Quantifying the ROI of Population Health Solutions
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Conflict of Interest

Curt Magnuson, M.B.A.
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Has no real or apparent conflicts of interest to report.
Agenda

• FHG Introductions
• Definitions of Population Health Management (PHM)
• Provider PHM Benefits
• Payor PHM Benefits
• Benefit Adjustments
• PHM ROI
• Data Needs and Requirements
• Final Thoughts
Learning Objectives

**PHM and ROI**
Calculate the ROI of Population Health Management Solutions

**Financial Benefits**
Identify and Quantify the Financial Benefits of Population Health Management Solutions

**Data**
Recognize Data Needs are Evolving to Meet Current & Future PHM Financial and Qualitative Goals
STEPS: Savings

Share an Approach to Consider the ROI of PHM

You Can Quantify the Benefits for PHM
Population Health Management (PHM)

PHM is widely used in the healthcare world, not universally understood.

First defined by David Kindig, MD and Greg Stoddart, PhD in 2003:

“The health Outcomes of a group of individuals, including the distribution of such Outcomes within the group.”

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Some PHM Definitions

• “Improving the health of populations” is one element in the Institute for Healthcare Improvement’s Triple Aim - Institute for Healthcare Improvement (IHI)

• “Better health by encouraging healthier lifestyles in the entire population, including increased physical activity, better nutrition, avoidance of behavioral risks, and wider use of preventive care” - Center for Medicare & Medicaid Innovation

• “The health of a population as measured by health status indicators and as influenced by social, economic and physical environments, personal health practices, individual capacity and coping skills, human biology, early childhood development, and health services.” - Dunn & Hayes (1999)
Objectives for Today’s Session

1. Provide an “Approach” to Help you Identify and Quantify PHM Benefits

2. Show you can “Move the Needle” by Realizing PHM Benefits

3. Understand there IS a Financial Impact and ROI for PHM Solutions
### Example of Potential PHM Benefits

<table>
<thead>
<tr>
<th>Benefit Description</th>
<th>Provider</th>
<th>Payor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reduce Cost of Care for Chronic Conditions</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce Inpatient Readmissions</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce Inpatient Admissions from ED</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce ED Visits</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce Duplication of Services</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce Preventable Adverse Drug Events (PADEs)</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Reduce Patient Leakage (I/P and O/P)</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>Target Appropriate Care Setting</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>Improve Risk Adjustment Scoring</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Improve STAR Rating</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Increase Reimbursement for Medicare Advantage Enrollees</td>
<td></td>
<td>✓</td>
</tr>
<tr>
<td>Reduce 3rd Party Expense for Chart Analysis</td>
<td></td>
<td>✓</td>
</tr>
</tbody>
</table>
PROVIDER PHM BENEFITS

Review 2 Examples in more detail:

Reduce Cost of Care for Chronic Conditions
Diabetic Patient

Target Appropriate Care Setting
Behavioral Health Patient
Scale and Scope of Chronic Care

• Chronic diseases are responsible for 7 out of every 10 deaths in the US$^1$

• Number of people with chronic conditions is rapidly rising:
  – In 2000, 45% or 133 MM Americans, had at least 1 chronic condition$^1$
  – By 2025, chronic diseases will affect 165 MM Americans, 49%$^2$

• People with chronic conditions account for 81% of all hospital admissions$^3$

• More than 75% of health care costs are due to chronic conditions$^4$

• In 2007, the top 7 chronic conditions accounted for a $1.7 Trillion impact$^5$
  – By 2023, projected to be $4.2 Trillion impact (treatment costs and lost economic output)

Scale and Scope of Chronic Care

Overview
- 55% of All Medicare Beneficiaries had High Blood Pressure
- 45% had High Cholesterol

Figure 1: Prevalence of Chronic Conditions Among Medicare Fee-For-Service Beneficiaries: 2012

