Enabling Population Health Informatics

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Agenda

• Population Health Management definition
• Creating a Population Health Management Informatics program
  › Governance
  › Technology inventory
  › Staff assessment
  › Data requirements
  › Infrastructure evaluation
• Defining the roadmap
• What’s next?
Population Health Management (PHM)

**A Definition**

The effective management of targeted patient populations to help drive economic success in at-risk reimbursement contracts (e.g., global budgets) while achieving contractual quality and patient satisfaction benchmarks.

### High cost/high utilization
- ER frequent flyer
- Multiple inpatient admissions
- No defined PCP
- Multiple comorbidities

### Gaps in care
- Prevention screenings (e.g., colonoscopy, mammogram)
- RX refills
- Vaccinations
- Routine appointments

### Prevention/wellness
- Actions that keep people healthy
Sophisticated workflows & organizational complexity

Require robust IT support and a foundation of reliable data

Automated surveillance and stratification of members to determine resource intensity

Dynamic assessment functionality with branching logic, algorithm design, expand/collapse capable

Robust data model focused around complex eligibility, problem, goals, interventions hierarchy

Best-practice workflows configured to span medical and psychosocial domains

Personalized care plan that can be reassessed and updated longitudinally and episodically

Multi-disciplinary care team access to care plan and member data across continuum of care
Population health across the care continuum

Enabling care coordination by leveraging IT

Care coordination

- SNF/rehab/hospice
  - EMR
- Hospital
  - EHR
  - Patient portals
  - Analytics
- ED
  - EHR
- RX/Lab/Rad
- TeleHealth
- HIE
- Community-based organizations/social work
- Patient portals
- Primary Care Provider, PCMH
- Specialists, referring providers
  - EHR
- Housing
## IT-enabled model of care

<table>
<thead>
<tr>
<th>Care management model</th>
<th>Care management categories</th>
</tr>
</thead>
<tbody>
<tr>
<td>High risk/high utilization</td>
<td>Frequent ED utilization, Inpatient discharge follow-up, Diabetes, Cardiovascular risk, Depression-comorbidities, Other...</td>
</tr>
<tr>
<td>Gaps in care</td>
<td>Cancer screening, Immunizations, Other...</td>
</tr>
<tr>
<td>Wellness</td>
<td>Weight control, Wellness visits, Access to care, Other...</td>
</tr>
</tbody>
</table>

### Sample of care management metrics

- **Plan All-Cause Readmissions**
- **Diabetes:** Eye Exam
- **Hemoglobin A1c testing; A1c poor control**
- **Diabetes:** Blood Pressure Control
- **Diabetes:** Medical Attention for Nephropathy
- **Diabetes:** Lipid LDL-C Screening
- **Smoking and Tobacco Use Cessation**
- **CV Disease:** Use of Statins
- **CAD:** Lipid Control
- **HF:** Beta Blocker Therapy for LVSD
- **Antidepressant Medication Management**
- **Screening for Clinical Depression**
- **Breast Cancer Screening**
- **Cervical Cancer Screening**
- **Colorectal Cancer Screening**
- **Childhood Immunization Status**
- **Flu & pneumonia vaccines; influenza immunization**
- **Adult BMI Assessment**
- **Well-child visits (15 mos – 6 yrs of life)**
- **Children & Adolescents’ Access to PCPs**
## Data

**The Foundation of PHM IT Enablement**

- Integrating clinical, administrative, and financial data across care settings from disparate sources
- Establishing common definitions
- Harmonizing patient and provider identifiers

- Enabling population stratification
- Creating insights into resource utilization intensity
- Measuring quality, safety and patient engagement
- Supporting standard care models
- Linking care coordinators
Population Health Informatics governance

Leader
Population Health

Leader
Population Health Informatics

Population Health Informatics Executive Council

Population Health Common Reporting Structure

Population Health Software Procurement & Optimization

Population Health Stewardship
Creating a PHM informatics program

*The first steps*

- Assess current IT applications for care management functionalities
- Determine the complete inventory of population HIT capabilities
- Assess the level of value the current capabilities are providing
- Identify redundancy and potential gaps when compared to needs, goals, and objectives
- Select and procure the information technology needed to address gaps
- Create an inventory of the current staff who are conducting population health data analytics to form a common shared service of population health data analytics and informatics
The approach

- Identify key stakeholders
- Create timeline
- Conduct kick-off meeting
- Define guiding principles
- Issue and evaluate requests for proposal
- Conduct selection process
- Conduct discovery
- Assess utilization, returned value of portfolio
- Identify gaps and redundancies
- Assess data sources
- Identify areas of data vulnerability and potential infrastructure gaps
- Define options to address gaps and eliminate redundancies in:
  - Technology
  - Staff
  - Data
  - Infrastructure
- Create 18-month tactical plan with milestones through year 3
- Develop final report and presentation
Population health management informatics vision

