Telemedicine in Skilled Nursing Facilities: A Brave New World

Steven Handler MD, PhD, CMD

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Department of Biomedical Informatics and Division of Geriatric Medicine; Medical Director, Long-term Care HIT,
UPMC Senior Communities.
Avoidable Hospitalizations from the Skilled Nursing Home (SNF)

• Two-thirds of SNF residents are enrolled in Medicaid, and most are also enrolled in Medicare (Medicare-Medicaid enrollees).

• SNF residents are frequently subject to avoidable inpatient hospitalizations.

• These hospitalizations are expensive, disruptive, and disorienting, and nursing facility residents are vulnerable to risks that accompany hospital stays and transitions between nursing facilities and hospitals.

• Avoidable hospitalizations among SNF residents stem from multiple system failures.
Opportunity for Care Coordination: Potentially Avoidable Hospitalizations

- Rates are highest for Medicare-Medicaid enrollees in skilled NHs and lowest for those residing in community settings.
- Five Conditions are responsible for over 80% of the PAHs. These conditions are:
  - CHF
  - COPD, Asthma
  - Dehydration
  - Pneumonia
  - Urinary tract infection

Summary Statistics on Medicare-Medicaid Enrollees and Potentially Avoidable Hospitalizations

<table>
<thead>
<tr>
<th>Statistic</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Potentially avoidable hospitalizations</td>
<td>699,818</td>
</tr>
<tr>
<td>Percentage of hospitalizations that were potentially avoidable</td>
<td>26%</td>
</tr>
<tr>
<td>Total costs in 2005</td>
<td>$5.6 billion</td>
</tr>
<tr>
<td>Average length of stay</td>
<td>6.1 days</td>
</tr>
<tr>
<td>2011 estimated costs attributable to Medicare-Medicaid enrollees PAHs</td>
<td>$7-8 billion</td>
</tr>
</tbody>
</table>
Factors Associated with Avoidable Admissions

- Lack of advance care planning/not up-to-date care plans
- SNF staff may lack skills and/or training needed to deal with certain medical conditions
- Lack of clarity regarding physician notification and objective criteria to send to ED or hospital
- Physicians may prefer to treat pt’s in the hospital b/c they may be unaware of what can be done on-site (tests, services, etc) and/or it may be more convenient/financially beneficial
What are Avoidable Hospitalizations?

- Acute Renal Failure (AKI)
- Altered mental status
- Anemia
- Asthma
- C. Diff
- Cellulitis
- CHF
- Constipation/Impaction
- COPD
- Diarrhea/Gastroenteritis
- FTT
- Falls and Trauma
- HTN
- Pneumonia/Bronchitis
- Nutritional deficiency
- Poor glycemic control
- Psychosis
- Seizures
- Skin Ulcers
- UTI

Evidence that Hospitalizations can be Avoided

- Nursing facility-employed staff provider model in NY reduced Medicare costs by 16.3% (Moore & Martelle, 1996)

- Evercare reduced hospital admissions by 47% and emergency department use by 49% (Kane, et. al, 2004).

- INTERACT II reduced hospital admissions by 17% (Ouslander, et. al., 2011).

- Project Red decreased 30-day hospitalization after discharge from SNF from 18.9% to 10.2% (Berkowitz, et al., 2013)

- Our own local experience of reducing unplanned transfers.
The Triples Aim of UPMC-Owned SNFs

1. *Improving the patient experience* of care including:
   - Improve access to care for residents of SNFs without requiring hospitalization
   - Enhance quality of communication among providers and care-givers; and among the clinical team and families.

2. *Improving the health of populations*:
   - Enhancing clinical capabilities within SNFs
   - Adverse drug event detection and management

3. *Lower per capita costs* by identifying and proliferating cost-effective care models
Telemedicine

• Telemedicine is defined as the use of telecommunication and information technologies in order to provide clinical healthcare at a distance.

• Types of telemedicine:
  – Store-and-forward
  – Remote monitoring
  – Interactive services

Has Telemedicine Ever Been Used in SNFs?

