

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 services¹
- Frequently forego care until the point of medical crisis, dial 911 and present to the emergency room (ER)^{2,3}
- Up to 34% of Medicare patients transported by EMS to an ER could have been safely treated in an alternative setting⁴

Solution

- Community Paramedicine (CP), also called Mobile Integrated Healthcare, has been shown to decrease hospitalizations for medically complex seniors while maintaining high patient satisfaction⁵
- 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, EtCO₂, blood glucose monitoring
 - Can administer IV fluids and >20 medications in home without ER transport, can transport to ER if necessary
- Secure wireless video capabilities**
 - HIPAA compliant

Materials and Methods

Criteria for participation

- Enrollment in NS-LIJ House Calls Program
- Experiencing an acute illness

Process – CP evaluation with Video Technology

- Patient/family/caregiver calls House Calls Program, discusses health concern with on-call provider
- Provider requests CP deployment
- Community Paramedic arrives on scene, performs evaluation
- Nursing Clinical Call Center hosts secure video conference via WebEx (Cisco)
- Parties engage in secure video conference using Verizon LG G2 phones {Figure 1}
- Treatment plan is determined and executed
- Videoconference terminates

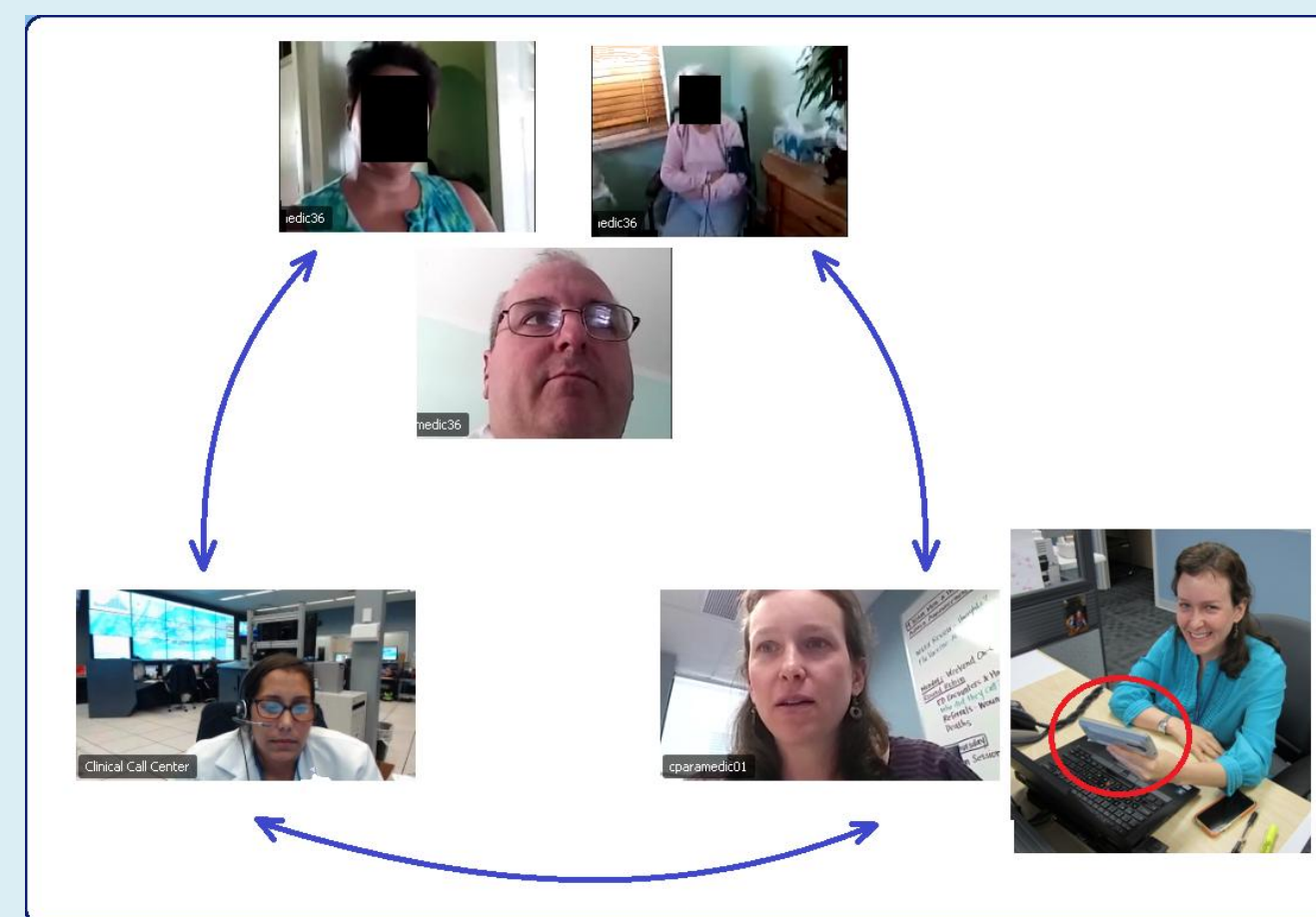


Figure 1: Video Conferencing – Connecting the patient, family, and paramedic (top) to the RN at the Clinical Call Center (left), and the physician (right). Physician using the wireless videoconferencing device (red circle)

