

Beneficiary Risk Management: Prioritizing High Risk SMI Patients for Case Management/Coordination

February 2010





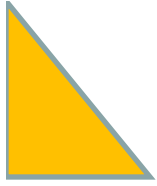
Summary of JEN Project

- Design predictive model to identify high risk patients using diagnoses, drug therapies, procedures from patient claims history: “Prospective Risk Model”
- Identify patterns of care in high risk populations that are associated with future declines in health: “Relapse Model”
- Identify patterns of care in high risk populations correlated with health improvement: “Recovery Model”
- Identify patterns of care in the low risk SMI population correlated with continued health: “Prevention Model”
- Demonstrate cost model that selectively enhances care for high risk populations



Identifying the At-Risk SMI





From BH Diagnosis to SMI Identification

- Identify BH diagnoses from literature and population in the claims data
- What BH diagnoses are highly correlated with hospital or ER treatments as primary diagnosis
- Which BH diagnoses are correlated with a future adverse event
- Empirical linkage between BH diagnoses and outcomes lead to “SMI”



BH Diagnoses with Significant Correlation to Costly Adverse Outcomes

- Schizophrenia
- Mood disorders
- Anxiety and Personality disorders
- Paranoid States
- Other Nonorganic/Organic Psychoses
- Psycho-physiologic Disorders
- Non-psychotic Brain Syndrome
- Conduct Disturbance (Select)
- Depression



Total Payments Medi-Cal Only*, Fee for Service Only and Continuously Eligible (C.E.) in Year

SMI Beneficiaries are 10% of Population, 37% of Payments

FFS, Medi-Cal Only,	2004	2005	2006	2007
Medi-Cal Pop. Count	1,562,340	1,522,220	1,540,500	1,580,440
SMI Pop. Count	163,713	163,232	167,044	166,786
Medi-Cal Pop. Pay	\$4,559,875,440	\$5,249,928,420	\$5,747,477,780	\$6,186,331,620
SMI Pop. Pay	\$1,719,148,571	\$2,065,150,388	\$2,239,423,172	\$2,395,938,298

***Not Medicare Eligible and Not Managed Care**





Prevalence of Chronic Disease

Chronic Disease	Medi-Cal	SMI
Diabetes	4%	11%
Ischemic Heart Disease	2%	6%
Cerebrovascular Disease	1%	3%
Chronic Respiratory Disease	5%	13%
Arthritis	2%	7%
Heart Failure	1%	3%



Comparative Selected Utilization Rates

Annualized Utilization Per 1,000

Beneficiaries	Medi-Cal	SMI
Inpatient Episodes	100	293
Outpatient ER Encounters	337	1,167
Inpatient Acute Days	609	2,094
Outpatient General Practitioner Encounters	128	492
Outpatient Specialist Encounters	1,211	6,058



Comparative Monthly Payments CY 2007: Highest Categories

Payments	Medi-Cal	SMI
Inpatient Acute	\$88	\$308
Mental Health	\$17	\$135
Outpatient	\$20	\$59
Physician	\$39	\$103
Drug	\$65	\$307
Lab/Radiology/Testing	\$8	\$26
Nursing Home	\$23	\$79
Adult Day Habilitation	\$3	\$16
Total	\$326	\$1,197



Identifying Risk





Defining Risks and Outcomes

- Diagnoses that are more likely to be seen in SMI populations than non-SMI populations
- Adverse events with a primary diagnosis of SMI are categorically included
- Correlation analysis of diagnosis codes observed prior to hospital and ER care within SMI population



SMI Correlated Outcomes: Diagnostic Sub-Groups (non-BH): Elevated Outcomes in SMI

- Infections/viral
- Poisonings
- Liver disease
- Fractures
- Gallbladder/pancreas disorders
- Neurological
- Urinary tract disorder
- Gastro-intestinal
- Skin/soft tissue conditions
- Chronic respiratory disease
- Joint/Musco-skeletal
- Other injuries
- General symptom exacerbation





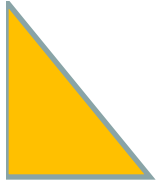
Data Mining for Risk

- Extensive review of diagnoses, NDCs and procedures observed in SMI populations before a hospitalization or ER event
- Risk Factors grouped by clinical type and by correlation strength and scored
- Multivariate model calibrated by time correlation and risk type



