

Journal Club Synopsis
Block 10, March 18, 2014
Discussion leader: Edward Smith, MD
Host: Brian Springer, MD

How can Lean methodologies be used to minimize excessive steps in ED processes?

Clinical Scenario: As you are about to start a Friday evening shift, you are greeted by the all too familiar sights and sounds of an overcrowded emergency department. There are 4 boarding patients awaiting transfers, a line of EMS arrivals attempting to navigate their way into the department, a waiting room with 30 patients, three patients sitting in the hallway and a wandering intoxicated patient that keeps offering to read the palm of anyone who wants to know their future. After taking a deep breath, you sit down to prepare to sign in. Before you are even able to click onto your first patient the charge nurse approaches and asks if you think any patients will be quick to discharge or admit upstairs.

After discussing the lack of inpatient beds with the departing team, you begin to wonder aloud if there are any strategies that could be adopted that would improve the patient flow through the emergency department. You suddenly remember hearing about a process that could help identify ways to “improve care via efficiency in the emergency department?”

Article 1:

Application of Lean Manufacturing Techniques in the Emergency Department, Dickson EW, Singh S, Cheung DS, Wyatt CC, Nugent AS. *J Emerg Med.* 2009, Aug;37(2):177-82. doi: 10.1016/j.jemermed.2007.11.108. Epub 2008 Aug 23. PubMed PMID: 18722732.

The purpose of this article was to evaluate whether the adoption of Lean principles by an Emergency Department improves the value of emergency care delivered. The implementation followed a six-step process of Lean education, ED observation, patient flow analysis, process redesign, new process testing, and full implementation. Process redesign focused on generating improvement ideas from frontline workers across all departmental units. Value-based and operational outcome measures, including patient satisfaction, expense per patient, ED length of stay (LOS), and patient volume were compared. Group discussion of this article demonstrated most to approve of reducing redundancy and improving efficiency but our main debate seems to be “...at what cost?” With LOS being a critical factor, are we going to be putting patients at risk of incomplete work ups? The group seemed to support the implementation of protocoling initial lab orders for those patients meeting certain criteria for chest pain and shortness of breath as most disposition delays are secondary to a laboratory reporting.

Article 2:

Apply Lean: Implementation of a Rapid Triage and Treatment System, Murrell KL, Offerman SR, Kauffman MB. *West J Emerg Med.* 2011 May;12(2):184-91. PubMed PMID: 21691524; PubMed Central PMCID: PMC3099605

The objective of this article was to evaluate how applying Lean principles to develop a Rapid Triage and Treatment (RTT) system affected ED metrics in a community hospital. Using Lean

principles, the hospital made ED process improvements that led to the RTT system. Using this system, patients underwent a rapid triage with low-acuity patients seen and treated by a physician in the triage area. A retrospective, observational study was then performed comparing hospital electronic medical record data six months before and six months after implementation of the RTT system. Several of our faculty members commented on this process as it has been implemented in one of our local teaching hospitals. The overall assessment was that it did improve overall throughput times but did not provide any real benefit to the patients being seen. This suspicion was confirmed via metrics and the triage physician was subsequently removed and placed back into a pod system. Our group discussion focused on recent healthcare trends which demonstrate the increasing patient population trend to utilize the emergency department for lower acuity visits leading to increased waiting times for those who would be triaged to these areas.

Article 3:

Use of Lean in the Emergency Department: A Case Series of 4 Hospitals. Dickson EW, Anguelov Z, Vetterick D, Eller A, Singh S. *Ann Emerg Med.* 2009 Oct;54(4):504-10. doi: 10.1016/j.annemergmed.2009.03.024. Epub 2009 May 6. PubMed PMID: 19423187.

This article describes the effects of Lean on quality of care in four emergency departments. The participants were 2 academic and 2 community EDs that instituted Lean as their single process improvement strategy and made observations of their behavioral changes over time. They measured metrics related to patient flow, service, and growth from before and after implementation: length of stay, patient satisfaction, percentage of patients who left without being seen by a physician, the time from ordering to reading radiographs and changes in patient volume. Three of the four hospitals showed improvements despite increasing patient volumes over 1 year. They were able to identify one of the most important factors in being successful was the support of both those in ED administrative positions and ED providers. Group discussion focused on the ED being an unpredictable environment. The hospitals evaluated in this setting were of lesser acuity and volume which may hide difficulties of throughput seen in larger trauma centers when faced with high acuity polytrauma. The aspects of Lean are attractive and contain methodology important to any process improvement. We felt the most important being the support of frontline workers in identifying problem areas and staff buy-in when implementing changes.

Synopsis:

With increasing healthcare costs and number of patients seen in the emergency department yearly there has to be an effective way to maximize margins and provide a quality experience for the customer. A major focus of assessing the quality of emergency department care has turned to patient satisfaction as we see more patients inappropriately utilizing emergency department resources for less urgent care needs. More competition, increased health care costs and decreasing per patient reimbursement rates seem to be the way of our future. What the patient may define as value (i.e. obtaining an imaging study to determine the cause of back pain), the physician may deem unnecessary, insurance may be unwilling to pay for, and society may have to consume the cost of. Many studies on Lean in the ED define value relative to time, attempting to show decreases in length of stay. While it may seem to benefit the hospital, a shorter

emergency departments stay with an incorrect diagnosis and inappropriate treatment would not have greater value in the eyes of the patient. Will we see an increase in medical errors as government mandates for reimbursement effect our performance?

Our groups' general consensus was in favor of improving efficiency and minimizing redundancy. If the application of LEAN principles continues to prove effective without affecting the quality of care it's a welcomed change.