EHR vendor agnostic capabilities

Patient Portal (single point of contact)

Care Management

Data Repository

Providence Epic Environment

- Build 1 / Instance 1
- Build 2 / Instance 4
- Build 1 / Instance 2
- Build 3 / Instance 5
- Build 1 / Instance 3
- Build 4 / Instance 6

PACMED GE Centricity

Non-owned Entities

- Seattle Children’s (Cerner)
- Other owned entities
- Non-owned physicians

Other owned entities

- LTC

Payers

- Reference Labs

Remote monitoring

Retail RX

Retail Clinics

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PHM informatics guiding principles

- EHR vendor platform should be used where appropriate and integrate with other population health applications as needed.
- The Population Health Informatics Executive Council will establish an enterprise-wide population health informatics strategy that allows for variation to support regional regulation and contractual commitments.
- The organization will organize staff to support population health informatics in a collaborative, federated structure with centralized governance.
- The organization will adopt a single enterprise-wide data standard with specific guidelines to handle variability required by regional regulation and contracts.
- The organization will adopt a single risk stratification approach for each type of algorithm (e.g., high utilization, readmission, no-show, financial).
- The organization will approach population health informatics application acquisition for new capabilities not covered by current functionality with a preference for commercially available products.
Population health IT framework

Care transition management
Access and navigation
Advance care planning/evidence-based guidelines
Patient self management

Customer relationship management (CRM)
Medication management

Risk identification & stratification
Quality & outcomes management
Resource utilization
Disease registries

Financial and cost modeling
Performance improvement

Patient dashboards (Alert huddle boards)
Contract dashboards

EHR Infrastructure

Physician office/ambulatory care
Inpatient clinical care
Patient billing/accounting
Clinical ancillaries/OR/ED
Registration
Scheduling
Contract management
Practice management

Patient portals
Health information sharing & exchange
Tele-monitoring/telehealth
Electronic messaging
Clinician portal
Workflow/rules management
Example population health current state inventory

Care management
- Care management: 10
- EHRs: 7

Analytics
- Applications: 17
  - Pilots: 2
- Tools: 10
- Data stores: 7
- Risk models: 4
- Groupers: 4
- Readmission models: 3
  - Pilots: 3

EHR Infrastructure
- Patient portal: 3
  - In development: 1
- Master provider index: 2
- Telehealth: 9
  - Pilots: 1

Note: eMPI and HIE categories will be addressed in phase 4

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Example reporting & analytics staff count

- Swedish (n=4)
- Clinical Data Analytics (n=5)
- HI team (n=139.4)
- Vantage (n=16.1)
- Payer Contracting (n=12)
- PacMed (n=2)
- ACO (n=17)
- Physician Services (n=20)
- PHP (n=45)
- Kadlec (n=0)
Example reporting & analytics roles across all teams

- Directors (n=10)
- Manager (n=19)
- Project / Program Coordinator (n=19)
- ETL Developers (n=18)
- Analysts (n=85.1)
- Business Analysts (n=47.5)
- Risk & Compliance (n=1.8)
- Clinical Education & Training (n=3)
- Population Health Support (n=9)
- Business Intelligence (n=36)
- Architects (n=5)
- Data Architects (n=13)
- Architect Analyst (n=8)
- Data Scientist (n=3)
- Database Administrators (n=5)
- Quality Assurance (n=2)
- Specialists (n=3)
# Metrics Review

## EP measure crosswalk 299 total measures

<table>
<thead>
<tr>
<th>Measure Title</th>
<th>CMS</th>
<th>NOF</th>
<th>HEDIS</th>
<th>PQRS</th>
<th>Domain</th>
<th>Government Programs</th>
<th>Medicare Advantage</th>
<th>State Programs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Appropriate Testing for Children with Pharyngitis</td>
<td>140v3</td>
<td>0007</td>
<td>CWP</td>
<td>066</td>
<td>Efficiency and</td>
<td>N</td>
<td>N</td>
<td>N/A</td>
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<tr>
<td>Initiation and Engagement of Alcohol and Other Drug Dependence Treatment</td>
<td>137v3</td>
<td>0004</td>
<td>IET</td>
<td>305</td>
<td>Cost Reduction</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Outpatient Experience: Provider Communication</td>
<td>N/A</td>
<td>0005</td>
<td>N/A</td>
<td>N/A</td>
<td>Access</td>
<td>N</td>
<td>N</td>
<td>N/A</td>
</tr>
<tr>
<td>Controlling High Blood Pressure</td>
<td>165v3</td>
<td>0018</td>
<td>CBP</td>
<td>235</td>
<td>Effective Clinical Care</td>
<td>N</td>
<td>N</td>
<td>Y</td>
</tr>
<tr>
<td>Annual Monitoring for Patients on Persistent Medications</td>
<td>N/A</td>
<td>0021</td>
<td>NPM</td>
<td>N/A</td>
<td>Prevention</td>
<td>N</td>
<td>N</td>
<td>N/A</td>
</tr>
</tbody>
</table>

