The Use Of Prehospital Telemedicine To Perform The NIHSS And Triage Patients

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Introduction

- In patients with acute ischemic stroke, significant time can elapse between symptom onset and initiation of thrombolytic therapy.
- Prehospital diagnosis can reduce time delays. Remote evaluation using telemedicine may further reduce delays, especially in the context of rural areas where a decision to airlift the patient to a stroke center must be made.
- The Florida Keys is a stretch of islands for 120 miles with no Primary or Comprehensive stroke centers.
- In order to address delays to therapy, a system was implemented to airlift patients directly from Fire Rescue units in three departments.
- The goal of the study was to determine the feasibility of using prehospital telemedicine as a triage tool to air transport stroke patients.

Methods

- Fire Rescue units in three departments were equipped with either an iPhone 5 or Android phone with encrypted software.
- Noise cancelling headsets were provided to each unit, together with dedicated Wi-Fi hotspots.
- Stroke physicians at the comprehensive stroke center were given a tablet with the same software for their use.
- All participants were trained to perform the Miami Emergency Neurological Deficit Scale (MEND) exam.
- All prehospital providers were trained to use the National Institute Health Stroke Scale (NIHSS) to aid the consulting physician.
- Prehospital providers conducted the Cincinnati Prehospital Stroke Scale (CPSS) initially, then the MEND exam, and, if abnormal, contacted the stroke physician for a telemedicine consult.
- The physician had 5 minutes to make contact with the crew and perform the NIHSS.
- Crews were stationed at a designated landing zone for the helicopter, in an effort to reduce air transport time after the exam was performed.
- Stroke Fellows and Attending Physicians at the University of Miami / Jackson Memorial Hospital took the call and alerted the ED, CT and the rest of the stroke team to prepare to receive the patient.
- Upon the patient’s arrival at the receiving facility, the physician performed the NIHSS and recorded his/her findings.

Results

- From January 2013 to July 2015, physicians utilized telemedicine to evaluate 32 stroke patients.
- The physicians’ initial NIHSS correlated with their secondary NIHSS (average NIHSS = 10).
- During the first few months of the study, several software upgrades were made to the system to enhance patient examinations based on feedback from providers.
- EMS providers and stroke physicians found the system easy to use and valuable in making the determination of whether to airlift patients to a Comprehensive Stroke Center.
- We are currently conducting a retrospective study on all the patients to determine a triage category score for prehospital transport (Primary or Comprehensive) designations.

Conclusion

- The use of prehospital telemedicine to conduct a neurological exam was feasible and proved to be a valuable tool for the triage of stroke patients.
- Physicians indicated the software was easy to use, reliable, and extremely clear.
- The cost associated with the implementation of a telemedicine unit is significantly less than the use of air transport if the patient does not meet stroke criteria.

Acknowledgements

- We would like to thank all of the healthcare providers who participated in the trainings and work so hard to save patients’ lives.
- We would also like to thank Specialty TeleHealth Services (STS) for the donation of equipment and their technological support of this project.