Summary:
As part of an EMS / Hospital Collaborative Lean Six Sigma Greenbelt program, a process was developed to shorten EMS offload and improve patient experience.

Hospital: Crouse Hospital
Location: Syracuse, New York
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Category:
- A: Arrival
- B: Bed Placement
- C: Clinician Initial Evaluation & Throughput

Key Words:
- Care Transitions
- Lean Six Sigma
- Patient Satisfaction
- Registration

Hospital Metrics:
- Annual ED Volume: 72,000
- Hospital Beds: 506
- Ownership: Private, Not-For-Profit Community Hospital
- Trauma Level: 2
- Teaching Status: No

Tools Provided:
- EMS Offload Times
- EMS Offload TAT Control

Clinical Areas Affected:
- Emergency Department

Staff Involved:
- ED Staff
- EMS
- Nurses
**Innovation**

As part of an EMS / Hospital Collaborative Lean Six Sigma Greenbelt program, a quick improvement opportunity was identified to allow the ED Charge nurse to take the EMS report, direct the appropriate patients to the waiting room where the EMS Crew would inform the registration staff that they brought the patient. At that time the transfer of care would be complete and the EMS Crew could return to service.

The national increase in emergency department (ED) volume and overcrowding has a negative effect on EMS providers operations. The time it takes for an EMS crew to transfer a patient, give report and have the ED staff assume responsibility for the patient varies. Often there is a delay in the transfer of care from EMS to the hospital resulting in EMS offload delays. These EMS offload delays are occurring in EDs across the country. The longer time an EMS crew spends in the ED waiting to transfer a patient the more stress is placed on the entire EMS system as less resources are available to handle new requests for service and decreases the number of available unit hours ambulances are able to respond to requests. In addition, previously the EMS crews were often directed to the waiting room and then requested to give reports directly to the triage nurse. This created an additional burden, as ED staff were working to see the patients that were already registered. This added wasted time to the door to triage and door to provider metrics, but more importantly could cause a delay in seeing the other patients that presented prior. In addition, the crew would often give report without the patient present, thus adding waste to all pertinent flow metrics of patients not yet seen, and adding waste to a the process, as the patient would have to be interviewed and seen by the ED staff later and receive the information again.

**Innovation Implementation**

The team was comprised of members of ED leadership, Quality Improvement Analysts, ED staff, ED Physician, Cardiology services, various EMS providers from both paid and volunteer services and EMS leaders. We started with a pilot, to determine if a quick hit improvement strategy of giving EMS report to the ED Charge nurse, could help decrease EMS Offload Delays in basic life support patients that were ambulatory or could be placed in a wheelchair and deemed appropriate for placement in the ED waiting room. We notified the ED staff, registration staff, security staff, charge nurses and EMS. We implemented the change and monitored for effectiveness and ensure no negative consequences to patients. We then also reinforced the benefits to our patients, the hospital and our EMS partners to further prioritize their transfer of care of patients brought in via EMS to the Emergency Department.

EMS offload delay is a concern of all the EMS agencies in our region. The problem has been present for many years and meetings have not resulted in any improvement. The EMS Directors, out of frustration, collectively wrote to the New York State Department of Health to ask for their help with the issue in March of 2012. Nearly 7 months prior to that letter, we had structured a Lean Six Sigma Greenbelt Course which we opened to Crouse team members and EMS members free of charge. One of the projects already identified was the EMS offload delay issue.

At Crouse our Mission is "To Provide the best in patient care and Community Health."

Our Crouse core values include:
- C: Community working together;
- R: Respect and honor;
- O: Open and honest communication
- U: Undivided commitment to quality
- S: Service to our patients; and
- E: Excellence through innovation and creativity.

Our Vision #4 states "to strength relationships with other community providers to enhance the continuum of care for those we serve”. We felt obligated to help our EMS partners with this issue. It was an issue that impacted them, the community - because if they were tied up in the Emergency Department, they were not available to answer other calls
for help, which would stress the entire emergency services system, the delays impacts the patient still on the EMS stretcher waiting for transfer of care. The past system also impacted the care and throughput of the other patients already in the waiting room, but not yet had their work up initiated.

Results
In the past many patients arriving via EMS had to wait over 20 minutes to have their care transferred to the hospital staff. We anticipated only a change in the turn-around-time for patients that were directed to the waiting room. However, the improvements were noticed across all patients that arrived via EMS.

The attached graph shows the decrease in the average turn-around-time for all EMS patients. Historically it was 14.5 minutes for 2010-2011. We implemented strategies as part of the Lean Six Sigma Greenbelt Initiatives and the average turnarond time decreased to 8.4 minutes. As part of the Control Phase of Lean Six Sigma (DMAIC), we restudied the times again to mirror the study time from last year (6/3/13-6/28/13), to evaluate if we were holding from last year. As you can see the average turn-around-time is even lower at 7.6 minutes. This is a 47.6% improvement from 2010-2011.

