LOOKING AHEAD: USING TELEREPICINE TO REDUCE COSTS AND IMPROVE THE QUALITY OF CARE IN POST-ACUTE AND LONG-TERM CARE SETTING

Steven M. Handler MD, PhD, CMD
Associate Professor, Division of Geriatric Medicine and Biomedical Informatics, RAVEN

Disclosure

- I am the Chief Medical and Innovation Officer for Curavi Health
- I do not own any equity interests in Curavi Health, nor do I have any options or other interests that are convertible into equity interests in Curavi Health

Learning Objectives

1. Describe the frequency, cost, and consequences of potentially avoidable hospitalizations (PAHs) of nursing home (NH) residents.
2. Describe the evidence-base and use of telemedicine to reduce PAHs in the NH setting.
3. Describe the RAVEN CMS Innovation Award that uses telemedicine to reduce PAHs.
Potentially Avoidable Hospitalizations (PAHs)

- CMS defines PAHs as hospitalizations that could have been avoided because the condition could have been prevented or treated outside of an inpatient hospital setting.
- Each year, approximately 25% of all long-stay and post-acute residents on a fee-for-service Medicare benefit in NHs are hospitalized, while over 20% are readmitted in 30-days following hospital discharge.
- NH residents are sent to the Emergency Department (ED) an average of nearly 2 times per year, and just over half of these visits do not result in hospitalization.


Most Common PAH Diagnoses

Six conditions are responsible for 80% of PAHs:
- Pneumonia (32.8%)
- UTI (14.2%)
- CHF (11.6%)
- Electrolyte disturbance/dehydration (10.3%)
- COPD / Asthma (6.5%)
- Skin Ulcers, cellulitis (4.9%)


Impact of PAHs

- Economic Impact - Have an avg. length of stay of 6.1 days and an estimated cost of $8 billion ($11,255/admission) to CMS (Centers for Medicare and Medicaid).
- Clinical Impact:
  - Death
  - Disability
  - Debility
  - Delirium
  - Discharged to higher level of care
Potentially Avoidable Hospitalizations Affect Many Aspects of the NH Strategy

CMS Innovation Awards Overview

In 2012 the Medicare-Medicaid Coordination Office and the Center for Medicare and Medicaid Innovation announced the Initiative to Reduce Avoidable Hospitalizations among Nursing Facility Residents

Phase One: 2012-2016

CMS is partnering with seven organizations to implement strategies to reduce avoidable hospitalizations for long-stay Medicare-Medicaid enrollees.

UPMC Community Provider Services (Aging Institute) (Pennsylvania)
Alabama Quality Assurance Foundation (Alabama)
Alegent Health (Nebraska)
The Curators of the University of Missouri (Missouri)
Greater New York Hospital Foundation, Inc. (New York)
HealthInsight of Nevada (Nevada)
Indiana University (Indiana)

*UPMC’s Operating Partners in Phase One: Excela Health, Heritage Valley Health System, Jewish Healthcare Foundation, and Robert Morris University

Why would CMS invest in this type of Initiative?

According to CMS potentially avoidable hospitalizations are hospitalizations that could have been avoided because the condition could have been prevented or treated outside of an inpatient hospital setting.
**CMS Goals for the Initiative**

**Resident Population**
Focus is on long-stay (>100 days) Medicare-Medicaid residents

- Improve beneficiary health outcomes
- Reduce the number of and frequency of avoidable hospital admissions and readmissions
- Provide better transition of care
- Promote better care at lower costs while preserving access to beneficiary care and providers

**Phases of the Innovation Award**

**Phase 1**
- Phase 1: September 2012 through September 2016

**Phase 2**
- Phase 2: March 2016 through September 2020
  - Recruitment and Ramp-Up *March 2016 through October 2016*
  - Payment Model went live in Pennsylvania *November 2016*

**Why Implement a Payment Model?**

The initial four years of the demonstration project (2012-2016) addressed preventing avoidable hospitalizations through various clinical quality models. **HOWEVER....** the initial demonstration did NOT address the existing payment policies that may be leading to avoidable hospitalizations.
RAVEN Eligible Residents*

<table>
<thead>
<tr>
<th>Group</th>
<th>Facilities</th>
<th>Eligible Residents</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>20</td>
<td>1,055</td>
</tr>
<tr>
<td>B</td>
<td>15</td>
<td>1,052</td>
</tr>
<tr>
<td>Totals</td>
<td>35</td>
<td>2,107</td>
</tr>
</tbody>
</table>

*RAVEN Phase II Group A & B Facility Map
Evaluation of Phase I

- Over the 3-year intervention period (2014–2016) in PA, there were statistically significant decreases associated with the Initiative in all types of Medicare expenditures.
- The ECCP intervention had largely consistent, but not always statistically significant, effects in reducing overall and PAHs and ED visits.
- For almost all utilization and expenditure measures, both the magnitudes and statistical significance of intervention effects peaked in 2014 and weakened considerably in 2015 and 2016.