Project Results

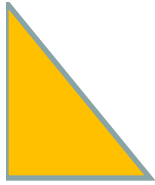




CaIMEND – JAI Risk Forecasting Project

- Four years of patterns of care, morbidity and outcomes in SMI adults were analyzed to identify
 - Hospital and ER visits correlated with SMI populations and classified by type
 - A range of short and long term risk factors associated with adverse care outcomes
- A time-sensitive predictive model was implemented and tested
 - Identifies SMI individuals with a high risk of a future hospitalization or ER use
 - Flags gaps in patient utilization/access correlated with adverse outcomes
- The model was used to simulate a real time system that uses claim feeds into the data warehouse to flag beneficiaries for case management by risk type and with information on what gaps in care need to be addressed



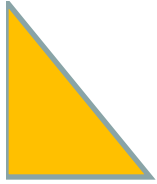


Size of Medi-Cal Highest Risk Population

Using flags for diagnoses, patterns of drug use and selected procedure codes a risk population was identified from a base period. The model identified 2.3% of the population as highest risk. The payment information in the table below shows the capacity of the selection for the identification of a future high cost population

Medi-Cal Only Population Type	CY 2006 FFS Beneficiaries with 12 Months Eligibility	Medi-Cal Payments in Prediction Year	Per Person Annual Payments
All SMI	249,254	\$2,758,001,218	\$11,065
Total Risk	28,080	\$976,381,877	\$34,771
Highest Risk	9,569	\$484,485,372	\$50,631





Savings Opportunity in Highest Risk Patients: Relapse versus Recovery Analysis

- Model identifies high risk population with historical patterns of persistently expensive care
- Analysis of high risk beneficiaries who go on to recover and those who relapse in follow up period demonstrate cost savings opportunity
- In prediction year costs for two care paths
 - \$5,062 per month in relapse population
 - \$3,156 per month in recovery population
 - Relapse to recovery conversion represents a \$1,900 per month opportunity

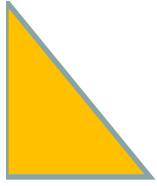




What Factors Lead to Recovery?

- Factors correlated with recovery trajectory
 - Rehabilitation therapy visits after hospital discharge
 - Physician GP expenditures and visit rates during chronic disease exacerbation
 - Extended hospital length of stay
 - Higher ratio of physical to mental health expenditures
 - Inpatient care over ER care
 - Recent use of psycho-active medication, with special risk associated with initiation management and discontinuation supervision





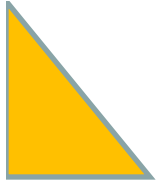
What Factors Lead to Continued Health?

- Preventive Care
- Factors correlated with continued health in low risk population
 - Ongoing outpatient physician care
 - Flu vaccination
 - Eye exam
 - Ear exam
 - HDL testing in diabetics
 - Uninterrupted use of psycho-pharmaceuticals



System Change Goals





Focusing Care Based on Need and Risk

- All combined physical/mental health diagnosis Medi-Cal beneficiaries are in need of care coordination through a medical home type model
- The resources required to organize a population wide initiative are not available without a very careful pairing of need to service intensity and an evaluation of both program costs and savings
- A focused program that provides critical case management to selected beneficiaries who are at high risk for expensive outcomes will improve care outcomes and save money

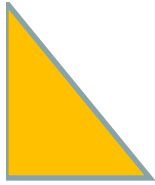




SMI Patient Registry

- Person-level list used to identify Medi-Cal beneficiaries with a qualifying diagnosis for SMI from claims/encounter data
- Historically complete and updatable
- Supplementary information collected:
 - SMI type
 - Physical and behavioral comorbidities
 - Current primary mental health provider affiliation
 - Current primary physical health provider affiliation
 - Therapy and health outcomes histories
 - Predicted risk type





Medical Home Planning/Implementation Data

- Measure to what extent are SMI beneficiaries associated with a primary care practice
- Develop metrics to determine the effectiveness of current care practices
- Develop data tell us how to implement a Medical Home structure based on current patterns of beneficiary utilization of providers
- Develop data for how to implement a Medical Home based on current naturally occurring provider networks with a primary care practice at the hub
- Develop messaging methods and content for information dissemination from Medical Home to affiliated providers





Summary Findings

- It is viable to use diagnoses, drug therapies and procedures to identify patterns related to:
 - Future high cost outcomes
 - Successful preventive care
- **Blueprint for:**
 - Identifying at risk cases
 - Supplying high risk cases with appropriate care at the right time

