Embracing Barriers in the Delivery of IVR Technology for Older, Chronically Ill Patients

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Remote Patient Monitoring Diffusion Grants Program

- AltaMed Health Services and Stamford Hospital
- Catholic Healthcare West
- California Association for Health Services at Home
- Centura Health at Home
- HealthCare Partners Institute for Applied Research and Education
- New England Healthcare Institute
- Sharp HealthCare Foundation
HealthCare Partners Medical Group

Background

- Physician-owned Group & IPA Serving the greater Los Angeles Orange Counties

Facilities/Physicians

- 66 Staff Model Facilities (Primary Care, Urgent Care, Walk-In, Ambulatory Surgery, Pharmacy)
- 753 IPA Medical Offices

Physicians

- 235 Employed
- 975 IPA
- 290 Specialists Employed

- ~575,000 + lives
  - ~479,000 commercial, ~99,000 senior

Health Plans Accepted: 14 Medicare Advantage, 8 Commercial (HMO/POS)
HealthCare Partners Medical Group

Background

- Comprehensive data warehouse to identify all patients with COPD
  - Individual patient data and reporting is available to all PCPs
  - Inpatient and outpatient claims
  - Laboratory results
  - Spirometry
  - Pharmacy usage
- Electronic Medical Record EMR;
- High Risk Programs; HouseCalls; Comprehensive Care Clinics
- Disease Management Programs; Heart Failure, Diabetes, COPD
  - RN staff targeted to facilitate patient self management
  - Electronic support tools that drive staff consistency in the delivery of COPD and other disease management programs
Disease Management at HealthCare Partners

- COPD Disease Burden at HealthCare Partners
  - Disease Registry of COPD Patients
    - 2009 = 16,642
    - 2011– 20,357
  - Economic Burden of COPD is Significant
    - Greater than $1,000 per patient per month
    - Inpatient hospitalization accounts for ~50% of all costs
    - Consistently one of the top 10 ranked at HCP for inpatient admissions (#8 in 2008, #4 in 2010); top 20 for readmissions
HCP COPD Disease Management Program
Study Objectives

- Assess a disease management program focused on COPD Patients aiming to:
  - Improve patient outcomes & QOL
  - Decrease hospitalization: goal 20% reduction
  - Decrease ER visits: goal 20% reduction
  - Reduction in the total cost of care of patients with COPD: goal 10% reduction in the pmpm of study population
HCP COPD Disease Management Program

- Key Interventions
  - Initial face-to-face visit for assessment and education
  - Regular telephonic outreach for patient self-management education and assessment of symptoms
  - Facilitated health delivery access and intervention for those with exacerbations
    - Red and Yellow Zone Action Plan
COPD Patient Instructions

- Patients Instructed to Call When Having:
  - More Shortness of Breath or Wheezing
  - Worsening Cough
  - Increased Mucus or Sputum
  - Trouble Getting Mucus Up
  - Mucus Changed to Green or Yellow
  - Onset of Fever
  - Trouble Concentrating
  - More Fatigue and Needed More Rest

- RN Facilitates Care and Emergency Prescriptions; antibiotics and steroids
HCP COPD Program - Spirometry and BODE

- RN Care Managers Track Spirometry and COPD Stage
- Spirometry is also part of a BODE Assessment which relates to acuity and follow up with patients
## HCP COPD DM Program – Monitoring Symptoms

<table>
<thead>
<tr>
<th>Date</th>
<th>Breathing</th>
<th>Sputum</th>
<th>Thinking</th>
<th>Energy</th>
<th>Smoking status</th>
</tr>
</thead>
<tbody>
<tr>
<td>03/17/2011</td>
<td>Green: No difficulty</td>
<td>Yellow: thicker than usual, yellow, green or brown</td>
<td>Red: Confused, slurred speech, may faint</td>
<td>Red: Very drowsy, difficult to arouse</td>
<td>Smoker</td>
</tr>
<tr>
<td>12/12/2011</td>
<td>Green: No difficulty</td>
<td>Green: Sputum clear / white / easy to cough up</td>
<td>Green: able to think clearly</td>
<td>Green: Able to do usual activities</td>
<td>Quit smoking</td>
</tr>
</tbody>
</table>
Study Enrollment Summary
- 141 patients enrolled over 6 months
  - 94 Group patients
  - 47 patients with Independent Physicians
- Matched “intervention” and “control” groups
- Program Interventions implemented for Intervention Group (8/1/08-7/31/09)
- Return on Investment analysis comparing the Intervention and Control
# Results of the HCP COPD Study

