Health Quality Partners’ Model of Community-based Care Management:
An Innovation that Improves Health Care Delivery, Outcomes, and Cost in Chronically Ill Older Adults

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Thanks to: HQP staff & Board (Fritz Wenzel, Chair), Doylestown Hospital (Rich Reif, CEO), Mary Naylor, CMS (CMMI/Medicare Demonstration and Rapid Cycle Evaluation Groups), Mathematica Policy Research, Aetna, Clinical Care Associates of UPHS (Ron Barg, Exec Dir), Crozer-Keystone Health System, St. Mary Medical Center (Langhorne, PA), hundreds of physicians, NPs, nurses, and other health care and community service providers, and thousands of Medicare beneficiaries
Chronic Disease: Healthcare’s Defining Challenge in the Modern Age

• Global rise of non-communicable chronic disease
  – Leading cause of death worldwide (WHO report 2010)
  – Cardiovascular, cancer, diabetes, chronic lung

• Overall decline of acute infectious diseases

• This transformation has been rapid
  – Technology driven (antimicrobials, vaccines, sanitation)
FIGURE 1. Crude death rate* for infectious diseases — United States, 1900–1996†

*Per 100,000 population per year.
Shift in Causes of Death in U.S.

Healthy People 2010: Understanding and Improving Health

Not so long ago; (Two of my grandparents were born in 1905 & 1906)

Notes: Later year estimates are more reliable than those of the early 20th century.
Older Population by Age: 1900-2050 - Percent 60+, Percent 65+, and 85+

From HHS, Administration on Aging website
The Impact on Health Care Costs

• Costliest 25% of Medicare beneficiaries accounted for 85% of spending in 2001

• Advanced age and prevalence of chronic conditions was strongly linked to high expenditures and use of medical services
  – More than 75% of high-cost beneficiaries had one or more of 7 major chronic conditions
    • Much less prevalent among low cost beneficiaries

From: CBO, High-cost Medicare Beneficiaries, May 2005
Health Quality Partners (HQP)

- A 20-person non-profit in Doylestown, Pennsylvania dedicated to improving population health through *system redesign and applied R&D*
  - 11 years as HQP & core team together 3+ yrs prior
  - Intense mission focus and constancy to purpose
  - Population-based analysis, reporting, and care management systems
  - Design and implementation of quality and performance improvement systems
    - System and process design, team models, and information rich management tools
  - Sensitivity to operations and high-reliability
Current Areas of Work at HQP

• Medicare Coordinated Care Demonstration (CMS)
• Medicare Advantage (higher-risk) care management (Aetna)
• Improving Systems Initiative (Doylestown Hospital)
• Cancer care coordination model (Clinical Cancer Center at Froedtert & the Medical College of Wisconsin)
HQP Collaborating Partners
Doylestown Hospital (lead hospital)
HQP Main Office
Physician Practices & Service Area

Tested in primarily in 4 counties in eastern Pennsylvania, with 90+ primary care practices

HQP Collaborating Partners
- Doylestown Hospital (lead hospital)
- HQP Main Office
- Physician Practices
HQP’s community-based care management

AIM: Improve health, promote independence, and relieve suffering of chronically ill older adults by providing a comprehensive and highly-effective preventive service.

- **Longitudinal** – continuous service until death or out-of-area relocation
- **Person-centered** – prioritize concerns of patients & caregivers, adapt care intensity and contact frequency to changing needs
- **Community-based** – participants are seen individually and in groups at accessible locations throughout the community, including at home
- **Nurse care managers** – clinically experienced RNs receive model-specific training and ongoing support and management
- **Collaborate & coordinate** – with primary care, specialist, hospitals, and other health care and community service providers
- **Robust portfolio of preventive interventions** – broad set of best in class interventions adopted with fidelity and delivered directly by nurse care managers
- **Process measurement and visual information displays** - drive performance management, process improvement, and organizational learning
Recap: Guiding Principles of HQP’s Model

• A robust portfolio of evidence-based, best in class interventions provided directly by nurses

• Long-term, person-centered helping relationships
  – In-person contacts at a frequency that supports the patient’s evolving needs

• Focus on multidimensional determinants of health

• Systems approach

• Continuous organizational learning / improvement
  – High reliability
HQP’s model has evolved greatly over 14 years and several settings; a robust SET of interventions, delivered reliably, are required to be effective.

