The Drive Towards Value Based Care  
Thursday, March 3, 2016  

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DISCLAIMER: The views and opinions expressed in this presentation are those of the author and do not necessarily represent official policy or position of HIMSS.
Conflict of Interest

Michael Aratow, MD, FACEP
Gaurav Nagrath, MBA

Have no real or apparent conflicts of interest to report.
Learning Objectives

• Compare the issues in evolving from a volume to value based organization
• Identify the role that risk stratification plays in going from volume to value
• Recognize the role that innovation plays in going from volume to value
Agenda

1. Introduction
2. Evolution of Value Based Care
3. Overview of Interlinked Initiatives
4. Risk Stratification Approach
5. Innovations
6. Pain Points
7. Future State
8. Lessons Learned
REALIZING THE VALUE OF HEALTH IT

Health IT creates five kinds of value of benefit to patients, healthcare providers and communities.

- S: SATISFACTION
- T: TREATMENT/CLINICAL
- E: ELECTRONIC SECURE DATA
- P: PATIENT ENGAGEMENT AND POPULATION MANAGEMENT
- S: SAVINGS
STEPS: Patient Engagement & Population Management

Risk Stratification
STEPS: Treatment/Clinical
Introduction

Integrated Delivery Network
- Small hospital (~2000 discharges per year)
  - Acute psychiatric services
  - Long term care
- Medium outpatient volume (~240K visits/year)
  - Basic medical and specialty clinics
- Medium volume emergency department (40K visits/year)

IT Landscape
- Best of breed EMR configuration (3!)
- Virtual desktop infrastructure
- Single sign on
- Data warehouse
- Videoconferencing gateway
- Sharepoint and Outlook pending
- No robust mobile policy
San Mateo Medical Center & Clinics

Diverse Patient Population
- Multicultural
- Multilingual
- Tend to have fewer educational opportunities
- Tend to have fewer financial resources
Patient Demographics

Gender:
- Male
- Female

Meet the Population:
- Age Range

Established Chronic Diagnoses:
- Hypertension
- Dyslipidemia
- Asthma
- Chronic pain
- Heart disease
- Kidney disease
- Cancer
- Diabetes mellitus
- COPD
- Depression
- Arthritis
- Allergies
- Stroke
- Pneumonia
- Congenital heart disease
- AIDS
- Ulcers
- Cirrhosis
- Cancer gen
- Hypothyroidism
- Anemia
- Hyperthyroidism
- Rheumatoid arthritis
- Hyperkalemia
- Chronic obstructive pulmonary disorder
- Gastroesophageal reflux disease
- Hypokalemia
- High blood pressure
- Hemorrhoids
- Hypoglycemia
- Snoring
- Sleep apnea
- Arthritis of the knee
- Acid reflux
- Ankylosing spondylitis
- Allergic rhinitis
- Acne
- Asthma bronchiale
- Cerebral palsy
- Crohn disease
- Eczema
- Fibromyalgia
- GERD versus heartburn
- Glaucoma
- Influenza
- Inhalers
- Leukemia
- Migraine
- Neuropathy
- Nonspeaking amyotrophic lateral sclerosis
- Pneumonia
- Sciatica
- Scoliosis
- Sickle cell disease
- Stroke
- Tendonitis
- Type 2 diabetes
- Uncontrolled diabetes
- Varicose veins
- Watery stools
- Yeast infection

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San Mateo County Healthcare Landscape
## Our Patients

### Health status compared by Type of current health insurance coverage - all ages

Regions in California (Bay Area Counties)

