Quality Improvement in Diabetes Care: Measuring Program Impact in BSMOD

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MFH BSMOD Annual Grantees Meeting

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Better Self-Management of Diabetes (BSMOD) Initiative
The Old Man of the Mountain
“Skate to where the puck is going, not where it is.”

-- Wayne Gretsky
The goal of quality improvement in health care is to provide the right care for every patient every time.
Source: Manoj Jain, MD, MPH. Road map for quality improvement: A guide for doctors.
Toyota Production System
Lean Methodology

- **Value-added activities** – add to the customer’s (patient’s) experience and the business margin

- **Non-value-added activities** (waste!):
  - Overproduction
  - Underproduction
  - Wasted inventory
  - Rework or rejects (ie, assembly mistakes)
  - Wasted motion (ie, poor work area ergonomics),
  - Waste associated with waiting (ie, patients waiting to be seen for appointments)
  - Waste associated with processing (ie, outdated policies and procedures)
  - Waste from transport or handling (ie, transporting patients unnecessarily).

- **Value stream mapping (VSM)** -- graphically displays the process of services or product delivery with use of inputs, throughputs, and outputs (sound familiar?!)

Motorola, Inc.
Six Sigma

- Inventor of the Six Sigma methodology for continuous improvement
- Sigma – number of SDs a given process is from perfection
- At “six sigma,” a process has ~3.4 defects/million opportunities – close to error free
- DMAIC - structured methodology for process improvement within the Six Sigma framework - Define, Measure, Analyze, Improve, and Control
- Master Black Belts, Black Belts, Green Belts (e-Green Belt Training Program)
- Certification by Motorola University

Better Self-Management of Diabetes: Cross-Site Logic Model

**Overall Program Goal**

To demonstrate that collaborative, multi-component, self-management diabetes programs can be delivered in a variety of health care and community settings.

**Key Program Inputs**

- Educational and Skills Training for Patients
  - Provide self-management support (SMS) educational and skills training programs for patients

- Training Programs for Providers and Care Teams
  - Train providers and health care teams on SMS methods

- Collaboration with Community Partners
  - Demonstrate strong partnerships that increase providers’ and patients’ access to SMS resources

- Follow Up Care, Support, and Communication
  - Provide patient follow up and support, including screenings, monitoring care continuity

**Shorter-term Outcomes**

- **Process Improvements**
  - Improvement in patient skills, knowledge, and behavioral changes (e.g., AADE 7) related to SMS
  - Improvement in provider SMS skills
  - Improvements in patient and provider satisfaction with the provision of SMS

**Longer-term Outcomes**

- **Patient Outcomes**
  - Improved patient clinical measures (e.g., A1c, BP, BMI)
  - Improved health and quality of life

- **Program Outcomes**
  - SMSs integrated into routine care
  - Continued training of care providers around the provision of SMSs
  - Community-based strategic alliances
  - Program sustainability

- **Organizational Outcomes**
  - Improvements in data management and patient monitoring
  - System wide improvements in chronic illness care
  - Shifts in clinical, administrative, and cultural practices and policy changes related to SMS
  - Integration of SMS into quality improvement processes

- **System Wide Spread**
  - Spread of SMS tools and resources to other target populations (other conditions)
  - Buy-in from other care providers
  - Support from senior level management
  - Diffusion of SMS tools and resources to other clinic sites/locations

**Engage in Clinical Feedback and Quality Improvement Efforts**
BSMOD
Quality Indicators

• **Patient Tracking Measures**
  • Collected semi-annually
  • “Tell Us How You’ve Been Doing” behavior change patient survey (6 questions)
  • Patient Clinical Outcomes (e.g., a1c, ldl, bp, bmi)
  • Clinical Procedural Outcomes (e.g., foot and eye exams)
  • Documented Self-Management Support Goals

• **Provider Satisfaction with Self-Management Supports** (5 questions)
  • Collected semi-annually
  • Administered to “core” SMS team

• **Primary Care Resources and Supports Survey**
  • Administered at baseline and then annually
  • Measures capacity for SMS across 16 domains
  • Patient and organization level supports
  • Includes periodic P-D-S-A quality improvement cycles based on needs of site
BSMOD
Quality Indicators (continued)

• **Online Diffusion of Innovation Survey**
  • Collected midcourse and end of program
  • Measures spread of SMS tools and resources and capacity building for SMS

• **End-of-Program Interview with Core SMS Team**
  • Program sustainability
  • Spread of SMS strategies and resources

• **Social Network Analysis (planned)**
  • Document expansion of program infrastructure
  • Document expansion of community partnerships
Social Network Analysis: Mapping Oxy-hemoglobin

Source: RasMol (www.umass.edu/microbio/rasmol/index.htm)
Example of Social Network Analysis
Field-Building of *Healthy Eating Research*
Using PDSAs to Improve Quality

What are we trying to accomplish?