- A recent systematic review identified 22 studies.
- Clinical services provided included allied health \((n = 5)\), dermatology \((3)\), general practice \((4)\), neurology \((2)\), geriatrics \((1)\), psychiatry \((4)\) and multiple specialities \((3)\).
- Most studies \((17)\) employed interactive services.
- Focused on economics \((3)\), feasibility \((9)\), satisfaction \((12)\), reliability \((5)\) and service implementation \((2)\).
- The present review shows that there is evidence for feasibility and stakeholder satisfaction in using telemedicine in LTCFs in a number of clinical specialities.
- No studies to date have assessed the utility of telemedicine for acute change in condition or palliative needs assessments.

1. Assess the current condition to better understand how consults are and should be placed to CRNPs

2. Select diagnostic medical equipment and software for acute change in condition (a sudden, clinically important deviation from a resident’s baseline) and palliative needs assessments

3. Work with our institutional partners to design and build telemedicine carts and make necessary software changes

4. Test feasibility of technology (including formal study analytics), in advance of deployment to select non-owned facilities (e.g., RAVEN partner facilities)
Selection of Diagnostic Medical Equipment and Software (Requirements Specifications)

• Evaluate residents in any location within the NH
• Assess overall resident condition, skin/wounds, and conduct teleconferencing for resident care conferences
• Auscultate heart, lung, and bowel sounds
• Obtain 12-lead EKGs
• Determine presence of venous/arterial pulses
• Inspect/visualize outer and middle ear
• Use software that would run on a standard web browser and is easy to use/train clinical staff
Introducing Telly

• Telly the telemedicine cart is the newest member of the RAVEN “clinical team”

• Was developed in partnership with the University of Pittsburgh Medical Center (UPMC) Technology Development Center (TDC), Center for Connected Medicine, Information Services Division (ISD), and Community Provider Services (CPS).
Diagnostic Medical Equipment (DME)

- HP All-in-one PC
- Vaddio ClearView PTZ Camera
- Logitech HD Pro C920 Web Cam
- Plantronic Calisto 420 Speakerphone
- 3M Digital Bluetooth Stethoscope
- Welch Allyn Digital Macroview Otoscope
- Aven Digital Mighty scope
- Cardiocard software
- Virtual Care Collaboration
Clinical Vignette

• You receive a telephone call from a nurse who just evaluated a resident for an acute change in condition.
• The nurse completed the noted that the resident has a temp of 101°F, is tachycardic (pulse of 110), and her left lower leg is red and swollen.
• The nurse has a difficult time explaining the skin findings to you over the phone and also states that the son who is a physician in Utah would like to send the resident out to the hospital where they provide better care.
• What should you do?
Live Session

- Internet-based telemedicine consult between on-site CRNPs and NH residents with bedside examination performed by nurse (RN or LPN).
Using UPMC’s Virtual Care Collaboration (VCC) Software

<table>
<thead>
<tr>
<th>PATIENT NAME</th>
<th>CHIEF COMPLAINT</th>
<th>APPOINTMENT TIME</th>
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<tbody>
<tr>
<td>Jonathan Sample</td>
<td>WP NEW TELEMED</td>
<td>9:36 am (about 2 hours ago)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>March 18, 2013</td>
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<table>
<thead>
<tr>
<th>Physician</th>
<th>OTHER PARTICIPANTS</th>
<th>APPOINTMENT ENDPOINT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Doctor Test</td>
<td></td>
<td>UPMC_Passavant_Emp_Clinic</td>
</tr>
<tr>
<td></td>
<td></td>
<td>9100 Babcock Blvd</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Pittsburgh, PA 15237</td>
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<table>
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<tr>
<th>VITALS</th>
<th>ALLERGIES</th>
<th>MEDICATIONS</th>
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<tr>
<td>Height: 5'5</td>
<td>CLINDAMYCIN HCL</td>
<td>benzonatate 100 MG Oral Capsule</td>
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<tr>
<td>Weight: 150</td>
<td>AMOXICILLIN POT CLAVULANATE</td>
<td>Acetaminophen 325 MG / Chlorpheniramine Maleate 2 MG Oral Tablet [Coricidin]</td>
</tr>
<tr>
<td>Blood Pressure: 125/85</td>
<td>SULFACETAMIDE</td>
<td>Sodium Chloride 0.154 MEQ/ML Nasal Spray [Simply Saline]</td>
</tr>
<tr>
<td>Heart Rate: 105</td>
<td>SULFA (SULFONAMIDE ANTIBIOTICS)</td>
<td>Lisinepril 26 MG Oral Tablet</td>
</tr>
<tr>
<td></td>
<td>Cleocin T</td>
<td>lamotrigine 200 MG Oral Tablet</td>
</tr>
<tr>
<td></td>
<td>sufa drugs</td>
<td>(6 [Azithromycin 250 MG Oral Tablet]) Pack</td>
</tr>
<tr>
<td></td>
<td>sulfamethoxazole</td>
<td></td>
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<tr>
<td></td>
<td>Augmentin</td>
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<th>HOME ADDRESS</th>
<th>PATIENT ID</th>
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<tr>
<td>Birth Date: 1976-08-12 04:00</td>
<td>2349 JAMES DR</td>
<td>EPIC MRN: 166628211</td>
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<tr>
<td>Marital Status: SINGLE</td>
<td>PITTSBURGH, PA 16237</td>
<td></td>
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<tr>
<td>Race: WHITE</td>
<td></td>
<td></td>
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<tr>
<td>Religion: CATHOLIC</td>
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Calling a Family Member to Discuss Options