* = statistically unstable

<table>
<thead>
<tr>
<th>Health status</th>
<th>Uninsured</th>
<th>Medicare &amp; Medicaid</th>
<th>Medicare &amp; Others</th>
<th>Medicare only</th>
<th>Medicaid</th>
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<td></td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
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<tr>
<td>Excellent</td>
<td>15.6%</td>
<td>11.2 - 19.9</td>
<td>5.7*</td>
<td>2.1 - 9.2</td>
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<tr>
<td>Very good</td>
<td>32.6%</td>
<td>27.4 - 37.8</td>
<td>14.3%</td>
<td>8.4 - 20.2</td>
<td>33.2%</td>
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<tr>
<td>Good</td>
<td>27.7%</td>
<td>23.0 - 32.3</td>
<td>30.4%</td>
<td>23.3 - 37.6</td>
<td>28.8%</td>
</tr>
<tr>
<td>Fair</td>
<td>20.4%</td>
<td>16.3 - 24.5</td>
<td>29.6%</td>
<td>22.7 - 36.4</td>
<td>15.5%</td>
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<tr>
<td>Poor</td>
<td>3.8%</td>
<td>1.7 - 5.9</td>
<td>20.0%</td>
<td>14.1 - 26.0</td>
<td>5.0%</td>
</tr>
<tr>
<td>Total</td>
<td>100*</td>
<td>100*</td>
<td>100*</td>
<td>100*</td>
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<table>
<thead>
<tr>
<th>Health status</th>
<th>Healthy Families/CHIP</th>
<th>Employment-based</th>
<th>Privately purchased</th>
<th>Other public</th>
<th>All</th>
</tr>
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<tr>
<td></td>
<td>%</td>
<td>95% CI</td>
<td>%</td>
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</tr>
<tr>
<td>Excellent</td>
<td>16.9%</td>
<td>9.7 - 24.1</td>
<td>30.9%</td>
<td>28.9 - 32.8</td>
<td>32.4%</td>
</tr>
<tr>
<td>Very good</td>
<td>56.2%</td>
<td>43.0 - 69.4</td>
<td>40.7%</td>
<td>38.6 - 42.7</td>
<td>34.1%</td>
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<tr>
<td>Good</td>
<td>21.5%</td>
<td>10.1 - 33.0</td>
<td>22.4%</td>
<td>20.7 - 24.1</td>
<td>22.8%</td>
</tr>
<tr>
<td>Fair</td>
<td>5.4*</td>
<td>0 - 11.0</td>
<td>5.5%</td>
<td>4.6 - 6.4</td>
<td>8.9%</td>
</tr>
<tr>
<td>Poor</td>
<td>-</td>
<td>-</td>
<td>0.6%</td>
<td>0.4 - 0.8</td>
<td>1.8*</td>
</tr>
<tr>
<td>Total</td>
<td>100*</td>
<td>100*</td>
<td>100*</td>
<td>100*</td>
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Created on: 9/4/2015 10:06 AM
Source: 2012, 2013, 2014 California Health Interview Survey
Evolution of Value Based Care

- Approximately 20% capitated as of 9.1.2015
- Capitation rate is currently increasing by approximately 5% of total population served (per annum)
- Will stabilize in FY 2016-2017 as health plan and San Mateo Medical Center negotiate strategies moving forward
What % of your clinical ops are tied to a value based model?

1. 0%
2. <33%
3. 34-67%
4. 68-100%
Evolution of Value Based Care

Developing a roadmap to full capitation

Building our primary care capacity and managed care infrastructure to support current capitation arrangement and see this as a pilot to assess our capabilities for managing risk

Reassess over the next year, but being a provider with limited scope of services limits our ability to truly manage full risk
Volume to Value Framework

Pay for Performance Initiatives
- DSRIP/ PRIME
- HPSM

Clinical & Process Measurement Approach
- Comprehensively designed outpatient and inpatient measures
- Public health data integration with patient level data

Practice Redesign
- Patient Centered Medical Home
- Patient Centered Outcomes Research

Innovations
- Clinical Analytics at Point of Care
- Operational Analytics at Point of Care
- Direct to Patient
- Optimizing Workflow – Software and Devices

Managed Care
- Risk stratification models which seek to identify ‘at-risk’ population cohorts

Technology/Process
- EMPI & HIE
- Data Governance
- LEAN
SMMC Goals for 2015/16

- Patient Centered Care
- Excellent Care
- Right Care Time & Place
- Staff Engagement
- Financial Stewardship
P4P - DSRIP 5 year goals, the ongoing delivery improvement, and health system modernization effort

<table>
<thead>
<tr>
<th>Goal</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>Reducing the time to third next available appointment to less than seven days in four clinics</td>
<td>Implementing best practice race, ethnicity, gender, primary language, and literacy (REAL) data for at least 90% of patients seen at SMMC</td>
</tr>
<tr>
<td>Expanding primary care capacity by adding three new provider teams</td>
<td>Incorporating the comparison of patient demographic and quality data to identify disparities</td>
</tr>
<tr>
<td>Assigning at least 90% of eligible patients to primary care teams</td>
<td>Making patient experience data for the medical/surgical wards, Emergency Department, and four outpatient clinics easily available to staff</td>
</tr>
<tr>
<td>Reducing no-show rates for medical home patients to less than 10%</td>
<td>Spreading validated patient experience surveys to the outpatient and Emergency Department settings</td>
</tr>
<tr>
<td>Implementing physical-behavioral health care integration in at least four primary care clinics</td>
<td>Completing at least 12 efficiency and quality improvement initiatives using LEAN methodologies and training</td>
</tr>
<tr>
<td>Utilizing depression screening tools for at least 60% of patients with diabetes</td>
<td>Improving compliance with a validated set of interventions to reduce sepsis mortality</td>
</tr>
<tr>
<td>Reducing central line associated bloodstream infections</td>
<td>Reducing surgical site infections</td>
</tr>
<tr>
<td>Achieving a rate of zero falls with injury per 1000 patient days for at least six months of the year</td>
<td></td>
</tr>
</tbody>
</table>
Pay for Performance (Health Plan of San Mateo – Financial Incentives for High-Quality Care)

