Technologies for Improving Post Acute Care Transitions: Background

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ARC Learning Session
Avoid Readmissions Through Collaboration
Oakland, CA  January 19, 2011
Issues surrounding the risk for readmissions

Care Team
Complex Care Coordination

- Lack of timely and follow-up with PCP 1
- Lack of Shared Care Plan and Goals 2
- Prevention of 1st Admission 10
- Lack of timely medication Reconciliation 3
- Lack of skills in complex case management 5
- Lack of Coordination With other Services 6
- Lack of aligned healthcare incentives 8
- Supportive payment and Reimbursement models 8
- Unable to fully ID pop at risk
- Lack optimal care paths for Pts with complex chronic diseases 5, 6
- Lack of cost metrics to understand change implications 8
- Lack of benchmarks of success 8

Patient
Self Management

- Financial
- Family support
- Logistics
- Transportation
- Patient conditions/limitations 5, 7, 9
- Cognitive
- Depression / Psych
- Language
- Poly-pharma 3
- Education
- Physical
- Age
- Co-morbidities
- Lack of Shared Care Plan and Goals 2
- Lack of Self management skills 2
- Accurate
- Timely
- Complete
- Standardized
- Timely Med Reconciliation 3
- Lack of Shared Care Plan and Goals 2

Pop Management

- Timely
- Complete
- Standardized
- Accurate

Information

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Numbers denote references (next page)
Issues surrounding the risk for readmissions

**Literature References**


9. Robyn Golden of Rush University Hospital, interview on readmission research from both their program and the BOOST program June 2010.

10. Source: ARHQ study “Patients with initial preventable condition (2004 study)” (20% readmissions were from preventable first admissions)
New Opportunities for Redesigning Care Delivery

Payment Reform and Increased Focus on Efficiency and Quality
(e.g., PPACA; ACA; CMS; ACOs; etc)

Advances in Technology-enabled Strategies
(e.g., RPM; Med Op; Caregiver Communications)

Infrastructure Investments
(e.g., EMR; CDS; etc)

Payment Reforms will Determine How The Service Delivery Model Reconfigures to Be More Patient-Centric, Integrated and Coordinated

Healthcare Service Delivery Model
(e.g., Patient-centered Medical Homes)
Issues in readmissions by process steps

Reliable Communications: Timely, Accurate, Complete, Standardized

Population Management

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HOME

1st Hospitalization

Discharged Patient

2nd Hospitalization

Prevention of 1st Admission

Self Management

Trained Staff in Complex Chronic Care

Coordination in Transitions in Episodes of Care

Timely Med Rec

Pl Psych, Cog exc early

Coordination in Transitions in Episodes of Care

Self Management

Shared DC plan goals

PCP follow up

Homecare Community Meds DME

Trained Staff in Complex Chronic Care

Coordination in Transitions in Episodes of Care

Timely Med Rec

Aligned Healthcare Incentives

ID Pops at risk for Readmit

Optimal complex conditions and cohort care paths

Benchmarks for Success, Quality, Financial, Customer Sat, Workforce

Shared Metrics for: Coding standard, Budget align Risk share
The Potential Contribution of Multiple Technologies

Which technologies will have the biggest impact on 30 day readmissions?
Reducing Rehospitalizations Through Innovative Technologies That Improve Care Coordination

This Commonwealth Fund-supported project will require a two-year effort:

We propose three core research products:

1) Working papers on the potential impact of technology-enabled innovations
2) Case studies that demonstrate their successful diffusion into the delivery system to improve integration of care
3) Tools and other resources to support health care organizations in the selection and broad-based diffusion of proven innovations

The project work will be conducted with an Advisory Board comprised of the following:

• Leading national organizations and thought leaders in the health policy arena and major care delivery systems
• Expertise from within the Public Health Institute, including senior advisors, the Center for Technology and Aging, and the Center for Connected Health
Project Objective

To build an **infrastructure that supports the adoption, diffusion and sustained use of technology-enabled innovations** into care delivery systems to prevent hospital readmissions.

Key elements of the infrastructure include **evaluation and decision-making, business planning, and operational processes** that will enable organizations to do the following:

- Identify and select promising technology-enabled innovations
- Understand the impact of business models and incentive structures on technology adoption and financial performance
- Develop strategies that successfully deploy and sustain innovations at a large scale

The targeted impact of technology-enabled innovations will be to improve care outcomes through an **integrated model of care that facilitates coordinated care management processes**.
Project Goal: Align Technology with Proven Strategies to Improve Transitions in Care

- Evidence-based inpatient care
- Error-free inpatient care
- Enhanced patient-family education and coaching on self management
- Appropriate referral for home care
- Written discharge instructions, with health literacy principles
- Accurate medication reconciliation
- Timely post-acute follow up
- Patient knows who to call
- Information about goals of care transfer between settings

Source: Promising Approaches to Reduce Rehospitalizations - presentation given by Amy Boutwell at 21st Annual National Forum on Quality Improvement in Health Care (2009)
Remote Health Services

RHS are patient care interactions where patient and provider are physically separate but virtually connected through telecommunications, IT, and sensor technology. RHS facilitate data collection and transmission to improve care coordination and communications and to support patient care applications.

