REMOVAL OF PATIENTS FROM EMS LONG SPINE BOARDS
CROUSE HOSPITAL

Publication Year: 2014

SUMMARY:
Implemented a novel strategy for RN rapid assessment and removal of patients from EMS long spine boards to increase safety and improve the patient experience

HOSPITAL: Crouse Hospital

LOCATION: Syracuse, NY

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SUBMISSION CATEGORY:
- Safety & Quality
- Flow & Efficiency
- Patient Experience

CATEGORY:
- A: Arrival
- C: Clinician Initial Evaluation

KEY WORDS:
- Care Transitions
- Communication
- Continuity of Care
- Hand-Offs
- Lean
- Patient Satisfaction

HOSPITAL METRICS:
- Annual ED Volume: 42,000 (72,000 with connected Prompt Care)
- Hospital Beds: 506 acute care & 57 NICU Bassinets
- Ownership: Private, Not-for-profit
- Trauma Level: n/a
- Teaching Status: Community Hospital with resident rotations

TOOLS PROVIDED:

CLINICAL AREAS AFFECTED:
- ED
- EMS
- Radiology
- Registration
- Triage

STAFF INVOLVED:
- Nurses
- Physicians
- Registration Staff
- Technicians
- EMS
- Medical Manufacturer

Innovation
Pre-hospital Emergency Medical Service (EMS) providers in New York State are mandated to follow the NYS Basic Emergency Medical Technician protocol regarding spinal immobilization. Being placed on an EMS long spine board is not a benign process. Immobilization increases a patient’s pain, anxiety, and risk for aspiration. It can also lead to the development of skin break down and other untoward events. The longer a patient spends being immobilized on a long spine board, the greater their chances of complications as a direct result of the immobilization. As part of an EMS/Hospital/National Medical Manufacturer Collaborative Lean Six Sigma Greenbelt program, an improvement opportunity was identified to allow ED Registered Nurses (RNs) to initiate a designed protocol to assess and remove patients from EMS long spine boards. The team included members from EMS agencies, the Hospital, and a leading local National Medical Manufacturer. The greenbelt team and work then was transitioned into the hospital’s Emergency Department Operations structure for implementation.

**Background**
The innovation works because the methodology of Lean Six Sigma was utilized to give structure to the process. The team was able to identify the problem, obtain the needed data, analyze it and develop an improvement plan while engaging all the key stakeholders. We chose this solution over others because the team identified the medical provider as the rate limiting step in removing a patient from an EMS long spine board. Once the key steps were identified and buy-in was obtained from all parties (EMS providers, ED providers, ED Nursing, and tech staff), the innovation was successful and has shown many benefits.

**Innovation Implementation**
The project was part of a collaborative six sigma greenbelt program where 24 students from Crouse Hospital, various EMS and Fire Agencies from multiple counties and Welch Allyn worked in integrated project teams to solve real life medical care related problems while earning their Lean Six Sigma Greenbelt certification. This innovative project was the result of one of the teams work. The course was conducted from April 2013 to July 2013 with the team continuing the work until their project was completed. The greenbelt team integrated into the ED operations and clinical improvement structure and the work was finished in March of 2014. It took approximately 6 weeks to ensure all the ED RNs were educated and competency confirmed prior to implementation.

**Timeline**
The tablet itself took months to design and build. However, the planning/implementation of the tablet at our facility took only 4-6 weeks. Creating the customized content took a couple of weeks, as did obtaining the marketing materials.

**Results**
A time study was conducted from June 2013 to September 2013, to determine the baseline time a patient remained on an EMS long spine board. Once the protocol was initiated, a repeat time study for the month of March 2014 was conducted to determine if the impact of the expedited EMS long board removal protocol on the time patients spend being immobilized on a long board. Patients that arrived via EMS pre-implementation of the RN/EMS expedited EMS long spine board removal protocol spent an average of 62 minutes on the EMS long spine board. Once the protocol was implemented, patients spent an average of only 13 minutes on the long spine board. That is a decrease of 49 minutes and represents an improvement of over 79% from the baseline.
Cost/Benefit Analysis
This has strengthened the collaboration between the EMS providers/ED Staff and the ED Nursing Staff / ED Provider Staff. The cost associated with implementation is that of the time the nurse educators to train and confirm competency of the staff in the protocol, and the time of the staff off the unit. There are benefits to increased safety and to improved patient experience. Spinal immobilization is not a benign process. The potential harmful effects include airway compromise, aspiration, increased intracranial pressure, cutaneous pressure ulcers, iatrogenic pain, increased difficulty handling of patient, combativeness in patients and increased anxiety to the patient. By reducing the time a patient spends immobilized on the long spine board benefits the patients and the hospital by increasing patient safety and decreasing the chance of any of the potential side effects. In addition, by allowing the RNs to work with the EMS providers upon arrival to the ED, the EMS and ED team can work more collaboratively together, this increases team effectiveness and help strengthen ED relationships with EMS as they are truly seen as an integrated part of the healthcare team. The EMS providers are the experts in immobilization and are at least two or three additional trained professionals that can assist the ED team in safely transferring and rolling the patient onto the ED stretcher while maintaining spinal integrity and c-spine collar. In addition, by allowing the RN and ED team to do this task, it allows ED providers to continue seeing and caring for patients without being interrupted to stop what they are doing and go to a patient bedside to just remove them from a backboard. This also increases safety for the patients that the provider is caring for by limiting interruptions so that they can continue to concentrate on the tasks at hand.

Advice and Lessons Learned
1. Present the information about the risks and complications about prolonged spinal immobilization to the entire ED staff. This will help with buy-in.
2. Inform the ED providers that this is a skill that is part of the nursing TNCC (Trauma Nurse Core Certification) program, and if you have nurses that have completed TNCC that will help with buy-in.
3. Engage your local EMS providers.
4. Ensure that there is time for the nurse educators to be in the ED once the initiative has started to observe and help push the process.
5. Ensure that there is a way that the nurses can document the removal in the medical record.
6. Have a flag to the ED provider will know the patient initially presented on an EMS long spine board and was removed per protocol.
**Sustainability**

We continue to monitor for success of the innovation. We can run reports off our EDIS to track door to removal times. We presented the work at the New York State ACEP Scientific Assembly and were recognized for Excellence in Research and Academic Achievement. As a result of that presentation, we have shared our innovation with other organizations and are helping them implement the process and will be looking to study the impact on their door to removal time, in addition to potential decrease in imaging studies ordered as a result of patients being more comfortable and in less discomfort being off the EMS long spine board when evaluated by the ED provider.