The University of California San Diego Health System Delivery System Reform Incentive Pool Proposal for the California Section 1115(a) Medicaid Demonstration

TABLE OF CONTENTS

OVERVIEW

The University of California, San Diego Health System (UCSDHS), the only academic medical center in San Diego, has developed a two-campus strategy, integrating research, teaching and clinical care on two existing campuses in Hillcrest (located 13 miles from the main UCSD campus) and La Jolla, on the eastern portion of the main campus. The health system consists of the UC San Diego School of Medicine, The Skaggs School of Pharmacy and Pharmaceutical Sciences, The Faculty Practice or Medical Group, two Acute Care Facilities under one license:- Hillcrest Hospital and Thornton Hospital, and multiple ambulatory delivery sites on University property, including the John and Rebecca Moores Cancer Center, the Shiley Ophthalmology Center, the Perlman Ambulatory Clinic, Medical Offices North and South, as well as multiple ambulatory delivery sites throughout the county. In April 2011, the East Campus in La Jolla will expand with the opening of the Sulpizio Family Cardiovascular Center, which will offer both ambulatory and acute care services. The hospitals operate under one license with a combined capacity of 552 licensed beds, an average daily census in FY10 of 369 and more than 23,000 patient discharges annually. With the addition of the Sulpizio Cardiovascular Center, our inpatient capacity expands to 600 beds. Our clinical mission is to take exceptional care of people by: providing excellent and compassionate patient care, advancing medical discoveries, educating the healthcare professionals of tomorrow; with core values of Integrity, Caring, Quality, Creativity and Teamwork.

The county of San Diego, with a current population of 3.2 Million is expected to increase by 15 percent from 2008 to 2020. The County does not have a dedicated facility for the care of the under insured or the uninsured. The UCSDHS provides approximately 8.6% of the inpatient market share for San Diego County, but almost 14.6 % of care for undercompensated patients, as defined by Medi-Cal and indigent. When considering care for the indigent population, UCSDHC provides 30% of the inpatient care received in the county (OSHPD 2009 data for acute and psychiatric discharges at acute care hospitals in San Diego County). In FY 2010, the health system had 24,216 inpatient admissions, 60,160 Emergency Room visits and 536,188 ambulatory care visits, providing care to 144,097 unique patients. Our Medical Group has approximately 27,000 assigned managed care lives and provides primary care for approximately 23,000 additional individuals. Our services include a regional trauma center, a level III Neonatal Intensive Care Unit, San Diego and Imperial Counties only Burn Center, bone marrow transplantation as well as heart, lung, liver and kidney transplantation. The Moores Cancer Center is one of only 40 National Cancer Institute Comprehensive Cancer Centers with 37,618 ambulatory visits in FY 2010.

UC San Diego Health System partners strategically with our community partners, particularly the multiple community clinics within San

Diego. Our focus is to provide access to specialty services for which the health system may be the only provider or one of few providers. To enhance access for patients whose medical coverage is through County Medical Services for San Diego County (CMS), we have developed protocols for triage and pre-referral workup. We meet regularly with CMS leadership to ensure patients are receiving timely care and that communication among providers is effective.

EXECUTIVE SUMMARY

The Triple Aim is an Institute for Healthcare Improvement (IHI) initiative that seeks to improve the individual patient experience and the health of entire communities, at a reasonable per capita cost. The IHI position is that the remaining barriers to integrated care are no longer technical, but political, and that preconditions for attaining the goals of improved care, health and cost include enrollment of an identified population, a commitment to universality for its members and the presence of an organization to serve as the integrator. The role of the integrator is to partner with individuals and families, redesign primary care, manage the health of the population, manage finances and achieve macro system integration1. The University of California, San Diego Health System intends to address each component of the Triple Aim, through a complement of initiatives which enhances our infrastructure, introduces innovation and care redesign, integrates and coordinates the delivery of care; as well as through continued participation in nationally recognized improvement efforts.

Understanding that accurate and accessible information is the cornerstone of safe and effective delivery of patient care, the institution began our journey to a comprehensive continuum of care electronic medical record (EMR). Computerized Provider Order Entry (CPOE) was introduced hospital wide in 2004. The health system has opted to use the Epic Hyperspace application (Epic Systems, Verona, WI) to deliver an integrated EMR across ambulatory, inpatient, procedural and emergency care domains. The ambulatory care implementation began in 2005, and the health system inpatient areas will convert to Epic from a legacy electronic system in late February 2011. UCSDHS has been recognized as among the "most wired" hospitals for the past five years and the "most wireless" for the past two. Further, UCSDHS has the distinction of being the only California hospital to garner both honors this year. While our EMR infrastructure provides a platform for information exchange, additional

[1] Berwick DM, Nolan TW, Whittington J. The triple aim: care, health, and cost. Health Affairs 27:759-69, 2008.

programming and reporting capacity must be developed to optimize further its patient safety, quality improvement and patient experience functions.

UCSDHS has embarked on a strategy to create EMR links broadly across the San Diego community both for provider groups with electronic records and those who are developing them. By offering the EMR link tool, community providers obtain a secure portal with which to follow the results and course of care of their patients at the health system and can communicate securely with UCSDHS providers. For the past year, we have also maintained a secure health information exchange (HIE) with a community health center partner, exchanging clinical notes and requests for services. Through this process, we are able to provide individuals seen in our emergency room with specific follow up appointments and immediate EMR access for care provided in our facilities. Building on that baseline, the San Diego community was awarded the Beacon Cooperative Agreement by the Office of the National Coordinator of Healthcare Information Technology (ONC-HIT), to create a seamless HIE between health systems within San Diego county and with linkages to the National Health Information Network (NHIN). The principal investigators, members of the UCSDHS faculty, have outlined several goals in cardiovascular and cerebrovascular health to improve the overall population health of the county using these exchange tools.

With the strengths and challenges of our health system in mind, as well as the goal of achieving the Triple Aim, UCSDHS has developed a comprehensive and multi-faceted approach to population health improvement. The following proposals represent the infrastructure, innovation, care redesign and integration of care to achieve this aim:

Category 1: Infrastructure Development

#3: Implement and Utilize Disease Management Registry Functionality

Goal: Implement the infrastructure and utilize disease management registries to support patient population health, panel management and coordination of care.

Expected Results: Implement disease management registry functionality to capture patients with cardiovascular risk factors to increase appropriate test ordering and reduce office visits as well as the time for resolving abnormal findings.

#4: Enhance Interpretation Services and Culturally Competent Care

Goal: Provide patients with access to timely, qualified health care interpreter services in their primary language, thereby increasing the likelihood of safe and effective care, open communication, adherence to treatment protocols, and good outcomes.

Expected Results: Increase qualified health care interpreter encounters in our patients' primary language.

#7: Introduce Telemedicine

***Goal*:** Provide telemedicine technology and services to improve the care of patients who would otherwise have limited access to specialty care and enable long term management to continue at the patients' medical home with assistance from the specialist.

Expected Result: Increase the access of community providers to specialty care and emergency evaluation services by expanding the number of specialty services providing telemedicine services and the number of sites at which telemedicine services are provided.

 # 8 Enhance Coding and Documentation for Quality Data

Goal: Improve documentation and coding of clinical data to improve the ability to risk adjust administrative data for benchmarking, opportunity identification, performance improvement and reduce manual data abstraction.

Expected Result: Transition to ICD-10 by the Federal deadline with coding staff and clinical documentation specialists competent to demonstrate accuracy as evidenced by successful audits.

Category 2: Innovation and Redesign

 # 3 Redesign Primary Care

Goal: To create a system of monitoring and delivering preventive health care services to established patients receiving primary care at UCSD using an Electronic Medical Record linked Patient Web Portal. Established patient are defined as having had at least two visits with a UCSD primary care physician within the previous 12 months.

Expected Result: A four year strategy will be developed and implemented that includes structure, process and outcomes to improve preventive services received by UCSD enrolled primary care patients.

 # 10: Improve Patient Flow in the Emergency Department

Goal: Reduce wait times in the Emergency Department (ED) so that patients in need of care are triaged in a timely manner, patients receive care in a timely manner, and fewer patients leave the ED without being seen.

Expected Result: Reduce overall average ED length of stay (LOS), overall average wait time to care evaluation, time to admission and prevent patients from leaving without care evaluation.

#11: Use of Palliative Care Programs

Goal: Provide dignified and culturally appropriate care to relieve suffering in a manner that prioritizes pain control, social and spiritual care, and patient/family preferences.

Expected Result: Double the number of palliative care consults across the health system within five years.

 # 12: Conduct Medication Management

Goal: Manage medications so that patients receive the right medications, education, and follow-up as they transition to home in order to reduce medication errors and adverse effects from medication use.

***Expected Results*:** Identify and enroll at risk inpatients in the "hospital to home program" prior to discharge so that they can receive customized and comprehensive medication education and follow-up.

#13 Implement/Expand Care Transitions Programs

Goal: Create smooth transitions of care from inpatient to outpatient settings so that patients being discharged understand the care regimen, have follow-up care scheduled, and are at reduced risk for avoidable readmissions.

Expected Results: Improve the quality and timeliness of discharge communication, improve links to medical homes, and improve patient/family comprehension and satisfaction. Reduce readmissions at 30 days, and return to ED visits within 7 days of discharge.

#14: Implement Real-Time Healthcare-Associated (HAI) Systems

Goal: Expand real-time electronic microbial surveillance that alerts clinicians to the presence of patient conditions that increase the risk of HAIs and pilot an early intervention system that educates clinicians and provides simple tools for HAI prevention.

Expected Result: Implement an automated infrastructure to identify patients at risk of HAI. Provide timely and accurate feedback and education to clinicians about HAI's.

Category 3: To be determined

Category 4: Common Interventions

Common Intervention #1: Sepsis

Common Intervention #2: Central Line-Associated Bloodstream Infection (CLABSI) Prevention

Additional Intervention #1: Surgical Site Infection (SSI) Prevention

Additional Intervention #2: Hospital –Acquired Pressure Ulcer Prevention

SUMMARY

UCSDHS has embarked on initiatives which support our commitment to patient centered care and move our institution further along the path to becoming a successful Accountable Care Organization (ACO) through the use of disease management registries, improving the transitions of care through standardized discharge processes, as well as enhanced pharmacist support for medication management, an electronic medical record across the continuum of care which includes a patient portal supporting bidirectional communication, improved interpreter services, and expanded palliative care services. As an academic medical center providing tertiary services to surrounding communities of San Diego and Imperial counties, our interventions must support their efforts in the response to health care reform and development of ACOs. We are therefore committed to telemedicine and provision of access to our EMR for community providers. These efforts will provide added infrastructure and process improvements in our efforts to minimize hospital acquired infections. We have made the institutional commitment to identify the primary

provider for all admitted patients and for those patients without a medical home or primary provider to link them to a medical home or provider for care post discharge. Improvements in coding and documentation not only support our interventions in urgent improvement, they are the underpinning for understanding clinical outcome, quality and safety, thereby driving the performance improvement efforts of the organization. Collectively, these initiatives will improve the patient experience and health of the populations we serve.

CATEGORY 1

CATEGORY 1 #3: IMPLEMENT AND UTILIZE DISEASE MANAGEMENT REGISTRY FUNCTIONALITY

Goal: Implement the infrastructure and utilize disease management registries to support patient population health, panel management and coordination of care.

UC San Diego Health System has been transitioning from a paper-based medical record to an electronic medical record in the ambulatory setting over the past six years. Our inpatient record is multi-media with both electronic and paper-based data. In 2011, we will complete our transition to a single electronic medical record across the health care system. Historically, providers have been trained to focus on patients during a single visit. Reaching out to patients who did not arrive for their scheduled appointments or required preventive health maintenance was not supported by existing infrastructure. The implementation of an electronic medical record allows UC San Diego providers to view their patients' risk factors outside of an office visit. Rather than addressing the elevated blood pressure for a single patient during an office visit, our providers can address the elevated blood pressures of every patient with hypertension who was seen in the last year. This new type of medical care delivery through disease management registries is consistent with Berwick's vision of redesigning primary care to affect care, health and cost.[2]

The electronic medical record's technological capability is necessary, but not sufficient to bring about better health care at a lower cost.[3] First, clinical protocols are needed to help guide the health care team to order the appropriate monitoring tests or titrate medications based on pre-specified rules. The protocols must also address escalation pathways to direct the health care team to schedule the patient for an office visit rather than trying to manage the patient remotely. Second, patients need to be assigned to a single provider or clinical care team to reduce the risk of multiple providers or care teams reaching out to the patient to try to manage the patient's condition(s). Third, patients must be willing and able to comply with instructions from a provider's office without a face-to-face visit by either telephone or electronic communication. Fourth, providers must receive regular feedback on their performance with historical and peer comparisons.

