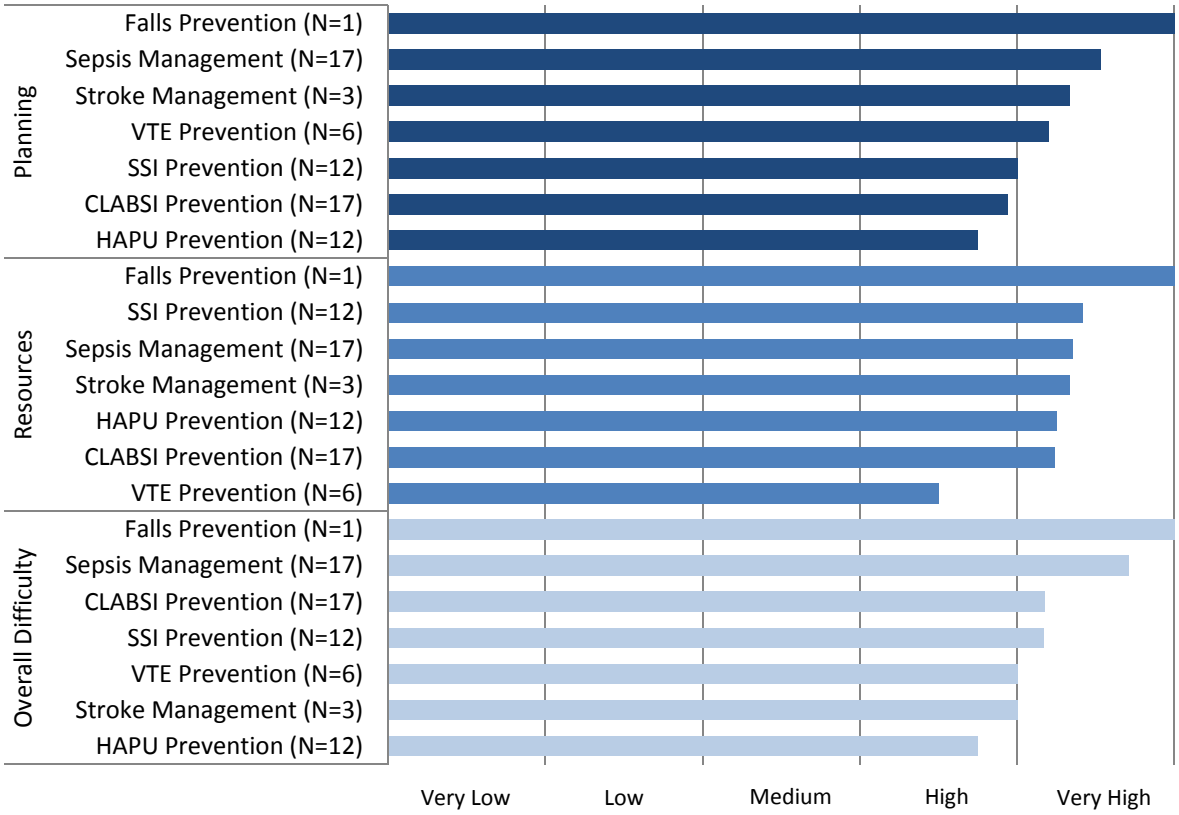


Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs at the time of the interim survey.

DPHs also rated the level of planning, resource use, and overall difficulty using the same five-point scale. The ratings for all three questions were "high" to "very high" (Exhibit 95). During the follow-up interviews, DPHs elaborated that planning and execution proved to be difficult

because of the complexities in coordinating clinical efforts, workflows, physicians and nursing, and external systems such as the hospital labs and pharmacies. For those DPHs that already had existing projects in place, the high level of achievement expected by the milestones often required adding data analysts, measure-specific nursing staff, and project managers.

Exhibit 95: Amount of Effort and Overall Level of Difficulty in Implementing Category 4 Projects



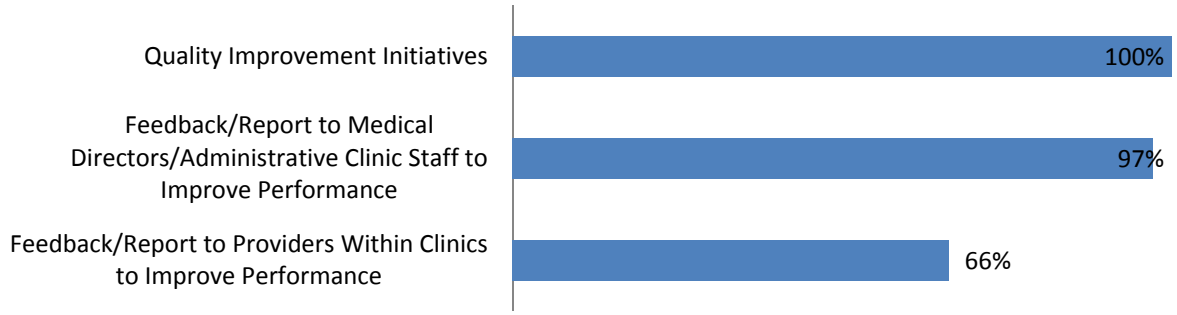
Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs at the time of the interim survey.

Incorporation of Category 4 Measures in Performance Improvement

In the interim survey, DPHs reported on whether and how they incorporated Category 4 project results or project information into quality improvement initiatives, feedback or reports to medical directors or administrative leadership to improve performance, or feedback to providers within clinics to improve performance (Exhibit 96). All DPHs planned to incorporate project results into quality improvement. All Category 4 project were always used for quality improvement initiatives. For 97% of the projects, DPHs planned on providing feedback to medical directors or administrative leadership. The largest area of variation was in the intention to provide direct feedback to providers within clinics, which DPHs indicated they would do for two-thirds of the projects. During follow-up interviews, San Joaquin key informants reported

providing feedback to the medical directors and administrative staff to change processes but did not provide the information to individual providers or identify them. Similarly, Arrowhead provided monthly reports to leadership and dips in performance were followed with education and feedback to the appropriate unit or team. UC Davis and San Francisco both developed dashboards to update staff on quality data.

Exhibit 96: The Proportion of Category 4 Projects that Used Project Measures for Quality Improvement Initiatives and Feedback



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of Category 4 projects selected by DPHs (n=68). Total is greater than 100% because DPHs were allowed to select more than one response option per project.

Outcomes

Project Milestones

DPHs achieved 105 milestones (100% of total proposed) in DY 6, 256 (100%) in DY 7, 291 (96%) in DY 8, 320 (94%) in DY 9, and 335 (90%) in DY 10, as of the date of this report (data not shown). For the mandatory Category 4 projects, DPHs overall achieved 280 milestones (98%) for sepsis management and 299 (93%) for CLABSI prevention. For optional projects, DPHs achieved 144 (95%) for SSI prevention, 176 (97%) for HAPU prevention, 150 (92%) for stroke management, 179 (93%) for VTE prevention, and 11 (92%) for falls prevention (data not shown). Overall, 25 milestones were partially achieved and 43 were not achieved.

Anticipated Effect of Category 4 Projects Based on Existing Literature

Reducing hospital-acquired infections and serious preventable conditions or "never events" have become important national and state priorities. The CDC estimates that 5-10% of patients who are hospitalized develop some type of hospital-acquired infection, and hospital-acquired infections are estimated to cost $28-33 billion each year.(85) Serious complications, including death, increased health care utilization, and higher costs are all associated with these adverse events. In 2008, CMS implemented a policy that effectively penalized hospitals if Medicare

patients developed certain conditions or experienced "never events," including SSIs, CLABSIs, and HAPUs.(86) This policy, along with other national patient safety efforts, has helped drive down the incidence of adverse events. The following section includes an overview of project-specific anticipated effects.

Sepsis Prevention

Mortality rates associated with severe sepsis have been as high as 50%, and sepsis patients have an average length of stay of approximately 20 days, with per stay costs in the $21,000-$25,000 range and total annual costs of $16.7 billion nationally.(87) Costs and lengths of stay have been found to be significantly higher at teaching hospitals, with mean charges ranging from $38,000 to $49,000.(88)

A series of guidelines and bundles to build awareness of sepsis, improve diagnosis, and increase the use of appropriate treatment have been created and refined since 2002.(89) The 6-hour sepsis bundle, promoted by the campaign, includes measuring serum lactate, obtaining blood cultures prior to antibiotic administration, improving time to broad-spectrum antibiotics, and in the event of hypotension and/or lactate less than 36mg/dl, delivering an initial minimum of crystalloid and applying vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure. Adoption of the sepsis bundle has been found to significantly reduce mortality, length of stay, and overall costs. In one analysis, mortality decreased from nearly 50% to 30%, length of stay decreased by five days, and mean total costs were reduced from $22,000 per case to $16,103 with the adoption of the protocol.(90) Another study found that compliance with the 6-hour bundle reduced mortality from 49% to 23%.(91) Implementing the sepsis bundle has also been found to be highly cost effective. One analysis found that the sepsis bundle was associated with an incremental cost of $11,274 per year of life saved.(92)

CLABSI Prevention

The incidence of CLABSIs is associated with a mortality rate of up to 25%, but there were still an estimated 18,000 CLABSIs in intensive care units (ICUs) in the United States in 2009 despite the significant decrease in incidence since 2001.(93) Patients with CLABSI experienced a three- to eight-day increase in the ICU length of stay, an eight- to twelve-day increase in the overall length of stay, and an increase of $12,000-$15,000 in total hospital costs, compared to patients who did not develop a CLABSI.(94-96) For critically ill patients, CLABSI is associated with an increase in $40,000 to $56,000 in total hospital costs, a 22- to 24-day increase in the length of stay, and an eight- to 20-day increase in the length of stay in the ICU.(97, 98)

The CLIP bundle is the CDC-recommended method of prevention and includes the use of maximum sterile barriers during insertion of the central line, evidence-based hand hygiene practices by insertion staff, and skin antiseptic such as chlorhexidine gluconate prior to insertion, and the practice of allowing the skin preparation agent to dry completely before insertion.(99) A significant decrease in the rate of catheter-related bloodstream infections was noted in an analysis of 103 ICUs that implemented elements of the CLIP bundle, with a median decline of 2.7 infections per 1,000 catheter days at baseline to zero during the 18 months of follow-up.(100) A 2012 review of the literature on CLABSI found that contributing factors included effective leadership, a culture of safety, multidisciplinary teams and teamwork, accountability of health care personnel, empowerment, resource availability, data collection and feedback, written policies and procedures, and the education of patients and their families on ways to reduce CLABSI.(85)

SSI Prevention

A CDC survey estimated that there were 157,000 SSIs associated with inpatient surgeries in the United States in 2012.(101) Along with a higher risk of mortality, consequences of an SSI include higher hospital costs, a longer overall length of stay and a higher 30-day readmission rate. Development of an SSI is associated with an increase in daily total inpatient charges of $500, a five-day increase in the total length of stay, and a more than five-fold increase in the 30-day readmission rate.(102) An analysis of SSIs at 129 Veterans Affairs hospitals found that relative costs were 1.43 times greater for patients who developed an SSI compared to patients who did not develop such a complication.(103)

Following an evidence-based bundle has been found to reduce rates of SSIs. One meta-analysis found that a bundle that included screening for *Staphylococcus aureus* in the nasal carriage, decolonizing *S. aureaus* carriers with chlorhexidine gluconate bathing and the antibiotic mupirocin, and using antibiotics prophylactically was associated with lower rates of S. *aureaus* SSIs among patients undergoing some types of surgical procedures.(104) A 20-hospital intervention that used an SSI bundle found a significant decrease in the rate of SSIs among patients undergoing cardiac, hip or knee surgery during the intervention.(105)

HAPU Prevention

More than 2.5 million people each year develop pressure ulcers in hospitals in the U.S.(106) HAPUs are estimated to cost $11 billion in excess hospital costs annually and thought to be largely preventable.(107) In addition to causing increased levels of pain and discomfort, pressure ulcers can also lead to infections and longer hospital stays. The development of HAPUs is associated with an increase of $2,100 in hospital costs and four additional days in the

hospital.(108) Strategies to prevent HAPUs include conducting a pressure ulcer examination and assessment upon admission for all patients, conducting a daily risk assessment and daily skin inspection, managing moisture, optimizing nutrition and hydration for patients, and minimizing pressure.(109)

A cost-effectiveness analysis examining whether prevention methods were cost-effective as compared to standard care for HAPUs found that the cost of prevention was estimated to be $54.66 per day per person.(110) Evidence that the 2008 CMS nonpayment policy for HAPUs has had some important effects is available. An analysis of 210 academic medical centers found that in the four years following the enactment of the policy, the HAPU incidence rate decreased from 11.8 cases per 1,000 inpatients to 0.8 cases per 1,000 inpatients.(107)

VTE Prevention

An estimated 300,000 individuals are affected by VTE each year, defined as either deep vein thrombosis (DVT) or pulmonary embolism (PE), and approximately 50% of VTE events are hospital-associated.(111) VTE is one of the leading causes of maternal mortality in the U.S. and one of the greatest causes of preventable deaths in hospitals.(112) An estimated 10-30% of patients die from VTE within the first month, and serious complications and decreased quality of life can occur for survivors.(112) VTE is also associated with a high rate of hospital readmissions. Hospital readmission rates for VTE or PE within one year were 5.3% if VTE was the primary diagnosis and 14.3% for secondary diagnoses.(113) VTE can also increase costs in the longer term. One analysis found that overall mean annual per member health costs for patients who had a VTE were significantly higher ($33,531) than non-VTE patients ($17,590).(114) Prevention strategies to reduce the occurrence of VTE include the use of prophylactic heparin and other anticoagulants and the use of pneumatic compression devices and graduated compression stockings.(111) The use of these prevention strategies requires risk assessments and reassessments in order to reduce other adverse outcomes.

A 2013 Cochrane review of interventions to improve compliance with VTE prophylaxis found that computerized reminders, electronic alerts, stickers on patient charts, staff education, and multifaceted interventions were associated with statistically significant increases in uptake of prevention strategies. One analysis found that using a checklist for VTE prophylaxis increased the percentage of new patients who were appropriately prescribed VTE prophylaxis from 75% to 98%.(115, 116) A meta-analysis found that treatment with any type of heparin was better than no treatment or placebo in prevention of VTE in colorectal surgery.(117) Another meta-analysis found that in comparison to no treatment, intermittent pneumatic compression (e.g. inflatable boots or gloves) reduced the risk of DVT by 60%.(118)

Stroke Management

Stroke is the fifth-leading cause of death in the U.S. and the leading cause of severe disability.(119) Approximately 800,000 people in the nation have a stroke each year, and 4-17% of these strokes occur while patients are in the hospital.(119, 120) A national analysis found that patients who had an onset of stroke while at the hospital had worse care, were more likely to die, were less likely to be discharged to their homes, and were less likely to walk independently when discharged compared with patients who had an onset of stroke outside the hospital, after adjusting for patient and hospital characteristics.(120) A variety of factors may account for the worse quality of care measures and outcomes, including less comprehensive in-hospital evaluations/stroke assessments, lower use of brain imaging for in-hospital strokes, longer delays between symptom recognition and appropriate treatment, and conflicting priorities associated with caring for patients with multiple comorbidities.(120)

Adherence to quality measures can improve care and outcomes, although the evidence is mixed. Patients who receive high-intensity rehabilitation services following a stroke had a 14% lower incidence of 30-day readmission compared with patients who had low intensity rehabilitation services.(121) Oral anticoagulants were effective in reducing the incidence of strokes in patients with atrial fibrillation and no history of stroke or transient ischemic attacks,(122) while antithrombotics such as warfarin reduced the risk of stroke by two-thirds.(123) Patients with stroke or transient ischemic attack who were administered secondary prevention measures such as stroke education (OR: 0.71; 95%CI: 0.69-0.73), antithrombotics on discharge (OR: 0.63; 95%CI: 0.59-0.66), and smoking cessation counseling (OR: 0.83; 95% CI, 0.78-0.89) all had lower odds of having a second stroke.(124) However, a 2012 meta-analysis of randomized, double-blinded, controlled trials found that statins were not effective in preventing secondary strokes.(125)

Falls Prevention

Falls continue to be one of the most common adverse events reported in hospitals.(126) There are approximately 1.3-8.9 falls per 1,000 patient days in inpatient settings and approximately one-fourth of falls result in an injury.(126, 127) Several risk factors predispose patients to falls, including older age, impaired mental status, use of certain medications, multiple comorbidities, and a history of falling.(128) CMS considers the fall of a hospitalized patient a "never event" and does not reimburse hospitals for these events. As a result of patient safety initiatives, hospitals have made efforts to prevent falls for hospitalized patients. Falls with injury can have serious consequences for the patients, including serious head injuries and death, and for health systems. In addition to the CMS nonpayment policy, falls can lead to lawsuits and high resource utilization. Patients who had a fall with injuries stayed, on average, 14 days longer at the

hospital compared with patients who did not have a fall.(129) The costs associated with a fall with injuries range from $7,000 to $31,000.(130)

Several hospital-related factors are associated with a decreased likelihood of falls during hospitalization, such as having higher registered-nurse-to-unlicensed-assistive-personnel-staffing ratios and the implementation of fall prevention strategies.(128) Fall prevention strategies include assessments, visual risk alerts, and patient education. A 2010 Cochrane systematic review found that patients in hospitals that had multifactorial interventions to reduce falls had a 29% lower risk of falling and the rate of falls was 31% lower compared with inpatients in hospitals without such interventions.(131) Supervised exercise interventions in hospitals were also successful in reducing the risk of falls: inpatients who participated in such interventions experienced 56% decrease in the risk of falls.(131) However, other meta-analyses have not found an association between hospital fall prevention programs and reduction in fall rates.(132) One analysis has found that falls prevention can be cost-effective, but only if the costs of prevention programs are relatively small.(130)

Trends in Category 4 Measures

Each of the projects in Category 4 required implementing a bundle of improvements. DPHs were required to report baselines and trends in adherence to care bundles and outcome measures implementing these bundles. All Category 4 projects in DY 6 were process-oriented measures that were achieved and are not highlighted in this section. The majority of Category 4 projects implemented in DY 7 were also process measures without quantifiable outcomes that were overwhelmingly achieved and are not reported in this section. The exceptions were rates of compliance with CLIP and the sepsis resuscitation bundle, which DPHs reported in DY 7. DPHs that implemented HAPU prevention also reported on the prevalence of stage II, III, IV or unstageable pressure ulcers in DY 7. Similarly, one DPH that implemented falls prevention reported prevalence of patient falls with injuries in DY 7 (rate per 1,000 patient days). These data are also not highlighted in this section because they were not intended as outcomes over time.

The data on outcomes for Category 4 projects are reported in the remainder of this section for DY 8-10, based on DPH annual reports. These include metrics that assessed adherence to bundles of care and patient outcome. DPHs also selected specific targets by demonstration year, but these targets are not reported here as they varied by specific DPH. Baseline data were not available for sepsis management, CLABSI prevention, or the HAPU prevention metrics.

Trends in Sepsis Prevention

DPHs reported on bundle compliance and mortality among patients diagnosed with sepsis using two different measures. One measure was based on CMS' ICD-9 code-based definition and the other on DPHs' own definitions. On average, DPHs reported a consistent increase in bundle compliance from DY 8-10, from 59.9% to 73.4% using the CMS definition and from 64.3% to 73.6% using the DPH definition (Exhibit 97). Detailed data on milestones for which there were sufficient information to measure achievement is provided in Appendix J: Category 4 DPH Specific Milestone Achievements.

DPHs reported a decline in sepsis mortality from septic shock or severe sepsis using the CMS definition from 21.0% in DY 8 to 17.0% in DY 10. DPHs could also choose to report on sepsis mortality using a different definition. Among the nine DPHs that reported mortality using DPH definitions, mortality decreased overall from 12.0% in DY 8 to 11.7% in DY 10 after a slight increase in DY 9. This subset of nine DPHs showed greater improvement than observed with the DPH-selected definition when using the CMS definition, with aggregate mortality rates dropping from 17.0% in DY 8 to 15.0% in DY 10. Trends using DPH definitions may be affected by variations between DPHs in construction of this rate (Appendix J Exhibit 158). All DPHs showed an increase in sepsis bundle compliance based on CMS definition from DY 8 to DY 10 (ranging from 0.1% to 24.4%, except for Alameda (-14.4%) and Natividad (-5.1%) which showed a decrease. However, Alameda showed an increase (42.6%) in compliance based on the DPH definition. Among the 14 DPHs reporting sepsis mortality based on CMS definition, all other than UC San Diego showed a decline from DY 8 to DY 10 (Appendix J Exhibit 158).

DPH definitions of sepsis mortality were derived from different sources that varied based on patient inclusion and exclusion criteria. For example, Riverside's definition of sepsis mortality did not include patient exclusions, while Santa Clara's definition of sepsis mortality excluded several patient populations including OB patients.

Exhibit 97: Sepsis Bundle Compliance and Mortality Rates Using CMS and DPH Definitions, DY 8-10

Measure	DY 8	DY 9	DY 10
Sepsis Bundle Compliance Among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD-9 Codes: 785.52 and 995.92)	59.9%	67.7%	73.4%
Sepsis Bundle Based Compliance on DPH Definition	64.3%	70.1%	73.6%
Sepsis Mortality among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD-9 Codes: 785.52 and 995.92)	21.0%	18.1%	17.0%
Sepsis Mortality Based on DPH Definition	12.0%	14.4%	11.7%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

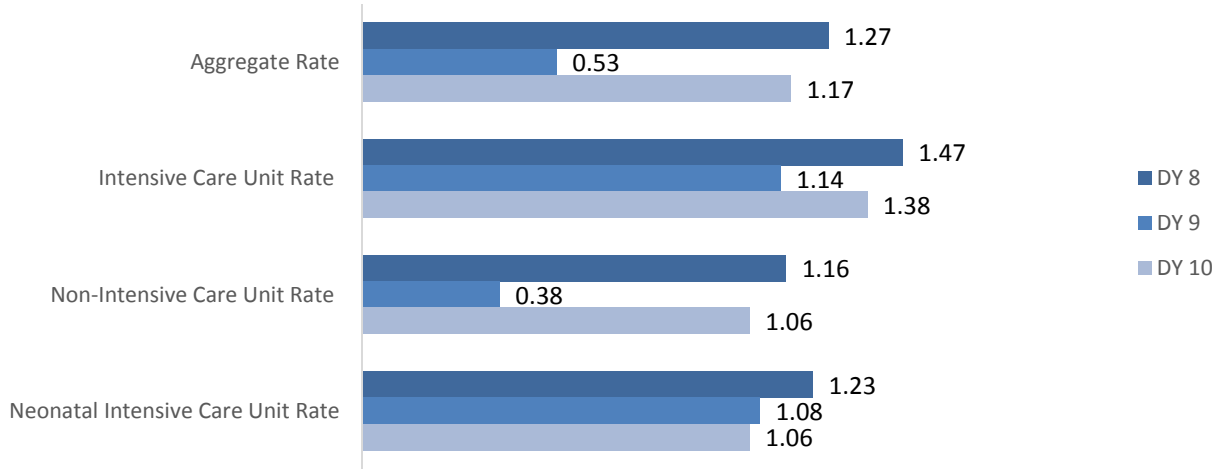
Note: Sepsis bundle elements are defined in Appendix I. ICD-9 code 785.52 indicates septic shock and ICD-9 code 995.92 indicates severe sepsis; for bundle based on CMS definition, N=16; for bundle based on DPH definition, N=10; for mortality rate based on CMS definition, N=14; for mortality rate based on DPH definition, N=9; CMS = Centers for Medicare & Medicaid Services.

Trends in CLABSI Prevention

DPHs reported on the CLIP adherence rate. The data indicated an increase from baseline (95.4%) to DY 8 (96.6%), and further increases from DY 8 to DY 10, culminating in 98.7% adherence to CLIP by the end of the program (data not shown). This increase in adherence corresponded to a reduction in the aggregate rate of CLABSI from 1.27 per 1,000 central line days in DY 8 to 1.17 in DY 10 (Exhibit 98). An examination of CLABSI rates for specific units in the DPHs indicated an overall decline for ICUs, non-ICUs, and neonatal ICUs during the program. The average rate in the neonatal ICU was reduced consistently over the course of the program, while rates in ICUs and non-ICUs decreased from DY8 to DY 9 before increasing in DY 10 but remaining below the initial DY 8 rates.

The DPH specific adherence rates increased for 14 DPHs but declined for Los Angles, Natividad, Riverside, and San Francisco (Appendix J Exhibit 159). The aggregate CLABSI rates per 1,000 central line days declined for 12 DPHs, but increased for Alameda, Contra Costa, Santa Clara, San Francisco, and US Los Angeles. More DPHs did reduce CLABSI in non-intensive care units than in intensive care units.

Exhibit 98: CLABSI Rates per 1,000 Central Line Days, DY 8-10



Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.
Note: For all rates, N=17.

Trends in SSI Prevention

The main outcome milestone for the 12 DPHs that selected the SSI prevention project was based on standardized infection ratios (SIRs) reported by DPHs for different surgical site infections, primarily because DPHs were allowed to select measures that were most relevant to their specific institution. For example, Riverside tracked SSI for C-sections, hernias, and hip prostheses, while San Joaquin reported SSIs for C-sections, colon surgeries, and hysterectomies.

The SIR is an indication of the number of infections in a DPH relative to the number of infections that would be expected based on previous years of data.(133) An SIR of 1 means DPHs experienced the same number of SSIs as predicted, while SIRs over 1 indicate more SSIs than predicted. On average, SIRs decreased in DPHs from 1.03 in DY 8 to 1.01 in DY 10, indicating improvement but remaining slightly higher than the predicted number of SSIs (Appendix J Exhibit 160). There was variation in decline in SSI rates by DPH, where seven DPHs indicated a decline ranging from -0.02 to -1.03 and five showed an increase ranging from 0.2 to 1.78.

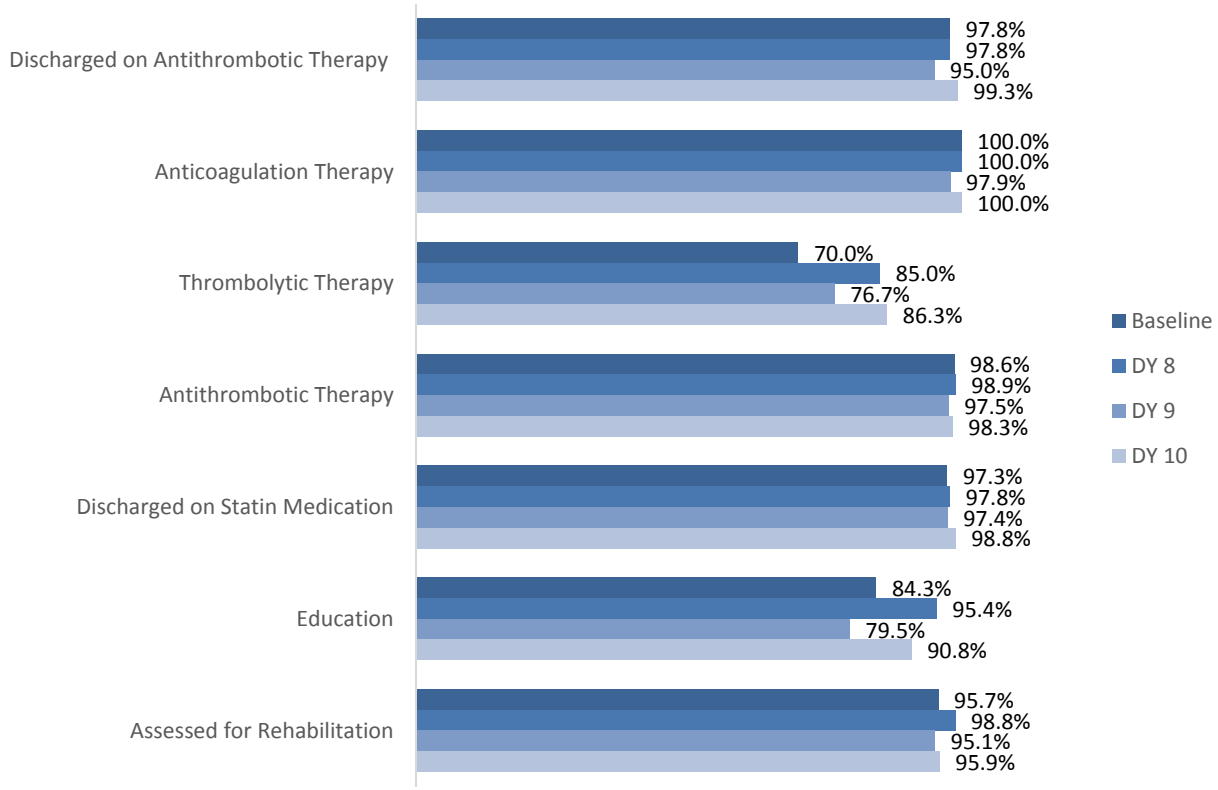
Trends in HAPU Prevention

DPHs reported reductions in the rates of hospital-acquired pressure ulcer (HAPU) rates. The weighted average rate of HAPUs among the 12 DPHs that selected this project consistently decreased over the course of measurement, from 2.19% in DY 8 to 1.46% in DY 9 and 1.08% in DY 10 (Appendix J Exhibit 161). The DPH specific prevalence rates declined for 9 DPHs, remained the same for Los Angeles, and increased for UC San Diego, among those implementing this project. A subset of five of the 12 DPHs that implemented the HAPU project also reported in DY 9-10 on AHRQ's patient safety indicator #3, a measure of the number of stage III or IV pressure ulcers per 1,000 adult discharges.(134) The aggregate rate among these DPHs was reduced by more than half from DY 9 (0.98/1,000 discharges) to DY 10 (0.45/1,000 discharges).

Trends in Stroke Management

Stroke management adherence rates were reported by the five DPHs that selected this measure (Exhibit 99). For all adherence measures with the exception of antithrombotic therapy, the baseline rates were lower than or equal to the rates reported in DY 10. Baseline adherence rates were lowest for thrombolytic therapy (70.0%) and stroke education (84.3%) at baseline but increased by the end of the program to 86.3% and 90.8%, respectively. For the remaining measures, the baseline rates were over 95% at baseline and increased to nearly 96% or higher in DY 10. The DPH specific rates of adherence depended on when the projects were implemented and varied by DPH but all of them showed improvements in adherence for the great majority of the measures (Appendix J Exhibit 163, Exhibit 164, and Exhibit 165).

Exhibit 99: Stroke Management Adherence Rates Reported by DPHs, Baseline and DY 8-10



Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.
Note: For all rates, N=5.

Stroke mortality decreased consistently over the course of program reporting, from 7.6% in DY 8 to 6.9% in DY 9 and 5.2% in DY 10. Based on top performance in DY 7 for one or more stroke process measures, four of the five DPHs reported two additional outcome measures in DY 9-10. On average, compliance with the National Institutes of Health Stroke Scale (NIHSS), an indication of the proportion of stroke patients who received the NIHSS assessment of stroke severity, increased in these DPHs from 61.2% in DY 9 to 72.5% in DY 10 (Exhibit 100). The proportion of stroke patients who received IV-thrombolytic therapy within 60 minutes of hospital arrival also increased dramatically from DY 9 (24.5%) to DY 10 (79.2%). All DPHs showed a decline in stroke mortality (Appendix J: Exhibit 165).

Exhibit 100: Stroke Management Outcome Rates Reported by DPHs, DY 8-10

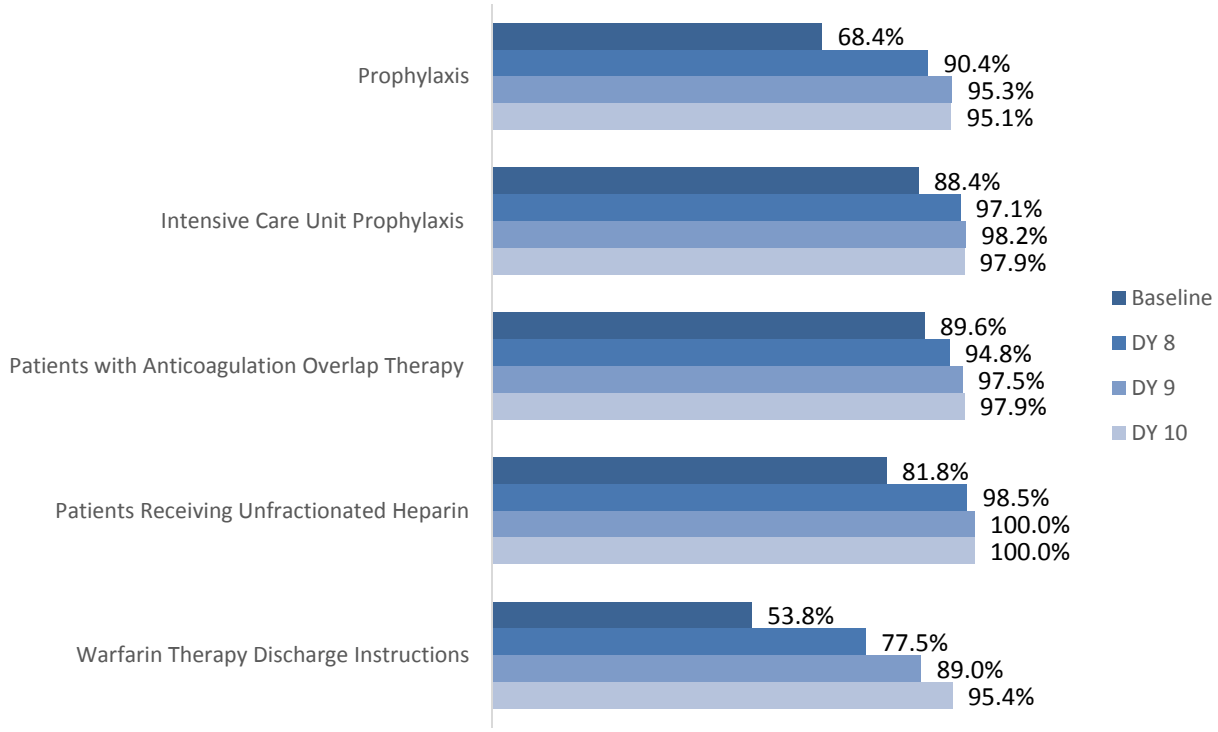
Measure	DY 8	DY 9	DY 10
Stroke Mortality	7.6%	6.9%	5.2%
National Institutes of Health Stroke Scale	N/A	61.2%	72.5%
Timely IV-Thrombolytic Therapy	N/A	24.5%	79.2%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.
Note: For stroke mortality rates, N=5; for other measures, N=4.

Trends in VTE Prevention and Treatment

Seven DPHs implemented the VTE prevention and treatment bundle. The largest improvements in adherence were reported for receipt of Warfarin therapy discharge instructions (from 53.8% at baseline to 95.4% in DY 10), unfractionated heparin (from 81.8% at baseline to 100% in DY 10), and VTE prophylaxis (from 68.4% at baseline to 95.1% in DY 10; Exhibit 101). For the remaining anticoagulation overlap therapy and ICU VTE prophylaxis, baselines rates of adherence were close to 90% and both increased to 97.9% in DY 10. DPH specific rates of adherence showed a nearly uniform increase in adherence to the VTE bundle (Appendix J Exhibit 162).

Exhibit 101: Venous Thromboembolism Prevention and Treatment Adherence Rates Reported by DPHs, Baseline and DY 8-10



Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.
Notes: For all rates, N=6 in Baseline and DY 8-9 and N=7 in DY 10 (UC San Diego implemented VTE prevention in DY 10 only).

AHRQ's patient safety indicator #12, a measure of the number of perioperative pulmonary embolism or deep vein thrombosis per 1,000 adult discharges,(135) was reported by two DPHs that met top performance criteria for DY 7. On average, the two DPHs reported an increase from DY 9 (6.66/1,000 discharges) to DY 10 (8.2/1,000 discharges), with variations between the two (data not shown).

Trends in Falls Prevention

Two DPHs selected falls prevention projects. The only outcome measure required for these projects was a reduction in falls with injuries per 1,000 inpatient days. DPHs reported an overall reduction from DY 8 (0.82 falls with injuries per 1,000 inpatient days) to DY 10 (0.49 falls per 1,000 inpatient days). This rate was different between Natividad (0.86 falls with injuries per 1,000 inpatient days) and San Mateo (0.08 falls with injuries per 1,000 inpatient days; data not shown).

UCLA also compared the weighted average rates of all Category 4 measures between county-owned and academic-owned DPHs as well as DPHs that were part of multi-site and single-site DPHs, using DY 10 second semi-annual reports. These analyses indicated that single-site DPHs performed significantly better than multi-site DPHs for some required project adherence and outcome measures, including sepsis mortality based on DPH definition (8.7% vs. 18.9%, respectively), CLABSI aggregate rate (0.64/1,000 vs. 1.47/1,000 central line days), CLABSI ICU rate (0.76/1,000 vs. 1.77/1,000 central line days), and CLABSI non-ICU rate (0.53/1,000 vs. 1.33/1,000 central line days; Appendix J). In addition, single-site DPHs performed significantly better on optional project adherence and outcome measures for stroke adherence rate to discharge on antithrombotic therapy (100% vs. 98.7%), thrombolytic therapy (97.2% vs. 75.7%), education (98.7% vs. 84.4%), and assessment for rehabilitation (99.8% vs. 93.1%), and VTE measures of adherence to prophylaxis (96.9% vs. 93.6%) and ICU prophylaxis (98.6% vs. 97.0%). Multi-site DPHs performed significantly better than single-site DPHs for three required project adherence measures – sepsis bundle compliance using the CMS definition (75.6% vs. 70.0%, respectively) and the DPH definition (78.6% vs. 66.1%), and the CLABSI CLIP adherence rate (98.8% vs. 98.4%). These differences did not account for patient characteristics or other factors that might determine patient experiences. Differences for remaining measures were not significant.

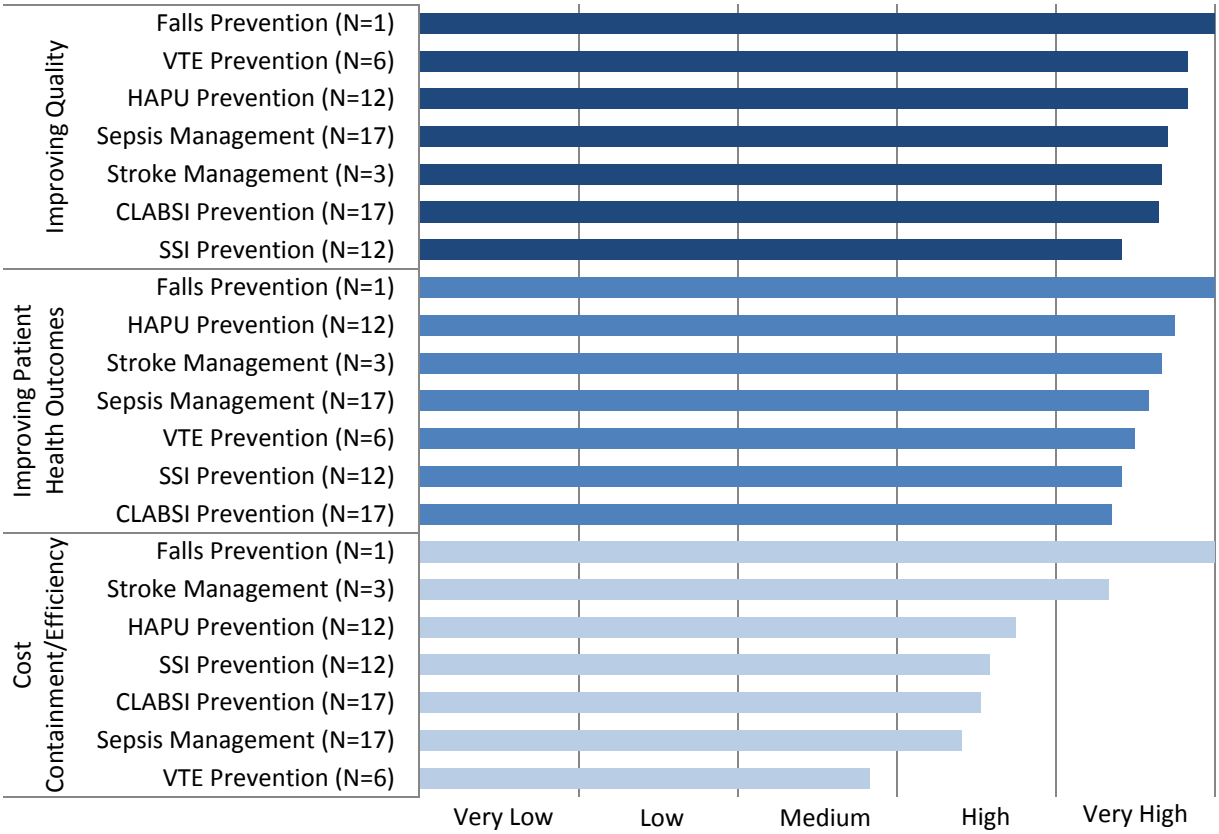
There were fewer significant differences between county-owned and academic-owned DPHs, with the former performing significantly better on six measures and the latter on three measures. County-owned DPHs performed significantly better than academic-owned DPHs on the sepsis bundle based on CMS definition (80.5% vs. 63.8%, respectively), mortality rate based on CMS definition (15.8% vs. 17.8%), and the CLABSI aggregate rate (0.89/1,000 vs. 1.31/1,000

central lines days), ICU rate (1.00/1,000 vs. 1.58/1,000 central line days), and non-ICU rate (0.83/1,000 vs. 1.16/1,000 central line days). Academic-owned DPHs performed significantly better than county-owned DPHs on sepsis bundle based on DPH definition (87.4% vs. 71.0%), VTE adherence rate on anticoagulation overlap therapy (100% vs. 96.7%), and VTE adherence rate on warfarin therapy discharge instructions (100% vs. 94.3%). These differences did not account for patient characteristics or other factors that might determine patient experiences. Differences for remaining measures were not significant. All comparative rates are available in Appendix J.

Perceived Impact of Category 4 Projects on Triple Aim

In the interim survey, DPHs reported the perceived impact of Category 4 on the Triple Aim of improving quality of care, improving patient outcomes, and increasing cost containment and efficiency. Each response was assessed on a one to five scale from "very low" impact to "very high" impact. The average rating for each project is presented in Exhibit 102. Average ratings for all projects were very high for the impact on quality and patient outcomes. There was greater variation in the answers regarding impacts on cost containment and efficiency, with the impact of some projects such as falls prevention and stroke management assessed as very high, others assessed as high, and VTE prevention on average assessed as having only a medium impact. For projects with many DPHs participating, a substantial number assessed the impact on costs and efficiency at the low or very low end of the scale. When asked about this in follow-up interviews, those DPHs indicated that they did not have the data to demonstrate cost impact or that it was too early to assess the impact on costs and efficiency.

Exhibit 102: Perceived Impact of Category 4 Projects on Triple Aim of Improving Quality, Patient Health Outcomes, and Increasing Cost containment/Efficiency

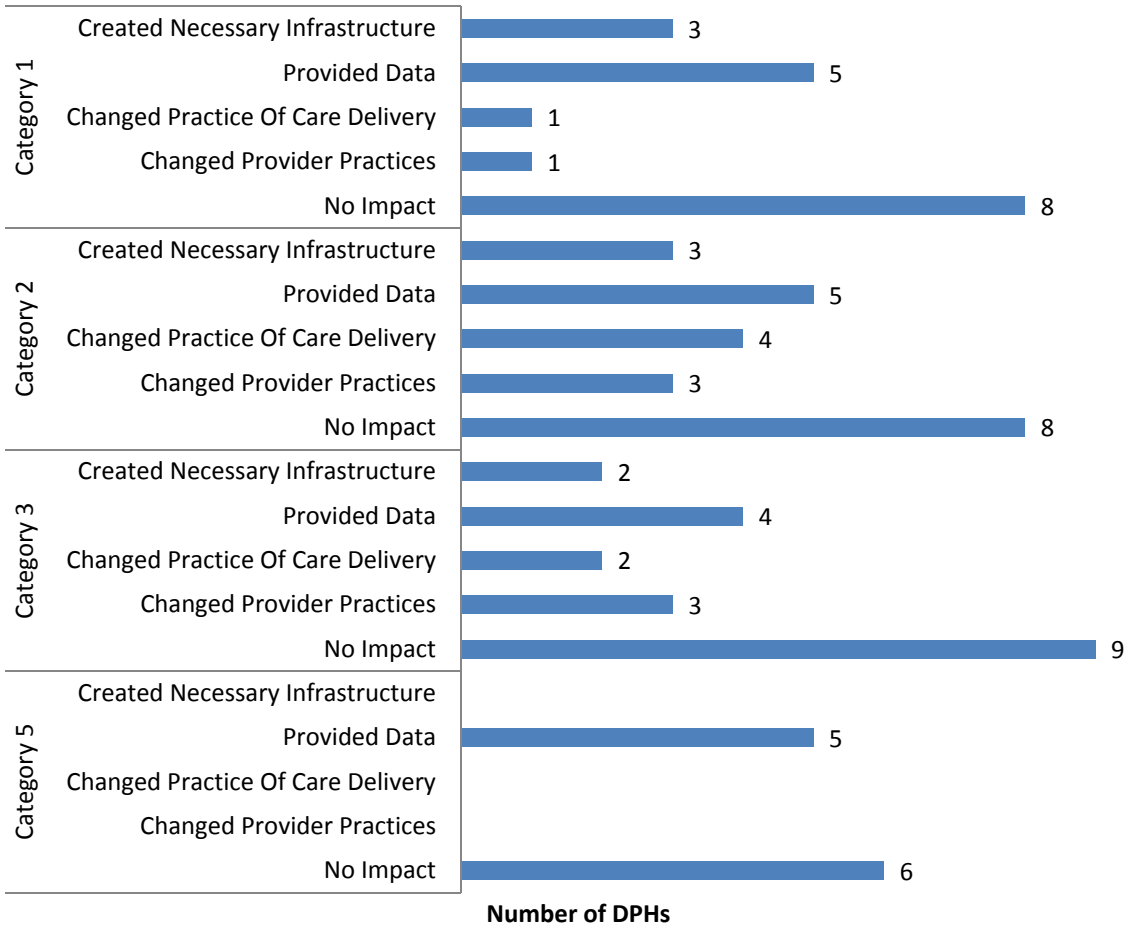


Source: UCLA interim survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

Perceived Impact of Category 4 Measures on Other DSRIP Categories

In the UCLA follow-up survey, DPHs reported on the type of impact Category 4 projects had on other categories (Exhibit 103). Most DPHs reported no impact on other categories. However, many DPHs reported that Category 4 projects provided data for other categories. Changes in provider practices and practice of care delivery were also noted by some DPHs.

Exhibit 103: Type of Impact of Category 4 Projects on DSRIP Categories 1, 2, 3, and 5



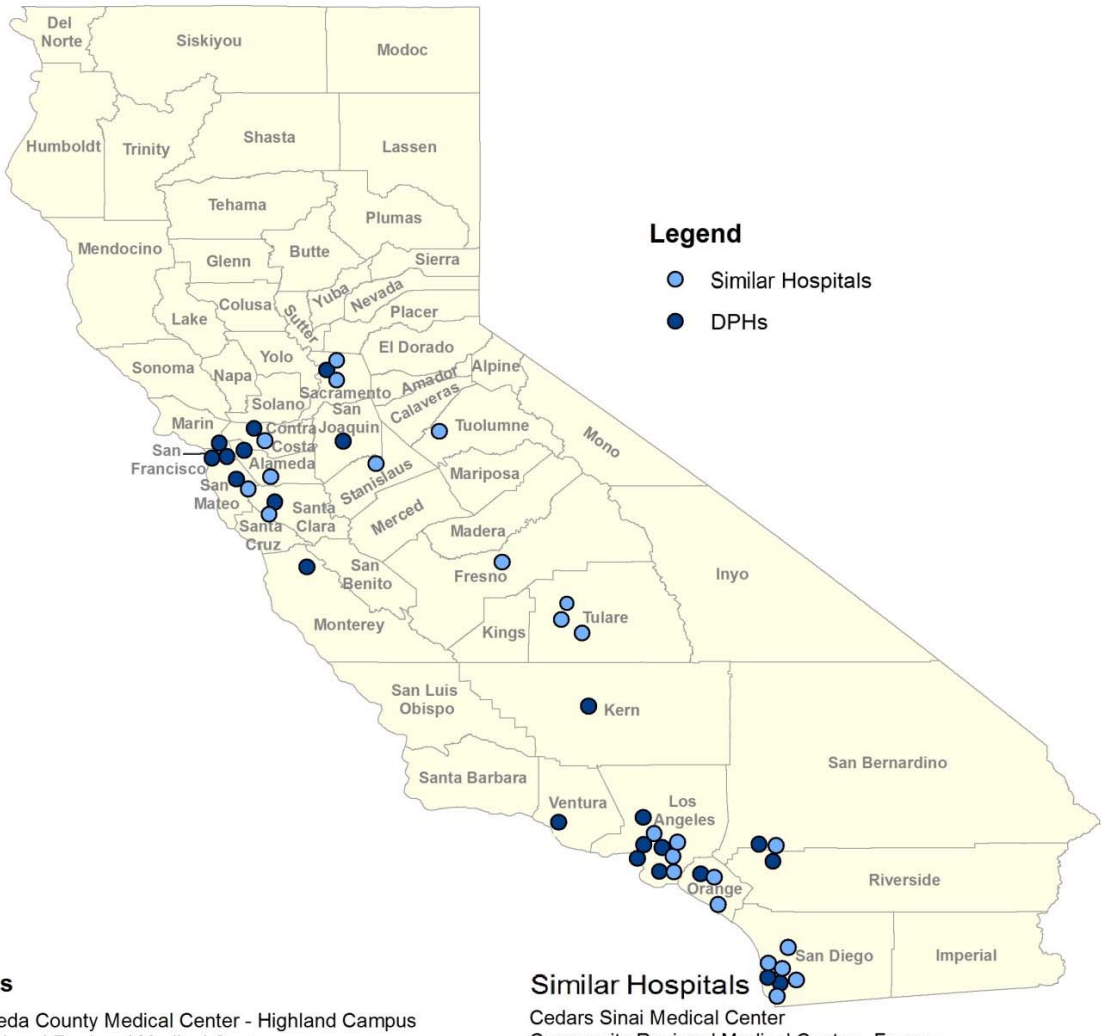
Source: UCLA final survey of designated public hospitals (DPHs).
Note: Ten DPHs participated in Category 5 measures.

