
Poster

Preventing Avoidable Hospitalizations at Low-Cost Across Large Populations

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Abstract

Background: People suffering from chronic illnesses account for greater than 85% of health care spending, and in many cases these costs can be significantly reduced, but many connected health solutions have not had the scale or levels of adherence that would be required to make an impact. Part of the problem is that on most days, chronically ill individuals feel well and as such don't feel compelled to follow a regimen using connected devices or recording vital signs. Another problem is that most disease management programs address a single condition and neglect the high prevalence of people with multiple chronic conditions (comorbidities).

Objective: Our objective was to address the above concerns of compliance and multimorbidity management in an affordable and scalable way. Guided by the triple aim, our solution uses the only technology that is accepted and embraced by our entire population—the telephone. In the case of the elderly high-risk population (generally 80 and older), they have telephones and use them to communicate with their families. In the case of the younger and more mobile at risk population, the mobile phone has become ubiquitous. The second key objective was to address the multiple conditions in each patient's unique case mix. Our solution requires only a small amount of data entry including patient demographics, a listing of the multiple health conditions (chronic, acute, and behavioral), and an acuity rating such as low, medium, or high. The demographics and conditions can be prepopulated via integration with the health system's electronic medical record (EMR).

Methods: The primary study measure has been reduction in 90-day hospital readmissions comparing a control group with a study population. For each emergency department visit that is prevented, the solution saves \$6000 or more.

Results: Early results have demonstrated a 75% reduction in preventable rehospitalizations. One lesson learned was that success with the solution requires an onboarding process where the patient is educated about the solution by someone they trust, and it requires monitoring of the results. Thus far the solution has been deployed by home health care organizations who are finding that they can reduce face-to-face visits while increasing patient satisfaction and reducing admissions. Another great application is for chronic care management in primary care.

Conclusions: Since the patient only needs to answer the phone or respond to a text, they can't forget to use it, and since it addresses multiple health conditions, results have the potential to surpass those of single-disease programs. Lastly, since the solution uses technology that the patients already have, the costs of deployment are minimal. We are confident that this solution can go a long way towards achieving the triple aim of high patient satisfaction, low cost, and the ability to reach a large population.

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KEYWORDS

chronic illnesses; preventing hospital readmissions; population health management; remote patient monitoring

This poster was presented at the Connected Health Symposium 2016, October 20-21, Boston, MA, United States. The poster

is displayed as an image in [Figure 1](#) and as a PDF in [Multimedia Appendix 1](#).

Figure 1. Poster.

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Foresight Care™
Multi Morbidity Patient Management
Like a Fire Alarm to alert you when intervention is needed

USE CASES

Issues with Remote Monitoring of Home Care Patients

- Who buys the equipment?
- Who installs and trains and handles customer service with the patient?
- Who picks up the equipment when patient situation changes, e.g. hospitalization, death?
- Who sanitizes equipment and how often?
- Internet access not generally available in the home
- Patients generally uncomfortable with monitoring devices
- High-Risk population generally has multiple health risks (co-morbidities)

Issues with Remote Monitoring of the Poor

- Internet Access generally not available in the home
- Medical equipment is often lost
- Multiple Health Risks and other additional risk factors

Solution

- Use technologies that the patient has and is comfortable with
 - Elderly: telephone - voice response with touch tones
 - Younger Population: text messaging
- Address Multiple Morbidities and Risk Factors
- Maximize adherence
 - Trusted clinician kicks off the persistent monitoring
 - No app, website, or telehealth devices to remember to use
 - Instead, patient is contacted (phone call or text)
 - Keep it short: 60-90 seconds
- Patient Monitoring: More like a "Fire Alarm" than a Medical Exam
 - Personal phone calls to patient with high risk of readmission

Post-Discharge

- Patient had hip replacement but has history of ED admissions for Congestive Heart Failure (CHF), Urinary Tract Infections (UTI) and Dehydration.
- System asks questions about wound site, pain control, congestion relative to last call, wet or dry cough, itching or burning when urinating.
- Potential result: Patient indicates "more congestion" and "wet/loose cough." Nurse follows up and learns that patient is confused about post-acute meds and has stopped taking diuretic. Problem is resolved through instruction or possibly renewing and filling script. Readmission avoided. Health system saves \$12K.

Long Term Disease Management

- Patient with Crohn's disease, Dehydration, UTI, Depression and Loneliness is enrolled with the five listed risk factors
- Calls are only twice a week.
- Potential Result: Patient has flare of Crohn's symptoms that trigger depression symptoms and isolation. Triage phone call identifies the problem and arranges for visit from church or social worker. Meals and companionship result in reversal of conditions that could cause ED visit. Health system saves \$8K.

Pre-Acute Care

- Patient is scheduled for surgery and has a check list of activities in preparation for surgery involving stopping certain medications days before surgery, cleaning body and surgical site, no alcohol several days before, and fasting night before.
- System calls to remind the patient of these required preparatory steps and confirms compliance
- Result: Fewer surgeries are cancelled due to patient non-compliance. Health System increases revenue by \$12K because surgery was completed (no need to reschedule OR, Anesthesiologist, Surgeon, OR Team, bed).

Home Health HHCAPHS Continuous Improvement

- Home Health Agencies are being evaluated by Consumers for via the Home Health Consumer Assessment of Healthcare Providers and Systems (HHCAPHS) program. This is part of the Home Health Value-Based Payment (HHVBP) initiative that will ultimately result in a 17% difference in reimbursement between the best performing and worst performing agencies
- Patients are surveyed in 1st and 2nd month of care to ensure that home health agency is performing well on specific measures such as finding all pill bottles and reviewing all medication questions, or treating patient with respect. Agency can modify survey questions to ensure compliance with the areas where they need improvement
- Potential Result: Agency gets early warning of poor results and can make corrections rather than waiting for actual HHCAPHS results coming 6 or more months in arrears

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Multimedia Appendix 1

Poster.

[\[PDF File \(Adobe PDF File\), 2MB - iproc_v2i1e4_app1.pdf\]](#)

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