I agree, don’t send her out!
Feasibility of Using Telemedicine to Assist Nurse Practitioners with Managing Acute Change in Condition and Palliative Care Assessments of Nursing Home Residents
Study Objectives

• Our *short-term* objective was to determine the feasibility of using telemedicine to assist nurse practitioners (CRNPs) with managing acute change in condition and palliative care assessments of UPMC NH residents.

• Our *long-term* objective was to determine the optimal configuration and use of the telemedicine carts to assist the RAVEN nurse practitioners (CRNPs) with managing acute change in condition and palliative care assessments of residents in our partner facilities.
Diagnostic Medical Equipment Considered
Sample Images from the Diagnostic Medical Equipment

Office/Facility:
Physician: Dr. Steve Handler
Patient Name: Reza
Patient unique number: 999009999
Age: 31, M
Nurse/Technician, Room:
Medications:
Blood pressure: na

7:43:44 PM, 2013 04 08, Run: 0
Interp/Comments/Annot:
HR (bpm): 78 (lead II)
R-R (ms): 769
P dur (ms): 91
PR (ms): 173
QRS dur (ms): 96
P/R/T axis: 57/43/38
QT: 324
QTc: 360
QTcfr: 353
QTch: 365
QTcfr: 324

Referring Physician:

DICOM:

10 mm/mV, 0.05-100 Hz, 25 mm/sec

A physician should overread the results

© Steve Handler M.D.
Reza Sadeghian M.D.
Developed Advanced Telemedicine Clinical Training Series (ATCTS)™
- In-class training for the diagnostic medical equipment (didactics)
- Hands-on group training

Developed ATC Skills and Competency Exam (ATCSCE)™
- Oral practical
• **Subjects**: Two CRNPs completed 60 consults between 05/01/13 and 07/28/13.

• **Participants**: 18 different nurses and 58 unique residents.

• **Design/Data Source**: Observational study design where we developed and used 3 web-based surveys (1 pre and 2 post) to quantify the perception of telemedicine services in terms of quality of the diagnostic medical equipment used and quality of the medical care provided following each consultation.

• **Statistics**: Simple descriptive statistics; Wilcoxon signed rank test
Key Findings From the CRNP Perspective

- Average time per consult was 16 min.
- For 88.3% of the sessions, the technology was effective in the medical management of the resident.
- For 91.7% of the sessions, the use of telemedicine is an appropriate and effective use of the CRNP’s skillset and time.
- Telemedicine allowed them to provide appropriate care while helping the resident avoid a face-to-face visit by a CRNP 86.7% of the time, and an attending physician 90% of the time.
- For 60% of the sessions, the telemedicine consult helped to avoid resident transfer to the hospital/emergency department (60 consults * 60% * $11,000 = $396,000 cost avoidance).
Limitations and Problems Encountered