In their DY 9 annual reports, DPHs noted that the Category 4 projects helped to solidify a culture of performance improvement and robust and rigorous data collection, leading to overall systemwide changes. Among the system changes noted, Arrowhead described how practice changes from the Category 4 projects had diffused throughout the organization, including the management of patients with central lines, continuous orientation of new staff members, and improved hand hygiene rates. Arrowhead also noted in its report how the success of the HAPU project led to improvements in the stroke management and Category 2 palliative care projects, particularly in the areas of stakeholder engagement and project coordination. Contra Costa standardized all harm-reduction policies and procedures to reduce human-factor lapses. San Joaquin played a greater role in patient care as a result of DSRIP, increasing staff satisfaction and leading to improved outcomes.

Comparison of DPH Category 4 Project Outcomes with Other California Hospitals

DPHs' progress in improving inpatient care was compared with other California hospitals based on their patient and institutional characteristics. UCLA identified a sample of California hospitals that were similar to DPHs – referred to here as "similar" hospitals. The remaining hospitals are referred to as "dissimilar" hospitals (Exhibit 104). For each project area, DPHs were categorized into "participating" and "non-participating" depending on whether the DPH implemented the project (all hospitals participated in the mandatory CLABSI prevention and sepsis management projects). For a detailed description of the methodology for selecting similar and dissimilar hospitals to DPHs, see Appendix L: Category 4 Methodology.

Exhibit 104: Map of DPHs and Similar Hospitals



DPHs

Alameda County Medical Center - Highland Campus
Arrowhead Regional Medical Center
Contra Costa Regional Medical Center
Kern Medical Center
LA County + USC Medical Center
LA County/Harbor-UCLA Medical Center
Los Angeles County Olive View-UCLA Medical Center
Natividad Medical Center
Riverside County Regional Medical Center
Ronald Reagan UCLA Medical Center
San Francisco General Hospital
San Joaquin General Hospital
San Mateo Medical Center
Santa Clara Valley Medical Center
Santa Monica - UCLA Medical Center And Orthopaedic Hospital
UCSD-La Jolla, John M And Sally B. Thornton Hospital
UCSF Medical Center
UCSF Medical Center At Mount Zion
University Of California Davis Medical Center
University Of California Irvine Medical Center
University Of California-San Diego Medical Center
Ventura County Medical Center

Similar Hospitals

Cedars Sinai Medical Center
Community Regional Medical Center - Fresno
El Camino Hospital Los Gatos
Grossmont Hospital
John Muir Medical Center-Walnut Creek Campus
Kaiser Foundation Hospital - Fremont
Kaiser Foundation Hospital - Sacramento/Roseville-Morse
Kaiser Foundation Hospital - South Sacramento
Kaweah Delta Medical Center
Loma Linda University Medical Center
Long Beach Memorial Medical Center
Memorial Hospital Medical Center - Modesto
Mission Hospital Laguna Beach
Palomar Medical Center
Scripps Green Hospital
Scripps Memorial Hospital - La Jolla
Scripps Mercy Hospital
Sierra View District Hospital
Sonora Regional Medical Center - Greenley
St. Francis Medical Center
Stanford Hospital
Tulare Regional Medical Center
Western Medical Center - Santa Ana
White Memorial Medical Center

*Hospitals are listed in alphabetical order

Note: Dissimilar hospitals are not included in this map.

UCLA assessed the trends in rates of outcome measures for DPHs, the sample of similar hospitals, and the group of dissimilar hospitals using 2009-2013 data from the California Office of Statewide Health Planning and Development (OSHPD) financial and patient discharge data to allow for consistent measurement of available measures across the groups of interest. Measure construction in the OSHPD data was limited by the type of information available on the discharge abstracts, and measures from the discharge data differ at times from Category 4 measures reported by the DPHs. For example, DPHs reported CLABSI rates per 1,000 central line days, but CLABSI rates constructed using the OSHPD data were infections per 1,000 discharges. Also, DPHs reported standardized infection ratios, but OSHPD-based measures present SSI rates 30 and 90 days post discharge. Despite these differences, OSHPD outcome data were the best proxy measures available for a meaningful comparison of participating DPHs with non-participating or similar hospitals.

Regression models were developed to compare trends in rates for all four groups from 2009 to 2013. All models were risk-adjusted to control for patient and institutional characteristics that may have impacted Category 4 outcomes. The small number of DPHs participating in some projects substantially reduced the power to assess whether differences in trends that were clinically meaningful were statistically significant.

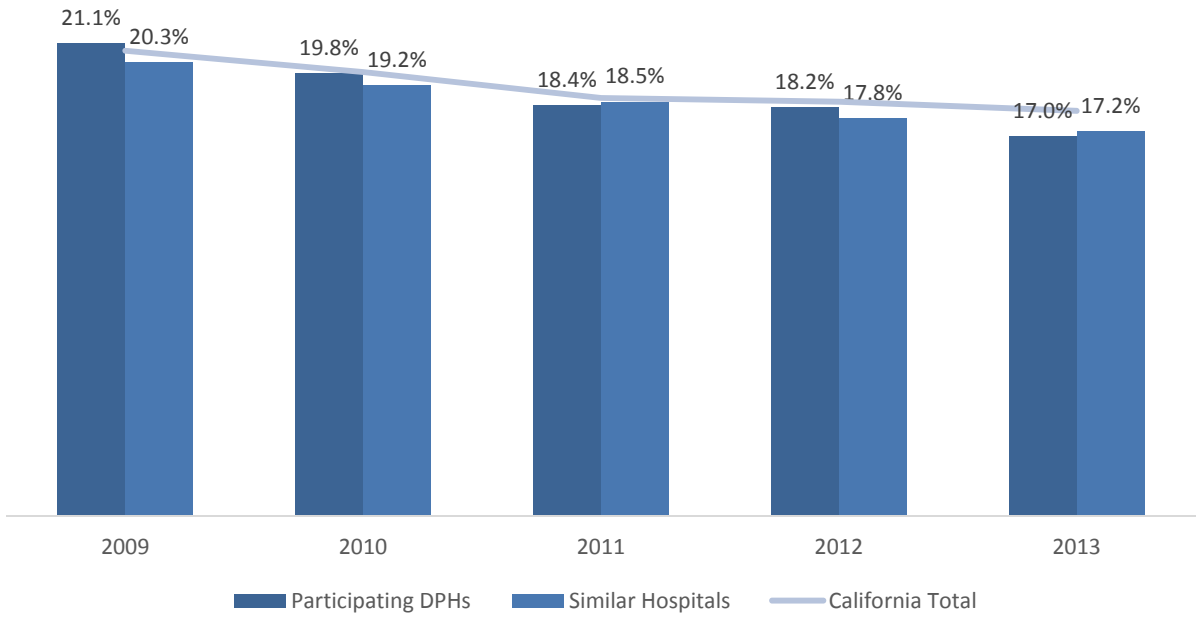
Trends from 2009 to 2013 were assessed for all four groups. Difference-in-differences (DD) analyses were completed to assess the difference in the change in rates between the intervention group (all DPHs for required Category 4 projects and participating DPHs for optional projects) and comparison groups (similar hospitals for required projects and non-participating and similar hospitals for optional projects) before (2009) and after (2013) DSRIP implementation. Appendix L: Category 4 Methodology includes a detailed description of the methodology for these analyses.

Sepsis Management: Mortality Rates

The overall rate of sepsis mortality in California, adjusted for risk factors including patient and hospital characteristics, declined significantly from 20.8% in 2009 to 18.1% in 2013 (Exhibit 105).

The analyses of trends in rates of sepsis mortality for all DPHs indicated a significant decline from 21.1% in 2009 to 17% in 2013. The trend for similar hospitals also significantly declined from 20.3% in 2009 to 17% in 2013. The DD analyses, comparing the change in rates for DPHs and similar hospitals between 2009 and 2013, indicated that the rate of decline for DPHs was not significantly different from the rate of decline for similar hospitals.

Exhibit 105: Adjusted Rate of Severe Sepsis Events Leading to Mortality for DPHs and Other California Hospitals, 2009-2013



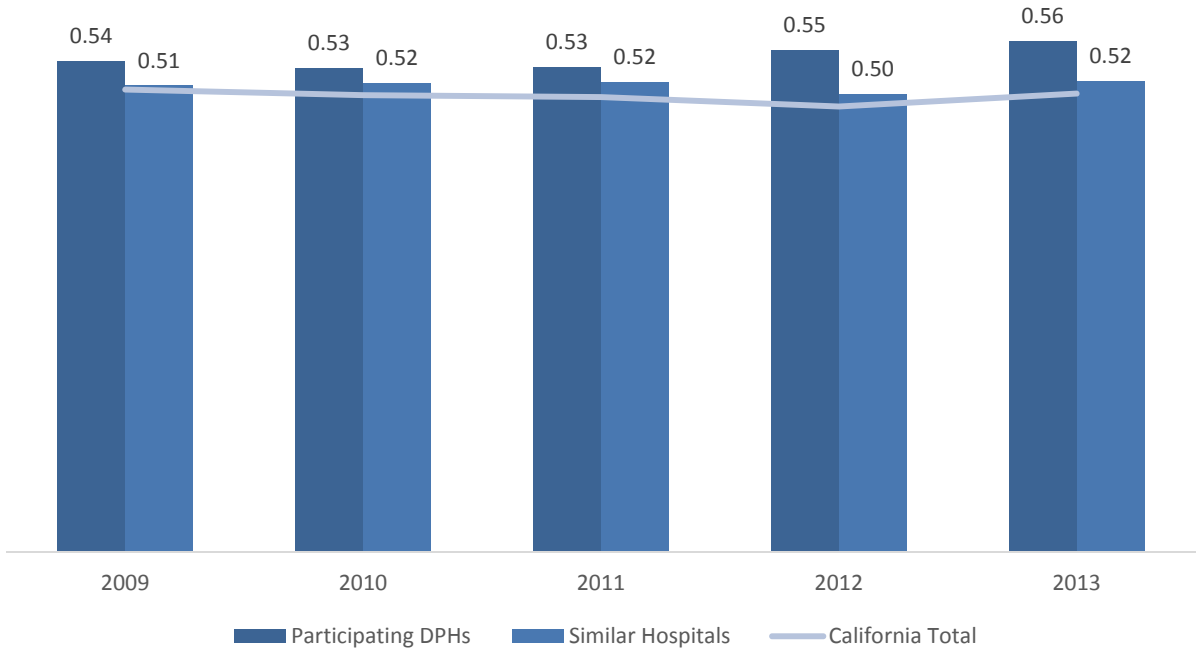
Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Sepsis mortality rate is constructed as the percentage of patients with severe sepsis diagnosis not present on admission defined by ICD-9 code 785.52 and 995.92, who died during their hospital stay. See Appendix L for further detail on methodology.

CLABSI Prevention: Central Vein Catheter Infection Rates

The overall rate of central vein catheter infections in California remained at approximately 0.51 per 1,000 discharges from 2009 to 2013 (Exhibit 106).

The rates for DPHs changed from 0.54 in 2009 to 0.56 in 2013, a very small and non-significant difference. The trend for similar hospitals was also flat. The DD analyses did not show a difference in these trends between DPHs and similar hospitals from 2009 to 2013. These analyses are not directly comparable to CLABSI rates reported by DPHs because DPHs reported CLABSI rates per 1,000 central line days and OSHPD outcomes were calculated per 1,000 discharges.

Exhibit 106: Rate of CLABSI on a Central Vein Catheter per 1,000 Discharges for DPHs and Other Hospitals, 2009-2013

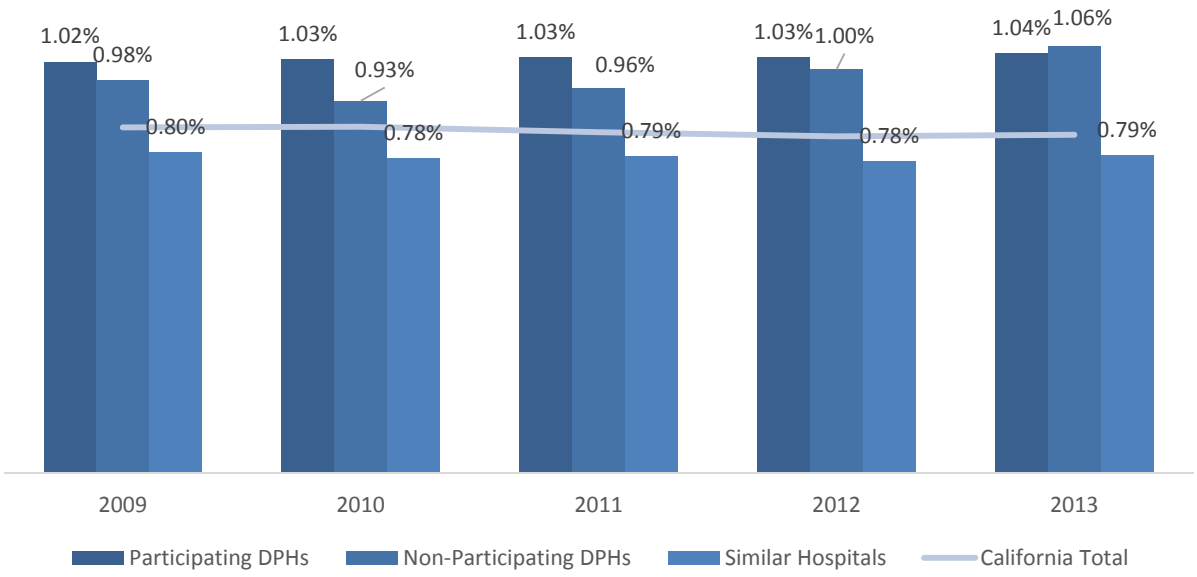


Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Discharges with ICD-9 code for central venous catheter bloodstream infection diagnosis code; Denominator: Surgical and medical discharges for patients 18 years and older; for participating DPHs, N=20; for similar hospitals, N=22 hospitals; for dissimilar hospitals, N=392-393. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

SSI Prevention: SSI Rates Post-Surgery

The California rates of SSI 30 days post-surgery declined slightly but not significantly from 0.86% to 0.84% between 2009 and 2013, respectively (Exhibit 107). Rates were flat for participating DPH (1.02% in 2009 and 1.04% in 2013), but increased slightly in non-participating DPHs (0.98% in 2009 and 1.06% in 2013). The rates for similar hospitals were lower than at participating DPHs in 2009 and were flat through 2013 (0.80% in 2009 and 0.79% in 2013). The DD rates showed statistically similar trends for all groups of interest from 2009 to 2013. These analyses are not directly comparable to standardized infection ratios reported by DPHs because OSHPD outcomes were calculated as SSI rates 30 and 90 days post-surgery.

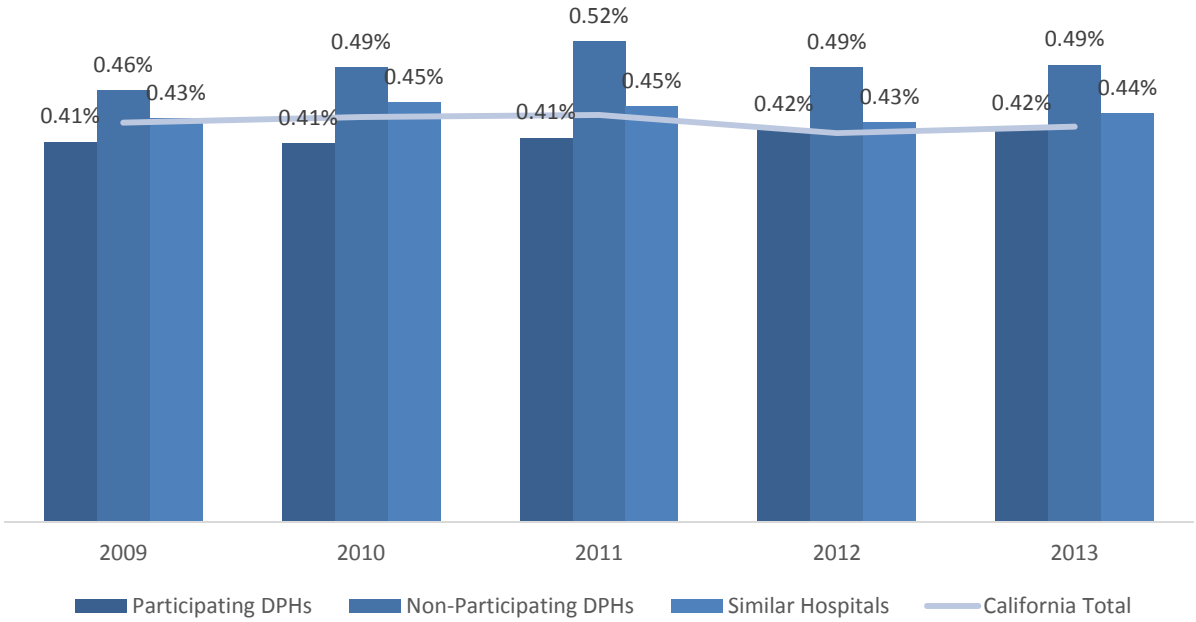
Exhibit 107: Rate of Surgical Site Infections with 30-Days Post-Surgery for Participating DPHs and Other Hospitals, 2009-2013



Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Patients with post-operative infection not present upon admission using a 30-day surveillance period; Denominator: The National Healthcare Safety Network (NHSN) surgical procedures list in *Surgical Site Infection (SSI) Event (2014)*; for participating DPHs, N=15; for non-participating DPHs, N=5; for similar hospitals, N=17; for dissimilar hospitals, N=321-325 hospitals. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

The rates of SSI 90 days post-surgery were 0.43% in 2009 and 0.42% in 2013 (Exhibit 108). The rates were statistically similar between participating DPHs and other comparison groups and the DD analyses did not show significant differences in trends between groups from 2009 to 2013.

Exhibit 108: Rate of Surgical Site Infections with 90-Days Post-Surgery for Participating DPHs and Other Hospitals, 2009-2013

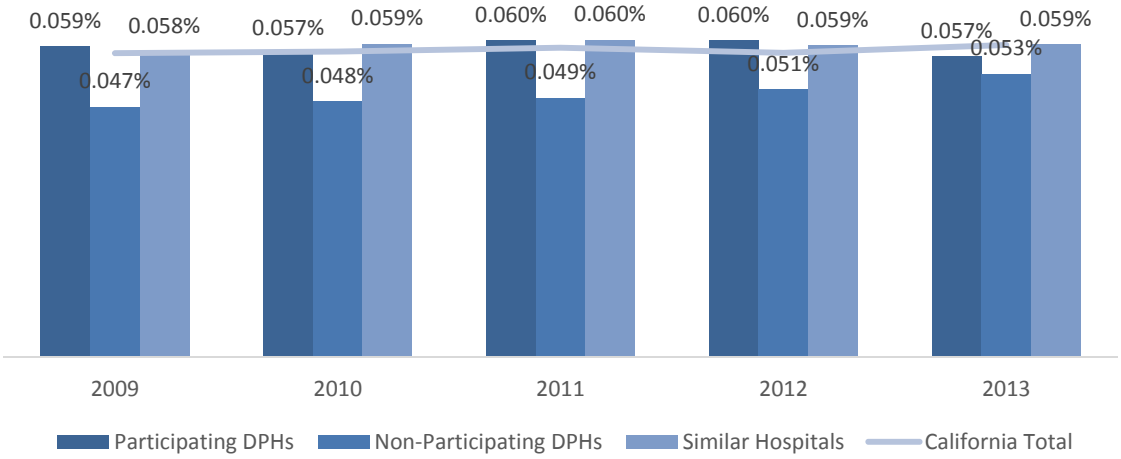


Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Patients with post-operative infection not present upon admission using a 90-day surveillance period; Denominator: The National Healthcare Safety Network (NHSN) surgical procedures list in *Surgical Site Infection (SSI) Event (2014)*; for participating DPHs, N=15; for non-participating DPHs, N=5; for similar hospitals, N=17; for dissimilar hospitals, N=308-316. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

HAPU Prevention: HAPU Rates

HAPU rates statewide did not differ significantly from 2009 (0.57%) to 2013 (0.059%; Exhibit 109). Participating DPH rates did not differ significantly from rates in non-participating DPHs or similar hospitals. The DD analyses comparing trends from 2009 to 2013 between participating DPHs and the comparison groups did not reveal any significant results.

Exhibit 109: Rate of Hospital-Acquired Pressure Ulcers for Participating DPHs and Other Hospitals, 2009-2013

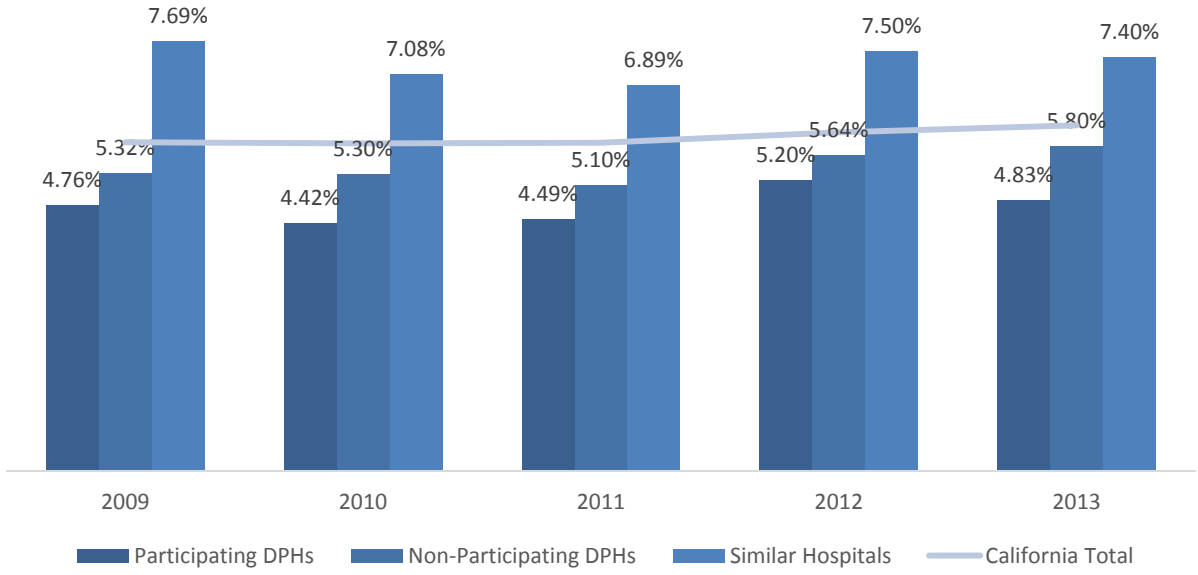


Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Stage III or IV pressure ulcers (secondary diagnosis) not present upon admission among surgical or medical patients ages 18 years and older; Denominator: Surgical or medical discharges for patients 18 years and older; for participating DPHs, N=13; for non-participating DPHs, N=7; for similar hospitals, N=22; for dissimilar hospitals, N=378-386. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

Stroke Management: Mortality Rates

Stroke mortality rates in California increased from 2009 (5.87%) to 2013 (6.18%; Exhibit 110). Rates of stroke mortality were lowest in participating DPHs, but did not change significantly from 2009 (4.76%) to 2013 (4.83%). Non-participating DPH rates were slightly higher but the trend was also flat. The rate for similar hospitals was highest but also flat from 2009 (7.69%) to 2013 (7.40%). The DD analyses comparing trends from 2009 to 2013 between participating DPHs and the comparison groups did not reveal any significant results.

Exhibit 110: Stroke Mortality Rates for Participating DPHs and Other Hospitals, 2009-2013

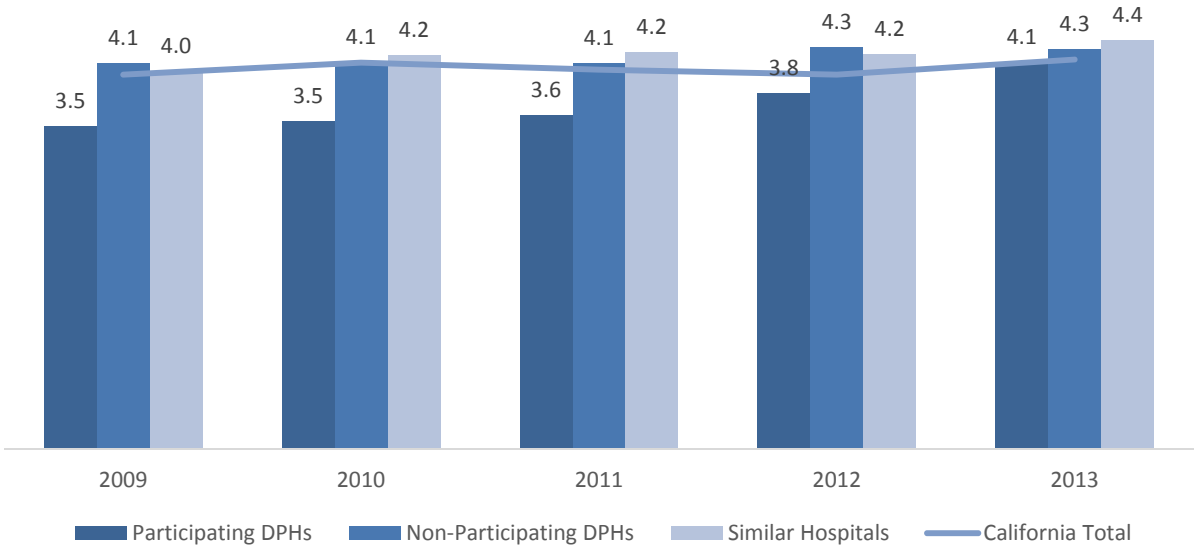


Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Number of deaths of patients with acute stroke diagnosis. Denominator: Patients with acute stroke diagnosis. For participating DPHs, N=3; for non-participating DPHs, N=17; for similar hospitals, N=3; for dissimilar hospitals, N=347-355. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

VTE Prevention: VTE Rates

The rate of VTEs in California per 1,000 surgical discharges did not change significantly from 2009 (4.0) to 2013 (4.2; data not shown). Similarly, the rates stayed statistically similar for participating DPHs (3.5 in 2009 and 4.1% in 2013), non-participating DPHs and similar hospitals (Exhibit 111). The DD analyses did not reveal any differences in trends among the groups of interest.

Exhibit 111: Rates of Venous Thromboembolisms per 1,000 Surgical Discharges for Participating DPHs and Other Hospitals, 2009-2013



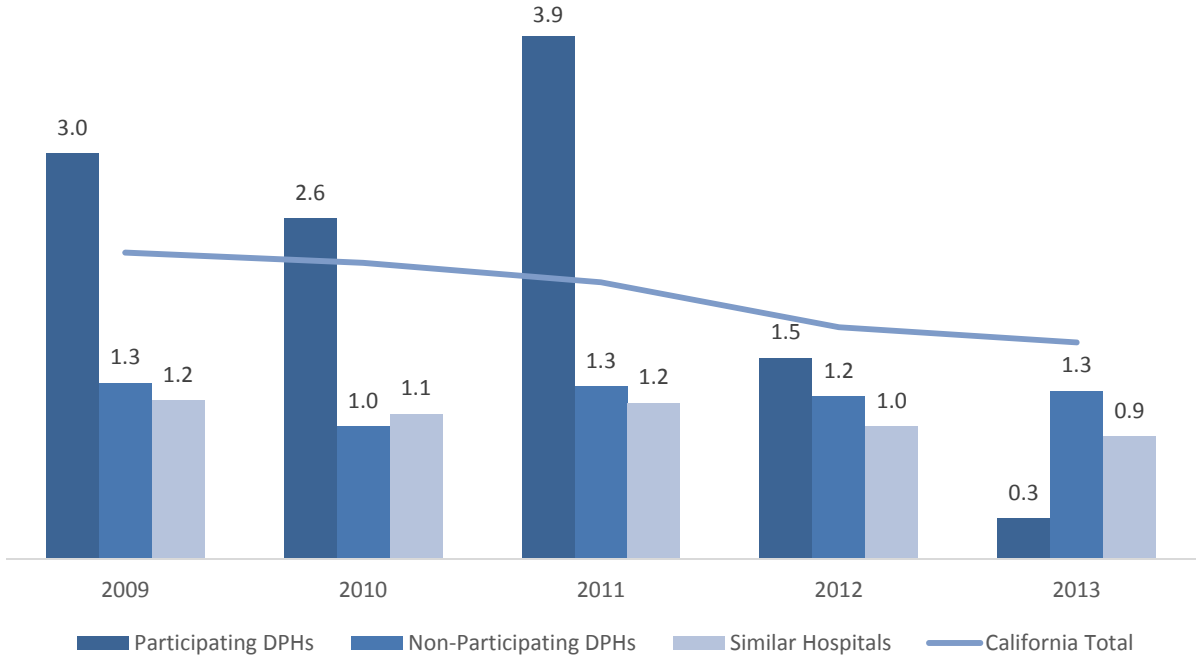
Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: Discharges among cases meeting the inclusion and exclusion rules for the denominator with ICD-9-CM codes for deep vein thrombosis or pulmonary embolism in any secondary diagnosis field; Denominator: All surgical discharges age 18 and older defined by specific DRGs or MS-DRGs and an ICD- 9-CM code for an operating room procedure. For participating DPHs, N=12; for non-participating DPHs, N=8; for similar hospitals, N=22; for dissimilar hospitals, N=320. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

Falls Prevention: Falls with Injury Rates

The rate of falls with injury per 1,000 inpatient days in California dropped significantly from 2.3 in 2009 to 1.6 in 2013 (data not shown).

The rates of falls with injury for participating DPHs remained statistically similar from 3.0 in 2009 to 0.3 in 2013 (Exhibit 112). The trend for non-participating DPHs also remained similar. But the trend for similar hospitals declined statistically from 1.2 to 0.9 in the same time period. The DD analyses, comparing the change in rates for participating DPHs vs. non-participating DPHs and similar hospitals between 2009 and 2013, did not show significantly different rates.

Exhibit 112: Falls with Injury Rates per 1,000 Inpatient Days for Participating DPHs and Other Hospitals, 2009-2013



Source: 2009-2013 data from the California Office of Statewide Health Planning and Development.
Notes: Numerator: All patients that have sustained an injury due to a fall during their stay at a hospital; Denominator: The sum of days that all patients have stayed in a hospital based on the length-of-stay variable. For participating DPHs, N=1; for non-participating DPHs, N=19; for similar hospitals, N=22; for dissimilar hospitals, N=392-393. Some DPHs have multiple sites. See Appendix L for further detail on methodology.

Challenges and Lessons Learned

DPHs were asked about top challenges and solutions to successful implementation of Category 4 projects. The challenges experienced by DPHs fell into four main areas: problems with the measurement of milestones, changes in the evidence base and operational definition of the milestones during DSRIP, data collection and management issues, and obtaining nurse and physician buy-in and engagement. Specifics from each of these areas, as well as how DPHs addressed these challenges, are detailed below.

Milestone Measurement

During the interim interviews, DPHs expressed frustration with how bundle compliance was defined, making it difficult to compare outcomes with other DPHs. For example, measurement of compliance with CLIP varied across DPHs. More than one-third of DPHs also found specific milestones challenging because of the low volume and low incidence of some events. Contra Costa described the case of one particular long-stay, complex patient that led the DPH to continuously miss the mark on their milestone and forced the DPH to request an adaptation of their performance from CMS. Other small DPHs reported the same problems with meeting milestones due to low volumes. DPHs with high performance at baseline also reported problems with the milestones, which required near-zero or zero event incidence. According to DY 9 annual reports, DPHs reported hiring additional staff to meet these high-performance measures and increasing and intensifying surveillance in order to capture rare events.

Changing Evidence Base and Operational Definitions of Milestones

During the follow-up interviews, DPHs also noted that the evidence behind certain bundle elements for Category 4 measures was not conclusive, making it difficult to get buy-in from staff when conflicting with organizational goals. For example, while the Surviving Sepsis campaign calls for the sepsis bundle to be completed within three hours, Contra Costa found that sepsis mortality was more closely tied to completing the bundle within one hour. Contra Costa then decided to track compliance for both the three-hour and one-hour methods, increasing the burden of data collection. Other DPHs were also conflicted on the time of presentation of the sepsis bundle. Adding to these concerns was the fact that the operational definitions of some measures changed from year to year, increasing the data collection burden and training. Finally, DPHs noted that some of the metrics used in DSRIP became outdated over the course of the projects.

Data Collection and Management Issues

One of the biggest challenges related to Category 4 was data abstraction and management. DPHs reported using significant amounts of information technology and nursing resources to correctly code and abstract data for Category 4 measures. Further adding to the challenges was the fact that many DPHs were in the midst of implementing EHRs during DSRIP. DPHs also noted that training staff to document when different bundle elements were completed proved to be challenging.

Sepsis – a new project for many DPHs – required a high degree of resources. For example, UC San Francisco initially started collecting data on early detection of sepsis with a paper-based form but invested a significant amount of resources to create an electronic surveillance system.

Alameda reported creating electronic tools within the EHR to capture Category 4 metrics. San Francisco reported that a very high degree of resources was required for sepsis data collection and data management. DPHs reported experimenting with various innovative ways to collect data for Category 4 projects, including using: electronic counters in operating rooms to capture traffic, electronic flow-sheets to gather data from various parts of the patient records to identify trends and challenges, and accelerometers to provide real-time data on patient position to prevent HAPUs.

Multi-hospital systems reported that it was difficult to implement standardized procedures and processes across facilities. Los Angeles reported that getting consensus across all four of its facilities on certain processes proved to be challenging. Smaller DPHs had more challenges with staff limitations because it was more difficult to reorganize teams in order to work on new patient safety measures. Yet smaller DPHs were also able to more quickly implement organization- and unit-wide changes. Other challenges included following Category 4 protocols in emergency and trauma cases and during other peak use times such as influenza season, and adapting bundles to special patient groups such as pediatric populations.

Stakeholder Engagement

During the follow-up interviews, DPHs identified stakeholder engagement, especially physicians and front-line nursing staff, as one of the most significant implementation challenges. Two-thirds of DPHs reported that it was particularly challenging to get physicians on board with bundle compliance or changing care processes. DPHs reported during the follow-up interviews and in DY 9 annual reports that they employed a variety of strategies to engage and motivate providers. Several DPHs noted that physician compliance and engagement improved when the

project had a physician champion who was influential in getting other providers on board. Contra Costa created a new position titled medical director of quality and reached out to various departments in the medical center to share patient narratives and success stories to systematically increase physician engagement. San Mateo embedded DSRIP measures as requirements in provider contracts to increase physician buy-in.

Regular feedback to providers proved to be a successful strategy at several DPHs. Arrowhead sent regular reports to leadership on provider-specific performance measures and rewarded and recognized high-performing units. DPHs reported that leadership often worked to increase compliance through bedside coaching, audits, education and feedback on results. UC San Francisco reported using peer counseling and just-in-time coaching to increase the use of clorhexidine gluconate bathing in the SSI prevention project. Other strategies included minimizing alert fatigue for nurses and physicians to keep engagement high.

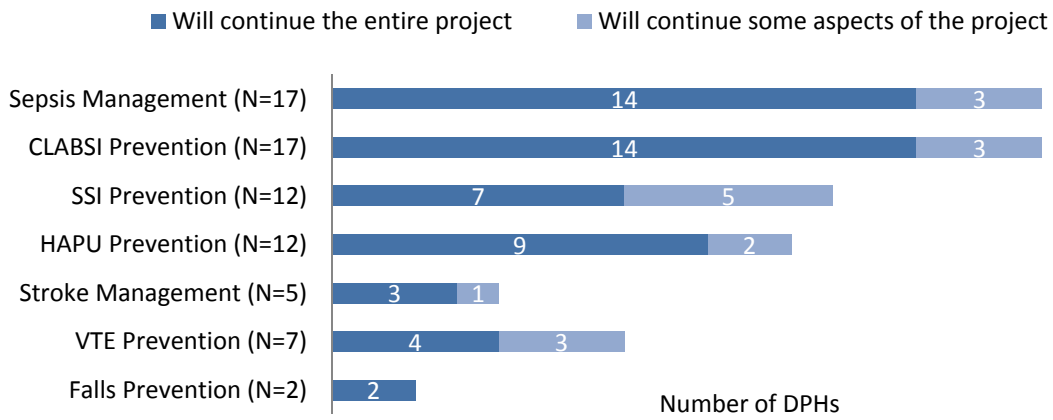
DPHs noted that the DSRIP financial incentives improved stakeholder engagement and increased focus on specific projects and goals. UC Los Angeles reported that DSRIP incentives reduced provider pushback on the sepsis bundle and increased compliance rates. Contra Costa reported that performance improvement and patient safety reports required under DSRIP became a high priority for the DPH's medical executive committee. Alameda experienced a similar transformation where quality improvement became tied to business goals due to DSRIP and led the DPH to integrate quality in the overall organizational strategy.

Involving additional stakeholders such as pharmacy and materials management services was important in streamlining communication and achieving compliance goals. Also, DPHs implemented nurse empowerment programs that gave nurses more decision-making capabilities. For example, San Francisco indicated that it implemented a nurse empowerment program that gave nursing staff the ability to start the necessary care for sepsis without waiting for a physician to sign off.

Sustainability of Category 4 Projects

In the UCLA follow-up survey, DPHs reported that they would continue all or some aspects of Category 4 projects after DSRIP (Exhibit 113). Most planned to continue to implement all aspects of the required and optional projects. The number of DPHs that planned to continue the entire project was always larger than the number that planned to continue only some aspects. No DPHs reported plans to discontinue Category 4 projects after DSRIP concluded.

Exhibit 113: DPHs' Plans to Continue Category 4 Projects



Source: UCLA final survey of designated public hospitals (DPHs).
Note: The numbers for each category represent the total number of projects implemented in the category across all DPHs. Exhibit totals do not always equal project implementation totals due to survey item non-response.

Factors that DPHs identified as contributors to sustainability are described in Exhibit 114. Compatibility with the organization's priorities (cited 49 times by DPHs across all Category 4 projects), projects being fully embedded in the organization's policies (49), and the establishment of infrastructure (49) were the most frequently cited motivators of sustainability across all Category 4 projects. The least frequently cited motivators were the availability of operational funding after DSRIP (30) and the need for projects to benefit other initiatives or programs (32). Category 4 projects for which multiple motivators were most frequently cited included sepsis management and CLABSI prevention. Projects with the fewest cited motivators were stroke management and falls prevention.

DPHs were also asked to identify barriers to sustainability. At least one DPH reported that no or insufficient funding after DSRIP would be a barrier to sustainability for the sepsis management, CLABSI prevention, SSI prevention, HAPU prevention, and VTE prevention projects. DPHs did not report any barriers to sustainability for the stroke management and falls prevention projects (data not shown).

Exhibit 114: Most Frequently Cited Reasons for Continuing Category 4 Projects After DSRIP

	Compatible With Organization's Priorities	Operational Funding Available After DSRIP	Fully Embedded Through Policies	Benefits Are Realized	Needed For Another Initiative/ Program	Ongoing Leadership Support	Infrastructure Established	Data Collection Established
Sepsis Management (N=17)	13	8	12	13	8	13	13	12
CLABSI Prevention (N=17)	14	7	14	13	9	12	13	14
SSI Prevention (N=12)	7	4	7	6	6	5	7	7
HAPU Prevention (N=12)	9	6	9	8	5	9	9	9
Stroke Management (N=5)	0	1	1	0	0	0	1	0
VTE Prevention (N=7)	4	2	4	4	2	4	4	4
Falls Prevention (N=2)	2	2	2	2	2	2	2	2
Most Frequently Cited (Total)	**49**	**30**	**49**	**46**	**32**	**45**	**49**	**48**

Source: UCLA final survey of designated public hospitals (DPHs).
Note: The Ns for each category represent the total number of projects implemented in the category across all DPHs.

In the DY 9 annual reports, DPHs outlined their plans to sustain Category 4 projects. Strategies reported by DPHs included incorporating best practice bundles in daily activities, incorporating Category 4 projects into organization-wide priority initiatives, continuing with surveillance and auditing to ensure compliance, and improving documentation to reduce barriers to compliance. Several DPHs noted that they would continue to refine practices based on updated evidence.

Summary

All DPHs were asked to implement sepsis management and CLABSI prevention projects and to undertake two other projects from a set of five. The most commonly selected optional projects were SSI and HAPU prevention (12). High in the factors considered in choosing projects were consistency with organizational goals (97%), synergy with existing projects (97%), and presence of organizational champions (71%).

As with efforts reported in other categories, DPHs had begun or planned work in most of these project areas prior to DSRIP (a key exception being sepsis management), and program participation enhanced and expanded existing work in many cases. All of the DPHs that selected HAPU and falls prevention had ongoing projects and nearly all of the DPHs that selected SSI prevention had an existing prevention project ongoing prior to DSRIP. DPHs reported using different methods and measures for Category 4 projects as compared to prior ongoing projects. Forty percent of DPHs reported using different methods for sepsis management and 35% reported using different methods for CLABSI prevention.

DPHs most frequently expanded the scope of sepsis management projects to other departments (7 DPHs). Eight DPHs did not expand the scope of CLABSI prevention projects. Among optional projects, most DPHs did not expand SSI (7 DPHs) or HAPU prevention (5 DPHs). Most DPHs (7 of 9 reporting) changed methods or measures for sepsis management projects but used the same methods for CLABSI prevention (6 of 16 reporting). Differences in goals with prior projects included more aggressive goals under DSRIP and more consistent implementation across the organization. Lack of identification of the project as a problem (44%) and lack of HIT infrastructure to identify or manage the project (44%) were the two reasons most frequently cited by DPHs for not implementing Category 4 projects prior to DSRIP.

Almost all DPHs adopted existing models for Category 4 projects, but over 70% of projects required at least moderate levels of adaptation and it was necessary to design a new intervention model in 10% of projects. DPHs undertook a variety of actions during

implementation to analyze current processes, engage internal stakeholders, and implement formal tests of change and compliance.

DPHs dedicated high levels of planning and resources, in some cases undertaking considerable levels of reorganization of care processes and personnel. Despite considerable efforts in these areas prior to DSRIP, all projects received "high" or "very high" overall difficulty ratings. Analysis of the interview data suggests that this was associated with the challenges of measurement and data abstraction for the measurement process, engaging staff and finding champions, and integrating the new processes into existing care systems. Nearly 60% of DPHs reported that staff had some previous training relevant to the project, but 69% reported intervention-related training prior to the intervention, and 82% reported training during the intervention.

Challenges in obtaining stakeholder engagement and reorganization of care processes required especially high levels of effort or were most frequently characterized as very hard. DPHs planned on providing feedback to medical directors or administrative leadership for 97% of the projects. However, DPHs intended to provide direct feedback to providers within clinics for only 66% of the projects. DPHs used all Category 4 projects in quality improvement initiative, which is highlights the critical importance of these measures in efforts to improve quality of care.

DPHs overall achieved 280 milestones (98%) for sepsis management and 299 (93%) for CLABSI prevention. For optional projects, DPHs achieved 144 (95%) for SSI prevention, 176 (97%) for HAPU prevention, 150 (92%) for stroke management, 179 (93%) for VTE prevention, and 11 (92%) for falls prevention.

DPHs reported high levels of performance on required Category 4 projects. On average, DPHs reported a consistent increase in sepsis bundle compliance from DY 8-10 from 59.9% to 73.4% and a decline in sepsis mortality from septic shock or severe sepsis using the CMS definition from 21.0% in DY 8 to 17.0% in DY 10. These results were relatively consistent among specific DPHs with the great majority reporting increase in compliance and reductions in mortality.

DPHs reported an increase from baseline (95.4%) to DY 8 (96.6%) and further increases from DY 8 to DY 10, culminating in 98.7% adherence to CLIP by the end of the program. This increase in adherence was associated with a reduction in the aggregate rate of CLABSI from 1.27 per 1,000 central line days in DY 8 to 1.17 in DY 10. There was variation in CLIP adherence and prevalence of CLABSI by DPH. More DPHs did reduce CLABSI in non-intensive care units than in intensive care units.

DPHs also reported progress on optional projects. DPHs reported standardized infection ratios for SSI, declining from 1.03 in DY 8 to 1.01 in DY 10, indicating improvement but remaining slightly higher than the predicted number of SSIs. Five out of 11 DPHs implementing this project did not reduce their SSI rates. HAPU at stages III and IV consistently decreased over the course

of measurement, from 2.19% in DY 8 to 1.46% in DY 9 and 1.08% in DY 10 and only two DPHs experienced an increase in the HAPU prevalence rate. An alternative aggregate rate of number of stage III or IV pressure ulcers per 1,000 adult discharges reported by only five DPHs also declined by more than half from DY 9 (0.98/1,000 discharges) to DY 10 (0.45/1,000 discharges).

Stroke management bundle adherence rates, reported by five DPHs, improved for six of seven measures at rates ranging from 90.8% to 100% in DY 10. Stroke mortality decreased consistently over the course of program reporting, from 7.6% in DY 8 to 6.9% in DY 9 and 5.2% in DY 10. All DPHs reported improved adherence rates for nearly all these measures.

VTE prevention and treatment bundle, reported by five DPHs, improved for all five measures, ranging from 95.4% to 100% in DY 10. The number of perioperative pulmonary embolisms or deep vein thrombosis per 1,000 adult discharges, reported by two DPHs, increased from DY 9 (6.66/1,000 discharges) to DY 10 (8.2/1,000 discharges). All DPHs reported improved adherence rates for nearly all these measures. The two DPHs that selected falls prevention reported an overall reduction from DY 8 (0.82 falls with injuries per 1,000 inpatient days) to DY 10 (0.49 falls per 1,000 inpatient days).

From the DPHs' perspective, Category 4 projects realized their greatest impact on improving quality of care and health outcomes when compared with increasing cost containment and efficiency, although results varied by project and DPHs cautioned that it was too early to estimate long-term impacts in the interim period. DPHs prepared for sustaining Category 4 achievements by incorporating project results into quality improvement initiatives and reporting outcomes to providers and administrators. Most DPHs perceived that Category 4 projects had no impact on other categories. However, many DPHs reported that Category 4 projects provided data for other categories. DPHs reported that Category 4 projects helped to solidify a culture of performance improvement and robust and rigorous data collection, leading to systemwide changes.

Independent analyses of external data revealed that California rates of severe sepsis mortality declined significantly from 20.8% in 2009 to 18.1% in 2013. Similarly, the rate of falls with injury in California dropped significantly from 0.23% in 2009 to 0.16% in 2013. But stroke mortality rates in California increased from 2009 (5.87%) to 2013 (6.18%). The rates for CLABSI, SSI, HAPU, and VTE in California did not change in this time period. Comparisons of DPHs participating in each Category 4 project with hospitals that were most similar showed an overall decline in severe sepsis mortality and similar trends between DPHs and similar hospitals from 2009 to 2013. CLABSI, SSI 30 days and 90 days post discharge, HAPU infection, stroke mortality, VTE, and falls with injury rates did not change in the same time period for DPHs or similar hospitals. These analyses were limited by: unavailability of data to construct identical measures to DPH-reported outcomes; the number of DPHs being too small for reliable comparisons;

hospitals identified as most similar still differing significantly in case-mix from DPHs; and lack of OSHPD data for later DSRIP years, among other factors. Only one of the seven Category 4 projects may have had unfavorable results for DPHs during early DSRIP implementation. Despite these limitations, the self-reported DPH Category 4 outcomes were consistent with independent analyses of external data, identifying similar trends for the early years of DSRIP implementation.

Limited evidence of the potential cost containment impact of Category 4 projects, including reductions in mortality and morbidity, could have been provided in DSRIP. But the progress of DPHs on these measures was not uniform, particularly for required projects such as sepsis management and CLABSI prevention, for which some DPHs started with higher performance levels than others. In addition, the very low incidence of many Category 4 measures and participation of few DPHs in some projects was a barrier to assessing the potential cost containment impact of DSRIP.