How will we know that a change is an improvement?

What changes can we make that will result in improvement?

Source: Manoj Jain, MD, MPH. Road map for quality improvement: A guide for doctors.
P-D-S-A Cycle on Snow Removal?

Top Five Snowiest Winters:
1. 122.0" 1873-74
2. 115.8" 2007-08
3. 115.0" 1872-73
4. 113.2" 1995-96
5. 111.0" 1886-87
Round 1 and 2 BSMOD Sites
Primary Care Resources and Supports Survey
Mean Baseline Patient Support Scores*

*Mean Patient Support Score

*N=29 clinics across 16 sites as of 4-1-08
Round 1 and 2 BSMOD Sites
Primary Care Resources and Supports Survey
Mean Baseline Organizational Support Scores*

- Continuity of Care
- Coordination of Referrals
- Ongoing QI
- Systems for Documenting SMS
- Patient Input
- Integration of SMS into Primary Care
- Patient Care Team
- Education and Training

*Mean Organizational Support Score
*N=29 clinics across 16 sites as of 4-1-08
Selected Examples of QI Efforts on Impact of Self-Management Support for Chronic Illness Care

RWJF’s “Quality Allies”

CHCF’s “Promoting Effective Self-Management Approaches to Improve Chronic Disease Care” Initiative
California HealthCare Foundation Self-Management Support Project
Patient Summary Data, April ’06 – October ‘07

Extent of Changes by Sites Across All 21 Impact Measures

Number of Sites

# Impact Measures with Positive Changes

0-5 6-10 11-15 16-21
California HealthCare Foundation Self-Management Support Project
Patient Summary Data, April ’06 – October ’07

#8. “Over the past week, I was able to stick with my meal plan.”

Mean % Patients Who “Agree a Lot”

F(2.1,27.3) = 4.1, p=.03)

Notes: Adjusted F statistic using Greenhouse-Geisser correction (G-G=.42)
Quality Allies:
Percentage of Patients with Documented Self-Management Goals
Nov 2005 – Aug 2006

Notes: Adjusted F statistic using Greenhouse-Geisser correction (G-G=.26)
Provider Satisfaction with Self-Management Support
(combination of all provider survey questions #1,2,3,4,5)

Mean % Providers “Very/Extremely Satisfied”

F(5,60) = 2.5, p=.04)
California HealthCare Foundation Self-Management Support Project Provider Summary Data, April ’06 – October ’07

#5. “How satisfied are you that the self-management tools and protocols your clinic is using are making a difference in your patients’ clinical outcomes?”

F(5,60) = 3.2, p=.01

Mean % Providers “Very/Extremely Satisfied”
Changes in Mean Patient Support Scores*

*All pre/post changes statistically significant (2-tailed p<.01)
California Health Care Foundation
Primary Care Resources and Supports Survey
Changes in Mean Organizational Support Scores*

*All pre/post changes statistically significant (2-tailed p<.05) except for “Ongoing QI”
Quality Allies Learning Community Tier Incentive Sites
Adoption of Self-Management Support Strategies

- Individual Assessment
  - Already Using: 12
  - New Strategy: 47
  - Expanded Strategy: 35
  - Not Yet Using: 6

- Goal Setting
  - Already Using: 18
  - New Strategy: 41
  - Expanded Strategy: 41
  - Not Yet Using: 41

- Involving Family Members
  - Already Using: 24
  - New Strategy: 29
  - Expanded Strategy: 24
  - Not Yet Using: 24

- Patient Support
  - Already Using: 47
  - New Strategy: 18
  - Expanded Strategy: 24
  - Not Yet Using: 12

- Multiple Types of Providers
  - Already Using: 53
  - New Strategy: 6
  - Expanded Strategy: 29
  - Not Yet Using: 12

- Patients & Providers Jointly Review Progress
  - Already Using: 12
  - New Strategy: 41
  - Expanded Strategy: 41
  - Not Yet Using: 6

- Use of Community Resources
  - Already Using: 53
  - New Strategy: 6
  - Expanded Strategy: 41
  - Not Yet Using: 41

