The Chronic Care Model

Mike Hindmarsh
Improving Chronic Illness Care

Stratis Health Web Ex
October 26, 2006

Three Biggest Worries About Having A Chronic Illness (Age 50+)

1. Losing Independence
2. Being a Burden to Family or Friends
3. Not Being Able to Afford Needed Medical Care
Number of Chronic Conditions per Medicare Beneficiary

<table>
<thead>
<tr>
<th>Number of Conditions</th>
<th>Percent of Beneficiaries</th>
<th>Percent of Expenditures</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>18</td>
<td>1</td>
</tr>
<tr>
<td>1</td>
<td>19</td>
<td>4</td>
</tr>
<tr>
<td>2</td>
<td>21</td>
<td>11</td>
</tr>
<tr>
<td>3</td>
<td>18</td>
<td>18</td>
</tr>
<tr>
<td>4</td>
<td>12</td>
<td>21</td>
</tr>
<tr>
<td>5</td>
<td>7</td>
<td>18</td>
</tr>
<tr>
<td>6</td>
<td>3</td>
<td>13</td>
</tr>
<tr>
<td>7+</td>
<td>2</td>
<td>14</td>
</tr>
</tbody>
</table>

- 63% of expenditures are associated with 2 conditions or less.
- 95% of expenditures are associated with 7 or more conditions.

Planning Productive Interactions for Chronic Conditions

For Example: Diabetic Needs

<table>
<thead>
<tr>
<th>Category</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Additional Diagnoses*</td>
<td>45%</td>
</tr>
<tr>
<td>Functional Limits**</td>
<td>50%</td>
</tr>
<tr>
<td>&gt; 2 Symptoms***</td>
<td>35%</td>
</tr>
<tr>
<td>Not Good Health Habits</td>
<td>30%</td>
</tr>
</tbody>
</table>

*Arthritis (34%), obesity (28%), hypertension (23%), cardiovascular (20%), lung (17%)
** Physical (31%), pain (28%), emotional (16%), daily activities (16%)
*** Eating/weight (39%), joint pain (32%), sleep (25%), dizzy/fatigue (22%), pain (21%), backache (20%)
### Differences between acute and chronic conditions (Holman et al, 2000)

<table>
<thead>
<tr>
<th></th>
<th>Acute disease</th>
<th>Chronic Illness</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Onset</strong></td>
<td>Abrupt</td>
<td>Generally gradual and often insidious</td>
</tr>
<tr>
<td><strong>Duration</strong></td>
<td>Limited</td>
<td>Lengthy and indefinite</td>
</tr>
<tr>
<td><strong>Cause</strong></td>
<td>Usually single</td>
<td>Usually multiple and changes over time</td>
</tr>
<tr>
<td><strong>Diagnosis &amp; prognosis</strong></td>
<td>Usually accurate</td>
<td>Often uncertain</td>
</tr>
<tr>
<td><strong>Techo. Intervention</strong></td>
<td>Usually effective</td>
<td>Often indecisive; adverse effects common</td>
</tr>
<tr>
<td><strong>Outcome</strong></td>
<td>Cure possible</td>
<td>No cure</td>
</tr>
<tr>
<td><strong>Uncertainty</strong></td>
<td>Minimal</td>
<td>Pervasive</td>
</tr>
<tr>
<td><strong>Knowledge</strong></td>
<td>Prof.’s - knowledgeable Patients - inexperienced</td>
<td>Prof.’s &amp; patients have complementary knowledge &amp; exp.’s</td>
</tr>
</tbody>
</table>

### Chronic care quality

- **Half of discharged CHF patients are readmitted within 90 days** [Ni et al. Arch Int Med 1998;158:1231]

- **Less than half of eligible atrial fibrillation patients receive warfarin** [Samsa et al. Arch Int Med 2000;160:967]

- **Only half of tobacco users are counseled about smoking cessation by their physician** [Perez-Stable, Fuentes-Afflick. West J Med 1998;169:23]
Chronic care quality

◆ 66% of people with hypertension are inadequately treated [JNC 7, JAMA 2003;289:2560]

◆ 63% of people with diabetes have HbA1c levels greater than 7.0% [Saydah et al. JAMA 2004;291:335]

More Results

• Less than 10% of patients with diabetes receive all guideline based care

• 48% of patients with asthma are taking medications properly

• 60% of patients 65 or older with Hx of an MI are on statins

• Less than 50% of patients with clinically significant depression are treated properly
The Watchword

Systems are perfectly designed to get the results they achieve

The IOM Quality Report: Selected Quotes

- “The current care systems cannot do the job.”
- “Trying harder will not work.”
- “Changing care systems will.”
Donald Berwick, Institute for Healthcare Improvement:

"We are carrying the 19th-century clinical office into the 21st-century world. It's time to retire it."