Evaluation of Phase I: Clinical Outcomes

- Reduced all cause hospitalizations*: 12.6% reduction
- Potentially avoidable hospitalizations: 19.6% reduction
- All-cause ED visit: 5.0% reduction
- Potentially avoidable ED visit*: 28.2% reduction

Evaluation of Phase I: Economic Outcomes

- Estimated savings of $2,513/resident/yr.*
CMS Qualifying Conditions

CMS states that six conditions are linked to approximately 80% of potentially avoidable hospitalizations among nursing facility residents nationally.

<table>
<thead>
<tr>
<th>Condition</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pneumonia</td>
<td>32.8%</td>
</tr>
<tr>
<td>Urinary tract infection</td>
<td>14.2%</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>11.6%</td>
</tr>
<tr>
<td>Dehydration</td>
<td>10.3%</td>
</tr>
<tr>
<td>COPD, asthma</td>
<td>6.5%</td>
</tr>
<tr>
<td>Skin ulcers, cellulitis</td>
<td>4.9%</td>
</tr>
</tbody>
</table>

Phase Two - Payment Reform

Phase Two Payment Reform has a revenue incentive for existing facilities and new participating facilities.

**Facility Payment**
1. Payments to a SNF under Medicare Part B for the treatment of qualifying conditions (for beneficiaries not on a covered Medicare Part A SNF stay).

**Practitioner Payments**
1. Increased practitioner payments under Medicare Part B for the treatment of conditions onsite at the LTC facility.
2. Practitioner payments under Medicare Part B for care coordination and caregiver engagement for beneficiaries.

Payments to a SNF for Treatment of Qualifying Conditions

<table>
<thead>
<tr>
<th>Condition</th>
<th>Duration</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Acute Care pneumonia</td>
<td>Maximum 7 Day course</td>
<td>$218/day</td>
</tr>
<tr>
<td>Acute Care (CHF)</td>
<td>Maximum 7 Day course</td>
<td>$218/day</td>
</tr>
<tr>
<td>Acute Care (COPD)/asthma</td>
<td>Maximum 7 Day course</td>
<td>$218/day</td>
</tr>
<tr>
<td>Acute Care (skin infection)</td>
<td>Maximum 7 Day course</td>
<td>$218/day</td>
</tr>
<tr>
<td>Acute Care (fluid or electrolyte disorder)</td>
<td>Maximum 5 Day course</td>
<td>$198/day</td>
</tr>
<tr>
<td>Acute Care (other SNF)</td>
<td>Maximum 7 Day course</td>
<td>$218/day</td>
</tr>
</tbody>
</table>
Core Elements of Initiative

1. Facility-based Nurse Practitioners/Enhanced Care Nurses
2. INTERACT tools to reduce avoidable hospital admission
3. Individualized educational program/simulation
4. Enhanced medication management, monitoring, and pharmacy engagement
5. Use of telemedicine to enable remote clinical assessment, and facilitate communication

Telemedicine 2.0: Raven Phase 2

- Facility payment:
  - Six conditions have qualifying criteria
  - MD, NP or PA must confirm qualifying diagnosis through in-person evaluation OR qualifying telemedicine assessment
  - Evaluation or assessment must occur by end of the 2nd day after acute change in condition
- Practitioner payment:
  - Can use telemedicine in accordance with current telemedicine rules
- CMS specifies the telemedicine software and hardware requirements

What is Telemedicine?

- Telemedicine is defined as the use of telecommunication and information technologies in order to provide clinical healthcare at a distance.
- Types of telemedicine:
  1. Interactive services (synchronous)
  2. Store-and-forward (asynchronous)
  3. Remote monitoring (self-monitoring)
  4. mHealth (mobile devices)
Evidence-Base for Telemedicine in NHs

- Edirippulige et al, conducted a systematic review which provides evidence for feasibility and stakeholder satisfaction in using telemedicine in NHs across clinical specialties
  - J Telem Telecare, 2013
- Grabowski et al., showed that an after-hours physician-based telemedicine program can reduce hospitalization by 9.7% and yield $151K cost savings to Medicare/NHyr.
  - Health Aff, 2014
- Hofmeyer et al., showed that NHs had on avg. 23 consults per yr. and overall 69% of cases were not transferred.
  - JAMDA, 2016
- Handler et al. surveyed 435 physicians and nurse practitioners who had highly positive and strongly-held beliefs of the value of telemedicine for managing PAHs in the NH setting.
  - JAMDA, 2016

Programs Designed to Reduce PAHs

- 236 NHs from 7 states were surveyed and 40% of respondents implemented telemedicine
  
Case Vignette

Stop and Watch
Early Warning Tool

If you have identified a change which is concerning, or observing a resident, please stop this change and notify a nurse. Either give the nurse a copy of this tool or walk them through it with residents as soon as you can.