DPHs expressed frustration with multiple aspects of the program, including: how bundle compliance was defined, making it difficult for some DPHs to compare their outcomes with other DPHs; low volume and low incidence of some events; and prior high performance that required near-zero or zero event incidence during DSRIP. DPHs reported hiring additional staff to meet these high-performance measures and increasing and intensifying surveillance in order to capture rare events.

DPHs also noted that the evidence behind certain bundle elements for Category 4 measures was not conclusive, making it difficult to get buy-in from staff and conflicting with organizational goals. DPHs reported using significant amounts of information technology and nursing resources to correctly code and abstract data for Category 4 projects, an undertaking that was especially challenging for DPHs that were in the midst of implementing EHRs. DPHs identified stakeholder engagement, especially with physicians and front-line nursing staff, as one of the most significant implementation challenges. Several DPHs relied on effective physician champions, regular feedback to providers, outreach to additional stakeholders, and knowledge of the DSRIP financial incentives, to address this challenge.

DPHs reported that they would continue all or some aspects of Category 4 projects after DSRIP, and none reported discontinuing Category 4 projects after DSRIP concluded. Compatibility with the organization's priorities (49), projects being fully embedded in the organization's policies (49), and the establishment of infrastructure (49) were the most frequently cited motivators of sustainability across all Category 4 projects. Category 4 projects for which multiple motivators were most frequently cited included sepsis management and CLABSI prevention.

Category 5: HIV Transition Projects

Category 5A projects were designed to improve the delivery and quality of services to people living with HIV/AIDS (PLWHA) as they transitioned into the Low Income Health Plan (LIHP). In particular, the DSRIP program sought to restore the continuity that may have been lost as PLWHA transitioned to LIHP from the Ryan White Program. LIHP delivered HIV services within the context of a medical home and includes access to many supportive services (e.g. substance abuse treatment, mental health counseling, and assistance with housing).

As part of California's waiver, counties had the option of implementing LIHP as part of the early expansion of Medicaid. During the summer of 2011, the federal Health Resources and Services Administration (HRSA), provided guidance that Ryan White was the "payer of last resort" and that Ryan White could not pay for services for persons diagnosed with HIV/AIDS who were eligible for and enrolled in LIHP. LIHPs screened Ryan White clients for eligibility and enrolled them in the program. After receiving the Ryan White payer-of-last-resort ruling, DHCS worked collaboratively with the California Association of Public Hospitals (CAPH) and Department of Public Health, Office of AIDS to establish DSRIP Category 5.

DPHs implementing DSRIP Category 5A projects were asked to select three of seven approved projects designed to achieve the overall DSRIP goals of better care, better health, and lower cost. The presentation of Category 5 findings differs from Categories 1-4 due to fundamental differences between these categories and the subsequent evaluation design.

The data sources for Category 5A projects and 5B performance measures included the DSRIP DPH proposals, DPH DY 8-9 1st and 2nd semi-annual reports and annual reports, and a survey of key informants at participating DPHs (referred to here as "interim survey") followed by telephone interviews conducted in late 2014. UCLA extracted and analyzed data and content from the reports, analyzed the interim survey data and conducted content analyses of follow-up interviews, and compiled a literature review to document the expected impact of Category 5 interventions. UCLA also extensively analyzed LIHP claims and enrollment data to compare service use of PLWHA whose medical homes were in DSRIP Category 5 sites or other medical homes. Additional detail on methodology for Category 5 is available in Appendix L: Category 4 Methodology.

Project Selection

DPHs were required to select three of seven performance improvement projects, with no mandatory projects. The Category 5A projects most frequently selected by participating DPHs

were the empanelment of patients into an HIV-specific medical home, creation of a disease management registry, development of a retention program, and establishment of provisions for wraparound services for HIV patients transitioning from Ryan White to LIHP (Exhibit 115). Fewer DPHs elected to build clinical support tools or enhance data sharing with their county, and only one DPH (Los Angeles) elected to launch an electronic consultation system.

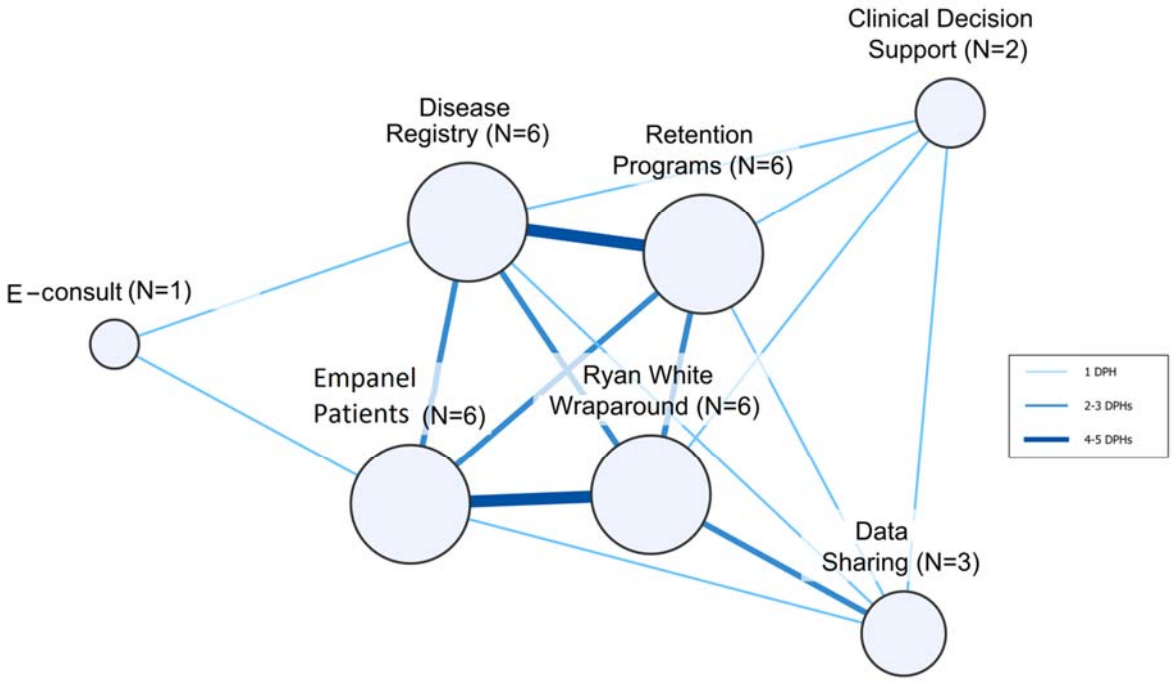
Exhibit 115: Projects Selected, by Designated Public Hospital, Category 5A

Designated Public Hospital	Empanel Patients	Disease Registry	Clinical Decision Support	Retention Programs	Data Sharing	E Consult	Ryan White Wraparound	Total
Alameda	✓	✓		✓				**3**
Contra Costa			✓		✓		✓	**3**
Kern		✓	✓	✓				**3**
Los Angeles	✓	✓				✓		**3**
Riverside	✓	✓					✓	**3**
San Francisco		✓		✓			✓	**3**
San Mateo	✓				✓		✓	**3**
Santa Clara	✓			✓			✓	**3**
UC San Diego	✓			✓			✓	**3**
Ventura		✓		✓	✓			**3**
Total	**6**	**6**	**2**	**6**	**3**	**1**	**6**	**30**

Source: UCLA analysis of designated public hospital (DPH) reports.

Exhibit 116 illustrates which Category 5A projects were most frequently selected together. DPHs that implemented medical homes (six DPHs) also selected enhanced Ryan White wraparound services, while DPHs implementing disease management registries also selected development of formal retention programs. Three DPHs that selected medical homes also selected disease management registry projects.

Exhibit 116: Concurrent Category 5A DSRIP Projects Selected by DPHs



Source: UCLA analysis of designated public hospital (DPH) reports.
Note: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that are concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented the same projects concurrently.

In addition, DPHs had to select any four of the 12 optional Category 5B performance measures that targeted specific preventive care outcomes (Exhibit 117). The most commonly selected measures were hepatitis C and syphilis screening.

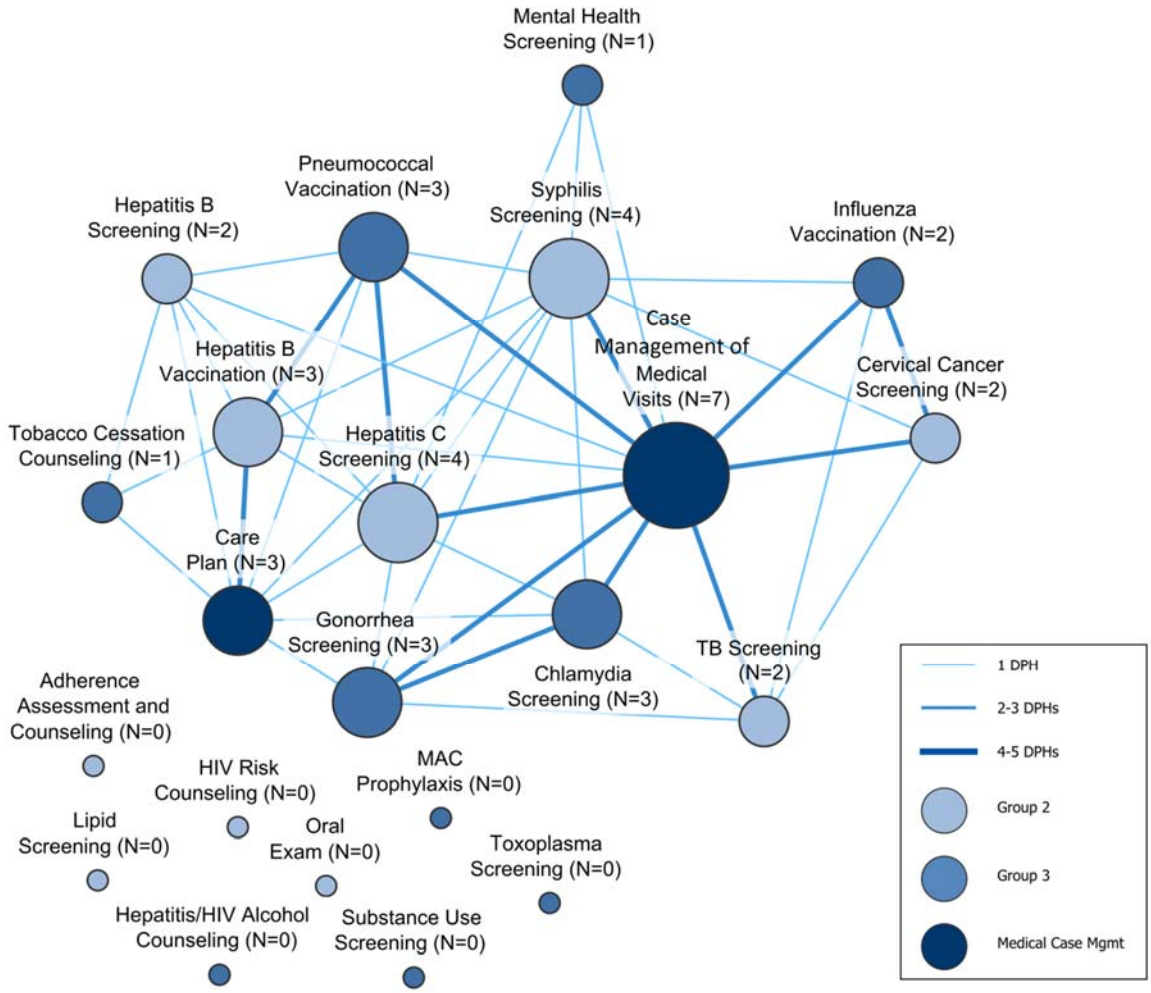
Exhibit 117: Performance Measures Selected, by Designated Public Hospital, Category 5B

Designated Public Hospital	Group 2: Cervical Cancer Screening	Group 2: Hepatitis B Screening	Group 2: Hepatitis B Vaccination	Group 2: Hepatitis C Screening	Group 2: Syphilis Screening	Group 2: TB Screening	Group 3: Chlamydia Screening	Group 3: Gonorrhea Screening	Group 3: Influenza Vaccination	Group 3: Mental Health Screening	Group 3: Pneumococcal Vaccination	Group 3 Tobacco Counseling	Total
Alameda	✓					✓			✓				**3**
Contra Costa			✓		✓						✓		**3**
Kern				✓	✓					✓			**3**
Los Angeles		✓	✓									✓	**3**
Riverside			✓	✓							✓		**3**
San Francisco		✓		✓							✓		**3**
San Mateo					✓		✓	✓					**3**
Santa Clara				✓			✓	✓					**3**
UC San Diego						✓	✓	✓					**3**
Ventura	✓				✓				✓				**3**
Total	**2**	**2**	**3**	**4**	**4**	**2**	**3**	**3**	**2**	**1**	**3**	**1**	**30**

Source: UCLA analysis of designated public hospital (DPH) reports.

Exhibit 118 shows which Category 5B optional performance measures were frequently selected together. DPHs that implemented medical homes also selected enhanced Ryan White wraparound services, while DPHs that implemented medical case management of medical visits most frequently selected screening of sexually transmitted infections (syphilis, hepatitis C, gonorrhea, and chlamydia) as well as pneumococcal vaccination. Several Category 5B performance measures were not selected by any DPHs, including lipid screening and HIV risk counseling.

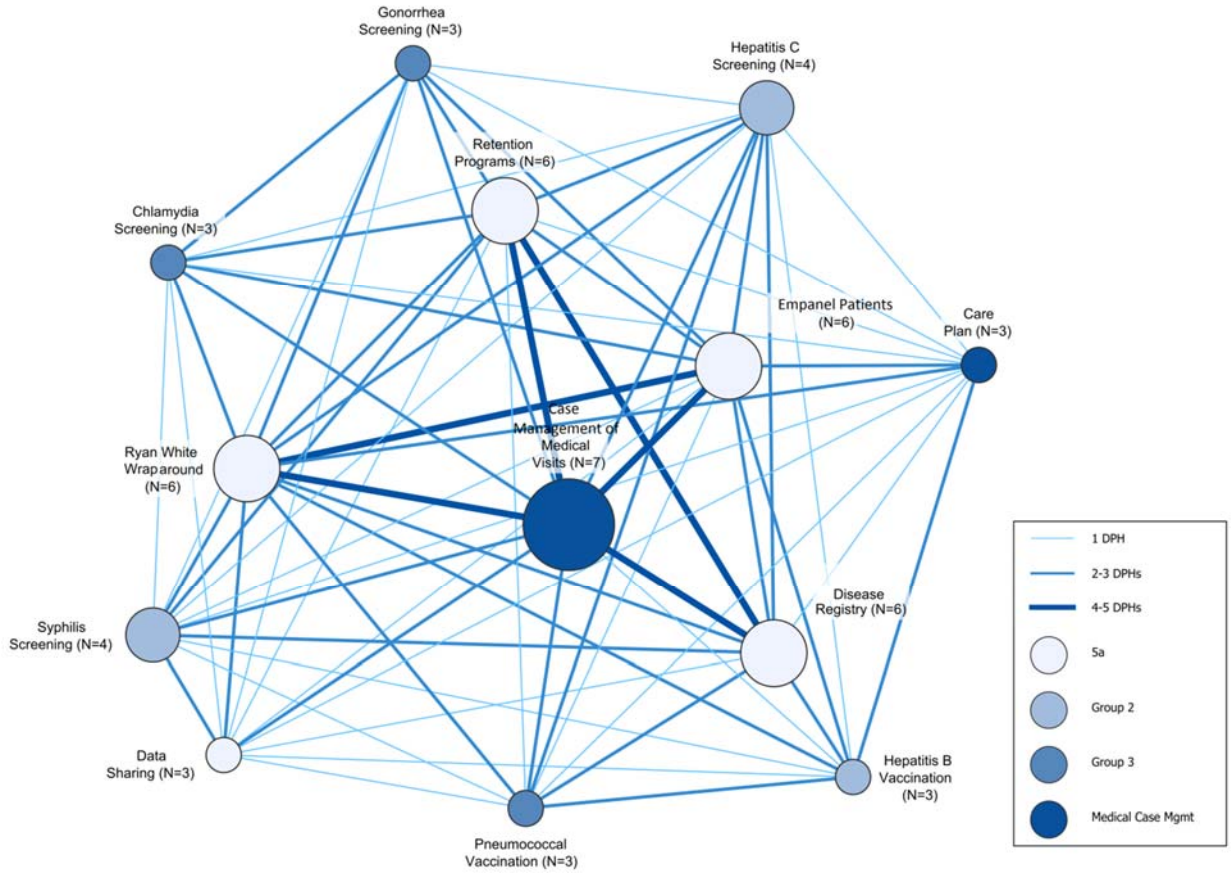
Exhibit 118: Concurrent Category 5B, Group 2 and 3 and Medical Case Management Optional Projects Selected by DPHs



Source: UCLA analysis of designated public hospital (DPH) reports.
Note: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that are concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented the same projects concurrently.

Exhibit 119 highlights the projects that were most frequently chosen by DPHs in Categories 5A and groups 2, 3 and medical case management 5B performance measures. DPHs that selected Category 5B medical case management of medical visits also selected the four most common Category 5A projects, including disease management registry and retention programs. Their patterns of selecting the remaining Category 5B Group 2 and 3 performance measures were not as clear.

Exhibit 119: Concurrent Category 5A and 5B Optional Projects Selected by DPHs



Source: UCLA analysis of designated public hospital (DPH) reports.
Note: The Ns represent the number of DPHs that implemented a specific project and larger circles correspond to more DPHs. The lines between circles represent projects that are concurrently selected by the same DPHs and thicker lines represent how many DPHs implemented the same projects concurrently.

Rationale for Selecting Category 5 Projects

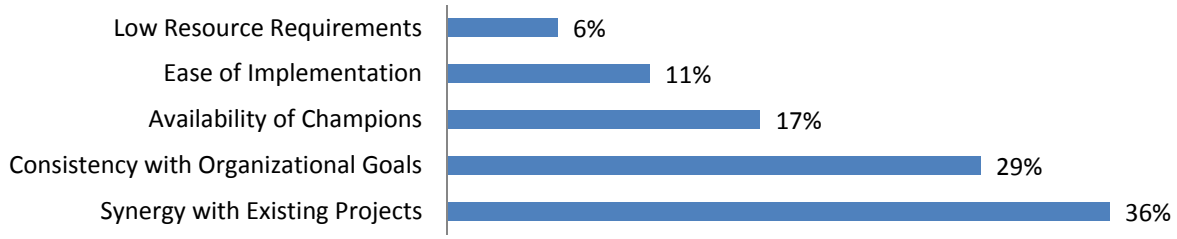
During follow-up interviews, several DPHs explained that they received Category 5 funding because they provide safety net services and operate in locations with a high prevalence of HIV/AIDS cases. As the planning process began, several DPHs conducted an evaluation of patient barriers to care to determine gaps and challenges in delivering care and to inform their selection of projects and performance measures. Several DPHs held local stakeholder meetings prior to the start of Category 5 in order to determine care delivery areas most in need of improvement. DPHs benefited from these meetings by sharing best practices, evaluating the potential impact of 5A project plans on outcomes, participating in group training, and collaboratively using educational resources to prepare for project implementation. Some DPHs complemented stakeholder input with population surveys that assessed health care needs from a patient perspective on the choice of projects. Additionally, most DPHs selected 5A projects

with goals that aligned with the Federal Implementation Plan of the National HIV/AIDS Strategy, and set 5B performance measure targets based on National HIV Benchmarks. Projects were also selected because they were complementary to DSRIP Category 1-4 projects, which were implemented concurrently with Category 5.

Across DPHs participating in Category 5, projects were selected to serve important roles, including: improving population health through preventive care and better resource use, moving from an episodic, disease-focused model to a patient-centered model to enhance patient experience, improving outcomes through wraparound support services, providing more coordinated and proactive care between clinical and public health sectors, and reducing the cost of care while strengthening infrastructure for improved quality of care and program sustainability.

DPHs reported the reasons for selecting the projects included in their Category 5 plans in the interim survey. The two most common reasons were synergy with existing projects and consistency with organizational goals (Exhibit 120). DPHs least frequently reported low resource requirements as a reason for selecting projects. In their annual and semi-annual reports many DPHs cited plans to implement an electronic health record for the development of a disease management registry, complementing both organizational goals and improvement plans for existing projects.

Exhibit 120: Reasons for Selecting Category 5A Projects



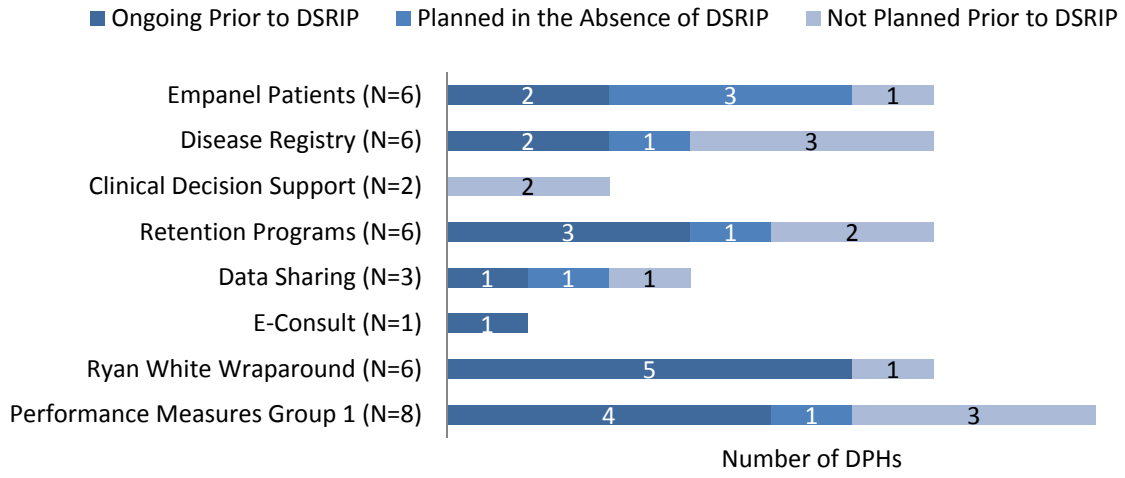
Source: UCLA interim survey of designated public hospitals (DPHs).

Status of Category 5 Projects Prior to DSRIP

Many DPHs built on projects that were ongoing prior to their participation in DSRIP (Exhibit 121). For example, five of the six DPHs that implemented Ryan White wraparound services had a similar program ongoing prior to DSRIP. Several other DPHs had begun developing a system to empanel patients into medical homes as part of their plan to transition to a patient-centered medical home model. Alternatively, prior to DSRIP, most DPHs did not yet have an EHR system or needed significant technological improvements for their existing system. In the interim survey and follow-up interviews several DPHs confirmed that participation in DSRIP increased

the scope of existing work, with DSRIP funding supplementing the development of sustainable protocols, staff training, and infrastructure building. Among the eight responding DPHs, three had not planned to collect the Group 1 performance measures prior to DSRIP. Half of the DPHs that implemented the disease management registry had not planned to implement the project previously, and none of the DPHs that chose the decision support tool project had planned to implement it previously.

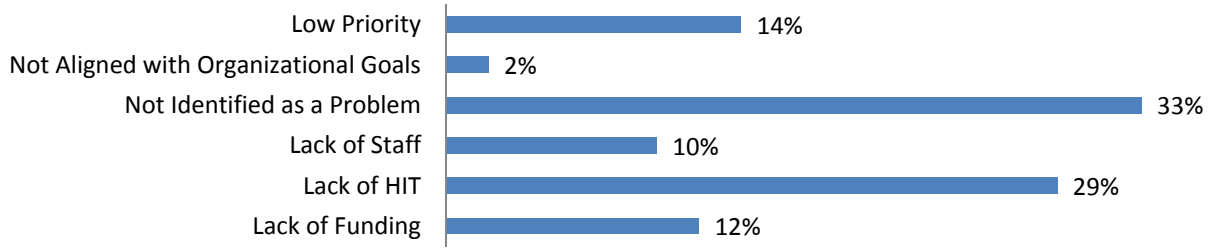
Exhibit 121: Status of Category 5 Projects in DPHs Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Missing data from Alameda and Los Angeles. Also, San Francisco responded to E-Consult, but did not implement it. The Ns for each category represent the total number of projects implemented in the category across all reporting DPHs.

The most common reasons cited by DPHs for not implementing projects prior to DSRIP were not identifying the topics as a problem (33%), followed by lack of health information technology (HIT) (29%; Exhibit 122). In a follow-up interview, one DPH reported that DSRIP had a big impact by leading its administration to focus on the HIV care delivery system to identify areas for improvement. The DY 8 DPH reports also concurred that some projects were not ongoing prior to DSRIP due to both a lack of awareness of particular care delivery problems and insufficient means to implement and accomplish project goals. The least frequently cited reason was that the project was not aligned with organizational goals (2%).

Exhibit 122: Reasons That Category 5A Projects Were Not Planned Prior to DSRIP



Source: UCLA interim survey of designated public hospitals (DPHs).
Notes: Analysis is based on the total number of projects that were not implemented or planned prior to DSRIP. Total is greater than 100% because DPHs were allowed to select more than one reason per project.

Participation in External Initiatives

In the interim survey, DPHs reported if they were participating in other initiatives to improve quality of care for PLWHA in addition to DSRIP. Alameda, San Francisco, and UC San Diego participated in the Patient Centered Medical Home (PCMH) Program funded by the California HIV Research Program. Analysis of DY 8 and DY 9 reports suggested that these DPHs were able to achieve greater successes in their project milestones than DPHs that had not yet begun designing system-level changes towards implementing the PCMH model. Additionally, Santa Clara participated in a Community Partnership Health Home Transformation Initiative, which is a collaborative assisting with PCMH recognition efforts. This allowed DPH staff to participate in local training to learn best practices from other sites. In follow-up interviews, several DPHs acknowledged that participation in external initiatives provided additional financial and structural support to implement the Category 5A projects. For example, one DPH reported that a Collaborative Health Research Projects grant allowed for the implementation of strong technological infrastructure, which in turn allowed staff to focus on the improvement of systemwide care delivery methods. Several other DPHs reported participating in numerous shared learning opportunities (e.g. conferences, quarterly stakeholder meetings, cross-site huddles) to present data and learn best practices for implementation of projects.

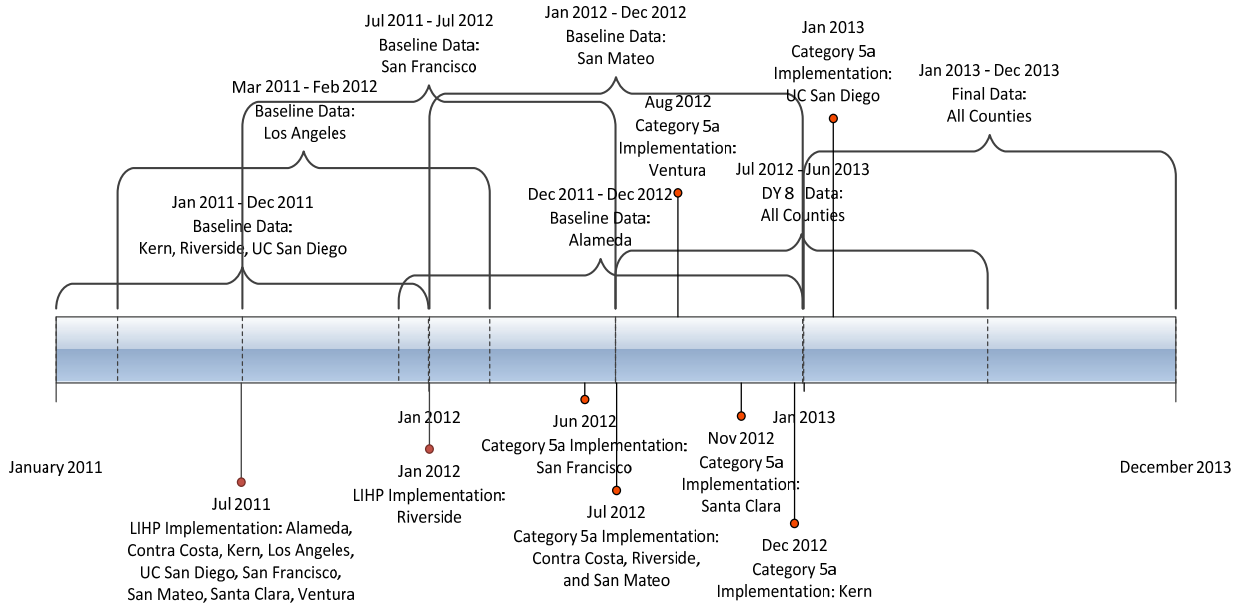
Implementation

Timeline

The timeline for implementation of Category 5A projects differed from Category 1-4 projects. Exhibit 123 shows DPH-reported dates for Category 5A project implementation as well as

measurement periods for 5B performance measure data. All ten DPHs reported on milestones and performance measures for DY 8 from July 1, 2012 to June 30, 2013 and DY 9 from January 1, 2013 to December 31, 2013. DPHs also reported on a yearlong baseline period that varied by DPH.

Exhibit 123: Category 5A Project Implementation and 5B Data Reporting Timeline



Source: UCLA analysis of designated public hospital (DPH) reports.
Notes: Exact dates for baseline measurements are unavailable for Contra Costa, Santa Clara, and Ventura. Alameda, Riverside, and San Francisco reported small achievement rate updates for some 5B Outcomes during the second half of DY10.

Care Delivery Infrastructure and Organization

DPHs reported on the implementation of Category 5A projects and 5B health outcome measures in designated outpatient clinics that served as medical homes for PLWHA within the hospital system, and reported on patient characteristics in the UCLA interim survey. DPHs implemented Category 5A projects in as few as one and in as many as nine medical homes (Exhibit 124). They also differed in terms of PLWHA patient mix and size. The numbers of PLWHA served ranged from 327 in Ventura to over 3,456 annually at the University of California, San Diego Health System. Five DPHs reported that more than half of their patients had been diagnosed with AIDS, indicating a higher severity in their case mix.

All DPHs except Kern reported receiving funding for at least some of their clinics from the Ryan White HIV/AIDS Program, which supports services for individuals who do not have sufficient health care coverage or financial resources to cope with HIV. LIHP enrollees could not seek care

at Ryan White sites for services covered by LIHP, but they could still access Ryan White wraparound services that were not available through LIHP.

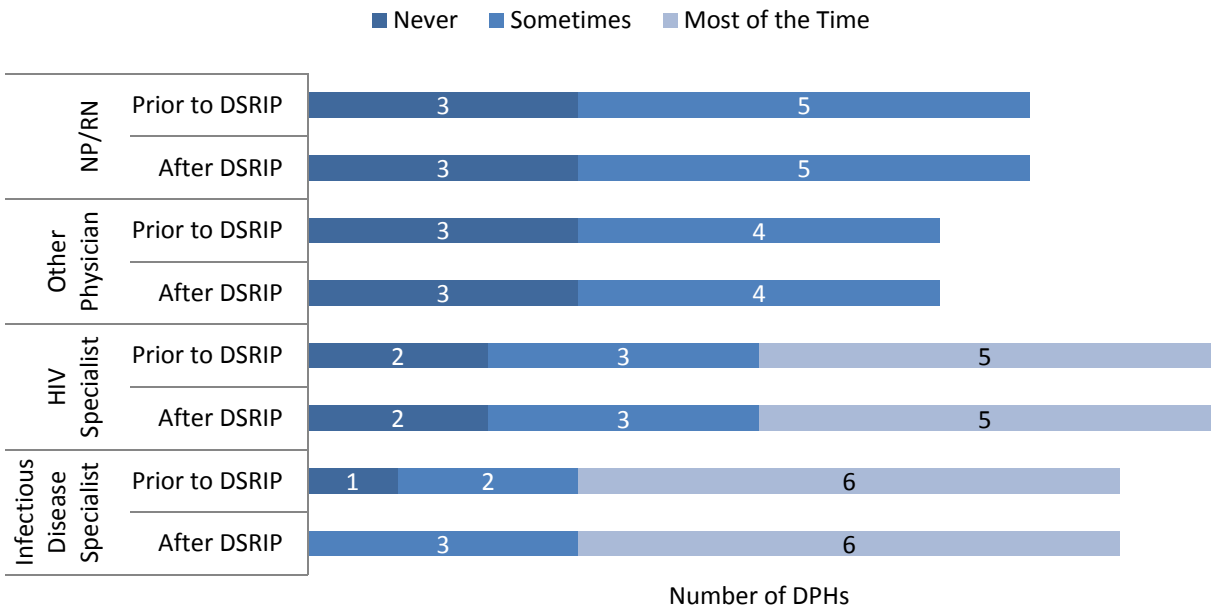
Exhibit 124: Characteristics of Designated Public Hospitals Implementing Category 5 Projects

Designated Public Hospital	Number of Outpatient Clinics	Number of Clinics that Implemented Category 5 Projects	Ryan White Funded Provider Prior to DSRIP	Number of Patients with HIV/AIDS at Baseline	Percentage of HIV+ Patients with AIDS at Baseline
County-Owned DPHs					
Alameda	17	1	Yes	950	53%
Contra Costa	113	6	Yes	386	9%
Kern	14	3	No	N/A	N/A
Los Angeles	N/A	9	Yes	N/A	N/A
Riverside	13	4	Yes	556	63%
San Francisco	12	4	Yes	3156	1%
San Mateo	6	1	Yes	475	36%
Santa Clara	7	1	Yes	1228	54%
Ventura	15	1	Yes	327	60%
Academic-Owned DPHs					
UC San Diego	46	1	Yes	3456	60%

Source: Information about the number of patients with HIV/AIDS and status as a Ryan White Funded provider sourced from the UCLA interim survey of designated public hospitals (DPHs). Information about outpatient clinics and implementing clinics was sourced from the DPH proposals, and DY 8 and DY 9 semi-annual reports. Baseline refers to number and percentage of patients with HIV/AIDS as reported in the DY 8 1st semi-annual report.
NA: Missing data.

As seen in Exhibit 125, DPHs also reported in the UCLA interim survey on the type of provider that acted as the principal managers of care (whether primary care provider or HIV specialist) for PLWHA. All respondents said patients had regular checkups with an infectious disease specialist at least some of the time and in six of the DPHs, infectious disease specialists managed care most of the time.

Exhibit 125: Principal Managers of HIV Patient Population prior to and after DSRIP Implementation



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Responses to this question were unreported by Alameda, Santa Clara, UC San Diego, and Ventura. HIV Specialist is defined as an infectious disease physician or a physician specializing in HIV care (has managed at least 20 HIV-infected patients in the past year)

Achievement of Category 5 Goals

Category 5A goals were laid out in the DSRIP proposals and DY 8 first semi-annual reports. Achievement was discussed in subsequent reports. DPHs reported that empanelment of patients into a medical home with HIV expertise would ease the transition from Ryan White to LIHP and improve coordination of care while better integrating HIV care in the overall hospital system (often ambulatory care), and subsequently discussed success in easing the transition during follow-up interviews. DPHs reported great success in the use of a disease management registry to streamline communication across providers. Using EHR prompts assured more thorough and comprehensive medical visits, created quality evaluation and improvement programs, and prevented duplication or omission of tests during medical visits.

Two DPHs reported that they chose to implement clinical decision support tools because they first found patients who were in need of retention in care services by identifying patients with outstanding labs, medications, visits, and immunizations. They then developed methods to help these patients attend medical visits and return appointments, implemented a new EHR to customize patient care and better manage the population, and identified clinical decision support tools to ensure easy transition to wraparound services.

Several DPHs that chose to develop formal patient retention services participated in shared learning to gain input from other programs and providers with expertise to develop best practices. As the transition to LIHP has created challenges for both patient and provider, another reported goal of the project was to hire retention specialists and redefine roles of clinical staff to more effectively use the EHR system and to deliver patient information to providers. A combination of more efficient use of electronic records and monitoring of patients by a retention specialist led to increased retention in care.

Easing the transition from Ryan White to LIHP services and ensuring access to Ryan White wraparound services post-transition were major goals of the DSRIP Category 5 projects. Several approaches were implemented across DPHs. The most common approach was the creation of a memorandum of understanding between primary providers and wraparound service providers to improve coordination and delivery of wraparound services. To link patients to wraparound services and retain them in care, DPHs planned to use EHRs to monitor service delivery and patient outcomes. Those DPHs that implemented the empanelment or retention projects assigned a staff member to monitor referrals and patient follow-through to ensure that there were no barriers in accessing wraparound services.

The three DPHs that sought to enhance data sharing between DPHs and county Departments of Public Health reported efforts to streamline data sharing through resolving chart

inconsistencies across providers and linking DPH-specific EHRs to a shared system with data mapping. Data sharing with Departments of Public Health alerted DPHs to patients who have fallen behind in CD4 and Viral Load Screening, which aided DPH retention efforts. With enhanced data sharing, DPHs expected to see a reduction in duplication and omission of important screenings, a more synchronized model of care and treatment, and an overall reduction in costs by removing barriers to coordination between DPHs and Departments of Public Health.

Los Angeles chose to expand its electronic consultation system between HIV primary care medical homes and specialty care providers to include three more specialties: gastroenterology, nephrology, and podiatry. During each milestone period, Los Angeles extended "eConsult" to two additional specialties. Los Angeles sought to train providers to use an internal web-based platform to securely share health information and discuss patient care methods.

Staff Training, Task Shifting, and Personnel Reorganization

To achieve the goal of supporting PLWHA in a medical home, several projects required staff training, task shifting, and hiring or reorganization of personnel. In the DPH DY 8 semi-annual reports, the most frequently reported implementation process for Category 5 was staff hiring and training. All seven projects required new or additional staff training on updated protocol and workflow processes, the use of new data technology systems, and educational seminars on DSRIP, LIHP, and the importance of each project. In the UCLA interim survey, DPHs reported that the majority of training was conducted prior to or during Category 5 implementation, as shown in Exhibit 126. DPHs reported that this was because some projects required the identification and development of new protocols and workflows for which staff had to be trained. For example, one DPH hired a full-time pharmacist to educate patients and monitor medication adherence, while another trained all staff on the use of the AIDS Regional Information and Evaluation System (ARIES) database to ensure timely and accurate data entry. Another DPH hired new staff to create a multidisciplinary care team to ensure patient retention and adherence, including bringing in a panel manager and additional social workers to help bring patients in for medical visits and ensure that screenings and wraparound services were provided.

DPHs reported that task shifting and personnel reorganization were undertaken mainly to streamline and improve empanelment and retention programs. Often, tasks once completed by nurses were now completed by other staff, freeing up time for nurses to spend with patients. In a follow-up interview, one DPH reported a benefit of task shifting in that, "We have RNs giving injectables, and that can be scoped to an LVN level." The implementation of disease management registries and fully operational EHRs required additional task shifting because

certain staff became responsible for determining the accuracy and timeliness of data entry and generation of patient reports prior to and after medical appointments. Some DPHs hired additional staff to review patient records, call patients with reminders about medical visits and testing appointments, and determine whether any additional retention services were required, especially for at-risk patients. Another personnel reorganization strategy utilized by several DPHs was the hiring of a pharmacist to help patients with medication adherence counseling and removing gaps in accessing medication due to the transition out of Ryan White and into LIHP.

Exhibit 126: Timing of Staff Training in Relation to DSRIP Implementation for Category 5 Projects

Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Missing data from Los Angeles. (% of all projects)

Care Process Reorganization, Resource Needs, and Engagement with Stakeholders

The implementation of Category 5 required a reorganization of the care process, especially as projects were intended to help DPHs shift from an episodic, disease-centric care model to a patient-centered population health model. Many DPHs held stakeholder meetings to review the care process and tasks of each staff member to determine gaps and failures in the care delivery process. The most frequently cited reorganization process involved the development of a multidisciplinary staffing model, especially for utilization of the disease management registry and development of retention programs. For example, several DPHs reported that they had successfully reorganized their care system for "multi-service" encounters. This means that when a patient came in for an appointment they received the necessary testing, a prescription, a mental health screening, and referrals to any needed wraparound services, among other

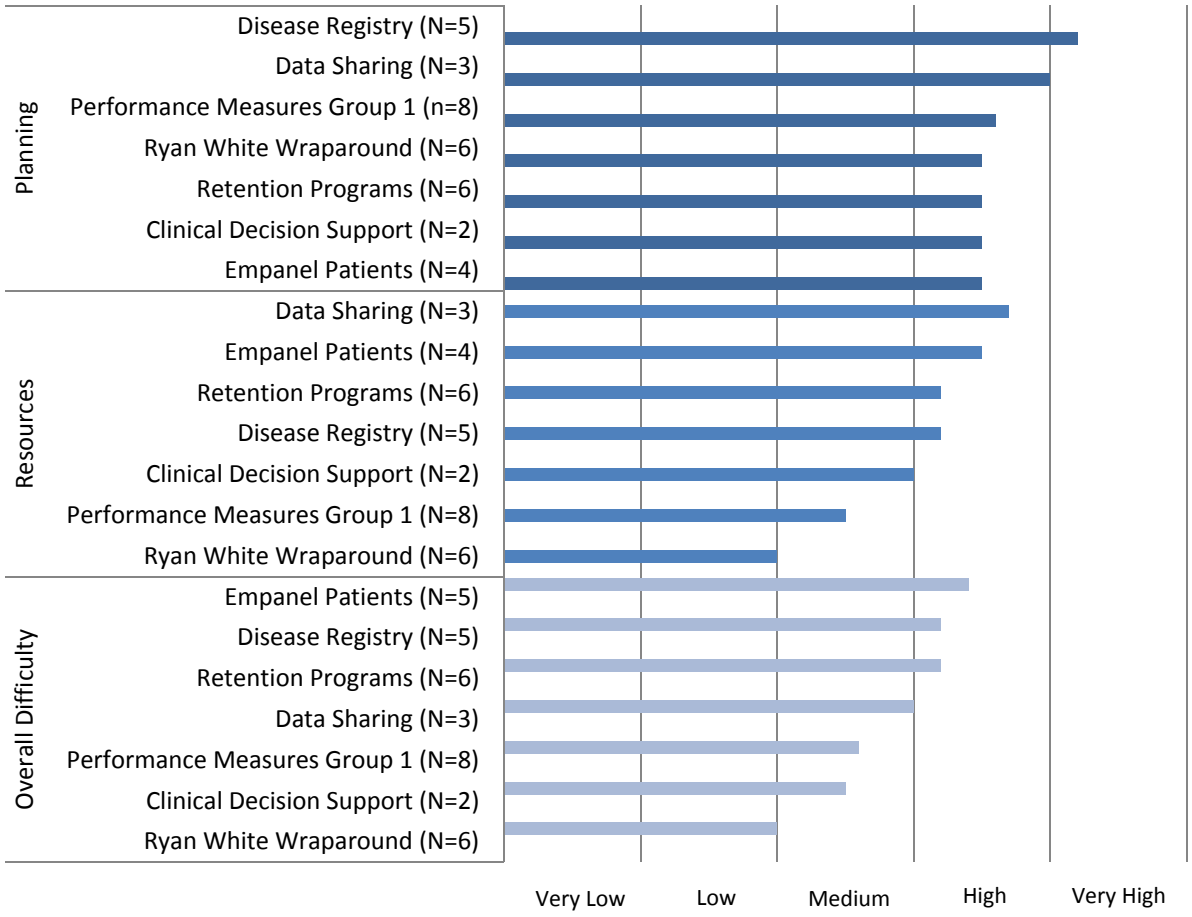
services. In addition, clinics that developed patient portals were able to streamline services by interacting with patients online, reducing the need for patients to schedule additional appointments while retaining them in care with more frequent contact.

Some DPHs reported moderate pushback from staff during the reorganization process due to the redefinition of long-held roles, but no DPHs cited pushback from physicians. This was because the majority of changes were implemented among staff including nurses, social workers, panel coordinators, and pharmacists. Several DPHs reported that the care transitions from DSRIP were relatively seamless for providers and patients, who witnessed swift improvements in care services and delivery.

UCLA also asked DPHs to assess the level of effort and difficulty of implementing Category 5A projects and collecting 5B Group 1 Outcomes in the interim survey (Exhibit 127). DPHs reported that the disease management registry required the highest level of planning, followed by data sharing with the county. In terms of resources required, data sharing with the county required the highest level of resources followed by empaneling patents into a medical home with HIV expertise. DPHs reported that empaneling patients was also the most difficult to implement overall, followed by the disease management registry and the retention program. In contrast, decision support tools and Ryan White wraparound services were considered the least difficult projects or measures to implement.

DPHs required resources for the implementation of Category 5A projects. In the DY 8 and DY 9 reports, DPHs summarized payment allotments for each project and performance measure. Overall, individual payment allotments for Category 5A projects during the baseline, interim, and final periods ranged from $85,000 to $5,400,000 per project depending on DPH size. Category 5B measure allotments ranged from $25,000 to $1,600,000. Los Angeles received the largest payments, while Kern and San Mateo received the least. Category 5 payments generally represented 5-10% of the overall DSRIP budget for each DPH, with a range of 1.4% to 31.2%.

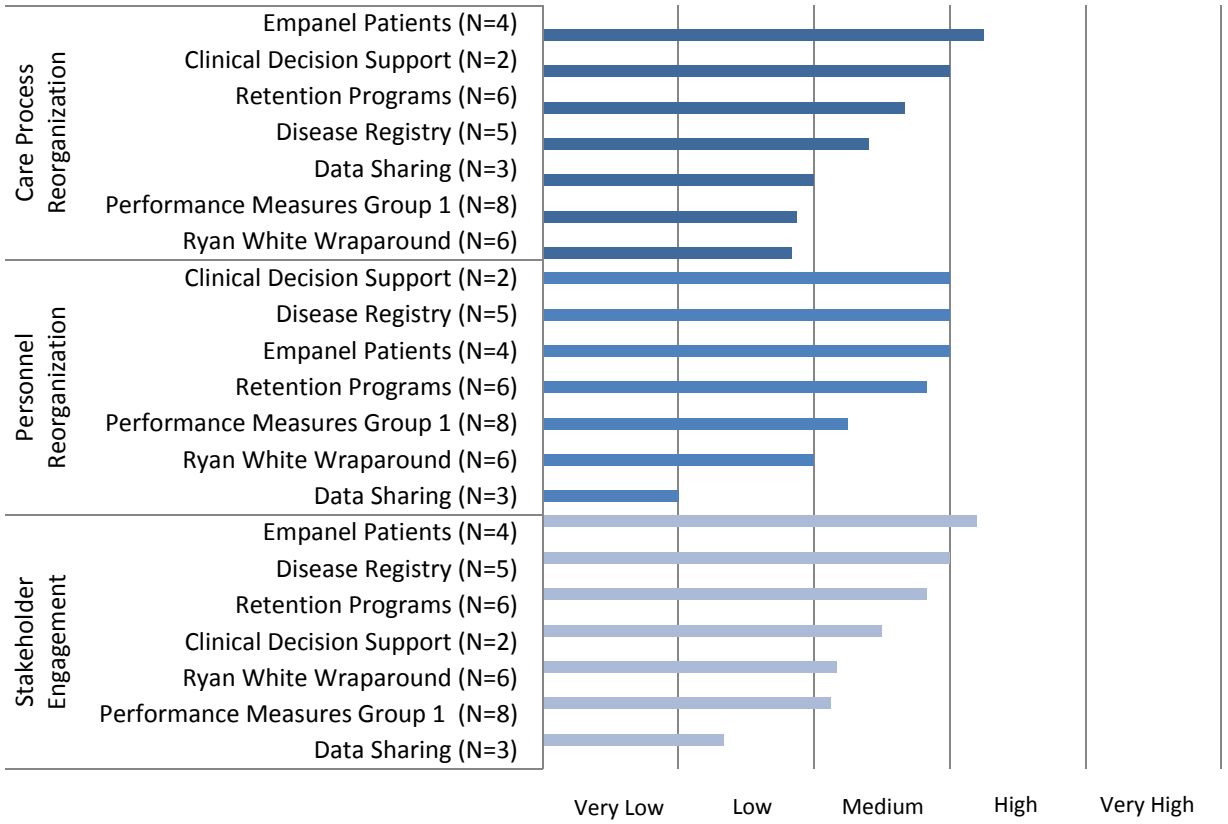
Exhibit 127: Amount of Planning, Resources, and Overall Level of Difficulty in Implementing Category 5A Projects



Source: UCLA interim survey of designated public hospitals (DPHs).

While DPHs cited medium to high difficulty and effort for a majority of projects, they reported only modest levels of effort for reorganization of personnel and care processes, as shown in Exhibit 128. Additionally, in both the UCLA interim survey and DY 8 and DY 9 semi-annual and annual reports, stakeholder engagement was reported as relatively modest for all projects. The majority of stakeholder engagement entailed shared learning during quarterly meetings, conferences, and other opportunities to discuss best practices for project design and implementation. The most significant engagement of stakeholders came from provider input on project implementation design and methodology. Overall, stakeholder support for projects was reported as high, while actual engagement was low.