## EH measure crosswalk 130 total measures

<table>
<thead>
<tr>
<th>Measure Title</th>
<th>CMS</th>
<th>NOF</th>
<th>Measure Set Identifier</th>
<th>Domain</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medical Assistance With Smoking and Tobacco Use Cessation</td>
<td>N/A</td>
<td>0027</td>
<td>MSC</td>
<td>Prevention</td>
</tr>
<tr>
<td>Childhood Immunization Status</td>
<td>N/A</td>
<td>0038</td>
<td>CIS</td>
<td>Prevention</td>
</tr>
<tr>
<td>Flu Vaccinations for Adults Ages 18 and Older</td>
<td>N/A</td>
<td>0038</td>
<td>N/A</td>
<td>Prevention</td>
</tr>
<tr>
<td>Heart Failure (HF), Angiotensin-Converting Enzyme (ACE) Inhibitor or Angiotensin Receptor Blocker (ARB) Therapy for Left Ventricular Systolic Dysfunction (LVSD)</td>
<td>N/A</td>
<td>0083</td>
<td>HF-3</td>
<td>Prevention</td>
</tr>
<tr>
<td>Participation in a Systematic Database for Cardiac Surgery</td>
<td>N/A</td>
<td>0113</td>
<td>N/A</td>
<td>Safety</td>
</tr>
<tr>
<td>Evaluation of Left Ventricular Systolic Function (LVSF)</td>
<td>N/A</td>
<td>0135</td>
<td>HF-2</td>
<td>Prevention</td>
</tr>
<tr>
<td>町DISCHARGE INSTRUCTIONS FOR HEART FAILURE</td>
<td>N/A</td>
<td>0136</td>
<td>HF-3</td>
<td>N/A</td>
</tr>
</tbody>
</table>

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Data management overview

- Governance leaders work with owners of operations data and workflows, and information technology.
- Considers what is required of the business and its data to fulfill its obligations.
- Identifies changes that must occur and their impacts in the broader scheme of reported measures and performance analytics.

Master data management
- Define and implement master reference files

Data profiling
- Analyze source data; identify areas for improvement

Ongoing audits
- Design and implement information architecture

Appropriate use
- Identify who may access what information

ETL
- Pull data as defined these practices

Reporting
- Report and analyze final data output
Data management scenario

The organization must report specific quality measures associated with a new ACO contract. Performance of these measures will significantly influence reimbursements.

- Prioritizes data for at risk contract metrics
- Recommends priorities for data remediation

Master data management
- Utilizes standards for patient and provider identification

Data profiling
- Conducts source to target mapping for required data elements

Ongoing audits
- Ensures accuracy and reliability of data

Appropriate use
- Determine and monitor who has access to final information

ETL
- Pulls validated data as set by metric requirements

Reporting
- Calculate and report metric
Data and Infrastructure Summary

- PHP Claims
- Facey Claims
- PH&S Claims
- PacMed Epic
- Swedish Epic
- Prov Epic’s
- Kadlec Epic
- Kronos
- Cost data
- Lawson
- Press Ganey
- EDIE/PreManage
- Milliman
- Enrollment data
- Premier
- Cerner Lab
- GE Centricity
- CHARs
- Tap
- Swedish Chronicles (Epic)
- Prov #1 Chronicles (Epic)
- PacMed Chronicles (Epic)
- Prov #2 Chronicles (Epic)
- Kadlec Chronicles (Epic)
- Prov #3 Chronicles (Epic)
- Adhoc Reporting
- Dashboards
- Monthly Superlist
- Dashboards
Current State Assessment

- Care management 10
  - Applications 17
    - Pilots 2
    - Tools 10
  - Data stores 7
  - Risk models 4
  - Groupers 4
  - Readmission models 3
- Pilots 1

- Enabling
  - Care Management Analytics
- Foundational
  - EHR Infrastructure
    - Patient portal 3
      - In development 1
    - Master provider index 2
    - Telehealth 9
    - Pilots 1

Note: ANP and PHC categories will be addressed in phase 4

- EHRs 7

- Swedish (n=4)
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- ACO (n=17)
- Physician Services (n=20)
- PHP (n=45)
- Kadlec (n=0)
Establish population health informatics roadmap

- Roadmap definition
  - Create roadmap from the redundancies & gaps identified during the assessment work
  - Mechanism to communicate direction, socialize findings and gain buy-in
  - Identifies activities and timeline for each work stream with major milestones

- Establish priorities
- Inventory technology
- Assess staff
- Assess infrastructure
- Evaluate data sources & management processes
- Socialize findings & gain buy-in
- Analyze redundancies & gaps
- Formalize roadmap
High level population health management informatics roadmap months 1 - 18

- **Procurement process**
- **Care management implementation**
- **Enterprise-wide analytics governance**
- **Staff reorganization**
- **OPHI PMO**
- **Data management**
- **Population health informatics platform**
- **Application reassessment, retirement, or replication**
- **Infrastructure**
### OPHI Enterprise-wide Analytics Governance

**Months 1-18**

Enterprise-wide analytics drives activities and deliverables in other work streams.