- S: Seems different than usual
- T: Temperature: 102 F
- O: Tactile or communication less
- P: Oxygen levels lower
- H: No loss
- N: No bowel movement in 3 days or diarrhea
- A: Diarrhea less
- W: Weight change
- A: Agitated or nervous more than usual
- T: Tired, weak, confused, incontinence
- C: Change in skin color, condition, or sensitivity to warm
- H: Help with walking, transferring, tolerating more than usual
Traditional Telephonic Clinical Case

- Chris Bartos is an 86 yo female (new resident) transferred to Jane St NH following a recent hospitalization for a UTI with sepsis
- Resident has a PMHx of diabetes, hypertension, osteoarthritis, Alzheimer’s disease and malnutrition
- Resident has indicated FULL TREATMENT on her POLST form and would like antibiotics if life can be prolonged
- Family wants to send her out because they believe that the hospital can take care of sick patients better

Curavi Health Genesis

<table>
<thead>
<tr>
<th>UPMC Owned NHs</th>
<th>CMS Innovation Award</th>
<th>Curavi Health, Inc.</th>
</tr>
</thead>
<tbody>
<tr>
<td>• Growing homes (NHs)</td>
<td>• 17 Min.</td>
<td>• Incorporated January 2016</td>
</tr>
<tr>
<td>• Physician Providers</td>
<td>• 35 Min.</td>
<td>• Market launch October 2016</td>
</tr>
<tr>
<td>• Division of Geriatric Medicine</td>
<td>• Long-term Care only</td>
<td>• Quick customer growth (16 NHs under contract)</td>
</tr>
</tbody>
</table>

- Nurse Practitioners
- Incorporated January, 2016
- Market launch October 2016
- Quick customer growth (16 NHs under contract)
- Nurse Practitioners
- In 2016

Acute Change in Condition NH Workflow

Managing Changes of Condition Using Curavi Telemedicine

1. Detect & Alert
2. Identify
3. Intervene
4. Notify
Resident-Centered Care

CuraviCare™ - Curavi’s solution

**Cart Features**
- Custom-made carts designed specifically for senior living communities.
- Custom-developed software that uses satellite-originated technology ideal for low-bandwidth settings and based on our requirement specifications and workflows.
- Wi-Fi or Cellular
- Powered Cart and Monitor Height Adjustment
- Optimized Ergonomic Design

**Telemedicine Cart Diagnostic Instrument Features:**
- Pan-tilt-zoom (PTZ) camera AND examination camera
- Otoscope
- 12-lead EKG
- Bluetooth stethoscope
- Document Scanner

CuraviCart™ - Curavi's hardware solution

**Telemedicine Cart Diagnostic Instrument Features:**
- Pan-tilt-zoom camera
- Examination camera
- Otoscope
- 12-lead EKG
- Bluetooth stethoscope
- Document Scanner
**CuraviCare™ – Curavi’s software solution**

- Software specifically designed for telemedicine in skilled nursing facilities
- Supports multiple provider groups
- Satellite originated technology ideal for low bandwidth
- Includes provider progress note, notification system and reporting mechanisms

**The CuraviCare™ EKG is fully integrated with our solution**

- 12 lead EKG - Guaranteed 1 hour turnaround for read and interpretation from the Heart and Vascular Institute.
- This represents an example of a store and forward solution.
- Another example is tele-wound/dermatology and geriatric psychiatry consultations.

**CuraviEMR™**
Curavi's focus on NHs drives results in avoided readmissions

<table>
<thead>
<tr>
<th>UPMC Owned NHs</th>
<th>RAVEN Partner NHs</th>
<th>Curavi NHs</th>
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<tbody>
<tr>
<td>% of hospital transfers avoided</td>
<td>% of hospital transfers avoided</td>
<td>% of hospital transfers avoided</td>
</tr>
<tr>
<td>Telemedicine consults (64 of 154)</td>
<td>Terminal phase consults (131 of 216)</td>
<td>Terminal phase consults (46 of 118)</td>
</tr>
<tr>
<td>61.0%</td>
<td>62.5%</td>
<td>65.40%</td>
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<tr>
<td>After-hours telephone consults (30 of 50)</td>
<td>Telephone-only consults (46 of 245)</td>
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<tr>
<td>15.2%</td>
<td>9.8%</td>
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*Based on Curavi physicians attestation that consults resulted in an avoided admission

Potentially avoidable conditions present:

- Acute confusion, delirium, altered mental status: 14%
- Cough, sinusitis, pneumonia: 13%
- Diabetes mellitus: 12%
- Depression: 10%
- GI bleed: 9%
- Hip fracture: 7%
- Lower respiratory infection: 7%
- Malignant neoplasm: 7%
- NPO: 6%
- Pneumonia: 5%
- Urinary tract infection: 4%
- Wound infection: 3%
- None of the above: 2%
- Total: 118

Post-Consult Telemedicine Survey

<table>
<thead>
<tr>
<th>strongly disagree</th>
<th>disagree</th>
<th>neutral</th>
<th>agree</th>
<th>strongly agree</th>
<th>Responses</th>
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<td>0</td>
<td>117</td>
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Based on Curavi physicians attestation that consults resulted in an avoided admission
CuraviMobile: telemedicine cart capabilities "on the go"

CuraviMobile “Backpack” offers:
- 2 digital scopes
- 4 high gain antenna
- Less than 20lbs
- 6-hour battery
- Connects to tablet through USB port
- Ferno connector for ambulance mount
- Redundant dual-modem connectivity
- Integrated speaker/mic

CuraviMobile brings telemedicine to patients or residents in any setting

Questions?
handlersm@upmc.edu