Improving Chronic Illness Care
A national program of the Robert Wood Johnson Foundation

• Mission

to improve the health of chronically ill patients

by helping health plans and provider groups,
especially those that serve low income populations, improve their care of the chronically ill.
A Recipe for Improving Outcomes

System Change Concepts

Evidence-based Clinical Change Concepts

Learning Model

System Change Concepts

Why a Chronic Care Model?

- Emphasis on physician, not system, behavior
- Characteristics of successful interventions weren’t being categorized usefully
- Commonalities across chronic conditions unappreciated.
Model Development 1993 --

- Initial experience at GHC
- Literature review
- RWJF Chronic Illness Meeting -- Seattle
- Review and revision by advisory committee of 40 members (32 active participants)
- Interviews with 72 nominated “best practices”, site visits to selected group
- Model applied with diabetes, depression, asthma, CHF, CVD, arthritis, and geriatrics

Essential Element of Good Chronic Illness Care

- Informed, Activated Patient
- Productive Interactions
- Prepared Practice Team
What characterizes a “prepared” practice team?

Prepared Practice Team

At the time of the visit, they have the patient information, decision support, people, equipment, and time required to deliver evidence-based clinical management and self-management support.

What characterizes a “informed, activated” patient?

Informed, Activated Patient

Patient understands the disease process, and realizes his/her role as the daily self manager. Family and caregivers are engaged in the patient’s self-management. The provider is viewed as a guide on the side, not the sage on the stage!
How would I recognize a productive interaction?

• Assessment of self-management skills and confidence as well as clinical status
• Tailoring of clinical management by stepped protocol
• Collaborative goal-setting and problem-solving resulting in a shared care plan
• Active, sustained follow-up

Chronic Care Model

- Community
  - Resources and Policies
  - Self-Management Support
- Health System
  - Health Care Organization
  - Delivery System Design
  - Decision Support
  - Clinical Information Systems

Informed, Activated Patient

Productive Interactions

Prepared, Proactive Practice Team

Improved Outcomes

Delivery System Design
Decision Support
Clinical Information Systems
Self-management Support

- Emphasize the patient's central role.
- Use effective self-management support strategies that include assessment, goal-setting, action planning, problem-solving and follow-up.
- Organize resources to provide support

Delivery System Design

- Define roles and distribute tasks amongst team members.
- Use planned interactions to support evidence-based care.
- Provide clinical case management services.
- Ensure regular follow-up.
- Give care that patients understand and that fits their culture
Features of case management

- Regularly assess disease control, adherence, and self-management status
- Either adjust treatment or communicate need to primary care immediately
- Provide self-management support
- Provide more intense follow-up
- Provide navigation through the health care process

Decision Support

- Embed evidence-based guidelines into daily clinical practice.
- Integrate specialist expertise and primary care.
- Use proven provider education methods.
- Share guidelines and information with patients.
Clinical Information System

- Provide reminders for providers and patients.
- Identify relevant patient subpopulations for proactive care.
- Facilitate individual patient care planning.
- Share information with providers and patients.
- Monitor performance of team and system.

Health Care Organization

- Visibly support improvement at all levels, starting with senior leaders.
- Promote effective improvement strategies aimed at comprehensive system change.
- Encourage open and systematic handling of problems.
- Provide incentives based on quality of care.
- Develop agreements for care coordination.
Community Resources and Policies

- Encourage patients to participate in effective programs.
- Form partnerships with community organizations to support or develop programs.
- Advocate for policies to improve care.

Research and QI Findings about The Chronic Care Model
RAND Evaluation questions

– Do organizations in a Collaborative change their systems for delivering chronic illness care?

– Does implementing the Chronic Care Model improve processes of care and patient health

– http://www.rand.org/health/ICICE

ICICE Participation

• 4 Collaboratives starting May 1999 to Feb 2001

• 37 organizations with 24 control groups fully on board
  – 17 more had partial participation

• 2132 pilot, 1837 control patients in Diabetes, CHF, Asthma answered the phone.

• IRB and consent difficulties delayed recruitment
  – In 3 collaboratives, 1st surveys were at end, but
  – Charts still provide true before and after
Did Organizations Make Changes?

