Eyes and Ears on the Homebound Patient during an Emergency Response: Video Technology Enhances a Community Paramedicine Program

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Introduction

Problem
• Older adults with multiple chronic conditions and functional impairment often cannot access usual outpatient settings
• Frequently forgo care until the point of medical crisis, dial 911 and present to the emergency room (ER)
• Up to 34% of Medicare patients transported by EMS to an ER could have been safely treated in an alternative setting

Solution
• Community Paramedicine (CP), also called Mobile Integrated Healthcare, has been shown to decrease hospitalizations for medically complex seniors while maintaining high patient satisfaction
• As part of its House Calls Program, NS-LIJ began CP in October 2013, added secure wireless video capabilities 1 year later

Study Objectives
• Assess impact of wireless video conferencing on a CP program, including ER transport rates and patient and physician satisfaction

Program Descriptions
• NS-LIJ House Calls Program
  – 11 clinicians (MD, DO, NP), 5 social workers
  – 1100 homebound, mostly elderly, patients in Queens and Long Island, NY
  – 65% of patients with 5-6 ADL dependencies

• Community Paramedicine program
  – Leverages excess capacity of critical care-trained paramedics as physician extenders
  – Community Paramedics receive additional geriatric house calls training
  – Can provide comprehensive physical exam, 12-lead EKG, BCCD, blood glucose monitoring
  – Can administer IV fluids and ≥20 medications in home without ER transport, can transport to ER if necessary

Materials and Methods

Criteria for participation
• Enrollment in NS-LIJ House Calls Program
• Experiencing an acute illness

Process – CP evaluation with Video Technology
1. Patient/family/caregiver calls House Calls Program, discusses health concern with on-call provider
2. Provider requests CP deployment
3. Community Paramedic arrives on scene, performs evaluation
4. Nursing Clinical Call Center hosts secure video conference via WebEx (Cisco)
5. Partners engage in secure video conference using Verizon LG G2 phones (Figure 1)
6. Treatment plan is determined and executed
7. Videoconference terminates

Results

• September 2014 – April 2015: 222 CP responses utilizing video
• Average patient age: 83.8 years

Preventing ER admissions
• 89% (BS-95%; 191/210) respondents would have sought emergency treatment (dialed 911, gone to ER, called local fire department) if CP program had not been available (Figure 2)
• CP ER transport rate: 19% (42/222) with video, 26% (57/141) without video, p-value=0.1 (Figure 3)
• CP ER transport rate before and after practice-wide video integration (2014 and 2015): prior to video integration: 24% (76/320), following video integration: 22% (79/363), p-value=0.5

Physician satisfaction
• 82% [76%-87%], (182/222): stated video enhanced physician evaluation (Figure 4)

Patient satisfaction scores since video integration
• 98% [93%-99%], (100/102): were satisfied with the overall CP experience (Figure 4)
• 93% [91%-95%], (92/100) of respondents would have sought emergency treatment (dialed 911, present to the emergency room (ER) could have been safely treated in an alternative setting

Discussion

• Decrease in ER transport rate when video was used, but not statistically significant
• Per physicians, secure wireless video conferencing capabilities enhanced patient evaluation in a large majority of cases by providing "eyes and ears" on the patient
• High satisfaction scores with CP program from patients/families since implementation of video
• Future cost-saving analysis – relevant in setting of increased value-based payment programs

Physician Comments
• "Patient with hypothyroidism, was able to get 12 lead EKG only after they started home with aggressive medication management: was able to see EKG via video conference."
• "It was useful to see the "tremors" in hand directly and not depend on a verbal description."
• "Video helped discern that pt's symptoms were due to gum problem rather than angioedema."

Patient/Family Comments
• "The [CP] experience was excellent. The team worked together in a very professional and caring manner."
• "The patients were extremely satisfied with the [CP] experience. The paramedics were reassuring, aggressive medication management, was able to see EKG by video conference."
• "Patient did not appear to have seizure activity but was 100% blood glucose."

References

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Figure 1: Video Conferencing – Connecting the patient, family, and paramedic to the ER at the Clinical Call Center (left), and the physician on-site (right). Physician using the wireless videoconferencing device (red circle)

Figure 2: Response to patient satisfaction survey question: If the CP Program did not exist, what would you have done during your medical emergency?

Figure 3: ER transport rate following a CP visit when video was not used (orange) and when video was used (green)

Figure 4: Program satisfaction – physicians who NA video enhanced patient evaluation, and patient satisfaction since video integration in CP program