Disease management registries also allow the health system to evaluate clinical effectiveness, and subsequently, cost-effectiveness.[4,5] From the providers' perspective, the registries help them manage groups of patients simultaneously. From an evaluator's perspective, the registries uniquely match patients to providers with differing practice styles. Each practice style will be associated with some measure of clinical effectiveness and disease-specific costs. These

[2] Berwick DM, Nolan TW, Whittington J. The triple aim: care, health and cost. Health Aff (Millwood) 2008 May-Jun;27(3):759-69.
[3] Gilfillan RJ, Tomcavage J, Rosenthal MB, et al. Value and the medical home: effects of transformed primary care. Am J Manag Care 2010 Aug;16(8):607-14.
[4] Finlay A, Cosovich C, Gebur S. A national disease registry moves beyond clinical impact, fostering measurable cost savings at the community hospital level. J Health Care Finance 2000 Winter;27(7):8-29.
[5] Longitudinal cost experience for gastric bypass patients.SurgObesRelat Dis 2010 May-Jun;6(3):243-8.

variations can be used to identify best practices that can then be disseminated to the provider community to help improve health care delivery for the patient population treated by all of the providers at the health system.

In order to move the Health System from office-based health care delivery toward patient-panel based care delivery, we propose to:

- Build a disease management registry with functions to identify high-risk patients, order lab tests and contact patients without hiring new resources to manage patients outside the office visit.
- Stratify disease management activities into disease monitoring (nursing staff) and medication management (providers). For nursing staff disease management activities, develop protocols to identify patients who require additional monitoring, medication adjustment or another face-to-face visit with their primary care provider.
- Shorten time-to-monitoring and time-to-control (where applicable) for several chronic disease measures:
    - INR monitoring for patients who require chronic oral anticoagulation
    - Blood pressure with diabetes or cardiovascular disease
    - LDL cholesterol for patient with diabetes or cardiovascular disease
    - Renal function for patients with diabetes or cardiovascular disease
    - AST/ALT for patients taking a HMG-CoA reductase inhibitor (statin)
    - Resolution of abnormal breast and cervical cancer screening test results
- Develop a system of audit and feedback of patient registry functions at the provider, clinic, specialty and health system level compared to usual care to drive change. Examples may include the following:
    - Blood pressure control rates
    - LDL cholesterol control rates
    - Nurse-driven or pharmacist-driven protocols with other providers seeing patients who fail the protocols
    - Providers contacting patients directly without nursing/pharmacist assistance

- Lower the total disease-specific costs of care from the health system perspective including outpatient, emergency room and inpatient charges over the observation period.

Expected results: Capture 95% of patients with at least one cardiovascular risk factor in at least one disease management registry (*i.e.*, hypertension, hyperlipidemia, diabetes, coronary artery disease and congestive heart failure).Increase risk factor test ordering (*e.g.*, renal function, A1C testing, LDL cholesterol testing) outside the office visit to 30% of all risk factor tests that are ordered at our health system. Reduce office visits for cardiovascular risk factor monitoring by 25% over the observation period. Reduce the time for resolving an abnormal mammogram finding or an abnormal Pap smear by 10%.

Related Projects: Establishing and utilizing disease registries is fundamental to rapidly achieving improvements in Care Coordination and Preventive Health, especially for At-Risk Populations. These tools enhance our providers' ability to deliver timely and effective care. The disease registries provide an important component for our primary care redesign project, by identifying those patients that require preventive or follow up care, avoiding unnecessary clinic visits or ineffective use of staff time. Efforts of our Care Transitions and Medication Management projects will be incorporated into the electronic medical record, providing important data for the Disease Registries.

Category 1 #3: Implement Disease Management Registries for Improving Clinical Care and Measuring Health Care Costs					
Year 1	Year 2	Year 3	Year 4	Year 5	Related Projects
1. Milestone: (process iii) Implement a functional disease registry. **Metric:** Have registry functionality for two practice sites. **2. Milestone:** (process vii) Create protocols for registry-driven reminders and reports for nurses and providers regarding blood pressure, LDL cholesterol, liver and renal monitoring and management in	**3. Milestone:** (process iii) Create protocols for registry-driven reminders and reports for nurses and providers regarding breast and cervical cancer screening, incorporating free-text analysis by natural language processing. **Metric:** Electronic process in place to correctly identify 95% of screening tests that require	**5. Milestone:** (improvement iv) Generate registry-based reports for each provider and their care team for the care they deliver outside the office visit with historical and peer comparisons for nurse-driven protocols. **Metric:** At least two reports sent out to all primary care providers over the 12-month period.	**8. Milestone:** (improvement iv) Generate registry-based reports for each provider and their care team for the care they deliver outside the office visit with historical and peer comparisons for provider-driven protocols (*e.g.*, blood pressure control, LDL cholesterol control). **Metric:** At least two reports sent out	**11. Milestone:** (process iii) Expand the registry functionality to other areas. **Metric:** Deliver registries to 95% of the practicing ambulatory providers in our Health System. **12. Milestone:** (improvement iv) Generate registry-based reports for each provider and their care team for the care they deliver	• Conduct Medication Management (Cat 2) • Implement/Expand Care Transitions Program (Cat 2) • Care Coordination (Cat 3) • At-Risk Populations(Cat 3) • Preventive Health (Cat 3)

Category 1 #3: Implement Disease Management Registries for Improving Clinical Care and Measuring Health Care Costs					
Year 1	Year 2	Year 3	Year 4	Year 5	Related Projects
patients with cardiovascular diseases. **Metric:** Documented protocols for the above conditions.	additional follow-up. **4. Milestone:** (process v) Conduct staff training on using the registry and associated protocols **Metric:** Document that 75% of all outpatient primary care and cardiology sites have at least two people trained in using the disease registry tools.	**6. Milestone:** (add'l process vii) Share learnings across the Health System ambulatory care setting. **Metric:** Hold two sessions for primary care providers to learn from the highest-performing colleagues for cardiovascular risk factor management. **7. Milestone:** (process iii) Expand the registry functionality to other areas. **Metric:** Add at least two specialty practices that can use the registry functionality.	to all primary care providers over the 12-month period. **9. Milestone:** (add'l process iv) Assess efficacy of processes in place and recommend process improvements to implement if any. **Metric:** Implement workflow changes based on user feedback to either reduce the time it takes to manage the registry or allows more patients to be managed by the same resources. **10. Milestone:** (process iii) Expand the registry functionality to more providers. **Metric:** Document at least some registry activity for 75% of all primary care providers.	outside the office visit with historical and peer comparisons for provider-driven protocols. **Metric:** At least two reports to every provider using a registry.	

CATEGORY 1 #4: ENHANCE INTERPRETATION SERVICES & CULTURALLY COMPETENT CARE

Goal: Patients have access to timely, qualified health care interpreter services in their primary language, thereby increasing the likelihood of safe and effective care, open communication, adherence to treatment protocols, and good outcomes. UC San Diego Health System has struggled to enhance the quality of communication we give to our limited English proficiency patients (LEP) for many years due to lack of resources and clear strategic direction.

We see a major opportunity to improve our collection and storage of information regarding our patient's primary language and how they wish to receive information about their healthcare. Our current PCIS system lacks the ability to store this type of information in the patient's electronic medical record. Our registration staff has adopted questions to ask patient regarding their language preference but sharing that information with all that patients care team is difficult. We know that the system is not always used when it could be. These "failure to utilize" situations are often related to inadequate training of personnel or insufficient access to the technology. Often times, caregivers resort to the using family members to assist with the information exchange with patient. These types of "failure to utilize" events are not currently being captured. It is unknown how much time our medical staff waits once they have called an interpreter before reluctantly using the Language Line for telephonic interpretation. Our Interpreters Services department does not function 24/7 due to financial constraints. Although UC San Diego has a policy and procedures addressing how to access interpretation services it is lacking specific measures and considerations outlined in the *Straight Talk: Model Hospital Policies and Procedures on Language Access* document.

UC San Diego Health System does not have a comprehensive training program that incorporates cultural competency/sensitivity for all staff. Our new hire orientation only briefly touches on how to access an interpreter or use the Language Line but does not teach any concept of cultural competency or sensitivity awareness to culturally diverse patients we are serving. Existing staff have instructional material on their nursing units regarding how to call an interpreter or use Language Line but there is no teaching on appropriate ways to address patient while using an interpreter, positioning, the do's and don'ts while using an interpreter.

UC San Diego Health System's Interpretation Department is significantly under resourced. We currently employ one full time supervisor who is also responsible for overseeing the Spanish Interpretation Services. Three employees are responsible for Spanish Interpretation Services throughout the Health Systems and all 61 medical office clinics. Their hours of hours of Operation are: Monday – Friday 8am-4:30pm with no after hours or weekend availability. The demand for face to face interpretation far outweighs our capacity to assist at that level. The need for expanded technology and interpretation methods must be explored in order for UC San Diego Health System to ensure all patients will receive equitable health care in their preferred language. In this project, we are focusing on increasing patients' access to qualified health care interpretation in a timely manner. One of the solutions we are pursuing is a partnership with Health Care Interpreter Network (HCIN), which is a cooperative of California hospitals and health care providers sharing trained health care interpreters through an automated

video/voice call center system, we can connect within seconds to an interpreter on the HCIN system. When a language is not available from an interpreter at one of the HCIN hospitals, the call connects automatically to a contracted telephonic language provider. HCIN provides interpretation for 170 languages, including American Sign Language (ASL), 24/7. By pooling hospital-based staff, routing calls from video devices and telephones, and linking to external interpreting resources, HCIN enables clinicians and front-end staff at every point of patient contact to reach an interpreter on demand at a very manageable cost. HCIN is an advanced, cost-effective, and innovative solution to language access needs.

In order for UC San Diego Health System to provide our patients with access to timely, qualified health care interpreter services in the setting of culturally competent care, we propose to:

- Complete gap analysis to determine current baseline of gaps that exist in our language access needs. We will report these findings to the senior management team for review and discussion.
- Evaluate, revise and ensure our policies meet The Joint Commission Standards, the *Straight Talk: Model Hospital Policies & Procedures on Language Access,* and the 12Office of Minority Health, U.S. Department of Health and Human Services, *National Standards on Culturally and Linguistically Appropriate Services (CLAS) in Health Care*, 65 Fed. Reg. 80865.
- Integrate cultural competency and awareness material into all staff training opportunities to increase their awareness and adherence to our policy which govern
- Expand our interpretation services by incorporating video and audio conferencing terminals with access to interpretation technology.

Expected Results: Improved access to timely, qualified health care interpreter services in our patients' primary language as evidenced by a 30% increase in qualified health care interpreter encounters.

Related Projects: Successful medical care requires a patient's participation and full understanding of their care plan, this is best accomplished when information is exchanged in the patient's primary language. Improved communication will support our efforts at medication management, care transitions, palliative care discussion, care coordination, preventive health and an optimal patient and care giver experience.

Category 1 #4: Enhance Interpretation Services and Culturally Competent Care					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process ix) Develop an	**2. Milestone:** (process i) Conduct an analysis to	**4. Milestone**: (improvement i)	**7. Milestone:** (improvement i)	**8. Milestone:** (improvement i)	• Conduct Medication Management (Cat 2)

Category 1 #4: Enhance Interpretation Services and Culturally Competent Care					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
organizational plan to patient and family centeredness and cultural competencies. **Metric**: Documentation of plan.	determine gaps in language access. **Metric:** Results of completed gap analysis. **3. Milestone:** (add'l process viii/ improvement i) Improve language access. **Metric:** Establish a baseline of qualified health care interpreter encounters per month.	Improve language access. **Metric:** Increase the # of qualified health care interpreter encounters per month by 10% of baseline. **5. Milestone:** (process iii) Expand qualified health care interpretation technology **Metric:** Implement audio/video conferencing interpreter terminals in 80% of patient care areas. **6. Milestone:** (process vi) Train providers/staff to appropriately utilize health care interpreters (via video, phone or in-person) **Metric:** 80% of staff trained **Numerator:** Number of trained	Improve language access. **Metric:** Increase the # of qualified health care interpreter encounters per month by 20% of baseline.	Improve language access. **Metric:** Increase the # of qualified health care interpreter encounters per month by 30% of baseline.	• Implement/Expand Care Transitions Programs (Cat 2) • Use Palliate Care Programs (Cat 2) • Improve Patient/Care Giver Experience (Cat 3)

Category 1 #4: Enhance Interpretation Services and Culturally Competent Care					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
		providers/staff **Denominator:** Total number of relevant providers/staff			

CATEGORY 1 #7: INTRODUCE TELEMEDICINE

Goal: Provide telemedicine technology and services to improve the care of patients who would otherwise have limited access to specialty care and enable long term management to continue at the patients' medical home with assistance from the specialist. It is well recognized that there is a shortage of many medical specialists throughout California, especially in rural and lower socioeconomic regions. Even when patients are able to travel, from many miles away, follow up is often left to the primary care providers located at great distances. University of California, San Diego has a broad array of clinical specialists that regularly serve the surrounding southern California region and telemedicine is a natural extension of existing specialty care.