- Single NH with relatively low acuity and bed size.
- Small number of resident consultations. However, the sample size was consistent with other telemedicine feasibility studies.
- Inadequate bandwidth at UPMC Canterbury
  - Required a circuit to be upgraded associated with a several month delay
- Bluetooth stethoscope interference
Conclusions

Telemedicine used by nurse practitioners to conduct consultations for an acute change in condition and/or palliative care need in the nursing home:

• is an effective use of their skillset and time
• is effective in the medical management of the resident
• avoids the need for face-to-face visits
• can help avoid resident transfers to the hospital/emergency department.
Reduce Avoidable hospitalizations using Evidence-based interventions for Nursing facilities (RAVEN) in Western Pennsylvania: A Focus on Telemedicine

https://raven.upmc.com/
Cooperative agreement with CMS: CMS-1E1CMS331081-01-00
https://raven.upmc.com
Geographic Distribution of RAVEN Partner SNFs (n = 19)

133 Miles/
2.25 hrs.
RAVEN Core Program Elements:

1. Facility-based Nurse Practitioners/Enhanced Care Nurses
2. INTERACT tools to reduce avoidable hospital admission
3. Individualized educational program/simulation
4. Enhanced medication management, monitoring, and pharmacy engagement
5. Use of telemedicine to enable remote clinical assessment, and facilitate communication.
RAVEN partner nursing home staff detect an acute change in condition and/or new/worsening palliative care need using the INTERACT STOP and WATCH Early Warning Tool.

Nurse at partner facility examines the resident to determine if there is either:

1) an acute change in condition; and/or
2) a palliative care need that could benefit from a CRNP-based telemedicine consult.

Report change to a partner facility nurse.

RN calls Certified Registered Nurse Practitioner (CRNP) located off-site by dialing 412-647-PAGE and then entering pager "RAVEN" or (72836).

Nurse at partner facility reviews the medical record, gathers pertinent information (e.g., progress notes, admission H&P, eMAR, etc.), and goals of care.

Nurse determines telemedicine appropriateness.

Nurse Completes Appropriate INTERACT Forms.

Nurse at partner facility reviews and completes the appropriate Care Path and SBAR Form and Progress Note.

RN assists CRNP by: 1) adjusting the location of Telly within the room; 2) performing elements of the physical exam using appropriate peripherals (e.g., stethoscope, otoscope, EKG, etc.); 3) adjusting the main camera; and, 4) reassuring resident.

CRNP remotely controls who can join the VCC session by means of audio and/or video (e.g., other clinicians, medical director, family/POA with a phone and/or PC with a webcam).

CRNP Joins the VCC session.

The RN creates a telemedicine session using the Virtual Care Collaboration (VCC) Internet-based application.

Initiate Telemedicine Session.

If CRNP decides that a consult is appropriate, then RN brings the telemedicine cart (AKA Telly) to the resident’s bedside.

CRNP develops an Assessment and Plan (A/P) to establish: 1) care plan goals; 2) disposition; and, 3) treatment plan.

Develop assessment and plan.

CRNP discussion the A/P with appropriate attending physician based on communication preferences to finalize A/P and then asks facility to carry out orders (e.g., labs, meds, additional tests, transfer, etc.).

Discuss with appropriate attending.

CRNP Documents in Cerner Millennium EMR which has both structured and unstructured fields.

Copy of the H&P is placed in the resident’s medical record.

Hand-off Communication through verbal sign-out b/w CRNP and CRNP/RN on the next business day at 8 AM.

End of telemedicine consultation and data collection.

Data to be Analyzed.

Updated 01/20/2013
RAVEN Telemedicine Rollout Plan

Facility Engagement

- **RAVEN Partner Facility Identification**
  - Organization of RAVEN Partner Facilities Into Clinical Cohorts

- **RAVEN Clinical Staff Identification**
  - Identify RAVEN Lead CRNPs and RAVEN CRNP Telemedicine Super-Users for Each RAVEN Partner Facility

- **RAVEN Clinical Staff Identification of Facility Leadership**
  - Determine SNF Administrator, Medical Director, Attending Physicians, and Other Appropriate Stakeholders (e.g., Nurse Educators, etc.)

