The Value of Remote Monitoring Programs through ROI – and a Do-it-Yourself Tool

Connected Health Symposium October 2012
Panelists

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Center for Connected Health, Partners HealthCare

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Center for Technology and Aging

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Director, Institute for Applied Research and Education
HealthCare Partners
Program Background

- Joint initiative of Center for Connected Health and Center for Technology and Aging

- CTA Technology Diffusion Grant Initiative
  - Sharp Healthcare
  - HealthCare Partners
  - Centura Health at Home
  - Dignity Health
  - Veterans Administration of Central California
Remote Patient Monitoring - ROI

- Many Remote Monitoring Programs are in pilot or research stage – and are not reimbursable

- Question: What value can an RPM program bring when it is operational?

- Flexible ROI tool created for program owners – evaluating cost inputs and value of outcomes/impact

- ROI model was tested with five organizations, who had very different implementation models
Remote Patient Monitoring - ROI

- Inputs gathered for ROI include:
  - Patient enrollment and growth assumptions
  - Staffing requirements – both fixed and variable
  - Technology costs – including up-front investments required, per patient costs, and assumptions relating to type of technology needed
  - Other operational costs – including inventory management, refurbishment, other administrative costs

- Value of the program measured by change in healthcare utilization – using actual data as assumptions
  - Inpatient admissions
  - Outpatient visits
  - Home visits
Do-it-Yourself Tool

Remote Patient Monitoring ROI Calculator

Start by answering a few questions

GET STARTED
Do-it-Yourself Tool

ROI CALCULATOR

Enrollment

Enter the following:

Initial Enrollment

5 Year Enrollment Goal

Intervention Months (2-12)

Calculated

Enrollment Summary

Year 1 Year 2 Year 3 Year 4 Year 5

Total Patient Enrollment

Concurrent Patient Enrollment

Home

Enrollment

Human Resources

Technology Costs

Health Outcomes

ROI Analysis

Sensitivity Analysis
Do-it-Yourself Tool
Do-it-Yourself Tool
Do-it-Yourself Tool
Do-it-Yourself Tool
# Do-it-Yourself Tool

## ROI Calculator

**Introduction**

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**Variables**

**Summary of Changes**

<table>
<thead>
<tr>
<th>PATIENT ENROLLMENT</th>
<th>AMOUNT</th>
<th>SENSITIVITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Patient Enrollment – 5 Year Goal</td>
<td>1,500</td>
<td>-100% 0 +100%</td>
</tr>
</tbody>
</table>

**COST CATEGORIES**

<table>
<thead>
<tr>
<th>Technology Costs / Patient</th>
<th>$250</th>
<th>-100% 0 +100%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Staffing Costs / Patient</td>
<td>$300</td>
<td>-100% 0 +100%</td>
</tr>
<tr>
<td>Other Costs / Patient</td>
<td>$24</td>
<td>-100% 0 +100%</td>
</tr>
<tr>
<td>Return / Patient</td>
<td>$3,240</td>
<td>-100% 0 +100%</td>
</tr>
</tbody>
</table>

**ROI at 5 years**

4.6
Results

<table>
<thead>
<tr>
<th>Organization</th>
<th>Year 1 ROI</th>
<th>Year 5 ROI</th>
<th>Highlights</th>
</tr>
</thead>
<tbody>
<tr>
<td>Centura Health at Home</td>
<td>2.6</td>
<td>3.9</td>
<td>Chronic disease pts; 49% of returns due to RN visit reduction; 1.5 month intervention</td>
</tr>
<tr>
<td>Dignity Health</td>
<td>0.4</td>
<td>5.2</td>
<td>Year 1 returns/pt = $9882</td>
</tr>
<tr>
<td>HealthCare Partners</td>
<td>1.3</td>
<td>18.9</td>
<td>COPD patients; IVR, opt out patient enrollment</td>
</tr>
<tr>
<td>Sharp HealthCare</td>
<td>1.6</td>
<td>1.7</td>
<td>Underinsured CHF pts</td>
</tr>
<tr>
<td>VA Central California</td>
<td>0.1</td>
<td>0.2</td>
<td>Randomized trial; 12 month intervention</td>
</tr>
</tbody>
</table>

Unless stated otherwise: 1) savings attributable to reduced hospital admits; 2) pre-post comparison design; 3) primarily CHF patients
Results

