Patient, Heal Thyself! A Technology Enabled Intervention to Promote Patient Activation

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Project Partners

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Motivation

Chronic disease consume 84% of US health care costs (Robert Wood Johnson Foundation, 2010)

$1 billion savings: 5 million US CHF patients took medication (Aitken & Valkova, 2013)

COPD patients have 50% adherence to doctor’s orders (Restrepo et al 2008)
Patient Activation and its Impact

Patient activation: A patient’s “skills, knowledge, and motivation to participate as part of the care team” (Hibbard et al, 2004)

Patient activation is associated with improved outcomes, reduced costs (Greene & Hibbard 2012, Hibbard et al, 2013, Hibbard et al 2007)

Intervention → Patient Activation → Readmission rate

RQ: Can a technology enabled intervention promote patient activation and reduce readmissions?
Rework in Manufacturing and Healthcare
Telemonitoring – a proposed solution
Costs of Quality

Our telemonitoring solution

Discharge

Prevention
- Medication reconciliation
- Education
- Encouragement
- Ready information source

Appraisal
- Tracking vital signs
- Tracking patient’s overall health

Internal Failure
- Patient deteriorates, but does not require hospitalization
- Early warning signs signal deterioration

External Failure

Readmission

Traditional telemonitoring solutions
Sample

- Patients with either CHF and/or COPD
- Recruited from 9 Indianapolis area hospitals
- Discharged to home (not nursing home or home health care)
- Hospitals continue their standard discharge protocol
- No cost/ no financial reward to participants
- 193 eligible patients
Sample

193 patients eligible and randomized

Intervention
- 93 patients randomized to Intervention Group
  - 19 patients excluded due to study restrictions
  - 74 patients participated in the Intervention Group
    - 69 patients completed the Intervention
    - 5 patients partially completed the Intervention
    - 69 Intervention patients completed Patient Activation Measure

Control
- 100 patients randomized to Control Group
  - 5 patients excluded due to study restrictions
  - 95 patients participated in the Control Group
    - 49 Control patients completed Patient Activation Measure
Experiment

<table>
<thead>
<tr>
<th>Control</th>
<th>Intervention</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Monitoring equipment setup</td>
<td>Day 1</td>
</tr>
<tr>
<td></td>
<td>Daily vitals + 3 conf calls</td>
<td>Week 1</td>
</tr>
<tr>
<td></td>
<td>Daily vitals + 2 conf calls</td>
<td>Week 2</td>
</tr>
<tr>
<td></td>
<td>Daily vitals + 1 conf call</td>
<td>Week 3</td>
</tr>
<tr>
<td></td>
<td>Daily vitals</td>
<td>Week 4</td>
</tr>
<tr>
<td></td>
<td>Monitoring equipment pickup</td>
<td>Week 5</td>
</tr>
<tr>
<td></td>
<td>PAM Survey</td>
<td>Week 5-6</td>
</tr>
<tr>
<td>Intervention</td>
<td>PAM survey</td>
<td></td>
</tr>
</tbody>
</table>
Outcome variables

- Percent readmitted into a hospital within 30 days of discharge
- Patient Activation Measure (PAM)
  - Short scale – 13 item, validated scale (Hibbard et al, 2004)
  - Includes items measuring patient knowledge, ability to adhere to protocol and other aspects of patient activation
# Results

<table>
<thead>
<tr>
<th></th>
<th>Telemonitoring group (n=74)</th>
<th>Control group (n=95)</th>
<th>P-value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Readmissions # (%)</td>
<td>3 (4.1%)</td>
<td>10 (10.5%)</td>
<td>0.10</td>
</tr>
<tr>
<td>Patient activation – surveys completed (%)</td>
<td>69 (93.2%)</td>
<td>49 (51.6%)</td>
<td></td>
</tr>
<tr>
<td>Average PAM score (std dev)</td>
<td>66.9 (17.4)</td>
<td>56.0 (13.2)</td>
<td>&lt;0.001</td>
</tr>
</tbody>
</table>
Conclusions

- **Challenges**
  - Sample size
  - Separating social effect from technical effect

- **Contributions**
  - Remote intervention to increase PAM
  - Cost of quality lens
  - Focus on patient engagement to drive prevention
  - Role of technology as an enabler, not as a standalone
Questions?
Example PAM item topics

1. I am responsible for my health
2. I can reduce my health problems
3. I know what my medications do
4. I know when I need to call a doctor
5. I can follow through on medical treatments
6. I know the treatments available
7. I have kept up with lifestyle changes
8. I can find solutions to new problems
9. I can maintain changes during stressful times
## Patient demographics

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>Telemonitoring intervention (n=74)</th>
<th>Control (n=95)</th>
<th>P value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age</td>
<td>60.1</td>
<td>58.8</td>
<td>.23</td>
</tr>
<tr>
<td>Female - number (%)</td>
<td>44 (59.5%)</td>
<td>43 (45.3%)</td>
<td>.07</td>
</tr>
<tr>
<td>African - number (%)</td>
<td>0 (0%)</td>
<td>1 (1.1%)</td>
<td>.32</td>
</tr>
<tr>
<td>African-American</td>
<td>21 (28.4%)</td>
<td>37 (38.9%)</td>
<td>.15</td>
</tr>
<tr>
<td>Caucasian</td>
<td>19 (25.7%)</td>
<td>25 (26.3%)</td>
<td>.93</td>
</tr>
<tr>
<td>Latino</td>
<td>1 (1.4%)</td>
<td>0 (0%)</td>
<td>.32</td>
</tr>
<tr>
<td>Unknown</td>
<td>33 (44.6%)</td>
<td>32 (33.7%)</td>
<td>.15</td>
</tr>
<tr>
<td>CHF</td>
<td>41 (55.4%)</td>
<td>43 (45.3%)</td>
<td>.19</td>
</tr>
<tr>
<td>Charlson score</td>
<td>3.43</td>
<td>3.28</td>
<td>.62</td>
</tr>
<tr>
<td>Modified Charlson score</td>
<td>4.59</td>
<td>4.43</td>
<td>.63</td>
</tr>
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