- **RAVEN Clinical Staff Determine Current Clinical Capabilities and Emergency Medication Box Contents**

- **RAVEN Clinical and Administrative Staff Suggest Best Engagement Strategies for Facility Leadership Which May Include but are not Limited to:**
  1. **Phone Calls to:**
     - Administrator (Project Mgr. Coordinates with Lead)
     - Medical Director (Steve)
     - All Skeptical Attending Physicians (Steve)
  2. **Face-to-Face Meetings and Demos With:**
     - Administrator (Project Mgr. Coordinates w/ Lead)
     - Medical Director (Project Mgr. Coordinates w/ Lead)
     - IT Group (Project Mgr. Coordinates w/ CPS)
  3. **Demos of Telly Once Equipment is On-Site for:**
     - QA/QI Meeting (Project Mgr. Coordinates w/ Lead)
     - Physician/Staff Meetings (Project Mgr. Coordinates w/ Lead)
  4. **Champion Identification:** at least one administrative, physician, and nursing staff person (Project Mgr. Coordinates w/ Lead)

- **RAVEN CRNP Super-User and Go-Live Support Training**
  - Overseen by RAVEN Clinical Project Manager (Reza)
  - Jane St. One full day or two half days

Facility and Telemedicine Readiness

- **Assess RAVEN Partner Facility IT Readiness**
  - Community Provider Services Staff Survey IT Personnel to Determine Wired and Wireless Infrastructure and Associated Internet Speeds and Fax to CPS

- **Assess Telemedicine Readiness**
  - RAVEN Clinical Staff Distribute Telemedicine Readiness Surveys and Fax Back to RAVEN Administrative Offices

- **Determine Physician Communication Preferences**
  - RAVEN Clinical Staff Distribute Physician Specific Communication Preferences Forms and Fax Back to RAVEN Administrative Offices

- **Introduce and Educate Partner Facilities**
  - Facilities in Collaboration with the RAVEN Clinical Staff Distribute: 1) Staff FAQs, 2) Resident/Family FAQs, 3) Physician FAQs, 4) DOH FAQs; and 5) P&Ps Associated with the use of Telemedicine.

- **Deliver Telly to RAVEN Partner Facility**
  - Working in Conjunction with Administrative Staff/IT/Facilities Management

  - With Staff Turnover Cycle Repeats

Facility Telemedicine Training

- **Identify RAVEN Partner Facility Staff that Will be Conducting Telemedicine Sessions**
  - RAVEN Clinical Staff Will Identify Clinicians Across Appropriate Shifts who Will Need to be Trained and Provide Contact Information to the UPMC Technology Development Center (TDC) for VCC Account Creation

  - At RAVEN Partner Facility

  - Conduct Didactic and Hands-On On-Site Telemedicine Training for Facility Nursing Staff

    - Phases I-V of RAVEN ATCTS by Facility-Specific RAVEN NPs/Enhanced RNs, telemedicine project mgr., and go-live support person

    - Train at Jane St.

    - Remaining RAVEN Clinical Staff Trained by Certified Super-Users
      - RAVEN CRNPs (including leads)
      - Enhanced Care RNs
      - Medical Director/Attending Physicians

- **Conduct a Two-Part Comprehensive Training Program**
  1. **Advanced Telemedicine Clinical Training Series (ATCTS):** Didactic training, use of diagnostic medical equipment and VCC software, survey completion, and basic troubleshooting, Practical hands-on skill building and peer-to-peer interactions.
  2. **Advanced Telemedicine Clinical Skills Competency Exam (ATCSCE):** Oral-practical competency assessments.

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**Telly Cohort 1:** Kane Glen Hazel; Kane McKeesport; Kane Ross; Ball Pavilion; Lutheran Home at Kane; Friendship Ridge

**Telly Cohort 2:** Mountainview Speciality Care; Oakwood Heights; The Caring Place; Evergreen; Golden Living; Sugar Creek Rest; Sunnyview

**Telly Cohort 3:** Trinity; Westmoreland; Sweden Valley Manor; The Commons at Sq Hill; Edison Manor; Corry Manor

Updated 01/06/2014
Our goal is to provide continuous access to high quality healthcare and healthcare professionals during afterhours and weekends. We recognize that nursing home physicians and nurse practitioners are sometimes not available to evaluate and treat a resident when there is a change in their usual state of health. That’s why we have developed Telly. Telly is a telemedicine cart that is operated remotely by a physician or nurse practitioner with the assistance of a nurse located at the resident’s bedside. Telly allows a clinician to remotely perform a history and physical examination of the eyes, ears, nose, throat, lungs, heart, abdomen, skin, extremities, and nervous system. Telly allows anyone with a working telephone or computer, to be involved in making better informed decisions about treatment options and any potential changes to the care plan, which may include a decision to transfer your resident to a hospital. Telly however needs to use the Internet to send and receive data and we need to know more about the IT capabilities in your facility.