UCSD has a long history of performing telemedicine evaluations in various telemedicine initiatives developed by individual UCSD Departments. Our dedication to this new direction of care is found in our initial experience with acute stroke management (in the STRokE DOC clinical research trial), and in our dedication to developing a core infrastructure which will serve all cinical aspects of our health system in the "UCSD AnyWhere" Telemedicine Program. UCSDs view of telemedicine, and its use in clinical care, centers on developing an underlying infrastructure which can be used by any clinical specialty as a routine activity in the course of daily clinical practice This decentralized model for Telemedicine is in contrast to many programs which require physicians to perform Telemedicine consults from one centralized location. We plan to integrate Telemedicine equipment and protocols into existing specialty clinical areas so that patients seen by Telemedicine will be integrated into the schedules of providers where they may also be seeing patients in a more traditional face to face manner.

STRokE DOC: The original STRokE DOC clinical trial was an NIH funded research trial assessing the efficacy of medical decision making using telemedicine technologies. In acute stroke management, thrombolytic therapy (rt-PA) is used to treat acute stroke victims, but requires immediate expertise at the bedside. To date, rt-PA remains the only approved therapy for acute ischemic stroke. If administered within 3 hours of symptom onset, this therapy is associated with a 30% greater likelihood of minimal or no disability at 3 months, with benefit sustained at 1 year as compared to placebo. However, rt-PA is utilized in less than 5% of acute stroke cases, while stroke remains the third leading cause of death and the leading cause of disability in the United States. Prior telemedicine trials had focused on maximizing rt-PA numbers, and have shown that rt-PA treatments can increase with the use of telemedicine. The NIH funded STRokE DOC clinical trial assessed the efficacy of medical decision making using telemedicine technologies. This resulted in a landmark publication in Lancet Neurology showing for the first time, efficacy for acute stroke related medical decision- making ($p = 0.0009$) with a low number needed to assess and high sensitivity, specificity and likelihood ratio. Deployments have enabled hundreds of patients to receive acute stroke consultations, and this publication showed a high rate of rt-PA treatments at 28% for telemedicine (compared to the <5% national average).

The "UCSD AnyWhere" telemedicine and communication technologies hold great promise in enhancing patient care experience and outcomes. Our belief is that telemedicine should not be an isolated environment where specialists attempt to perform evaluations in a sterile manner outside of their own usual practice. This

has been a driving force in UCSD's planned development of a telemedicine infrastructure that can be used as a tool and disseminated to each clinical department. This belief has led to the beginnings of a Department of Telemedicine that will work with other UCSD Clinical Departments in order to help them deliver their own specialty services using state of the art methods and technology. The "UCSD AnyWhere" program is being developed as a "plug and play" core infrastructure which will enable various specialties within the health system to perform telemedicine consultations all using a single, standardized telemedicine policies and procedures in their own environments. Standardized telemedicine protocols, checklists and workflow documents are being piloted both within UCSD and with some potential community partners.

To provide this model of care to more patients, it is essential that we are able to expand telemedicine throughout the health system for use by all specialty departments. In order to do this, we propose to:

- Develop a centralized, optimized, telemedicine infrastructure for use with specialty departments' clinic operations.
- Develop a centralized, optimized, telemedicine infrastructure for use with specialty departments' acute care/ emergency operations.
- Expand telemedicine clinic hours in specialty clinics.
- Expand telemedicine acute care evaluations for emergency medical evaluations services.

Expected Result: Increase the access of community providers to specialty care and emergency evaluation services by expanding the number of specialty services providing telemedicine services and the number of sites at which telemedicine services are provided.

Related Projects: Telemedicine will support our efforts to enhance, expand and improve the efficiency and timeliness of specialty services we provide for our primary care patients, as well as that of our surrounding community; thereby, enhancing care coordination, clinical outcomes and the patient and care giver experience.

Category 1 #7: Introduce Telemedicine					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process ix) Develop a plan to establish the UCSD Department of Telemedicine. **Metric:**	**2. Milestone:** (process i) Establish telemedicine triage unit for at least one selected specialty. **Metric:** Telemedicine program established for	**4. Milestone:** (process ii) Expand telemedicine program for at least one additional specialty/ service.	**6. Milestone:** (improvement i) Increase the number of e-consultations by 10% of baseline. **Metric:** Number of	**9. Milestone:** (improvement i) Increase the number of e-consultations by 20% of baseline. **Metric:** Number of	• Patient/Caregiver Experience (Cat 3) • Care Coordination (Cat 3) • Preventive Health

Category 1 #7: Introduce Telemedicine					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
Documentation of a project plan and policies.	one specialty. **3. Milestone:** (add'l process iii) Pilot telemedicine charting and communication tools for consulting and referring practitioners within the Electronic Medical Record (EMR) system **Metric:** Documentation of completion	**Metric:** Number of telemedicine established specialties/services. **5. Milestone:** (process iii) Expand telemedicine program to additional clinic. Implement a Telemedicine Partnership with at least one additional remote clinical site (SPOKES) **Metric:** Number of remote telemedicine sites **6. Milestone:** (add'l process viii/ improvement i) Establish the baseline number of e-consultations. **Metric:** Number of specialty referrals by e-consultation as a percent of in-person visits.	specialty referrals by e-consultation as a percent of in-person visits. **7. Milestone:** (process ii) Expand telemedicine program for at least one additional specialty/ service. **Metric:** Number of telemedicine established specialties/services. **8. Milestone:** (process iii) Expand telemedicine program to additional clinic. Implement a Telemedicine Partnership with at least one additional remote clinical site (SPOKES) **Metric:** Number of remote telemedicine sites	specialty referrals by e-consultation as a percent of in-person visits. **10. Milestone:** (process iii) Expand telemedicine program to additional clinic. Implement a Telemedicine Partnership with at least one additional remote clinical site (SPOKES) **Metric:** Number of remote telemedicine sites	(Cat 3)

CATEGORY 1 # 8: ENHANCE CODING AND DOCUMENTATION FOR QUALITY DATA

Goal: The goal of this project is to improve both coding and documentation of clinical data so that it reflects a more accurate and specialized data set that can be stratified by quality indicators in order to identify opportunities for performance improvement with reduced manual data abstraction.

Complete and accurate coding of the medical record is critical to the Performance Improvement and Patient Safety program at UC San Diego. A great deal of quality data is currently gathered through manual abstraction of the record, which is inefficient and costly. It is estimated that the Performance Improvement & Patient Safety Department abstracts from more than 10,000 records each year. Improved accuracy of documentation and coding would facilitate data mining and analysis through administrative data, reducing the manual abstraction burden and improving efficiency of quality improvement.

Healthcare documentation in the United Stated currently lags behind much of the world. While we are required to transition to ICD-10 by October 2013, most of the world is already using this expanded set of codes. A major focus of this project will be the transition from ICD-9 to ICD-10. This will create a more robust administrative data set of quality and patient safety codes to use for performance improvement.

UC San Diego is currently participating in the Dr. Foster Elite Global Comparators project with some of the finest medical institutions in the US, the UK, Italy and the Netherlands. This project has been complicated by the need to translate ICD-9 codes into ICD-10 codes for comparison. We will compare clinical outcomes and share best practice across international borders to drive improvements in outcomes from mortality to length of stay and readmissions. This project will help the group understand how healthcare varies across nations, how reimbursement methodologies influence care processes. We hope that there will be additional lessons about the cross-walk between the two coding systems and the benefits to quality analysis with ICD-10.

In order to do this, we propose to:

- Develop and implement a project plan to transition all coding from ICD-9 to ICD-10
- Train coding professionals, clinical documentation specialists, physicians and other licensed independent practitioners in ICD-10
- Audit the results of our transition and leverage the enhanced data set for quality improvement

Expected Result: A successful transition to ICD-10 by the Federal deadline with coding staff and clinical documentation specialists competent to demonstrate data accuracy as measured by external audit.

Related Projects: This project relates to all category 3 and 4 efforts. Accurate documentation and coding contributes to the robust analysis of quality and patient safety indicators for all patients. This project has both broad and profound reach within the organization, but also increases our ability for robust analysis with international systems.

Category 1 # 8: Enhance Coding and Documentation for Quality Data					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process ii) Conduct a needs gap analysis. Complete an inventory of current information systems that house ICD codes. **Metric:** Documentation of the completed analysis/inventory.	**2. Milestone:** (add'l process ix) Develop a project plan for the organization-wide transition. **Metric:** Documented project plan with tactics, owners and deadlines. **3. Milestone:** (process i) Determine whether current information systems that house ICD codes should be converted or upgraded. **Metric:** Assessment documented for each system in the inventory.	**4. Milestone:** (process iv) Train coding staff, clinical documentation specialists on knowledge required for ICD-10 transition. **Metric:** Training complete on 100% of coding staff and clinical documentation specialists. **5. Milestone:** (process vi) Modify existing clinical documentation improvement tools for ICD-10 **Metric:** Documentation of updated tools.	**6. Milestone:** (improvement i) Implement ICD-10 organization-wide. **Metric:** 100% of inpatient records coded using ICD-10. **7. Milestone:** (process xi) Complete an audit of the clinical documentation improvement program. **Metric:** At least 50 records audited by external experts to evaluate accuracy of coding in ICD-10.	**8. Milestone:** (improvement ii) Develop and implement improvement plan based on coding audit (#7) **Metric:** Completion of all action items on the improvement plan.	• All projects in Category 3 and 4

CATEGORY 2

CATEGORY 2 #3: REDESIGN PRIMARY CARE

Goal: To create a system of monitoring and delivering preventive health care services to established patients receiving primary care at UCSD using an Electronic Medical Record linked Patient Web Portal. Established patient are defined as having had at least two visits with a UCSD primary care physician within the previous 12 months.

To a large extent, the current financial reimbursement paradigm for delivering health care in the United States is built around acute symptom related care or providing care to patients after disease develops. This is unfortunate because it is well established that many diseases and disorders can be prevented from occurring or prevented from progressing with timely intervention or screening. There are many challenges related to implementing age and gender related evidence-based screening and disease prevention. There is however great concordance around the efficacy of a great number of preventive screening tests and vaccines. In broad categories, some of those challenges relate to whether patients present for screening at appropriate intervals, whether patients are offered culturally and linguistically appropriate education related to screening or disease management, whether patients themselves follow through when recommendations are offered. It is also the case that even when patients have medical encounters, opportunities are missed to offer timely screening and disease management monitoring. Encouraging patients to establish a medical home which serves as a focal point for disease screening, disease monitoring and chronic care management is a model many think will lead to better health outcomes, better quality of life, improved patient satisfaction and decreased health care costs.

There are approximately 50,000 patients who currently receive primary care services at UCSD. These patients are divided between Family Medicine and Internal Medicine located at various clinical sites around the San Diego County community. Over the last several years UCSD has made a significant investment in electronic medical record system with linkage to a clinical decision support unit. The electronic medical record system includes a secure, password protected patient web portal (MyUCSDChart) which allows patients to access portions of their medical record and for bidirectional communication between patients and providers.

There is significant evidence that electronic medical record systems can be leveraged to assist providers and patients improve preventive care rates. Among the way electronic medical records can be of assistance include imbedded decision support tools and provider alerts at the time of an arrived patient appointment, generation of electronic reminders sent to patients through secure patient web-portals, creation of a variety of patient tracking reports that can be used by teams of care providers and individual physicians. These reports include creation of disease registries (see

disease registry project) for tracking patients with known disease. However the electronic medical record can also be used to alert patients for screening before medical problems arise. Examples might include alerting women over the age of 65 to be screened for osteoporosis, assure that appropriate patients are alerted when influenza vaccine is available or assure appropriate patients have received pneumococcal vaccine. We are aware that not all patients receiving primary care at UCSD will have a home computer the same as we are aware that not all patients have telephones or even a stable place to live. We do however think that the great majority of our patients, regardless of age, have access to a computer or a web enabled cell phone that allows them internet access.

In order to accomplish this goal, we propose to:

- Modify access to MyUCSDChart so that patients can enroll without an "order" from a primary care provider.
- Allow the automatic generation of reminders to patients through MyUCSDChart based on age, gender and last record of preventive measure.
- Encourage, through internal marketing, enrollment in MyUCSD Chart.
- Allow patients to sign up themselves for MyUCSDChart without permission from primary care providers.
- Develop and implement protocols to identify and remind appropriate patients for disease screening or preventive services including:
    - Influenza vaccination
    - Osteoporosis screening
    - Pneumococcal vaccine
    - Breast Cancer screening
    - Colon cancer screening
- Conduct focus groups with patients to get feedback on features of MyUCSDChart found most valuable and what can be improved with a focus on preventive services

Expected results: A four year strategy will be developed and implemented that includes structure, process and outcomes to improve preventive services received by UCSD enrolled primary care patients.