<table>
<thead>
<tr>
<th>Year</th>
<th>Disease Specific Care Managers</th>
<th>Integrated Disease &amp; Geriatric Care Managers</th>
<th>Patient Referrals through Claims and Practice Data</th>
<th>Stratification - Diagnosis based</th>
<th>Stratification - Geriatric &amp; Disease Risk Assessment</th>
<th>Comprehensive Assessments</th>
<th>Group Education</th>
<th>Lifestyle Physical Activity &amp; Exercise</th>
<th>Aggregate Data Analysis</th>
<th>Care Transitions Protocol</th>
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Management Practices that Support High Performance of the Nurse Care Management Team

• Selective recruitment
• Extensive orientation and training with a Clinical Lead
• Weekly team ‘huddles’
• Ongoing training, education, certifications
• One-on-one supervision
• Supervisory observation visits
• Guidance is a phone call away
  – Standards for shared accountability & supervisory notification
  – Clinical Leads and Director invite and encourage collaborative problem solving, case review and nursing support
Integrated Management and Performance Monitoring System

• Aimed at standardizing performance & ensuring reliability
• Essential for growth and expansion without loss of effectiveness
• HQP’s program is demanding to implement and requires
  – Considerable initial and ongoing staff training
  – Tight adherence to standards and process specifications
  – Reliable execution (low process variation)
  – Continuous refinement, learning and adaptation
  – A management process that is dedicated to
    » Using data and advanced analysis
    » Understanding causes of variation
    » Coaching, mentoring and providing continuous feedback

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Data Management & Reporting Components

Production DB → Analysis/Reporting

Real-time decision support (under development)

VPN cellular connection (under development)

Web browser

HQP Management: Performance monitoring & improvement

Health Care Providers (under development)

Information exchange interfaces with other external health care providers / health plans others as needed
### Process/Outcome Dashboards; Web-based Report
Combines Process Reliability and Outcomes

#### Total Population / Multiple Measures

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<td>HbA1c</td>
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#### By Nurse Care Manager Caseload – LDL

#### Single measure by nurse panel

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Web-based statistical process control charting is used extensively to robustly compare performance between groups or over time; here’s a ‘cross-sectional’ p-chart of flu vaccination coverage by nurse.
Cross-sectional p-chart comparing the rate of monthly "no contacts" by care manager; example shows: low variation between nurses, performance within spec. limit, but still with ‘outliers’ (including a positive deviant).
Medicare Coordinated Care Demonstration
- Randomized, controlled trial; HQP model vs. usual care
- Implemented in 90+ practices in 4 counties of eastern PA
- April 2002 to present, 2,600+ traditional Medicare beneficiaries
- Low, moderate, and high risk patients served during first 8 years
- Serving higher-risk patients since late 2010
  - HF, CAD, DM, COPD and 1+ hospitalizations in prior year

Aetna Medicare Advantage
- Difference-in-differences analysis; trend of HQP cohort vs. like comparison
- 50+ practices in eastern PA, started 2010
- Serving higher-risk patients selected by diagnoses, utilization, and Aetna proprietary risk scoring methodology
Medicare Coordinated Care Demonstration (MCCD); longest, most rigorous, evaluation of care coordination

Randomized, controlled trial testing ‘Care Coordination’ models for chronically ill Medicare beneficiaries (Authorized in BBA 1997, Started April 2002)

- April, 2002: 15 different programs were competitively selected from 58 applications
- April, 2006: 11 programs continued
- April, 2008: 2 programs continued
- June, 2010: 1 program continued (*Health Quality Partners*) with extension through June 2013 and CMS request to expand regionally
## HQP Program Results Demonstrate that 3-part Aim is Achievable

**Better health care:** Person-centered prevention, support, education, and coordination  
**Better health:** Lives saved and suffering relieved  
**Reduced cost through improvement:** Lower net cost among higher-risk subgroups