- High blood pressure: 55%
- High cholesterol: 45%
- Arthritis: 29%
- Ischemic heart disease: 29%
- Diabetes: 27%
- Chronic kidney disease: 15%
- Depression: 15%
- Heart failure: 15%
- COPD: 11%
- Alzheimer’s Disease/Dementia: 10%
- Cancer: 8%
- Atrial fibrillation: 8%
- Osteoporosis: 6%
- Asthma: 5%
- Schizophrenia/Psychotic Disorders: 4%
- Stroke: 4%
- Autism spectrum disorders: 0.1%
Scale and Scope of Chronic Care

**Overview**

- 34% of All Medicare Beneficiaries had at least 1 Chronic Condition
- 14% of All Beneficiaries had 6 or more chronic conditions

**Figure 5: Prevalence of Multiple Chronic Conditions Among Medicare Fee-For-Service Beneficiaries: 2012**

- 34% had 0 to 1 conditions
- 30% had 2 to 3 conditions
- 21% had 4 to 5 conditions
- 14% had 6+ conditions
Overview

- Beneficiaries with multiple chronic conditions increases the cost to treat each Beneficiary exponentially.
Overview

• 34% of Beneficiaries with 0 or 1 chronic conditions accounted for 7% of Medicare spending

• 14% with 6 or more chronic conditions accounted for 49% of Medicare spending
Chronic Care Management - Diabetes

- 29.1 Million Americans have Diabetes
  - Accounts for 9.3% of the American population
- Not all Americans who have Diabetes are diagnosed:
  - 21.0 Million Diagnosed
  - 8.1 Million Undiagnosed
- 7th leading cause of death in the American population
- Total cost of diagnosed Diabetes was $245 Billion in 2010
  - $176 Billion in direct medical costs
  - $69 Billion in reduced productivity
- Annual medical costs for Diabetic patients is $13,700 per year
- At current incidence rate:
  - 1 in 5 Americans will have Diabetes by 2015
  - 1 in 3 by 2025

3. Cost of Diabetes, American Diabetes Association, March 2013
Chronic Care Management – Diabetes Example

“At-Risk” Population Currently Managed
100,000

Diabetic Population
9,300 Patients

- Projected 9.3% of an “At-Risk” Population is Diabetic

Chronic Care Management – Diabetes Example

• Annual Treatment Cost for a Type 2 Diabetic Patient\(^1\) = $4,953

• Potential Direct Cost Reduction Impact using a PHM Solution\(^2\) = 10%
  – $495 Cost Reduction per Patient

• Annual Type 2 Diabetic Patient Treatment Reduction Opportunity = $4,600,000 (i.e. 9,300 x $495 = $4.6MM)

• Effectiveness of Using PHM Solutions for Coordinated Care Outside of Hospital\(^3\) = 40%

Projected Annual Benefit Opportunity = $1,800,000

Diabetic Population 9,300 Patients

1. Lifetime Direct Medical Costs Treating Type 2 Diabetic Patients, AJPM, 2013
Behavioral Health – Appropriate Care

• In 2012, more than 41 million adults were treated for a Behavioral Health condition¹
  – Accounts for 18% of the American population

• These encounters accounted for $536 Billion in total healthcare services¹

• The additional healthcare costs incurred by people with a Behavioral comorbidities were estimated to be $293 billion in 2012¹

• 17% of all Medicare beneficiaries have a mental illness²

Projected 4.5% of all Inpatient Admissions will have a Behavioral Health Encounter.annual inpatient admissions
20,000
behavioral health encounter
900 patients

Hospitalizations for Mental Health and…", piperreport.com (citing AHRQ), 2012
Behavioral Health

- Average Treatment Cost per Behavioral Health Encounter\(^1\) = $5,000

- Potential Direct Cost Reduction Impact using a PHM Solution\(^2\) = 10%
  - $500 Cost Reduction per Encounter

- Annual Behavioral Health Reduction Opportunity = $450,000 (i.e. 900 x $500 = $450,000)

- Percent of Encounters Utilizing a Lower Level of Service = 20%

Projected Annual Benefit Opportunity = $90,000

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1. Hospitalizations for Mental Health and…”, piperreport.com (citing AHRQ), 2012
2. Lifetime Direct Medical Costs Treating Type 2 Diabetic Patients, AJPM, 2013
PAYOR PERSPECTIVE