Related Projects: Leveraging the bi-directional portal for patients and providers contained within our electronic medical record will improve the patients' and care givers' experience, as well as our efforts at care coordination, preventive care delivery and the outcomes for at-risk populations. Information and care plans developed in the transitions of care and the hospital-to- home medication management programs will be accessible in the electronic medical records. The data and tools created by the disease registries will be leveraged for the development of protocols and processes.

Category 2 #3: Redesign Primary Care					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (process vii) Establish mechanism for patient self-enrollment in an on-line patient portal for access to their health record and bi-directional communication (MyUCSDChart) **Metric**: Documentation of system being established.	**2. Milestone:** (add'l process viii/ improvement vi) Establish the baseline for primary care patient enrollment in MyUCSD Chart. **Metric**: Patients enrolled in MyUCSDChart **3. Milestone** (process viii) Develop a marketing system to encourage patients to enroll in MyUCSDChart. **Metric:** Documentation of marketing strategy **4. Milestone**: (process ix) Develop a system for protocol driven	**5. Milestone:** (improvement vi) Improvement of patients enrolled in MyUCSDChart by 5 % over baseline **Metric**: Percent of primary care patients enrolled in MyUCSDChart **6. Milestone:** (process x) Develop protocols for screening alerts pushed out to patients. (e.g. breast and colon cancer) **Metric:** Documentation of system, process to implement screening.	**7. Milestone:** (improvement vi) Improvement of patients enrolled in MyUCSDChart by 10 % over baseline **Metric**: Percent of primary care patients enrolled in MyUCSDChart **8. Milestone**: (add'l process xii) Develop a new methodology based on learning. Develop protocols to push reminders out to patients for lipid and glucose screening in patients with CVD and diabetes. **Metric**: Documentation of	**9. Milestone**: (improvement vi) Improvement of patients enrolled in MyUCSDChart by 15% over baseline **Metric:** Percent of primary care patients enrolled in MyUCSDChart	• Implement and Utilize Disease Management Registry Functionality (Cat 1), • Conduct Medication Management (Cat 2) • Implement/Expand Care Transitions Programs (Cat 2), • Patient/care Giver Experience (Cat 3) • Care Coordination (Cat 3) • Preventive Health (Cat 3) • At-Risk Populations (Cat 3)

Category 2 #3: Redesign Primary Care					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
	automatic patient reminders. **Metric**: Document system and processes to implement		system, process to implement screening.		

CATEGORY 2 # 10: IMPROVE PATIENT FLOW IN THE EMERGENCY DEPARTMENT

Goal: Reduce wait times in the Emergency Department (ED) so that patients in need of care are triaged in a timely manner, patients receive care in a timely manner, and fewer patients leave the ED without being seen. ED crowding and patient flow are significant problems both nationally and at our institution. We see approximately 61,000 patients annually at both UCSD-Hillcrest and Thornton Hospital EDs. Average ED lengths of stay (LOS) last year (FY2009-10) were 5:45 and 4:07 respectively, with much longer stays for patients who are admitted from the ED (average LOS 8:47 and 7:16 respectively), mirroring national trends. We have previously demonstrated the impact of delayed admissions and LOS on other ED patient flow parameters,[6] as well as the role patient flow has on patients who leave before being seen (LWBS) and ambulance diversion.[7] Improving patient flow and ED LOS can greatly improve our ability to care for patients by reducing the proportion of those who LWBS and are diverted due to ED overcrowding. We will implement multiple process improvements and patient flow redesign to address LOS, patient wait time to evaluation and care in the ED, and LWBS rates. In order to accomplish our goal, we proposed to:

- Analyze ED throughput for bottlenecks and opportunities for targeted improvement
- Initiate care per protocol on patient arrival and triage to expedite medical examination and treatment
- Expand physical patient care areas for both EDs for increased capacity
- Innovate and implement an electronic health information exchange with pre-hospital care and community clinics

Expected Result: Reduce overall average ED length of stay (LOS), overall average wait time to care evaluation, time to admission and prevent patients from leaving without care evaluation. Efforts to prevent patients leaving prior to medical evaluation will be focused on our Hillcrest Emergency Department, as the rates at Thornton Emergency Department are consistently below 1.5%.

Related Projects: Improved patient flow in the ED will result in more rapid, appropriate care that will improve the overall quality of care, the patient experience and the coordination of care. In addition, by addressing ED overcrowding, care will be more accessible to patients in need of emergent services, thereby improving overall community and population health. More efficient and timely care may also improve the timely initiation of therapy for patients with sepsis.

[6] Chan TC, Killeen JP, Castillo EM, Guss DA. The impact of delayed admissions held in the emergency department on wait time, patient care time, and length of stay for other patients. Ann Emerg Med 2006; 48(4 Supp 1):S5.

[7] Chan TC, Killeen JP, Kelly D, Guss DA: Impact of Rapid Entry and Accelerated Care at Triage on Reducing Emergency Department Patient Wait Times, Lengths of Stay, and Rate of Left Without Being Seen. Ann Emerg Med 2005; 46(6):491-497

Category 2#10: Improve Patient Flow in the Emergency Department					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process v) Redesign the process to be more effective. Develop improvements such as care initiation protocols on patient entry/triage. **Metric:** Submission of care initiation protocols **2. Milestone:** (add'l process viii/ improvement ii) Establish baseline for the percent of patients who leave the Hillcrest ER without being seen **Metric:** Left Without Being Seen (LWBS) **Numerator:** Number of patients who present to the ER but are not seen by the Provider **Denominator:** Total number of patients who presented to the ER for that Midnight to Midnight cycle **3. Milestone:** (add'l process viii/ improvement i)	**4. Milestone:** (improvement ii) Decrease the percent of patients who leave the Hillcrest ER without being seen by 5%. **Metric:** Left Without Being Seen (LWBS) **Numerator:** Number of patients who present to the ER but are not seen by the Provider **Denominator:** Total number of patients who presented to the ER for that Midnight to Midnight cycle **5. Milestone:** (add'l process xi) Implement a new technology to support the project. Develop health information exchange link with pre-hospital care providers such that patient information (such as field ECG), is available prior to patient arrival **Metric:** Demonstrate availability of technology	**7. Milestone:** (improvement ii) Decrease the percent of patients who leave the Hillcrest ER without being seen by 10%. **Metric:** Left Without Being Seen (LWBS) **Numerator:** Number of patients who present to the ER but are not seen by the Provider **Denominator:** Total number of patients who presented to the ER for that Midnight to Midnight cycle **8. Milestone:** (improvement i) Reduce overall ED wait time for admitted patients by 10% over baseline **Metric:** Door-to-admission	**9. Milestone:** (improvement ii) Decrease the percent of patients who leave the Hillcrest ER without being seen by 15%. **Metric:** Left Without Being Seen (LWBS) **Numerator:** Number of patients who present to the ER but are not seen by the Provider **Denominator:** Total number of patients who presented to the ER for that Midnight to Midnight cycle **10. Milestone:** (improvement i) Reduce overall ED wait time for admitted patients by 15% over baseline **Metric:** Door-to-admission	**11. Milestone:** (improvement ii) Decrease the percent of patients who leave the Hillcrest ER without being seen. Maintain 15% below baseline. **Metric:** Left Without Being Seen (LWBS) **Numerator:** Number of patients who present to the ER but are not seen by the Provider **Denominator:** Total number of patients who presented to the ER for that Midnight to Midnight cycle **12. Milestone:** (improvement i) Reduce overall ED wait time for admitted patients. Maintain 15% below baseline **Metric:** Door-to-admission	• Patient/Care Giver Experience (Cat 3) • Care Coordination (Cat 3) • Sepsis (Cat 4)

Category 2#10: Improve Patient Flow in the Emergency Department					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
Establish baseline for overall ED wait time for admitted patients. **Metric:** Door-to-admission	**6. Milestone:** (improvement i) Reduce overall ED wait time for admitted patients by 5% over baseline **Metric:** Door-to-admission				

CATEGORY 2 #11: USE OF PALLIATIVE CARE PROGRAMS

Goal: Patients receive dignified and culturally appropriate care to relieve suffering in a manner that prioritizes pain control, social and spiritual care, and patient/family preferences. As a tertiary referral center, UCSD houses multiple programs of specialty care for the San Diego region including trauma, burn, solid organ transplant, bone marrow transplant, a comprehensive cancer center, and many others and as a result sees a disproportionately high level of complexity and severity of illness. As the public hospital system in San Diego, UCSD also sees a disproportionately large number of patients who are under- or uninsured, non-English speaking, or of lower socioeconomic status, who present with more advanced illness and have fewer treatment options. For these reasons, we see a large number of patients with a high symptom burden and poor prognosis.

It has been demonstrated that palliative care teams in hospitals improve multiple outcomes. There is an emerging literature that palliative care teams improve patient and family satisfaction with care at the end of life[8]. Specificically, palliative care teams can assist with pain and symptom management, recognition of the patient as a whole person, clear medical decision making, life completion and preparation for death[9]. Palliative care consultations have been clearly associated with decreased costs of care at the end of life[10] and higher costs of treatment have been associated with lower quality of life in the week before death[11]. Palliative care teams are instrumental in assisting with transitions in care such as transfers out of the ICU when critical care is no longer effective or consistent with patients' goals, or to hospice when further disease-focused treatments are not available or helpful. Conversations about preferences for end-of-life care have been shown to improve quality of life for patients and caregiver bereavement[12]. Additionally, palliative care can and should be provided to any patient with suffering, regardless of their prognosis or options for life-prolonging treatments. In fact, recent literature has shown that palliative care consultation as part of treatment at the time of diagnosis, rather than late in the course of illness, has been associated not only with improved quality of life but also with improved overall survival[13].

In 2010, the first full calendar year with teams seeing consults at both UCSD hospitals, the palliative care team at UCSD performed 490 inpatient consults between the two consult services, which represents 2% of all inpatient admissions. The palliative care teams saw 35% of patients who died in our Hillcrest hospital with a length of stay > two days. We propose a multi-faceted system to increase the numbers of patients referred to palliative care teams at UCSD to both generate new consults through systematic active case-finding and provide expert palliative care services to greater numbers of patients. In order to do this, we propose to:

[8] Higginson, et al Journal of Pain and Symptom Management 2003; 25:150-168 and Finlay, et al Annals of Oncology 2002; 13 Suppl 4:257-64
[9] Steinhauser, et al Annals of Internal Medicine 2000; 132:825-832
[10] Morrison, et al Archives of Internal Medicine 2008; 168:1783-1790
[11] Zhang, et al Archives of Internal Medicine 2009; 169:480-488).
[12] Wright, et al Journal of The American Medical Association 2008; 300:1665-1673
[13] Temel, et al New England Journal of Medicine 2010; 363:733-742

- Expand the current teams to meet needs of program expansion
- Create automated triggers to facilitate the identification of patients who may benefit from palliative care consultation and with this information, approaching the managing team to offer consultation.
- Monitor patient transitions from ICUs or changes in code status across our hospitals to increase appropriate transitions from aggressive life-prolonging care in a futile setting.
- Monitor costs of patients seen by palliative care versus inpatient controls, especially patients who die in the hospital.
- Monitor patient reports of symptoms, including pain scores, to assess effectiveness of symptom interventions.

Expected Result: Double the number of palliative care consults across the health system within five years.

Related Projects: Establishing goals of care and relieving symptoms, the cornerstones of palliative care, are fundamental to improving the patient and care giver experience. They support care coordination, the transitions in care as well as optimal medication management.