Exhibit 128: Level of Reorganization of Personnel, Care Processes, and Stakeholder Engagement for Category 5 Projects



Source: UCLA interim survey designated public hospitals (DPH).
Note: Missing data from Los Angeles.

Relationship among Category 5A Projects

The most frequently reported relationships among the Category 5 projects were the influence of the EHR and disease management registries on other projects. Clinical decision support tools provided the underlying data that allowed providers to use these tools to schedule necessary tests and update patient information. With regard to data usage, DPHs reported that the maintenance of accurate, up-to-date data in the disease management registry was integral for sharing data with Departments of Public Health. Good data allowed the two to collaborate to identify at-risk patients and work together to retain or re-link patients into care, as well as provide referrals for wraparound services. The disease management registry and EHR were also very useful for Los Angeles' eConsult initiative, through which primary care providers and specialists were able to share real-time patient data. Los Angeles noted that the successful implementation of eConsult allowed primary care providers and specialists to provide more timely, quality care for patients, and ensure that patients attended appointments to which they were referred. In addition, referrals to wraparound services and tests would automatically

display in the patient's profile, as would current test results, reducing testing duplication and unnecessary appointments while allowing patients to receive specialty care with decreased wait times.

The retention program greatly benefited from the disease management registry. For many DPHs, a clinician was responsible for generating daily reports to provide appointment reminders and identify patients who might be falling out of care. This staff member also monitored fluctuations in performance measurements to determine areas of success and those in need of improvement. The development of multidisciplinary care teams also linked projects together, and DPHs reported significant improvements in coordination of care because project goals and tasks were aligned, reducing gaps in care. The empanelment and Ryan White transition projects were also closely linked. As patients were empaneled into medical homes, many DPHs would assign patients to a case manager in addition to a provider, and the case manager was responsible for arranging for necessary screenings and referrals to wraparound services. One DPH summarized the overall relationship between projects as: "You can only go so far with one project and then, you might not optimize it by not instituting another component."

Collaboratives That Informed Implementation

All DPHs participated in collaboratives to inform the implementation of Category 5A projects. One DPH observed: "You can work in silos until something like this [DSRIP] comes out, and you realize that you have to collaborate for the sake of the patient." In follow-up interviews, the most commonly cited collaborative method was shared learning experiences at conferences and stakeholder meetings during the project development period. Two DPHs reported that they often engaged in informal collaborations with other clinics and stakeholders to find best practices for project implementation. One DPH participating in the PCMH approach reported being assigned by the National Committee for Quality Assurance (NCQA) a coach who provided advice for developing the empanelment project.

Another collaboration method occurred within the clinic setting. The use of daily or weekly huddles with the care team of providers, nurses, case and panel managers, and other clinical staff, allowed DPHs to engage in ongoing collaboratives to improve implementation processes for Category 5A projects. This also helped identify gaps and barriers to care in real time, and gave staff an outlet to provide feedback on DSRIP.

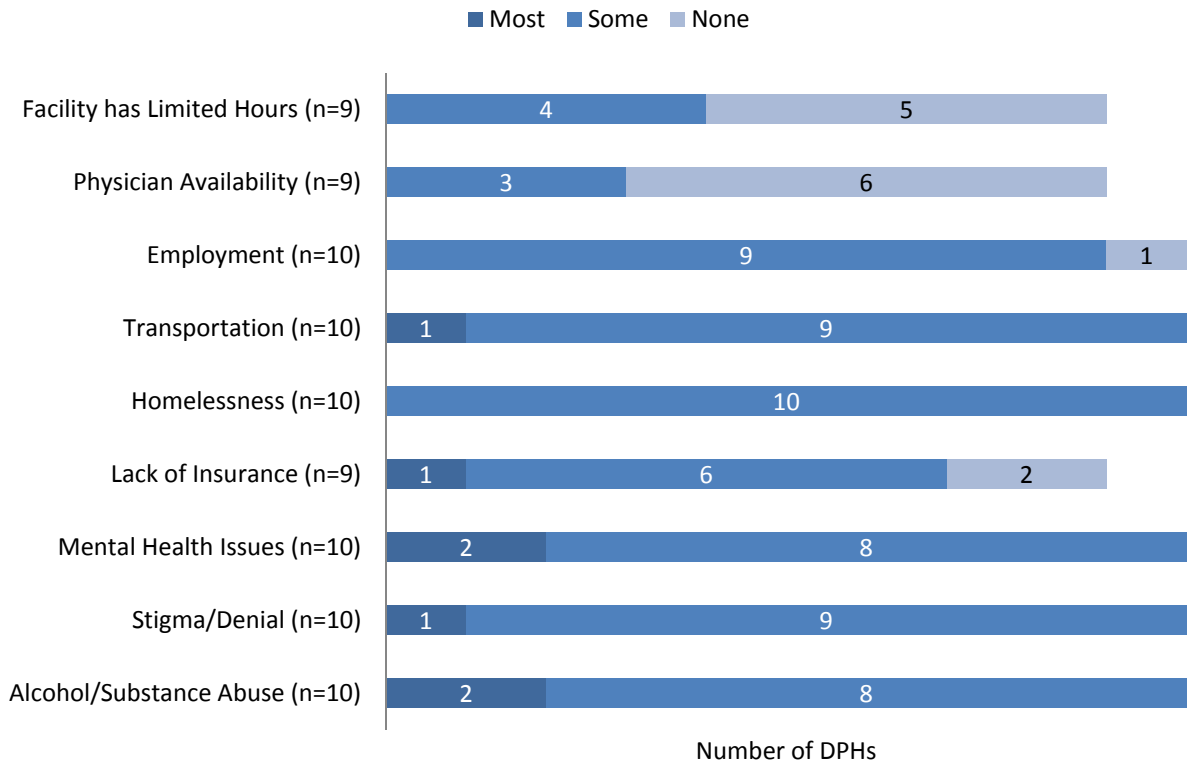
Transition of PLWHA into LIHP

DSRIP Category 5 projects were designed to help create a smoother transition for patients transitioning from Ryan White programs into LIHP. Previous research has shown that

uninterrupted health insurance is important for achieving or maintaining favorable HIV health outcomes.(136) Further, integrated service delivery, as found in Ryan White clinics, may increase patient retention in care and adherence to medication. Thus it is important for DPH systems to ensure that the transition of PLWHA to health coverage under LIHP and the Affordable Care Act maintains patient continuity of care. DPHs reported that PLWHA enrolled into LIHP faced a number of challenges to retention and treatment adherence.

Almost all DPHs reported that patients faced personal challenges in attending medical visits due to lack of transportation, unemployment, stigma, and mental health and substance abuse problems. Convenience of clinic hours, physician availability, and lack of insurance were less frequently mentioned as reasons for missing medical visits (Exhibit 129).

Exhibit 129: Challenges Patients with HIV Faced Around Medical Visits

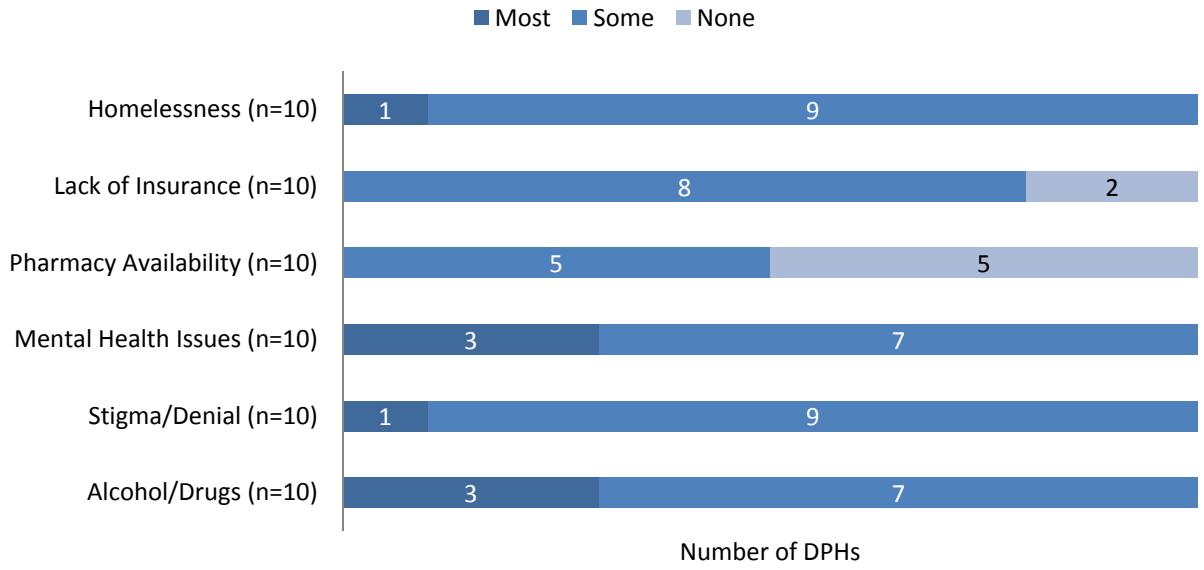


Source: UCLA interim survey to designated public hospitals (DPHs).

Maintaining adherence to ART was a challenge mentioned by four DPHs because the change in insurance arrangements often required that patients switch from the pharmacy they had been using to a new pharmacy (Exhibit 130). One DPH mentioned that DSRIP helped bring together public health and hospital administration to develop processes for educating patients on pharmacy changes and for ensuring timely receipt of medications. The challenges most

frequently reported were underlying difficulties in medication adherence, mental health and substance abuse, homelessness, and stigma. The availability of pharmacies and lack of insurance coverage were not reported as major issues for most patients.

Exhibit 130: Challenges Patients with HIV Face around Medication Adherence



Source: UCLA interim survey of designated public hospitals (DPHs).

DPHs reported that improvements in coordinated care, use of disease registries and EHRs, and patient empanelment into HIV-specific medical homes have facilitated the transition for at-risk clients. DPH reports indicated increasing numbers of PLWHA who were accessing services through DSRIP sites and being retained in care.

During follow-up interviews, DPHs discussed how DSRIP facilitated the transition of PLWHA. Three DPHs reported that DSRIP helped make the transition from Ryan White to LIHP seamless. Several DPHs attributed this success to the 5A project that ensured access to Ryan White wraparound services. For example, one DPH reported that this project was essential for ensuring that patients could obtain the resources they were used to receiving such as bus passes, housing assistance, and food vouchers. Others discussed the benefits of utilizing the disease management registry and tracking performance measures as useful for getting a "global sense" of how patients were doing and also for identifying individual patients who may need to be reengaged in care. Several DPHs reported that the transition helped better integrate the HIV system into the general hospital care delivery system. DPHs did not submit CG-CAHPS PLWHA specific data in their reports. However, four DPHs reported tracking patient satisfaction over

the course of DSRIP implementation and all found that satisfaction levels were maintained or increased.

Outcomes of Care

Project Milestones

DPHs established milestones for implementing Category 5A projects during DY 8 and DY 9 in the DSRIP Proposal Modifications submitted before the implementation period began. DPHs then reported on achievement of milestones during each period (DY 8 and DY 9 1st and 2nd semi-annual and annual reports) to demonstrate progress on improved coordination and collaboration, integration of health care services, and quality of care delivered. Each DPH received DSRIP payments associated with progress on milestones.(137) As each DPH had distinct local needs and resources, milestones and payment allocations differed by site. Exhibit 131 summarizes the most common baseline, interim, and final milestones for each of the seven Category 5A projects. Most DPHs were able to fully achieve milestones during each reporting period. However, some DPHs missed or had partial achievement of four or fewer milestones due to project-related challenges. The same is true of the 5B performance measures – most DPHs met established targets for the interim and final reporting periods, though some DPHs fell short of their targets or saw decreases in measures for a few indicators.

Exhibit 131: Summary of Category 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	Develop protocol to assign patients to a medical home and develop multidisciplinary staff model	Implement protocol and staffing model and continue assigning patients to medical homes	Evaluate and improve on protocol and staffing model and continue to empanel patients
Disease Registry	Identify an HIV/DMR module and develop protocol for data entry and use	Hire and/or train staff to manage DMR for patient retention, implement DMR, and update/clean data	Develop ongoing performance improvement activities through DMR data and roll-out DMR in all clinics
Clinical Decision Support	Identify a set of HIV-specific clinical decision support tools and update IT	Deploy IT to develop clinical decision support tools and evaluate workflow and protocols	Pilot and refine decision support tools in clinics and measure the impact on disease management

Project	Baseline	Interim	Final
Retention Programs	Develop staffing models and enrollment criteria for Retention programs	Implement retention program and monitor effectiveness	Track effectiveness of retention program and focus on effectiveness of retention in outcome measures
Data Sharing	Identify capacity for data exchange and develop protocol for improving data quality and assurance	Establish and implement protocol for monitoring data exchange and continue development of procedures to improve data for quality of care improvements	Continue to monitor data exchange and use data to improve quality of care
E-consult	Select priority specialties to expand eConsult and launch in clinics	Launch eConsult in additional clinics and ensure that clinics have capacity to use eConsult	Launch eConsult in additional clinics and engage in shared learnings to improve service delivery
Ryan White Wraparound	Develop procedures to ensure that patients transitioning from Ryan White to LIHP have access to wraparound services	Train staff to ensure care coordination, determine current wraparound services and identify possible additional services, and assist patients in transition	Ensure effectiveness of wraparound services (e.g. referrals), continue to improve coordination, and shift focus to retention

Source: Analysis of 1st Semi-Annual, 2nd Semi-Annual, and Annual DY8 and DY9 DPH Reports.

Anticipated Effect of Category 5A Interventions on 5B Outcomes of Care

The anticipated impact of Category 5A projects on Category 5B outcomes in Group 1 and Group 2 were assessed from the existing literature on effective methods of improving outcomes for PLWHA. The results are presented separately for each Category 5A project.

Empanel Patients in Medical Homes with HIV Expertise

The Institute of Medicine report, *Crossing the Quality Chasm: a New Health System for the 21st Century (138)*, promoted the idea of developing medical homes for PLWHA in order to increase their engagement in care and improve their health outcomes.(139) Saag (139) called the Ryan White program an "unintentional home builder" because early evidence documented that Ryan White-supported sites had more coordinated care than non-Ryan White sites. (140, 141) Higher rates of viral suppression found among poor patients in Ryan White-funded facilities have been associated with the added support services these patients receive. (142, 143)

Since the publication of the IOM report in 2009, the published literature has continued to provide supporting evidence for a positive link between medical homes and improved health outcomes for PLWHA. For example, one study showed that rates of care and treatment adherence were best supported within a medical home framework.(144) Another showed that patients in Veterans Affairs hospitals with integrated clinics were more likely to achieve viral suppression.(145)

A review of the literature on the HIV care cascade concluded that there is clear evidence that individuals incompletely engaged in care "account for the largest proportion of HIV-infected individuals with detectable viremia." Therefore, the review concluded that it is important to improve engagement and retention in care.(146)

Another literature review showed a positive relationship between integrated HIV care and engagement and retention in care.(147) Improved case management and a close relationship with a medical provider such as that provided in a medical home have been found to be key to engagement in HIV care in a variety of settings. (148-150) Another study found that PLWHA who had more positive relationships with their providers, such as those found in medical homes, were more likely to remain engaged in care.(151)

Ryan White sites, which typically function as medical homes for PLWHA, provided better PCP prophylaxis and greater use of TB tests. (152) A study that compared university clinics to county hospital clinics found that the organization of clinical services was more important than patient characteristics in predicting whether patients received primary care preventive services.(153) Clinics that engaged in case management or were funded by the Ryan White Program were found to be more likely to provide a greater percentage of the elements in a summed quality of care measure that included retention in care, CD4 counts and viral load testing, screening of hepatitis and STIs, mental health and substance abuse screenings..(154)

Implement a Disease Management Registry

A Cochrane Collaborative Review concluded that settings with case management had fewer deaths and had higher use of antiretroviral medications.(155) A study reported that case management promoted improved antiretroviral adherence and led to higher CD4+ cell counts among homeless and marginally housed PLWHA.(156) A more recent study showed that PLWHA in urban areas who attended clinics providing adherence counseling or case management were more likely to meet quality of care measures.(154) A study in Washington, D.C. found that patients treated in facilities that provided medical case management programs were significantly more likely to be retained in care, but not more likely than PLWHA treated in other sites to be virally suppressed.(157) A brief case management intervention increased the

percentage of recently diagnosed HIV-infected persons who were linked to care within six months of initial diagnosis from 60% to 78%, compared to passive referral. (158)

One study developed an electronic patient database that tracked patients across a metropolitan community of 150,000 inhabitants. Following the introduction of this registry, medication adherence rose from 82% to 100%, immunization rates rose from a mean of 72% to a mean of 87%, perinatal HIV transmission rates fell from 31% to 4% and emergency department use decreased.(159),(160) Patients whose electronic medical records were updated daily with patient-specific alerts about missed appointments, virologic failure and toxicity had improved CD4 cell counts and were more likely to have optimal follow-up medical appointments than a control group without the electronic alerts. The two groups did not differ significantly in toxicity or confirmed virologic failure.(160) A guideline-consistent clinical management algorithm to promote entry into and retention in care has also been developed.(161)

Build Clinical Decision Support Tools

One study found that a health information support system improved outcomes for PLWHA, in particular use of CD4 T cell counts and viral load suppression.(162) Clinical support tools may be particularly valuable in preventing harmful combinations of antiretroviral drugs as shown in a study in the New York State AIDS Drug Assistance Program, which found that antiretroviral (ARV) drug interaction safety alerts reduced by 77% the prescribing of non-recommended combinations of drugs among prescribers who had previously prescribed contraindicated combinations. (163) A randomized trial of a clinical decision-support system in an HIV practice led to improvements in CD4 cell counts as compared to a control group. (160) In a later study, authors found that combining a clinical decision support system with community intervention reduced acute respiratory tract infections requiring treatment among a group of PLWHA in a rural setting and led to more appropriate prescribing.(164)

Implementation of a clinical decision support tool designed to elicit symptoms among PLWHA at the Veteran's Administration found a mild relationship between availability of a patient decision support tool and provider awareness of patients' symptoms, but the presence of the decision support tool had significant difference in numbers of symptoms charted.(165) In addition to improving CD4 T cell counts and viral load suppression, a web-based health information support system increased syphilis screening from 66.5% of cases to 93.8% and also improved the prescription of PCP for patients with CD4 T-cell counts under 200.(162) Another clinical decision support tool successfully increased both HIV and Chlamydia screening.(166)

Develop Retention Programs

A literature review on the effectiveness of patient navigators and case management in promoting retention of HIV-infected patients in care provided evidence of the positive effects on viral load, CD4 cell counts and other outcomes when patients are retained in care.(167)

Comparing six measures of retention in HIV care, one study's authors found that in each case, greater retention in care was associated with improved viral load.(168) PLWHA with optimal retention after diagnosis experienced greater decreases in viral load and increases in CD4 counts than those with sporadic retention.(169) Mortality rates were also lower among PLWHA with optimal retention in care than among persons with sporadic retention or loss to care.(169) A separate group of authors reported that providing patients with an opportunity to speak with an interventionist improved visit adherence, as compared with a standard of care group.(170)

Enhance Data Sharing Between DPH and County Departments of Public Health

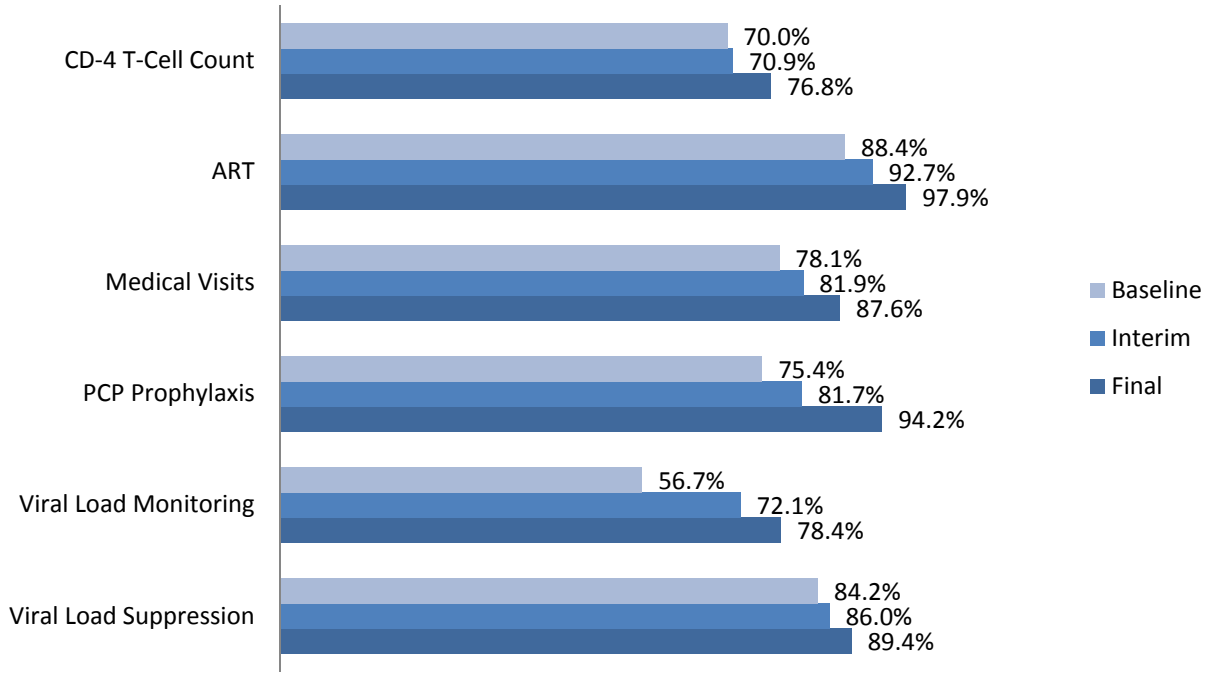
Increasingly, public health data systems that track CD4 and viral load laboratory tests are being used to examine visit frequency and retention in care, and to reengage PLWHA who have fallen out of care. One study examined retention in care using mandated laboratory reporting databases for CD4 lymphocyte counts and HIV-1 RNA levels for PLWHA seen at two large HIV care centers and found that 84% of the cohort had linked to care, 73% were retained in care, 49% were prescribed antiretroviral therapy, and 36% were virally suppressed by 18 months after HIV diagnosis. By five years after HIV diagnosis, 55% of the cohort was retained in care, 37% were virally suppressed, 15% had moved out of state, and 3% were deceased.(171)

One study informed providers about their patients who have fallen out of care, based on lack of recent records in laboratory surveillance files. Seventy-six percent of the identified patients were aware of their HIV status, but had not had a medical visit for over 12 months (median = 20 months). Eighty-two percent of these patients did receive at least one CD4 count during the next 18 months, and 62% had at least one visit with an HIV specialist.(172) The Louisiana Public Health Information Exchange (LaPHIE) provides real-time alerts to providers about PLWHA who have not monitored their CD4 or HIV viral load (VL) in a year or more. This program led to increased engagement, re-engagement and retention of out-of-care PLWHA who had been out of care for a median of 19.4 months. (173) Of those followed up for at least 6 months, 85% received at least one CD4 and/or VL after being identified. After two years, both medical use and measures of health status improved. (173)

DPH-Reported Trends in Category 5B Group 1 Outcomes

DPHs were required to report on six health outcome measures: CD4 T-cell count, ART, medical visits, PCP prophylaxis, viral load monitoring, and viral load suppression, designated as "Group 1" 5B outcomes. In addition, DPHs were asked to select four additional outcomes from a provided list, designated as "Group 2", "Group 3", and "Medical Case Management" outcomes. All DPHs reported overall improvement in Category 5B Group 1 outcome measures, with variation across DPHs. As displayed in the timeline in Exhibit 123, the baseline year reported by DPHs ranged from January 2011 to December 2012. DPHs reported notable increases in all required Group 1 outcomes over the 18-month implementation period for Category 5 (Exhibit 132). The largest increases were observed for PCP prophylaxis (75.4% to 94.2%), ART (88.4% to 97.9%), and medical visits (78.1% to 87.6%). Overall, these increases are consistent with anticipated outcomes of retention programs from the literature.

Exhibit 132: Category 5B Group 1 Outcomes



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9.
Note: Data were unavailable for Contra Costa, Los Angeles, and San Francisco. Data from Ventura were available for CD4 T-Cell Count, but unavailable for all other Group 1 outcomes. Data from Alameda were unavailable for Medical Visits. All DPHs that reported 'baseline' data reported within the DY8 reporting period. Alameda and Riverside reported updated Viral Load Monitoring data for DY10; Alameda also reported updated Viral Load Suppression data.

In follow-up interviews, several DPHs credited empaneling patients into medical homes, developing retention programs, and ensuring access to Ryan White wraparound services for

new LIHP enrollees for these improvements. DPHs also reported that the use of medical case managers and panel coordinators within medical homes, and clinical staff in charge of new retention programs, have been effective in monitoring patient follow-up for medical visits.

Our analysis shows that increasing the proportion of patients brought into and retained in care is key to improving other targeted outcomes because it provides the opportunity for providers to initiate ART, provide routine CD4 and viral load monitoring, promote viral suppression, and prescribe PCP prophylaxis for patients who require it. By the end of Category 5 implementation in DY 9, all DPHs reported increased adherence to ART. Adherence with CD4 T-cell count, medical visits, PCP prophylaxis, and viral load monitoring increased in all DPHs with the exception of one or two decreases for each measure. The rates declined for CD4 in San Francisco and Ventura, medical visits in Santa Clara and Ventura, PCP prophylaxis in San Francisco, and viral load monitoring in San Francisco.

Despite increases in rates of patients with viral load suppression, four DPHs reported that this rate decreased over time in a sample of DSRIP patients. Two DPHs reported that a major reason for the decline was challenges in understanding the Health Resources and Services Administration HIV/AIDS Bureau (HRSA HAB) measurement specifications for the denominator. HRSA HAB requires that patients included in 5B outcome measures have two medical visits at least 90 days apart in the reporting period.

DPH-Reported Trends in Category 5B Group 2 and 3 Outcomes

DPHs reported that increases in preventive care and screening services were enhanced by Category 5A projects. As a result of the increase in medical visits, patients missed fewer appointments, completed required testing more often, and received better access to wraparound services, all contributing to improvements in Group 2 and 3 goals. DPHs reported in follow-up interviews that several Category 5A interventions were designed to enhance the use of electronic data systems and clinical decision support tools to improve the comprehensiveness of services delivered in the medical visit and enhance communication and coordination across providers.

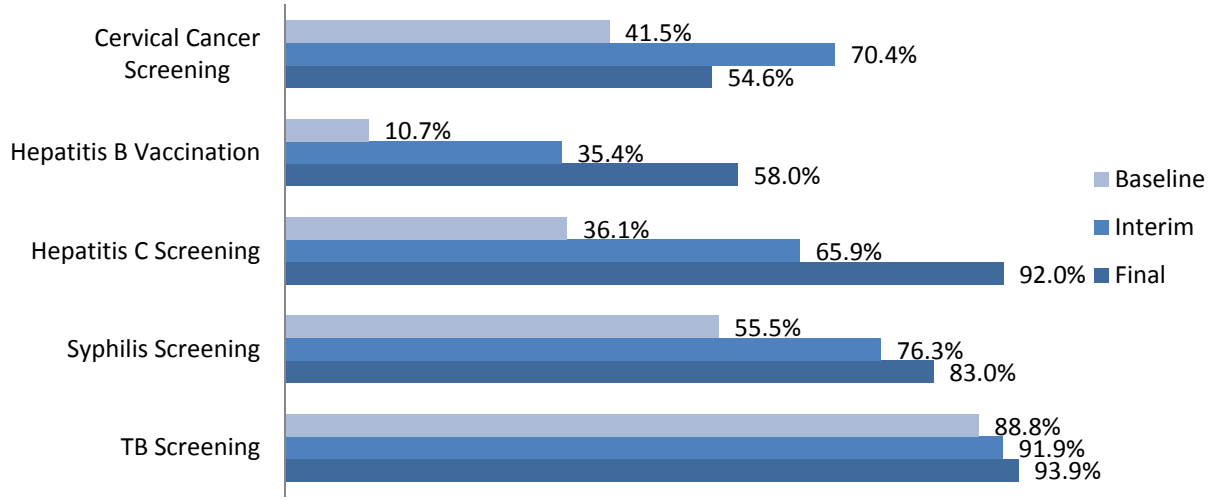
Several DPHs trained staff on efficient use of EHRs and the newly implemented disease registry to improve panel management and sharing of patient data among providers, screenings for syphilis, chlamydia, gonorrhea, and tuberculosis (TB), and to reduce duplication of screenings. Two DPHs considered the use of a disease registry as the most important tool for sustainability of improved outcomes because they can monitor patient adherence and retention, and reach out to at-risk patients and those who have fallen out of care. Building clinical decision support tools and launching electronic consultation systems between HIV primary care medical homes

and specialty care providers helped remind providers to schedule necessary screenings and immunizations. Clinical decision support tools were also effective in helping providers and case managers refer patients to wraparound services, which improved outcomes by reducing a number of barriers to care and improving adherence to treatment.

DPHs reported that outcome measures for Category 5B Group 2 generally improved over the 18-month Category 5 implementation period. All five available outcomes in Group 2 improved. Exhibit 133 shows that screening rates for hepatitis C jumped from 36.1% to 92% and syphilis screening increased from 55.5% to 83% of patients. TB Screening increased slightly from 88.8% to 93.93% of patients. Hepatitis B screening was targeted only by Los Angeles and San Francisco, sites for which there were not comparable baseline and final report data. There was an increase in the proportion of women with a medical visit who received a Pap screening, from 41.52% to 54.63%, though the proportion decreased overall from the interim measure of 70.37% based on reporting from two DPHs. One DPH reported several challenges to increasing the rate of cervical cancer screening, including a change in leadership that left the clinic manager position vacant, low attendance at women's clinic appointments, failure of patients to disclose their HIV status at women's health appointments, and difficulty in receiving results when patients were screened at other facilities. The 70.37% rate matches the 70.8% mean reported in the National HIVQUAL data for cervical cancer screening.

Although all five measures showed improvement, those sites that had low baseline levels showed the greatest improvement (e.g., Kern increased rates for syphilis screening from 30% of patients at baseline to 61% of patients), while DPHs with high initial screening rates tended to maintain their high levels. Across DPHs, many chose high improvement targets that exceeded national HIV benchmarks, and DPHs met or exceeded their set targets for most measures.

Exhibit 133: Category 5B Group 2 Outcomes



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 6-9.
Note: Data were unavailable for Contra Costa, Los Angeles, San Francisco, and Ventura. Hepatitis B screening was omitted from this chart because Los Angeles and San Francisco selected these measures but their baseline and final report data were not comparable and were not included. All DPHs that reported 'baseline' data reported within the DY8 reporting period.

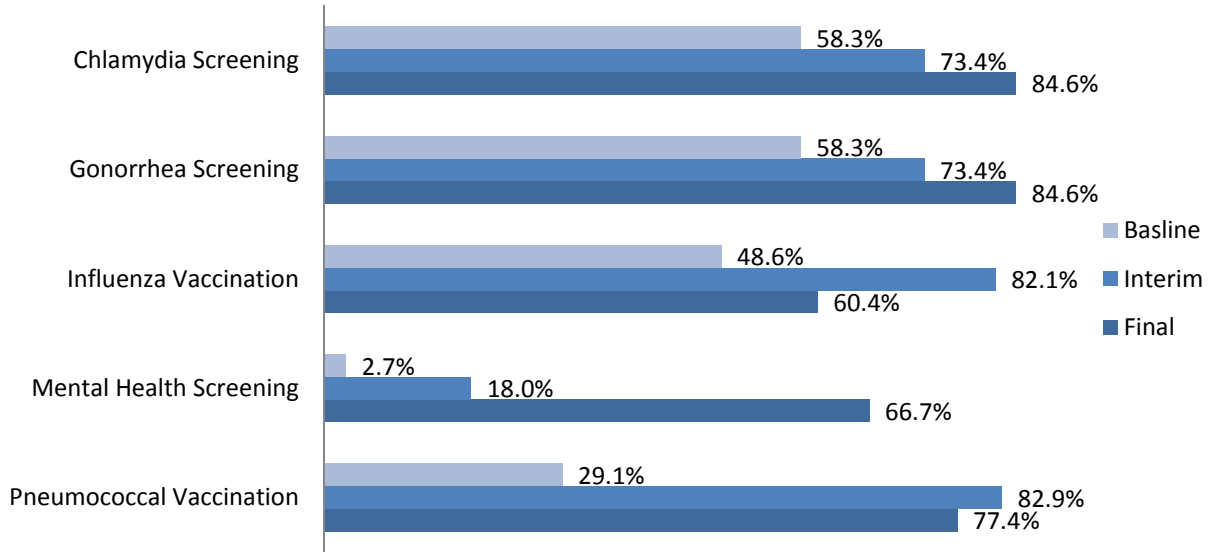
Four of the Group 3 measures also showed substantial average improvements, suggesting better care coordination. In the three DPHs that targeted chlamydia and gonorrhea, screening rates rose from 58% to 85% of patients (Exhibit 134). Kern County started with only 3% of patients screened for mental health problems, and increased that rate to 67%.

DPHs also improved vaccination rates, although there was variation across sites. Riverside increased its pneumococcal vaccination rate from 29% of patients to 82% of patients, for an average increase in immunization rates from 29% to 77%. The proportion of patients who received a flu vaccine rose from 49% to 60% overall in Alameda, though the rate fell from an interim measure of 82% based on reporting from two DPHs. One DPH reported that the primary challenge to increasing flu vaccines was ensuring that patients went to clinic during flu season. The panel management intervention helped this measure by aiding in identifying and following up with patients who had not been to clinic for care and through use of cuing sheets that prompted clinicians to remind patients of the importance of getting the flu vaccine. The DPH also reported documentation challenges in tracking flu vaccination given in other settings. Overall, hepatitis B vaccination rose from 11% to 58% of patients.

In many cases, only two to three DPHs selected a particular outcome measure, making it difficult to empirically associate the improvements with a Category 5A Intervention. However,

DPHs attributed improvements in Group 2 and 3 outcomes to use of disease management registries and retention programs because these programs have allowed medical home staff to efficiently and effectively track patients who have missed appointments or who have gone longer than a year without testing. DPH semi-annual reports discussed how empanelment and data sharing improved coordination of care between primary care providers, specialists, and wraparound services, leading to better access to and quality of care for clients.

Exhibit 134: Category 5B Group 3 Outcomes



Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 6-9.
Note: Data were unavailable for Contra Costa, Los Angeles, San Francisco, and Ventura. Los Angeles was the only DPH that selected Tobacco Cessation Counseling, and as data were pulled from electronic records for baseline and a sample pool for DY 8 data, results were not comparable and were therefore not reported. All DPHs that reported 'baseline' data reported within the DY 8 reporting period.

Containment and Efficiency Outcomes

In follow-up interviews, DPHs did not report major cost savings due to Category 5 projects. However, the literature suggests that these projects should reduce total treatment costs because increased viral suppression would reduce the costs of treating opportunistic infections and inpatient care.(174)

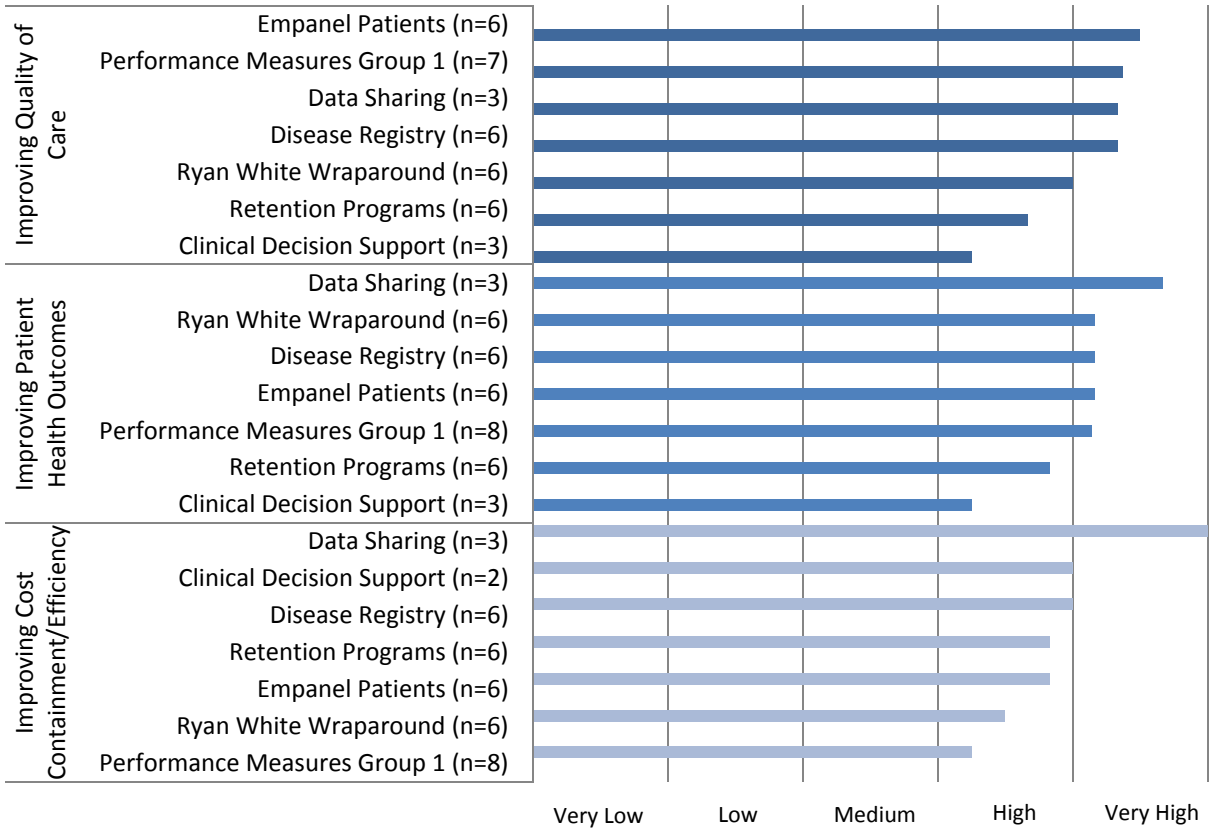
Most DPHs reported that Category 5A projects had a very large impact on overall efficiency of care delivery. Primarily, DSRIP gave DPHs the opportunity to engage in stakeholder meetings and collaborate to determine both gaps in the care delivery system and methods for improving efficiency. The two most frequently cited projects that improved efficiency were the use of disease management registries and the multidisciplinary care model utilized within the empanelment, retention, and wraparound service programs. One DPH reported that the

disease management registry allowed the clinic to clean and aggregate data in order to generate daily or weekly reports through which linkage to care and appointment reminders could be conducted. Additionally, having been able to set up electronic data systems through DSRIP funding provided DPHs with the infrastructure for sustained efficiency and improvement of care delivery. Another DPH reported that the reorganization of tasks and care processes through the new multidisciplinary team was beneficial to streamlining services and ensuring that patients received a comprehensive, "multi-service" encounter visit during which as many needs as possible were met. Efficiency was also measured by several DPHs through reductions in readmission rates and increases in medical visits.

Overall Impact of DSRIP Category 5 on Care Delivery

The UCLA interim survey asked DPHs to assess the overall impact of Category 5 interventions on the Triple Aim of better quality of care, better outcomes, and better cost containment and efficiency. As shown in Exhibit 135, all Group 1 measures and Category 5A projects had at least a medium impact on the goals of the Triple Aim. For quality of care, empanelment ranked highest, followed by Group 1 outcomes, while decision support tools ranked lowest, perhaps because the initial level of HIV expertise was high when DSRIP was initiated in HIV specialty clinics. For outcomes, data sharing with counties ranked highest while decision support tools again ranked lowest. Cost containment and efficiency of project implementation and outcome measures were greatest among DPHs that engaged in data sharing with counties, and helped least by measuring Group 1 outcomes.

Exhibit 135: Perceived Impact of Category 5 on Triple Aim of Quality of Care, Health Outcomes, and Increasing Cost Containment/Efficiency



Source: UCLA interim survey of designated public hospitals (DPHs).
Note: Missing data from Alameda and Los Angeles. (Averages)

During follow-up interviews, DPHs also discussed the most important aspects of DSRIP on their overall HIV care delivery system. One DPH described the impact of DSRIP as a guiding tool to help develop a care delivery system that used strong data as its design and implementation base. Several DPHs concurred that the disease management registry was the most impactful project overall because it helped to identify and link patients to care, which facilitated the success in all other projects by bringing the patients into regular contact with the DPH.

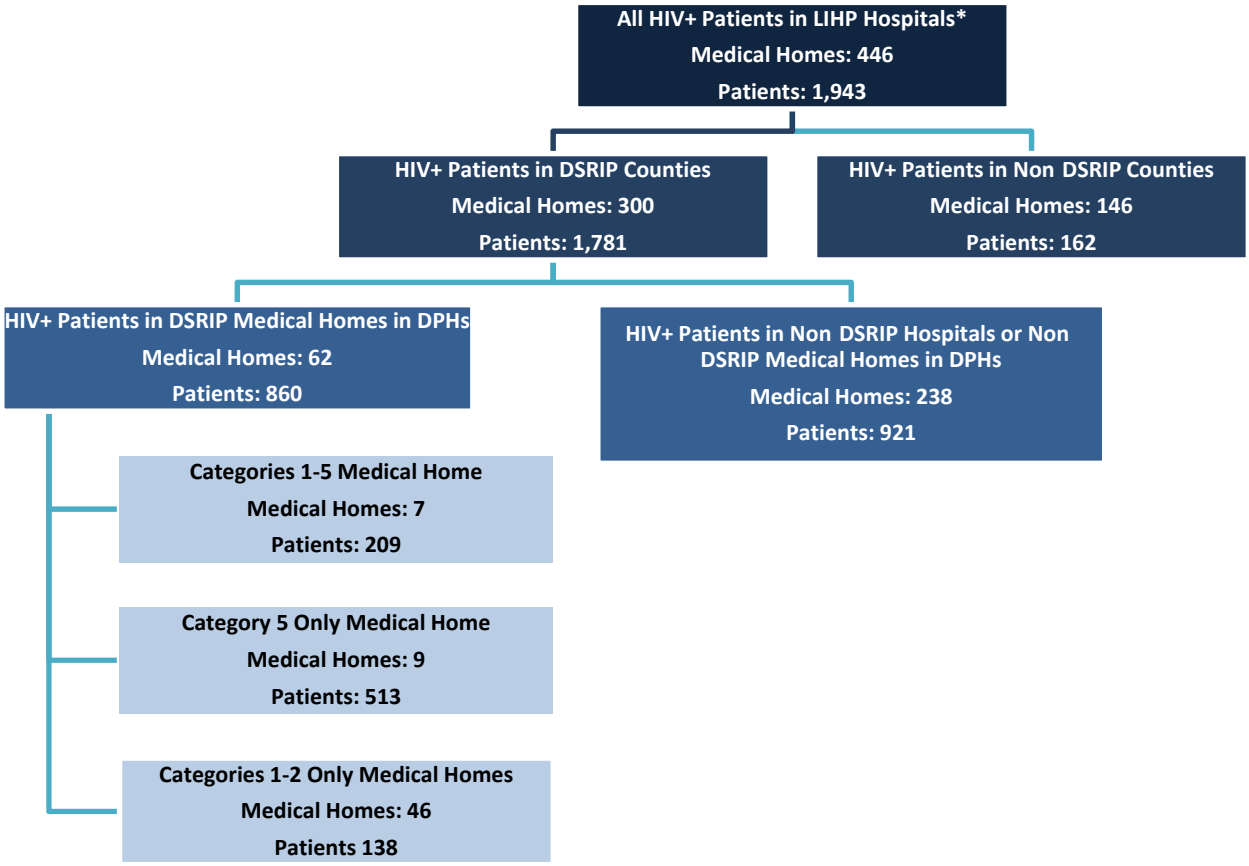
Several DPHs also cited improved collaboration, especially through multi-disciplinary teams and the "single encounter, multiple service" model as a strong method to develop structured, formalized coordination in clinics to sustain quality and efficiency. DPHs commented that this model also demonstrated a shift toward population health and the PCMH as well as improving outcomes by offering better case management. Coupled with a reorganized team model, the retention program was the project cited most frequently in the DPH reports after the disease management registry as having an effect on increased timeliness of medical visits and improved patient adherence to medication and other treatment.

Comparison of Category 5B Outcomes between Category 5 Participating DPHs and Non-Participating DPHs

UCLA conducted a comparison of available Category 5b measures between DPHs that participated in Category 5 and those that did not, using enrollment and claims data for the subset of the DSRIP HIV/AIDS populations enrolled in the Low Income Health Program (LIHP). UCLA conducted these analyses using individual-level LIHP data, controlling for clustering at the medical home level, since Category 5 projects were implemented in specific medical homes in each organization.

UCLA identified the medical home that each enrollee was assigned to in LIHP and divided these medical homes into five mutually exclusive categories as illustrated in Exhibit 136: 1) non-DSRIP medical homes located in non-DSRIP counties, 2) non-DSRIP medical homes located in DSRIP counties, 3) DSRIP medical homes that implemented Categories 1-2 only, 4) DSRIP medical homes that implemented Category 5 only, and 5) DSRIP medical homes that implemented all of the categories (1-5) simultaneously. LIHP was implemented in 53 California counties and included a combination of DPHs and selected other hospitals in these county-based provider networks.

Exhibit 136: DSRIP and non-DSRIP Medical Homes and Selected Comparisons



Source: UCLA analysis of Low Income Health Program (LIHP) data.
*Includes patients with an HIV diagnosis and at least 11 months of enrollment prior to January 2013.

UCLA divided the non-DSRIP medical homes into two categories because of fundamental differences in patient selection of non-DSRIP medical homes for care. Specifically, patients located in non-DSRIP counties did not have the option of seeking care in a medical home that implemented DSRIP, whereas patients located in DSRIP counties may have had that option. UCLA also divided the DSRIP medical homes into three categories in order to separately assess the impacts of Category 5 projects from those of Categories 1-2.

UCLA examined data for calendar year 2013 as the intervention year. The intervention year was 11 months from February to December for UC San Diego. Therefore, the intervention year spans across the second half of DY 8 and first half of DY 9. As displayed in Exhibit 123, DPHs implemented Category 5 projects at different times starting in 2012 to January 2013. Each DPH also provided a baseline year prior to their implementation period, which ranged from January 2011 to December 2012.

UCLA used a validated claims-based algorithm to identify patients with HIV/AIDS.(175) To ensure patients with diagnosed HIV had similar opportunities for the receipt of care, the sample was limited to those with at least 11 months of enrollment in LIHP and an HIV/AIDS diagnosis that occurred prior to the second month of the analysis year. The analysis sample excluded enrollees in Los Angeles and Contra Costa counties because CPT codes were not available in these claims data and PLWHA could not be identified in these counties.

Only four Category 5B measures were available in LIHP data even though DPHs were required to report data on six HRSA HAB HIV core clinical performance measures. The available measures included:

- Two or more evaluation and management medical visits with a provider in an HIV care setting at least three months apart during the year;
- Two or more CD4 T-cell counts performed among those with at least one medical visit during the year;
- A recommended combination of antiretroviral therapy prescribed any time during the year as defined by having two or more nucleoside reverse transcriptase inhibitors (NRTIs) and at least one non-nucleoside reverse-transcriptase inhibitors (NNRTI), protease inhibitor (PI) or integrase strand transfer inhibitors (INSTI).
- A viral load test performed at least every six months among those who had at least two medical visits during the measurement year.
- A more detailed description of these measures can be found in Appendix M: Category 5. UCLA could not assess other measures such as pneumocystis carinii pneumonia (PCP) prophylaxis or viral load suppression due to unavailability of lab results that contained information on CD4 T-cell counts below 200 cells/mm^3. The evaluation questions and subsequent analyses are displayed in Exhibit 136.

Exhibit 137: Evaluation Questions and Analyses of Category 5 Project Outcomes

	Evaluation Questions	Comparison Groups	Sample	Year
1	What are the HIV outcomes for patients in different types of medical homes?	Average patient characteristics and outcomes for medical homes implementing Category 5 only; Categories 1-2 only; Categories 1-5; non-DSRIP medical homes in DSRIP counties; medical homes in non-DSRIP counties	PLWHA LIHP enrollees with minimum 11 months of LIHP enrollment in 2013 and first diagnosis prior to February 2013.	Implementation year: January – December 2013

	Evaluation Questions	Comparison Groups	Sample	Year
2	Do DSRIP medical homes that received HIV-specific DSRIP support achieve significantly better HIV outcomes than DSRIP medical homes without Category 5, controlling for patient characteristics?	Category 5 only medical homes vs. Category 1-2 only medical homes	Same as 1, excluding enrollees in Category 1-5 and non-DPH PLWHA LIHP enrollees	Baseline year: January-December 2012 Implementation year: January-December 2012
3	Do DSRIP medical homes that received HIV specific DSRIP support achieve significantly better HIV outcomes than non-DSRIP medical homes controlling for patient characteristics?	Category 5 medical homes vs. non-DSRIP medical homes	Same as 1, excluding enrollees in Category 1-2 only medical homes	Baseline year: January-December 2012 Implementation year: January-December 2012

Exhibit 138 shows the demographic characteristics of the LIHP enrollees with HIV in each of the five categories of medical home arrangements. Overall, 90% of the enrollees were male and 60% were aged 45 or older. Most enrollees were white (43%). Latinos accounted for 23% of the sample and African Americans for 15%. Five of the eight Category 5-only medical homes received Ryan White funding. These five clinics provided care to 82% of patients in Category 5-only. Four of the 24 clinics in Category 1-2 only medical homes received Ryan White funding. These four clinics provided care to 17% of the patients in Category 1-2 only.