- All five organizations found ROI tool useful for:
  - Accurately capturing RPM inputs and outcomes
  - RPM program value analysis and optimization
  - Achieving Triple Aims – improving care and costs, as well as patient experience
  - Meeting readmissions reduction targets (aligned with ACA provisions)
  - Effective in influencing management discussions regarding expansion and sustainability
**Case Study: HealthCare Partners**

- HCP’s RPM program is an interactive voice response (IVR) based program targeting primarily patients with COPD and CHF

- Patients are enrolled for an average of 6 months, during which time they receive up to 3 calls per week to answer symptom-based questions

- Program is managed by existing in-house teams

- CCH received data on 70 patients showing pre and post program hospitalizations and outpatient visits
# Case Study – HealthCare Partners

## Cost Summary

<table>
<thead>
<tr>
<th></th>
<th>Year 1</th>
<th>Year 2</th>
<th>Year 3</th>
<th>Year 4</th>
<th>Year 5</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Patient Enrollment</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Patient Enrollment</td>
<td>90</td>
<td>268</td>
<td>445</td>
<td>623</td>
<td>800</td>
</tr>
<tr>
<td>Concurrent Patient Enrollment</td>
<td>45</td>
<td>134</td>
<td>223</td>
<td>311</td>
<td>400</td>
</tr>
<tr>
<td><strong>Technology &amp; Other Operating Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Technology and Operations Costs</td>
<td>$31,594</td>
<td>$2,105</td>
<td>$2,617</td>
<td>$3,128</td>
<td>$3,639</td>
</tr>
<tr>
<td>Total Technology and Operations Costs/Patient</td>
<td>$351.05</td>
<td>$7.87</td>
<td>$5.88</td>
<td>$5.02</td>
<td>$4.55</td>
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<tr>
<td><strong>Personnel Costs</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Telehealth Coordinator</td>
<td>$37,000</td>
<td>$37,000</td>
<td>$37,000</td>
<td>$46,250</td>
<td>$45,880</td>
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<tr>
<td>Nurses</td>
<td>$98,400</td>
<td>$98,400</td>
<td>$98,400</td>
<td>$123,000</td>
<td>$122,016</td>
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<tr>
<td>Management Resources</td>
<td>$4,920</td>
<td>$4,920</td>
<td>$4,920</td>
<td>$4,920</td>
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<tr>
<td>Total Personnel Cost</td>
<td>$140,320</td>
<td>$140,320</td>
<td>$140,320</td>
<td>$174,170</td>
<td>$172,816</td>
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<tr>
<td>Personnel Cost/Patient</td>
<td>$1,559</td>
<td>$525</td>
<td>$315</td>
<td>$280</td>
<td>$216</td>
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<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total Operating Cost</td>
<td>$171,914</td>
<td>$142,425</td>
<td>$142,937</td>
<td>$177,298</td>
<td>$176,455</td>
</tr>
<tr>
<td>Operating Cost/Patient</td>
<td>$1,910.16</td>
<td>$532.43</td>
<td>$321.21</td>
<td>$284.82</td>
<td>$220.57</td>
</tr>
</tbody>
</table>
Case Study – HealthCare Partners

### Outcomes

- **Sample Size:** 70

<table>
<thead>
<tr>
<th></th>
<th>PRE</th>
<th>POST</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hospitalizations</td>
<td>48</td>
<td>22</td>
</tr>
<tr>
<td>Outpatient Visits</td>
<td>446</td>
<td>581</td>
</tr>
<tr>
<td>Hospitalization rate</td>
<td>68.57%</td>
<td>31.43%</td>
</tr>
</tbody>
</table>

- **Inpatient Admissions Cost/Patient:**
  - PRE: $8,529
  - POST: $3,909
  - Change: $(4620)

- **Outpatient Visits Cost/Patient:**
  - PRE: $765
  - POST: $996
  - Change: $231

- **Total Return/Patient:** $4,388
### Case Study – HealthCare Partners

#### Summary

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<td>$142,937</td>
<td>$177,298</td>
<td>$176,455</td>
</tr>
<tr>
<td>Total Return</td>
<td>$394,948</td>
<td>$1,173,872</td>
<td>$1,952,797</td>
<td>$2,731,721</td>
<td>$3,510,646</td>
</tr>
<tr>
<td>ROI</td>
<td>1.30</td>
<td>7.24</td>
<td>12.66</td>
<td>14.41</td>
<td>18.90</td>
</tr>
</tbody>
</table>
Sign up to be a beta user at the Center for Connected Health booth
Or email: support@techandaging.org