• Health Plans are also impacted by investments in Population Health Management solutions

• Incentives and Benefits may/may not align with Providers
  – Some benefits are unique to the Health Plans

• There is Value to understanding the Payor perspective
PAYOR PHM BENEFITS

Review 2 Examples in more detail:

- Reduce Duplication of Services
- Improve Risk Adjustment Scoring
Reducing Duplication of Services

• Build longitudinal health records to provide comprehensive patient information
• Provide seamless care transitions between care providers
• Results in reduced duplicate/unnecessary services

Financial Benefits
• Reduces clinical reimbursement expenses
• Challenge: Maintain 85%/15% MLR ratio
Improve Risk Adjustment Scoring

- More detailed understanding of Population Health
- Predictive analytics to project future expenses and implement proactive preventative protocols
- Enables more accurate member premium pricing to reflect Population Health

Financial Benefits
- Higher premiums based on actual population health to achieve higher margins/reduce losses
- Lower premiums based on actual population health to attract more members
Benefit Adjustments

Financial Benefits are Impacted by Different Variables that Must be Accounted for:

- Benefit Realization Timing
- Shifting Reimbursement Environment
Benefit Realization Timing

Financial benefits are never immediately realized. Magnitude and Timing of Benefit Realization are impacted by a variety of factors:

1. Staggered Implementation of Different Solutions
2. Go-live Date(s)
3. Training Requirements
4. Learning Curve
5. Adoption Rates

<table>
<thead>
<tr>
<th>Benefit</th>
<th>M1</th>
<th>M2</th>
<th>M3</th>
<th>M4</th>
<th>M5</th>
<th>M6</th>
<th>M7</th>
<th>M8</th>
<th>M9</th>
<th>M10</th>
<th>M11</th>
<th>M12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Benefit #1</td>
<td>0%</td>
<td>0%</td>
<td>25%</td>
<td>50%</td>
<td>75%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
</tr>
<tr>
<td>Benefit #2</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>25%</td>
<td>25%</td>
<td>50%</td>
<td>50%</td>
<td>75%</td>
<td>75%</td>
<td>100%</td>
</tr>
</tbody>
</table>

Objective: Demonstrate where PHM can “Move the Needle”
Shifting Reimbursement Environment

The industry shift in reimbursement from a Fee-for-Service (FFS) model to Fee-for-Value (FFV) will impact potential benefits differently:

1. Most benefits are different for FFS versus FFV
2. Some benefits not impacted at all
3. FFS vs. FFV relationship dynamic and continually changing
4. Shared savings can significantly impact FFV benefits

<table>
<thead>
<tr>
<th>Reimbursement</th>
<th>Current</th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td>FFS</td>
<td>75%</td>
<td>70%</td>
<td>65%</td>
<td>60%</td>
<td>55%</td>
<td>50%</td>
</tr>
<tr>
<td>FFV</td>
<td>25%</td>
<td>30%</td>
<td>35%</td>
<td>40%</td>
<td>45%</td>
<td>50%</td>
</tr>
<tr>
<td>Shared Savings (FFV)</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
<td>50%</td>
</tr>
</tbody>
</table>

Objective: Demonstrate where PHM can “Move the Needle”
# Shifting Reimbursement Environment

**Example:** Target Appropriate Care Setting (lower level of service when appropriate)

<table>
<thead>
<tr>
<th>Fee for Service (FFS)</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Plan benefits from reduced reimbursement</td>
<td></td>
</tr>
<tr>
<td>Provider may see no impact or reduced margin</td>
<td><img src="arrow-down.png" alt="down" /></td>
</tr>
</tbody>
</table>

*Provider has LITTLE/NO financial incentive to target appropriate care setting*

<table>
<thead>
<tr>
<th>Fee for Value (FFV)</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>Health Plan realizes benefits, but at the Shared Savings rate</td>
<td></td>
</tr>
<tr>
<td>Provider realizes benefits, but at the Shared Savings rate</td>
<td><img src="arrow-up.png" alt="up" /></td>
</tr>
</tbody>
</table>