- Using Lay Health Workers
  - Already Using: 24
  - New Strategy: 18
  - Expanded Strategy: 18
  - Not Yet Using: 41

Percentage of Respondents Reporting on Adoption of SMS Strategy
Quality Allies Learning Community Tier Incentive Sites
Changes in Confidence in Using Self-Management Support Skills with Patients

- Expressing Empathy: 83% (Sep-07), 55% (Dec-06)
- Listening to Patients' Concerns: 83% (Sep-07), 62% (Dec-06)
- Open-Ended Inquiry: 48% (Sep-07), 38% (Dec-06)
- Planning Action Steps: 50% (Sep-07), 50% (Dec-06)
- Problem Solving: 17% (Sep-07), 34% (Dec-06)
- Collaborative Goal Setting: 50% (Sep-07), 41% (Dec-06)
- Information Sharing: 28% (Sep-07), 50% (Dec-06)
- Assessing Patients' Preferences: 24% (Sep-07), 33% (Dec-06)
- Building Collaborative Relationships: 63% (Sep-07), 67% (Dec-06)

Percentage of Providers Who Feel Quite Confident in Using This Skill*

* Rated “5” on a scale of 1 to 5
Differences between two time points are not statistically significant
**Quality Allies Learning Community**

Benefits Gained from Using Self-Management Support Strategies

- Patients More Satisfied with Care: 70%
- Better Understand Patient Population: 41%
- Better Relationships Between Patients/Providers: 64%
- Better Use of Provider Skills: 77%
- Providers Understand Value of SMSs: 47%
- Easier to Treat Patients Using SMSs: 59%
- Improved Patient Outcomes In Future: 89%
- Documented Change In Patients’ Behaviors: 47%
- Documented Change In Clinical Outcomes: 42%

*Percentage Who Report “Strong Benefit to Site”*

*Rated “4” or “5” on a scale of 1 to 5*
Recent Studies of QI Efforts and Diabetes Management
Association between Quality of Care and the Intensity of Diabetes Disease Management Programs

- Translating Research into Action for Diabetes (TRIAD)
- Multicenter study of diabetes care in managed care – health care systems features can affect quality of care
- 3 measures of intensity of disease management strategies: physician reminders, performance feedback, and structured care (use of formal case management, diabetes guidelines, patient reminders, and diabetes education)
- Assessed associations between each of the 3 disease management intensity scores and the combined intensity score with each process indicator, intermediate outcome level, and medication use variable
- Strong associations between intensity of 3 disease management strategies and better care processes (eye and foot exam, nephropathy screening, a1c test, lipid test, flu vaccine advised)
- Lack of association of disease management strategies with intermediate outcomes (a1c, bp, ldl)
- Lack of association of disease management strategies with medication management of intermediate outcomes

Source: Carol M. Mangione, MD, MSPH; Robert B. Gerzoff, MS; David F. Williamson, PhD; W. Neil Steers, PhD; Eve A. Kerr, MD; Arleen F. Brown, MD, PhD; Beth E. Waltzfelder, PhD; David G. Marrero, PhD; R. Adams Dudley, MD, MBA; Catherine Kim, MD, MPH; William Herman, MD; Theodore J. Thompson, MS; Monika M. Safford, MD; and Joe V. Selby, MD, MPH, for the TRIAD Study Group. The association between quality of care and the intensity of diabetes disease management programs. Annals of Internal Medicine 2006;145:107-116.
Association between Quality of Care and the Intensity of Diabetes Disease Management Programs (continued)

• “Our findings support the need for refinements in disease management that shift the focus toward direct measurement and feedback of intermediate outcomes and toward measurement of clinical processes of care that are more directly associated with improved outcomes”

• “Process improvement can be more readily applied to entire populations with diabetes; however, intermediate outcome control requires identification of patients with elevated levels, targeted interventions, and support of self-management”

• “Control of intermediate outcomes requires the active participation of primary care physicians who may yet lack sufficient knowledge, decision support, or time to appropriately support patients in achieving control”

Source: Carol M. Mangione, MD, MSPH; Robert B. Gerzoff, MS; David F. Williamson, PhD; W. Neil Steers, PhD; Eve A. Kerr, MD; Arleen F. Brown, MD, PhD; Beth E. Waitzfelder, PhD; David G. Marrero, PhD; R. Adams Dudley, MD, MBA; Catherine Kim, MD, MPH; William Herman, MD; Theodore J. Thompson, MS; Monika M. Safford, MD; and Joe V. Selby, MD, MPH, for the TRIAD Study Group. The association between quality of care and the intensity of diabetes disease management programs. *Annals of Internal Medicine* 2006;145:107-116.
Variation in Quality of Diabetes Care at the Levels of Patient, Physician, and Clinic