<table>
<thead>
<tr>
<th></th>
<th>Control</th>
<th>Intervention</th>
<th>% Change</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date:</td>
<td>8/1/08-7/31/09</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Total admits</td>
<td>57</td>
<td>40</td>
<td>30% reduction</td>
</tr>
<tr>
<td>Total beddays</td>
<td>190</td>
<td>115</td>
<td>39% reduction</td>
</tr>
<tr>
<td>Total ED visits</td>
<td>92</td>
<td>71</td>
<td>23% reduction</td>
</tr>
<tr>
<td>Cost of care (all paid-pmpm)</td>
<td>$7,070</td>
<td>$4,661</td>
<td>34% reduction</td>
</tr>
<tr>
<td>Total PCP visits</td>
<td>683</td>
<td>887</td>
<td>30% increase</td>
</tr>
<tr>
<td>Total Drug costs</td>
<td>$402,553</td>
<td>$415,154</td>
<td>3% increase</td>
</tr>
</tbody>
</table>
Value of BODE Reporting; Quartile and Admission Correlation

Percentage of Patients in Each Quartile with at least 1 Admission

BODE Quartile
HCP Learning Lessons

- Opportunities to Improve the RN Workflow Process
  - Outreach frequency with Patients
    - BODE 4 Patients need more frequent monitoring
  - Manuel screening and tracking of patient status
    - Nurse calls and documents patient symptoms using the National Jewish Zones of Symptoms
- Patient related factors
  - Very Ill Patients
    - Some requested less frequent RN calls
    - A significant number (80) declined
  - Patients may recognize worsening symptoms – but still may not alert the RN or their PCP
    - “Didn’t want to bother” the Doctor or the RN
    - “Thought I would get better”
Interactive Voice Recognition (IVR) technology can provide support for COPD clinical parameters to help identify and reduce disease exacerbations (Red and Yellow Zone Symptoms)

IVR technology used “on top of” an existing patient-centric COPD program can expand nursing capacity and supplement other face-to-face or telephonic clinical interactions with patients.

Offers scalable, user-friendly technology that allows older, chronically ill adults to live in their chosen residence with ongoing interaction with their healthcare team (PCP and RN).
IVR Strategy for COPD Patient Monitoring

- Telehealth Survey call to patient's home phone on Mondays and Thursdays. First call at noon, if that call is missed, a second call at 7:00pm is sent.

- Patients respond to the telehealth survey by pressing 1, 2 or 3 on their telephone keypad.

- Using the National Jewish Zones of Symptoms as a reference, patients gauge their COPD with the Green, Yellow or Red Zones.

- "Change Greater Than 2" indicates the patient has experienced an increase in their survey score since last report. Care manager nurse will follow-up with these patients for possible COPD flare-up.

- "Answered 3 for Any Question" indicates patient is in the Red Zone with possible flare-up or exacerbation. Care manager nurse will contact these patients as priority.

- Vendor collects data after patients complete their survey. Four different reports of the survey results are emailed to HCP Care Team the next morning.

- "Incomplete or No Survey Taken" lists patients who did not respond to their telehealth survey. The COPD care coordinator will contact these patients for follow-up. If a patient has a question or COPD concern, an email 'alert' will be sent to the Care Manager for appropriate patient intervention.

- "Trending Report" offers a longitudinal overview of all the patient survey responses, legends and demographical information.

- Telehealth allows HCP care managers to expand their clinical coverage for patients who experience disease exacerbation.
Strategy toward Reducing COPD Readmissions

- Allows for more frequent monitoring of patients
- Initially, 3 calls weekly
  - Not intrusive: brief calls that patients are willing to engage with
  - Avoid timely and complicated set up: Patient Uses their own phone (land-line phone or cell phone)
  - Convenient: calls occur either at noon with a back-up call early evening
- Provides critical and actionable information for the RN
  - Survey captures yellow zone or red zone symptoms
### COPD IVR Patient Monitoring

| Date       | 04/10/11 Sun | 04/10/11 Tue | 04/12/11 Thu | 04/14/11 Tue | 04/14/11 Thu | 04/17/11 Thu | 04/19/11 Tue | 04/21/11 Thu | 04/24/11 Thu | 04/26/11 Tue | 04/28/11 Thu | 05/01/11 Sun | 05/03/11 Tue | 05/05/11 Thu |
|------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|--------------|
| **Patient Name** | 04/10/11 Sun | 04/10/11 Tue | 04/12/11 Thu | 04/14/11 Tue | 04/14/11 Thu | 04/17/11 Thu | 04/19/11 Tue | 04/21/11 Thu | 04/24/11 Thu | 04/26/11 Tue | 04/28/11 Thu | 05/01/11 Sun | 05/03/11 Tue | 05/05/11 Thu |
| V11        | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| V12        | N/A          | N/A          | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| V13        | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           |
| V14        | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           | 14           |
| V15        | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           | 13           |
| V16        | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| V17        | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           |
| V18        | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           |
| V19        | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            | 0            |
| V20        | 17           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           | 10           |
| V21        | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           |
| V22        | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           |
| V23        | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           |
| V24        | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           | 12           |