Exhibit 138: Characteristics of PLWHA LIHP Enrollees by Type of Medical Homes, Implementation Year (2013)

Designated Public Hospital	Total, N (%)	Non-DSRIP in a non-DSRIP County, %	Non-DSRIP in a DSRIP County, %	Categories 1-2 only, %	Category 5 only, %	Categories 1-5
Ages 45 or older	1171 (60)	57	63	61	55	66
Male	1749 (90)	85	91	86	93	86
Ethnicity/Race						
White	832 (43)	64	40	33	45	39
Latino	452 (23)	15	26	38	21	14
Black	288 (15)	12	9	15	18	35
Other	167 (9)	-	8	-	10	11
Missing	204 (11)	-	17	-	6	-

Designated Public Hospital	Total, N (%)	Non-DSRIP in a non-DSRIP County, %	Non-DSRIP in a DSRIP County, %	Categories 1-2 only, %	Category 5 only, %	Categories 1-5
Ryan White Funded Provider	930 (48)	12	34	17	82	49
Region						
North	638 (33)	7	4	38	65	98
South	1,110 (57)	-	92	59	35	-
Rural	195 (10)	93	4	-	-	-
Total	1943	162	921	138	513	209

Source: UCLA analysis of Low Income Health Program (LIHP) data.
Notes: Percentages are in parentheses. Dash represents cells that were too small to report, thus the columns may not add up to 100%. LIHP data were unavailable for Contra Costa and Los Angeles. No LIHP patients were assigned to Ventura's Category 5 medical home. The data include PLWHA enrollees with minimum 11 months of LIHP enrollment in 2013 and first diagnosis prior to February 2013. Regional divisions: North (Alameda, Santa Clara, Santa Cruz, San Francisco, San Mateo), South (Orange, Riverside, San Diego, Ventura), Rural (CMSP, Kern, Placer San Joaquin).

Variations in Outcomes within Each Type of Medical Home in 2013

Exhibit 139 shows the unadjusted percentage of patients achieving each outcome by type of medical home. These comparisons indicated that enrollees seen in Category 5-only medical homes were more likely to meet the desired outcomes of at least two medical visits and two CD4 tests per year, one viral load test per year, and one ARV prescription compared to those patients seen in all other medical homes. In addition, enrollees in medical homes that implemented Categories 1-5 were more likely have two CD4 test per year compared to those in the Categories 1-2 only or 5-only medical homes. Also, enrollees in medical homes in non-DSRIP counties were more likely to achieve all the desired outcomes compared to those in non-DSRIP medical homes in DSRIP counties. In fact, those in non-DSRIP counties were more likely to achieve the desired outcomes for medical visits and tests than other groups. Only any ARV prescription rate (88%) was highest for Category 5-only medical homes.

Exhibit 139: Percentage of PLWHA LIHP Enrollees with Desired Outcomes by Type of Medical Home During the Implementation Year (2013)

Designated Public Hospital	Non-DSRIP in a non-DSRIP County	Non-DSRIP in a DSRIP County	Categories 1-2 only	Category 5 only	Categories 1-5	*p value*
At least 2 Medical Visits in 1 year	91	83	72	86	64	<0.0001
At least 2 CD4 Tests in 1 year	69	68	52	63	65	0.023

Designated Public Hospital	Non-DSRIP in a non-DSRIP County	Non-DSRIP in a DSRIP County	Categories 1-2 only	Category 5 only	Categories 1-5	*p value*
Any Appropriate ARV Prescription	88	88	73	89	83	0.0007
At least 2 Viral Load Tests in 1 year	73	60	40	67	16	<0.0001

Source: UCLA analysis of Low Income Health Program (LIHP) data.
Notes: The data include PLWHA enrollees with minimum 11 months of LIHP enrollment in 2013 and first diagnosis prior to February 2013. LIHP data were incomplete for being included in the analysis for Contra Costa and Los Angeles Counties. No LIHP patients were assigned to Ventura County's Category-5 medical home. As shown in Appendix M, Exhibit 170, the following counties were excluded from the analyses due to missing data: Medical Visits--San Mateo; CD4--Alameda and Riverside; Viral Load--Alameda, Riverside, and San Diego; ARV--Alameda, Kern, Riverside, and Santa Clara.

Additional analyses were conducted to assess differences in outcomes among all five medical home types controlling for age, gender, race/ethnicity, a measure of severity (Chronic Illness and Disability Payment System (CDPS) index), and California regions. The analyses indicated that the Category 5-only medical home enrollees significantly more often (87%) had at least two medical visits per year than enrollees in Categories 1-2 (74%) and Categories 1-5 (64; data not shown). CD4 testing rates did not differ significantly across medical home types. This might be related to revisions to the HRSA HAB measurement guidelines, which, in 2013, no longer included CD4 testing as a core measure. Furthermore, Category 5-only enrollees had significantly higher predicted rates of receiving any appropriate ARV prescription (90%) than those in non-DSRIP medical homes in a DSRIP county (81%) and Category 1-2 only medical homes (73%).The predicted rate of receiving at least two viral load screenings per year in a Category 5-only medical home was significantly higher (75%) than for enrollees in Categories 1-2 (41%) and Categories 1-5 medical homes (23%).

An additional analysis was conducted to examine the impact of Ryan White funding on outcomes, adjusted for demographics and severity. The adjusted rates for medical visits and CD4 tests did not differ by Ryan White funding. However, enrollees in Ryan White-funded medical homes had significantly higher predicted rates of appropriate ARV prescriptions (90%) and viral load testing (73%) compared to non-Ryan White funded medical homes (71% and 18%, respectively; data not shown). These analyses are similar to the differences between Category 5-only medical homes and other, mostly because most Category 5-only medical homes were also Ryan White funded clinics that were selected by LIHPs to provide care to PWHLA due to their expertise in HIV care.

Variations in Outcomes of Category 5 Only vs. Categories 1-4 Only Medical Homes

Further comparisons were conducted between Category 5 (intervention group) and Category 1-4 only (control group) medical homes from baseline year (2012) to implementation year (2013). Exhibit 140 shows that, adjusting for patient characteristics, the rates of two or more medical visits (-5%) and viral load tests (-2%) declined for Category 5-only medical homes or the intervention group. But rates increased for CD4 tests (3%) and any ARV prescriptions (12%). During the same timeframe, the pattern of change was the same for medical visits and CD4 tests for the control group. However, the rates of any ARV prescription declined (5%) and the rates of viral load tests (24%) increased for the control group. An important limitation to using 2012 as the baseline for this analysis is that DSRIP implementation was staggered across 2012. For example, San Francisco began Category 5 implementation in June 2012, while San Diego began in January 2013.

Exhibit 140: Differences in Rates of Outcomes for Category 5 Only (Intervention Group) and Category 1-4 only (Control Group) Medical Homes from Baseline to Implementation Year, Adjusted for Patient Random Effects

Performance Indicators Designated Public Hospital	Categories 1-4 Only Medical Homes (Control Group)		Category 5 Only Medical Homes (Intervention Group)		Percent Change in Control Group from Baseline to Implementation Year	Percent Change in Intervention Group from Baseline to implementation Year
	Baseline Year	***Implementation Year***	***Baseline Year***	***Implementation Year***	**Δ**	**Δ**
At least 2 Medical Visits in 1 year	84	72	91	86	-12	-05
At least 2 CD4 Tests in 1 year	40	52	60	63	+12	+3
Any Appropriate ARV prescription	78	73	77	89	-5	+12
At least 2 Viral Load Tests in 1 year	16	40	70	68	+24	-2

Source: UCLA analysis of Low Income Health Program (LIHP) data.
Notes: LIHP data were unavailable for Contra Costa and Los Angeles Counties. No LIHP patients were assigned to Ventura County's Category-5 medical home. Some counties were excluded from analyses due to missing data: Medical Visits--San Mateo; CD4--Alameda and Riverside; Viral Load--Alameda, Riverside, and San Diego; ARV--Alameda, Kern, Riverside, and Santa Clara. LIHP data was unavailable for Contra Costa and Los Angeles Counties. No LIHP patients were assigned to Ventura County's Category-5 medical home. Calendar year 2012 was used for 'baseline year' because all counties were providing data through LIHP at this time. A limitation is that DPHs

implemented Category 5 at different time points, with some beginning in July of 2012. We used 2013 for 'implementation year' because claims were submitted through December 2013.

Variations in Outcomes of Category 5 vs. Non-DSRIP Medical Homes

Outcomes were compared for medical homes that implemented Category 5 projects (intervention group, including both Category 5-only and Categories 1-5 medical homes) with those in non-DSRIP hospitals (control group) from baseline (2012) to implementation (2013) year, controlling for patient characteristics. Exhibit 141 shows that the rates of CD4 (1%) and viral load (4%) tests and any ARV prescription (12%) was observed for Category 5 medical homes or the intervention from baseline to the intervention year. However, a larger increase was observed for non-DSRIP medical homes.

Exhibit 141: Differences in Rates of Outcomes for Category 5 (Intervention Group) and Non-DSRIP (Control Group) Medical Homes from Baseline (2012) to Implementation (2013) Year, Controlling for Patient Random Effects

Performance Indicators Designated Public Hospital	Non-DSRIP (Control Group)		Category 5 (Intervention Group)		Percent Change in Control Group from Baseline to Implementation Year	Percent Change in Intervention Group from Baseline to Implementation Year
	Baseline Year	***Implementation Year***	***Baseline Year***	***Implementation Year***	***Δ***	***Δ***
At least 2 Medical Visits in 1 year	81	84	81	81	+3	0
At least 2 CD4 Tests in 1 year	35	68	63	64	+33	+1
Any Appropriate ARV prescription	82	88	76	88	+6	+12
At least 2 Viral Load Tests in 1 year	8	64	50	54	+56	+4

Source: UCLA analysis of Low Income Health Program (LIHP) data.
Notes: LIHP data were unavailable for Contra Costa and Los Angeles Counties. No LIHP patients were assigned to Ventura County's Category-5 medical home. Some counties were excluded from analyses due to missing data: Medical Visits--San Mateo; CD4--Alameda and Riverside; Viral Load--Alameda, Riverside, and San Diego; ARV--Alameda, Kern, Riverside, and Santa Clara. LIHP data was unavailable for Contra Costa and Los Angeles Counties. No LIHP patients were assigned to Ventura County's Category-5 medical home.

Patient Retention and Compliance

DPHs reported the success of all 5A projects in improving patient retention and compliance. The clinical decision support tools, data sharing, electronic consultation system, and wraparound services have been beneficial to patient retention and adherence in terms of identifying patient medical and non-medical needs and barriers to care in order to prescribe care. Based on qualitative data provided in DPH reports and follow-up interviews, the three projects that had the biggest impact on patient retention and adherence were the empanelment of patients into medical homes with HIV expertise, implementation of a disease management registry, and development of retention programs.

These projects were the most successful because DPHs were able to improve medication and other treatment adherence and retention by sending out appointment reminders to patients, reaching out to and linking lost-to-care and at-risk patients into a medical home, following-up on appointments, issuing referrals for wraparound services, and creating a sense of community and trust between patient and provider. The use of case management within these projects was reported as being exceptionally helpful in providing a continuum of care.

Challenges and Lessons Learned

Challenges Encountered Implementing Category 5A Projects

DPHs stressed the successful implementation of 5A projects in helping to reach performance improvement targets in their reports. However, DPHs also encountered challenges that are described for each type of 5A project. Challenges related to timing, staff training, physician adherence, retaining patients in care, and sustainability after DSRIP funding has ended were consistent across DPHs and are described below.

Empanel Patients into Medical Homes with HIV Expertise

The six DPHs that chose to empanel patients into medical homes faced several challenges, including continuity of care, establishing and maintaining new staffing models and treatment protocols, and accurately and consistently utilizing new data systems. Two DPHs discussed difficulty in re-identifying and linking patients previously lost to care in order to improve continuity. Additionally, DPHs reported difficulty in establishing strong relationships between patient and provider during the limited implementation period, because time is required to gain patients' trust in order to encourage retention and adherence. In the DY 9 first semi-annual reports, several DPHs identified challenges in promoting medication adherence due to gaps in insurance coverage and the fact that patients' substance abuse affected adherence. A few DPHs

reported that while empanelment had been successful, they did not have the capacity to hire the necessary additional staff to assist in ongoing empanelment processes. The identification and facilitation of linkage to wraparound services for LIHP enrollees who were newly empaneled in a medical home was also a challenge.

Implement a Disease Management Registry Module Suitable For Managing Patients Diagnosed with HIV

The two main challenges reported across the six DPHs that implemented this project were the training of staff and timely and accurate updating of the disease management registry. Two DPHs did not previously use an HIV-specific disease management registry and had to identify and launch a new system in addition to training staff for technical competency. One DPH reported difficulty in finding a panel manager to oversee use of the disease management registry, and there were reports of staff confusion over use of new electronic systems. Another DPH reported that their panel manager was too busy to complete timely updates of the disease management registry because it still required manual entry. Another DPH chose to merge existing data systems and encountered problems with chart inconsistencies and inaccurate reporting between systems, for which a reconciliation process had not yet been determined. Following initial implementation, several DPHs were able to streamline data input, but significant challenges remained in efficiently linking the disease management registry to other health technologies within and outside of the clinic.

Build Clinical Decision Support Tools to Allow for More Effective Management of PLWHA

Two DPHs implemented this project and reported relatively few challenges. DSRIP funding was very helpful in assisting DPHs to develop HIV-specific tools. One DPH discussed the need to standardize appropriate "alerts" for long-term success of the project as there had been confusion over the newly implemented strategies that were still in-process as of DY 9. The same DPH also cited difficulty in having to manually enter data into ARIES, which leaves room for data errors. Overall, the main challenge of the project was the cost of training staff on the new protocol, which the DPH met through expansion of ancillary staff roles to assist primary care providers.

Develop Retention Programs for PLWHA Who Inconsistently Access Care

Based on DPH reports, the retention program was the most successful in the overall improvement of care coordination, care quality, and outcomes for the six DPHs that selected this project. The main challenge reported was the sustainability of the program after DSRIP

funding ended. From a clinical standpoint, providers encountered initial problems in locating patients who had fallen out of care and developing protocols for patient follow-up and appointment reminders. Again, as protocols have been established to identify and retain patients into care, DPHs identified structural methods to sustain this project beyond DSRIP, including allotting funding to retain additional staff hired during implementation. The majority of the remaining challenges stemmed from patient barriers to care, which are discussed later in this section. These include issues such as homelessness, substance abuse, lack of transportation, and patients being too ill to attend appointments or forgetting appointments.

Enhance Data Sharing between DPHs and County Departments of Public Health

Similar to the building of clinical decision support tools, DPHs with enhanced data sharing projects encountered fewer challenges than some of the other projects. Ventura discussed obstacles in accurately sharing data due to patients accessing care in unpredictable patterns and frequency. The DPH and Department of Public Health have also been unable to accurately consolidate patient data to better serve the population due to the use of different systems and manual charts. Inconsistency in medical visits has also made it difficult for providers to coordinate care, and Ventura reported problems with duplication and omission of services due to inaccurate or lack of patient information.

Launch Electronic Consultation System between HIV Primary Care Medical Homes and Specialty Care Providers

The only DPH that selected this project had already implemented an electronic consultation system for selected specialists prior to DSRIP and chose to expand the system to include a wider selection of specialists. In expanding the electronic consultation system the DPH found a series of workflow issues. These included a lack of efficient and effective processes for triage and referral tracking, long wait times for specialty care, and failure to conduct appropriate testing prior to specialty visits. Los Angeles reported a thorough evaluation of these workflow issues and planned to continue addressing issues as they arose after the completion of Category 5 projects.

Ensure Access to Ryan White Wraparound Services for New LIHP Enrollees

Six DPHs selected this project to minimize the disruption of care for enrollees of the Ryan White program in LIHP. The biggest challenge reported for this project was the coordination of care between primary care providers, specialists, and wraparound service providers. Most of the DPHs that selected this project also implemented projects related to data systems and information sharing across providers, and encountered problems with accurately and efficiently

utilizing patient data to link patients to other services. Additionally, DPHs report challenges in monitoring patient adherence with treatment received from wraparound service providers, making it difficult for DPH providers to offer further support. DPHs reported in follow-up interviews that they had challenges with patient medication adherence due to several care barriers including substance abuse and homelessness. Patients also experienced issues with insurance coverage leading to gaps in their medication regimen, and for some falling out of care due to being overwhelmed by the empanelment process.

Challenges Encountered Meeting Category 5B Goals

Some DPHs were in the early stages of implementing Category 5 projects during DY 8. DPHs reported difficulty in measuring real improvements in Category 5B performance measures or health outcomes during DY 8, but improved on reporting during DY 9. The most frequently reported challenge for improving 5B outcomes was removing patient barriers to care. Patient barriers included transportation to medical visits, homelessness, psychological problems and substance abuse, other social factors that prevented or deterred patients from seeking care, co-infections, and patient adherence to treatment plans. The majority of DPHs met their targets by the end of the DY9 reporting period, but some DPHs encountered more challenges than others in meeting targets and even saw decreases in measures. In DY 9, one frequently reported challenge was patient failure to adhere to medication regimens, which undermined DPHs' efforts to meet targets for ART, PCP Prophylaxis, and Viral Load Suppression. DPHs also reported difficulty in meeting vaccination measures due to long wait times between appointments, which made it difficult for patients to complete all the vaccinations needed for full immunity. Another common challenge was that some patients did not come in for two appointments at least 90 days apart during the measurement year, as designated by HRSA HAB, and thus could not be included in the measure.

From the provider perspective, a commonly reported challenge was the inconsistent updating of patient information in the EHR. When providers did not update problem and medication lists, patients were at an increased risk of missing a follow-up appointment or failing to complete required screenings. The delay in data entry complicated coordination of care between primary care providers and specialists. Concurrent with this problem was the issue of manual data entry in many disease management registries, which made it difficult to access patient data in a timely manner. This challenge further complicated patient retention because it was difficult to monitor patients so that they could be reminded of upcoming appointments. DPHs also reported that metrics were at times unclear. In addition, some DPHs reported baseline metrics that were very high, perhaps based on a group of patients who signed up for DSRIP early and who were particularly adherent. As DSRIP enrollment extended to potentially less adherent

patients, sites found it challenging to make significant improvements or to maintain high measures.

A few DPHs reported challenges due to problems of capacity and funding. One DPH discussed problems with long wait times and inconvenient location of labs that discouraged patient follow-through. Another DPH encountered patient loads that exceeded assignment caps during the LIHP enrollment period, and attempted to find a solution to retain patients in care while mitigating provider overload. As with difficulties in consistently updating patient information in the EHR, some counties required more staff and funding for uptake and maintenance of their large HIV population. These counties also reported that patients were sometimes diagnosed outside the primary care provider setting or received screenings and vaccinations at locations where such data was not captured or not linked to the EHR.

Lessons Learned

DPHs reported successes in addressing obstacles met in the implementation of 5A projects. Several DPHs utilized ongoing staff training and evaluation to ensure that new protocols were implemented well. Huddles were frequently cited as a method for overcoming challenges in workflow. One DPH reported that consistent focus and management led to significant changes towards "hard-wiring" new care processes into the system. Following DY 9, several DPHs began standardizing practices developed during DSRIP and believed that sustaining these practices would help them overcome implementation challenges.

Engagement with the patient population was also an important strategy to overcome challenges. Staff members who actively reviewed patient data and provided personal contact with patients helped DPHs overcome several barriers to care. Further building of wraparound services helped reduce barriers to care and both improved performance measures and retained patients in care at the medical home in which they were empaneled.

During the planning and implementation of 5A projects in DY 8 and their completion in DY 9, DPHs discussed many helpful lessons learned that will improve health care for PLWHA after the DSRIP Category 5 program ends. Increased communication and coordination across providers was one of the most important factors in improving care. Many DPHs reported that care of PLWHA prior to implementation of Category 5 projects was often siloed and that created poor care coordination and data accuracy. When providers quickly and accurately shared patient information, both adherence and retention improved among the patient population. The six DPHs that chose to implement the medical home empanelment and retention program projects reported that the use of active follow-up, formal protocol-setting, and continuity through standardization of care and monitoring had increased medical visits and improved overall patient health. One DPH implemented a project through which primary care providers ran a

"learn and lead" program to educate clinical staff and demonstrate best practices for quality care. The use of oversight and accountability also helped this DPH achieve success by creating a team-based staffing model.

Lessons learned in the improvement of 5B outcomes related to data sharing across providers and coordination of care in empanelment. Accurate and updated patient information in the EHRs and disease registries helped DPHs track and reach clinical goals by improving provider communication and patient retention. Up-to-date data systems helped clinicians follow-up with patients and increased the number of screenings and data monitoring activities necessary to provide consistent, high-quality care. For example, one DPH reported that through consistent, timely updates of ARIES, it was able to identify patient viral loads earlier and track medication adherence to improve this outcome. One DPH reported that empanelment was an integral opportunity for long-term patient retention and improved outcomes. This DPH stated that empanelment allows providers and case managers to establish a relationship with the patient from the start. This initial "total" contact, in which the patient is assessed and linked into care, was reported to be the most important time to ensure retention.

DPHs also reported that shared learning through stakeholder meetings and staff huddles strengthened the system. Stakeholder meetings allowed for the development of provider buy-in to changes and helped create best practices for data accuracy and integrity. Additionally, huddles empowered staff and frequent meetings generated consistent communication that helped coordination between different members of the multidisciplinary care team.

Overall, DPHs reported learning several valuable lessons during Category 5. However, multiple DPHs recommended that in the future, more time be given for the implementation of these projects. Several DPHs also noted scale effects. For example, a small DPH reported that while they provided care to fewer patients than the large DPHs such as Los Angeles or UC San Diego, the cost of implementing the disease management registry was not proportionately lower. Thus, lack of sufficient funding was a significant challenge for them. DPHs also recommended that they be provided more information on the importance and expected impact of 5A projects before DSRIP to better inform design and implementation.

Sustainability of Category 5A Projects and 5B Performance Measures

DPHs consistently reported a desire to sustain all projects after the completion of DSRIP. During follow-up interviews, DPHs highlighted that restructuring of staffing models to maintain the empanelment and retention programs would ensure sustainability. One DPH noted that the Category 5A projects were able to generate system-level changes that better integrated HIV care with ambulatory care, which is critical for sustainability and continued improvements in

care delivery. Another DPH reported that the ability to keep case managers who had developed relationships with patients ensured better retention of patients who subsequently felt more comfortable attending appointments. Another DPH noted that case management had been so successful for retention that some patients expected calls from their case manager and were eager to attend appointments.

Several DPHs reported that the technological improvements made during Category 5 implementation created permanent, sustainable infrastructure. The implementation of EHRs, disease management registries, clinical decision support tools, and electronic consultation required funding to build HIV-specific systems. However, these were often one-time costs, and now that the systems were implemented they were stable and had generated a new baseline of care delivery for most DPHs.

The biggest challenge to sustainability cited by DPHs was cost. Two DPHs hired additional staff during the implementation of the disease management registry and retention program. These DPHs feared that without this staff they would be unable to update the registry in a timely manner and have a data backlog. Fewer staff for the retention program could also result in delays in patients' follow-up visits and subsequent falling out of care.

Summary

Category 5 interventions were designed to improve the delivery of services to PLWHA and to facilitate the transition from Ryan White to LIHP. The analyses of available data in this report indicated that the DPHs were successful in implementing Category 5A projects and in achieving the majority of 5B outcomes.

Many of these interventions were intended to enhance interaction between patients and providers and to link and retain patients in treatment and monitor their adherence. DPHs reported selecting Category 5A projects that aligned with the Federal Implementation Plan of the National HIV/AIDS Strategy. Projects were primarily selected because they were complementary to DSRIP Category 1-4 projects and synergistic with DPHs' organizational goals and other planned projects.

DPHs reported significant increases in four of the six required Category 5B Group 1 outcomes. The reported improvement in Group 1 outcomes was supported by the analyses of enrollment and claims data for the subset of Category 5 patients who were also enrolled in LIHP. The analyses showed that PLWHA had higher rates of the desired outcomes when they received care in Category 5 medical homes than those receiving care in medical homes implementing other DSRIP categories only. The changes in these outcomes between the baseline and

implementation year were not always significant or were smaller than those observed for medical homes that did not implement Category 5 projects. However, many Category 5 medical homes were also Ryan White funded clinics with a high level of performance at the start of DSRIP, making it harder to improve outcomes over time.

In their reports and follow-up interviews, DPHs noted that empanelment of patients into medical homes with HIV expertise, implementation of a disease management registry, and development of retention programs were the three interventions with the greatest impact on retention. DPHs also reported significant increases in preventive care. All five available Category 5B outcome measures showed significant increases. All the Group 3 measures also showed substantial improvement, on average.

DPHs faced many challenges, including short timelines, the need for staff training, and physician adherence and timeliness of inputting patient information in the EHR. The most frequently reported challenge was removing patient barriers to retention in care. DPHs also had concerns about sustainability of 5A programs once DSRIP funding ended. Despite these challenges, DPHs reported widespread success in implementing the interventions and improving patient outcomes, consistent with the Triple Aim of DSRIP.

Overall Impact of DSRIP and Lessons Learned for PRIME

DSRIP Impact on DPHs

DPHs reported on the overall impact of DSRIP Categories 1-4 on their organizations during follow-up interviews in the interim period. Examples of this impact are summarized below.

Systematic and Major Change, Investment in the Future of DPHs

DPHs reported that DSRIP provided an opportunity to expand and accelerate existing projects, invest in additional projects, and innovate. DSRIP projects were used to initiate more deliberate and comprehensive changes in care delivery and culture, incorporate new methodologies such as LEAN, and focus on specific outcomes and benchmarks. DSRIP improved the focus of DPHs on population health, primary and patient-centered care, and integrated care delivery, which prepared DPHs to thrive in the post-reform era. DSRIP helped create common goals and performance across each organization. The specific and non-negotiable nature of DSRIP measures helped DPHs stay on target and perform consistently with an impetus to complete projects despite difficulties. Many DSRIP projects were integrated into the day-to-day activities of DPHs rather than being viewed as temporary projects that were imposed from above, helping to fundamentally transform care.

Transformation of Operations and Information Technology

DSRIP data collection requirements were a major catalyst for implementation of electronic health records and improved data collection and reporting capabilities. DPHs reported creating new infrastructure such as EHRs, analytic teams, measurement strategies, and better management systems. DSRIP projects led to the breaking down of silos between different departments, improved collaboration, and a more multi-disciplinary approach to quality improvement. One DPH reported implementing a Category 4 DSRIP project in a population group not targeted by DSRIP, an indication that the program's influence exceeded its initial scope.

Resources and Financial Incentives

DPHs reported that the funding provided by DSRIP helped provide a sound business case for implementing the projects and changing care delivery. The newly available resources improved provider buy-in, aligned goals and increased focus on specific targets, filled gaps left by the loss

of other revenues that supported such activities, and allowed DPHs to negotiate with boards of directors for more resources.

Collaboration Between DPHs and Innovations

DSRIP provided the impetus for collaboration between DPHs, including the sharing of forms, methodology, and innovations. Some DPHs found the ability to sound off on ideas and share lessons learned in real time particularly useful.

Examples of innovations included creating a learning collaborative in the organization, having a single person in the organization who is accountable for the success of DSRIP overall, and using healthcare navigators to reduce the burden of activities on higher level staff.

DPH Recommendations for PRIME

DPHs were asked to provide their recommendations for renewal of DSRIP under the next Medicaid §1115 Waiver. These recommendations are summarized below.

Alignment with Other Initiatives and Organizational Goals

DPHs emphasized the importance of aligning DSRIP measures with other publicly reported goals or CMS initiatives such as meaningful use of EHRs. Also, projects should aim to build systems for delivery of high quality care. DPHs highlighted differences between organizational missions of county-based DPHs and academic DPHs and asked that goals align with organization type.

Preparing DPHs for the Future

DPHs highlighted the potential of DSRIP to prepare them for the challenges brought about by the ACA. One DPH suggested that there should be more focus on dealing with costs and questioned the assumption that models such as the patient-centered medical home would lead to cost control due to lack of sufficient evidence. Other DPHs proposed adopting risk-based arrangements and involving the payers in these arrangements, moving towards more ACO-type projects. DPHs also desired more innovative projects to promote telephone and electronic access.

Narrower Focus and Fewer Projects

DPHs suggested a reduction in the number of different projects and milestones. The difficulties presented by the quantity of projects included identifying champions for so many overlapping projects, inability to focus on multiple projects simultaneously, lack of sustainability of plans and focus, and high demand for personnel and resources to implement projects and report

results. Two DPHs said Category 3 should have fewer measures and that they should be organized as strongly correlated plans linked to a greater goal.

Clear Metrics with Clear Instructions and Direction

DPHs commented on the difficulties posed by lack of clarity in the definition of measures as well as changes in measurement over time. DPHs suggested developing clear and detailed measures, including instructions on how measures should be calculated and reported. For example, concepts such as the patient-centered medical home should be more specifically described and measured. Consistency in reporting requirements across years is not currently possible and would be beneficial to allow for comparisons. DPHs also reported that frequent changes in definitions have a detrimental impact on the progress of the staff members who are focused on a given goal. They suggested that measurement remain consistent across DPHs, allowing for systemwide comparisons. It would be important to decide on numerators and denominators at the beginning and agree on standards before projects start.

DPHs requested more time to provide input into the development and planning of PRIME than was provided in the first round. They expressed a need for more support and explanation of milestones from DHCS, and better framework in preparation of the semi-annual and annual reports. DPHs also suggested fostering more information sharing through available webinars on measurement strategies and in-person meetings to build stronger connections among DPHs and move towards local collaboratives to promote community-centered care.

Reevaluate the Relevance of Measures

DPHs made additional comments on the selection of measures and methodology in DSRIP. These comments included reexamining the use of baseline milestones created in earlier years, which may be outdated and no longer relevant, and examining the science behind some projects to provide supporting evidence that a specific project will lead to desired outcomes.

Flexibility Versus Standardization

DPHs highlighted the importance of maintaining flexibility to ensure that DSRIP projects and measures can be tailored to fit each DPH's organizational goals, strategic direction, culture, and regional context. Flexibility would allow DPHs to focus on areas that are the most important to their patients or focus on projects that can be achieved within their resource or other limitations.

At the same time, DPHs recommended more standardization, particularly in Categories 3 and 4, to have specific and consistent measurement protocols and procedures that would allow for comparisons across DPHs and improve the ability of DPHs to exchange ideas and lessons

learned to achieve the best possible outcomes. DPHs highlighted the importance of maintaining focus on the same measures in DSRIP regardless of changes in leadership at CMS.

Assessing Performance Level

DPHs commented on the difficulties of improving on milestones when organizations started DSRIP at a high performance level or significantly improved outcomes in the first year. DPHs suggested that the baseline performance improvement levels be considered in developing milestones and that there should be flexibility in selecting projects that accounts for significant room for growth.

Better Measurement of Time and Effort Required to Complete Projects

DPHs proposed better assessment of the level of effort required to complete DSRIP projects. DPHs reported that the level of effort required to complete DSRIP projects was high and was not fully captured in milestones and in current reports.

Timely Feedback and Direct Communication Lines

DPHs suggested improving the direct communication lines with CMS to make sure information does not get lost or interpreted differently than intended. DPHs also suggested more timely feedback and updates from CMS.

Conclusions

The California DSRIP program was designed to achieve significant reform in designated public hospitals (DPHs) in California, with the optimum goal of achieving the Triple Aim of better care, better health, and lower cost. Because DSRIP was implemented under a §1115 Medicaid waiver, an implicit aim of the program was to improve the care of Medicaid beneficiaries. However, any achievements in DSRIP would have a broader impact on the entire population of patients who seek care at California DPHs, specifically the majority of uninsured and low-income populations served at these DPHs.

DSRIP approached this reform through implementation of five different categories of projects. Categories 1 and 2 aimed to develop infrastructure and change the care delivery redesign, processes that were most likely to address the specific Triple Aim of better care. Category 3 developed the capacity in DPHs to gather evidence-based measures of population health addressing the specific Triple Aim of better health. Projects in Categories 4 and 5 were a hybrid

of changing the process of care delivery with direct measures of improvements in health that focused on population subsets, including hospitalized patients and patients with HIV/AIDS, respectively. DSRIP payment was tied to improvement in some measures in Categories 1, 2, and 5, and all the measures in Category 4. Payment for Category 3 measures was tied to collection of data rather than specific improvements in the values of each measure. DSRIP did not have specific cost containment requirements that would address the Triple Aim of lower costs.

The majority of the evaluation data were self-reported and could not be verified independently. External data were available for independent assessment of Category 4 projects, but the analyses were constricted by inability to construct the same exact measures from external data. Enrollment and claims data were only available for some Category 5 measures. Despite these limitations, the evaluation data were collected systematically and were valid and reliable.

The achievements of DSRIP can be assessed in terms of whether Categories 1-5 projects were implemented successfully, achieved the Triple Aim, and were sustainable over time. The answers to these questions were generally positive within the confines of the data available for the evaluation. The evidence supporting success in implementation of DSRIP projects was overwhelming. The evaluation uncovered numerous examples of specific achievements. DPHs reported multiple challenges to implementation yet the nearly perfect rate of achievement of project milestones and evidence that milestones exceeded targets in many cases attest to successful implementation. The success of DPHs in achieving all Category 3 measures was particularly noteworthy because many DPHs were not collecting some of these measures and had to collect baseline data in the absence of EHRs or without pre-developed data collection tools. Many were simultaneously implementing EHRs, leading to further complexities.

The role of DSRIP in promoting quality improvement was significant, judging by incorporation of multiple projects from different categories in quality improvement initiatives implemented by DPHs. Many or nearly all the projects implemented in Category 1-4 projects appeared to be critical for quality improvement since they were always or very frequently incorporated in such initiatives. Among Category 1 projects, those providing critical infrastructure or data were always used for quality improvement. Among Category 2 projects, those with the greatest potential to bring about changes in care processes that lead to more efficient operations and use of resources were always used for quality improvement. Among Category 3 measures, those with most relevance to existing efforts were used and all Category 4 projects were used. The broad incorporation of multiple DSRIP projects in quality improvement highlights the importance of DSRIP in promoting the Triple Aim of better care.

The key to success of implementation of DSRIP projects was primarily synergies between DSRIP projects and DPH goals. The fact that many of the DSRIP projects were ongoing prior to DSRIP

indicated that DPHs were clear on the value of developing needed infrastructure, system redesign, population health improvements, and urgent improvements in care. The evidence provided on the limited scope of ongoing projects and how DPHs significantly expanded the goals and reach of ongoing projects indicated that DSRIP funds incentivized DPHs to move above and beyond pilot or small-scale improvements and towards standardized and comprehensive approaches. Flexibility afforded to DPHs to select the type and number of specific projects from Categories 1, 2, 4, and 5 contributed to the ability to implement successful DSRIP projects. The size of DSRIP funding was also key to solidifying leadership and stakeholder support for DSRIP projects. The infusion of resources was an effective incentive and an essential catalyst for change.

The great majority of challenges faced by DPHs in DSRIP implementation were data-related and associated with lack of fully functional and comprehensive EHRs, and these significant challenges were addressed by implementation of functional EHRs throughout the organization using CMS Meaningful Use EHR Incentive Program with funding ranging from $4 million to $50 million. Challenges also included internal stakeholder buy-in, the need for a trained workforce particularly among county-owned DPHs, availability of resources to implement DSRIP projects, and the shifting definitions for some DSRIP measures during the program. Nevertheless, DPHs successfully navigated these challenges through innovation and perseverance. DPHs' approaches to addressing challenges included efforts such as focusing on employee satisfaction and managing change fatigue in Category 1 projects; utilizing LEAN projects to streamline care processes in Category 2 projects; improving and standardizing documentation to gather Category 3 measures; and increasing the decision-making capabilities of nurses for Category 4 projects.

In additional to successful implementation, the evaluation results provided evidence of progress of DPHs towards the Triple Aim. The majority of DPH improvement milestones in Categories 1 and 2 exceeded targets. Category 4 adherence measures improved during DSRIP. Category 3 measures showed some improvements over time and DPHs reported some values that were similar to national performance benchmarks. The self-reported DPH Category 4 outcomes were also consistent with independent analyses using external data, identifying similar trends for the early years of DSRIP implementation. However, comparisons of Category 4 measures using external data did not show different trends between DPHs and other California hospitals. The independent analyses of Category 5 projects also identified success of participating DPHs in improving the outcomes of care for complex patients, particularly on crucial HIV treatment indicators such as CD4 tests, viral load tests, and appropriate ARV prescriptions. These results supported the conclusion that DSRIP succeeded in moving DPHs towards better care and better health, two of the three components of the Triple Aim.

DPHs' perceptions of progress towards achieving the Triple Aim were consistent with and confirmed perceived impact, primarily on improved quality of care and better patient outcomes. DPHs' perceptions of the impact of DSRIP on achieving the Triple Aim were mostly based on internal feedback from stakeholders but were consistent between the interim period and near the end of DSRIP. DPHs uniformly acknowledged that better care and better health should lead to cost containment and efficiencies but did not have clear evidence of these benefits accrued to the organization. Limited evidence of the potential cost containment impact could have been provided in Category 4 outcomes, including reductions in mortality and morbidity. But the progress of DPHs on these measures was not uniform across all DPHs, particularly for required measures such as sepsis and CLABSI where some DPHs started with higher performance levels than others. In addition, the very low incidence of many Category 4 measures and participation of few DPHs in some projects was a barrier to assessing the potential cost containment impact of DSRIP. Similar to Category 4, the reductions in undesired outcomes measured in Category 3 such as diabetes complications and congestive heart failure admissions highlight the potential for cost containment. Ultimately, increased cost containment is more likely to be a long-term achievement and requires careful assessment using patient-level data.

The final overarching question of interest is whether the progress towards system reform and achieving the Triple Aim promoted by DSRIP is sustainable in the long term. Once again, the evaluation identified evidence of sustainability of DSRIP efforts and impact. Evidence of sustainability was provided in DPH reports of the extent to which DSRIP projects and measures were embedded in DPHs' infrastructure and care delivery processes. The simultaneous implementation of DSRIP and EHRs led to development and incorporation of data gathering tools in EHRs. Data collection activities also led to increased expertise in performance measurement. Category 3 measures were used in quality improvement and provider performance review activities and were incorporated into implementation and assessment of Category 1 and 2 projects. The undertaking of such an initiative, which was not mandated by the program, was an implicit acknowledgement by DPHs that these measures were useful and important tools in their efforts to improve primary care in their organizations.

Another important indicator of the sustainability of DSRIP projects was DPHs' acknowledgment that transformation of operations and information technology, as well as systematic and major change, were necessary investments in their organizations' futures. These statements were supported by DPHs' intentions to continue the majority of DSRIP projects once the program ended, citing realization of the benefits of these projects, leadership support, and consistency with organizational goals. DPHs believed that DSRIP prepared them for the challenges facing public hospitals in light of the Affordable Care Act. Most DPH recommendations for PRIME echoed the challenges they had reported throughout the program in their reports and in

surveys and interviews. Of particular note were alignment of future PRIME projects with other initiatives and organizational goals; recommendations to adopting measures that promoted cost containment and promoted quality improvement; narrower focus on fewer projects to improve successful implementation and avoid change fatigue; and consistency and clarity in reporting requirements.

Appendix A: Survey and Interview Methodology

In addition to the DPH annual reports from DY 6-9, semi-annual reports from DY 6-10, and data from the Office of Statewide Health Planning and Development (OSHPD), UCLA undertook an extensive survey process with DPHs, including two surveys and one telephone-based follow-up interview, to comprehensively evaluate the DSRIP program.

Representatives of all DPHs completed two surveys (interim and follow-up), both of which included open-ended and categorical closed-ended questions to obtain a systematic set of responses from all respondents. The interim survey was fielded in July and August 2014. The results of this survey were included in the interim evaluation report and have been reproduced in the final evaluation report to the extent that they contribute to understanding of the implementation of the program or as a comparative point for questions that were repeated in the follow-up survey. The follow-up survey was fielded in May and June 2015 and served as a measure of DPHs' perceptions of DSRIP near the end of the demonstration, with a particular focus on the impact and sustainability of DSRIP-related initiatives moving forward.

Immediately following completion of the interim survey, UCLA conducted semi-structured, two-hour telephone follow-up interviews with all DPHs. The interviews served as follow-up to the interim survey, particularly when DPH reports did not sufficiently illustrate lessons learned and barriers or challenges to implementation of the program overall or for specific projects. Follow-up interviews were conducted by telephone with the individuals most knowledgeable about the specific areas of interest such as medical directors, administrators of the DSRIP projects and/or quality improvement initiatives, and clinicians. Each participating DPH participated in a follow-up interview on Categories 1-4. Separate follow-up interviews on Category 5 were conducted with the subset of DPHs that implemented those projects. UCLA recorded all interviews with the permission of participating DPHs to ensure accuracy and generate a transcript of all interviews.

Appendix B: Project Selection by Demonstration Year

Exhibit 142-Exhibit 144 outline the projects that each DPH selected and the demonstration years in which each project was implemented for Categories 1, 2, and 4, which allowed some degree of selection by DPHs (all measures in Category 3 were mandatory).

Exhibit 142: Category 1 Projects by DPH, Project, and Demonstration Year

Designated Public Hospital	Primary Care Capacity	Workforce Training	Disease Registry	Cultural Competency	REAL Data	Urgent Medical Advice	Telemedicine	Quality Data	Risk Stratification	Specialty Care Capacity	Performance Improvement	Total
Alameda	✓		✓							✓	✓	**4**
Arrowhead	✓	✓	✓							✓		**4**
Contra Costa	✓	✓		✓	✓							**4**
Kern	✓		✓	✓		✓				✓		**5**
Los Angeles			✓			6-7[1]		✓	8-10[2]		✓	**5**
Natividad		✓		✓								**2**
Riverside	✓	✓	✓							✓		**4**
San Francisco	✓	✓								✓	✓	**4**
San Joaquin	✓		✓									**2**
San Mateo	✓				✓							**2**
Santa Clara	✓		✓									**2**
UC Davis			✓		✓							**2**
UC Irvine	✓	✓	✓				✓		✓			**5**
UC Los Angeles		✓								✓		**2**
UC San Diego			✓	✓			✓	✓				**4**
UC San Francisco	✓		✓								✓	**3**
Ventura		✓		✓							6-8[3]	**3**
Total	**11**	**8**	**11**	**5**	**3**	**2**	**2**	**2**	**2**	**6**	**5**	**57**

Source: UCLA analysis of designated public hospital reports.
✓ = project implemented DY 6-10
[1]Finished after exceeding goal
[2]Added a result of exceeding goals for the Enhance Urgent Medical Advice project
[3]No reason stated in DPH reports

Exhibit 143: Category 2 Projects by DPH, Project, and Demonstration Year

Designated Public Hospital	Medical Homes	Chronic Care Management	Primary Care Redesign	Patient Experience	Cost Containment	Physical and Behavioral Health Integration	Specialty Care Access/Redesign Referral Process	Patient Care Navigation Program	Process Improvement	Flow in the ED/Rapid Medical Evaluation	Palliative Care	Medication Management	Care Transitions	Real Time Hospital Acquired Infections (HAIs) System	Total
Alameda	✓	✓		✓						✓			✓		**5**
Arrowhead	✓	✓	✓												**3**
Contra Costa	✓			✓		✓						✓			**4**
Kern	✓		✓			✓		✓							**4**
Los Angeles	✓	✓				✓									**3**
Natividad				✓					✓						**2**
Riverside	✓	✓	✓	✓			✓								**5**
San Francisco	✓					✓	✓								**3**
San Joaquin	✓		✓												**2**
San Mateo	✓		✓	✓		✓	✓		✓						**6**
Santa Clara		✓		✓	✓	✓									**4**
UC Davis	✓								✓			✓	✓		**4**
UC Irvine	✓	✓	✓	✓				✓						✓	**6**
UC Los Angeles	6-10, Pediatric 9-10[4]											✓	✓		**3**
UC San Diego			✓							✓	✓	✓	✓	✓	**6**
UC San Francisco	✓						✓						✓		**3**
Ventura		✓				✓					✓				**3**
Total	**13**	**7**	**7**	**7**	**1**	**7**	**4**	**2**	**3**	**2**	**2**	**4**	**5**	**2**	**6**

Source: UCLA analysis of designated public hospital reports.

[4]UCLA added a specialized Pediatric Medical Home project for DY 9-10.

Exhibit 144: Category 4 Projects by DPH, Project, and Demonstration Year

Designated Public Hospital	Sepsis Management	CLABSI Prevention	SSI Prevention	HAPU Prevention	Stroke Management	VTE Prevention	Falls Prevention	Total
Alameda	✓	✓	✓	✓				4
Arrowhead	✓	✓		✓	✓			4
Contra Costa	✓	✓		✓		✓		4
Kern	✓	✓		✓		✓		4
Los Angeles	✓	✓	6-8[5]		9-10[6]	✓		5
Natividad	✓	✓		✓		✓	✓	5
Riverside	✓	✓	✓		✓			4
San Francisco	✓	✓	✓			✓		4
San Joaquin	✓	✓	✓		✓			4
San Mateo	✓	✓	✓				✓	4
Santa Clara	✓	✓	✓	6-8[7]	9-10[8]			5
UC Davis	✓	✓	✓	✓				4
UC Irvine	✓	✓		✓		✓		4
UC Los Angeles	✓	✓	✓	✓				4
UC San Diego	✓	✓	✓	✓		10[9]		5
UC San Francisco	✓	✓	✓	✓				4
Ventura	✓	✓	✓	✓				4
Total	**17**	**17**	**12**	**12**	**5**	**7**	**2**	**72**

Source: UCLA analysis of designated public hospital reports.
[5]No reason stated, likely due to exceeding SSI goals
[6]Added as a result of finishing SSI project
[7]Finished after exceeding HAPU goals
[8]Added as a result of exceeding HAPU goals
[9]Added for DY10

Appendix C: Attachment Q Measures Selected by DPHs

The following exhibits include a full accounting of all Attachment Q measures selected by participating DPHs in Categories 1-2, along with the DPHs that implemented each measure and the number of milestones each DPH implemented under each measure from DY 6-10.