- Studied variance in glycated hemoglobin (HbA1c) values among adults with diabetes to identify variation in quality of diabetes care at the levels of patient, physician, and clinic
- Study subjects were 120 primary care physicians and their 2,589 eligible adult patients with diabetes seen at 18 clinics (part of HealthPartners Medical Group)
- More than 95% of variance in HbA1c values was attributable to the patient level; much less variance was seen at the physician and clinic level.
- “...variation is most likely related to both patient factors and other factors that influence the physician–patient relationship.”

Source: Patrick J. O’Connor, MD, MPH, William A. Rush, PhD, Gestur Davidson, PhD, Thomas A. Louis, PhD, Leif I. Solberg, MD, A. Lauren Crain, PhD, Paul E. Johnson, PhD, Robin R. Whitebird, PhD. Variation in quality of diabetes care at the levels of patient, physician, and clinic. Preventing Chronic Disease 2008;5(1). http://www.cdc.gov/pcd/issues/2008/jan/06_0118.htm.
Does Improving Quality Yield a Return on Investment for Diabetes Management?

- HealthPartners (Minneapolis integrated delivery system)
- Program includes practice guidelines, provider and member education, patient screening and reminders, performance feedback to physicians, and case management
- Costs rose $330 per patient over a ten-year period
- The projected savings over the same period, because of lower service use, was $405 per patient
- A net benefit of $75 per patient
- In year ten the annual benefit is expected to exceed costs by an estimated $1,500 per patient

Tracking Impact Measures to Improve Diabetes Self-Management Support

Read all about it! We love to track our BSMOD data!
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<tr>
<th>Activity</th>
<th>Round 1*</th>
<th>Round 2**</th>
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<tr>
<td>Logic Model</td>
<td>August 2007</td>
<td>March/April 2008 (in progress)</td>
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<tr>
<td>Baseline PCRS</td>
<td>July 2007</td>
<td>November 2007 (some sites still in progress)</td>
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<tr>
<td>1st Follow-up PCRS</td>
<td>Monday, July 14, 2008</td>
<td>Monday, January 12, 2009</td>
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<tr>
<td>2nd Follow-up PCRS</td>
<td>Monday, July 13, 2009</td>
<td>Monday, January 11, 2010</td>
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<td>1st PCRS P-D-S-A Cycle</td>
<td>December 2007</td>
<td>Friday, September 12, 2008</td>
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<td>2nd PCRS P-D-S-A Cycle</td>
<td>Friday, June 13, 2008</td>
<td>Friday, March 13, 2009</td>
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<td>3rd PCRS P-D-S-A Cycle</td>
<td>Friday, December 12, 2008</td>
<td>Friday, September 11, 2009</td>
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<tr>
<td>4th PCRS P-D-S-A Cycle</td>
<td>Friday, June 12, 2009</td>
<td>Friday, March 12, 2010</td>
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<td>5th PCRS P-D-S-A Cycle</td>
<td>Friday, December 11, 2009</td>
<td>Friday, September 10, 2010</td>
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<tr>
<td>Impact Measures Summary Data (2nd half 2007)</td>
<td>February 2008</td>
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<td>Impact Measures Summary Data (1st half 2008)</td>
<td>Friday, July 18, 2008</td>
<td>Friday, July 18, 2008</td>
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<td>Impact Measures Summary Data (2nd half 2008)</td>
<td>Friday, Jan 23, 2009</td>
<td>Friday, Jan 23, 2009</td>
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<tr>
<td>Impact Measures Summary Data (1st half 2009)</td>
<td>Friday, July 17, 2009</td>
<td>Friday, July 17, 2009</td>
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<td>Impact Measures Summary Data (2nd half 2009)</td>
<td>Friday, Dec 11, 2009</td>
<td>Friday, Jan 22, 2010</td>
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<td>Impact Measures Summary Data (1st half 2010)</td>
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<td>Friday, July 16, 2010</td>
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<td>Impact Measures Summary Data (3rd quarter 2010)</td>
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<td>Friday, Oct 8, 2010</td>
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* grant period ends Dec 31, 2009
** grant period ends Oct 31, 2010
Think Spring!