Be Careful What You Ask For – A Predictive Model That Really Works

Rod Christensen, MD
President, Allina Health Clinics

Cheryl Hermann, RN, MBA
Vice President, Clinic Operations & Patient Care Services

Karen Tomes, RN, MA, PHN
Vice President, Care Management & Patient Experience
Agenda

• An introduction to Allina Health
• A review of our predictive tools
• How we used predictive data to improve care
• What happened – our results
• Key learnings
• Next steps
Hello from Minnesota
About Allina Health

- 12 Hospitals
- 64 Allina Health Clinics
- 15 Retail Pharmacy Sites
- Hospice, Home Care, Palliative Care, Medical Equipment, Transportation
- 933 Providers
- 26,405 Employees
- 112,973 Inpatient Hospital Admissions
- 3.3 million Total Clinic Visits
- 63,111 Ambulance Transports
Volume to Value Journey

• 80% of payer arrangements include some form of value payment

• Financial risk is estimated at 3% of Allina Health revenue

We practice in a predominately fee for service market
Allina focused its participants to primary care clinics operating in 3 Counties:

1. Hennepin
2. Anoka
3. Ramsey

265 Allina Primary Care Providers (MDs, NP/PAs) participating

CMS attributed Medicare FFS beneficiary population is ~14,000

Allina Pioneer ACO Clinics
What Did We Learn from the Data?

Expenditures follow an expected distribution pattern

All Clinics

Healthy Users: 44%
Low Utilization: 29%
Moderate Utilization: 12%
High Utilization: 11%
Very High Utilization: 4%

Percent of Patients

Percent of Dollars

0% 10% 20% 30% 40% 50% 60% 70% 80%
Healthy Users Low Utilization Moderate Utilization High Utilization Very High Utilization

17% of patients drive 72% of dollars

Allowed/Patient

Healthy Users: $861
Low Utilization: $3,861
Moderate Utilization: $10,337
High Utilization: $27,533
Very High Utilization: $82,475

$100,000 $80,000 $60,000 $40,000 $20,000

$100,000 $80,000 $60,000 $40,000 $20,000
Pioneer

• Preventing adverse outcomes and high cost utilization is critical to our future success.

• Preventing unnecessary ED visits and hospitalizations are key to reducing the Total Cost of Care.

• Identifying patients at risk will allow appropriate allocation of our resources.

• Provide for better patient care.
Advanced Care Teams

An integrated team of health care disciplines, led by the primary care provider and focused on the coordination and care of patients with complex healthcare needs.
ACT Workflow

Patient Care Plan

- Primary Care
- Service Line
- Mental Health
- Home Care
- Community Services
Early Results

<table>
<thead>
<tr>
<th></th>
<th>Medicare Pioneer Patients with Advanced Care Teams</th>
<th>Matched Controls with Standard Care Teams</th>
</tr>
</thead>
<tbody>
<tr>
<td>TCOC</td>
<td>↓ 37%</td>
<td>↓ 20%</td>
</tr>
<tr>
<td>Admissions</td>
<td>↓ 70%</td>
<td>↓ 55%</td>
</tr>
<tr>
<td>ED visits</td>
<td>↓ 76%</td>
<td>↓ 36%</td>
</tr>
<tr>
<td>High tech imaging</td>
<td>↓ 72%</td>
<td>↑ 16%</td>
</tr>
</tbody>
</table>

Regression to the mean
Natural History of High Cost Patients

Persistent High Cost - 16%

New State of Health
Ideal Predictive Modeling

- Cost alone is an incomplete predictor of future cost.

- Need to predict persistent risk. (e.g. readmission risk model)

- Even better: predict the risk before the spike.
Ideal Predictive Models

- Pre-Spike Model
- Persistent Risk Model (readmission)
Pre-Spike Predictive Model

• Developed by Allina Health
• Used EMR clinical data, including trends over time
• Regression analysis of thousands of variables
• Patterns were identified to predict an admission or ED visit (an event) in the next year
• Precision of ~0.9 (90% of those predicted had an event within 1 year)
Success: Blunt the Spike
Success: Reduce the Number of Spikes
Who Needs Intervention?