Category 2 #11: Use of Palliative Care Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process v) Redesign the process in order to be more effective by developing automated triggers for consideration of palliative care consult. **Metric:** Documentation of criteria and mechanism for automated triggers. **2. Milestone:** (process iii) Establish a baseline number of palliative care consults **Metric:** Palliative care consults meet targets established by the	**3. Milestone:** (process iii) Increase the number of palliative care consults by 25% over baseline **Metric:** Palliative care consults meet targets established by the program **Numerator:** Number of palliative care consults **4. Milestone**: (improvement ii) Establish the baseline of patients who died in the hospital and	**5. Milestone:** (process iii) Increase the number of palliative care consults by 50% over baseline **Metric:** Palliative care consults meet targets established by the program **Numerator:** Number of palliative care consults **6. Milestone**: (improvement ii) Among patients who died in the hospital,	**7. Milestone:** (process iii) Increase the number of palliative care consults by 75% over baseline **Metric:** Palliative care consults meet targets established by the program **Numerator:** Number of palliative care consults **8. Milestone**: (improvement ii) Among patients who died in the hospital, increase the proportion	**9. Milestone:** (process iii) Increase the number of palliative care consults by 100% over baseline **Metric:** Palliative care consults meet targets established by the program **Numerator:** Number of palliative care consults **10. Milestone**: (improvement ii) Among patients who died in the hospital,	• Implement/expand Care Transitions (Cat 2) • Conduct Medication Management (Cat 2) • Improve Patient/Care Giver Experience (Cat 3)

Category 2 #11: Use of Palliative Care Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
program **Numerator:** Number of palliative care consults	received a palliative care consult **Metric:** Percent of total in-hospital deaths who had a palliative care consult **Numerator:** Number of patients who died in the hospital and received at least one palliative care consult **Denominator:** Number of patients who died in the hospital	increase the proportion of those who received a palliative care consult by 5% over baseline **Metric:** Percent of total in-hospital deaths who had a palliative care consult **Numerator:** Number of patients who died in the hospital and received at least one palliative care consult **Denominator:** Number of patients who died in the hospital	of those who received a palliative care consult by 10% over baseline **Metric:** Percent of total in-hospital deaths who had a palliative care consult **Numerator:** Number of patients who died in the hospital and received at least one palliative care consult **Denominator:** Number of patients who died in the hospital	increase the proportion of those who received a palliative care consult by 15% over baseline **Metric:** Percent of total in-hospital deaths who had a palliative care consult **Numerator:** Number of patients who died in the hospital and received at least one palliative care consult **Denominator:** Number of patients who died in the hospital	

CATEGORY 2 # 12: CONDUCT MEDICATION MANAGEMENT

Goal: Manage medications so that patients receive the right medications and education as they transition from the inpatient care to home in order to reduce medication errors and adverse effects from medication use. Failure to adequately plan and implement medication related transitions from hospital to home is a cause for failed therapeutic objectives and unplanned visits to the emergency department as well as hospital readmissions[14], [15]. As a tertiary academic center, we have several high risk populations whose medical managements require complex poly-pharmaceutical regiments, including bone marrow transplant, solid organ transplant, congestive heart failure, patients on anticoagulation, diabetics, hypertensive patients and patients with cancer. Our current rates for congestive heart failure readmission are above the national average and we believe suboptimal compliance with medication is a contributing factor. The intent of the UC San Diego Health System medication management program is to spread the long-term medication management principles successfully employed in our organ transplant population to other targeted high-risk groups. These tactics will improve medication efficacy in the critical transition phase from hospital to home.

The proposed intervention to enhance medication reconciliation and transition from hospital to home includes a thorough medication history assessment and reconciliation at admission and discharge. Population-based screening criteria will be used to identify and prioritize patients for pharmacist intervention during hospitalization. Admission assessment includes previous non-adherence, lack of efficacy and side effects as well as a health literacy evaluation[16]. High risk patients will receive tailored patient education and discharge planning as well as enhanced follow-up post discharge. Pharmacists will verbally educate on discharging medication throughout the hospital stay; verify patient comprehension of medication instruction (utilize Teach Back method), and provide written information with patient specific references and learning tools, such as MedActionPlan (see below) [17, 18, 19]. During the discharge process, they will coordinate the delivery of prescriptions to the patient and assist in resolving payment issues. Pharmacists will create a patient-medication contract, coordinate timely post-discharge follow-up and communicate the medication list with patient's follow-up health care provider. Examples of the tools to be used with patients include: a patient specific medication record, special instructions (these can be edited at the time of printing), weekly medication checklist, and health care record (allows

[14] Stewart S, Pearson S, Horowitz JD. Effects of a home-based intervention among patients with congestive heart failure discharged from acute hospital care. *Arch Intern Med*. 1998;158:1067-1072.
[15] Rainville EC. Impact of pharmacist interventions on hospital readmission for heart failure. *Am J Health Syst Pharm*. 1999;56:1339-1342.
[16] Schnipper JL, Kirwin JL, Cotugno MC, et al. Role of pharmacist counseling in preventing adverse drug events after hospitalization. *Arch Intern Med.* 2006;166(5):565-571
[17] Murray MD, Young J, Hoke S, et al. Pharmacist intervention to improve medication adherence in heart failure. *Ann Intern Med.* 2007;146:714-725.
[18] Walker PC, Bernstein SJ, Jones JN, et al. Impact of a pharmacist-facilitated hospital discharge program: a quasi-experimental study. *Arch Intern Med*. 2009 ;169(21):2003-2010.
[19] Varma S, McElnay J, Hughes CM, et al. Pharmaceutical care of patients with congestive heart failure: interventions and outcomes. *Pharmacotherapy*. 1999;19:861-869.

the patient to participate in their health monitoring). After hospital discharge, the highest-risk patients will have a face-to-face visit within 48 hrs of discharge. Moderate-risk patients will have a follow-up phone call within 48 hrs [20]. These follow-up contacts will compare patient's self-reported medication list with discharge list, reassess comprehension of meds, identify storage of meds and use of pill box, assess medication adherence and address potential adherence concerns [21]. They will also identify additional concerns or medication-related problems (ADEs) and confirm scheduled follow-up appointments. Significant findings will be documented in the medical record and communicated to patient's primary care physician.

MedActionPlan was introduced in 2005 and consists of HIPAA compliant web-based programs that allow healthcare providers to quickly create, customize, document and print a personalized medicine schedule for a patient at no charge. A medication profile can be generated from a medication database or written in as free text, special instructions and dietary considerations can also be added for each medication. Patients can also view their medication schedule through MyMedSchedule, another web-based program which facilitates the hospital to home transition of care. MyMedSchedule also allows patients to receive e-mail or text message reminders so they don't forget to take their medications or get refills. Currently, there are five modules that fields that are currently setup to track a specific subpopulation of patients who are at a higher risk for poly-pharmacy (and medication error): HIV, chronic heart failure, solid organ transplant, bone marrow transplant, and diabetes. MedActionPlan has been shown to decrease hospital re-admission rates by informing patients of the proper use of their discharge medications before they leave the hospital. A multidisciplinary team at the Hospital of the University of Pennsylvania was able to reduce the 30-day readmission rate on a high-turnover general medicine unit by almost 3% (from 13.6% 10.8%) [22]. One intervention they used to reduce readmission was using MedActionPlan to create wallet sized medication schedules for their patients. MedActionPlan has also been used in the outpatient setting as a tool to improve patient education, compliance, and satisfaction while reducing medication errors. A multi-phased study at the University of Nebraska Medical Center (UNMC) showed patients and caregivers who received daily MedActionPlans scored higher on a survey of medication knowledge than those who had received a MedActionPlans only upon discharge[23]. In addition, transplant pharmacists and coordinators involved in teaching reported that patients and caregivers who received daily MedActionPlans were more actively engaged in the plan of care, more prepared to ask meaningful questions, and more confident with medication self-administration.

In order to implement a comprehensive hospital-to-home medication management program, we propose to:

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[20] Dudas V, Bookwalter T, Kerr KM, Pantilat SZ. The impact of follow-up telephone calls to patients after hospitalization. *Am J Med.* 2001;111(9B):26S-30S.

[21] Bubalo J, Clark RK, Jiing SS, et al. Medication adherence: Pharmacist perspective. *J Am Pharm Assoc.* 2010;50:394-406

[22] Buckley B, Buckley J. ***Project BOOST Cuts Hospital Readmissions.*** Pharmacy Practice News Vol. 37, Sept 2010.

[23] Lecia Snell and Laurel Williams, University of Nebraska Medical Center. *Evaluation of Post Solid Organ Transplant Patient Education for Continuous Quality Improvement.*

- Establish a program plan with screening criteria for prioritizing high risk patients
- Provide pharmacist education prior to discharge for high risk populations
- Utilize patient friendly education and medication management tools
- Provide targeted post- discharge pharmacist support

***Expected Results*:** Enroll 75% of at risk inpatients into the "hospital to home program" prior to discharge

***Related Projects*:** Effective medication management is critical to the overall treatment of complex diseases. Pharmaceutical advances have led to more complex medication regimens with contribute to vulnerabilities in patient understanding and compliance. By addressing these risks with a patient-centered approach, we anticipate improving patient experience, transitions of care, care coordination and health outcomes. These improvements should reduce unplanned readmissions as well as emergency room visits.

Cat 2 #12: Conduct Medication Management					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (add'l process ix) Develop a plan to establish a medication management program. **Metric:** Documentation of project plan.	**2. Milestone:** (process ii) Develop criteria and identify targeted patient populations **Metric:** Establish a baseline of patients in the targeted populations that consistently receive medication management counseling **3. Milestone:** (process iii) Implement a program to improve continuity of medication management from acute care to the ambulatory setting	**4. Milestone:** (improvement i) Manage medications for targeted patients **Metric:** Increase the number of patients that consistently receive medication management by 100% over baseline.	**5. Milestone:** (improvement i) Manage medications for targeted patients **Metric:** Increase the number of patients that consistently receive medication management by 200% over baseline.	**6. Milestone:** (improvement i) Manage medications for targeted patients **Metric:** Increase the number of patients that consistently receive medication management by 300% over baseline.	• Implement and Utilize Disease Management Registry Functionality (Cat 1) • Redesign Primary Care (Cat 2) • Improve Patient Flow in the Emergency Department/Rapid Medical Evaluation (cat 2) • Use Palliative Care Programs (Cat 2) • Implement/Expand Care Transitions Programs (Cat 2) • Patient/Care Giver Experience (Cat 3)

Cat 2 #12: Conduct Medication Management					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
	(hospital to home) **Metric:** Written plan to provide medication reconciliation as part of the transition from acute care to ambulatory care				• Care Coordination (Cat 3) • Preventive Health (Cat 3) • At Risk Populations (Cat 3)

CATEGORY 2 #13: IMPLEMENT/EXPAND CARE TRANSITIONS PROGRAMS

Goal: Create smooth transitions of care from inpatient to outpatient settings so that patients being discharged understand the care regimen, have follow-up care scheduled, and are at reduced risk for avoidable readmissions.. Both a quality and financial opportunity for improvement, reducing the occurrence of unplanned readmissions has become a more urgently focused topic for improvement with the proposed change in reimbursement penalties set to begin in FY 2013. The acutely ill inpatient often has multiple risk factors for readmission, returns to the emergency room, and adverse drug events. These risk factors include certain high risk diagnoses (CHF, Cancer, Pneumonia, for example), but also represent many risk factors overrepresented in the Safety Net population (e.g. poor health literacy, major psychiatric disorder, lack of family / caregiver, homelessness, polypharmacy, lack of a defined PCP or medical home). According to a recent study, unplanned readmissions (all cause) cost Medicare $17.4 billion in 2004, with 20% of the Medicare fee-for-service patients readmitted within 30 days of discharge.[24] The UC San Diego all-cause, all payor, non-newborn 30-day readmission rate was 11.7% (Jul'09-Jun'10).

The literature has plentiful evidence that flaws in the transition processes contribute to many preventable readmissions. Patients are not routinely screened for these risk factors in any reliable or standardized fashion, and even when the risk factors are identified, the diffusion of responsibility and poor communication amongst the healthcare team leads to an uncoordinated and unreliable approach to dealing with the barriers to a safe transition. Patient and family instructions and education are often compressed into the day of discharge. Furthermore, educational efforts and care instructions are often inadequate, and performed without any confirmation of their understanding and comprehension. Medication reconciliation is often inaccurate, with resultant errors in medication lists for the patient and next provider,[25] [26]and essential elements in discharge communication are provided too late to be of use, or are provided inaccurately and incompletely.[27] Post hospitalization appointments are often not scheduled with the family/patient input, or are not scheduled at all prior to the patient's discharge, leading to uncertainty about the reliability of timely outpatient follow up.[28] In our reviews of the UC San Diego transition from the inpatient setting, we have verified that UC San Diego transitions from the inpatient suffer from these same flaws.

[24] Jencks SF, Williams MV, Coleman EA. Rehospitalizations among patients in the medicare fee-for-service program. N Engl J Med. April 2, 2009 2009;360(14):1418-1428.
[25] Forster AJ, Murff HJ, Peterson JF, Gandhi TK, Bates DW. The incidence and severity of adverse events affecting patients after discharge from the hospital. Ann Intern Med. Feb 4 2003;138(3):161-167.
[26] Forster A, Clark H, Menard A, et al. Adverse events among medical patients after discharge from hospital. CMAJ. 2004;170:345-349.
[27] Halasyamani L, Kripalani S, Coleman E, et al. Transition of care for hospitalized elderly patients--development of a discharge checklist for hospitalists. Journal of Hospital Medicine. Nov 2006;1(6):354-360.
[28] Williams MV, Budnitz T, Greenwald JL, Halasyamani L, Howell E, Kerr K, Maynard G, Vidyarthi A, Coleman E. Project BOOST Implementation Guide – Better Outcomes for Older Adults via Safe Transitions. Society of Hospital Medicine, 2009.

