Integration of remote patient monitoring program to reduce potentially avoidable hospital utilization among patients with congestive heart failure in a rural community

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Christian Milaster, Principal, Ingenium Healthcare Advisors
REMOTE PATIENT MONITORING
OVERVIEW

Christian Milaster
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A Telehealth Taxonomy

Telehealth

TeleEducation

Telemedicine

Interactive Video

Remote Patient Monitoring

Patient Portal

Store and Forward
Telehealth
Delivering Care
at a Distance

Telemedicine
Practicing Medicine
at a Distance
Interactive Telemedicine
Live Video, Chat, or Phone Interaction

Remote Patient Monitoring
Continuous & Periodic Transmission of Vital Signs

Store & Forward
Asynchronous Transmission of images, video, sound
Typical Remote Patient Monitoring Solution Setup

- **Automatic via BT** (or Manual Entry)
- **Cellular** (or WiFi, LAN, Dial-up)
- **Cloud-Based Storage**
- **Health Data Management for Healthcare Professionals**
- **Electronic Medical Record (EMR)**
- **Electronic Health Record (EHR)**

Diagram based on graphic provided by mTeleHealth/Ideal Life
RPM (ESP. READMISSION PREVENTION) CLINICAL & OPERATIONAL WORKFLOW

- Enroll & Train Patient
- Set up patient at home
- Monitor and interact
- User support, technical support
- Retrieve technology
- Clean, disinfect, test
READMISSION PREVENTION
RETURN ON INVESTMENT

Reduced health care costs

• Reduced readmissions (e.g., -53%, to -82%)
• Reduced skilled nursing visits (e.g., -40%)
• Reduced emergency room visits
• Savings for payer (e.g, $1.9M)

Actively engaged patients

• Increased care engagement by 24 minutes/day
• Early identification and treatment of disease exacerbation

Overall ROI

$14.50 for every $1 invested
(1,350% ROI)
STUDIES ON REMOTE TELEMONITORING HAVE SHOWN:

- A 65% decrease in hospital utilization
- A 66% reduction in overall patient costs
- A 92% decrease in ED Utilization for patients with COPD, CHF and Diabetes
STUDIES ON REMOTE TELEMONITORING HAVE SHOWN:

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>LENGTH OF STAY</td>
<td>RPM delivered impressive results when compared to in-office treatment by reducing the time required for clinicians to make treatment decisions and cutting length of stay.</td>
</tr>
<tr>
<td>MORTALITY</td>
<td>Telemonitoring reduced the risk of mortality by 53% when compared to conventional care.</td>
</tr>
<tr>
<td>READMISSIONS</td>
<td>Telemonitoring reduced the risk of all-cause readmission for Medicare Advantage plan members by 77%, and reduced the risk for 30-day and 90-day readmission by 56% and 62%, respectively.</td>
</tr>
<tr>
<td>COST EFFECTIVENESS</td>
<td>RPM for cardiac patients would result in a net savings of $5,034 per patient per year.</td>
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</table>
Telehealth is about

- **Care**: delivering **CARE** at a distance
- **Patients**: putting the **PATIENT** in the center
- **Clinicians**: workflow design for **PHYSICIAN** efficiency
- **Optimization**: OPTIMIZING the delivery of care
CARROLL HOSPITAL REMOTE PATIENT MONITORING PILOT & PROGRAM

Melissa J. Holley, DNP, MSN, APRN, FNP-c
Director, Disease Management & Population Health
MISSION

To improve the quality of care, patient outcomes, and reduce hospital utilization for patients with chronic illnesses.
CONCEPT MAP

**Readmissions within 30 days of hospital discharge**

**Causes**
1. Delayed f/u with PCP
   - Financial barriers
   - Telecommunication
   - No PCP or PCP unavailable
2. Delayed receipt of prescriptions or polypharmacy
   - Cost
   - Transportation
   - Miscommunication
3. Miscommunication
   - To/with patient
   - Between team (Nursing/SW/MD)
   - D/C instructions not clear
   - Untimely receipt of d/c summary by PCP or receiving facility/agency
4. Incomplete labs/test during d/c
5. Inadequate coordination of care

**Top Diagnoses**
- Behavioral
- Sepsis
- CHF
- Pneumonia
- COPD

**Community Contributors**
- LTC
- SNF
- Dialysis
- Home health agencies
- MD Offices

**Discharge location**
- Home
- LTC
- SNF
- ALF
- unknown

**Demographics**
- Age
- Gender
- Language
- payor

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Local Data

- During the 2015 fiscal year, Carroll hospital had a readmission rate of 11% at 30 days and 5% at 10 days.
- Congestive Heart Failure (CHF) patients had the highest rate of readmission rate (22-30%).
- We have approximately 45 discharges with a diagnosis of CHF per month.

