Improving Service Delivery for Medicaid Clients Through Data Integration and Predictive Modeling

David Mancuso, PhD • July 28, 2015
The Medicaid Environment

- Program costs are often driven by a small proportion of patients with multiple health conditions, often exacerbated by mental illness, substance use disorders, cognitive limitations or functional impairments.

- High-cost clients are often served in multiple Medicaid-funded delivery systems.

- High-cost clients often have significant social support needs such as the need for housing or employment support, or interventions to reduce the risk of criminal justice involvement.

- Persons dually eligible for Medicare and Medicaid comprise a disproportionate share of high-risk, high-cost Medicaid beneficiaries.

- Increased emphasis on quality/outcome measurement and value-based payment structures.
Creating Analytically Meaningful Measurement Concepts

**Services**
- Gender
- Race/Ethnicity
- Age
- Language
- DD
- TANF
- SNAP
- Child Welfare
- Medical
- Juvenile Rehab
- Long Term Care
- Behavioral Health
- Medical

**School**
- Grades
- Test Scores
- Special Needs
- Attendance
- Progress
- Stability
- Graduation

**Work**
- Employment
- Hours
- Earnings
- Unemployment

**Housing**
- Homeless
- Stable

**Geography**
- County
- Legislative District
- Locale
- Urban/Rural

**Health**
- Diagnoses
- Primary Care
- Disability
- Medications
- Mental Illness
- Hospitalization
- Substance Use
- Chronic Conditions
- Pain
- Misdemeanors
- Incarcerations
- Arrests
- Convictions
- Felonies

**Family**
- Births
- Siblings
- Relationships
- Deaths

**Language**
- Age
- Gender
- Race/Ethnicity
- Homeless
- Stable
- Progress
- Stability
- Grades
- Test Scores
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**DSHS | Research and Data Analysis**

**Washington State Department of Social and Health Services**
PRISM CDSS Data Sources and Features

- **Data sources**
  - Medical, mental health and LTSS services from multiple IT systems
  - Medicare Parts A/B/D data integration for dual eligibles
  - LTSS functional assessments
  - Housing status (including some local jail stay data) from the state’s eligibility data system

- **Data refreshed on a weekly basis for the entire Medicaid population**

- **Dynamic alignment of patients to health plans and care coordination organizations, with global patient look-up capability for providers**

- **1,000 currently authorized users**

- **700,000 page views in past 12 months**
PRISM Users

PRISM is used by:
- Medical and behavioral health managed care organizations
- Area Agencies on Aging
- Health Home lead entities and their care coordination networks

Business associate agreements and PRISM-related contract amendments govern external contracting entity access to PRISM

PRISM risk score is a key criterion defining eligibility for Health Home services in Medicaid State Plan Amendment

Medicare integration supports provision of Health Home services for Medicare/Medicaid “dual eligibles”

Agreement with CMS gives state access to share of Medicare savings if Health Homes reduce Medicare costs
## PRISM Screens

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Risk Factors</td>
<td>Key medical and behavioral health risk factors</td>
</tr>
<tr>
<td>IP Risk Model</td>
<td>Prospective hospital admission risk model</td>
</tr>
<tr>
<td>Adherence</td>
<td>Medication adherence dashboard</td>
</tr>
<tr>
<td>Eligibility</td>
<td>Detailed eligibility and demographic data</td>
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<tr>
<td>Claims</td>
<td>All medical claims and encounters</td>
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<tr>
<td>Office</td>
<td>Office visits</td>
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<tr>
<td>Rx</td>
<td>Prescriptions filled</td>
</tr>
<tr>
<td>IP</td>
<td>Inpatient admissions</td>
</tr>
<tr>
<td>ER</td>
<td>Outpatient emergency room visits</td>
</tr>
<tr>
<td>LTC</td>
<td>Long term care services</td>
</tr>
<tr>
<td>SNF</td>
<td>Skilled nursing facility services</td>
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<tr>
<td>Lab</td>
<td>Laboratory</td>
</tr>
<tr>
<td>Providers</td>
<td>Provider list with links to contact information</td>
</tr>
<tr>
<td>SUD</td>
<td>Substance use disorder treatment</td>
</tr>
<tr>
<td>MH</td>
<td>Mental health services</td>
</tr>
</tbody>
</table>
Uses of PRISM

- **Triaging high-risk populations** to more efficiently allocate scarce care management resources

- **Intuitive and easily accessible source of patient health and social service data for clinicians and case managers**

