The Connected Health Imperative

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Director
Center for Connected Health
Partners HealthCare
How will the future look?

Images removed due to copyright restrictions.
Images of potential home-based healthcare products and services.
About the Center for Connected Health
Partners HealthCare

• Using consumer technologies and online resources to deliver quality care to patients outside the medical setting

• Creating new ways to deliver care *when* and *where* it is needed

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The Connected Health Imperative

Growth in Chronic Disease

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Chart showing growth, between 1990 and projected to 2020, in number of deaths due to chronic diseases such as diabetes mellitus, chronic obstructive pulmonary disease and asthma, neoplasms, cardiovascular diseases, and other noncommunicable diseases.

Supply and Demand Projections for Nurses: 2000 to 2020

Image removed due to copyright restrictions.
Graph showing drop-off in supply and steady rise in demand for nurses between 2000 and 2020 (projected).

Rising Costs

Image removed due to copyright restrictions.
Graph showing the rise in America's spending on health care as a percentage of GDP, from 1970 to 2003; graph suggests increase of about 8%.
"Most primary care physicians at Boston's top-tier teaching hospitals are so busy that they have officially closed their practices to new patients."

"There is a huge crisis in primary care right now," said Dr. Sherry Haydock, medical director of Internal Medicine Associates, a primary care practice at Mass. General
The Connected Health Imperative

QuickTime™ and a YUV420 codec decompressor are needed to see this picture.
Connected Health

Patient-centric

• Care when and where it is needed

• Patients have access to their own health data

• Self management increases quality and capacity

• “I noticed my weight was up – I knew you’d be calling”
What are some ideas you have for using technology to create a more patient-centric care system?
Connected Health: 
Fundamental Challenges

• Self-care: tools and support to comply with care plans

• Remote care: Care when and where it is needed
## Connected Health Platforms

**Self-Care Platform**
- Feedback
- Motivation & support
- Patient education

**Remote Care Platform**
- Remote monitoring
- Remote diagnostics
- Remote care delivery
# Connected Health Initiatives

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<thead>
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**Center for Connected Health**

**PARTNERS HealthCare**
Connected Health Initiatives:
Medication Adherence

- Clinical trial to study the impact of real-time information and feedback on adherence rates
- Goals include assessment of patient view of using ‘background’ devices for personal reminders

Image removed to copyright restrictions.

Medicine is taken. (Photo removed due to copyright restrictions).

Medicine container detects change in pill count. (Photo removed due to copyright restrictions).

Center for Connected Health
## Connected Health Initiatives

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Connected Health Initiatives:
Virtual Coach – Empathic Agent

1. Wearable monitor records subject’s activity levels

2. Activity data sent wirelessly to central server

3. Personalized coaching to improve adherence to activity regime

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**Self Care Platform**

**Remote Care Platform**
Connected Health Initiatives: Heart Failure Monitoring

- Homebound patients are being monitored to manage heart failure, COPD, renal failure, etc...
- Tele-monitoring nurse monitors patient vital signs daily and prioritizes nurse visits based on patient status
- Prior study showed that HF patients with tele-monitoring required 40% fewer nursing visits and had a 25% reduction in re-hospitalization rates.
9 Months Post Trial Data

• Primary dx of CHF: 22% re-hospitalization rate (30/136)

• Secondary dx of CHF: 24% re-hospitalization rate (9/38)

• For the telemonitored patients with primary CHF there was a 5.2% re-hospitalization rate

• There were no patients with a secondary diagnosis of CHF re-hospitalized in the 9 months

• For the MGH telemonitored patients there was an overall (all diagnosis) re-hospitalization rate of 13.8%.
Describe how CHF is a model system for showing the value of connected health technologies.
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Connected Health Initiatives:
Acne E-visits

- Online “e-visits” to replace in-person visits
- Secure communications, image transfer
- Partnering w/ BCBSMA to demonstrate value

Images removed due to copyright restrictions.
E-visits patient

QuickTime™ and a YUV420 codec decompressor are needed to see this picture.
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**Center for Connected Health**
Connected Health provides value by:

• **Improving quality** - more robust data

• **Improving supply**
  – More effective use of providers
  – Care when and where it’s needed

• **Decreasing demand**
  – Increasing self-care

• **Lowering costs**
  – Moving care to lower cost environment
  – Using patient data (physiologic and functional status) to move decision-making to lower cost providers

• **System value** - capacity to take in, synthesize, and act on data from outside of the system
Connected Health Markets

- Medicaid/Free care
- Medicare High Risk
- Commercial – including Pay for Performance
- Employee benefits/wellness
- Caregivers/elder care
- Consumers/sports & fitness
Medicaid/Free care and Medicare

Representative data of Medicaid and free care patients in a hospital

- Number of ED visits per 1000 patients: 98
- Number of admissions per 1000 patients: 13

55% of all hospital admissions in 2003 started in the emergency dept.

- Medicare and Medicaid cover 66% of all hospital admissions through the ED

Policy makers are concerned with the overuse or inappropriate use of EDs among people with limited access to ambulatory care.
Graph removed due to copyright restrictions.
Employee Health and Wellness

- Review of 73 published studies of worksite health promotion programs shows an average of $3.50-$1 savings-to-cost ratio in reduced absenteeism and healthcare cost.

### Employee Risk versus Healthcare Costs

<table>
<thead>
<tr>
<th>Outcome measure</th>
<th>Low-risk</th>
<th>Medium-risk</th>
<th>High-risk</th>
<th>Excess cost (%)</th>
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<tbody>
<tr>
<td>Short-term disability</td>
<td>$120</td>
<td>$216</td>
<td>$333</td>
<td>41%</td>
</tr>
<tr>
<td>Worker’s comp</td>
<td>$228</td>
<td>$244</td>
<td>$496</td>
<td>24%</td>
</tr>
<tr>
<td>Absence</td>
<td>$245</td>
<td>$341</td>
<td>$527</td>
<td>29%</td>
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<tr>
<td>Medical &amp; pharmacy</td>
<td>$1158</td>
<td>$1487</td>
<td>$3696</td>
<td>38%</td>
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<tr>
<td>Total</td>
<td>$1751</td>
<td>$2288</td>
<td>$5052</td>
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Wright, Beard, Edington. JOEM. 44(12): 1126-1134, 2002
Define the value proposition for:

• Medicaid/free care
• High cost Medicare
• Commercial payers (P4P)
• A large self-insured employer
Join our discussion at www.connected-health.org

Just published: Home Telehealth
Thank you.

jkvedar@partners.org