Clearly, an organized interdisciplinary approach utilizing a proven quality improvement (QI) framework and multifaceted interventions are needed to establish breakthrough levels of improvement for such a complicated problem. A redesign of the process is essential, along with better coordination of both inpatient and ambulatory aspects of care.

Fortunately, we have some good evidence that improvement is possible. Redesigned transitional care models can improve quality outcomes and achieve cost savings, as many readmissions and other complications are preventable. Many common interventional themes run throughout the literature demonstrating successful programs to improve transitions.[29, 30, 31] Elements of Project Red and **The Care Transitions Intervention™** have been incorporated into a Society of Hospital Medicine initiative called **Project BOOST**.

UC San Diego has early innovative experience with Project BOOST and other interventional programs that incorporate best practice bundles strongly linked to improved outcomes, as well as a number of innovative programs that leverage UC's technology and innovation strengths. A multidisciplinary steering committee has focused on pilot wards (6E, 6W) to introduce improved patient / family preparation using "teach back" techniques. Internal Medicine services have stressed communication with outpatient providers on the day of discharge, as well as the timeliness and quality of the discharge summary. Pilot attempts to proactively identify high risk conditions for readmissions and mitigate the risk have been undertaken, as well as attempts to foster interdisciplinary communication, enhance accurate medication reconciliation and provision of accurate medication lists, and providing post hospitalization follow up phone calls.

UC San Diego Health System has also been a pioneer in developing models of identifying patients at risk for either readmission or presentation to the emergency department and then providing them with appropriate medical homes, in partnership with community clinics.[32] Through expansion of this technology to the core electronic medical record for the health system, provision of medical home placement and seamless transmission of health information is now possible for all inpatient admissions. This effort compliments the multidisciplinary efforts outlined above to provide all patients with a more standardized and reliable transition experience. There is evidence that provision of this "templated" or checklist driven discharge is optimal for fragile populations such as the elderly.

In spite of all these efforts, improving the reliability of transitions of care has proven difficult. While some improvement has occurred across the spectrum of services, other improvements are limited to pilot wards or selected services. Interdisciplinary communication is hampered by historical culture and health record

[29] Jack BW, Chetty VK, Anthony D, et al. A reengineered hospital discharge program to decrease rehospitalization. Annals of Internal Medicine. 2009;150:178-187.
[30] Balaban RB, Weissman JS, Samuel PA, Woolhandler S. Redefining and redesigning hospital discharge to enhance patient care: a randomized controlled study. JGIM: Journal of General Internal Medicine. 2008;23(8):1228-1233.
[31] See A Look at Care Transitions article: http://nashville.medicalnewsinc.com/reducing-unplanned-hospital-readmissions-cms-2426.
[32] Chan TC et al. Impact of an internet-based emergency department appointment system to access primary care at safety net community clinics. Ann Emerg Medicine, 2009 Aug 54(2): 279-84.

architecture, as well as by the logistics of physicians rounding on a multitude of wards. Resources for coaching patients, providing post discharge phone calls, and conducting regular audit and feedback of key quality parameters are difficult to secure in an environment with a multitude of competing priorities. Expansion and enhancements to the UC San Diego "transitions of care" program are needed to create smooth transitions of care from inpatient to outpatient settings so that patients being discharged understand the care regimen, have follow-up care scheduled, and are at reduced risk for avoidable readmissions. In order to accomplish this, we propose to:

- Assess current care transitions and processes, identify key leverage points for improvement, and develop operational definitions and measurement system to assess progress.
- Develop and implement a proactive assessment of risk factors for readmission, return to the ED, adverse drug events, and other barriers to a safe transition, with efforts to address risk factors in a coordinated and effective way.
- Develop best practice standards and protocols for care transitions, including proactive, patient involved scheduling of outpatient follow up, communication with the next provider of care, and provision of patient friendly discharge instructions and "teach back" verification of understanding.
- Sustaining and expanding pilot wards for improvement efforts, with enhanced resources focused on improving care transitions.
    - Establishing physician leadership and measurement / analyses structure
    - Establishing a designated discharge advocate / coordinator (RN level of training).
    - Enhanced pharmacist staffing for improved medication counseling on high risk patients and improved medication reconciliation.
    - Establish a dedicated care transitions call center, focused on follow up phone calls and post discharge hotline functions.
- Accelerate improvement by participating in collaboratives related to Transitions of Care: Project BOOST mentoring and participation in the "Preventing Readmissions Network" a collaborative effort coordinated by the Hospital Association of San Diego and Imperial Counties.
- Integrate and improve upon Electronic Medical Records and Information Technology:
    - Implement and insure proper use of a standardized "discharge navigator", which assists with medication reconciliation, improved communication between care providers, and integration of piloted tools (such as the risk stratification tool, discharge checklists, and other innovations).

- Use of an embedded electronic scheduler to provide medical homes to patients being discharged for whom no primary care practice has been identified in the course of admission. This tool can proactively define guaranteed, expedited follow up appointment slots with appropriate community clinic partners in the region, as well as route key clinical data to them.
- Project Beacon innovations: allowing for secure sharing of appropriate medical information between different providers in the region.
- Medication lists and discharge instructions can be transformed into patient friendly documents that enhance their adherence and understanding by programs like the MedActionPlan.com™ (Attachment A). Creating seamless links between the enterprise EMR and these patient education tools will promote their increased adoption and utility. An example of a CHF patient Med Action Plan is show in Table 1. A program similar to this was utilized in the landmark Project RED study.

Expected Results: Improved patient satisfaction as measured by HCAHPS surveys on pertinent items (overall patient satisfaction, extent they felt ready for discharge, speed of discharge process, instruction quality, medication explanation, received help needed, written instructions received). Improved quality and timeliness of discharge communication to next provider. Improved links to medical homes. Improved patient /family understanding / education. Reduction in readmissions at 30 days, and reduction in return to ED within 7 days of discharge.

Related Projects: One of the key interventions to improve care transitions involved developing a risk stratification system for high risk conditions that can lead to readmission or undesirable Emergency Department visits, related to the Category 1 "Develop Risk Stratification Capabilities." After piloting the risk stratification model, we will integrate it into the electronic medical record. Project BOOST advocates a routine screen for inpatients that may benefit from Palliative Care consultation, as Palliative Care experts can improve the quality of patient's lives as well as reduce readmissions, creating a link to the Cat. 2 Project "Use Palliative Care Programs". Improved medication reconciliation, improved pharmacist involvement in family / patient education, "teach back" techniques, the "Discharge Navigator" and use of the the MedActionPlan.com™ program are all part of this Care Transitions Project, providing a robust synergy with the Category 2 "Conduct Medication Management" Project, as well as the "Reduce Harm from Medical Errors" Cat 3 effort. Improving Care Transitions, using intervention bundles similar to those we've outlined here, have been shown to improve patient satisfaction, reduce costs, and reduce readmissions, creating synergy with those projects as well.

Category 2 #13: Implement/Expand Care Transitions Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (process vii) Develop a staffing and implementation plan	**4. Milestone:** (improvement iv) Identify the top chronic	**9. Milestone:** (process ii) Implement standard care transition	**14. Milestone:** (process ix) Improve discharge summary timeliness.	**16. Milestone:** (process ii) Implement standard care transition processes	• Reduce Readmissions (Cat 3)

Category 2 #13: Implement/Expand Care Transitions Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
to accomplish the goals/objectives of the care transitions program **Metric:** Documentation of the staffing plan, which describes the number and types of staff needed and the specific roles of each participant **2. Milestone:** (process i) Develop protocols for effectively communicating with patients and families during and post-discharge to improve adherence to discharge and follow-up care instructions **Metric:** Care transitions protocols **3. Milestone**: (add'l process x) Designate team to support and / or manage the project intervention. **Metric:** Documentation of team.	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 **Metric:** Top Chronic Conditions Report **5. Milestone:** (process v) 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 **Metric:** Patient stratification system **6. Milestone:** (add'l process iii) Pilot care transitions process for patient/family communication and interdisciplinary rounds on two wards. **Metric:** Completion of pilot	processes **Metric:** Care transitions protocols. Submission of protocols for four pilot wards. **10. Milestone:** (process iii) Establish a process for hospital-based case managers *(or equivalent)* 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. **Metric:** Care transitions protocols **11. Milestone:** (process ix) Improve discharge summary timeliness. 80% of discharge summaries of all medical and general surgical patients complete within 48 hours of discharge.	90% of discharge summaries of all medical and general surgical patients complete within 48 hours of discharge. **Metric:** Discharge summary completion within 48 hours of discharge. **Numerator:** Discharge summary complete within 48 hours of discharge. **Denominator:** Patients discharged from all Hospital Medicine, Family Medicine, and General Surgical services. **15. Milestone:** (improvement vi) Increase percent of medical surgical inpatients discharged to home setting assigned to medical homes by 30% over baseline. **Numerator:** Number of medical / surgical inpatients discharged to home with referral / assignment to a medical home. **Denominator:** Number of medical / surgical inpatients discharged to	**Metric:** Care transitions protocols expanded to all medical/surgical wards. **17. Milestone:** (add'l process vii) Share learnings from implementing process improvements, such as through presentations, reporting, or publication, in at least two venues with peer organization audiences. **Metric:** Shared Learning materials. **18. Milestone:** (improvement vi) Increase percent of medical surgical inpatients discharged to home setting assigned to medical homes by 50% over baseline. **Numerator:** Number of medical / surgical inpatients discharged to home with referral / assignment to a medical home. **Denominator:** Number of medical / surgical inpatients discharged to home	• Improve Patient Experience (Cat. 2) • Develop Risk Stratification Capabilities (Cat 1) • Use Palliative Care Programs (Cat 2) • Conduct Medication Management (Cat 2)

Category 2 #13: Implement/Expand Care Transitions Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
	7. Milestone: (process ix) Improve discharge summary timeliness. **Metric:** 80% of Hospital Medicine Service discharge summary completion within 48 hours of discharge. **Numerator:** Discharge summary complete within 48 hours of discharge. **Denominator:** Patients discharged from specified hospitalist services. **8. Milestone:** (add'l process viii/ improvement vi) Establish a baseline percent of medical surgical inpatients discharged to home setting assigned to medical homes. **Numerator:** Number of medical / surgical inpatients discharged to home with referral / assignment to a medical home. **Denominator:** Number of medical / surgical inpatients discharged to home	**Metric:** Discharge summary completion within 48 hours of discharge. **Numerator:** Discharge summary complete within 48 hours of discharge. **Denominator:** Patients discharged from all Hospital Medicine, Family Medicine, and General Surgical services. **12. Milestone:** (process iv) Conduct an assessment and establish linkages with community-based organizations to create a support network for targeted patients post-discharge **Metric:** Care transitions assessment **13. Milestone:** (improvement vi) Increase percent of medical surgical inpatients discharged to home setting assigned to medical homes by 15% over baseline. **Numerator:** Number of medical / surgical	home		

Category 2 #13: Implement/Expand Care Transitions Programs					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
		inpatients discharged to home with referral / assignment to a medical home. **Denominator:** Number of medical / surgical inpatients discharged to home			

CATEGORY 2 #14: IMPLEMENT REAL-TIME HEALTHCARE-ASSOCIATED (HAI) SYSTEMS

Goal:To expand real-time electronic microbial surveillance that alerts clinicians to the presence of patient conditions that increase the risk of HAIs and pilot an early intervention system that educates clinicians and provides simple tools for HAI prevention.

Healthcare associated infections (HAI) are a major public health problem in the United States. In 1998, CDC estimated 2 million hospital associated infections and 90,000 deaths equating to 4.5 billion dollars in excess healthcare costs annually[3334353637].

Sporadic compliance with hand hygiene and simple infection control precautions, and antibiotic misuse and over utilization contribute to HAI and the emergence and spread of multi drug resistant organisms (MDRO)[38394041].

Systems based improvements which make it easier for health care practitioners to follow best practices can lead to decreased HAI, better outcomes and lower costs[424344]. Meaningful changes in health care settings require data systems that can track compliance with processes and outcomes and demonstrate that changes lead to improvement[4546]. Efforts to reduce HAI require standardized, sustainable data and information systems. Infection control programs share the same language across the country. As public reporting has become a reality, it seems logical that infection prevention programs would lead in educating other quality programs, including public reporting.