<table>
<thead>
<tr>
<th>Population</th>
<th>N</th>
<th>Deaths</th>
<th>Part A &amp; B expenditures</th>
<th>Net Cost</th>
<th>Hospital admissions</th>
<th>ER visits</th>
<th>SNF cost</th>
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<tr>
<td>MCCD All-in risk</td>
<td>1,464</td>
<td>-14%</td>
<td>Neutral</td>
<td>-14%</td>
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<tr>
<td>(low, mod, high)</td>
<td>1,721</td>
<td>-25%</td>
<td>+9.4%</td>
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<td>-20%</td>
<td>-29%</td>
<td>-37%</td>
<td>-64%</td>
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<td>Higher-risk 2</td>
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<td>-20%</td>
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</table>

**P ≤ 0.05, * P ≤ 0.1**  
° statistics not reported

- $511 per person per month  
- $6,132 per person per year

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**HQP Participant Survey (from Peikes et al, JAMA eTables) n=675, 98% response rate**

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Control</th>
<th>Difference</th>
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<tr>
<td>Received help in arranging care</td>
<td>76%</td>
<td>4%</td>
<td>+72% **</td>
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<tr>
<td>Pain interferes with usual activities</td>
<td>66%</td>
<td>75%</td>
<td>-9% *</td>
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<tr>
<td>Primary condition a burden on family</td>
<td>40%</td>
<td>53%</td>
<td>-13% **</td>
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<tr>
<td>Health care clinicians keep in touch with each other (excellent rating)</td>
<td>44%</td>
<td>36%</td>
<td>+8% *</td>
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</table>

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Fourth Report to Congress, Jennifer Schore, et al., March 2011, MPR  
MPR report shared with HQP with CMS permission, 2011 (unpublished)  
Aetna Medical Economics Team Report (unpublished)
Readmissions among HQP’s MCCD Participants at Doylestown Hospital; April 2002 thru March 2009

<table>
<thead>
<tr>
<th>Same Hospital (DH only)</th>
<th>Intervention Group</th>
<th>Control Group</th>
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<tbody>
<tr>
<td>Readmissions (30 days)</td>
<td>139</td>
<td>196</td>
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<tr>
<td>Total admissions</td>
<td>1041</td>
<td>1084</td>
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<tr>
<td>Readmission rate</td>
<td>13.4%*</td>
<td>18.1%</td>
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</table>

* Risk ratio=0.74 (95%CI, 0.60-0.90) P=0.003, Source: data from Doylestown Hospital and HQP MCCD enrollment data, analyzed by K. Coburn, MD, MPH

26% relative reduction in readmissions for those getting HQP care management; (95%CI; 10%-40%)
Kaplan-Meier Plots of Death up to 5 Years from Enrollment:
Control (blue) versus Intervention (red)

All enrollees; n=1,736
25% decrease in relative risk of death

Top tertile geriatric risk on intake; n=568
34% decrease in relative risk of death

Coronary heart disease as primary Dx on intake; n=300
48% decrease in relative risk of death

The ability to improve survival is a clear indication of the impact of effective prevention in this population.
Insights gained and future opportunities

• **Variables that significantly impact savings**
  – Target population, effectiveness in improving health outcomes, program cost (start-up, scale, and demonstration-related overhead), and time frame

• **Access to Data on diagnoses, health service utilization, and clinical tests**
  – Would significantly improve efficiency (case-finding), and effectiveness (better monitoring)

• **Incentives for hospitals and PCPs** to partner with effective providers of this model could
  – Accelerate dissemination
  – Optimize efficiency and fidelity to program implementation to preserve effectiveness

• **Complementary to / synergistic with emerging primary care models**
  – Interface can be designed to minimize redundancy of work and be mutually reinforcing

• **HQP’s Replication and Reliability Platform**
  – An integrated suite of tools to support training, decision support, performance analysis, and program monitoring and guidance would boost scalability and enhance reliability

• **Robust and sustained research & development effort seems warranted**
  – Design, adapt, and test variations of the HQP model to serve other vulnerable, at-risk populations

• **Scale it up! The next frontier ...**
  – Supporting scalability R&D could fit portfolio of CMMI, other HHS agencies, and/or foundations
  – Unique opportunity for ACO’s and consortia of health systems, physician groups, and health plans
HQP looks forward to further collaboration to create a better health system and improve the health of vulnerable populations

http://www.hqp.org