Data collection

- Physician documentation in medical record
- Direct-mail patient satisfaction surveys

Results

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

Preventing ER admissions

- 92% [85-95%], (92/100) of 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% (37/141) without video, p -value=0.1 {Figure 3}
- CP ER transport rate before and after practice-wide video integration (September 2014): 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 patient evaluation {Figure 4}

Patient satisfaction scores since video integration

- 98% [93-99%], (100/102): were satisfied with the overall CP experience {Figure 4}
- 98% [93-99%], (99/101): were satisfied with how the physician and paramedic worked together to manage their medical issues {Figure 4}

*95% Confidence interval indicated by square brackets

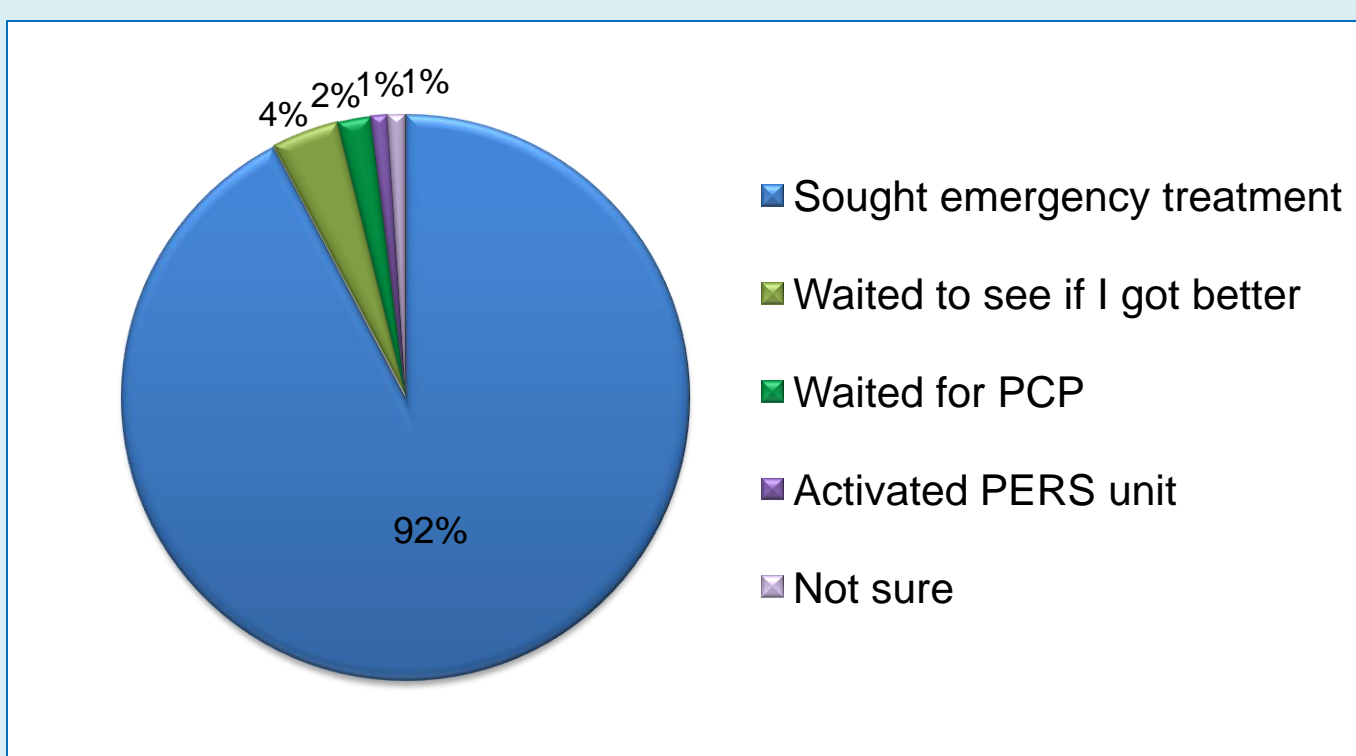


Figure 2: Response to patient satisfaction survey question: if the CP Program did not exist, what would you have done during your medical emergency?