COST

TIME

Patient A

Patient B

1 YEAR

0

1 YEAR
Intervention Plan

- Using the persistent risk model and the pre-spike model, patients were divided into three groups based on the following four categories:

  Group A: Patients at increased risk of readmission

  Group B: Patients at increased pre-spike risk, and with an event in the last year

  Group C: Patients at increased pre-spike risk, but without an event in the last year

  Group D: Patients at low risk by both models
Intervention Plan

Groups A & B
(High risk, recent event)
8% of Patients

Group C
(High risk, no recent event)
7% of Patients

Group D
(Low risk)
85% of Patients
Challenges of the Pre-Spike Predictive Model

1. Clinical challenges

– Black box to clinicians
– Reasons for risk are often unclear
– Pre-spike patients are not eager for increased care
– Desired interventions are uncertain
Challenges of the Pre-Spike Predictive Model

2. Value analytics challenges

– Model had infrequent data updates
– Model is more precise than sensitive
– Need control group and at least 1 year to show effectiveness of interventions
– Hard to prove the value in pre-spike work
– Lack of payer alignment
Ideal Predictive Models

1 YEAR

Pre-Spike Model

COST

0

1 YEAR

TIME

Persistent Risk Model (readmission)
Next Steps

• New strategy

• Reliable and easily understood care models

• Target a population for high cost resources

• Triple aim scorecard to monitor progress

• Rigorous data analytics for TCOC impact

• Expand to larger populations with appropriate funding (PMPM)
Objective: Segment the Population by Level of Risk with Unique Care Models

Relationship based interdisciplinary care coordination. Ensure additional help around key transitions (hospital, ED).

Proactively educate & provide convenient options to health care and resources.
Care Coordination for All Patients

At Risk Populations

Complex

Chronic Complex

- Prevention/Wellness
- Access to Primary Care
- My Chart
- Care Navigation

- Registries
- Screening Tools
- Predictive Models
- Health Coaches/Care Guides

- Primary Care
- Advanced Care Team
- Specialty Care Coordination (Clinical Service Lines)
- Hospital & ED Complex Transitions Team

- Complex Care Program
Allina Health Care Management Programs

Coordinated care by an interdisciplinary team for patients with **complex illness** who need support and resources to manage their self care needs.

<table>
<thead>
<tr>
<th>Primary Care-Advanced Care Team</th>
<th>Specialty Care</th>
<th>Hospital &amp; ED Transitions</th>
</tr>
</thead>
<tbody>
<tr>
<td>Relationship based</td>
<td><strong>Disease Expertise</strong> ex., Oncology, Mental Health, Heart Failure</td>
<td><strong>Episodic</strong></td>
</tr>
<tr>
<td>Complex</td>
<td><em>In collaboration with Primary Care</em></td>
<td><strong>Complex discharges</strong></td>
</tr>
<tr>
<td>Chronic Disease</td>
<td></td>
<td><strong>Link to resources</strong></td>
</tr>
</tbody>
</table>

Community Resources: Home Health, Hospice, Skilled Nursing Facilities, housing, county and neighborhood support, faith organizations

Supported by modern technology

Process Metrics

Triple Aim
Ensuring Strategic Alignment with Resources
Care Management Meets the Patient Where They Are

- Telephonic
- Home Setting
- Clinic, ED, Hospital, SNF
- Telemedicine

Care Management
Care Management Interventions

1. Holistic **assessment** (physical, emotional, social, spiritual)
2. Self care **education**
3. Individualized **patient centered goals**
4. **Plan** for ongoing intervention/interactions
5. **Financial counseling** & benefit coordination
6. Follow up **appointments** after hospital and ED visits
7. **Medication management**
8. **Hospital discharge** planning to the right level of care
9. **Referrals** to Home Health, Palliative Care, Hospice, Community Resources
10. **Advanced Care Planning**
2014 Care Management Measures

**Process Metrics**

- Enrollment
- 2 process metrics consistent across CM programs:
  - ✔ patient centered goals
  - ✔ medication management
- Patients with Advanced Care Planning
- Patients/family member on MyChart
- Patients with QOL (Promis) complete

**Outcome Metrics**

- Hospital days/1000 trends
- ED visits
- Preventable trends (PPR, PPC)
- Penetration of ACP and impact on last 6 months in the hospital
- Utilization: Clinic, Home Health, SNF/TCU, Hospice & Palliative Care
- Patient Experience
- Cost measured in Per Member Per Month (PMPM)
- Dollars saved
Care Management Strategy
Eliminate Redundancy, Achieve the Triple Aim & Align Payment

Current Patient Experience
- Payer
- Allina Health

Future Member Experience
- Allina Health
- Payer
Questions?