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Establish workgroup with charter</td>
</tr>
<tr>
<td></td>
<td>Include OPHI, Innovations, Swedish, MultiScale, Facey, Clinical Data Analytics, C.O.R.E., Vantage, Kadlec, and IS/HI</td>
</tr>
<tr>
<td>2</td>
<td>Define requirements</td>
</tr>
<tr>
<td></td>
<td>Establish and document enterprise-wide analytics needs</td>
</tr>
<tr>
<td>3</td>
<td>Define process and standards</td>
</tr>
<tr>
<td></td>
<td>Establish policies and procedures to promote collaboration and standardization</td>
</tr>
<tr>
<td></td>
<td>Develop processes for workflow sign-off</td>
</tr>
<tr>
<td></td>
<td>Integrated through PHDCC, supported by PHSPO and PHCRS</td>
</tr>
<tr>
<td>4</td>
<td>Implement process and standards</td>
</tr>
<tr>
<td></td>
<td>Rollout policies and procedures to promote collaboration and standardization</td>
</tr>
</tbody>
</table>

### Data Management

**Months 1-18**

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Implement governance (OPHI Council Board Committee)</td>
</tr>
<tr>
<td>2</td>
<td>Expand provider identification metrics</td>
</tr>
<tr>
<td>3</td>
<td>Implement provider identification process</td>
</tr>
<tr>
<td>4</td>
<td>Implement new portal</td>
</tr>
<tr>
<td>5</td>
<td>Set ETL standards</td>
</tr>
<tr>
<td>6</td>
<td>Implement standards for data access and usage</td>
</tr>
<tr>
<td>7</td>
<td>Data access and usage standards</td>
</tr>
<tr>
<td>8</td>
<td>Alignment of analytics: establish OPMO</td>
</tr>
<tr>
<td>9</td>
<td>Implement SDL for reports</td>
</tr>
<tr>
<td>10</td>
<td>Rationalize existing metrics</td>
</tr>
<tr>
<td>11</td>
<td>Standardize requirements process, create report templates, use visualization standards</td>
</tr>
</tbody>
</table>

### OPHI Staff Reorganization

**Months 1-18**

<table>
<thead>
<tr>
<th>Milestone</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Confirm staffing option decision</td>
</tr>
<tr>
<td>2</td>
<td>Announce team reorganization</td>
</tr>
<tr>
<td>3</td>
<td>Re-establish team, assign job descriptions for new role</td>
</tr>
<tr>
<td>4</td>
<td>Re-establish team, assign &amp; update objectives</td>
</tr>
<tr>
<td>5</td>
<td>Update employee performance evaluations</td>
</tr>
<tr>
<td>6</td>
<td>Create protocol; restructure PMO &amp; project delivery units</td>
</tr>
<tr>
<td>7</td>
<td>Establish PMO</td>
</tr>
</tbody>
</table>
Key process examples: reporting model

**Report SDLC** Activities and processes performed by technical and non-technical resources to request, define, develop, test, and implement a business intelligence query, report, data mart, or extract

Prioritized analytic needs drives subsequent work

1. Define requirements
2. Profile data
3. Develop ETL
4. Populate EDW & build data marts
5. Build templates & dashboards
6. Quality assurance

**OPHI Priorities**

- Initiatives
- Reports (1)
- Dashboards (2)
- Ad hoc analyses (3)

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Decision process to rationalize application portfolio

1. Does functionality under evaluation exist in another application?
   - NO: Is solution scalable?
     - NO: Replicate
     - YES: Keep
   - YES: If any functionality is missing, is it required?
     - NO: Retire
     - YES: Can required functionality be covered in another application?
       - NO: Limit legacy application to unique functionality
       - YES: The PHSPO will be tasked with defining what “required functionality” is for analytics tools, applications, data stores, risk models, groupers, and readmission models. Scalability should be defined in conjunction with IS.

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Progress to date...

- Governance implemented and working well
  - New application requests reviewed to reduce redundancy
  - Centralized staffing decisions
  - At-risk contract metrics being rationalized

- Care management application in process

- Infrastructure update planned to begin in next fiscal year

- Data management process refinement underway

- Staff re-alignment being worked (this one is hard!)

- Application portfolio rationalization discussions starting (this is hard, too!)
Thank You!