1. Name of Facility: 

2. Do you have access to the internet in your facility?
   a. Yes  
   b. No  

3. Who is your internet service provider (ISP)?
   a. Name: 
   b. Phone:
# Telemedicine Readiness

## Partner Facility Telemedicine Readiness Survey

**RAVEN Partner Facility Name:** ___________________________  **Date:** ______/______/______

**Role (Select all that apply):**

- [ ] Attending physician  
- [ ] Medical Director  
- [ ] Facility Administrator  
- [ ] Nurse educator  
- [ ] DON  
- [ ] RN/LPN  
- [ ] Charge/Nurse  
- [ ] Other ____________

Please indicate your agreement with the following statements regarding the use of telemedicine in nursing homes using a 7-point scale ranging from 1 (strongly agree) to 7 (strongly disagree):

<table>
<thead>
<tr>
<th>Statement</th>
<th>1 Strongly Agree</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7 Strongly Disagree</th>
</tr>
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<tbody>
<tr>
<td>1. Telemedicine may increase overall efficiency</td>
<td></td>
<td></td>
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<tr>
<td>2. Telemedicine may fill an existing service gap</td>
<td></td>
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<tr>
<td>3. Telemedicine may improve timeliness of resident care</td>
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<td>4. Telemedicine may help avoid resident transfers to hospital/ED</td>
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<td>5. Telemedicine may help improve service productivity of medical staff</td>
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<td>6. A step toward successful implementation of Telemedicine is addressing potential workflow and process challenges</td>
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<td>7. Telemedicine may be depersonalizing</td>
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<td>8. Telemedicine may hinder CRNP-resident relationships</td>
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Physician Communication Preferences

RAVEN CRNP Telemmedicine Consultation Physician-Specific Survey Notification Form

Please Complete this Survey and Return it to the RAVEN CRNP/RN OR Fax it to 855-223-7077
(Note that all data collected will be stored securely and not redistributed)

Name of RAVEN Partner facility: ________________________________

1. Contact Information:

<table>
<thead>
<tr>
<th>First Name: ____________________</th>
<th>Last Name: ____________________</th>
</tr>
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<tbody>
<tr>
<td>Office Mailing Address:</td>
<td>Office Phone Number: ( ) -</td>
</tr>
<tr>
<td>1st line ______________________</td>
<td>2nd line ______________________</td>
</tr>
<tr>
<td>City __________________________</td>
<td>Office Fax Number: ( ) -</td>
</tr>
<tr>
<td>State ______ Zip ________________</td>
<td>Pager Number: ( ) -</td>
</tr>
<tr>
<td>Mobile/Cell Number: ( ) -</td>
<td>Home Phone Number: ( ) -</td>
</tr>
<tr>
<td>Preferred e-mail address:</td>
<td></td>
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</table>

2. Would you prefer to receive communication from a RAVEN CRNP after ALL telemedicine consults OR just following consults where the CRNP feels that a hospital transfer may be indicated:

- [ ] A. After ALL consults
- [ ] B. Only for consults where a potential transfer may be indicated

3. What is your preferred method of receiving communication related to acute change in a resident’s condition or palliative care need(s):

- [ ] A. Office phone
- [ ] B. Pager
- [ ] C. Cell phone
- [ ] D. Home phone
- [ ] E. Email
- [ ] F. Other: ____________________
Dear Nursing Home Staff,

Our goal is to provide continuous access to high quality healthcare and healthcare professionals. We recognize that nursing home physicians and nurse practitioners are sometimes not available to evaluate and treat a resident when there is a change in their usual state of health.