Exhibit 145: Category 1 Selected Attachment Q Measures, by Type of Measure, DPH and Project

Project	Selected Attachment Q Measure	Process	Improvement	DPH
Primary Care Capacity	Achieve a call abandonment rate for the nurse advice line and patient scheduling unit		1	Alameda
	Assess efficacy of processes in place and recommend process improvements to implement, if any (e.g., in DY 8, evaluate whether the primary care redesign methodology was as effective as it could be, by: (1) performing at least two team-based Plan-Do-Study-Act workshops in the primary care clinics; (2) documenting whether the anticipated metric improvements were met; (3) identifying opportunities, if any, to improve on the redesign methodology, as documented by the assessment document capturing each of these items)	1		Alameda
	Develop and implement a plan for proactive management of adult medicine patient panels through a new Office of Panel Management, such that same-store panel capacity is increased and optimized going forward. This intervention will reopen and optimize use of available adult medicine panel capacity	5		Santa Clara
	Develop automated tracking system for measuring time to next available offered appointment at DPH system primary care medical homes for non-urgent needs	1		Contra Costa
	Establish a baseline, in order to measure improvement over self	1		Contra Costa
		1		San Francisco

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Establish a nurse advice line and/or primary care patient appointment unit	2		Alameda
		3		San Francisco
	Establish additional/expand existing/relocate primary care clinics	2		Alameda
		5		Arrowhead
		3		Contra Costa
		2		Riverside
		1		San Joaquin
		7		Santa Clara
		3		UC Irvine
		2		UC San Francisco
	Expand the hours of a primary care clinic, including both evening and/or weekend hours	1		Arrowhead
		2		Contra Costa
		3		Kern
		1		Riverside
		4		San Francisco
		2		UC Irvine
	Implement a nurse triage software system to assist nurses in determining the acuity of patients	1		Kern
	Implement, adopt, upgrade, or improve technology to support the project	1		UC Irvine
	Implement/expand a community/school-based clinics program	1		UC Irvine
		2		Riverside
	Implement/expand a mobile health clinic program	4		Riverside
	Increase primary care clinic volume		7	Alameda
			4	Arrowhead
			4	Contra Costa
			4	Riverside
			6	San Francisco
			3	San Joaquin

Project	Selected Attachment Q Measure	Process	Improvement	DPH
			3	UC Irvine
			4	UC San Francisco
	Patient access to primary care by reducing days to third next-available appointment		3	Contra Costa
			2	Kern
			4	San Mateo
	Percent patients receiving urgent care appointment in the primary care clinic (instead of having to go to the ED or an urgent care clinic) within X calendar days of request		2	Kern
			1	San Francisco
			4	Santa Clara
	Share learnings from implementing process improvements, such as through presentations, reporting, etc. (e.g., in DY 8, present the results and findings from the redesign work to at least two peer organizations and/or convenings of peer organizations, as documented by the presentation delivered and the agenda)	1		UC Irvine
	Train/hire additional primary care providers and staff and/or increase the number of primary care clinics for existing providers	2		Arrowhead
		1		Kern
		1		Riverside
		3		San Joaquin
		3		San Mateo
		5		Santa Clara
		3		UC Irvine
		3		UC San Francisco
	Other - remote monitoring		1	UC Irvine
	TOTAL	**83**	**53**	
Workforce Training	Develop and implement a curriculum for residents to utilize their practice data to demonstrate skills in quality assessment and improvement		1	UC Irvine
	Establish/expand a faculty development program	2		Ventura
	Expand positive primary care exposure for residents/trainees	1		Arrowhead
		3		Contra Costa

Project	Selected Attachment Q Measure	Process	Improvement	DPH
		3		San Francisco
		1		UC Irvine
		2		UC Los Angeles
	Expand primary care training	1		Arrowhead
		2		Contra Costa
		4		Natividad
		2		Riverside
		12		UC Irvine
		1		UC Los Angeles
		1		Ventura
	Implement, if any (e.g., in DY 8, evaluate whether the primary care redesign methodology was as effective as it could be, by: (1) performing at least two team-based Plan-Do-Study-Act workshops in the primary care clinics; (2) documenting whether the anticipated metric improvements were met; (3) identifying opportunities, if any, to improve on the redesign methodology, as documented by the assessment document capturing each of these items)	1		San Francisco
	Increase primary care training and/or rotations		4	Arrowhead
			9	Natividad
			6	Riverside
			4	San Francisco
			8	UC Irvine
			6	UC Los Angeles
			2	Ventura
	Increase primary care training in Continuity Clinics, which may be in diverse, low-income, community-based settings		5	Contra Costa
	Increase the number of faculty staff completing educational courses	1		UC Irvine
	Increase the number/proportion of primary care residency/trainee graduates choosing primary care as a career		0	UC Los Angeles
		1		Arrowhead

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Obtain approval from the Accreditation Council for Graduate Medical Education (ACGME) to increase the number of primary care residents	1		Riverside
		1		San Francisco
	Recruit/hire more trainees/graduates to primary care positions in DPH system	1		UC Irvine
	TOTAL	**41**	**45**	
Disease Registry	Conduct staff training on populating and using the registry function	4		Alameda
		3		Arrowhead
		1		Kern
		1		Los Angeles
		2		Riverside
		6		Santa Clara
		2		UC San Diego
	Create/disseminate protocols for registry-driven reminders and reports for clinicians and providers regarding key health indicators monitoring and management in patients with targeted diseases	1		Alameda
		4		Los Angeles
		4		UC Irvine
		2		UC San Diego
	Demonstrate registry automated reporting ability to track and report on patient demographics, diagnoses, patients in need of services or not at goal, and preventive care status	1		Arrowhead
		2		Kern
		1		Los Angeles
		4		Santa Clara
		3		UC Irvine
	Develop cross-functional team to evaluate registry program	1		Los Angeles
		1		Santa Clara
	Enter patient data into the registry		6	Arrowhead
			1	Kern
			4	Los Angeles
			9	Riverside

Project	Selected Attachment Q Measure	Process	Improvement	DPH
			2	UC Davis
			4	UC San Francisco
	Generate registry-based reports for each provider/care team for the care delivered outside the office visit, which may include historical and peer comparisons for protocols		2	Alameda
			2	UC Irvine
			3	UC San Diego
	Implement cross-functional team to staff registry program	1		Alameda
		1		UC Irvine
	Implement/expand a functional disease registry	3		Arrowhead
		3		Los Angeles
		1		Riverside
		2		San Joaquin
		5		Santa Clara
		1		UC Davis
		2		UC Irvine
		1		UC San Diego
	Increase the number of providers/clinicians/staff using the registry		1	Alameda
			2	San Joaquin
			1	UC San Diego
	Making patient data in the registry more accurate	6		UC Davis
	Number of patient touches recorded in the registry		2	Kern
			2	Los Angeles
	Plan development of/implement tethered registry to capture patients enrolled in chronic disease management program	1		Arrowhead
		2		UC Davis
	Review current registry capability and assess future needs	1		Los Angeles
		1		San Joaquin
		1		UC Davis
		1		UC Irvine
		1		UC San Diego

Project	Selected Attachment Q Measure	Process	Improvement	DPH
		1		UC San Francisco
	Review future potential registry platforms and select registry platform	1		Arrowhead
		1		Santa Clara
	Spread registry functionality throughout system		1	Arrowhead
			1	Kern
			2	San Joaquin
			4	Santa Clara
			1	UC Davis
			2	UC San Diego
			4	UC San Francisco
	TOTAL	**80**	**56**	
Cultural Competency	Complete a planning process/submit a plan, in order to do appropriate planning for the implementation of major infrastructure development or program/process redesign (e.g., in DY 6, complete a planning process for a care-navigation program to provide support to patient populations who are most at risk of receiving disconnected and fragmented care)	1		Natividad
	Conduct an analysis to determine gaps in language access	1		Contra Costa
		1		Kern
		1		Natividad
		1		UC San Diego
		2		Ventura
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		Contra Costa
	Develop program to improve staff cultural competency and awareness	2		Kern
		1		UC San Diego
	Establish a baseline, in order to measure improvement over self	1		Kern
		1		Natividad
		1		Ventura
	Expand qualified health care interpretation technology	2		Contra Costa

Project	Selected Attachment Q Measure	Process	Improvement	DPH
		3		Kern
		4		Natividad
		1		UC San Diego
		3		Ventura
	Implement language access policies and procedures	1		Natividad
	Improve language access		4	Contra Costa
			4	Kern
			4	Natividad
			4	UC San Diego
			5	Ventura
	Train number or proportion of providers and staff to appropriately utilize health care interpreters (via video, phone or in-person)	2		Kern
		1		UC San Diego
	Train/certify additional health care interpreters	1		Contra Costa
		1		Kern
		1		Natividad
		2		Ventura
	TOTAL	**36**	**21**	
REAL Data	Analyze and report on quality outcomes by REAL data categories to identify potential areas of disparities, (e.g., such as utilization of preventive care, improving patient experience and/or various health outcomes)		1	Contra Costa
			1	San Mateo
			2	UC Davis
	Collect accurate REAL data fields as structured data		5	Contra Costa
			3	San Mateo
			3	UC Davis
	Develop and implement an organizational process to stratify patient outcomes and quality measures by patient REAL demographic information in order to identify potential health disparities and develop strategies to ensure equitable health outcomes /	1		San Mateo
		3		UC Davis

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Implement standardized policies and procedures to ensure the consistent and accurate collection of data			
	Develop REAL data template and/or integrate it into data warehouse, electronic medical record (EMR), and/or registries	1		Contra Costa
		1		San Mateo
		2		UC Davis
	Report on / Improve patient satisfaction/experience (e.g., in DY 10, improve primary care clinic patient satisfaction scores as a result of redesigning clinic visits)		1	UC Davis
	Train staff on the collection of consistent, valid and reliable data	1		Contra Costa
	TOTAL	**9**	**16**	
Urgent Medical Advice	Develop/distribute a patient-focused educational newsletter with proactive health information and reminders based on nurse advice line data/generated report identifying common areas addressed by the nurse advice line	2		Kern
	Establish baseline and metrics	1		Kern
		1		Los Angeles
	Establish nurse advice line	1		Kern
	Expand access to nurse advice line		1	Los Angeles
	Increase in the number of patients that accessed the nurse advice line		3	Kern
	Increase the number of patients that called the nurse advice line with intent to go to the ED for non-emergent conditions who were redirected to non-ED resources		3	Kern
			1	Los Angeles
	Inform and educate patients on the nurse advice line	2		Kern
	TOTAL	**7**	**8**	
Telemedicine	Establish a baseline, in order to measure improvement over self		1	UC San Diego
	Establish telemedicine program for selected medical service line(s)	3		UC Irvine
		2		UC San Diego
	Expand telemedicine program for selected medical service line(s)	2		UC Irvine

Project	Selected Attachment Q Measure	Process	Improvement	DPH
		1		UC San Diego
	Expand telemedicine program to additional clinics/service lines	4		UC San Diego
	Increase number of e-consultations		2	UC San Diego
	Pilot a new process and/or program	1		UC San Diego
	Other	1		UC Irvine
	TOTAL	**14**	**3**	
Quality Data	Complete an audit of the clinical documentation improvement program	1		UC San Diego
	Conduct a needs/gap analysis, in order to inform the establishment or expansion of services/programs (e.g., in DY6, conduct a gap analysis of high-impact specialty services to identify those in most demand by the local community in order to expand specialty care capacity targeted to those specialties most needed by patients)	1		UC San Diego
	Determine whether current information systems that house ICD codes should be converted or upgraded	1		UC San Diego
	Develop/implement an education plan and/or curriculum for coding staff, clinical documentation specialists, physicians and other staff	1		Los Angeles
		3		UC San Diego
	Implement HIPAA 5010 transaction sets to be able to communicate with institutions that are able to receive and send such transactions	1		Los Angeles
	Implement process to enhance coding and documentation of diagnoses, procedures, and process and outcome measures	1		Los Angeles
		1		UC San Diego
	Modify existing clinical documentation improvement tools for ICD-10	1		UC San Diego
	Train staff on the changes in work flow	1		Los Angeles
		1		UC San Diego
	TOTAL	**13**	**0**	
Risk Stratification	Apply the risk stratification methodology, produce risk scores for # or % of patients, and assign them to the appropriate medical home and disease management program		2	Los Angeles

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Conduct risk stratification for number or percent of patients with the targeted chronic conditions	1		UC Irvine
	Develop adaptive screening tools for patients with targeted conditions/indicator/criteria	1		UC Irvine
	Develop and implement risk stratification to identify patient populations who would benefit from specialized medical homes, disease management programs, remote monitoring, and other special programs	1		Los Angeles
		8		UC Irvine
	Develop criteria to better identify those patients that would benefit from disease management and other special programs	1		UC Irvine
	TOTAL	**12**	**2**	
Specialty Care Capacity	Assess specialty clinic capacity, productivity, and/or care models	5		San Francisco
	Collect baseline data for wait times, backlog, and/or return appointments in specialties	2		Arrowhead
		1		Kern
	Conduct a specialty care gap analysis based on community need	1		Kern
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		Riverside
	Establish a baseline, in order to measure improvement over self	1		Riverside
	Establish specialty care guidelines for the high impact/most impacted medical specialties.	1		Arrowhead
		2		Kern
	Expand the ambulatory care medical specialties referral management department	2		Arrowhead
	Implement a specialty care access plan	1		UC Los Angeles
	Increase the number of available specialty appointments by XX for the most impacted specialty clinics		9	Alameda
			1	Arrowhead
			4	San Francisco
	Increase the number of referrals of targeted patients to the specialty care clinic		3	Riverside
			3	Kern

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Increase the number of specialist providers, clinic hours and/or procedure hours available for the high impact/most impacted medical specialties		2	UC Los Angeles
	Launch a specialty care clinic (e.g., pain management clinic)	1		Kern
		1		Riverside
	Provide reports on the number of days to process referrals and/or wait time from receipt of referral to actual referral appointment	2		Arrowhead
		1		UC Los Angeles
	Reduce the number of specialty clinics with waiting times for next routine appointment		2	Arrowhead
	Train primary care providers, specialists and staff on processes, guidelines and technology for referrals and consultations into selected medical specialties	2		Arrowhead
		1		Kern
		1		UC Los Angeles
	TOTAL	**26**	**24**	
Performance Improvement	Create a quality dashboard or scoreboard to be shared with organizational leadership on a regular basis that includes patient satisfaction measures		1	Alameda
			4	Los Angeles
			3	San Francisco
			1	UC San Francisco
			3	Ventura
	Develop reporting methodologies that will enable continuous quality improvement	1		UC San Francisco
	Enhance the organizational infrastructure and resources to store, analyze and share the patient experience data, as well as utilize them for quality improvement	2		Alameda
	Establish a performance improvement office to manage data, improvement trajectory and improvement activities across the hospital system	1		Alameda
		5		San Francisco
		1		Ventura
	Establish a program for trained experts on process improvements to mentor and train other staff for safety and quality care improvement	3		San Francisco

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Hire/train quality improvement staff in well-proven quality and efficiency improvement principles, tools and processes, such as rapid cycle improvement and/or data and analytics staff for reporting purposes (e.g., to measure improvement and trends)	3		Alameda
		11		San Francisco
		2		UC San Francisco
		1		Ventura
	Implement a Lean/Kaizen rapid improvement project	1		Alameda
		3		Ventura
	Implement improvement strategies to ensure accurate coding of patient safety indicators	4		Los Angeles
	Implement quality improvement data systems, collection, and reporting capabilities		1	Alameda
			3	UC San Francisco
	Number of process improvement champions		1	Ventura
	Participate in statewide, public hospital or national clinical database(s) for standardized data sharing	1		Alameda
		1		Los Angeles
	Participate in/present to quality/performance improvement conferences, webinars, learning sessions or other venues	2		UC San Francisco
	TOTAL	**42**	**17**	
	GRAND TOTAL	**363**	**245**	

Source: UCLA analysis of designated public hospital annual reports DY 6-10.

Exhibit 146: Category 2 Selected Attachment Q Measures, by Type of Measure, DPH and Project

Project	Selected Attachment Q Measure	Process	Improvement	DPH
Medical Homes	Based on criteria, assign eligible patients to medical homes		3	Alameda
			5	Contra Costa
			2	Kern
			2	Los Angeles
			3	Riverside
			3	San Francisco

Project	Selected Attachment Q Measure	Process	Improvement	DPH
			3	San Joaquin
			4	San Mateo
			1	UC Davis
			3	UC Irvine
			8	UC Los Angeles
			7	UC San Francisco
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		Arrowhead
	Determine the appropriate panel size for primary care provider teams, potentially based on staff capacity, demographics, and diseases	1		Kern
		1		Los Angeles
	Develop training materials for medical homes	1		Arrowhead
		1		San Francisco
		1		UC San Francisco
	Establish a baseline, in order to measure improvement over self	1		Alameda
	Establish criteria for medical home assignment	1		Arrowhead
		1		Contra Costa
		1		Los Angeles
		1		Riverside
		2		San Joaquin
		2		UC Irvine
	Expand and redefine the roles and responsibilities of primary care team members	1		Arrowhead
		1		Los Angeles
	Implement a system to improve prevention services	1		Los Angeles
		5		UC Davis
		0		UC San Francisco
	Implement the medical home model in primary care clinics	2		Arrowhead
		1		Contra Costa

Project	Selected Attachment Q Measure	Process	Improvement	DPH
		2		Los Angeles
		1		San Mateo
		7		UC Davis
		1		UC Irvine
		5		UC Los Angeles
	Implement, adopt, upgrade, or improve technology to support the project	1		UC Davis
		7		UC Los Angeles
	Increase number or percent of enrolled patients' scheduled primary care visits that are at their medical home		2	Riverside
	Medical home provides population health management by identifying and reaching out to patients who need to be brought in for preventive and ongoing care		2	Kern
			3	Los Angeles
			6	San Francisco
			3	UC San Francisco
	New patients assigned to medical homes receive their first appointment in a timely manner		4	Arrowhead
			2	Kern
	Obtain medical home recognition by a nationally recognized agency (e.g., NCQA)		1	UC Davis
			3	UC Irvine
	Put in place policies and systems to enhance patient access to the medical home	1		Alameda
		1		Arrowhead
		1		Kern
		1		San Francisco
		2		UC Los Angeles
	Reorganize staff into primary care teams responsible for the coordination of patient care	1		Arrowhead
		2		San Francisco
		1		UC Irvine

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Report on / Improve patient satisfaction/experience (e.g., in DY 10, improve primary care clinic patient satisfaction scores as a result of redesigning clinic visits)		1	UC Davis
	Share learnings from implementing process improvements, such as through presentations, reporting, etc. (e.g., in DY 8, present the results and findings from the redesign work to at least two peer organizations and/or convenings of peer organizations, as documented by the presentation delivered and the agenda)	1		Arrowhead
		1		UC Davis
	Track the assignment of patients to the designated care team	1		San Mateo
	Train medical home personnel	2		Arrowhead
		2		San Francisco
		7		UC San Francisco
	TOTAL	**74**	**71**	
Chronic Care Management **Primary Care Redesign**	Apply the Care Model to targeted chronic diseases, which are prevalent locally		3	Arrowhead
			1	Santa Clara
	Assess efficacy of processes in place and recommend process improvements to implement, if any (e.g., in DY 8, evaluate whether the primary care redesign methodology was as effective as it could be, by: (1) performing at least two team-based Plan-Do-Study-Act workshops in the primary care clinics; (2) documenting whether the anticipated metric improvements were met; (3) identifying opportunities, if any, to improve on the redesign methodology, as documented by the assessment document capturing each of these items)	2		Alameda
	Complete a planning process/submit a plan, in order to do appropriate planning for the implementation of major infrastructure development or program/process redesign (e.g., in DY 6, complete a planning process for a care navigation program to provide support to patient populations who are most at risk of receiving disconnected and fragmented care)	1		Alameda

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Designate/hire personnel or teams to support and/or manage the project/intervention	2		Arrowhead
		1		Riverside
	Develop a comprehensive care management program	1		Arrowhead
		3		UC Irvine
		1		Ventura
	Develop and implement program to assist patient to better self-manage their chronic conditions	2		Los Angeles
		2		UC Irvine
	Develop program to identify and manage chronic care patients needing further clinical intervention	2		Alameda
		5		Santa Clara
	Expand and document interaction types between patient and health care team beyond one-to-one visits to include group visits, telephone visits, and other interaction types	1		Los Angeles
		5		Riverside
	Expand the Care Model to primary care clinics	2		Arrowhead
		4		Santa Clara
		1		UC Irvine
	Formalize multi-disciplinary teams	2		Arrowhead
		1		Santa Clara
		1		Ventura
	Implement a diabetes medication titration program that is supported by pharmacy	2		Riverside
	Implement a risk-reduction program for patients with diabetes mellitus to target patients identified as at-risk (e.g., an inpatient or perioperative glycemic control program; if implementing more than one program, may include as two separate milestones)	5		Los Angeles
		3		Riverside
		1		Santa Clara

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Implement a test-ordering process for patients with cardiovascular risk factors, including indicators such as blood sugar level, cholesterol, liver and renal monitoring	2		Ventura
	Implement evidence-based clinical protocols	1		Santa Clara
	Implement Stroke Medical		3	Los Angeles
	Improve the percentage of patients with self-management goals		3	Arrowhead
			2	Los Angeles
			5	Riverside
			3	UC Irvine
			1	Ventura
	Number of patient touches recorded in the registry		1	Ventura
	Pilot a new process and/or program	1		Alameda
	Train staff in the Care Model, including the essential components of a delivery system that supports high-quality clinical and chronic disease care	2		Arrowhead
		5		Santa Clara
		3		UC Irvine
	Other - increase patient engagement	2		UC Irvine
	TOTAL	**66**	**22**	
	Assess efficacy of processes in place and recommend process improvements to implement, if any (e.g., in DY 8, evaluate whether the primary care redesign methodology was as effective as it could be, by: (1) performing at least two team-based Plan-Do-Study-Act workshops in the primary care clinics; (2) documenting whether the anticipated metric improvements were met; (3) identifying opportunities, if any, to improve on the redesign methodology, as documented by the assessment document capturing each of these items)	1		UC Irvine

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Complete a planning process/submit a plan, in order to do appropriate planning for the implementation of major infrastructure development or program/process redesign (e.g., in DY 6, complete a planning process for a care navigation program to provide support to patient populations who are most at risk of receiving disconnected and fragmented care)	1		San Joaquin
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		Riverside
	Develop a marketing system to encourage patient enrollment	1		UC San Diego
	Develop protocol for CHF, diabetes, falls prevention	3		UC Irvine
	Develop protocols for breast, colon and prostate screening	1		UC San Diego
	Develop/implement a system for protocol driven automatic patient reminders	1		UC Irvine
		2		UC San Diego
	Establish a baseline, in order to measure improvement over self	1		UC San Diego
	Establish baseline data for patient appointment 'no-show' rates, days to third-next available appointment, and/or primary care visit cycle times	1		Arrowhead
		1		Kern
	Establish mechanism for patient self-enrollment in on-line patient portal for access to their health record and bi-directional communication	1		UC San Diego
	Implement patient visit redesign in primary care clinics	2		Arrowhead
		1		Kern
	Implement practice management system	1		Arrowhead
		1		Kern
	Implement the patient-centered scheduling model in primary care clinics	1		Kern
		1		San Mateo
	Improve productivity of team		3	Riverside

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Patient self-enrollment in on-line patient portal for access to their health record and bi-directional communication		3	UC San Diego
	Reduce average visit cycle time for primary care clinics to 60 minutes or less – without reducing the time a patients spends with his/her provider		3	Arrowhead
			3	Kern
	Reduce patient appointment no-show rates to 10% or less		3	Arrowhead
			3	Kern
			3	San Joaquin
			5	San Mateo
	Train staff on methods for redesigning clinics to improve efficiency	2		Arrowhead
		2		Riverside
		3		San Joaquin
	Other	1	2	UC Irvine
	TOTAL	**30**	**28**	
Patient Experience	Administer regular inquiry into patient experience in the new organizational area	1		Contra Costa
		1		Riverside
	Assess the organizational baseline for measuring patient/family and/or employee experience and utilizing results in quality improvement	4		Contra Costa
		3		Natividad
		4		San Mateo
		1		Santa Clara
		2		UC Irvine
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		Riverside
	Develop a plan to roll out a regular inquiry into patient experience in a new area of the organization, which currently does not collect patient experience information, for example, primary care clinics	2		Riverside
		1		UC Irvine

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Develop a training program on patient experience	1		UC Irvine
	Develop and implement organizational strategies to improve patient, family and/or employee experience	2		Alameda
		4		Natividad
		3		Santa Clara
		1		UC Irvine
	Develop new methods of inquiry into patient and/or employee satisfaction, or improve the existing ones, to achieve greater quality and consistency of data	1		Riverside
		4		UC Irvine
	Develop regular organizational display(s) of patient and/or employee experience data (e.g., via a dashboard on the internal Web) and provide updates to employees on the efforts the organization is undertaking to improve the experience of its patients and their families		1	Alameda
			1	Contra Costa
			4	Natividad
			1	Riverside
			4	San Mateo
			2	Santa Clara
	Develop, implement, and/or enhance a patient experience survey tool	1		Natividad
		1		San Mateo
		1		Santa Clara
		3		UC Irvine
	Establish a steering committee comprised of organizational leaders, employees and patients/families to implement and coordinate improvements in patient and/or employee experience	1		Riverside
		1		Santa Clara
	Improve patient satisfaction/experience scores		1	Alameda
			3	Natividad
			1	UC Irvine
	Integrate patient and/or employee experience into employee performance measures	1		Natividad
		1		Riverside

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Integrate patient and/or employee experience into management performance measures	1		Riverside
	Integrate patient experience into employee training	1		Natividad
	Make patient and/or employee experience data available externally (e.g., via a dashboard on the external website) and provide updates to the general public on the efforts the organization is undertaking to improve the experience of its patients and their families		4	Contra Costa
			1	Natividad
			1	Riverside
	Orchestrate improvement work on identified experience targets, (targets could include, for example, better understanding of HCAHPS results or results of other measures; improved caregiver communication; better discharge planning; improved cleanliness, noise levels and/or dining experience; better ambulatory experience; improved employee experience, etc.)	2		Riverside
		4		Santa Clara
		8		UC Irvine
	Perform a mid-course evaluation of the results of improvement projects / Make necessary adjustments and continue with implementation	1		Riverside
		3		Santa Clara
	Train number or percent of providers/clinicians/staff	1		Alameda
		2		Riverside
		1		UC Irvine
	Write and disseminate a patient/family experience strategic plan	1		Santa Clara
	Other - compliance in information updates		1	UC Irvine
	TOTAL	**71**	**25**	
Cost Containment	Develop/identify a cost-accounting methodology to quantify the financial impact of quality and efficiency improvement interventions	1		Santa Clara
	Establish a baseline for cost	1		Santa Clara
	Implement cost-accounting systems to measure intervention impacts	2		Santa Clara

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Measure cost containment		3	Santa Clara
	Review current cost allocation and accounting system capabilities and select a system/methodology that will allow for cost measurement	1		Santa Clara
	TOTAL	**5**	**3**	
Physical and Behavioral Health Care Integration	Assign patients discharged from the inpatient psychiatric unit to a medical home		3	Kern
	Co-locate behavioral health and primary care	3		Contra Costa
		1		Kern
		5		Los Angeles
		8		San Francisco
		3		Ventura
	Convene a clinical content team for development of a structured algorithm to determine selection of pharmacologic therapy for depression.	4		Los Angeles
	Develop patient visit tracking model to establish staffing productivity, patient no show rates, and/or financial cost and reimbursement dimensions of the new service component.	1		Santa Clara
	Development of a tracking mechanism of referrals from primary care providers to on-site mental health professionals to be used at the pilot of physical-behavioral health sites	1		Kern
		2		Los Angeles
	Educate and/or train primary care clinicians in behavioral health care	2		Kern
		1		Santa Clara
		1		Ventura
		1		Kern

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Establish/implement/distribute consensus-care referral guidelines	1		Santa Clara
	Implement a structured care algorithm for selection of pharmacologic therapy for depression	1		Los Angeles
	Implement physical-behavioral health integration pilots, such as implementing the IMPACT Model and/or Four Quadrant Model	1		Contra Costa
		5		San Mateo
		1		Santa Clara
		3		Ventura
	Implement telepsychiatric consultation	3		San Francisco
	Increase the number of telepsychiatric consultations	1		San Francisco
	Increase the number or percent of patients with a behavioral health care need (e.g., primary diagnosis of depression) as identified by the primary care provider, who have access to behavioral health care (e.g., visits with social workers, case managers or psychiatrists), as needed		3	Kern
			2	San Francisco
	Integrate depression screening of targeted patients within the primary care setting		3	Contra Costa
			1	Los Angeles
			3	San Mateo
			3	Santa Clara
	Primary care patients who receive behavioral health services will report improved satisfaction with overall healthcare received; increased involvement in care; and/or improved emotional well being		1	Santa Clara
	Provide primary care patients behavioral health service (must select at least one metric)		3	Santa Clara
			1	Ventura
	Provide timely initial behavioral health visit wait times		3	Los Angeles
	Track the number of referrals from primary care providers to on-site mental health professionals to be used at the pilot of physical-behavioral health sites	2		Los Angeles

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Use joint consultations and treatment planning, and coordinate resources to improve patient education, support, and compliance with the medication regimen	3		Los Angeles
	TOTAL	**54**	**26**	
Specialty Care Access/Redesign Referral Process	Achieve compliance/meet or exceed standards for specialty care		1	UC San Francisco
	Complete a planning process/submit a plan to implement electronic referral technology	1		Riverside
		1		UC San Francisco
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		UC San Francisco
	Develop and implement standardized referral and work-up guidelines	2		Riverside
		3		UC San Francisco
	Develop the technical capabilities to facilitate electronic referral	1		UC San Francisco
	Implement referrals technology and processes that enable improved and more streamlined provider communications	1		Riverside
		4		San Francisco
		1		San Mateo
	Implement specialty care access programs (e.g., e-referral technologies)		2	UC San Francisco
	Implement, adopt, upgrade, or improve technology to support the project	2		San Francisco
	Increase referral coordination resources for primary care and medical specialty clinics by developing and implementing bi-directional communication functionality in the system		4	San Mateo
	Measure proportion of specialty referrals initiated and processed through the system		4	San Francisco
	Measure wait times for specialty care appointments		4	San Mateo
			3	UC San Francisco
			0	San Francisco

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Reduce the rate of inappropriate or rejected referrals / or Increase the rate of appropriate or accepted referrals		3	Riverside
	Train or education personnel and/or referring providers on referral guidelines	2		Riverside
	TOTAL	**19**	**21**	
Patient Care Navigation Program	Establish/expand a health care navigation program to provide support to patient populations who are at most risk of receiving disconnected and fragmented care	1		Kern
		3		UC Irvine
	Implement a case management program	1		Kern
	Increase patient engagement, such as through patient education, self-management support, improved patient-provider communication techniques, and/or coordination with community resources	1		Kern
		3		UC Irvine
	Measure ED visits and/or avoidable hospitalizations for patients enrolled in the navigator program		2	Kern
			1	UC Irvine
	Provide care management/navigation services to targeted patients (e.g., high utilizers of the ED and/or inpatient services)	2		Kern
		3		UC Irvine
	Provide navigation services to patients using the ED for episodic care	2		Kern
	Other - documentation of improvement	1		UC Irvine
	Other - establish utilization patterns	1		UC Irvine
	Other - staff training	3		UC Irvine
	TOTAL	**21**	**3**	
Process Improvement	Develop early-warning systems within the EHR to act upon identified problems	4		UC Davis
	Implement a Lean/Kaizen rapid improvement project	4		San Mateo
		2		UC Davis
	Implement a program to improve efficiencies	1		San Mateo
	Number of process improvement champions		2	Natividad

Project	Selected Attachment Q Measure	Process	Improvement	DPH
			1	San Mateo
	Number of trainings conducted by designated trainee/process improvement champions		5	Natividad
			1	UC Davis
	Target specific workflows, processes and/or clinical areas (e.g., the OR) to improve	4		Natividad
	Train providers/staff in process improvement	1		Natividad
		3		San Mateo
		6		UC Davis
	TOTAL	**25**	**9**	
Flow in the ED/Rapid Medical Evaluation	Decrease in the number of patients who leave the ER without being seen		4	UC San Diego
	Establish a baseline, in order to measure improvement over self		2	UC San Diego
	Implement, adopt, upgrade, or improve technology to support the project	1		UC San Diego
	Redesign the process in order to be more effective, incorporating learnings (e.g., in DY 9, incorporate at least one new element into the process based on the assessment, using the process modification process to include the specificity needed as new learnings are discovered in DY 8)	1		UC San Diego
	Reduce ER wait time / Reduce overall ED cycle time for admitted patients		4	Alameda
			4	UC San Diego
	Undertake an initiative to dissect and measure the components of the overall cycle time	1		Alameda
	TOTAL	**3**	**14**	
Palliative Care	Among patients who died in the hospital, increase the proportion of those who received a palliative care consult		3	UC San Diego

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Develop a hospital-specific business case for palliative care and conduct planning activities necessary as a precursor to implementing a palliative care program	1		Ventura
	Establish a baseline, in order to measure improvement over self	2		UC San Diego
	Implement a patient/family experience survey regarding the quality of care, pain and symptom management, and degree of patient/family centeredness in care and improve scores over time		1	Ventura
	Implement/expand a palliative care program	3		Ventura
	Number of palliative care consults	4		UC San Diego
		1		Ventura
	Redesign the process in order to be more effective, incorporating learnings (e.g., in DY 9, incorporate at least one new element into the process based on the assessment, using the process modification process to include the specificity needed as new learnings are discovered in DY 8)	1		UC San Diego
	TOTAL	**12**	**4**	
Medication Management	Conduct a needs/gap analysis, in order to inform the establishment or expansion of services/programs (e.g., in DY6, conduct a gap analysis of high-impact specialty services to identify those in most demand by the local community in order to expand specialty care capacity targeted to those specialties most needed by patients)	2		Contra Costa
	Develop criteria and identify targeted patient populations	1		UC San Diego
	Develop evidence-based decision rules that will be the clinical content underpinning each point of care decision support message	1		UC Los Angeles

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Establish a baseline, in order to measure improvement over self	1		Contra Costa
	Implement a medication refill process	2		Contra Costa
	Implement a program to improve continuity of medication management from acute care to the ambulatory setting	2		UC Davis
		1		UC San Diego
	Implement bedside barcode scanning	3		UC Davis
	Implement safeguards in EHR to ensure compliance with Black Box Warnings	1		UC Davis
	Implement smart infusion pumps	2		UC Davis
	Implement/expand a medication management program and/or system	1		UC Davis
		1		UC Los Angeles
		1		UC San Diego
	Increase medication adherence for targeted patients/with a targeted disease		3	Contra Costa
	Increase number or percent of identified patients that have follow-up		1	UC Davis
	Increase number or percent of patients that are covered by clinical pharmacists		3	UC Davis
			2	UC Los Angeles
	Manage medications for targeted patients		3	UC San Diego
	Roll out the point of care decision support system	3		UC Los Angeles
	TOTAL	**22**	**12**	
Care Transitions	Begin monthly data collection and reporting for chosen metrics. If testing an intervention on a pilot unit, collect and report on monthly data for all discharges from pilot unit		1	Alameda
			3	UC San Francisco
	Conduct an assessment and establish linkages with community-based organizations to create a support network for targeted patients post-discharge	1		UC San Diego
		1		UC San Francisco

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Create a patient stratification system designed to identify patients requiring care management, and to accommodate a quicker allocation of resources to those patients with high-risk health care needs	1		UC San Diego
	Demonstrate the integration of information systems by stratifying patient demographic data by process, clinical and/or quality data		1	UC Los Angeles
	Designate/hire personnel or teams to support and/or manage the project/intervention	1		UC San Diego
	Develop a staffing and implementation plan to accomplish the goals/objectives of the care transitions program	1		UC Los Angeles
		1		UC San Diego
		1		UC San Francisco
	Develop protocols for effectively communicating with patients and families during and post-discharge to improve adherence to discharge and follow-up care instructions	1		Alameda
		2		UC Los Angeles
		1		UC San Diego
		1		UC San Francisco
	Establish a baseline, in order to measure improvement over self	1		UC San Diego
	Establish a process for hospital-based case managers to follow up with identified patients hospitalized related to the top chronic conditions to provide standardized discharge instructions and patient education, which address activity, diet, medications, follow-up care, weight, and worsening symptoms; and, where appropriate, additional patient education and/or coaching as identified during discharge	1		Alameda
		1		UC San Diego

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Identify the top chronic conditions (e.g., heart attack, heart failure and pneumonia) and other patient characteristics (e.g., medical home assignment and demographics such as age) or socioeconomic factors (e.g., homelessness) that are common causes of avoidable readmissions		1	UC San Diego
	Implement a case management related registry functionality	3		UC Davis
	Implement standard care transition processes in specified patient populations		2	UC Los Angeles
			2	UC San Diego
			2	UC San Francisco
	Improve discharge summary timeliness.	3		UC San Diego
	Link program enrollees to primary care services which utilize the medical home model		3	UC San Diego
	Pilot a new process and/or program	1		Alameda
		1		UC San Diego
	Redesign the process in order to be more effective, incorporating learnings (e.g., in DY 9, incorporate at least one new element into the process based on the assessment, using the process modification process to include the specificity needed as new learnings are discovered in DY 8)	1		UC San Francisco
	Share learnings from implementing process improvements, such as through presentations, reporting, etc. (e.g., in DY 8, present the results and findings from the redesign work to at least two peer organizations and/or convenings of peer organizations, as documented by the presentation delivered and the agenda)	1		UC San Diego
		1		UC San Francisco
	Train/designate more ED case managers	3		UC Davis

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	X% of patients in defined population receives standardized care according to the approved clinical protocols and care delivery model in X% of medical encounters		3	UC Los Angeles
	TOTAL	**29**	**18**	
Real-Time Hospital-Acquired Infections (HAIs) System	Automated physician processes to confirm daily necessity of central lines and urinary catheters, with automated prompts for prevention processes when device dwell time exceeds the institutional median dwell time for that device in that particular patient population	1		UC Irvine
	Design automated reporting tool using EMR fields	1		UC Irvine
	Develop baseline measures of central line dwell time for risk stratified patient populations with central lines	1		UC Irvine
	Develop semi-automated detection of targeted HAI by flagging charts with select criteria / Develop semi-automated detection of CLABSI due to skin commensals by flagging charts with select NHSN criteria	3		UC San Diego
		1		UC Irvine
	Development of electronic system for real time education on HAI prevention to clinicians	1		UC San Diego
	Development of electronic system for real time feedback of HAI events to clinicians	1		UC San Diego
	Implement Clinical Documentation Specialist review for identified charts	1		UC Irvine
	Implement daily chlorhexidine bathing (CHG) of patients with central vascular catheters (CVCs)		2	UC Irvine
				UC Irvine
	Implement prompts for prevention and risk identification / Develop daily nursing prompts to identify presence of any medical device	1		UC Irvine
		2		UC San Diego
	Initiate chlorhexidine bathing in non-ICU adult patients with medical devices (such as central lines, urinary catheters)	1		UC San Diego

Project	Selected Attachment Q Measure	Process	Improvement	DPH
	Measure impact of automated real-time system on HAI rates		2	UC San Diego
	TOTAL	**14**	**4**	
	GRAND TOTALS	**445**	**260**	

Source: UCLA analysis of designated public hospital annual reports DY 6-10.

Appendix D: Quantitative Improvement Measure Achievement, Categories 1-2

Exhibit 147: Quantitative Improvement Measures, Category 1, DY 9

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
Primary Care Capacity	Increase advice line utilization	Alameda	210	436	108%	*263*	25%	66%	1
	Increase primary care clinic volume	Alameda							
		Newark Clinic	23,483	24,556	5%	*27,005*	15%	0%	0.25
		Oakland Clinics	118,354	133,914	13%	*132,556*	12%	1%	1
		Arrowhead	70,358	79,778	13%	*77,394*	10%	3%	1
		Contra Costa	136,788	148,362	8%	138,588	1%	7%	1
		Riverside Family Care Clinic	20,662	36,657	77%	29,662	44%	24%	1
		San Joaquin	47,313	60,462	28%	*52,044*	10%	16%	1
		San Francisco	--	14,730	--	10,973	--	34%	1
		UC Irvine Senior Center	1,508	1,746	16%	*1,734*	15%	1%	1
		UC San Francisco	96,010	108,232	13%	103,508	8%	5%	1
	Third next available appointment (number of days)	Contra Costa Antioch Health Center	13.88	8	--	12.5		-36%	1
		Kern	--	6	--	30		-80%	1
Workforce Training	Increase primary care training and/or	Arrowhead	18	22	22%	20	11%	10%	1
		Riverside	27	35	30%	31	15%	13%	1
		UC Los Angeles	--	16	--	*13*	--	23%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
	rotations (number of residents)	Natividad	--	6	--	6	--	0%	1
		San Francisco	--	4	--	4	--	0%	1
	Increase scheduled continuity clinic sessions and/or trainee office visits	Contra Costa	8,904	12,277	38%	10,574	19%	16%	1
Disease Registry	Enter patient data into the registry (number of patients)	Arrowhead							
		Diabetes registry	--	4,259	--	1,500	--	184%	1
		CHF registry	--	585	--	60	--	875%	1
		Kern (diabetes registry)	--	1,491	--	*1,474*	--	1%	1
		Riverside					--		
		Diabetes registry	--	2,093	--	*1,736*	--	21%	1
		Congestive Heart Failure registry	--	378	--	*227*	--	67%	1
		UC San Francisco (pediatric immunization)	--	6,952	--	*6,185*	--	12%	1
	Enter patient data into the registry for at least 6 data categories	Santa Clara	--	6	--	6	--	0%	1
	Expansion of chronic disease management program (number of diabetes patients enrolled in program)	UC Davis	--	254	--	*169*	--	50%	1
	Spread registry functionality throughout system (number of sites with	Santa Clara	--	6	--	6	--	0%	1
		San Joaquin	--	5	--	*5*	--	0%	1
		UC San Francisco	--	6	--	6	--	0%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
	patient data in registry)								
	Spread registry functionality to more providers	UC San Diego	--	103	--	*81*	--	27%	1
Cultural Competency	Qualified health care interpreter encounters per month	Contra Costa	--	7,490	--	3,400		120%	1
		Kern	1,533	2,230	45%	*1,763*	15%	26%	1
		Natividad	1,067	1,786	67%	*1,440*	35%	24%	1
		UC San Diego	1,053	2,459	134%	*1,264*	20%	95%	1
		Ventura							
		Ventura County Medical Center	31.2	85	172%	*37.4*	20%	126%	1
		Santa Paula Hospital	1.9	5.8	202%	*2.3*	20%	152%	1
REAL Data	Percent of patients registered with designated REAL data fields	Contra Costa	--	912,942	--	*697,967*	--	31%	1
		San Mateo	--	58,393	99.9%	*46,752*	--	25%	1
		UC Davis	--	105,095	--	*93,542*	70%	12%	1
Urgent Medical Advice	Increase in the number of patients that accessed the nurse advice line by 80% over baseline	Kern	81	146	80%	*146*	80%	0%	1
	Increase the number of patients that called the nurse advice line with intent to go to the ED for non-emergent conditions who were redirected	Kern	1	--	26%	**--**	25%	4%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
	to non-ED resources (number of patients)								
Telemedicine	Increase e-consultation volume	UC San Diego	111	591	432%	*122*	10%	384%	1
Specialty Care Capacity	Increase outpatient clinic volume	San Francisco	2,610	3,619	39%	*2,741*	5%	32%	1
	Increase specialty care clinic volume	Alameda							
		Optometry	2,899	5,617	94%	*4,638*	60%	21%	1
		Cardiology	3,281	4,831	47%	*4,757*	45%	2%	1
		Dermatology	1,087	2,902	167%	*2,554*	135%	14%	1
		Orthopedic	8,569	15,502	81%	*14,567*	70%	6%	1
	Number of patient referrals to the CHF clinic per week	Riverside	8	23.2	190%	23	188%	1%	1
	Reduce wait time (number of days)	Arrowhead							
		ENT	130	43	-67%	*117*	-10%	63%	1
		Gastroenterology	226	198	-12%	*203*	-10%	3%	1
		Hepatology	123	47	-62%	*111*	-10%	58%	1
		Urology	104	63	-39%	*94*	-10%	33%	1

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 9.

Notes: Target values in italics were not explicitly stated in designated public hospital (DPH) DY 9 annual reports. They were extrapolated by UCLA based on information available in the reports. Improvement measures not included in the table were either missing data in the annual reports or were not explicitly numeric in nature. The quality data, risk stratification, and performance improvement projects did not have any numerical and quantifiable improvement milestones with sufficient data reported to be included. Annual Milestone Achievement Value is the value listed by DPHs in their DY 9 annual reports.

Exhibit 148: Quantitative Improvement Measures, Category 1, DY 10

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
Primary Care Capacity	Increase advice line utilization	San Francisco	16,268	18,655	14.67%	17,081	16%	9%	1
	Increase primary care clinic volume	Alameda							
		Newark Clinic	23,483	24,467	4.19%	*27,240.28*	16%	0%	0
		Oakland Clinics	118,354	137,598	16.26%	*142,024.8*	20%	0%	0.75
		Arrowhead	70,358	81,912	16.42%	*80,911.7*	15%	1%	1
		Contra Costa	136,788	182,952	33.75%	142,788	4%	28%	1
		Riverside Family Care Clinic	20,662	34,877	68.80%	32,622	58%	7%	1
		San Joaquin	47,313	75,983	60.60%	61,507	30%	24%	1
		San Francisco	5,018	10,528	109.80%	10,973	119%	0%	0.75
		UC Irvine Senior Center	1,508	1,717	13.86%	1,810	20%	0%	0.5
		UC San Francisco	96,010	57,267	-40.35%	106,010	10%	0%	0.5
	Increase urgent appointments scheduled through nurse advice line	San Francisco	--	5,651	--	*4,773*	--	18%	1
	Third next available appointment (number of days)	Contra Costa	13.88	6.67	-51.95%	11.9	-14%	-44%	1
Workforce Training	Increase primary care training and/or rotations (number of residents)	Arrowhead							
		internal medicine	22	24	--	24	--	0%	1
		family medicine	36	38	--	38	--	0%	1
		Riverside	27	36	33.33%	29	7%	24%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
		Natividad (Touro University Medical Students)	--	10	--	6	--	67%	1
		San Francisco	--	4	--	4	--	0%	1
		UC Irvine Senior Center	--	102	--	102	--	0%	1
		UC Los Angeles	--	13	--	*11*	--	18%	1
	Increase scheduled continuity clinic sessions and/or trainee office visits	Contra Costa	8,904	12,891	44.78%	12,424	40%	4%	1
Disease Registry	Enter patient data into the registry (number of patients)	Arrowhead							
		Diabetes registry	--	4,477	--	2,000	--	124%	1
		CHF registry	--	598	--	120	--	398%	1
		Kern (diabetes registry)	--	1,712	--	*1,678*	--	2%	1
		Riverside							
		Congestive Heart Failure registry	--	470	--	*458*	--	3%	1
		Diabetes registry	--	1,769	--	*1,811*	--	0%	0.75
		UC San Francisco (pediatric immunization)	--	8,009	--	*6,195*	--	29%	1
	Expansion of chronic disease management program (number of diabetes patients enrolled in program)	UC Davis	--	374	--	*171*	--	119%	1
		San Joaquin	--	6	--	6	--	0%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
	Spread registry functionality throughout system (number of sites with patient data in registry)	UC San Francisco	--	3	--	3	--	0%	1
	Use population health registry for patient outreach activities in all primary care clinics (number of clinics)	Alameda	--	4	--	4	--	0%	1
	Decrease the number of patients who have not had age- and gender-specific preventative care delivered	Los Angeles	--	82,820	--	*90,777*	--	9%	1
	Spread registry functionality to more providers	UC San Diego	--	115	--	*111*	--	4%	1
Cultural Competency	Qualified health care interpreter encounters per month	Contra Costa	--	8450	--	3500	--	141%	1
		Kern	1,533	2307	50%	*1839.6*	20%	25%	1
		Natividad	1,067	3471	225%	*1,493.80*	40%	132%	1
		UC San Diego	1,053	3369	220%	1369	30%	146%	1
		Ventura	31.2	50.25	61%	37.44	30%	34%	1
REAL Data	Percent of patients registered with designated REAL data fields	Contra Costa	--	115784	--	*100432.8*		15%	1
		San Mateo	--	58592	--	*52738.2*	--	11%	1
		UC Davis	--	125855	--	*117459.9*	--	7%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from Baseline		
Urgent Medical Advice	Increase the number of patients that called the nurse advice line with intent to go to the ED for non-emergent conditions who were redirected to non-ED resources (number of patients)	Kern	--	--	29.77%	--	25%	19%	1
Telemedicine	Increase e-consultation volume	UC San Diego	111	513	362.16%	133	20%	286%	1
Specialty Care Capacity	Increase outpatient clinic volume	San Francisco	62,893	68670	9.19%	*66038*	5%	4%	1
	Increase specialty care clinic volume	Alameda							0.75
		Optometry	2,899	6826	135.46%	*5218*	80%	31%	
		Cardiology	3,281	4,039	23.10%	4,922	50%	0%	
		Dermatology	1,087	3,642	235.05%	2,554	135%	43%	
		Orthopedic	8,569	18,322	113.82%	15,424	80%	19%	
	Number of patient referrals to the CHF clinic per week	Riverside	8	24.5	206.25%	28	80%	0%	0.75
	Reduce wait time (number of days)	Arrowhead							1
		ENT	130	37	-71.54%	111	-15%	67%	
		GI & Gastroenterology	226	156	-30.97%	192	-15%	19%	
		Hepatology	123	55	-55.28%	105	-15%	48%	
		Urology	104	53	-49.04%	88	-15%	40%	

Source: UCLA analysis of designated public hospital (DPH) annual reports from second semi-annual reports from DY 10.
Notes: Target values in italics were not explicitly stated in designated public hospital (DPH) DY 9 annual reports. They were extrapolated by UCLA based on information available in the reports. Improvement measures not included in the table were either missing data in the annual reports or were not explicitly numeric in nature. The quality data, risk stratification, and performance improvement projects did not have any numerical and quantifiable improvement milestones with sufficient data reported to be included. Annual Milestone Achievement Value is the value listed by DPHs in their annual reports.