National Data

- CHF is a leading cause of hospital readmission
- 5 million Americans with Heart Failure…
- Prevalence to increase 25% by 2030
SIGNIFICANCE

• Medicare penalty diagnoses are AMI, CHF, pneumonia, COPD, total hip/knee repl
• CHF annual costs: $34 billion ..... Projected costs: $70 million by 2030
• We discharge approximately 45 patients with a diagnosis of CHF each month.

• CHF is our highest opportunity for PQI and readmission reduction.
PROGRAMS ALREADY IN PROGRESS

• Project RED Pilot
  • Multidisciplinary approach to coordinating a quality & safe transition from hospital to home
• Development, dissemination & implementation of Heart Failure Guidelines and Discharge Checklist to hospital and community providers—COPD, DM, & pneumonia to follow
• Care Solutions Center
• Care Navigation program
mTELEHEALTH

• The mTelehealth Remote Health Monitoring System Powered by Ideal Life® provides a complete solution to remotely collect, store and report timely and accurate health information anywhere.

• FDA-approved monitoring devices – communicate through a wireless gateway known as the Ideal Life Pod™.

• Users simply plug the Pod in and their home is instantly ready for integrated, automatic communication with any of Ideal Life’s remote health management products. Ideal Life devices also communicate through other modes of communication, including smartphones and the Internet.

• There is no need for the patient to have cell or home phone service to transmit.
WHY TELEMONITORING?

- Compliment to our comprehensive care transitions initiatives for patients with CHF
- No cost pilot to organization or patient
- Could address the following readmission causes:
  - Delayed f/u with PCP
  - Miscommunication
  - Inadequate coordination of care
AIM

To improve patient-provider communication, time-to-outpatient intervention and the self-management of patients living with CHF in a rural community where access to care and transportation is limited.
TELEMONITORING PILOT

• Focus on patients with CHF (Nov 2016 - Feb 2017)
• Monitoring patient’s weight, blood pressure, pulse ox and heart rate daily
  • Cognizant Nurses are available by phone 24/7
  • Alerts sent to nurses and providers for review and intervention if needed
• Consult done in hospital to include info about program and education on use
• Engagement of patients & provider at Carroll Hospital, in ACO pilot and at Access Carroll
  • Working collaboratively with Case Management, Navigation, Right at Home, Cognizant Call Center Nurses, mTelehealth and providers
CARE SOLUTIONS TELE-MONITORING WORKFLOW

**Patient Identification**
- SRG & MJH will receive daily report for pts with CHF or on Lasix
- Providers, Navigators and Case managers can recommend pts to care solutions program
- Access Carroll will identify patients from their practice who meet criteria

**Patient consent/competency evaluation/education**
- Navigators in ACO Pilot practices will conduct above
- Access Carroll will conduct above for their patients
- NP will meet with patients to discuss program, evaluate appropriateness of participation and obtain consent

**Installation**
- NP will provide patient with equipment prior to discharge
- Navigators and Access Carroll will provide patient with equipment in office
- Installation will occur within 24-48 hours of notification

**Alerts**
- General alerts set for BP, weight and SpO2 (can individualize with provider input)
- Low/medium readings will require a triage call to patient from nurse
- High readings require a triage call to patient from nurse and from nurse to providers (PCP & Disease Management NP)

**Patient Access**
- Patient will have 24/7 access to Cognizant Call Center Nurses 410-601-4700
- NP will contact patients weekly to check their progress
- Summary of vital signs sent to collaborating provider weekly

**De-installation**
- Within 30-40 days
- Care Solutions will evaluate patient data after 30 days to determine if discontinuation is appropriate
- Right at Home will clean and redistribute devices
- Refer to Navigation

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**NP/Nav/Access Carroll**
- NP/Nav/Access Carroll will provide education on proper use of equipment
- NP/Nav/Access Carroll will collaborate with PCP and inform of pt participation
TELEMONITORING PILOT DATA

- 27 patients enrolled
- 10 days readmission rate = 0%
- 30 day readmission rate = 7% (7.4%)
- 100% of patients have had interaction with a health care provider (nurse/NP)
- 100% response to patient alerts
- 94% of patients that completed surveys (N=18) were “very satisfied” with the program, would recommend it to a friend or family member and felt they are able to manage their condition.
CARROLL HOSPITAL RESULTS

Monthly Trend in PQI Volume
Hospital: Carroll
Payer: All Payers

Monthly Trend in Volume of the Top PQIs

- CHF
- COPD
- All Diabetes

CRISP DATA
2/21/2017
TELEMONITORING SUCCESS STORIES

• 2/8/17: received a call from Care Solutions telemonitoring patient J.H.
• States he enjoys being on the program and believes the work we have done here at Carroll Hospital during his hospitalization and follow up has been instrumental in him staying healthy.
• He was told yesterday by his cardiologist that he no longer needs the scheduled cardioversion as he is in sinus rhythm now.
• He takes his readings daily and feels “safe” knowing that his vital signs are transmitted to us, that we are monitoring them, and contacting him with any concerning values.
• He especially likes the ability to check his oxygen saturation. He would like to stay on the program forever, however is appreciative of the time and education he has received while involved.
**READMISSION AVOIDANCE EXAMPLE**