### Patient Monitoring Table

- **Month**: May
- **Region**: REGION III, REGION IV
- **Status**: ACTIVE, INACTIVE
COPD IVR Patient Reporting for RNs

Chart from 04/08/2011 to 5/8/2011

- **Patient ID:** [Redacted]
- **Full Name:** [Redacted]
- **Address:** 2230 BAY WAY, BUENA PARK, CA 90620
- **Phone:** [Redacted]
- **Doctor:** [Redacted]
- **Region:** REGION IV
- **Calls Per Week:** 3 - Sun, Tue, Thu
- **Status:** ACTIVE
- **Begin Date:** 04/05/2011
- **End Date:** N/A

Legend:
- Red > 10
- Black = 9 or 10
- Blue < 9

Total Answer

Date Of Call

- 04/10/2011
- 04/12/2011
- 04/14/2011
- 04/17/2011
- 04/21/2011
- 04/25/2011
- 05/01/2011
- 05/03/2011
- 05/08/2011
Strategy to Reducing COPD Readmissions

- **Learning Lessons:**
  - Changed calling frequency for patient surveys based on patient feedback
  - Now 2 calls or even 1 call a week for patients
  - Patients more inclined to answer survey, less of an intrusion once we gave them flexibility.
  - Increased patient ability to understand when they are having an exacerbation, and implement the COPD action plan.
Strategy to Reducing COPD Readmissions

- **IVR Technology**
  - Continues to expand the clinical capacity of our RNs; Expected Case Loads ~200 patients; 5% triggering follow up after every IVR survey
  - Supports the administration of Emergency Prescriptions; patients recognize worsening symptoms and are taking action

- **RNs Report**
  - IVR Reports are easy to read/actionable; “we know which symptoms the patient is experiencing”.
  - Frees-up time and allows the RNs to focus on pts. who are more at-risk for exacerbation
Patient Feedback Regarding IVR Technology

- IVR did not substitute a nurse call or face to face meetings with patients; only supplemented that activity
  - “Calls were easy.”
  - “Did not take too much time.”
  - “Helped me become more involved in my healthcare.”

- IVR has encouraged patients to monitor their own symptoms; it has been more effective than our paper handout on Zones of Symptoms.

- IVR has encouraged patients to report symptoms of an exacerbation via the IVR survey when before a patient might have been hesitant to call his/her nurse.
Learning Lessons

- Patients/family need to know how to monitor for symptoms of exacerbation.
  - Until they are doing that, we cannot achieve optimal results
- IVR Technology is supporting that understanding and reinforcing the need for patients to self-manage their own condition.
Follow up Questions

- What could we have done differently for our execution/logistical strategy?
- Can healthcare providers perceive this as a practical and time saving instrument for all of their patients with COPD?
- Should it be reserved for just those at high risk (for us, BODE 3s and 4s).
- Challenges with EHR integration. It was easier for us to build outside of our EHR, but shouldn’t the data be integrated for the whole care team?
- What strategies have you implemented to ensure patient/family buy in (and participation)?
Further Critical Input

- How do we further enhance patient/family engagement/activation to help improve care delivery, improve health, and stabilize/reduce costs?
- How does one ramp up diffusion of telehealth throughout a large integrated care organization?
- Input on behavioral economics to enhance/facilitate better adherence to clinical treatment?
- What return on investment models have been developed to support a robust patient monitoring program?
- How many programs have incorporated physician protocols to improve real-time intervention and clinical outcomes?
Where are we Going Next…

- Return on investment analysis, evaluate clinical metrics.
- Diffuse to other geographic sites.
- Expand technology to include CHF.
- White papers, case studies, publications, presentations to seek critical input.
Acknowledgements

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- HealthCare Partners Team
  - Dr. Jeremy Rich, Director of the HCP Institute
  - Dr. Chan Chuang, Pulmonologist
  - Ms. Janelle Howe, Director Disease Management
  - Ms Lori Larson, COPD IVR Care Coordinator
  - HCP COPD Disease Management Nurses
Questions for Us?

Contact Information

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