*Health Plan and Provider HAS financial incentive to target appropriate care setting*
### Shifting Reimbursement Environment

**Example:** Reduce Average Length of Stay (cost/day)

<table>
<thead>
<tr>
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<th>Impact</th>
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<tbody>
<tr>
<td>Health Plan not impacted</td>
<td></td>
</tr>
<tr>
<td>Provider realizes all benefits</td>
<td>![Arrow]</td>
</tr>
<tr>
<td><em>Health Plan has NO financial incentive to reduce ALOS</em></td>
<td>![Arrow]</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Fee for Value (FFV)</th>
<th>Impact</th>
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</thead>
<tbody>
<tr>
<td>Health Plan realizes benefits, but at the Shared Savings rate</td>
<td>![Arrow]</td>
</tr>
<tr>
<td>Provider realizes benefits, but at the Shared Savings rate</td>
<td>![Arrow]</td>
</tr>
<tr>
<td><em>Both Health Plan and Provider HAS financial incentive to reduce ALOS</em></td>
<td>![Arrow]</td>
</tr>
</tbody>
</table>
Shifting Reimbursement Environment

Example: Increase Capacity/Volume and/or Reduce Leakage

<table>
<thead>
<tr>
<th>Fee for Service (FFS)</th>
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<tbody>
<tr>
<td>Health Plan not impacted</td>
<td></td>
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<td>Provider realizes all benefits</td>
<td></td>
</tr>
<tr>
<td><em>Provider HAS financial incentive to increase patient volume</em></td>
<td></td>
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<tbody>
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<td>Health Plan not impacted</td>
<td></td>
</tr>
<tr>
<td>Provider realizes benefits; no Shared Savings impact</td>
<td></td>
</tr>
<tr>
<td><em>Provider HAS financial incentive to increase patient volume</em></td>
<td></td>
</tr>
</tbody>
</table>
PHM Return on Investment (ROI)

ROI is calculated from Financial Benefits and Investment Costs

Financial Benefits
• Such as examples reviewed earlier

Investment Costs
• Include Total Cost of Ownership (TCO)
  – Not just vendor costs
• Consider internal costs (training, hardware, etc.)
• There may be current costs that can be eliminated/avoided

You will likely work with Finance to develop your own ROI

You want to help Finance by demonstrating where PHM can “Move the Needle”
Evolving Data Needs

• Data needed to support PHM ROI will evolve:
  – No single “source of truth” for ROI benefit metrics
  – Current ROI metrics derived from many different sources
  – Multi-system and data interoperability is lacking
  – Need to use any information available at this time

• As PHM ROI data needs evolve, data could be located in:
  – Clinical repositories, claims data, administrative, EHR records, self-reported health information, laboratory and prescription information, socioeconomic information, care management programs, etc.
  – And, many more data sources
Evolving Data Needs

- Office of the National Coordinator for Health IT is optimistic – at least in the long term:
  - "By 2024, the nationwide use of interoperable health IT will be pervasive," the agency predicted in its 10-year vision, "Health IT Enabled Quality Improvement." Across the healthcare ecosystem, stakeholders will "seamlessly interact with on a daily basis for multiple purposes such as: healthy habits of daily living, delivery of care, care coordination, population management and value based reimbursement."

**Goal:** to create a robust, collaborative, healthcare IT infrastructure to collect, process, analyze, and share information to efficiently and effectively manage a patient population.
Final Thoughts

1. We shared an approach to consider the ROI of Population Health Management Solutions
   - “Move the Needle” to show financial impact of PHM

2. There ARE benefits associated with PHM
   - Use ROI metrics currently available

3. Data requirements to determine a PHM ROI are constantly evolving:
   - Data being used today will not be the same in the future
STEPS: Savings

Share an Approach to Consider the ROI of PHM

You Can Quantify the Benefits for PHM
Questions

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