- Detected 3.8lb weight gain in 1 day with telemonitoring equipment
- Care Solutions provider contacted patient for telephonic assessment to determine patient experiencing mild symptoms of CHF exacerbation
- Care Solutions provider contacted patient’s PCP (Galvin) for collaboration and disposition
- Patient ordered to increase Lasix to 40mg BID x 2 days then 40mg QD, and has a follow up appointment on Monday with PCP.
- Monitored patient over the weekend
- Patient continues to do well and understands warning signs for heart failure
LESSONS LEARNED

• Collaboration with partners is essential
• In conjunction with other interventions, remote telemonitoring is effective in reducing avoidable hospital utilization
• Patients were engaged and satisfied with the telemonitoring pilot

MOVING FORWARD

• Telemonitoring Program approved for 2 years
• Will expand conditions to include COPD & DM
• Begin with 25 sets of devices and expand based on demand
• Working with IT and billing to obtain reimbursement for inpatient consults and CCM
**REVISED CARE SOLUTIONS TELE-MONITORING WORKFLOW**

**Patient Identification**
- SRG & MJH will receive daily report for pts with CHF or on Lasix & COPD & review with Case Management
- Automatic inpatient care solutions consult for pts with CHF & COPD from order set (in progress)
- Providers, Navigators and Case managers can refer pts to care solutions program via caresolutions@carrollhospitalcenter.org
- Access Carroll/UM Cardiology will identify patients from their practice who meet criteria

**Patient consent/competency evaluation/education**
- NP will meet with patients to discuss program, evaluate appropriateness of participation and obtain consent
- Access Carroll/UMCard will conduct above for their patients
- NP will provide education on disease, program, obtain consent for CCM & proper use of equipment
- Care Solutions/Access Carroll will collaborate with PCP/Specialist and inform of pt participation & request CCM code billing for *60 days

**Installation**
- Appropriate team will enter patient in portal as pending installation
- Team will notify Right at Home (RAH) need for install: complete and fax install form
- Access Carroll can provide patient with equipment in office
- Installation by RAH will occur within 24-48 hours of notification
- RAH/Access Carroll will assign devices in portal
- Right at Home will return install form with device assignment upon completion

**Alerts**
- General alerts set for BP, weight and SpO2 (can individualize with provider input)
- Cognizant call center nurses will monitor portal for patient readings and alerts
- Low/medium readings will require a triage call to patient from nurse
- High readings require a triage call to patient from nurse and from nurse to providers (PCP & Care Solutions NP).
- Provider will determine next steps

**Patient Access**
- Patient will have 24/7 access to Cognizant RNs 410-601-4700
- All team members will document patient interaction including total time
- Care Solutions will contact patients weekly to check their progress & update care plan
- Summary of vital signs sent to collaborating provider weekly

**De-installation**
- Within 45-60 days
  - Care Solutions will evaluate patient data after 30 days to determine if discontinuation is appropriate
  - Care Solutions/Access Carroll will contact RAH via fax for de-installation
  - RAH will de-install, clean and redistribute devices
  - Care Solutions with refer to Navigation

**Billing**
- Inpatient consults will be billed through Cerner
- Care Solutions NP to complete consult ticket
- CCM code will be billed from documentation in portal through Cerner
LAUNCHING REMOTE PATIENT MONITORING AT YOUR ORGANIZATION

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Principal, Ingenium Healthcare Advisors
RPM SYSTEM OPTIONS

- **Vital Sign Monitoring**
  - BYOD
  - Purchased
  - Leased
  - DIY
  - RPM Vendor
  - Wireless (Bluetooth) Automated
  - Apps on Phone/Tablet
  - Hub
  - Tablet

- **Vital Sign Data Collection**
- **Logistics**
  - Deployment & Setup
  - Retrieval & Refurbishing
- **Technical/Operational Support**
- **Clinical Management**
  - Internal (RNs)
  - External (RNs)
  - Internal (Physicians)

- **DIY**
- **RPM Tech Vendor**
- **RPM Service Provider**
RPM PROGRAM LAUNCH ACTIVITIES

- Project Management & Facilitation
- Telehealth Strategy & Objectives
- RPM Strategy & Objectives
- RPM Business & Clinical Case
- RPM Process/Workflow Design
- RPM Performance Dashboard
- Patient Selection Criteria & Process
- Vendor/Technology Selection
- Vendor-Optimized RPM Workflow
- RPM Service Pilots
- RPM Service Rollout

25% Administrative
25% IT
50% Clinical
AGENDA

1. Remote Patient Monitoring Overview
2. Carroll Hospital RPM Pilot & Program
3. Implementing RPM at your Organization
4. Q&A
QUESTIONS