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[33]Weinstein RA Nosocomial infection update. Emerging Infectious Diseases 1998;4:416-20.
[34] Schiff GD, Young QD. You can't leap a chasm in two jumps: The Institute of Medicine health care quality report. Public Health Rep. 2001 Sep-Oct;116(5):396-40.
[35] Detmer DE. Erring is human: will we cross the quality chasm? Qual Health Care. 2001 Jun;10(2):68-9.
[36] Klevens RM, Edwards JR, Andrus ML, Peterson KD, Dudeck MA, Horan TC. Dialysis Surveillance Report: National Healthcare Safety Network (NHSN)-data summary for 2006. Semin Dial. 2008 Jan-Feb;21(1):24-8.
[37] Edwards JR, Peterson KD, Andrus ML, Dudeck MA, Pollock DA, Horan TC. National Healthcare Safety Network (NHSN) Report, data summary for 2006 through 2007, issued November 2008. Am J Infect Control. 2008 Nov;36(9):609-26.
[38] Gordin FM, Schultz ME, Huber RA, Gill JA. Reduction in nosocomial transmission of drug-resistant bacteria after introduction of an alcohol-based handrub. Infect Control HospEpidemiol. 2005
[39] Tenorio AR, Badri SM, Sahgal NB, Hota B, Matushek M, Hayden MK, Trenholme GM, Weinstein RA. Effectiveness of gloves in the prevention of hand carriage of vancomycin-resistant enterococcus species by health care workers after patient care. Clin Infect Dis. 2001 Mar 1;32(5):826-9.
[40] Aragon D, Sole ML, BrownS.Outcomes of an infection prevention project focusing on hand hygiene and isolation practices. AACN Clin Issues. 2005 Apr-Jun;16(2):121-32.
[41] Weinstein R. Controlling antimicrobial resistance in hospitals: infection control and use of antibiotics. Emerg Infect Dis 2001;7:188-92).
[42] Slater F. Cost effective infection control success story: a case presentation. Emerg Infect Dis 2001;7:293-4, Scott RD, Solomon SL, McGowan JE. Applying economic principles to health care. Emerg Infect Dis 2001;7:282-5.
[43] Kritchevsky SB, Braun BI, Wong ES, Solomon SL, Steele L, Richards C, Simmons BP, and the EPIC study group. Impact of hospital care on incidence of bloodstream infection: the evaluation of processes and indicators in infection control study. Emerg Infect Dis 2001;7:193-6.
[44] Dellinger EP, Hausmann SM, Bratzler DW, Johnson RM et al. 2005. Hospitals Collaborate to decrease surgical site infections. Am J Surg. 190:9-15.
[45] Platt R, Yokoe DS, Sands KE, and the CDC Eastern Massachusetts Prevention Epicenter Investigators. Automated methods for surveillance of surgical site infections. Emerg Infect Dis 2001;212-6
[46] Jarvis WR. Benchmarking for prevention: the Centers for Disease Control and Prevention's National Nosocomial Infections Surveillance (NNIS) system experience. Infection. 2003 Dec;31Suppl 2:44-8.

Starting in July 2008, all acute care healthcare organizations in California are required to participate and report several HAI-related process and outcome measures into NHSN, using CDC definitions and methodology. As a result of this legislation, all acute care hospitals in California are using CDC standard definitions for infection surveillance and reporting[47][48] . However, many public healthcare facilities in California do not have adequate resources to perform real time HAI surveillance. Contributing factors are insufficient investment by healthcare administration, a limited pool of experienced infection control practitioners and hospital epidemiologists, and lack of available automated data collection systems. Though patient related data is collected electronically in most healthcare organizations, the information is often times segregated and lacks the ability to extract or share data easily within the same organization. It comes as no surprise that, even in the era of electronic data warehouses, there are still significant barriers and opportunities for improvement in the sharing and timely feedback of information internally and externally across organizations.Open, but secure data systems are needed to allow for the interweaving and storing of diverse data streams for diverse purposes. Examples of such data streams are the perioperative electronic record, pharmacy data, laboratory information systems, demographics, billing, procedural codes, ICU and anesthesiology data, and health indicators.

The Infection Prevention and Clinical Epidemiology Unit at UC San Diego Health System created and implemented a real-time electronic HAI surveillance system called Atlas/Guardian. In addition to automated electronic reporting of reportable diseases to San Diego Public Health (SDPH), the Atlas/Guardian Surveillance System performs real-time organism centered in-house surveillance of microbiologic organisms and produceshousewide, unit- or service-specific antibiograms. This HAI surveillance system is used to extract data for laboratory event reporting (e.g. Methicillin Resistant Staphylococcus aureus (MRSA) and Vancomycin Resistant Enterococcus (VRE) Bloodstream Infections (BSI), Clostridium difficile Infections (CDI)) to NHSN and to identify cases for device- and procedure-related HAI surveillance (central line-associated bloodstream infections (CLABSI), surgical site infections (SSI). One of the goals of this proposal is to facilitate our ability to query and provide real-time and unit/service specific canned reports (for example, MRSA in ICU, clostridium difficile infections, invasive fungal diseases in transplant and HIV-infected populations).

[47] National Nosocomial Infections Surveillance System. National Nosocomial Infections Surveillance (NNIS) System Report, data summary from January 1992 through June 2004, issued October 2004. Am J Infect Control. 2004 Dec;32(8):470-85.

[48] Cardo D et al. 2004. National Nosocomial Infections Surveillance (NNIS) System report, data from Jan 1992 through June 2004, issued October 2004. American Journal of Infection Control. 32:470-85)

Though this HAI surveillance system has undoubtedly facilitated the successful implementation of infection prevention initiatives and has contributed for example to the significant and sustained decrease in CLABSI rates in the intensive care units, further improvement can be achieved. The comprehensive integration and automation of data systems proposed in this project will do more than facilitate small scale quality improvement projects. Such a powerful system will be lead to more rapid change and demonstrable improvement resulting in faster buy in by clinicians and health care administrators. In order to expand and leverage our current system, we propose to:

- Implement alerts to clinicians regarding the presence of high risk patient conditions that can lead to HAIs
- Interface our new electronic medical record with the HAI surveillance system
- Develop tools for clinicians that prompt prevention bundle compliance and documentation
- Provide just-in-time education, tools and resources to clinicians when high risk patient conditions or HAI's are identified

The HAI surveillance system interweaves with the electronic medical record to incorporate automated alerts to target interventions for high-risk patients, and provide feedback to clinicians both preemptively and after identified HAI events. These systems can prompt clinicians to act on current opportunities for prevention and provide relevant education to prevent future events. Interventions include banner alerts in the Electronic medical record to alert clinicians for the need of transmission-based isolation precautions in patients colonized or infected with a multidrug resistant organism (MDRO) or another potentially transmissible pathogen.

Expected Result: This project will provide a robust automated quality improvement infrastructure to improve patient care through several mechanisms. First, it will employ an HAI intervention to minimize the risk of device-associated infections, post-surgical infections, and the nosocomial acquisition of invasive infections with multidrug resistant organisms (MDRO), as well as the transmission of MDRO to other patients. Second, it will provide high efficiency accurate feedback about healthcare associated infections to treating physicians, including education about infection prevention processes.

Related Projects: The prevention of HAI events will positively affect the experience of our patients. Real-time awareness of HAI risk should allow interventions to prevent sepsis, CLABSI and SSI.

Cat 2 #14: Implement a Real-Time Healthcare Associated Infections (HAI) System					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
1. Milestone: (process iv) Develop a real-time intervention system to track targeted patients with organisms known to increase the risks of HAIs in the new electronic medical record. **Metric:** HAI system for targeted high-risk population (inpatient BMT). Generate report from HAI system. **2. Milestone**: (process viii) Development of electronic system for real time feedback of potential HAI events in inpatient BMT patients to clinicians **Metric:** Real-time feedback on inpatient BMT patients **3. Milestone**: (process i) Implement prompts for prevention and risk identification (CLIP and daily line necessity). **Metric:** Percent of	**4. Milestone:** (process iv) Expand real-time intervention system to identify and track patients with organisms known to increase the risks of HAIs in the new electronic medical record. **Metric:** Expand HAI system to other inpatient areas as ICU, non-ICU areas or specialty care (e.g. Oncology, Solid Organ Transplant, HIV/AIDS, chronic dialysis). Generate report from HAI system **5. Milestone**: (process ix) Development of electronic system for real- time education on HAI prevention to clinicians **Metric:** Real-time education **6. Milestone**: (process i) Implement prompts for prevention and risk identification (add	**7. Milestone:** (process iv) Expand real-time intervention system to identify and track patients with organisms known to increase the risks of HAIs in the new electronic medical record. **Metric:** Expand HAI system to all inpatients.	**8. Milestone**: (process xiv) Initiate chlorhexidine bathing in non-ICU adult patients with central lines, urinary catheters, or recent surgery **Metric:** Percent of patient provided chlorhexidine bathing	**9. Milestone**: (improvement iv) Measure impact of automated real-time HAI surveillance system on HAI rates **Metric:** HAI rate for urinary catheter associated infections (CAUTI) per 1000 catheter days.	• Patient/Care Giver Experience (Cat 3) • Sepsis (Cat 4) • CLABSI • SSI (Cat 4)

Cat 2 #14: Implement a Real-Time Healthcare Associated Infections (HAI) System					
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**	**Related Projects**
relevant patients detected	urinary catheter necessity to CLIP and daily line necessity. **Metric:** Percent of relevant patients detected				

CATEGORY 3: TO BE DETERMINED

CATEGORY 4

In support of our commitment to continuous quality improvement so that patients receive the safest and highest quality health care possible, University of California San Diego Health System has elected to pursue four interventions in Category IV Urgent Health Improvement in Quality and Safety to make improvements in care provided to our patients 1) Improve Sepsis Detection and Management, 2) Central Line-Associated Bloodstream Infection (CLABSI) 3) Prevention Surgical Complications Core Processes and 4) Hospital –Acquired Pressure Ulcer (HAPU) Prevention. These initiatives will impact a large proportion patients receiving care in the acute care settings. Successful efforts with these interventions will result in improved patient outcomes, experience and meaningful reductions in morbidity, mortality, and healthcare costs. Three of these efforts are specifically targeted at hospital acquired conditions – CLBSI, Surgical Infections and Pressure Ulcers.

CATEGORY 4 COMMON INTERVENTION #1: IMPROVE SEVERE SEPSIS DETECTION & MANAGEMENT

Key Challenge: Sepsis can harm and kill patients if not treated quickly and increases ICU length of stay and its associated costs. Sepsis can be defined as a spectrum of clinical conditions caused by the immune response of a patient to infection that is characterized by systemic inflammation. It includes the full range of response from systemic inflammatory response (SIRS) to organ dysfunction to shock to multiple organ failure and ultimately death. It is estimated that there are 750,000 episodes of sepsis annually in the United States. Shock develops in approximately 40% of patients with sepsis and is associated with a mortality rate in excess of 40%. Sepsis represents the 10th leading cause of death in the United States and national costs associated with the disease process are estimated to be in the range of 18 billion dollars annually, representing 25% of total ICU costs. An increase in the incidence of disease is anticipated due to aging of the population. Elderly patients are more susceptible to sepsis, are more likely to have underlying co-morbidities, and have less physiologic reserve to tolerate the insult, all of which adversely impact survival.

In recognition of the importance of understanding critical outcomes and resource utilization, UCSDHS elected to participate in the Cerner base Critical Outcomes Project (title), a national benchmarking effort focused on care in adult intensive care units. Participation in this effort requires detailed chart review and data entry. A 50% sampling review of patients admitted to the Intensive Care Units at UCSD Health System between October 2009 and December 2010 revealed 102 patients admitted with the primary diagnosis of sepsis. This is exclusive of patients managed in non-ICU settings. Median age of these patients was 59 years. Hospital mortality was 23%, the overwhelming majority occurring within the ICU.

Extrapolation of these figures suggests that approximately 15 patients monthly are admitted to the Intensive Care Units at UCSD with sepsis resulting in approximately 50 deaths annually.

Major Delivery System Solution: We propose to improve severe sepsis detection and management to reduce unnecessary death and harm attributable to sepsis. Our interventions and improved processes from are based upon the IHI recommended Surviving Sepsis Campaign to establish reliable detection and treatment for severe sepsis. This includes implementing both the Sepsis Management and Resuscitation Bundle. .

Early recognition and treatment of sepsis are essential to reduce the mortality of this disease. However, the initial signs of sepsis are subtle and often overlooked. Thus, hospital-based systems are needed to identify and triage patients who might be septic. A rapid response system for the early detection and treatment of septic shock requires a multidisciplinary approach. At UCSD, the development of a Rapid Response Team (RRT) has substantially reduced the mortality in patients with impending cardiovascular collapse. It has not had an appreciable mortality impact on patients who ultimately prove to have sepsis. This appears to represent a failure of both early recognition and implementation of elements of the Sepsis Resuscitation Bundle.

The central goal of this proposal is to retrospectively examine current practices in patients diagnosed with severe sepsis and septic shock and to establish a rapid response system that will include an educational program for healthcare personnel (physicians, nurses, pharmacists, and respiratory therapists) on early recognition of sepsis, implementation of a hospital-wide early resuscitation bundle, early protocol-directed diagnosis and therapy, and early transfer to the intensive care unit when indicated. Outcome measures will include compliance with process measures as well as clinical outcome.