In addition, in 2010-2011, 20% of the EMS crews experienced a Turn Around time of over 20 minutes. Last year it dropped to only 3.6% of EMS Crews experienced a turn-around-time of over 20 minutes. This year to check for control, we found that only 2.3% of EMS crew had a turn-around-time of over 20 minutes. This represents a decrease of 17.7% for EMS Crews experiencing a turnaround time of greater than 20 minutes at Crouse Hospital since 2010-2011. We feel that this innovation has been a huge success.

There has been a sustainable improvement in EMS turn-around-time of 47.6% since 2010-2011, to the current average time of 7.6 minutes. There has been a sustainable improvement in EMS Crew experiencing a Turn Around Time of over 20 minutes by 17.7%, to the current state that 97.7% of EMS Crew experience a shorter than 20 minute turn-around-time.

Timeline
The innovation was part of a Lean Six Sigma Training course. The course and project started in April 2012 and the course ended July 2012, the project continued until May 2013. The implementation only took a few weeks to implement, but needed guidance and attention to help hardwire changes. Direct monitoring of the process and reinforcement during meeting and rounding on the unit was on going. The reminders and sharing of the positive impact our improvements were making with staff and the positive feedback from the EMS community helped transition an innovation into our normal way of doing things.

Cost/Benefit Analysis
There was no direct cost to the organization to implement this project. The cost of the course was already planned for as part of the larger training initiative. The benefit is in the maintaining excellence door to provider times, maintaining a safe environment for our patients, providing the patients and the EMS providers a positive experience with transfer of care and by the strengthening of relationships with our EMS Partners as evidenced by their comments after sharing our follow up control data:

- “We do very much want to continue partnering with CIM as much as possible - the win-win of it all simply cannot be denied”. Jeanne Potanas, Director of Administrative Services, Western Area Volunteer Emergency Services, 7/13/2013
- “I know that our providers love the relationship with Crouse, and this type of feedback goes a long way to enhancing that even further.” Troy D. Hogue Area Manager- Syracuse Rural/Metro Medical Services of Central NY, 7/13/2013
- “Congratulations to all involved. This was a truly wonderful experience. Thanks to the Crouse Team for opening the doors to an educational pathway that many EMS Providers wouldn't otherwise have a chance to explore.” Capt. Colleen Price, RN, Cortland Fire Department, CNY EMS, 7/13/2013
• “Yes, it does look good. Better yet, it FEELS good to be able to get in & get out. Unfortunately, I don't get to transport to CIM as much as I'd like, but when I do it is very nice to see the progress that's been made. You guys are clearly leading the pack as far as offload times go.” Scott Cary, TLC, 7/13/2013
• “This is great stuff. I'll tell you that as field provider I have noticed a significant difference at CIM even though through my 23 year tenure in the Syracuse EMS system it has traditionally been tops to begin with.” Jason Green, EMT-P, Chief, Dewitt Fire Department 7/13/2013
• “Wonderful to hear! A huge thank you to CIM - from Administration down to ED Techs - because without all of their support throughout all of this, well - it wouldn't matter how many studies and ideas were generated. It's putting thought into action that makes the difference! Kudos to Crouse - proving that patients are the priority!” Waves, 7/13/2013
• “Every shift we always want to come to Crouse, it is our favorite hospital in the city to go to.” Eileen Begley, NAVAC, 7/13/2013

Those sentiments were unsolicited. When we shared our project close out findings in July 2013, these comments were sent in. The benefit of the innovation is evident by the response we have received from our EMS partners. It truly fits with the Crouse mission, vision, and values, which was one of the big drivers to complete this project.

Advice and Lessons Learned
1. Engage all stakeholders, for us one big group was EMS. We had EMS come into the ED and be the data collectors. That way, there were no issues with the validity of the data.
2. Continue to encourage staff as to the importance of any new innovation and to keep nurturing it and them until it is hardwired and the benefit is clear.
3. Listen to the needs of all your customers. Look for ways to do things that reduce waste, we worked hard to remove all the non-value added steps and decrease the variation in the processes.
4. Have front line staff working the process and involved from the beginning in understanding and defining the true problem, working on the solution and being the engaged champions to move it forward.

Sustainability
The plan is to continue to encourage staff to anticipate the needs of our EMS patients and to work to think of new ways to better serve our patients and our EMS team members. Monitoring of the process will continue as part of rounding and sharing new comments and feedback received from EMS and patients and to continue to share our current state as part of our Quality, Safety and Efficiency metrics.

Tools to Download
• EMS Offload Times
• EMS Offload TAT Control
EMS Offload Time

% Offload > 20 minutes

Pre, Post Implementation and Control

Pre (2010-2011) | 80% (avg mins 29.6)
Post 2012 | 96.4% (avg mins 27.9)
Control 2013 | 97.7% (avg mins 25.0)

17.7% reduction in offloads > 20 minutes
EMS Offload Time
Avg TAT (in minutes) All Arrivals

2010-2011 Pre-"Quick Hit" 14.5
S/P 2012 Implementation 8.4
2013 CONTROL 7.6

47.6% Decrease