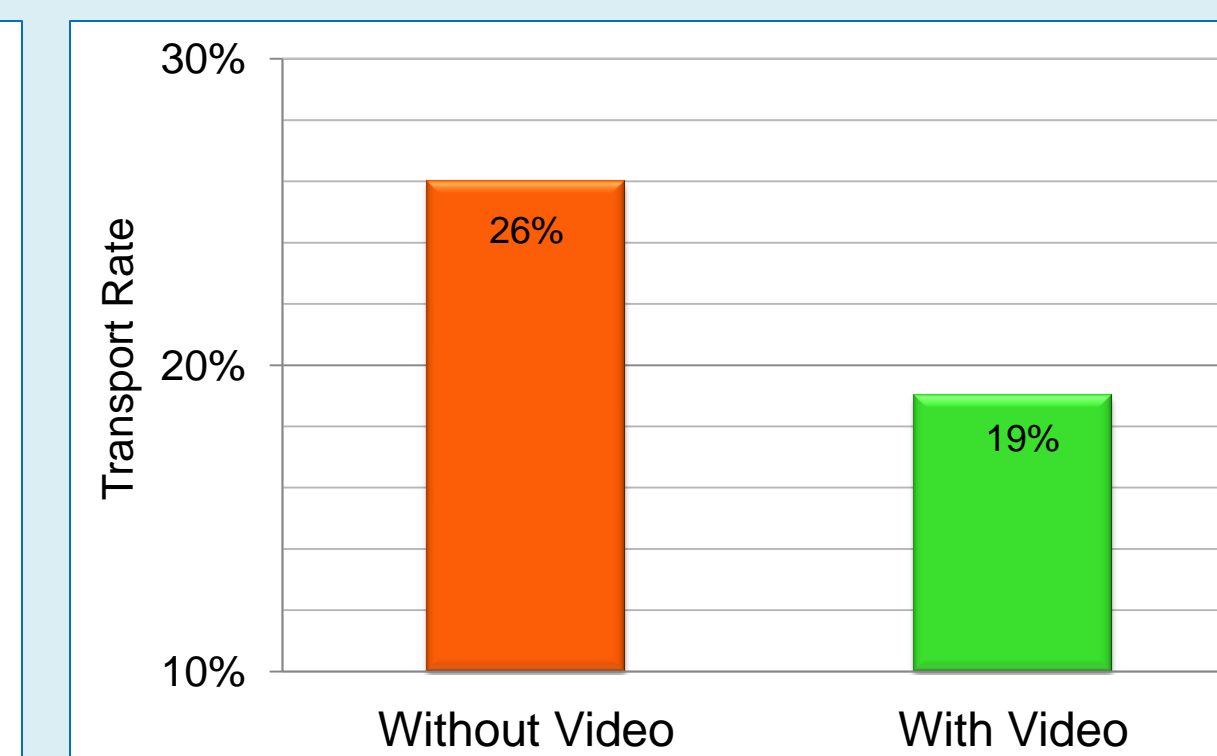


Figure 3: ER transport rate following a CP visit when video was not used (orange) and when video was used (green)

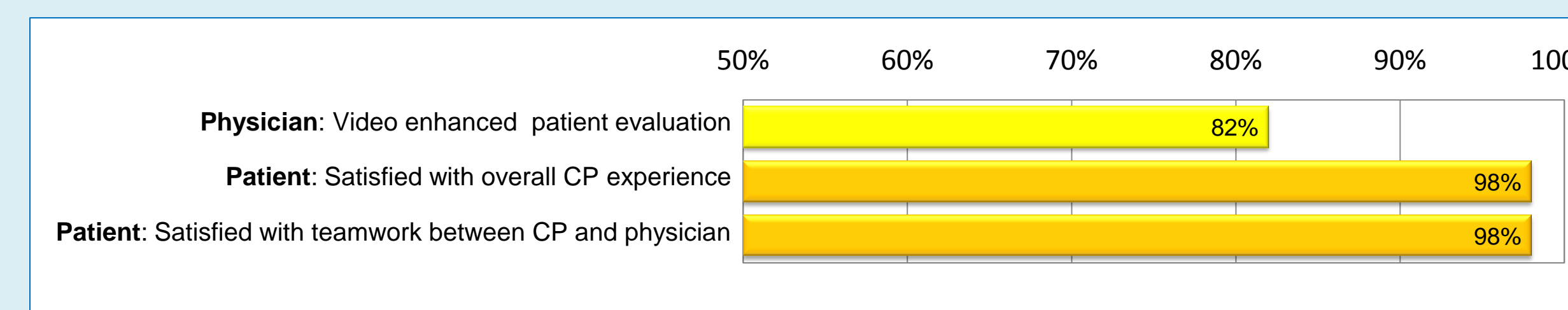


Figure 4: Program satisfaction – physicians who felt video enhanced patient evaluation, and patient satisfaction since video integration in CP program

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-savings** analysis – relevant in setting of increased value-based payment programs

Physician Comments

- “Patient with hyperkalemia, was able to get 12 lead EKG and then to stay home with aggressive medication management, was able to see EKG by 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 did not appear to be having seizure-like episode during the video monitoring.”

Patient/Family Comments

- “The [CP] experience was excellent. The team worked together in a very professional and knowledgeable manner. I felt they really cared.”
- “This is the best way to prevent unnecessary ER visits. This service should be a prerequisite before dialing 911 for people who are ill at home.”
- “We are extremely satisfied with the [CP] experience. The paramedics were reassuring, intelligent, and caring.”

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