Exhibit 149: Quantitative Improvement Measures, Category 2, DY 9

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
Medical Homes	Medical home assignment and appointment	Alameda (Emergency department and specialty clinic patients)	--	24%	--	*25%*	--	--	--
	Patients contacted for their first patient visit within 60-120 days (number of patients)	Arrowhead	--	22,562	--	*16,328*	--	38%	1
	Patients assigned primary care provider (number of patients)	Contra Costa	--	688,167	--	*659,794*	--	4%	1
	Contact patients needing selected preventive services	Kern	--	10,955	--	*7,718*	--	42%	1
		Los Angeles	--	17,420	--	*8,687*	--	101%	1
	Increase number of patients with primary care visits scheduled with their medical home team	Riverside	--	5,492	--	*3,310*	--	66%	1
	Increase number of high risk patients assigned to care manager team	San Francisco	--	154	--	100	--	54%	1
		UC San Francisco	--	247	--	150	--	65%	1
		San Joaquin	--	11,677	--	750	--	1457%	1
		UC Irvine	--	1,823	--	*1,571*	--	16%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
	Increase number of patients assigned to medical home	UC San Francisco (SPD patients)	--	75	--	75	--	--	1
	Increase number of patients assigned to primary care team	San Mateo	--	31,754	--	*24,989*	--	27%	1
Chronic Care Management	Improve the percentage of patients with self-management goals	Arrowhead	--	3,493	--	*2,559*	--	36%	1
		Los Angeles	--	20,454	--	*11,722*	--	74%	1
		Riverside	--	1,547	--	*1,047*	--	48%	1
		Ventura	--	494	--	*267*	--	85%	1
	Improve blood pressure control (number of patients with BP< 130/90)	Los Angeles	--	2,425	--	*2,096*	--	16%	1
Primary Care Redesign	Average visit cycle time (in minutes)	Arrowhead	72	52	-28%	45	-38%	--	0.75
		Kern	97.25	54.91	-44%	60	-38%	-8%	1
	Reduce patient appointment no-show rates	Arrowhead	--	27,513	--	*22,483*	--	--	0.75
		Kern	--	2,028	--	*2,479*	--	-18%	1
		San Joaquin	--	10,106	--	*10,585*	--	-5%	1
		San Mateo	--	12%	--	10%	--	--	0
	Increase Family Care Clinic productivity (visits per clinic session)	Riverside	6.75	7.5	11%	7.43	10%	1%	1
	Increase number of patients enrolled in EHR	UC San Diego	--	16582	--	*11,260*	--	47%	1

Project									
Patient Experience	Improve the overall quality of care Percent Excellent patient satisfaction score	Natividad (Emergency Department)	40%	51%	27%	45%	13%	13%	1
	Improve patient reported satisfaction score on selected questions	UC Irvine							
		Internal Medicine	92%	100%	8%	94%	2%	6%	1
		Urology	44%	62%	41%	46%	5%	35%	1
Physical and Behavioral Health Care Integration	Increase depression and/or substance abuse screening	Contra Costa	--	581	--	*331*	--	76%	1
	Increase depression screening for diabetic patients using PHQ-9	Los Angeles	--	13,239	--	*8,917*	--	48%	1
		San Mateo	--	780	--	*780*	--	--	1
		Santa Clara	--	4,042	--	*2,514*	--	61%	1
	Assign medical home to patients discharged from psychiatric unit	Kern	--	282	--	*251*	--	12%	1
	Increase scheduled visits to behavioral health professional	Kern (patients with behavioral health need)	--	1,281	--	*1,015*	--	26%	1
		San Francisco (patients with depression)	--	1,788	--	*1,754*	--	2%	1
	Timely initial behavioral health visit wait times	Los Angeles	--	923	--	*915*	--	1%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
	Expand population of patients who receive integrated behavioral health services	Santa Clara	--	314	--	1,000	--	--	0.3
Specialty Care Access/Redesign Referral Process	Increase accepted referrals	Riverside	--	32,950	--	*32,129*	--	3%	1
	eReferrals reviewed and responded to within 3 days	San Francisco	--	91.60%	--	75%	--	22%	1
	referred patients evaluated within 30 days	San Mateo	--	5470	--	*5957*	--	--	0.75
	Increase number of specialty clinics with e-referral program	UC San Francisco	--	3	--	2	--	50%	1
	Measure wait times for specialty care appointments in two additional clinics	UC San Francisco	--	6	--	2	--	200%	1
Patient Care Navigation Program	Reduce ED Visits and avoidable IP Admissions among care managed patients	Kern	952	465	-51%	*476*	*-50%*	2%	1
	Reduce median length of stay for ED patients	Alameda (low acuity patients)	--	87 min	--	*199 min*	--	-45%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
Flow in the ED/Rapid Medical Evaluation		Alameda (high acuity patients)	--	9.28 hrs	--	*9.44 hrs*	--	-2%	1
	Reduce number of patients who left ED without being seen	UC San Diego	--	1,124	--	*1,904*	--	-41%	1
	Reduce overall ED wait time for admitted patients	UC San Diego	8.4 hrs	10.9 hrs	30%	*7.14 hrs*	-15%	-15%	0
Palliative Care	Increase in-hospital deaths who had a palliative care consult	UC San Diego	--	173	--	*155*	--	12%	1
Medication Management	Adherence to the medication refill process	Contra Costa (first medication refill clinic)	--	37	--	*37*		--	1
	Provide clinical pharmacist services	UC Davis							
		COPD, pneumonia, and AMI patients	--	512	--	*424*		21%	1
		Heart failure and warfarin patients	--	1,884	--	*1751*		8%	1
	Increase medication management interventions (number of patients)	UC San Diego	244	806	230%	*732*	*200%*	10%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
Care Transitions Programs	Number of patients who receive receiving discharge intervention and enhanced post-hospitalization management	UC Los Angeles	--	276	--	*278*	--	--	1
	Medical/surgical inpatients assigned to a medical home or PCP	UC San Diego	--	12,913	--	*13,319*	--	--	0.75
Real-Time Hospital-Acquired Infections (HAIs) System	Increase number of patients with CVCs receiving chlorhexidine bathing	UC Irvine	--	44	--	*41*	--	7%	1

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 9.
Note: Target values in italics were not explicitly stated in DPH DY 9 annual reports. They were extrapolated by UCLA based on information available in the reports; improvement measures not included in the table were either missing data in the annual reports or were not explicitly numeric in nature; Annual Milestone Achievement Value is the value listed by DPHs in their annual reports.

Exhibit 150: Quantitative Improvement Measures, Category 2, DY 10

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
Medical Homes	Medical home assignment and appointment	Alameda (Emergency department and specialty clinic patients)	--	844	--	*1,635*	--	--	0.5
	Patients contacted for their first patient visit within 60-120 days (number of patients)	Arrowhead	--	24,933	--	*19,946*	--	25%	1
	Patients assigned primary care provider (number of patients)	Contra Costa (Full Scope Medi-Cal and Low Income Health Plan patients)	--	87,298	--	*83,263*	--	5%	1
	Contact patients needing selected preventive services	Kern	--	15,447	--	*11,720*	--	32%	1
		Los Angeles	--	45,993	--	*28,508*	--	61%	1
	Increase number of patients with primary care visits scheduled with their medical home team	Riverside	--	4676	--	*3,502*	--	34%	1
	Increase number of high risk patients	San Francisco	--	226	--	150	--	51%	1
		UC San Francisco	--	441	--	250	--	76%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
	assigned to care manager team								
	Increase number of patients assigned to medical home/primary care team	UC Davis	--	83,592	--	*35,293*	--	137%	1
		UC Irvine	--	1,812	--	*1,669*	--	9%	1
		UC San Francisco (SPD patients)	--	1,383	--	50	--	2666%	1
	Increase number of patients assigned to primary care team	San Mateo	--	32,424	--	*29,963*	--	8%	1
	Increase utilization rate of diabetes risk reduction bundle	Los Angeles	--	20,006	--	*20,158*	--	--	1
	Primary care patients managed through registries	San Francisco							
		colorectal cancer patients	--	10,235	--	1,750	--	485%	1
		diabetes patients	--	6,925	--	1,200	--	477%	1
		UC San Francisco (colorectal cancer and diabetes patients)	--	3,500	--	3,500	--	--	1
Chronic Care Management	Improve the percentage of patients with self-management goals	Arrowhead (CHF and diabetes patients)	--	4,611	--	*3,532*	--	31%	1
		Riverside	--	1,035	--	*811*	--	28%	1
Primary Care Redesign	Average visit cycle time (in minutes)	Arrowhead	72	58.09	-19%	45	-38%	--	0.75
		Kern	97.25	57	-41%	60	-38%	5%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
	Reduce patient appointment no-show rates	Arrowhead	--	23,333	--	*16,281*	--	--	0.75
		San Joaquin	--	298	--	*315*		5%	1
		San Mateo	--	11.06%	--	10%	--	--	0.25
	Increase Family Care Clinic productivity (visits per clinic session)	Riverside	6.75	7.4	10%	7.76	15%	--	0.5
	Increase number of patients enrolled in EHR	UC San Diego	--	19,042	--	12,300	--	55%	1
	Reduce rate of all-cause E.D. visits (E.D. visits per 1,000 patient days)	UC Irvine	1.197	0.835	-30%	*1.017*	-15%	18%	1
Physical and Behavioral Health Care Integration	Increase depression and/or substance abuse screening	Contra Costa	--	1,162	--	*866*	--	34%	1
	Increase depression screening for diabetic patients using PHQ-9	San Mateo	--	1,948	--	1,908	--	2%	1
	Assign medical home to patients discharged from psychiatric unit	Kern	--	549	--	*367*	--	50%	1
	Increase scheduled visits to behavioral health professional	Kern (patients with behavioral health need)	--	995	--	*939*	--	6%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
		San Francisco (patients with depression)	--	3,402	--	*2,995*	--	14%	1
Patient Experience	Improve the overall quality of care Percent Excellent patient satisfaction score	Natividad (Obstetrics Department)	57%	53.75%	-6%	66.01%	15%	--	0
	Improve quarterly average "Nurse Communication" score on HCAHPS survey	Alameda	63.83%	69.93%	10%	71.49%	12%	--	0.75
Specialty Care Access/Redesign Referral Process	Increase accepted referrals	Riverside	--	34,032	--	*31,058*	--	10%	1
	eReferrals reviewed and responded to within 3 days	San Francisco	--	*26,600*	--	*22,400*	--	19%	1
	referred patients evaluated within 30 days	San Mateo	--	6,791	--	*6,339*	--	7%	1
	specialty referrals made using bidirectional electronic referral systems	San Mateo	--	9,055	--	*8,150*	--	11%	1
Flow in the ED/Rapid	Reduce median length of stay for ED patients	Alameda	--						1
		low acuity patients	199	81	-59%	*159.2*	-20%	49%	

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
Medical Evaluation	(LOS in minutes for low acuity patients and in hours for high acuity patients)	high acuity patients	11.8	9.03	-23%	*9.44*	-20%	4%	
	Reduce rate of patients who left ED without being seen (LWBS)	UC San Diego (Hilcrest Medical Center)	5.1	3.36	-34%	4.34	-15%	23%	1
	Reduce overall ED wait time for admitted patients (in hours)	UC San Diego	8.4	12.38	47%	7.14	-15%	--	0
Palliative Care	Increase in-hospital deaths who had a palliative care consult	UC San Diego	--	146	--	165	--	--	0
Medication Management	Adherence to the medication refill process	Contra Costa							
		first medication clinic	--	42	--	42	--	--	1
		second medication clinic	--	187	--	*138*	--	36%	1
	Provide clinical pharmacist services	UC Davis (Heart failure, warfarin. COPD, pneumonia, and AMI patients)	--	2,296	--	*2,205*	--	4%	1
	Increase medication management	UC San Diego	244	1,066	337%	976	300%	9%	1

Project	Metric	Hospital	Baseline	Achievement		Target		Percent Achievement Exceeding Target	Annual Milestone Achievement Value
				Value	Percent Change from Baseline	Value	Percent Change from baseline		
	interventions (number of patients)								
Care Transitions Programs	Patients receiving enhanced post-hospitalization management	UC Los Angeles (heart failure patients)	--	495	--	*485*	--	2%	1
	Medical/surgical inpatients assigned to a medical home or PCP	UC San Diego	--	13,805	--	*14,268*	--	--	0.75
Real-Time Hospital-Acquired Infections (HAIs) System	Improve rate for urinary catheter associated infections (CAUTI) in adult ICUs	UC San Diego (rate per 1000 catheter days)	7.42	2.55	-66%	7.05	-5%	64%	1

Source: UCLA analysis of designated public hospital (DPH) second semi-annual reports from DY 10.
Note: Target values in italics were not explicitly stated in DPH DY 10 second semi-annual reports. They were extrapolated by UCLA based on information available in the reports; improvement measures not included in the table were either missing data in the annual reports or were not explicitly numeric in nature; Annual Milestone Achievement Value is the value listed by DPHs in their second semi-annual reports.

Appendix E: Sources of Category 3 Data

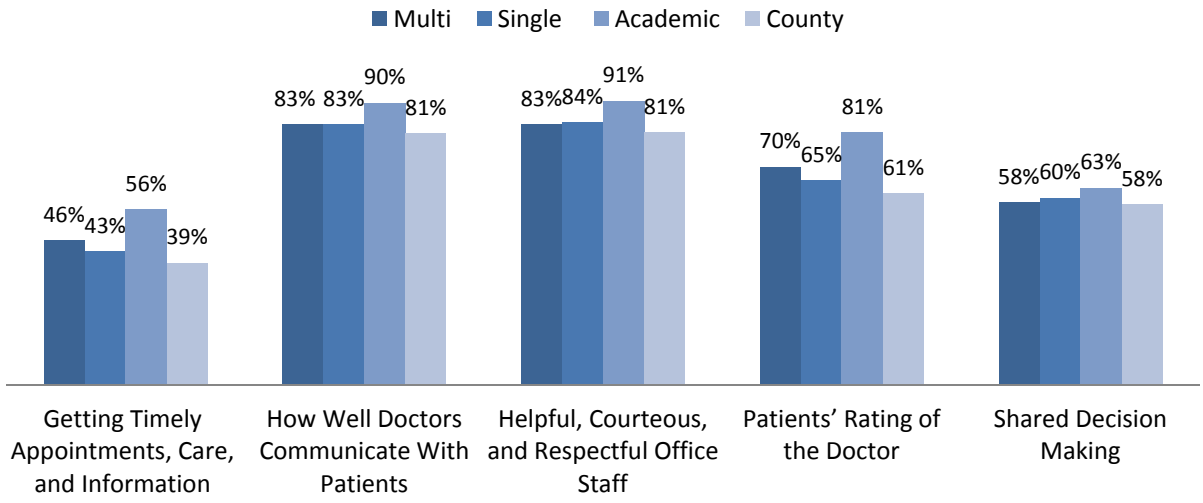
Exhibit 151: Source of Data for Category 3 Measures

	DY 8				DY9				DY10			
	Data warehouse	EHR	Manually (sample)	Registry	Data warehouse	EHR	Manually (sample)	Registry	Data warehouse	EHR	Manually (sample)	Registry
Care Coordination												
Diabetes, short-term complications	10	5	0	2	10	2	1	4	8	3	3	3
Uncontrolled Diabetes	10	5	0	2	10	2	1	4	8	3	3	3
Congestive Heart Failure	10	6	0	1	10	5	1	1	7	5	3	2
Chronic Obstructive Pulmonary Disease	9	6	1	1	10	5	1	1	7	5	3	2
Preventive Health												
Mammography Screening for Breast Cancer	8	4	3	2	9	3	2	3	8	4	4	1
Influenza Immunization	9	6	1	1	8	6	0	3	8	4	5	0
Child Weight Screening	6	7	4	0	8	6	2	1	6	6	4	1
Pediatrics Body Mass Index (BMI)	6	7	4	0	8	6	2	1	6	6	4	1
Tobacco Cessation	5	7	4	1	7	5	3	2	5	6	5	1
At-Risk Populations												
Diabetes Mellitus: Low Density Lipoprotein (LDL-C) Control (<100 mg/dl)	8	4	1	4	8	2	2	5	7	3	4	3
Diabetes Mellitus: Hemoglobin A1c Control (<8%)	6	5	2	4	8	1	2	6	7	3	4	3
30-Day Congestive Heart Failure Readmission Rate	9	6	2	0	10	5	2	0	7	6	4	0
Hypertension (HTN): Blood Pressure Control (<140/90 mmHg)	7	5	4	1	5	6	3	3	5	7	4	1
Pediatrics Asthma Care	4	5	6	2	7	6	3	1	6	6	4	1
Optimal Diabetes Care Composite	6	4	5	2	7	2	4	4	6	3	4	4

Source: UCLA analysis of designated public hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.
Note: EHR = electronic health record.

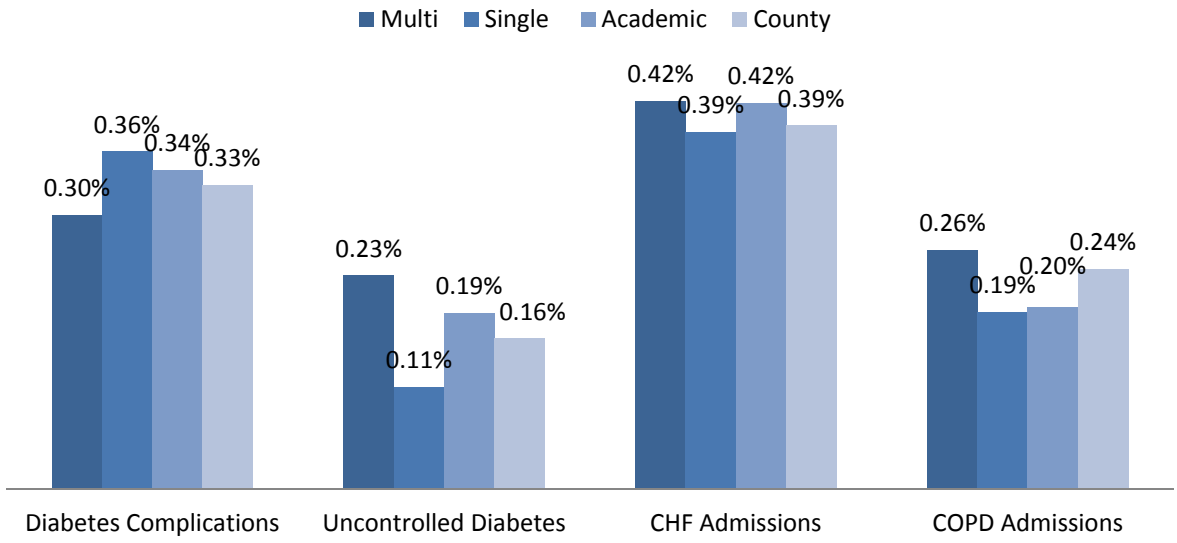
Appendix F: Category 3 Comparisons by Ownership and Multi-Site vs. Single-Site

Exhibit 152: Comparisons of Category 3 CG-CAHPS Survey Results, County-Owned vs. Academic-Owned and Multi-Site vs. Single-Site DPHs



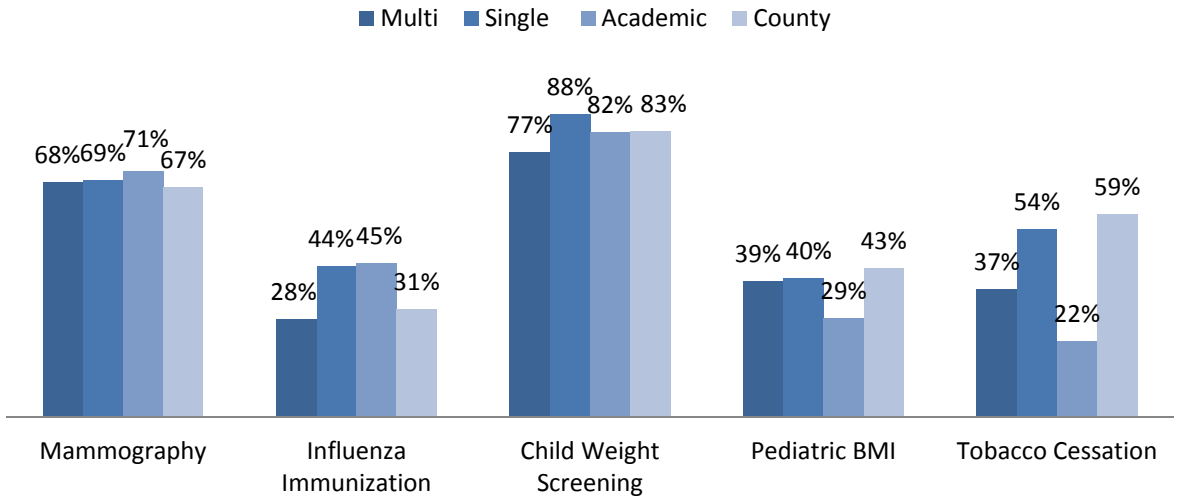
Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10.
Note: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems.

Exhibit 153: Comparisons of Category 3 Care Coordination Measures, County-Owned vs. Academic-Owned and Multi-Site vs. Single-Site DPHs



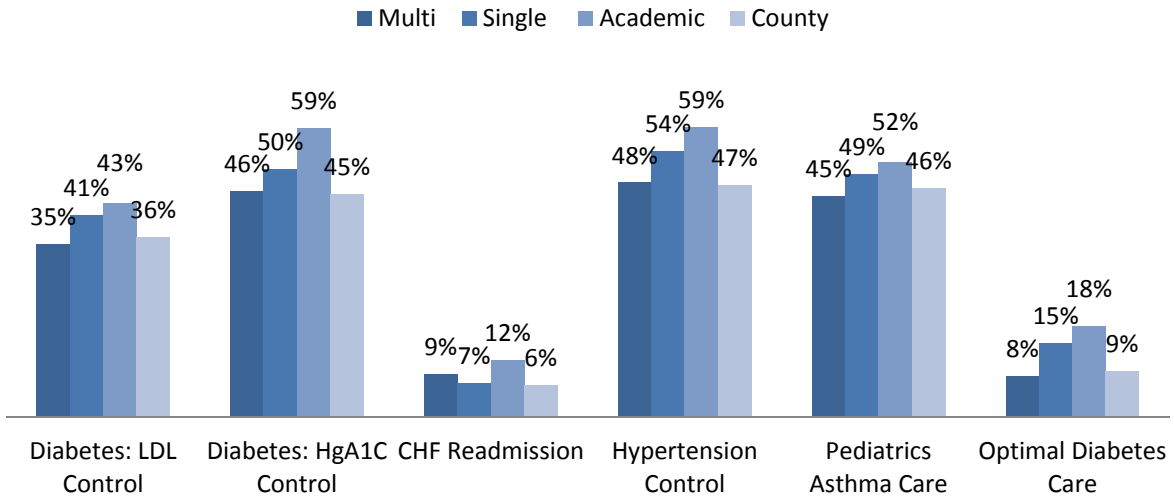
Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10.
Notes: Lower rates indicate better performance/outcomes for care coordination measures. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease.

Exhibit 154: Comparisons of Category 3 Preventive Health Measures, County-Owned vs. Academic-Owned and Multi-Site vs. Single-Site DPHs



Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10.
Note: Higher rates indicate better performance/outcomes for preventive health measures. BMI = body mass index.

Exhibit 155: Comparisons of Category 3 At-Risk Populations Measures, County-Owned vs. Academic-Owned and Multi-Site vs. Single-Site DPHs



Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10.
Note: Higher rates indicate better performance/outcomes for at-risk populations measures except for CHF readmissions, where higher rates indicate worse outcomes. CHF = congestive heart failure.

Appendix G: Category 3 Benchmark Measure Descriptions

Exhibit 156: Category 3 Benchmark Measure Descriptions

	DSRIP Measure		National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
Patient/Care Giver Experience	Getting Timely Appointments, Care and Information	Not specified	Composite of the following items: * Got appointment for urgent care as soon as needed * Got appointment for check-up or routine care as soon as needed * Got answer to phone question during regular office hours on same day * Got answer to phone question after hours as soon as needed * Saw provider within 15 minutes of appointment time	AHRQ's CG CAHPS	2014	62.0%
	How Well Doctors Communicate with Patients	Not specified	Composite of the following items: *Provider explained things clearly * Provider listened carefully * Provider knew important information about your medical history * Provider showed respect *Provider spent enough time	AHRQ's CG CAHPS	2014	84.0%
	Helpful, Courteous, and Respectful Office Staff	Not specified	Composite of the following items: * Office staff was helpful * Office staff was courteous and respectful	AHRQ's CG CAHPS	2014	80.0%
	Patients' Rating of the Doctor	Not specified	* Rating of provider	AHRQ's CG CAHPS	2014	80.0%

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
	Shared Decision making	Not specified	Composite of the following items: * Talk about reasons to take medication * Talk about reasons not to take medication * Ask what you though was best	AHRQ's CG CAHPS	2014	67.0%
Care Coordination	Diabetes Complications	**Numerator:** All inpatient discharges from the PHS system of patients age 18-75 years with ICD-9 principal diagnosis code for short-term complications (ketoacidosis, hyperosmolarity, coma) within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18-75 years with diabetes who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.	**Numerator:** Discharges, for patients ages 18 years and older, with a principal ICD-9-CM diagnosis code for diabetes short-term complications (ketoacidosis, hyperosmolarity, or coma). **Denominators:** Population ages 18 years and older in the metropolitan area or county with diabetes.	AHRQ's HCUP SID	2012	0.91% (905.9/100,000 population)

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
	Uncontrolled Diabetes	**Numerator:** All inpatient discharges from the PHS system of patients age 18-75 years with ICD-9 principal diagnosis code for uncontrolled diabetes, without mention of a short-term or long-term complication, within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18-75 years with diabetes who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year	**Numerator:** Discharges, for patients ages 18 years and older, with a principal ICD-9-CM diagnosis code for uncontrolled diabetes without mention of a short-term or long-term complication. **Denominator:** Population ages 18 years and older in metropolitan area or county with diabetes.	AHRQ's HCUP SID	2012	0.17% (169.7/100,000 population)
	CHF	**Numerator:** All inpatient discharges from the PHS system of patients age 18 years and older with ICD-9 principal diagnosis code for CHF within the demonstration year reporting period who have	**Numerator:** Discharges, for patients ages 18 years and older, with a principal ICD-9-CM diagnosis code for heart failure. **Denominator:** Population ages 18 years and older in metropolitan area or county.	AHRQ's HCUP SID	2012	0.32% (321.4/100,000 population)

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
		visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18 years and older who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.				
	COPD	**Numerator:** All inpatient discharges from the PHS system of patients age 18 years and older with ICD-9 principal diagnosis code for COPD within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18 years and older with COPD who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.	**Numerator:** Discharges, for patients ages 40 years and older, with either: 1) a principal ICD-9-CM diagnosis code for COPD (excluding acute bronchitis), 2) a principal ICD-9-CM diagnosis code for asthma, or 3) a principal ICD-9-CM diagnosis code for acute bronchitis and any secondary ICD-9-CM diagnosis codes for COPD (excluding acute bronchitis). **Denominator:** Population ages 40 years and older in metropolitan area or county.	AHRQ's HCUP SID	2012	0.50% (495.7/100,000 population)

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
Preventive Health	Mammography	**Numerator:** All female patients age 50-74 years who had a mammogram to screen for breast cancer within 24 months who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of female patients age 50-74 years who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.	The percentage of women 50–74 years of age who had at least one mammogram to screen for breast cancer in the past two years.	HEDIS	2013	57.9%
	Influenza Immunization	**Numerator:** all patients age 50 and older who received an influenza immunization during the flu season (September through February) of the current demonstration year who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** number of patients age 50 and older who have visited the PHS	The percentage of Medicare members 65 years of age and older who report receiving an influenza vaccination between July 1 of the measurement year and the date when the Medicare CAHPS survey was completed.	HEDIS	2012	71.7%[a]

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
		system primary care clinic(s) two or more times in the prior demonstration year.				
	Child Weight Screening	**Numerator:** All patients age 2-18 years with a calculated BMI documented in the medical record within the demonstration year reporting period **Denominator:** Number of patients age 2-18 years who have visited the PHS system primary care clinic(s) within the current demonstration year.	The percentage of children and adolescents 3–17 years of age who had an outpatient visit with a primary care practitioner or OB/GYN during the measurement year and who had evidence of BMI percentile documentation.	HEDIS	2013	56.9%
	Pediatric BMI	**Numerator:** All patients age 2-18 years with a BMI above the 85th percentile within the demonstration year reporting period **Denominator:** Number of patients age 2-18 years who have visited the PHS system primary care clinic(s) in the current	The percentage of obese children and adolescents age 2 - 19 years, where obesity is defined as a body mass index at or above the 95th percentile of the CDC sex-specific BMI-for-age growth charts from 2000.	NHANES	2011-2012	16.9%

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
		demonstration year with a BMI recorded.				
	Tobacco Cessation	**Numerator:** Number of patients 18 years and older who screened positive for tobacco use and who received or were referred to cessation counseling within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients 18 years and older who screened positive for tobacco use who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.	The percentage of adults 18 years of age and older who are current smokers or tobacco users who discussed or were provided cessation methods or strategies during the measurement year.	HEDIS	2013	41.9%

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
At-Risk Populations	Diabetes: LDL Control	**Numerator:** All patients age 18-75 years with diabetes mellitus who had most recent LDL-C level in control (less than 100 mg/dl) within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18-75 years with diabetes mellitus who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year	The percentage of adults age 18–75 years with type 1 or type 2 diabetes who had their LDL-C level in control (less than 100 mg/dl).	HEDIS	2013	33.9%
	Diabetes: Hemoglobin A1c Control	**Numerator:** All patients age 18-75 years with diabetes whose most recent hemoglobin A1c level is in control (< 8%) within the demonstration year reporting period who have visited the PHS primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of	The percentage of adults age 18–75 years with type 1 or type 2 diabetes who had their Hemoglobin A1c level in control (less than 8%).	HEDIS	2013	45.5%

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
		patients age 18-75 years with diabetes who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.				
	CHF Readmission	**Numerator:** All patients age 18 years and older who experience a readmission with an ICD-9-CM principal diagnosis for CHF or related conditions (within 30 days of discharge for an index admission with ICD-9 principal diagnosis code for CHF) within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18 years and older with CHF who have visited the PHS system primary care clinic(s) two or more time in the prior demonstration year and had an admission (related to CHF).	The ratio of the numerator and denominator are multiplied by the national unadjusted readmission rate to obtain the Hospital-level 30-day risk-standardized readmission rate (RSRR) for heart failure. **Numerator:** Predicted number of unplanned readmissions to any acute care hospital within 30 days of discharge from the initial heart failure hospitalization. **Denominator:** Expected number of readmissions for patients admitted for heart failure who are 65 years or older and are either Medicare Fee-For-Service or Veterans Health Administration beneficiaries hospitalized in non-federal or Department of Veterans Affairs (VA) facilities.	CMS	2012-2013	21.9%

DSRIP Measure			National Benchmark			
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
	Hypertension Control	**Numerator:** Number of patients age 18-75 years with a diagnosis of hypertension with the most recent blood pressure level (in clinic or with ambulatory pressure monitoring) in control (less than 140/90 mmHg) within the demonstration year reporting period who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year. **Denominator:** Number of patients age 18-75 years with a diagnosis of hypertension who have visited the PHS system primary care clinic(s) two or more times in the prior demonstration year.	The percentage of adults 18–85 years of age who had a diagnosis of hypertension and whose blood pressure was adequately controlled (<140/90) during the measurement year.	HEDIS	2013	56.5%
	Pediatric Asthma Care	**Numerator:** Number of patients age 5-18 with persistent asthma who were prescribed at least one controller medication for asthma therapy within the demonstration year reporting period who have	The percentage of children 5-18 years of age during the measurement year who were identified as having persistent asthma and who were appropriately prescribed asthma controller medication during the measurement year.	HEDIS	2013	90.2%[b] 86.9%[c]

DSRIP Measure				National Benchmark		
Domain	DSRIP Measure	Attachment Q Definition	Benchmark Definition	Source	Year	Benchmark
		visited the DPH system primary care clinic(s) two or more times in the past 12 months. **Denominator:** Number of patients age 5-18 with persistent asthma who have visited the DPH system primary care clinic(s) two or more times in the past 12 months.				

[a] HEDIS Medicare HMO average.
[b] Children ages 5-11.
[c] Children ages 12-18.
Sources: Agency for Healthcare Research and Quality Clinician and Group Consumer Assessment of Healthcare Providers and Systems Survey Database(77); Agency for Healthcare Research and Quality (AHRQ) Prevention Quality Indicator (PQI) individual measure technical specifications and benchmark data tables(79); National Committee for Quality Assurance (NCQA) State of Healthcare Quality Report, 2014(37); National Health and Nutrition Examination Survey (NHANES), 2011-2012(82); Medicare Hospital Quality Chartbook, 2014.(84)
Notes: CG-CAHPS = Clinician and Group Consumer Assessment of Healthcare Providers and Systems. HCUP = Healthcare Cost and Utilization Project. SID = State Inpatient Databases. DHCS = California Department of Health Care Services. HEDIS = Healthcare Effectiveness Data and Information Set. CHF = congestive heart failure. COPD = chronic obstructive pulmonary disease. BMI = body mass index. The optimal diabetes care composite measure was excluded because a national benchmark was not identified for the measure. CG-CAHPS benchmarks represent the percentage of all CG-CAHPS participants nationwide that selected the most positive response for the specified measure. All HEDIS measures are national averages for Medicaid HMO plans unless stated otherwise.

Appendix H: Category 3 Measure Definitions from Attachment Q

Exhibit 157: Category 3 Measure Definitions

Metric	Definition
Patient/Care Giver (CG) Experience	Each CG CAHPS theme includes a standard set of questions. The following CG CAHPS' themes will be reported on: a. Getting Timely Appointments, Care, and Information b. How Well Doctors Communicate With Patients c. Helpful, Courteous, and Respectful Office Staff d. Patients' Rating of the Doctor e. Shared Decision making
Diabetes, short-term complications	**Numerator:** All inpatient discharges from the DPH system of patients age 18 – 75 years with ICD-9-CM principal diagnosis code for short-term complications (ketoacidosis, hyperosmolarity, coma) within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 – 75 years with diabetes who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Uncontrolled Diabetes	**Numerator:** All inpatient discharges from the DPH system of patients age 18 – 75 years with ICD-9-CM principal diagnosis code for uncontrolled diabetes, without mention of a short-term or long-term complication within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 – 75 years with diabetes who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Congestive Heart Failure	**Numerator:** All inpatient discharges from the DPH system of patients age 18 years and older with ICD-9-CM principal diagnosis code for CHF within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months

Metric	Definition
	Denominator: Number of patients age 18 years and older who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Chronic Obstructive Pulmonary Disease	**Numerator:** All inpatient discharges from the DPH system of patients age 18 years and older with ICD-9-CM principal diagnosis code for COPD within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 years and older who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Mammography Screening for Breast Cancer	**Numerator:** All female patients age 50 – 74 years who had a mammogram to screen for breast cancer within 24 months who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of female patients age 50 – 74 years who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Influenza Immunization	**Numerator:** All patients age 50 and older who received an influenza immunization during the flu season (September through February) who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 50 and older who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Child Weight Screening	**Numerator:** All patients age 2 – 18 years with a calculated BMI documented in the medical record within the demonstration year reporting period. **Denominator:** Number of patients age 2 – 18 years who have visited the DPH system primary care clinic(s) within the current demonstration year.
Pediatrics Body Mass Index (BMI)	**Numerator:** All patients age 2 – 18 years with a BMI above the 85th percentile within the demonstration year reporting period

Metric	Definition
	Denominator: Number of patients age 2 – 18 years who have visited the DPH system primary care clinic(s) two or more times in the current demonstration year with a BMI recorded.
Tobacco Cessation	**Numerator:** Number of patients 18 years and older who screened positive for tobacco use and who received or were referred to cessation counseling within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients 18 years and older who screened positive for tobacco use who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Diabetes Mellitus: Low Density Lipoprotein (LDL-C) Control (<100 mg/dl)	**Numerator:** All patients age 18 – 75 years with diabetes mellitus who had most recent LDL-C level in control (less than 100 mg/dl) within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 – 75 years with diabetes mellitus who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Diabetes Mellitus: Hemoglobin A1c Control (<8%)	**Numerator:** All patients age 18 – 75 years with diabetes whose most recent hemoglobin A1c level is in control (<8%) within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 – 75 years with diabetes who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
30-Day Congestive Heart Failure Readmission Rate	**Numerator:** All patients age 18 years and older who experience a readmission with a ICD-9-CM principal diagnosis for CHF or related conditions (within 30 days of discharge for an index l admission with ICD-9-CM principal diagnosis code for CHF) within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months

Metric	Definition
	Denominator: Number of patients age 18 years and older with CHF who have visited the DPH system primary care clinic(s) two or more times in the past 12 months and had an admission
Hypertension (HTN): Blood Pressure Control (<140/90 mmHg)	**Numerator:** Number of patients age 18 – 75 years with a diagnosis of hypertension with the most recent blood pressure level (in clinic or with ambulatory blood pressure monitoring) in control (less than 140/90 mmHg) within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 18 – 75 years with a diagnosis of hypertension who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Pediatrics Asthma Care	**Numerator:** Number of patients age 5 – 18 with persistent asthma who were prescribed at least one controller medication for asthma therapy within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients age 5 – 18 with persistent asthma who have visited the DPH system primary care clinic(s) two or more times in the past 12 months
Optimal Diabetes Care Composite (Minnesota Community Measurement as adopted by the National Quality Forum)	**Numerator:** Number of patients ages 18 – 75 with a diagnosis of diabetes, who meet all the numerator targets of this composite measure within the demonstration year reporting period who have visited the DPH system primary care clinic(s) two or more times in the past 12 months **Denominator:** Number of patients ages 18 – 75 with a diagnosis of diabetes who have visited the DPH system primary care clinic(s) two or more times in the past 12 months

Source: DSRIP Metrics Attachment Q

Appendix I: Category 4 Bundle Descriptions

Category 4 measures were grouped into seven projects: severe sepsis detection and management, central line-associated bloodstream infection (CLABSI) prevention, surgical site infection (SSI) prevention, hospital-acquired pressure ulcer (HAPU) prevention, stroke management, venous thromboembolism (VTE) prevention and treatment, and falls with injury prevention. The single requirement for the SSI prevention, HAPU prevention, and falls prevention projects was to report prevalence in each project. Reporting requirements for the sepsis management, CLABSI prevention, stroke management, and VTE prevention projects each included the outcome and process measures described below.

The sepsis management project required DPHs to report sepsis mortality and a bundle of process measures that assessed compliance with the following items:

- Serum lactate measured;
- Blood cultures obtained prior to antibiotic administration;
- Improve time to broad-spectrum antibiotics: within 3 hours for ED admissions and 1 hour for non-ED ICU admissions;
- In the event of hypotension and/or lactate >4 mmol/L (36mg/dl): deliver an initial minimum of 20 ml/kg of crystalloid (or colloid equivalent) and apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) >65 mm Hg or equivalent.

The CLABSI prevention project required DPHs to report the overall rate of CLABSI in the DPH as well as the rate of CLABSI in the DPH's ICU, neonatal ICU, and acute care units. CLABSI prevention also measured adherence to the central line insertion practices (CLIP) bundle. CLIP adherence was measured by the following processes:

- Maximal sterile barriers (i.e., cap, mask, gown, gloves, drape);
- Hand hygiene;
- Appropriate skin preparation agent;
- Allowing the skin preparation agent to dry.(176)

DPHs that selected the stroke management project had to report the DPH's stroke mortality rate and several stroke management processes. Process measures included in the stroke management project assessed the rate of patients who received:

- Antithrombotic therapy upon discharge;
- Anticoagulation therapy for atrial fibrillation/flutter;
- Thrombolytic therapy;

- Antithrombotic therapy by end of hospital day 2;
- Statin medication when discharged;
- Stroke education;
- Rehabilitation assessment.

VTE prevention included process measures that assessed the rate of patients that received:

- VTE prophylaxis;
- Intensive care unit VTE prophylaxis;
- Anticoagulation overlap therapy;
- Unfractionated heparin with dosages/platelet count monitoring by protocol;
- VTE discharge instructions.

Appendix J: Category 4 DPH Specific Milestone Achievements

Exhibit 158: Trends in Sepsis Prevention by DPH, DY 8-10

	Sepsis Bundle Compliance Among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD 9 Codes: 785.52 and 995.92)			Sepsis Bundle Based Compliance on DPH Definition			Sepsis Mortality among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD 9 Codes: 785.52 and 995.92)			Sepsis Mortality Based on DPH Definition		
	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10
Alameda	86.7%	92.1%	72.3%	37.6%	68.8%	80.2%	28.2%	30.7%	22.6%	15.6%	15.7%	12.9%
Arrowhead	75.3%	90.3%	90.2%	-			29.9%	24.3%	-			
Contra Costa	57.6%	68.4%	71.0%	51.3%	72.7%	80.0%	10.6%	5.5%	5.0%	11.6%	8.4%	6.9%
Kern	62.6%	84.6%	74.8%	64.0%	83.2%	74.8%	19.3%	22.1%	15.7%	17.0%	18.6%	15.7%
Los Angeles	77.9%	82.8%	86.3%	72.2%	84.0%	85.2%		18.8%	14.1%		26.8%	23.8%
Natividad	52.7%	56.0%	47.6%	-	-		31.1%	25.3%	26.2%	-	-	
Riverside	14.1%	44.2%	38.5%	45.2%	44.2%	56.4%	22.0%	20.7%	15.1%	11.0%	22.9%	17.5%
Santa Clara	56.2%	58.3%	69.2%	55.3%	55.6%	70.0%	22.3%	15.3%	15.6%	10.9%	6.5%	6.6%
San Francisco	49.1%	53.7%	49.2%	47.0%	49.8%	51.4%	24.9%	9.4%	22.4%	11.9%	14.9%	9.0%
San Joaquin	71.4%	84.0%	80.7%	-	-		22.3%	23.2%	-	-	-	
San Mateo	80.0%	66.7%	91.7%	56.3%	65.6%	85.6%	47.0%	58.3%	29.2%	28.1%	26.6%	22.2%
UC Davis	37.9%	52.6%	58.6%	83.1%	84.6%	87.4%	14.8%	11.1%	10.7%	12.6%	14.8%	13.0%
UC Irvine	70.4%	76.9%	71.5%	-			22.0%	19.2%	18.2%	-		
UC Los Aneles	42.3%	36.9%	49.4%	-	-		35.5%	30.5%	24.4%	-	-	
US San Diego	50.0%	57.7%	61.6%	-			12.9%	13.9%	13.9%	-		
UC San Francisco	70.8%	83.3%	78.3%	-			24.1%	17.8%	19.4%	-		
Ventura	61.0%		-	57.2%	61.8%	69.9%	18.0%		-	13.0%	-	-
Average	59.9%	67.7%	73.4%	64.3%	70.1%	73.6%	21.0%	18.1%	17.0%	12.0%	14.4%	11.7%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Note: Sepsis bundle elements are defined in Appendix I. ICD-9 code 785.52 indicates septic shock and ICD-9 code 995.92 indicates severe sepsis; CMS = Centers for Medicare & Medicaid Services.

Exhibit 159: Trends in CLABSI Rates per 1,000 Central Line Days by DPH, DY 8-10

	Adherence Rate			Aggregate Rate			Intensive Care Unit Rate			Non Intensive Care Unit Rate			Neonatal Intensive Care Unit Rate		
	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10
Alameda	99.2%	99.6%	100.0%	0.66	0.49	0.78	0.54	0.27	0.60	0.73	0.62	0.90	0.00	0.00	0.00
Arrowhead	99.1%	98.3%	100.0%	1.20	0.63	1.08		0.20	1.07		0.61	1.09		3.00	2.50
Contra Costa	99.3%	100.0%	99.4%	0.45	0.18	0.49	0.00	0.00	0.87	0.67	0.35	0.34		0.00	
Kern	94.0%	99.6%	99.2%	0.28	0.46	0.20 -	0.96	0.45	0.26 -	0.00	0.66	0.00 -	0.00	0.00	0.47
Los Angeles	99.0%	98.5%	98.2%	0.91	0.89	1.16	1.20	0.25	1.43	0.80	0.77	1.02 -	0.44	1.19 -	0.75
Natividad	99.2%	99.4%	96.7%	1.95	0.60	0.37	3.22	1.32	0.00	0.00	0.00	0.77	0.00	0.00	0.00
Riverside	99.7%	99.8%	99.6%	0.71	0.53	0.36	0.93	0.17	0.20	0.68	0.49	0.50	0.00	3.56	0.00
Santa Clara	99.0%	98.5%	99.3%	0.53	0.65	1.15	0.46	0.44	1.21	0.26	0.72	1.09	3.07	2.47	1.61
San Francisco	99.1%	99.1%	97.3%	0.36	0.49	0.57	0.66	0.55	0.60	0.12	0.31	0.55	0.00	3.55	0.00
San Joaquin	96.9%	97.5%	99.5%	1.88	0.61	0.75	1.87	1.41	1.45	2.06	0.26	0.27	0.00	0.00	0.00
San Mateo	83.7%	97.8%	97.8%	0.67	0.00	0.00	0.00	0.00	0.00	1.04	0.00	0.00	-		
UC Davis	96.7%	97.6%	99.2%	1.01	1.02	0.59	1.63	1.79	0.98	0.62	0.70	0.29	1.55	0.34	1.76
UC Irvine	68.5%	76.3%	85.0%	1.02	0.59	0.35	1.41	0.91	0.30	0.70	0.21	0.34	-	1.04 -	0.65
UC Los Aneles	96.5%	98.8%	98.8%	1.80	1.57	1.86	1.75	1.64	2.03	1.82	1.61	1.80	2.00	0.73	1.22
US San Diego	98.4%	99.6%	98.7%	1.87	1.47	1.67	2.49	1.78	2.65	1.73	1.44	1.11 -	0.41	0.00	1.95
UC San Francisco	97.4%	99.6%	99.8%	1.55	0.15	1.29	1.51	0.70	1.34	1.53	0.12	1.28	2.01	1.96	1.11
Ventura	93.6%	95.9%	97.5%	1.43	1.65	1.16	2.42	1.65	2.56	0.99		0.85	1.59		0.00
Average	96.6%	98.0%	98.7%	1.27	0.53	1.17	1.47	1.14	1.38	1.16	0.38	1.06	1.23	1.08	1.06

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10. - -

Exhibit 160: Trends in Standardized Infection Ratios by DPH, DY 8-10

DPH	DY 8	DY 9	DY 10
Alameda (4)	0.99	0.92	0.71
Riverside (3)	0.41	0.37	0.51
San Francisco (5)	1.27	0.55	0.45
San Joaquin (4)	1.23	0.70	0.21
San Mateo (19)	0.79	0.78	0.00
Santa Clara (4)	1.17	2.07	2.37
UC Davis (8)	0.80	0.43	0.46
UC Los Angeles (3)	0.87	2.35	2.65
UC San Diego (6)	0.65	0.68	0.77
UC San Francisco (6)	0.87	0.64	0.50
Ventura (2)	2.32	2.08	2.51
AVERAGE	1.03	1.05	1.01

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Exhibit 161: Trends in HAPU Prevention by DPH, DY 8-10

	Prevalence Rate			AHRQ patient safety indicator #3 Rate	
	DY 8	DY 9	DY 10	DY 8	DY 9
Alameda	2.65%	1.46%	0.73%	2.65%	
Arrowhead	3.40%	1.64%	1.37%	3.40%	
Contra Costa	2.04%	1.06%	0.44%	2.04%	
Kern	2.68%	0.70%	1.02%	2.68%	
Los Angeles	0%	0.00%	0.00%	0%	0.00%
Santa Clara	0.58%		-	0.58% -	
UC Davis	0.78%	0.70%	0.54%	0.78% -	0.09%
UC Irvine	2.19%	1.66%		2.19% -	1.66%
UC Los Aneles	3.92%	2.72%	1.75%	3.92% -	
US San Diego	0.82%	1.19%	0.96%	0.82%	0.00%
UC San Francisco	1.35% -	1.20%	0.88%	1.35% -	0.06%
Ventura	1.56%	1.57%	1.08%	1.56%	0.91%
Average	2.19%	1.46% -	1.08%	1.83%	

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10. -

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Exhibit 162: Trends in VTE Prevention by DPHs, DY 8-10

	Prophylaxis			Intensive Care Unit Prophylaxis			Patients with Anticoagulation Overlap Therapy			Patients Receiving Unfractionated Heparin			Warfarin Therapy Discharge Instructions		
	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10
Contra Costa	93.1%	98.4%	99.4%	96.7%	100.0%	100.0%	94.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.2%	80.6%	100.0%
Kern	98.6%	98.9%	99.7%	99.7%	99.7%	99.7%	85.0%	95.0%	100.0%	95.8%	100.0%	100.0%	85.0%	95.0%	100.0%
Los Angeles	89.2%	94.7%	93.6%	96.0%	98.0%	97.0%	93.3%	94.3%	95.7%	98.2%	100.0%	100.0%	64.3%	85.0%	95.5%
Natividad	89.2%	99.4%	99.4%	95.9%	100.0%	100.0%	76.5%	91.7%	83.3%	85.7%	100.0%	100.0%	14.3%	88.9%	100.0%
San Francisco	77.7%	86.4%	87.2%	86.6%	87.2%	92.0%	98.8%	100.0%	98.2%	97.8%	100.0%	100.0%	64.3%	83.0%	88.6%
UC Irvine	96.6%	95.3%	96.2%	100.0%	100.0%	100.0%	100.0%	99.2%	100.0%	100.0%	100.0%	100.0%	95.8%	100.0%	100.0%
Average	90.4%	95.3%	95.1%	97.1%	98.2%	97.9%	94.8%	97.5%	97.7%	98.5%	100.0%	100.0%	77.5%	89.0%	95.8%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Exhibit 163: Trends in Stroke Management Adherence Rates by DPH, DY 8-10

	Discharged on Antithrombotic Therapy			Anticoagulation Therapy			Thrombolytic Therapy			Antithrombotic Therapy		
	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10
Arrowhead	96.5%	99.5%	100.0%	100.0%	94.1%	100.0%	50.0%	61.9%	92.9%	98.7%	100.0%	99.0%
Los Angeles	-	85.9%	98.1%		100.0%	100.0%		80.0%	46.7%		97.1%	97.9%
Riverside	99.3%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	95.5%	100.0%	99.4%	99.0%
Santa Clara	-	98.5%	100.0%		92.3%	100.0%		75.0%	100.0%		91.0%	97.4%
San Joaquin	99.0%	100.0%	100.0%	100.0%	100.0%	100.0%	100.0%	87.5%	100.0%	97.2%	100.0%	97.6%
Average	97.8%	95.0%	99.3%	100.0%	97.9%	100.0%	85.0%	76.7%	86.3%	98.9%	97.5%	98.3%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Exhibit 164: Trends in Stroke Management Adherence Rates by DPH, DY 8-10 (continued)

	Discharged on Statin Medication			Education			Assessed for Rehabilitation			Timely IV Thrombolytic Therapy	
	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 8	DY 9	DY 10	DY 9	DY 10
Arrowhead	97.0%	98.2%	98.9%	98.3%	96.1%	97.5%	92.2%	98.0%	99.6%		92.9%
Los Angeles	-	95.7%	98.0%		31.5%	78.5%		85.4%	89.8%	25.0%	100.0%
Riverside	100.0%	100.0%	100.0%	99.4%	96.5%	99.2%	99.2%	99.5%	100.0%	13.0%	96.2%
Santa Clara	-	96.0%	98.9%		93.4%	100.0%		97.4%	100.0%	47.1%	88.9%
San Joaquin	97.0%	96.7%	100.0%	99.1%	100.0%	98.2%	98.7%	100.0%	100.0%	0.0%	10.0%
Average	97.8%	97.4%	98.8%	98.8%	79.5%	90.8%	95.4%	95.1%	95.9%	24.5%	82.1%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Exhibit 165: Trends in Stroke Management Outcome Rates by DPHs, DY 8-10

	Stroke Mortality			Stroke National Institute of Health Stroke Scale	
	DY 8	DY 9	DY 10	DY 9	DY 10
Arrowhead	7.7%		10.5%		-
Los Angeles	-	5.2%	3.4%	97.1%	98.8%
Riverside	6.2%	11.0%	9.9%	46.5%	48.5%
Santa Clara	-	6.3%	4.4%	65.0%	86.0%
San Joaquin	7.5%	6.8%	5.0%	44.4%	62.5%
Average	7.6%	6.9%	5.2%	61.2%	72.5%

Source: UCLA analysis of designated hospital (DPH) annual reports from DY 8-9 and second semi-annual reports from DY 10.

