Moving From Disease Management to Population Health Management

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Definition
Evidence-Based Process
to Assist Payers and Providers in Improving Patient Outcomes and Manage Health Care Costs
Using the Principles of Total Quality Management (Continuous Quality Improvement)

CQI/TQM
Plan - Do - Check - Act

Continuous Improvement

Goals of Disease Management

• Improve Quality of Care
  – Identify and Treat Appropriate Patients
  – Reduce Tx Variation/Facilitate Best Practices
• Improve Patient Satisfaction with Care
  – Improve outcomes important to patients
• Manage Total Cost of Health Care
  – Cost Centers (Pharm., Hosp., etc.) ➔ Overall Cost

TOP DISEASE STATES FOR IPA AND STAFF HMO & HCS CONTRACTS WITH OUTSIDE VENDORS
FALL/WINTER 2000 THROUGH SPRING/SUMMER 2002

<table>
<thead>
<tr>
<th>Disease State</th>
<th>2000</th>
<th>2001</th>
<th>2002</th>
<th>2003</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diabetes</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>4</td>
</tr>
<tr>
<td>Allergy</td>
<td>7</td>
<td>6</td>
<td>6</td>
<td>5</td>
</tr>
<tr>
<td>Depression</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>2</td>
</tr>
<tr>
<td>Hypertension</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Congestive Heart Failure</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>COPD</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Pneumonia</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Asthma</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>GERD</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Migraine</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Arthritis</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Menopause</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
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</table>
What are the Components of DM?

Outcomes at Staff Model MCO CHD Disease Management Program Results
- Population identified through integrated claims, lab, pharmacy data
- Pharmacy-based Intervention (MD notification and follow-up)
- Results assessed at 1 year & 2 years

Outcomes at Medicaid-contracted HMO Asthma Disease Management Program Results
- DM components included provider and patient mailings, group classes, case management, and ATAQ (Asthma Therapy Assessment Questionnaire) software
- 4,200 target population of asthmatics, 43% pediatric
- Results assessed at 1 year

Current Disease Management
- Disease/Condition Focused
- Major Components
  - Patient Education / Self-Management
  - Messages / Reminders
  - Case Management
- Evaluation Generally Weak
  - Health Outcomes
  - Financial Outcomes

Why don’t we know if many DM programs save money?
- Most documentation in trade rather than peer-reviewed literature
- Most common approach is to focus on severe patients -- leads to overestimate of cost savings for population
  - assumes current resource use predicts the majority of future resource use
Example: Asthma

1D Patients by Recurrent ER/Hospital Use

- Of patients using the ER/Hospital for asthma in Year 2, only 15% had ER/Hospital use in the prior year
- 85% of patients with an asthma-related visit to an ER/Hospital in Year 2 did not use the ER/Hospital for asthma in Year 1

Statistical Sleight of Hand

“Regression to the Mean”

- “Patients selected because they represent an extreme value in a distribution can be expected, on average, to have less extreme values on subsequent measurements” even without an intervention. (called “regression to the mean”)
- The population of asthmatics most in need of disease management may be those who have not been high resource users in the past year, but those who have had poor asthma control.

Comprehensive Vision of Disease Management (DMAA)

“A multi-disciplinary continuum-based approach to healthcare delivery that proactively identifies populations with or at risk for established medical conditions, that supports the physician/patient relationship and plan of care, emphasizes prevention of exacerbations and complications utilizing cost-effective evidence-based practice guidelines and patient empowerment strategies such as self-management, and continuously evaluates clinical, humanistic, and economic outcomes with the goal of improving overall health.”