That is why we are working with the clinical staff at your nursing facility, the University of Pittsburgh Medical Center (UPMC) Technology Development Center, the Center for Connected Medicine, the Division of Geriatric Medicine, and the Dept. of Biomedical Informatics to bring you the newest member of our team; Telly. Telly is a telemedicine cart that is operated remotely by a physician or nurse practitioner, with the assistance of a nurse located at the resident’s bedside.

Telly allows a clinician to remotely perform a history and physical examination of the eyes, ears, nose, throat, lungs, heart, abdomen, skin, extremities, and nervous system. Telly allows anyone with a telephone or computer, to be involved in making better informed decisions about treatment options and any potential changes to the care plan, which may include a decision to transfer your resident to a hospital.

Frequently asked questions (FAQs):

1. Q: Will Telly replace the usual direct face-to-face care that a resident receives?
   A: No, Telly will be used primarily when a physician or nurse practitioner is unable for whatever reason to have a face-to-face encounter and examine a resident directly.

2. Q: Will Telly be used for routine medical examinations that a resident receives?
   A: No, Telly will be used to help a physician or nurse practitioner to assess a change in a resident’s usual state of health. Examples of changes in usual state of health may include a change in a resident’s breathing, heart function, urination, pain, skin finding, or level of confusion.

3. Q: Will Telly be used in place of sending a resident to the hospital for evaluation?
   A: No, all residents that require hospital-level care either before or following a telemedicine session will be sent if medically indicated and consistent with the resident/families wishes.

4. Q: Who will be conducting the telemedicine consults and when will they occur?
   A: CRNPs who function within a collaborative practice agreement with the attending physician will conduct the telemedicine consults for residents with acute changes in condition and/or palliative care needs when after-hours Telly coverage is available.

5. Q: How does the use of Telly change what I need to do in the nursing home?
   A: Following training by the UPMC Technology Development Center, you will be responsible for assisting the CRNP by setting up Telly in the resident’s room, staying bedside during the exam, and using the peripherals (e.g., digital stethoscope, otoscope, patient exam camera) requested by the CRNP.

If you have any questions, please contact Dr. Steven Handler at 412-648-9215.

Warm regards,

[Signature]
Training
Approach to Training 1

- **PHASE I** (Complete with PHASE II as a group and takes 10 min):
  - Group didactic session and overview and rationale for doing telemedicine

- **PHASE II** (Complete with PHASE I as a group and takes 90 min; Then repeat either 1:1/1:2/1:3 and takes 120 min):
  - Small group (2 nurses maximum at a time) reviewing core functionality and assessing
Approach to Training 2

- **PHASE III (Takes 30 min per person):**
  - Rubric and competency examination Phases I-II

- **PHASE IV (1:1/1:2/1:3 and takes 45 min):**
  - Small group (2 nurses maximum at a time) reviewing more advanced functionality

- **Phase V (Takes 30 min per person):**
  - Rubric and competency examination assessing Phase IV
Clinical Management and Protocol Development

• Focus on the 20 CMS diagnoses associated with avoidable hospitalizations

• Modify acute change of condition cards to determine which signs, symptoms and lab abnormalities are appropriate for telemedicine

• Modify and develop SBAR communication tools

• Create clinical protocols or algorithms to standardize response to change in condition
Other Aspects of the Project

- Develop a policy and procedure modeled from the inpatient setting to ensure appropriate use of telemedicine in UPMC SNFs
- Develop an infection prevention policy and procedure
- Develop an implementation/training plan for UPMC SNFs
- Add language to current consent for treatment upon entering a UPMC SNF that we may use telemedicine
Future Opportunities

- Tele-care coordination/care planning [RAVEN]
- Tele-medication management [RAVEN]
- Tele-ostomy/wound care [Health Plan]
- Tele-dermatology
- Tele-cardiology/CHF
- Tele-rounding [Seneca Vent/LTAC Unit]
- Tele-psychiatry [WPIC]
- Tele-neurology
- Tele-Infectious Disease
- Next round of CMS findings
Research Questions

• Assessment of the telemedicine implementation and training program

• Precise impact of telemedicine on potentially avoidable hospitalizations

• Perception of telemedicine services from multiple stakeholder perspectives (nurse, NP, physicians)
Project Team

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