Data collected includes:

- Vital signs (blood pressure, glucose meters, pulse oximeters, weight)
- Physical and emotional well-being assessment

Data transmitted over:

- Video over low-bandwidth POTS
- Video over IP
- LAN/WAN
- Broadband

Results include:

- Improvement in care coordination and caregiver support
- Reduction in unnecessary visits and hospitalizations
- Improvement in medication compliance and treatment outcomes
Remote Patient Monitoring

• Remote patient monitoring (RPM) is a specific application within RHS

• RPM facilitates data collection and transmission to improve care coordination processes, reduce unnecessary resource utilization, improve patient and provider satisfaction, support self-management, and improve care outcomes:
  – Provides **messaging, monitoring and measurement, and interactive communications functions**
  – Use relies on a **reorganization of care processes** (involving newly defined roles, a disruption of existing business models, and a reduction in the use of traditional hospital-based care services)
  – The **Veterans Health Administration and smaller trials at fully-integrated provider-based plans** have demonstrated the greatest success to date in adopting and deploying RPM-enabled programs
  – The **VHA attributes the success of its implementation to the “systems approach”** taken to integrate the clinical, educational, technical, business, and organizational elements of the program

• It is difficult to assess the isolated effect of RPM on reducing rehospitalization rates (results range from low of 14% to a high of 80% reduction)*

*Source: Institute for Healthcare Improvement
The Early Adopter Experience: Veterans Health Administration (1 of 2)

- VHA has evaluated, piloted, reevaluated, and deployed RPM technologies in a continuing process of learning and improvement far beyond adoption in the private sector.

- Currently, there is no program elsewhere in the US of the size and complexity of VHA’s national program to enable detailed comparison.

- Home telehealth programs drive substantial benefits as alternatives to traditional care models:
  - Findings from comparative studies conducted on patients enrolled in the VA’s Care Coordination/Home Telehealth program in 2006 and 2007 show:
    - 25% reduction in bed days of care
    - 20% reduction in numbers of admissions
    - 86% mean satisfaction score rating
Net cost = $1,600 / patient / year vs.
- VHA's home-based primary care services = $13,121 / patient / year
- Market nursing home care rates average = $77,745 / patient / year

VHA attributes the rapidity and robustness of its CCHT implementation to the “systems approach” taken to integrate the elements of the program. This includes:
- Product selection
- Training
- Protocols for patient selection, management
- Data analytics

Since VHA implemented CCHT in 2003, a total of 43,430 patients have been enrolled.

VHA will increase these services 100% above 2007 levels to reach 110,000 patients by 2011. This will be only 50% of its projected NIC needs.
Use of RPM with CHF Patients

RPM interventions have been shown to reduce the frequency of hospitalizations:

- A systematic review of studies involving RPM found that six of nine studies experienced reductions ranging from 29% to 43% in CHF patients (Institute for Healthcare Improvement)

- Allegan Homecare reduced home visits in CHF and COPD patients from an average of 22 nurse home visits per episode to 12 visits for CHF patients, leading to an increase in average patient case load/nurse from 15 to nearly 25 (Genesis DM / Honeywell HomMed)

- Banner Health reported that telehealth services to more than 550 patients with CHF and other chronic diseases achieved a readmission rate of 3.8 percent for patients on telehealth, versus a national readmission rate of 29 percent for Medicare-certified home health agencies (TeleStation/ Philips)
Potential RPM-Associated National Savings In Congestive Heart Failure

The New England Healthcare Institute’s Research Update: Remote Physiological Monitoring reports the following cost savings for all Class III and Class IV heart failure patients:*

- 60% reduction in readmissions compared to standard care
- 50% reduction in readmissions compared to disease management programs without remote monitoring.
- Potential to prevent 460,000 - 627,000 heart failure-related hospital readmissions/yr
- Annual national cost savings of up to $6.4 billion dollars

The net savings of RPM technology = $3,703 / patient / year for those with disease management programs, and $5,034 for those with standard care

*Note: Assuming 80% of patients hospitalized / year, annual cost $2,052 / patient for monitoring technology
Web-based Applications for CVD

Specialized web applications that support patient education and self-management interface with peripheral devices to automatically upload data:

• **Heart 360**
  • **Online cardiovascular wellness center** that allows users to manage blood pressure, blood glucose, cholesterol, weight, nutrition and physical activity
  • Provides **education and information** specific to a patient’s condition
  • Data can also be **transferred to the patient’s HealthVault PHR** for storage or use with other HealthVault-compatible applications

• **CardioSmart Health Tracker**
  • **Online hypertension management tool** that tracks, organizes and presents blood pressure, medication and lifestyle data
  • Supports **patient self-care in the context of lifestyle changes**
  • Provides **care recommendations** that follow ACC guidelines
  • Data are transferable to the **HealthVault PHR**

• **Heart Profilers**
  • Offers **online treatment decision support tools** that help patients with heart disease to make informed decisions
  • Provides decision support specific to a patient’s clinical status based on **best practice and latest clinical research**
CVD Technology Example: Connected Cardiac Care (Integrated Remote and Web-based Application)

- Connected Cardiac Care is a **self-management and preventive care program** for CHF patients that combines telemonitoring capabilities with nurse intervention and care coordination, coaching and education.