Rationale for Population-based Health Management

- Co-prevalence of Common Conditions
  – Interactions affect health outcomes and costs
- Potential Economies of Scope and Scale
  – Delivery at POC address Entire Patient
  – System development to meet particular population needs
- Titration resource allocation
  - 10% non-institutionalized elderly population account for 75% of health care expenditures

Example: The Elderly

- Elderly suffer from high rates of chronic disease, social isolation, poor diet, lack of mobility, and sub-optimal function
- Social HMOs (1985)
  – Social, Medical Services (including home and community-based)
  – No improvement in outcomes
- Medicare Plus Choice
  – More comprehensive than FFS (prevention, drugs)
  – Fiscal Uncertainty
  – No clear improvement in outcomes

Titration of Resources by Need

- Goal-oriented Case Management
- Specific DM, DUR, outgoing calls, reporting
- Physical activity, nurse line, improved continuity (IS/phone), social activities, health education groups, caregiver support, improved screening


1 Clinical Epidemiology. RH Fletcher, SW Fletcher, EH Wagner. Williams & Wilkins, Baltimore, MD. 1988, page 38.
**A Randomized Controlled Trial of Population-based Care Management in a Medicare Plus Choice HMO**

David Martin*, Marc Berger, David Anstatt, Jonathan Wofford*, DeAnn Warfel*, Robin Turpin, Carolyn Cannuscio, Steve Teutsch, Bernard Mansheim*

* Coventry Health Care

Project co-funded, designed, and implemented by Coventry Health Care and Merck & Co., Inc.

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**Vision -- 1999**

- Comprehensive, broadly defined senior health management
- Proactive, informatic-assisted interventions
- Links to community resources
- Financially neutral, or better
- Improved member satisfaction & retention
- Targeted programs in depression, diabetes, CHD, falls & fractures, nutrition, & inappropriate medication use
- Documented outcomes

**Reality -- 2002**

- Broadly defined senior case management
- Modest informatic-assisted interventions
- Program expansion
- Financially stable
- Targeted programs in areas of high cost and high utilization
- Documented savings

**Senior Life Management™**

- Identify and monitor for risk
  - Informatics and decision support (Master Console)
  - Staffing by personal service reps, nurse coordinators, social workers, and medical director (800-1000 pts per team)
  - Integrate claims data, periodic health risk assessments
- Targeted complex case management (50-70 pts per team)
- Disease management programs
  - CHF, Falls (home safety), Nutrition
  - Depression, Diabetes
- Community physician awareness
- Coordination with community services

**Study Design**

- RCT with 18 month follow-up
  - Jan 2000 to June 2001
  - SLM vs Standard Medicare Plus Choice
    - Randomized by Zip Code
  - All 8504 Medicare beneficiaries aged 65 and over enrolled for 12 months prior to start of study from 9-county metropolitan Pittsburgh area served by a network model plan

**Outcomes**

- Comparison of Baseline & 18 months
  - Survival
  - Health Status
  - Member Satisfaction
  - Costs
- Intention-to-treat
  - data analyzed for all patients until disenrollment, regardless of whether agreed to participate
**Patient Assessments**

- **Baseline**
  - 44 question HRA (SF-36 plus patient satisfaction)
  - Algorithms for complex case mgmt eligibility
    - eg 2 ER visits for diabetes control
- **Ongoing**
  - Q 3 Month Short Assessments
    - 18 questions
    - Changes in physical or mental health or social supports
  - Inbound Calls
    - 9 and 18 Months
    - Full HRA

**Program Effectiveness**

- Subset of 9 Questions from HRA were identified *a priori*
  - likely to be impacted by SLM
- Global Patient Satisfaction Question
- Health Care Resource Use and Costs
  - claims (6-month run-out permitted extraction of >98% of claims)
  - resource use: inpatient, outpatient, physician, skilled nursing and rehab, home health, durable medical equipment, all other

