Designing for Effectiveness in Health Care

*Where is good design most evident? ... least evident?*

*Does your work afford you dedicated time for design?*
Topics to Explore

• Introduction to HQP and our work
• Design
  – Its place and importance in health care
• Design thinking
  – Generic example
• Design thinking applied to health care
  – Specific health care case study with outcomes
Health Quality Partners (HQP)

- A 20-person non-profit in Doylestown, PA dedicated to improving population health through **system design 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 Thanks:

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.
Design

• To create better models of care we must first imagine and design them
• Design is underappreciated, misunderstood, and underused
• Starting point and most important determinant of system performance

Design + Implementation => Effectiveness

• Design offers the chance to influence the most numerous and powerful leverage points in a system
  – “Problems cannot be solved at the same level of thinking that created them.” Albert Einstein
  – Also offers an opportunity for sense-making in organizations
Lots of Recommendations, but Little Innovative Design; Why?

Primary Care and Public Health: Exploring Integration to Improve Population Health, IOM March 2012
Design Thinking
Example (with limitations) – A Car

BIG IDEA

✓ Transportation
✓ Ground
  - Air
  - Water

Use Environment

Design Stage 2
✓ Ground

Carrying capacity, mobility, size
✓ Car
  - Motorcycle
  - Truck
  - Bus
  - Train

Design Stage 3

Design decisions

Range, energy efficiency, affordability
✓ Prius/Ford Fusion
  - Honda Civic Hybrids/
  - VW Golf TDI
  - Lamborghini
  - Tesla Roadster
  - Honda FCX Clarity

© 2012 Health Quality Partners, Inc. All rights reserved.
A Framework for Health Care Design: Conceptual Foundation for New Program Development

- **Aim** – maximize health*
- **Approach**
  - Aim guides design decisions
  - Prior to proof of concept testing, resist self-censoring design decisions based on a presumption of resource scarcity
  - Design for program reliability on implementation
- **End Goal** – measurably better health
- **Assumptions**
  - Pursuing the aim will force person-centeredness*
  - Substantially improving health will yield savings / sustainability*
  - Suspend as many assumptions as possible (regarding people, roles, time, place, market share, control, data access, etc., etc., etc.)

* IHI Triple Aim

© 2012 Health Quality Partners, Inc. All rights reserved.
Design Thinking for Health Care; Case study – Health Quality Partners

BIG IDEA

✓ Improve or Preserve HEALTH

Target Population

✓ Chronically ill older adults
  Uninsured
  Congenital Illness
  Trauma

Design decisions

Design Stage 2

✓ Advanced Preventive Service (APS):
  1) Breadth and depth of preventive interventions
  2) Attributes of delivery model
  3) System of learning and improving

Organizing design framework

Design Stage 3

Specific choices satisfying APS criteria

Design Stage 4

✓ HQP Community-based Care Management Model

© 2012 Health Quality Partners, Inc. All rights reserved.
HQP Framework for Design: Advanced Preventive Service (APS)

• Comprehensive set of “best practice” preventive interventions; primary, secondary, tertiary, quaternary
  – Chosen to address the key risks to health of defined population

• Delivered in accordance with key specs / attributes
  – Understand and honor participants’ needs and preferences
  – High touch, continuous, longitudinal service across care settings
  – Innovative team role(s); define and train
  – Collaborate with health care and community service providers
  – Process and performance monitoring system

• Data-driven system of learning and improvement
HQP’s model has evolved greatly over 14 years and several settings; creating a robust and coherent SET of interventions is a series of key design decisions.
Implementation

- Design
- Manage
- Measure
- Improve

From Fixsen, DL et al, Core Implementation Components, Research on Social Work Practice, 2009
National Implementation Research Network, UNC-Chapel Hill
HQP Replication and Reliability Platform; Knowledge and Information Tool Set for Implementing with Fidelity to Design

Web-based Suite of Capabilities

- **Policies & Standards**: Version control and review automation system. Local adaptations.
- **Staff Training**: Web and iPad training modules, assessments, and interactive video conferencing.
- **Patient Education**: Web and iPad training modules and assessments.
- **Database**: Used via iPad cellular data link. Real-time decision support (in development).
- **Analytics**: Web accessible advanced business intelligence and statistical process control reporting.

Human Talent – Expertise to Operate, Train, and Improve

Ongoing development of human talent to operate and improve the platform and train and mentor health systems, nurse care managers, process improvement specialists, and management staff.

Expertise is provided to support others in undertaking the core components of implementation; staff selection, pre-service training, consultation & coaching, staff performance evaluation, decision support data systems, facilitative administrative supports, systems interventions (1)

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: eligible population – 65+ yo, traditional Medicare, CHF, CAD, DM, and/or COPD, and 1+ hospitalization in prior yr

© 2012 Health Quality Partners, Inc. All rights reserved.
Program Implementation & Evaluation:
A Decade of R&D

- 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, 2,800+ traditional Medicare beneficiaries
  - Low, moderate, and high risk patients served during first 8 years

- 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
HQP Program Outcomes

• Medicare Coordinated Care Demonstration, (traditional Medicare), Fourth Report to Congress, 2011
  – Among ‘higher’-risk, chronically ill older adults (1)
    • 39\% decrease in hospitalizations (p<0.01)
    • 37\% decrease in ER use (p=0.05)
    • $511/person/month decrease in total Part A & B Medicare expenditures ($6132/person/year) (p=0.01)
    • *Net savings* of $397/person/month ($4764/person/year) (p=0.05)
  – Among all enrollees (low, moderate, high risk groups)
    • 25\% decrease in deaths overall (p=0.02)
• Aetna High-risk Medicare Advantage population; Aetna Medical Economics Team Year 1 Evaluation
  – 20\% decrease in hospitalizations
  – 18\% decrease in net cost

(1) In the Report this was defined as individuals having one or more Dx [HF, CAD, COPD] + a hospital admission (for ANY reason) in prior year; represents 14\% of all Medicare beneficiaries in U.S.
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>
</tr>
</thead>
<tbody>
<tr>
<td>Readmissions (30 days)</td>
<td>139</td>
<td>196</td>
</tr>
<tr>
<td>Total admissions</td>
<td>1041</td>
<td>1084</td>
</tr>
<tr>
<td>Readmission rate</td>
<td>13.4%*</td>
<td>18.1%</td>
</tr>
</tbody>
</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.

© 2012 Health Quality Partners, Inc. All rights reserved.
How does Design relate to HIT/HIE?

• Absent good Design program effectiveness will be limited regardless of the stand-alone quantity or quality of HIT/HIE
• With good Design HIT/HIE can contribute dramatically to the scope, efficiency, and EFFECTIVENESS of our care delivery system
  – Telehealth and chronic illness management
  – Population risk monitoring and dynamic at-risk population targeting
  – Enabling better team models of care
  – Evaluating system effectiveness and guiding system design
“Problems cannot be solved at the same level of thinking that created them.” Albert Einstein

Design provides the means to ‘think different’

Thank you

Ken Coburn, MD, MPH

coburn@hqp.org

http://www.hqp.org