- Extended Office Hours
- Patient Auto Assignment
- BMI Measurement
- Initial Health Assessment
- Child Well Visit
- Teen Well Visit
- Women’s Health Exam
- Depression Screening
- Post Discharge Visit
- Diabetes Management
- Referrals by PCPs to OB physicians
- OB Visit by OB physician
- Postpartum exam by OB/Gyn physician
- Immunization Registry
Managed Care – Programs and Projects

**IT / Data Analytics**
- HIE Dashboard
- PCMH Tier 1 & 2 Metrics
- **Risk Adjustment Factor Scores**
- Specialty Clinic Capacity Analysis
- Online Patient Portal
- MRN Auto-assignment

**Proactive Outreach**
- New Member Cards & Materials
- Untouched Member Outreach
- Pay for Performance

**Service Delivery**
- Phone-based Care
- Care Team Transformation
Criteria for Risk Stratification

- In-depth approach to understanding the population and unique characteristics
- An integral part of volume to value
- Identification of the high risk cohort
  - Healthcare expenditure
  - Avoidable hospitalizations
- Elucidate population disease patterns and preemptive risk assignments
- Strategies and Interventions to manage the high risk cohort
Audience Poll Question 2

Are you using risk stratification to guide your operations?

1. Yes
2. No
## Model Comparison

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
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</thead>
</table>
| **Chronic Comorbid Count (CCC)**     | - AHRQ Clinical Classification Software  
- Sum of selected comorbid conditions grouped into 6 categories                                                                                                                                               |
| **Adjusted Clinical Groups (ACGs)**  | - Used to predict future costs, hospital utilization, developed by Johns Hopkins  
- Model uses diagnosis information, pharmacy information to classify patients into 93 ACG categories                                                                                                                                 |
| **Hierarchical Condition Categories (HCC)** | - Measures burden of disease, includes 70 condition categories  
- Medicare Advantage Program - adjusts capitation payments for expenditure risk of its enrollees                                                                                                           |
| **MN Tiering (MN)**                  | - Based on Major extended Diagnostic Groups (MEDCs)  
- Groups patients in 5 categories from 0 – 4 based on number of conditions                                                                                                                                 |
| **Elder Risk Assessment (ERA)**      | - Designed for adults over 60  
- Use administrative data and select morbidities to derive risk of hospital and ED utilization                                                                                                                                 |
| **Charlson Comorbidity Index (CCI)** | - Predicts risk of 1 year mortality from comorbid conditions  
- Based on administrative data, 17 comorbidity definitions, and total of selected conditions  
- Predicts undesirable future outcomes                                                                                                                                                                       |
What model are you using for risk stratification?

1. None
2. Proprietary
3. Models discussed
4. Other
Model

Pre-Regression Model Statistics
Crude rates of preventable hospitalizations*, include:

Respiratory: Adult Asthma, Bacterial pneumonia, COPD

Diabetes: Short-term complication, Long-term complication, uncontrolled diabetes, and lower-extremity amputation among patients with diabetes

Heart disease: Angina w/o procedure, congestive heart failure, hypertension
Base Year Demographics

Race and Ethnicity of Health System Adult Patients in FY' 2014 N = 50,806

- Black/African American
- White
- Asian
- Latino/a
- Pacific Islander
- Native American
- Other/Multi Race
- Unknown
Results

Percentage of Selected Hospital/ED Outcomes by Adult Primary Care Clinic Patients FY' 2014
N = 50,806

- Preventable ED* (%)
- Preventable Hospitalization* (%)
- Avoidable Medi-Cal ED* (%)
Results

Average Charlson Co-Morbidity Score by Adult Primary Care Clinic
FY’2014 (N = 50,806)
Interventions & Priorities

Innovations

Clinical analytics at the point of care
• Gaps in diagnosis and care
• Predictive analytics for patient lifestyle

Operational analytics at the point of care
• Predictive analytics for staffing
• Automated root cause analysis for real time operations

Optimizing workflow through devices
• All in one vitals device
• Refraction performed by staff

