INTRODUCTION

- Photographic crash scene and vehicle documentation can be used to improve triage and transportation of motor vehicle crash (MVC) victims. Using such photographic evidence of the scene and transmitting to the trauma center may help better predict injuries, assist trauma staff develop mental models of treatment options, and help better implement treatments remotely (Kaufman, 2009).
- Only 51% of emergency physicians are satisfied with the information they receive from EMS reports (Brenner, 2008).
- Researchers have found the process of photographing the crash scene to be underutilized and under-researched (Hunt, 1999).

PURPOSE

- The purpose of this project is to improve communication between emergency responders at a crash scene and the receiving trauma care providers at UIHC. The objectives of the project are:
  - Design and develop TraumaHawk, a smartphone application used for the acquisition of MVC scene photographs;
  - Educate emergency response teams and hospital trauma care teams to utilize crash scene photographs;
  - Implement and evaluate a TraumaHawk pilot program.

METHODS

- Conduct a thorough literature review focusing on crash scene documentation and scene-to-hospital communication.
  - Design and create the TraumaHawk smartphone trauma scene documentation application.
  - Educate and train Iowa State Patrol, Johnson County Ambulance Service, and UIHC trauma care workers on crash scene documentation, the TraumaHawk app, and how to use photographs to assist the trauma patient.
  - Design three brief questionnaires for users of the TraumaHawk smartphone application after using it in the field and hospital setting to measure the quality of interdisciplinary communication.
  - Project received IRB exempt status.

RESULTS

- The TraumaHawk smartphone application was created through collaboration with members of the computer science program.
- Seven educational seminars were taught through the Iowa Department of Public Safety to state patrol, state legislators, and rural safety services.
- A trauma team Grand Rounds was used to educated UIHC trauma staff on how to use crash scene photographs as a tool in the assessment process.
- Six questionnaires from two scenarios were received. One set from a TraumaHawk demonstration walk-through and one obtained from an actual crash scene as part of the TraumaHawk pilot program.
- Emergency Response teams did not communicate that photographs were sent in the demo or pilot program.
- There was communication in both cases between the emergency department and trauma team.

EVALUATION

- The TraumaHawk smartphone application is user friendly and quality photographs can be sent from the crash scene to the hospital in a timely manner.
- There is a lack of communication between emergency response teams and hospital care providers after sending the photographs.
- Both groups in the study, emergency responders and hospital personnel, are very receptive to improving communication between the two groups and are open to using new technology to improve that communication.
- Gathering sufficient data for this program will take place over an extended period of time. More data will become available as more emergency responders are educated and trained to use the TraumaHawk smartphone application.
- Inferential statistics will be used to calculate the probability of “YES” answers using $p \pm 2 \sqrt{\frac{(1-p)}{n}}$ as more questionnaires are gathered. Associations between pairs of variables will be assessed by 2x2 tables and chi-square statistics.

PRACTICE IMPLICATIONS

- Correlating with past research, crash scene photographs can be taken at the trauma scene in a fast and efficient manner that doesn’t interfere with care of the crash victim.
- Field responders need a reminder to communicate the transmission of photographs with the emergency department.
- More needs to be done to ensure that photographs arrive in a timely manner, before arrival of the patient.
- More planning and education are necessary to detail the communication between disciplines as photographs are sent and received.
- Modern technology allows for the transmission of high quality photographs that can be used as part of the assessment process in the emergency department.
- Initial concerns from emergency responders about taking time away from the victim or the crash scene were eased after they used the TraumaHawk application.

CONCLUSIONS

- MVC scene photographs can be obtained and sent to the emergency department in a fast and efficient time frame.
- TraumaHawk can help to improve the communication process between emergency responders and hospital staff.
- It will be necessary to create a system in which the arrival of photographs is communicated to the emergency department automatically after they are sent via TraumaHawk.
- The future of crash scene recreation will continue to grow as technology progresses. TraumaHawk can be a step in that process.
- More research is necessary to evaluate the ability of crash scene photographs to change or improve the decision making process of patient care in the hospital.

REFERENCES


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