Elements of the resuscitation bundle include: (1) lactate measurement; (2) blood cultures prior to antibiotic administration; (3) early administration of broad spectrum antibiotics (within 3 hours of Emergency Room admission and 1 hour for non-Emergency Room ICU admissions); (4) adequate volume resuscitation and use of vasoactive medications; (5) early goal-directed therapy for patients not responsive to volume resuscitation.

Elements of the management bundle include: (1) low dose steroid administration in compliance with ICU policy; (2) Xigris7 (drotrecogin alfa (activated)) administration in compliance with ICU policy; (3) glycemic control; (4) low volume ventilation strategy.

Cat 4 Common Intervention #1: Improve Severe Sepsis Detection and Management				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Participate in San Diego Patient Safety Collaborative on Sepsis to learn and share best practices related to improving severe sepsis and septic shock detection and management.	2. Implement the Sepsis Resuscitation Bundle, as evidenced by completion within 6 hours for patients with severe sepsis, septic shock and /or lactate > 4mmol/L (36 mg/dl) • 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 (36 mg/dl): o Deliver an initial minimum of 20 ml/kg of crystalloid (or colloid equivalent). o Apply vasopressors for hypotension not responding to initial fluid resuscitation to maintain mean arterial pressure (MAP) > 65 mm Hg. Data will be captured within the electronic medical record and reviewed by utilizing trained clinical data	5. Achieve X% compliance with Sepsis Resuscitation Bundle, where "X" will be determined in Year 2 based on baseline data. 6. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 7. Report Sepsis Resuscitation Bundle and Sepsis Mortality results to the State.	8. Achieve X% compliance with Sepsis Resuscitation Bundle, where "X" will be determined in Year 2 based on baseline data. 9. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 10. Report results to the State.	11. Achieve X% compliance with Sepsis Resuscitation Bundle, where "X" will be determined in Year 2 based on baseline data. 12. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 13. Report results to the State.

Cat 4 Common Intervention #1: Improve Severe Sepsis Detection and Management				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
	abstractors. This data will be used to establish the baseline 3. Report at least 6 months of data collection on Sepsis Resuscitation Bundle to SNI for purposes of establishing the baseline and setting benchmarks. 4. Report results to the State			

CATEGORY 4 COMMON INTERVENTION #2: CENTRAL LINE- ASSOCIATED BLOODSTREAM INFECTION (CLABSI) PREVENTION

Key Challenge: It has become clear that interventions designed to diagnose and treat critically ill patients in hospitals are a cause of injury to patients. The use of central venous catheters is one of those interventions causing significant morbidity, mortality and cost. More importantly it has also become clear that there are a number of simple to achieve standardized practices that can significantly minimize the risk of infection. These include specific practices for line insertion and line maintenance that have been collected into bundles and implemented widely via checklists.

Major Delivery System Solution: We propose to implement best practices (bundles) for central line catheter insertion and maintenance to reduce the rate of CLABSI. We will use CDC definitions of CLABSI and will measure outcomes as number of infections per 1,000 catheter-days. CLABSI prevention has been a focus for UC San Diego in the ICU's with demonstrated success in reducing rates. Calendar year 2009 data for adult ICU's (including Burn ICU) was 1.4 per 1,000 central line days. The year-to-date rate for 2010 (January-September) is 1.1, representing a 21% reduction. We are now broadening the focus of improvement to include acute care areas in non-ICU settings. We will embed the documentation tools for CLIP and daily line necessity within the electronic medical record facilitating compliance with these efforts.

Cat 2 Common Intervention # 2: Central Line-Associated Bloodstream Infection (CLABSI) Infection Prevention (required)				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Implement the Central Line Insertion Practices (CLIP), as evidenced by documentation tools within the electronic medical which facilitate compliance with CLIP and daily line necessity. This data will be utilized to establish baseline compliance.	2. Report at least 6 months of data collection on CLIP to SNI for purposes of establishing the baseline and setting benchmarks. 3. Report at least 6 months of data collection on CLABSI to SNI for purposes of establishing the baseline and setting benchmarks. 4. Report CLIP results to the State.	5. Achieve X% compliance with CLIP/bundle, where "X" will be determined in Year 2 based on baseline data. 6. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 7. Report CLIP and CLABSI results to the State.	8. Achieve X% compliance with CLIP/bundle, where "X" will be determined in Year 2 based on baseline data. 9. Reduce Central Line Bloodstream Infections by X%, where "X" will be determined in Year 2 based on baseline data. 10. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 11. Report CLIP and CLABSI results to the State.	12. Achieve X% compliance with CLIP/bundle, where "X" will be determined in Year 2 based on baseline data. 13. Reduce Central Line Bloodstream Infections by X%, where "X" will be determined in Year 2 based on baseline data. 14. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 15. Report CLIP and CLABSI results to the State.

CATEGORY 4 ADDITIONAL INTERVENTION #1: SURGICAL SITE INFECTION (SSI) PREVENTION

Key Challenge: Beginning October 1, 2008, the Centers for Medicare & Medicaid Services (CMS) selected Surgiacl Site Infections (SSI) with select procedures as hospital-acquired conditions that will no longer receive a higher reimbursement when not present on admission. Surgical site infections (SSIs) occurring within 30 days after an operation have the second highest frequency of any adverse event occurring in hospitalized patients and are the third most common healthcare-associated infection (HAI). Surgical complication harm to patients is significant, resulting in increased mortality, readmission rate, length of hospital stay, and cost for patients who incur them. SSI are associated with additional postoperative hospital days as well as increased mortality and hospital costs.

Major Delivery System Solution: The Surgical Care Improvement Project (SCIP) was initiated as a partnership between the Centers for Disease Control (CDC) and the Center for Medicare and Medicaid Services (CMS) to reduce surgical complications by 25% by 2010. The most significant surgical complications, in terms of combined frequency of occurrence and impact on individual patients, include surgical site infections (SSIs), cardiac events and venous thrombo-embolism events (VTEs). UCSDHS achieved 89% composite score for the inpatient SCIP Core Measure July 2009-June 2010. While we are pleased with the progress we have made in this measure set and consistently perform over 95% in most measures, we have opportunities remaining with glycemic control (91% July 2009- June 2010) and urinary catheter removal (91% same timeframe). In the ambulatory antibiotic SCIP measures, we've only achieved a combined score of 82% for July 2009-June 2010. In 2006, we began participation in the National Surgical Quality Improvement Project, a national risk adjusted benchmarking collaborative focused on improving surgical outcomes. Current participation in NSQIP demonstrates UC San Diego 30-day SSI rates at or above expected.

Cat 4 Additional Intervention #1: Surgical Site Infection (SSI) Prevention				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Redesign and implement antibiotic delivery documentation within the inpatient electronic medical record	2. Report at least 6 months of data collection on SSI to SNI for purposes of establishing the baseline and setting benchmarks 3. Report results to the State. 4. Achieve 92% compliance in SCIP Core Measures: post-operative glycemic control in CT surgery and urinary catheter removal by post op day 2. 5. Achieve 85% compliance with combined SCIP Core Measure for ambulatory antibiotic administration.	6. Reduce the rate of surgical site infection for Class 1 and 2 wounds by X, where "X" will be determined in Year 2 based on baseline data. 7. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 8. Report results to the State. 9. Achieve 93% compliance in SCIP Core Measures: post-operative glycemic control in CT surgery and urinary catheter removal by post op day 2. 10. Achieve 90% compliance with combined SCIP Core Measure for ambulatory antibiotic administration.	11. Reduce the rate of surgical site infection for Class 1 and 2 wounds by X%, where "X" will be determined in Year 2 based on baseline data. 12. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 13. Report results to the State. 14. Achieve 95% compliance in SCIP Core Measures: post-operative glycemic control in CT surgery and urinary catheter removal by post op day 2. 15. Achieve 95% compliance with combined SCIP Core Measure for ambulatory antibiotic administration.	16. Reduce the rate of surgical site infection for Class 1 and 2 wounds by X%, where "X" will be determined in Year 2 based on baseline data. 19. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 20. Report results to the State. 21. Maintain ≥95% compliance in: post-operative glycemic control in CT surgery and urinary catheter removal by post op day 22. Maintain ≥95% compliance with combined SCIP Core Measure for ambulatory antibiotic administration.

CATEGORY 4 ADDITIONAL INTERVENTION #2: HOSPITAL-ACQUIRED PRESSURE ULCER (HAPU) PREVENTION

Key Challenge: Hospital acquired pressure injuries (HAPU) are a serious unintended consequence of hospitalization. According to the National Pressure Ulcer Advisory Panel (NPUAP), the prevalence of HAPU is 10% to 18% in acute care settings, 2.3% to 28% in long-term care facilities, and as high as 29% in home care environments[49]. The Agency for Healthcare Research and Quality (AHRQ) reported in 2008 that HAPU doubled or tripled lengths of stay and costs $16,000 to $20,000 to treat[50]. The Centers for Medicaid and Medicare Services (CMS) has estimated the cost per patient is closer to $43,000 and has included HAPU on its list of acquired conditions for which it will not reimburse[51]. HAPU are becoming a burden on health care. Two and a half million patients are treated for complications of pressure ulcers that increase mortality rates and carry a cost of $11 billion. Policies lead by CMS and The Joint Commission are bringing the focus to cost effective prevention initiatives. The reduction of these events requires collaboration at many levels of the organization from direct care nurses to senior leadership.

Major Delivery System Solution: By utilizing and refining the structures and processes listed below we hope to achieve and maintain a rate of Hospital Acquired Pressure Ulcers which is the absolute minimum possible for the high risk population we serve. Key to this strategy is to embed this goal in our nursing strategic plan annually, support it with expert resources in advanced practice nursed (WOCNs), analyst support, and participation in national databases. Furthermore, the following best practices will be embedded in our practices to ensure continued improvement in our rates.

UCSDHS organizational commitment will be demonstrated with a multi-faceted approach. The organization is improving the availability of protective devices & products available: special beds, boots, dressings, creams, support surfaces for wheelchairs, upgraded mattresses, etc. there will be an investment in national databases, analyst support and IT support to create documentation templates. An interdisciplinary skin care committee guides performance improvement and is responsible for communication of outcomes to the organization through dashboards as well as physician, nursing and transport staff education. Skin Care Committee champions will educate staff on new products and serve as local resource.

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[49] . Cuddigan J, Ayello EA, Sussman C, Baronoski S, eds. Pressure Ulcers in America: Prevalence, Incidence, and Implications for the Future. Reston VA: National Pressure Ulcer Advisory Panel

[50] Russo CA, Steiner C, and Spector W. Hospitalizations Related to Pressure Ulcers among Adults 18 Years and Older, 2006. Healthcare Cost Utilization Project. December 2008. Available at: www.hcup-us.ahrq.gov

[51] Centers for Medicaid and Medicare Services. Proposed Fiscal Year 2009 Payment, Policy Changes for Inpatient Stays in General Acute Care Hospitals. Available at: www.cms.gov

Implementation of best practices will include: visually assess skin on admission and each shift; application of an evidence-based risk assessment tool; protocols for interventions based on risk assessment grounded in NPUAP standards; utilization of protocols for ordering specialty beds and nutritional consults; handoff communication; intra-operative nursing interventions; and patient and family education. Establish a "wound Wednesday" to ensure weekly photo documentation.

Monitoring strategies will include establishing concurrent review with a daily skin report to central database with report to all managers to allow for tracking of patients as they move through different levels of care. Staff will conduct prevalence studies more frequently than quarterly using standardized criteria for staging (NPUAP standards)[52]. We will establish a validation process with WOCN for prevalence studies to ensure data integrity.

Cat 4 Additional Intervention # 2: Hospital-Acquired Pressure Ulcer Prevention				
Year 1	**Year 2**	**Year 3**	**Year 4**	**Year 5**
1. Implement wound ostomy nurses documentation of skin assessment in electronic medical record, allowing tracking and aggregate data capture and guide process improvement.	2. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 3. Report hospital-acquired pressure ulcer prevalence results to the State.	4. Achieve hospital-acquired pressure ulcer prevalence of less than 1.1 %. 5. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 6. Report hospital-acquired pressure ulcer prevalence results to the State.	7. Maintain hospital-acquired pressure ulcer prevalence of less than 1.1%. 8. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 9. Report hospital-acquired pressure ulcer prevalence results to the State.	10. Maintain hospital-acquired pressure ulcer prevalence of less than 1.1%. 11. Share data, promising practices, and findings with SNI to foster shared learning and benchmarking across the California public hospitals. 12. Report hospital-acquired pressure ulcer prevalence results to the State.

[52] NPUAP standards http://www.npuap.org/