Appendix K: Category 4 Comparisons by Ownership and Multi-Site vs. Single-Site

Exhibit 166: Comparisons of Category 4 Outcomes, County-Owned vs. Academic-Owned and Multi-Site vs. Single-Site DPHs, DY 10

	Multi - Site	Single - Site	Academic - Owned	County -Owned
Sepsis Management				
Sepsis Bundle Compliance Among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD-9 Codes: 785.52 and 995.92)	75.6%	79.0%	63.8%	80.5%
Sepsis Bundle Based Compliance on DPH Definition	78.6%	66.1%	87.4%	71.0%
Sepsis Mortality among Patients with Septic Shock or Severe Sepsis Based on CMS Definition (ICD-9 Codes: 785.52 and 995.92)	17.2%	16.4%	17.8%	15.8%
Sepsis Mortality Based on DPH Definition	18.9%	8.7%	13.0%	11.6%
CLABSI Prevention				
Central Line Insertion Practices Adherence Rate				
Aggregate Rate per 1,000 Central Line Days	1.47	0.64	1.31	0.89
Intensive Care Unit Rate per 1,000 Central Line Days	1.77	0.76	1.58	1.00
Non-Intensive Care Unit Rate per 1,000 Central Line Days	1.33	0.53	1.16	0.83
Neonatal Intensive Care Unit Rate per 1,000 Central Line Days	1.12	0.94	1.28	0.61
HAPU Prevention				
Overall Rate	1.2%	0.9%	1.1%	1.1%
Stroke Management				
Adherence Rates				
Discharged on Antithrombotic Therapy	98.7%	100.0%	--	--
Anticoagulation Therapy	100.0%	100.0%	--	--
Thrombolytic Therapy	75.7%	97.2%	--	--
Antithrombotic Therapy	98.3%	98.3%	--	--
Discharged on Statin Medication	98.7%	99.1%	--	--
Education	84.4%	98.7%	--	--
Assessed for Rehabilitation	93.1%	99.8%	--	--
Mortality	5.5%	4.6%		
VTE Prevention				
Adherence Rates				
Prophylaxis	93.6%	96.9%	96.2%	95.1%
Intensive Care Unit Prophylaxis	97.0%	98.6%	100.0%	97.7%
Patients with Anticoagulation Overlap Therapy	95.7%	98.4%	100.0%	96.7%
Patients Receiving Unfractionated Heparin	100.0%	100.0%	100.0%	100.0%
Warfarin Therapy Discharge Instructions	95.5%	96.0%	100.0%	94.3%

Source: UCLA analysis of designated public hospital (DPH) second semi-annual report from DY 10.
Notes: Weighted averages not presented for SSI prevention because the standardized infection ratio is based on unique denominators for each DPH. Weighted averages not presented for falls prevention because all DPHs that implemented the project were county-owned and single-site.

Appendix L: Category 4 Methodology

UCLA compared available Category 4 outcomes among DPHs, hospitals that were most similar to DPHs, and the remaining hospitals in California. This appendix describes the data sources and methodology used to generate these comparisons.

Data Sources

UCLA used California Office of Statewide Health Planning and Development (OSHPD) hospital data with detailed information on all California licensed hospitals. 2013 OSHPD financial data were used to identify similar hospitals based on a set of hospital-level characteristics described below. The year was selected because 2013 was close enough to the start of DSRIP demonstration years and also provided a chance to look forward to exclude hospitals that subsequently closed. Once the comparison group of hospitals was identified, UCLA used OSHPD annual patient discharge data (PDD) for 2009-2013 to compare the rates of change in Category 4 outcome measures in DPHs, hospitals that were most similar to DPHs (referred to as "similar" hospitals), and the remaining hospitals in California that were least similar to DPHs (referred to as "dissimilar" hospitals).

Characteristics for Identifying Similar Hospitals

The following characteristics were used to identify statistically similar hospitals to DPHs. The exact definitions of the original measures defined by OSHPD are available on the OSHPD website. For the purpose of identifying similar hospitals, some of the measures are grouped into fewer categories.

License category, defined as general acute care, acute psychiatric, psychiatric health facility, and chemical dependency recovery hospital. All DPHs are general acute care hospitals.

Principal service type, defined as general medical/surgical, physical rehabilitation, long-term care, orthopedic or pediatric orthopedic, psychiatric, developmentally disabled, chemical dependency (alcohol/drug), pediatric, and other. All DPHs are general medical/surgical hospitals, except for one that is a long-term care hospital.

Trauma level, ranging from not a trauma center to Level IV trauma center. Levels I and II are similar in terms of personnel, services, and resource requirements. The main differences is that Level I centers are research and teaching facilities. The same is true of Level III and IV centers. For this comparison, UCLA grouped trauma level into three groups: Not trauma center; Level I or Level II; Level III or Level IV. None of the DPH's are Level III or Level IV.

Licensed emergency department (ED) level at the end of the year, defined as comprehensive, basic, and standby. The first two were grouped for the analyses.

Case mix, a measure of the relative cost of resources needed to treat the mix of patients based on Medicare Severity-Diagnosis Related Groups (MS-DRG) and their associated weights created by OSHPD, was used to indicate the mixture of patient types. UCLA used the 1996-2012 file maintained by OSHPD.

Number of non-pediatric beds, a measure of the size of the institution.

Ratio of outpatient visits to inpatient visits, a measure of the volume of services provided.

Ratio of ICU beds to general acute care beds, a measure of the relative intensity of the services provided.

Teaching hospital vs. non-teaching hospital, an indicator variable of a general feature of the hospital, including the type of patients served, the type of physicians, and facilities.

Two strategies were applied to analyze missing data. When there was a missing value at the individual hospital level but the corresponding organization-level information existed, the organization-level information was assigned to the hospital. If organization-level information was also missing, the matching algorithm was restricted to the set of available characteristics.

Methods for Selecting Similar Hospitals

All DPHs in California participated in DSRIP. Private academic or community hospitals do not have similar payer mixes or patient populations to DPHs. Payer mix plays a crucial role in how hospitals are organized and deliver care. DPHs include primary and specialty care clinics that are structured as systems, while most private hospitals rely primarily on external contracts for primary and sometimes specialty care. Given the variation in Medicaid, uninsured, and private insurance caseload between DPHs and non-DPH institutions, a sample of hospitals that is truly comparable to the DPHs involved in DSRIP is intrinsically not available even when controlling for academic status, rural/urban location, surrounding demographics, and capacity. Nevertheless, for the purpose of evaluating DSRIP, UCLA selected the hospitals most similar to DPHs based on the characteristics described in the previous section and conducted difference-in-differences analysis with the constructed comparison groups.

Three hospitals that formed part of participating DPHs were not included in the selection process for similar hospitals because they did not participate in Category 4. Alameda-Fairmont and Los Amigos are rehabilitation hospitals, and Ventura-Santa Paula did not participate in Category 4. In addition, UC San Francisco Medical Center at Mount Zion and UC San Diego Medical Center at La Jolla were not included in the sample because neither hospital reported

individual hospital data to OSHPD. Patient discharge data for UC San Francisco at Mount Zion and UC San Diego at La Jolla were captured in their respective DPHs. This left a total of 22 DSRIP hospitals for matching.

UCLA used a mixture of exact matching method and distance matching method to identify hospitals similar to the 22 DSRIP hospitals. The first step was to create the eligible pool of similar hospitals for each DPH by exact matching on license category, principal service type, trauma level, and ED level – measures describing fairly broad categories. The exact matching on these measures guaranteed a great deal of similarity on these dimensions. Gower's distance measure was then calculated for each pair between a DSRIP hospital and each member in its eligible pool of similar hospitals based on the remaining continuous measures, including case mix, ratio of ICU beds to general acute care beds, number of non-pediatric beds, and ratio of outpatient visits to inpatient visits. The hospitals in the eligible pool with the highest matching scores based on Gower's distance were chosen as the matching hospitals to the corresponding DSRIP hospital. Finally, among the "matching" non-DSRIP hospitals, further adjustment was made to match DSRIP teaching hospitals with non-DSRIP teaching hospitals when possible. Some DPHs had more than one match, allowing the teaching hospitals to be included.

The mean and variance of the continuous measures in DPHs and other hospitals are provided in Exhibit 167. The match was exact on all measures except teaching/non-teaching. The results indicated that the largest discrepancy was in the ratio of outpatient visit to inpatient visits. All other measures seemed to have reasonable match. The dissimilar hospitals were smaller in terms of number of non-pediatric beds, and the majority were not in the eligible pool for matching in step 1. Given reasonable match on nine of 10 measures, UCLA concluded that the eligible group of hospitals could reasonably serve as similar hospitals.

Exhibit 167: Means and Variances of Continuous Measures, DPHs and Other Hospitals

		DPHs (N=22)	Similar Hospitals (N=24)	Dissimilar Hospitals (N=454)
Case Mix	Mean	1.31	1.28	1.30
	Variance	(0.28)	(0.33)	(0.45)
Ratio of ICU Beds to General Acute Care Beds	Mean	0.10	0.11	0.08
	Variance	(0.05)	(0.06)	(0.05)
Number of Non-Pediatric Beds	Mean	300.00	303.64	171.86
	Variance	(198.06)	(156.32)	(123.42)
Ratio of Outpatient Visits to Inpatient Visits	Mean	15.03	29.01	14.26
	Variance	(13.71)	(17.00)	(25.93)

Source: UCLA analysis of 2013 California Office of Statewide Health Planning and Development (OSHPD) data.

Category 4 Outcome Measure Construction

OSHPD data lacked detailed information available in DPH medical records. Therefore, UCLA identified evidence-based measures to construct similar outcome measures that could be derived from the data available in OSHPD PDD. Each resulting measure, the source for the measure, and the numerator and the denominator specifications are indicated in Exhibit 168. AHRQ patient safety indicators (PSIs) were used when possible. Two different measures were constructed for Surgical Site Infections (SSIs) for procedures with 30-day and 90-day surveillance periods. Some measures from the discharge data differ at times from Category 4 measures reported by the DPHs. For example, DPHs reported CLABSI rates per 1,000 central line days, but CLABSI rates constructed using the OSHPD data were infections per 1,000 discharges. Also, DPHs reported standardized infection ratios, but OSHPD-based measures present SSI rates 30 and 90 days post discharge.

Exhibit 168: Category 4 Outcome Measures Constructed from OSHPD Patient Discharge Data

Outcome Measure	AHRQ Indicator	Diagnosis Code	Numerator	Denominator	Exclusion
Sepsis Mortality	Attachment Q	995.92 or 785.52	All patients in the denominator who die during their hospital stay	All patients with a severe sepsis diagnosis defined by diagnosis codes not presented on admission	Any patient with a do not resuscitate status (DNR= "Y"), elect for palliative care within the first 24 hours of admission (ICD-9 diagnoses codes: V49.86, V66.7), or any patient who refuses care (ICD-9 diagnosis code: V62.6)
CLABSI Rate (Central Venous Catheter-Related Blood Stream Infection Rate)	PSI #7, version 5(177)		Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD -9-CM diagnosis codes for selected infections.	Surgical and medical discharges, for patients ages 18 years and older or MDC 14 (pregnancy, childbirth, and puerperium). Surgical and medical discharges are defined by specific DRG or MS-DRG codes.	Any patient with: a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for selected infections (as defined by the numerator) ; length of stay less than 2 days; any listed ICD-9-CM diagnosis codes for cancer; any listed ICD-9-CM diagnosis codes or any listed ICD-9-CM procedure codes for immunocompromised state; missing gender (SEX=missing), age (AGE=missing), quarter (DQTR= missing), year (YEAR=missing), or principal diagnosis (DX1=missing).
SSI Rate (Surgical Site Infection) 30 days	Attachment Q	998.59	Patients with postoperative infection (ICD-9 diagnosis code: 998.59) not present on admission.	The National Healthcare Safety Network (NHSN) surgical procedures with 30 day surveillance periods, list in *Surgical Site Infection (SSI) Event* (2014)	

Outcome Measure	AHRQ Indicator	Diagnosis Code	Numerator	Denominator	Exclusion
SSI Rate (Surgical Site Infection) 90 days	Attachment Q	998.59	Patients with postoperative infection (ICD-9 diagnosis code: 998.59) not present on admission	The National Healthcare Safety Network (NHSN) surgical procedures with 90 day surveillance periods, list in *Surgical Site Infection (SSI) Event* (2014)	
HAPU rate (Hospital-Acquired Pressure Ulcer)	PSI 03, version 5(134)		Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with any secondary ICD-9-CM diagnosis codes for pressure ulcer and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable)	Surgical and medical discharges, for patients ages 18 years and older. Surgical and medical discharges are defined by specific DRG or MS-DRG codes.	Any patient with: length of stay of less than 5 days; a principal ICD-9-CM diagnosis code for pressure ulcer; any secondary ICD-9-CM diagnosis codes for pressure ulcer (see above) present on admission and any secondary ICD-9-CM diagnosis codes for pressure ulcer stage III or IV (or unstageable) present on admission; any listed ICD-9-CM diagnosis codes for hemiplegia, paraplegia, or quadriplegia; any listed ICD-9-CM diagnosis codes for spina bifida or anoxic brain damage; any listed ICD-9-CM procedure codes for debridement or pedicle graft before or on the same day as the major operating room procedure (surgical cases only); any listed ICD-9-CM procedure codes for debridement or pedicle graft as the only major operating room procedure (surgical cases only); transfer from a hospital (different facility); transfer from a Skilled Nursing Facility (SNF) or Intermediate Care Facility (ICF); transfer

Outcome Measure	AHRQ Indicator	Diagnosis Code	Numerator	Denominator	Exclusion
					from another health care facility; MDC 9 (skin, subcutaneous tissue, and breast); MDC 14 (pregnancy, childbirth, and puerperium); missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)
Stroke mortality Rate	Attachment Q	430, 431, 432.0, 432.1, 432.9, 433.01, 433.11, 433.21, 433.31, 433.81, 433.91, 434.01, 434.11, 434.91, 436	Number of deaths among patients with acute stroke diagnosis	Patients with acute stroke diagnosis (ICD-9 diagnosis codes) not presented on admission	
VTE rate (Venous Thromboembolism)	PSI 12, version 5(135)		Discharges, among cases meeting the inclusion and exclusion rules for the denominator, with a secondary ICD-9-CM diagnosis code for deep vein thrombosis or a secondary ICD-9-CM diagnosis code for pulmonary embolism	Surgical discharges, for patients ages 18 years and older, with any listed ICD-9-CM procedure codes for an operating room procedure. Surgical discharges are defined by specific DRG or MS-DRG codes	Any patient with: a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for deep vein thrombosis; a principal ICD-9-CM diagnosis code (or secondary diagnosis present on admission) for pulmonary embolism; the only operating room procedure is interruption of vena cava; a procedure for interruption of vena cava occurs before or on the same day as the first operating room procedure; MDC 14 (pregnancy, childbirth, and puerperium); missing gender (SEX=missing), age (AGE=missing), quarter (DQTR=missing), year (YEAR=missing), or principal diagnosis (DX1=missing)

Outcome Measure	AHRQ Indicator	Diagnosis Code	Numerator	Denominator	Exclusion
Falls with injury rate	Attachment Q	E88.00, E88.01, E88.09, E88.10, E88.11, E88.2, E88.31, E88.32, E88.39-E88.46, E88.49-E88.54, E88.59, E88.60, E88.80, E88.81, E88.88, E88.89, E91.6, E91.77, E91.78, E92.93	All patients who have sustained an injury due to a fall during their stay at a hospital	The sum of inpatient days of all the patients	

Statistical Models

Regression models were constructed to compare Category 4 outcomes among participating DPHs, non-participating DPHs, similar hospitals, and dissimilar hospitals. DPHs were categorized as "participating" when they implemented an optional Category 4 project and "non-participating" when they did not. Statistical analysis included an encounter-level logit model followed by a hospital-level random effect count model. Each model included the categorical variables OSHPD years, hospital type (defined as participating, non-participating, similar and dissimilar) and their interaction term. Limited encounter-level characteristics including risk factors (described in this section) were controlled in the encounter-level logit model. The predicted probability of the outcome for each patient encounter was obtained and summed to obtain the expected number of events (for each outcome measure, such as sepsis mortality). The number of encounters was summed for each year and for each hospital to obtain the hospital-level numerator and denominator. The random effect model was conducted on these hospital-level outcome measures. The random effect Poisson regression model controlled for hospital-level characteristics and hospital random effect.

Using the regression models, trends in outcomes from 2009 to 2013 were examined for participating DPHs and comparison hospitals. Next, difference-in-differences analyses were conducted to compare the change in trends for participating DPHs and comparison groups from 2009 to 2013. Due to the extremely large sample size at the encounter level, UCLA used a two-step approach. The first step was to run a logistic regression without controlling for the fact that encounters were clustered by hospitals. The first-stage results were collapsed to the hospital level by program years and the difference-in-differences analyses were conducted at the hospital level in the second step using random effects Poisson regressions. This greatly reduced the sample size, which reduced the statistical power to detect the extremely low rates of some outcome measures. The sample sizes for each of the models are reported in Exhibit 169.

Exhibit 169: Sample Sizes by Outcome Measure for Category 4 Statistical Analysis

Category 4 Outcome Measure	Group	Number of Hospitals	Number of Encounters
Sepsis Mortality Rate	Participating DPH	20	21,950
	Non-Participating DPH	--	--
	Similar Hospitals	23	32,509
	Dissimilar Hospitals	328	220,598
	Total	371	275,057
CLABSI Rate	DSRIP Participating	20	1,239,498
	DSRIP Non-participating	--	--
	Matched	23	1,584,645
	Other	411	10,003,966
	Total	454	12,828,109
SSI Rate (30 days)	DSRIP Participating	15	196,987
	DSRIP Non-participating	5	48,625
	Matched	18	308,414
	Other	340	1,953,852
	Total	378	2,507,878
SSI Rate (90 days)	DSRIP Participating	15	109,243
	DSRIP Non-participating	5	15,819
	Matched	18	200,073
	Other	338	1,083,683
	Total	376	1,408,818
HAPU Rate	DSRIP Participating	13	294,553
	DSRIP Non-participating	7	166,864
	Matched	23	519,930
	Other	405	2,935,203
	Total	448	3,916,550
Stroke Mortality Rate	DSRIP Participating	3	4,258
	DSRIP Non-participating	17	25,221
	Matched	3	3,288
	Other	386	285,308
	Total	409	318,075
VTE Rate	DSRIP Participating	8	145,056
	DSRIP Non-participating	12	291,782
	Matched	23	607,513
	Other	350	2,961,992
	Total	393	4,006,343
Falls with Injury Rate	DSRIP Participating	1	19,508
	DSRIP Non-participating	19	1,926,552
	Matched	23	2,456,144
	Other	411	15,178,518
	Total	454	19,580,722

Source: UCLA analysis of 2009-2013 data from the California Office of Statewide Health Planning and Development (OSHPD).

Note: Sepsis and CLABSI were required projects and were implemented by all DPHs.

Risk Adjustment

The encounter-level regression models were adjusted for payer per discharge, major diagnostic category (MDC), diagnosis related group, teaching vs. non-teaching status, for each hospital discharge encounter. MDCs were grouped into high (1, 8, 9, 10, 11, 12, 17, 21, 22) vs. low (2, 3, 4, 5, 6, 13, 14, 19, 23).(178) UCLA also constructed and included the Elixhauser comorbidity index to adjust for potential severity.(179) The percent of Medicare patients was also calculated and included in an attempt to control the composition of the patient population.

Limitations

The selection of similar hospitals and comparisons of Category 4 outcomes were limited by the fact that DPHs were fundamentally different from other California hospitals, as described above.

The outcome measures reported by DPHs were constructed from hospital medical record data that included clinical information not available in OSHPD PDD. Some measures were based on data obtained from chart review, and DPHs may have used different methods of constructing each measure. Therefore, the comparisons in difference-in-differences models differ systematically from DPH-reported measures and are not directly comparable.

In order to protect patient anonymity, OSPHD masked patient demographics in 2012 data. Prior to 2012, OSPHD also masked a large quantity of personal patient information. OSHPD's masking of patient-level data made it impossible to adjust for personal information.

Due to lack of service dates in the non-confidential patient discharge data, UCLA could not align the data with DSRIP intervention years, since DSRIP demonstration years generally started in July and OSHPD years are calendar years.

Two other difference-in-differences models were attempted, including (1) generalized estimating equations with binary outcome variables (such as sepsis mortality) or count variable with exposures (such as fall with injury per 1,000 inpatient days), adjusted for patient-level and hospital-level characteristics to account for the clustering of patients in hospitals; and (2) a random effect logit model to control for the clustering of patients in hospitals and including patient characteristics as fixed effects. However, computing power constraints did not allow execution of these alternative models that may have led to more accurate results. Sampling was also considered but not attempted due to constraints of computing power and other resources.

The performance of California hospitals are not directly comparable to national benchmarks due to market, population, and institutional differences.

Appendix M: Category 5

Exhibit 170: Data Exclusions for the Section Entitled, "Comparison of Category 5b Outcomes between Category 5 Participating DPH and Non-Participating DPH"

	5B Outcome Measures	Counties Excluded for Missing Data
1.	Medical Visits	San Mateo
2.	CD4 T-Cell Testing	Alameda Riverside
3.	Viral Load Testing	Alameda Riverside San Diego
4.	ARV Prescription	Alameda Kern Riverside Santa Clara

Note: LIHP data were unavailable for Contra Costa and Los Angeles.

Milestones and Category 5B Outcomes by DPH

The ten DPHs participating in Category 5 reported milestones for 5A projects and progress in meeting 5B outcomes. The exhibits below summarize this data at the DPH level.

Alameda

Exhibit 171: Alameda 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Assign clients an HIV clinician according to a written criteria and protocol.	1. Establish a continuity of care metric, baseline and target for achievement and improvement, 2. Select/develop optimal staffing model and design for AHS medical home for patients diagnosed with HIV.	1. Empanel patients into medical homes, 2. Define roles and responsibilities of team members, 3. Implement the approved staffing model for ACMC medical home for patients with HIV, including pharmacy medication adherence services for patients with advanced co-morbidities.
Disease Registry	1. Document ongoing evaluation of clinical performance measures and use of data for performance	1. Hire a Panel Management Coordinator (PMC) and expand panel management to 1 additional clinician, 2. Document ongoing evaluation of clinical performance	1. Expand panel management program to all HIV clinicians, 2. Document ongoing evaluation of clinical performance measures and use of data for performance

Project	Baseline	Interim	Final
	improvement activities.	measures and use of data for performance improvement activities, 3. Identify and develop HIV DMR module in AHS registry program, 4. Pilot use of DMR module in clinics.	improvement activities, 3. Implement HIV DMR module in all clinics that serve as a medical home for HIV-positive patients.
Retention Programs	1. Identify Staffing models for implementation of Retention Program.	1. Define criteria for enrolling patients in Retention Program, 2. Implement Retention Program in medical homes for patients diagnosed with HIV.	1. Track effectiveness of Retention program along pre-defined outcome metrics.

Source: Analysis of Alameda DY 8-9 reports.

Exhibit 172: Alameda 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	68.41%	69.39%	80.00%	71.66%
ART	97.45%	98.76%	97.70%	100.00%
Medical Visits	*no data*	*no data*	*no data*	*no data*
PCP Prophylaxis	56.55%	88.61%	75.00%	94.26%
Viral Load Monitoring	50.06%	67.96%	80.00%	80.84%
Viral Load Suppression	80.79%	80.93%	85.00%	82.27%
Cervical Cancer Screening	41.52%	70.37%	65.00%	54.63%
TB Screening	83.23%	84.98%	91.60%	93.20%
Influenza Vaccination	48.63%	82.05%	75.00%	60.35%
Medical Care Management: Medical Visits	92.99%	*no data*	*no data*	*no data*

Source: Analysis of Alameda DY 8-9 semi-annual reports.
Note: Alameda reported final Viral Load Suppression achievement rate at 82.27%, down from 83.02% reported in the DY9 1st Semi-Annual report, following corrections from DHCS. Alameda also reported an increase in Viral Load Monitoring to an 80.84% achievement rate during the second half of DY10, up from 55% during DY 9.

Contra Costa

Exhibit 173: Contra Costa 5A Project Milestones

Project	Baseline	Interim	Final
Disease Registry	*No data reported*	1. Define data domains to be exchanged between ccLink and ARIES using	1. Establish policies and procedures to monitor and use the data to improve quality of care and overall population health, test

Project	Baseline	Interim	Final
		electronic interface and/or data extracts.	data sharing, review ARIES quality indicator data.
Clinical Decision Support	1. Identify evidence-based guidelines and point of care reminders to minimize variation in clinical strategies used within CCRMC.	1. Select initial core group of 6-10 best practices advisories that can be incorporated into the EHR (ccLink); Identify workflow adjustment.	1. Pilot and refine tools in at least one positive health clinic, establish procedures to monitor and track use of tools, develop measures to evaluate the impact on disease management.
Data Sharing	1. Identify capacity to link the EHR with ARIES, the Public Health HIV database.	*No data reported*	*No data reported*
Ryan White Wraparound	1. Draft a Project Plan outlining the specific rules and responsibilities of clinic staff and Public Health AIDS Program staff to ensure HIV patients are assessed and referred for Ryan White services.	1. Identify one Positive Health clinic to implement pilot; Identify staff positions to implement the various activities in the Project Plan; Train clinic staff in responsibilities.	1. Implement Project Plan activities in at least one Positive Health clinic; train positive health clinic staff in pilot clinic in their roles and responsibilities; pilot project plan activities in the selected positive health site; monitor implementation and make adjustments as needed.

Source: Analysis of Contra Costa DY 8-9 reports.
Note: ccLink is the name of the electronic health record program purchased and used by Contra Costa.

Exhibit 174: Contra Costa 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	70.25%	63.45%	72.20%	75.59%
ART	92.31%	96.72%	94.30%	96.08%
Medical Visits	71.94%	72.89%	73.90%	80.99%
PCP Prophylaxis	82.69%	96.72%	87.70%	94.12%
Viral Load Monitoring	68.14%	55.91%	72.10%	85.60%
Viral Load Suppression	89.85%	87.16%	91.40%	87.60%
Hepatitis B Vaccination	29.95%	31.39%	36.90%	41.55%
Syphilis Screening	70.74%	77.69%	73.70%	82.79%
Pneumococcal Vaccination	72.64%	79.69%	75.60%	87.77%
Medical Care Management: Care Plan	23.08%	36.59%	33.00%	33.97%

Source: Analysis of Contra Costa DY 8-9 semi-annual reports.

Kern

Exhibit 175: Kern 5A Project Milestones

Project	Baseline	Interim	Final
Disease Registry	1. Identify/develop HIV DMR module.	1. Identify/develop HIV DMR module, 2. Train Infectious Disease clinic providers and staff on new HIV DMR module, 3. Pilot use of HIV DMR module in clinics.	1. Train internal medicine and family practice clinic providers and staff on new HIV DMR module, Roll-out HIV DMR module in all clinics that serve as a medical home for HIV-positive patients, document ongoing evaluation of clinical performance measures and use of data for performance improvement activities.
Clinical Decision Support	1. Define full set of clinical decision support tools that will be available, 2. Deploy Information Technology (IT) programming and resources to develop clinical decision support tools.	1. Deploy Information Technology (IT) programming and resources to develop clinical decision support tools, 2. Define full set of clinical decision support tools that will be available, 3. Ensure that protocols are consistent with DHHS guidelines as feasible, considering IT and other technical constraints, 4. Ensure that protocols for co-morbidities are consistent with established guidelines.	1. Pilot, refine, and fully implement clinical decision support tools within medical homes that care for patients with HIV, establish and implement protocols and procedures for tracking use of clinical decision support tools and evaluating impact on disease management, service provision, and clinical health outcomes.
Retention Programs	1. Develop Retention Program and Define criteria for enrolling patients in Retention Program.	1. Identify staffing models for implementation of Retention Program, 2. Implement Retention Program in medical homes for patients with HIV, 3. Develop Retention Program and define criteria for enrolling patients in Retention Program.	1. Track effectiveness of retention program along pre-defined outcome metrics.

Source: Analysis of Kern DY 8-9 reports.

Exhibit 176: Kern 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	16.67%	51.56%	45.00%	76.81%
ART	18.00%	55.70%	45.00%	100.00%
Medical Visits	11.31%	34.38%	45.00%	73.91%
PCP Prophylaxis	42.86%	53.57%	53.00%	68.18%
Viral Load Monitoring	62.23%	59.60%	72.00%	86.27%
Viral Load Suppression	100.00%	61.40%	90.00%	100.00%
Hepatitis C Screening	28.04%	53.91%	40.00%	73.91%
Syphilis Screening	29.87%	49.22%	50.00%	60.87%
Mental Health Screening	2.65%	17.97%	20.00%	66.67%
Medical Care Management: Medical Visits	16.28%	77.78%	31.00%	67.74%

Source: Analysis of Kern DY 8-9 semi-annual reports.

Los Angeles

Exhibit 177: Los Angeles 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Document LAC/DHS clinical standards required of providers serving patients with HIV/AIDS, 2. Document current HIV-specific training, background, and/or certification of each of LACDHS' 9 clinics serving patients with HIV.	1. Select/Develop optimal staffing model for use in medical homes that care for patients with HIV, including pharmacy and medication adherence services for patients with advanced disease and co-morbidities, 2. Define roles and responsibilities of team members, 3. Develop patient weighting/risk adjustment algorithms for assigning patients with HIV to medical homes and thus determining panel size.	1. Empanel patients into medical homes, 2. Implement a staffing model appropriate for LIHP patients empaneled in a medical home with HIV expertise, including pharmacy and medication adherence services for patients with advanced disease and co-morbidities, 3. Assess engagement of patients with their medical home provider.
Disease Registry	1. Assess hardware needs (e.g. PCs) in clinics targeted for implementation of HIV-capable DMR.	1. Complete 'Training of the Trainers' for registry use at each clinic, 2. Identify/detail the specifications/fields needed in a properly-configured DMR able to service patients with HIV.	1. roll-out HIV DMR capabilities in all 9 clinics that will serve as a medical home for patients with HIV, 2. Document ongoing evaluation of clinical performance measures and

			use of data performance improvement activities.
E-consult	1. Select 3 priority specialties for further expansion of eConsult and identify workgroup participants for the selected specialties, 2. Launch eConsult in at least 4 of DHS' 9 primary care clinics serving patients with HIV.	1. Launch eConsult in at least 1 of 3 selected additional specialties, 2. Ensure all 9 primary care clinics serving patients with HIV are able to utilize electronic consultations with available sub-specialties using electronic data interface, 3. Establish primary care-specialty care workgroups for priority specialties to develop shared approaches to common and important medical conditions for patients with HIV.	1. Launch eConsult in additional 2 selected specialties, 2. Share learnings about specialty care use and service delivery improvement via HIV commission and/or LACDPH Division of HIV/STD program forum.

Source: Analysis of Los Angeles DY 8-9 reports.

Exhibit 178: Los Angeles 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	84.36%	100.00%	86.00%	93.00%
ART	66.96%	99.59%	70.00%	98.00%
Medical Visits	79.69%	88.52%	82.00%	98.00%
PCP Prophylaxis	42.34%	100.00%	47.80%	92.00%
Viral Load Monitoring	65.80%	96.14%	69.00%	78.00%
Viral Load Suppression	74.97%	83.29%	77.50%	89.00%
Hepatitis B Screening	87.27%	99.05%	88.00%	99.90%
Hepatitis B Vaccination	18.63%	77.62%	27.00%	75.00%
Tobacco Cessation Counseling	0.00%	69.23%	25.00%	82.00%
Medical Care Management: Care Plan	0.00%	0.00%	15.00%	30.00%

Source: Analysis of Los Angeles DY 8-9 semi-annual reports.

Riverside

Exhibit 179: Riverside 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Develop a protocol to expand the Linkages to Care Programs to increase the number of LIHP enrollees with HIV/AIDS who received necessary immunizations, including the pneumococcal and Hepatitis B vaccines.	1. Implement a staffing model appropriate for LIHP patients empaneled in a medical home with HIV expertise, including pharmacy and medication adherence services for patients with advanced disease and co-morbidities, 2. Evaluate Riverside County's medical homes with HIV expertise to ensure an optimal staffing model is being used, 3. Evaluate the feasibility of expanding mental health support services at Riverside County's medical homes with HIV expertise, 4. Redefine the roles and responsibilities of team members in Riverside County's medical homes with HIV expertise.	1. Implement the plan to expand mental health support services at Riverside County's medical homes with HIV expertise by increasing the number of available mental health appointments with a psychiatrist by 8 appointments per month over baseline.
Disease Registry	1. Develop a checklist to document staff competency on the use of the ARIES registry.	1. Train at least 5 staff members to enter patient data into the ARIES registry, 2. At least 95% of known LIHP members assigned to DOPH-HIV/STD medical home with updated information in the ARIES registry.	1. Utilize ARIES registry reports on Cat 5 mandatory and optional clinical performance measures to develop ongoing performance improvement activities for DOPH-HIV/STD.
Ryan White Wraparound	1. Develop a draft outline of key provisions to be included in the MOU, including roles and responsibilities of RCRMC and the Riverside County DOPH.	1. Finalize MOU between RCRMC and the Riverside County DOPH to ensure transitioned HIV patients are assessed for wraparound services.	1. Ensure that effective care coordination is available within Riverside County LIHP medical homes to provide Ryan White wrap around services as measured by 50% of LIHP enrollees with HIV/AIDS will have received a risk assessment that identifies support services to facilitate improved health outcomes.

Source: Analysis of Riverside DY 8-9 reports.

Exhibit 180: Riverside 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	50.72%	45.91%	70.00%	70.28%
ART	42.86%	71.52%	81.00%	90.34%
Medical Visits	85.25%	79.39%	90.00%	90.28%
PCP Prophylaxis	5.88%	36.07%	93.00%	94.64%
Viral Load Monitoring	24.05%	35.74%	63.00%	50.97%
Viral Load Suppression	64.84%	80.29%	85.00%	87.25%
Hepatitis B Vaccination	10.67%	35.37%	50.00%	57.99%
Hepatitis C Screening	33.88%	60.16%	89.00%	92.68%
Pneumococcal Vaccination	29.14%	82.88%	77.00%	77.43%
Medical Care Management: Medical Visits	82.99%	79.69%	95.00%	95.13%

Source: Analysis of Riverside DY 8-9 semi-annual reports.
Note: Riverside revised the Viral Load Monitoring achievement rate from 51.98% to 50.97% following corrections by DHCS.

San Diego

Exhibit 181: San Diego 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Select and develop a staffing model comprised of a HIV multi-disciplinary care team, 2. Present shared learning, including tools, challenges and lessons about empanelment from stakeholders.	1. Establish the baseline number of patients empaneled in the medical home, 2. Define roles and responsibilities for members of the multidisciplinary care team, 3. Present shared learning, including tools, challenges and lessons about empanelment with stakeholders, 4. Develop an HIV specific patient weighting/risk adjustment algorithms for assigning patients diagnosed with HIV to medical homes, 5. Implement staffing model for patients empaneled in a medical home which includes pharmacy	1. Increase the number of patients currently empaneled in a medical home for the period 7/1/2013-12/31/2013, 2. Present shared learning, including tools, challenges, and lessons about empanelment from stakeholders.

		and medication adherence services.	
Retention Programs	1. Define criteria for enrolling patients in the retention program, 2. Identify staffing model for implementation of the retention program, 3. Present shared learning, including tools, challenges and lessons about retention.	1. Implement the retention program in medical homes for patients diagnosed with HIV, 2. Establish baseline effectiveness of retention program for patients receiving ambulatory care at the Owen clinic, 3. Present shared learning, including tools, challenges and lessons about retention with stakeholders.	1. Improve the effectiveness of the retention program for patients receiving ambulatory care at the Owen clinic, 2. Present shared learning, including tools, challenges and lessons about retention with stakeholders.
Ryan White Wraparound	1. Establish mechanism for the provision of wraparound services for SD County LIHP, 2. Present shared learning, including tools, challenges and lessons about wraparound.	1. Create processes, procedures, and algorithms to improve care coordination of wraparound service delivery, 2. Present shared learning, including tools, challenges and lessons about wraparound service delivery with stakeholders, 3. Establish the baseline number of wrap around service encounters delivered to Owen patients, 4. Establish the baseline percent of wrap around services delivered within 14 days of request.	1. Utilize care coordination to ensure the processes, procedures, and algorithms improve the delivery of wrap around services for Owen patients, 2. Increase by 10% over baseline the percent of wrap around services delivered within 14 days of request, 3. Present shared learning, including tools, challenges and lessons about wraparound service delivery with stakeholders.

Source: Analysis of UC San Diego DY 8-9 semi-annual reports.

Exhibit 182: San Diego 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	72.19%	75.45%	75.80%	79.28%
ART	94.89%	95.89%	96.30%	98.62%
Medical Visits	78.53%	82.81%	86.40%	86.85%
PCP Prophylaxis	88.98%	86.98%	93.40%	95.09%
Viral Load Monitoring	62.98%	80.30%	81.90%	82.62%
Viral Load Suppression	90.74%	89.41%	92.60%	91.62%
TB Screening	90.61%	93.98%	92.40%	94.14%
Chlamydia Screening	57.35%	71.68%	63.10%	84.16%
Gonorrhea Screening	57.35%	71.68%	63.10%	84.16%

Medical Care Management: Medical Visits	75.79%	90.91%	83.40%	88.81%

Source: Analysis of UC San Diego DY 8-9 semi-annual reports.

San Francisco

Exhibit 183: San Francisco 5A Project Milestones

Project	Baseline	Interim	Final
Disease Registry	1. Identify potential HIV DMR module, 2. Identify patients for registry. Create policy and procedure to ensure data integrity.	1. Pilot use of HIV DMR module.	1. Roll-out HIV DMR modules in clinics that serve as a medical home for at least 10 HIV-positive patients, 2. Design and implement formal structures to utilize and present data at the clinic, provider and consumer levels, 3. Document ongoing evaluation of clinical performance measures and use of data for performance improvement activities.
Retention Programs	1. Define enrollment criteria for Retention Program.	1. Implement Retention Program in medical homes for patients with HIV.	1. Track effectiveness of retention program along pre-defined outcome metrics, 2. Decrease in number and percentage of patients out of care and increase in number with viral load suppression consistent with category 5B.
Ryan White Wraparound	1. Establish a mechanism, such as an MOU, between the DPH and LIHP with the local.	1. Develop and hold up to 3 training sessions with Ryan White case managers, benefit counselors, clinic staff to ensure care coordination within each medical clinic designated as a medical home for patients with HIV.	1. Track effectiveness of mechanisms designed to ensure continued access to wraparound services.

Source: Analysis of San Francisco DY 8-9 semi-annual reports.

Exhibit 184: San Francisco 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	65.24%	*no data*	68.24%	60.10%
ART	78.15%	*no data*	82.15%	99.31%
Medical Visits	76.98%	*no data*	81.79%	82.20%
PCP Prophylaxis	84.44%	*no data*	85.44%	89.22%
Viral Load Monitoring	76.74%	*no data*	79.74%	72.67%
Viral Load Suppression	89.36%	*no data*	91.36%	81.28%
Hepatitis B Screening	83.78%	*no data*	85.78%	89.29%
Hepatitis C Screening	99.34%	*no data*	99.34%	99.32%
Pneumococcal Vaccination	84.28%	*no data*	85.28%	79.20%
Medical Care Management: Medical Visits	83.77%	*no data*	88.77%	85.99%

Source: Analysis of San Francisco DY 8-9 semi-annual reports.
Note: San Francisco reported a final achievement rate of 82.2% for Medical Visits during the second half of DY 10, an increase from 79.17%, the rate reported in the DY9 1st Semi-Annual report. San Francisco also achieved an increase in PCP Prophylaxis to 89.22% in DY10 from 71.43% in DY 9.

San Mateo

Exhibit 185: San Mateo 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Select/develop optimal staffing model for use in medical homes that care for patients with HIV, 2. Define the roles and responsibilities of team members.	1. Define the roles and responsibilities of team members.	1. Implement a staffing model appropriate for LIHP patients empaneled in a medical home with HIV expertise, including pharmacy and medication adherence services for patients with advanced disease and co-morbidities, 2. Develop patient weighting/risk-adjustment algorithms for assigning patients with HIV to medical homes, 3. Empanel patients into medical homes.
Data Sharing	1. Identify and map data fields that will be included in the data	1. Establish and implement protocols	1. Continue to monitor accuracy of data exchange, 2. Continue to

	exchange, 2. Develop and implement the data exchange, 3. Establish and implement protocols and procedures for ongoing monitoring of data exchange, 4. Establish and implement protocols and procedures for use of data to improve quality of care and population health.	and procedures for use of data to improve quality of care and population health, 2. Establish and implement protocol and procedures for ongoing monitoring of data exchange.	utilize data to improve quality of care and population health, 3. Monitor for additional clinical measurement data fields to be added to data exchange.
Ryan White Wraparound	1. Establish a mechanism between LIHP enrollment workers and Ryan White medical case managers to ensure that transitioned HIV patients continue to be assessed for wraparound services, 2. Ensure coordination with each medical provider at Edison Clinic through regularly scheduled multi-disciplinary case conferences to assess need for specific wraparound services.	1. Ensure care coordination with each medical provider at Edison Clinic through regularly scheduled multi-disciplinary case conferences assess need to specific wraparound services.	1. Continue to ensure care coordination with each medical provider at Edison Clinic through regularly scheduled multi-disciplinary case conferences and eligibility screenings to assess need for specific wraparound services, 2. Monitor any co-factors that create barriers to care in order to promote retention and re-engagement in care.

Source: Analysis of San Mateo DY 8-9 semi-annual reports.

Exhibit 186: San Mateo 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	88.92%	90.43%	93.30%	96.34%
ART	97.02%	95.79%	99.00%	100.00%
Medical Visits	93.10%	94.68%	96.00%	99.27%
PCP Prophylaxis	88.52%	100.00%	95.00%	100.00%
Viral Load Monitoring	88.92%	92.82%	95.00%	92.67%
Viral Load Suppression	86.69%	87.39%	92.00%	91.21%
Syphilis Screening	66.13%	84.90%	76.00%	88.64%
Chlamydia Screening	66.13%	83.66%	76.00%	88.28%
Gonorrhea Screening	66.13%	83.66%	76.00%	88.28%
Medical Care Management: Medical Visits	91.30%	94.68%	85.00%	97.76%

Source: Analysis of San Mateo DY 8-9 semi-annual reports.

Santa Clara

Exhibit 187: Santa Clara 5A Project Milestones

Project	Baseline	Interim	Final
Empanel Patients	1. Select/Develop Optimal Staff Model(s) for use in Medical Homes that care for Patients with HIV.	1. Define the roles and responsibilities of team members, 2. Implement a staffing model appropriate for LIHP patients empaneled in a Medical Home with HIV expertise, including pharmacy and medication adherences services for patients with advanced disease and co-morbidities.	1. Develop patient weighting/risk adjustment algorithms for assigning patients with HIV to medical homes, 2. Empanel patients into medical homes.
Retention Programs	1. Define criteria for enrolling patients into retention program.	1. Identify staffing models for implementation of retention program.	1. Implement retention program in medical homes for patients with HIV, 2. Track effectiveness of retention program along pre-defined outcome metrics.
Ryan White Wraparound	1. DPH will implement a procedure to ensure that HIV patients transitioned to LIHP are assessed with wraparound services.	1. DPH will implement a procedure to ensure that HIV patients transitioned to LIHP are assessed for wraparound services.	1. Ensure care coordination within each medical clinic designated as a medical home for patients with HIV. Care coordination staff will work with primary care team to assess patient need, to develop care plans to promote engagement and retention in medical care and address cofactors that may create barriers to care.

Source: Analysis of Santa Clara DY 8-9 semi-annual reports.

Exhibit 188: Santa Clara 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	70.45%	78.26%	75.00%	75.41%
ART	94.44%	98.70%	97.00%	98.86%
Medical Visits	78.41%	95.09%	80.00%	78.14%
PCP Prophylaxis	100.00%	100.00%	100.00%	100.00%
Viral Load Monitoring	14.29%	72.30%	75.00%	7.08%

Viral Load Suppression	80.00%	86.50%	83.00%	89.93%
Hepatitis C Screening	67.05%	96.00%	75.00%	96.46%
Chlamydia Screening	41.66%	96.20%	75.00%	93.55%
Gonorrhea Screening	41.66%	96.20%	75.00%	93.55%
Medical Care Management: Care Plan	0.00%	2.65%	20.00%	10.05%

Source: Analysis of Santa Clara DY 8-9 semi-annual reports.

Ventura

Exhibit 189: Ventura 5A Project Milestones

Project	Baseline	Interim	Final
Disease Registry	1. Identify/develop HIV DMR module, 2. Pilot use of HIV DMR module in clinics.	1. Implement HIV DMR module in all clinics that serve as a medical home for HIV-positive patients.	1. Document ongoing evaluation of clinical performance measures and use of data for performance improvement activities.
Retention Programs	1. Define specific criteria for enrolling patients in Retention Program, 2. Identify staffing models for implementation of Retention Program.	1. Implement Retention Program in medical home for patients diagnosed with HIV.	1. Track effectiveness of Retention Program along pre-defined outcome metrics.
Data Sharing	1. Identify and map domains for data exchange.	1. Develop and Implement Electronic Data Interface.	1. Establish and implement protocols and procedures for ongoing monitoring and use of data to improve quality of care and population health.

Source: Analysis of Ventura DY 8-9 semi-annual reports.

Exhibit 190: Ventura 5B Outcome Measures, by Percent

5B Outcome Measure	Baseline Measurement (DY 8 1st Semi-Annual)	Interim (DY 8 2nd Semi-Annual)	Target	Final (DY 9 1st Semi-Annual)
CD4 Count	92.05%	70.73%	93.80%	64.72%
ART	81.96%	100.00%	86.10%	93.00%
Medical Visits	80.12%	85.61%	84.00%	71.14%
PCP Prophylaxis	80.00%	100.00%	84.00%	100.00%

Viral Load Monitoring	77.98%	70.20%	81.90%	85.71%
Viral Load Suppression	77.37%	66.10%	80.90%	53.64%
Cervical Cancer Screening	91.23%	90.00%	92.80%	100.00%
Syphilis Screening	77.98%	75.36%	81.90%	82.22%
Influenza Vaccination	58.10%	53.90%	62.00%	63.56%
Medical Care Management: Medical Visits	89.91%	90.73%	91.80%	97.96%

Source: Analysis of Ventura DY 8-9 semi-annual reports.

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