- The program has been launched **throughout the Partners HealthCare network** following a six-month pilot study.

- Results include the following:
  - Individuals enrolled in the program had **lower hospital readmission rates and fewer emergency room visits** than those receiving usual care.
  - 95 percent of participants found the program improved their heart failure control, helped them manage their condition, and assisted them in staying out of the hospital.
Center for Technology and Aging

- Established in 2009 with funding from The SCAN Foundation, located at the Public Health Institute
- Expand use of technologies that help older lead healthier lives and maintain independence
- Independent, non-profit resource center on issues related to diffusion of technology for older adults
- Technology Diffusion Grants Programs
  - e.g., Tech4Impact grant (Technologies for Improving Post-Acute Care Transitions “Tech4Impact”)
CTA Grants that Aim to Reduce Hospitalizations

Medication Optimization Technologies
• American Society of Consultant Pharmacists Foundation
• Caring Choices
• Connecticut Pharmacists Foundation
• VA Central California Health Care System
• Visiting Nurse Services of New York

Remote Patient Monitoring Technologies
• AltaMed Health Services, Stamford Hospital
• California Association of Health Services at Home
• Centura Health at Home
• New England Healthcare Institute
• Sharp HealthCare Foundation
• HealthCare Partners
• Catholic Healthcare West

Personal Health Records Technologies
State Units on Aging and ADRCs in:
• California
• Rhode Island
• Washington

Evidence-Based Care Transitions QI Evaluation Technologies
State Units on Aging and ADRCs in:
• Indiana
• Texas

ADRC = Aging and Disability Resource Center
### Veterans Health Administration (Central CA)
#### CTA Grant Project

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Medication Adherence, Remote Patient Monitoring</th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>Vets with CHF, hospitalized within past year</td>
</tr>
<tr>
<td>Technology</td>
<td>Health Buddy using POTS,</td>
</tr>
<tr>
<td></td>
<td>Med Adherence Algorithm, weight scale, BP cuff</td>
</tr>
<tr>
<td>Expected Benefits</td>
<td>Reduce hospital/ED visits; improve patient activation, QOL &amp; satisfaction</td>
</tr>
<tr>
<td>Workforce Issues</td>
<td>Care coordinator (RN), MD oversight, Automated clinician alerts, enabled patients/informal caregivers</td>
</tr>
<tr>
<td>Organizational Readiness</td>
<td>VHA: world’s largest telehealth user, rural health = telehealth</td>
</tr>
<tr>
<td>Focus Area</td>
<td>Improving communications, coordination, self-management during care transitions</td>
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<tr>
<td>Population</td>
<td>Patients recently discharged from hospital that are participating in the Care Transitions Intervention program</td>
</tr>
<tr>
<td>Technology</td>
<td>Shared Care Plan EHR/PHR Utilizes Microsoft HealthVault</td>
</tr>
<tr>
<td>Expected Benefits</td>
<td>Reduce hospitalizations/re-hospitalizations, improved patient self-management, improved communications</td>
</tr>
<tr>
<td>Workforce Issues</td>
<td>CTI coach, connected clinicians, increased engagement of patients and caregivers</td>
</tr>
<tr>
<td>Organizational Readiness</td>
<td>An early adopter, Whatcom County, WA started project in 2001</td>
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# Connecticut Pharmacists Foundation

## CTA Grant Project

<table>
<thead>
<tr>
<th>Focus Area</th>
<th>Remote Medication Therapy Management</th>
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</thead>
<tbody>
<tr>
<td>Population</td>
<td>Older Cambodian-Americans w/ history of torture/trauma, high incidence of chronic illness and low literacy rate</td>
</tr>
<tr>
<td>Technology</td>
<td>Video conferencing, spoken format technology, EMR</td>
</tr>
<tr>
<td>Expected Benefits</td>
<td>Reduce hospital/ED visits; improve meds use; improve access to culturally concordant providers</td>
</tr>
<tr>
<td>Workforce Issues</td>
<td>Remote pharmacist visit, patient is accompanied by community health worker. Few providers trained in special needs of this population.</td>
</tr>
<tr>
<td>Organizational Readiness</td>
<td>Connecticut partner, Khmer Health Advocates, is the only Cambodian health organization in the US</td>
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Lessons Learned

- Stakeholder readiness to adopt
- Business model/payment model
- Technology/Intervention model
  - Evidence base/relative advantage
  - Compatibility
  - Complexity
- Policy issues