**Baseline Demographic and Health Characteristics**

<table>
<thead>
<tr>
<th>Intervention Group</th>
<th>Control Group</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age, mean (SD), years</td>
<td>72.9 (8.1)</td>
</tr>
<tr>
<td>Male, %</td>
<td>47.0%</td>
</tr>
<tr>
<td>1999 Medical claim expenditure, mean (SD), $</td>
<td>3630 (8162)</td>
</tr>
<tr>
<td>1999 Medical claim expenditure, median, $</td>
<td>862</td>
</tr>
<tr>
<td>In general would you say your health is 1-Excellent 5-Poor</td>
<td>2.98</td>
</tr>
<tr>
<td>Compared to one year ago, how would you rate your health in general now? 1-Much Better 5-Much Worse</td>
<td>2.91</td>
</tr>
<tr>
<td>If you now require assistance with daily tasks, who helps you? Paid caregiver %</td>
<td>2.01%</td>
</tr>
<tr>
<td>Is there a friend or family member you can count on in an emergency %</td>
<td>97.8%</td>
</tr>
<tr>
<td>Do you use any of the following aids all or most of the time? Cane %</td>
<td>10.7%</td>
</tr>
<tr>
<td>Do you use any of the following aids all or most of the time? Walker %</td>
<td>3.12%</td>
</tr>
<tr>
<td>Do you use any of the following aids all or most of the time? Dentures %</td>
<td>61.6%</td>
</tr>
<tr>
<td>During the past year, how many times have you fallen to the ground? 1-0 times 2-6- &gt;=5 times</td>
<td>1.70</td>
</tr>
<tr>
<td>How would you rate all your experiences with the plan now? 0-Worst 10-Best</td>
<td>8.92</td>
</tr>
<tr>
<td>SF-36 Domains</td>
<td></td>
</tr>
<tr>
<td>General Health</td>
<td>64.92</td>
</tr>
<tr>
<td>Bodily Pain</td>
<td>67.60</td>
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<tr>
<td>Mental Health</td>
<td>78.11</td>
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<tr>
<td>Physical Function</td>
<td>71.23</td>
</tr>
<tr>
<td>Role Limitation – Emotional</td>
<td>81.15</td>
</tr>
<tr>
<td>Role Limitation – Physical</td>
<td>66.73</td>
</tr>
<tr>
<td>Social Function</td>
<td>84.37</td>
</tr>
<tr>
<td>Vitality</td>
<td>59.73</td>
</tr>
<tr>
<td>Mental Component – Summary Score</td>
<td>53.04</td>
</tr>
<tr>
<td>Physical Component – Summary Score</td>
<td>43.66</td>
</tr>
</tbody>
</table>

*Baseline survey respondents only. N all interventions =4257; N all controls =4247

**Flow Chart of Patients showing enrollment and retention of patients and survey response rates**

**Mortality**

- SLM
  - 191/4257 (5.3%)
- Control
  - 211/4247 (5.8%)
- Difference not statistically significant

**Hospitalizations**

- All Fractures (SLM=44, Control=68, p=0.045)
- Hip Fracture (SLM=6, Control=21, p=0.007)
- CHF (SLM=191, Control=141, n.s.)
- All Cause Diabetes (SLM=528, Control=519, n.s.)
### Key Findings

- Total medical costs between baseline & 12 months
- General health status between baseline & 12 months
- Member satisfaction
- Falls

### Financial Bottom Line

\[
\text{Program Costs} \quad \text{=} \quad \text{Program Savings}
\]

(roughly equivalent)
Conclusions

• Modestly better outcomes
  – General Health, Self-Reported Falls, Satisfaction with Health Plan, Global Domain of Social Function (SF-36)
  – Overall health status decline and increase in costs compared to baseline
• Lower rate of hospitalization for fracture
• No significant differences in costs of care for diabetes and CHF
• Program Cost Neutral
  – Slight decrease in HCRU offset by admin costs

This is a Good Outcome … But are We Willing to Pay for it?

“‘The true value of disease management is as a paradigm by which the healthcare system can re-engineer how it goes about its business — with clear goals, recognized standards, and ongoing monitoring. The adoption of evidence-based best practice guidelines and the attendant reduction in practice variation will inevitably benefit millions of patients.”

M Berger, P Nebenfuhr, R Murray