- **Informing care planning and care coordination for clinically and socially complex persons**

- **Identification of child health risk indicators for high-risk children** (mental health crisis, substance abuse, ED use, nutrition or feeding problems)

- **Identification of behavioral health needs** (redacting information where required by state or federal law)
Uses of PRISM continued

- Identification of other potential barriers to care:
  - Patient’s housing status (e.g., whether they are homeless)
  - Hearing impairment
  - Non-English primary language

- Access to treating and prescribing provider contact information for care coordination

- Creation of child health summary reports for foster parents and pediatricians

- A source of regularly updated contact information from the medical eligibility determination process to support patient outreach and engagement efforts
Uses of PRISM continued

- Medication adherence monitoring
- Identification of potential narcotic drug-seeking behavior
- Identification of psychotropic medication polypharmacy patterns associated with overdose risk
- Monitoring health plan compliance with contractual requirements
- Plan- and provider-level quality improvement program support
- Service authorization and utilization review
- Medical evidence gathering for determining eligibility for disability programs
Returns Show Promise

- Care Coordination Program for Washington State Medicaid Enrollees Reduced Inpatient Hospital Costs
  - Statistically significant reduction in hospital costs
  - Promising reduction in overall Medicaid medical costs

http://content.healthaffairs.org/search?submit=yes&fulltext=care+coordination+program+for+washington+state+medicaid+enrollees+reduced+inpatient+hospital+costs&x=0&y=0
Targeting approaches

- Expected future medical costs
- Prospective inpatient risk
- Extreme recent utilization [stronger regression to the mean]
- Care gaps and quality indicators [less effective for high ROI]
Prospective Inpatient Admission Risk Model

Example condition within risk group

- Sickle-cell disease: 27.7%
- Dialysis catheter infection: 21.4%
- Pneumonia: 18.7%
- Hemophilia/von Willebrands: 15.6%
- Lung transplant: 12.9%
- Secondary malignant neoplasm: 11.2%
- Congestive heart failure: 9.4%
- Age 85 or above: 8.8%
- Chronic skin ulcer: 8.0%
- Liver transplant: 8.0%
- Chronic renal failure: 7.1%
- Ulcerative colitis: 6.1%
- Diabetes, type 1 with complications: 6.0%
- Septicemia: 5.3%
- Chronic obstructive asthma: 5.3%
- Chronic nephritis: 5.2%
- Decubitis ulcer: 5.1%
- Heart transplant: 5.0%
- Rx for Liver Disease: 5.0%
- Alcohol dependence: 4.9%

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Prospective Inpatient Admission Risk Model continued

**Hospital Admission Impact . . .**

- Additional impact per hospital admission in prior 30 days: 9.8%
- Additional impact per hospital admission in prior 31-90 days: 5.8%
- Additional impact per hospital admission in prior 91-182 days: 4.2%
- Additional impact per hospital admission in prior 183-365 days: 2.1%

**Outpatient Emergency Room Utilization Impact . . .**

- Additional impact per OP ER visit in prior 30 days: 1.7%
- Additional impact per OP ER visit in prior 31-90 days: 0.9%
- Additional impact per OP ER visit in prior 91-182 days: 0.3%
- Additional impact per OP ER visit in prior 183-365 days: 0.2%

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Jane Doe has been diagnosed with congestive heart failure (9.4%), poorly controlled type 1 diabetes (6.0%), and chronic obstructive asthma (5.3%). She was hospitalized once in the prior 31-90 days (5.8%), and twice in the prior 183-365 days (2 x 2.1% = 4.2%). She has been to the ED twice in the past month without being admitted to the hospital (2 x 1.7% = 3.4%). Her risk of an inpatient admission in the next 6 months is 28.3%.
Building an Effective Data Strategy

- Build support for integrated analytics among agency data owners
  - Connect analytic investments to the business needs of agency data owners
  - Ensure agency subject matter experts inform analytic strategies
  - Invest in analytical, clinical and policy subject matter expertise
- Leverage opportunities to obtain resources to extend analytical capabilities
- Identify priority populations for targeted interventions
  - High chronic disease burden
  - Behavioral health risk
  - LTSS populations with rebalancing opportunities
- Have reasonable expectations
  - Scale of potential cost savings
  - Implementation timelines
  - Resources required to sustain analytical environment in production
  - Impact on state agency SME resources
Questions?

https://www.dshs.wa.gov/sesa/rda/research-reports