Optimizing workflow through software
• Simplified medication instructions

Direct to Patient
• Mobile aid in bowel prep for colonoscopy

Outsourcing provider services
• Certified Diabetic Educators electronically engaging with diabetics
Direct to Patient
Mobile aid in bowel prep for colonoscopy

Provider Scheduling System

Secure servers

- Reminders
- Coaching
- Compliance checks
- Diet
- Meds
- Cleanout
- Appointment
- Recovery

Import patient names and phone #’s (via .CSV file)

Patient Compliance Dashboard

Early warning dashboard for no-shows, cancellations, aborted procedures, poor prep.
Operational analytics at the point of care

**Patients in ER by process step**

<table>
<thead>
<tr>
<th>Process Step</th>
<th>Disposition</th>
<th>Average LOS (minutes)</th>
<th>Transfer to Room (minutes)</th>
<th>Room to Doc (minutes)</th>
<th>Doc to Disposition (minutes)</th>
<th>Disposition to Exit (minutes)</th>
</tr>
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<tbody>
<tr>
<td>BH-02 - Bh, Mental Health Eval</td>
<td>ADMIT TO PSYCH</td>
<td>1404.9</td>
<td>7.1</td>
<td>15</td>
<td>1320</td>
<td>62.9</td>
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<tr>
<td>BH-04 - Bh Depression</td>
<td>ADMIT TO PSYCH</td>
<td>1030.9</td>
<td>13.1</td>
<td>5</td>
<td>965</td>
<td>47.9</td>
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<td>BH-03 - Bh Suicidal</td>
<td>ADMIT TO PSYCH</td>
<td>882.9</td>
<td>15.1</td>
<td>0</td>
<td>815</td>
<td>52.8</td>
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<tr>
<td>BH-05 - Bh Eval <em>Discharge</em></td>
<td>ADMIT TO PSYCH</td>
<td>868.9</td>
<td>6.1</td>
<td>0</td>
<td>805</td>
<td>57.9</td>
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<td>ZONE2--17 - Bh Eval</td>
<td>ADMIT TO PSYCH</td>
<td>613.9</td>
<td>11.1</td>
<td>5</td>
<td>550</td>
<td>47.9</td>
</tr>
<tr>
<td>ZONE1--08 - Chest Pain</td>
<td>Telemetry - Cardiac</td>
<td>377.9</td>
<td>10.1</td>
<td>10</td>
<td>145.1</td>
<td>21.2</td>
</tr>
</tbody>
</table>
Outsourcing provider services
Certified Diabetic Educators
electronically engaging with diabetics

Consumer App

1. Upload pictures of meals and readings
2. Get feedback and support
3. Earn incentives to keep going

Debbie
Debbie's Coach
(Certified Diabetes Educator)
Optimizing workflow through devices
All in one vitals device

Core Technology
Healthcare Home Hub platform for secure real-time collection of vital signs in 60 seconds.

1. Vitals measurements
2. Patient data processing and storage
3. Analytics, API and value added services (e.g. external communication)

Self Sterilized Non contact charging HARDWARE & connected HUB

Local Data Processing (e.g. filtering humidity, movement artefacts) and Storage

Consumer APP
Secure communication

External Analytics (Anonymized)

Researchers Startups
Clinical analytics at the point of care
Gaps in diagnosis and care
Predictive analytics for patient lifestyle

Key Insights (Diagnosis)

Potential Reimbursement by Gaps of Dx

Member Count per Gaps Dx
Pain Points

- BI Analyst Staffing
- Rogue Report Writers and Request Pathways
- BI reporting operational metrics
- Data culture dissemination
- Hybrid reimbursement environment
- Unknown out of system patient activity
- Data sharing with the health plan
- Incomplete EDW
- Lack of eMPI
- Lack of HIE
- Data Quality
- Low acuity ED
- PM Staffing
- No Cost Accounting
- High administrative days on inpatient psychiatry floor
- Report requests not prioritized on basis of need
What matters most?

1. Converting volume to value
2. Social determinants of health
3. Consumer empowerment
4. Home-based care
Future State

- Home or Phone based Care
- Community Dashboards
- Patient Engagement
- Self service reporting
- Proactive care
Lessons Learned

- Metrics require full description and face to face meeting between requestor and analyst.
- Clinical leaders need to prioritize data requests whenever demand surpasses supply.
- User validation of data/reports is hard to accomplish.
- Standard work is not easy.
- Knowledge driven culture needs time and investment.
- Managed care effort, Business Intelligence, Epidemiology, Technology infrastructure, and Governance need very close collaboration.
- Leadership alignment and involvement is essential.
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