- Yes, a mean of 48 changes over the year per site
  - Organizations implemented changes in 5.8 of the 6 CCM elements, on average
- Depth of change ratings 17% to 76% of the maximum possible (major change in all 23 areas)
  - Average 49%
    - .98 on a scale 0(none) 1(some) 2 (major)
- Information support had the most emphasis
  - Making a registry was a prerequisite

Differences in CHF Care

- 387 pilot site patients, 414 control patients
- 81% of Pilot patients reported receiving counseling about diet, fluid intake, weighing, etc vs. 62% of controls
- No difference in self-efficacy
- Pilot patients more likely to have a scale at home and use it more regularly
- Pilot patients report significantly better satisfaction with communication

Baker et al. J Cardiac Failure (in press)
Differences in CHF Care

- Pilot patients showed greater improvements in processes—especially ACE-inhibitor use and counseling
  Asch et al., Medical Care (in press)
- Pilot patients had 35% fewer hospital days

Differences in Diabetes Care

- Evaluated two different collaboratives, a national BTS in 99-00, and WA state 01-02
- 300-400 pilot and control patients in each
- Process and outcome measures generally improved in all groups, but differences significant mostly in WA collab.
- Net 2.4% reduction in CVD risk, 4.1% reduction in highest risk group
  Asch et al. – Under review
The Relationship between Organizational Systems and Diabetes Quality*

- Studied 134 managed Medicare organizations
- Collected Diabetes quality measures (HbA1c, LDL, microlabuminuria and eye exams)
- Assessed 32 care elements based on the CCM (e.g., practitioner reminders, use of guidelines, use of registries, formal self-management)
- Compared top and bottom quartiles on quality (e.g., HbA1c>9.5– 20% vs. 50%)
- Top quartile more likely to employ CCM elements, especially:
  - Computerized reminders,
  - Practitioner involvement on QI teams,
  - Guidelines supported by academic detailing,
  - Formal self-management programs,
  - A registry

*Fleming et al., AJMC 10:934, 2004

Successes of Teams in Collaboratives: The Benefit of Organized Chronic Care

- 1.5 - 2 times as many patients with major depression will be recovered at six months
- Inner city kids with moderate to severe asthma have 13 fewer days per year with symptoms
- Readmission rates of patients hospitalized with CHF will be cut nearly in half
### Performance of 26 Delivery Systems in WA Diabetes II Collaborative

<table>
<thead>
<tr>
<th>Measure</th>
<th>% of Teams Improving</th>
<th>Average Improvement</th>
</tr>
</thead>
<tbody>
<tr>
<td>HbA1c Test</td>
<td>77</td>
<td>11%</td>
</tr>
<tr>
<td>HbA1c** &lt;8.0%</td>
<td>77</td>
<td>11%</td>
</tr>
<tr>
<td>BP Measured</td>
<td>58</td>
<td>8%</td>
</tr>
<tr>
<td>BP** &lt;?140/90 mmHg</td>
<td>69</td>
<td>11%</td>
</tr>
<tr>
<td>LDL Test</td>
<td>73</td>
<td>17%</td>
</tr>
<tr>
<td>LDL** ? ?130 mg/dL</td>
<td>77</td>
<td>14%</td>
</tr>
<tr>
<td>Foot Exam</td>
<td>92</td>
<td>23%</td>
</tr>
<tr>
<td>Retinal Exam</td>
<td>73</td>
<td>8%</td>
</tr>
<tr>
<td>Doc. Self-Mgmt Goal</td>
<td>89</td>
<td>32%</td>
</tr>
</tbody>
</table>

### Premier Health Partners

- Dayton, Ohio
- 100 physicians in 36 practices
- Change began in one practice—spread throughout system
- ACE-inhibitors for albuminuria was 38% in 1999 and 80% in 2001
- A1c < 7% was 42% in 1999 and 70% in 2001
High Plains Community Center

- Lamar, Colorado
- Serves 11,000 people
- 29% uninsured
- 14% monolingual in Spanish
- 172 diabetics – A1c fell from 9.5% to 8.4%
- 114 with CVD - % with BP<140/90 rose from 35% to 62%

Bureau of Primary Health Care: Health Disparities Collaboratives

- Numerous collaboratives beginning in 1999
- Diabetes, asthma, CV, HIV, depression
- tens of thousands of patients touched
- All 800 community clinics involved nation-wide
- Early result suggest improved care for the poor that may exceed that in commercial populations
Advantages of a General System Change Model

- Applicable to most preventive and chronic care issues
- Once system changes in place, accommodating new guideline or innovation much easier
- Fits well with other redesign initiatives
- Approach is being used comprehensively in multiple care settings and countries

Contact us:

- www.improvingchroniccare.org

thanks