Summary:
Decreasing the time patients spend in the waiting room to improve satisfaction and the timeliness of care.

Hospital: Saint Francis Hospital and Medical Center
Location: Hartford, CT
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Category:
- C: Clinician Initial Evaluation & Throughput

Key Words:
- Continuity of Care
- Door-to-Doc
- Information Systems
- Left-Without-Being-Seen
- Patient Satisfaction
- Wait Times

Hospital Metrics:
- Annual ED Volume: 80,000
- Hospital Beds: 612
- Ownership: Not-For-Profit
- Trauma Level: 2
- Teaching Status: Yes

Tools Provided:
- N/A

Clinical Areas Affected:
- Emergency Department
- Triage

Staff Involved:
- ED Staff
- Nurses
- Physicians
- Social Workers
Innovation
A significant portion of the patient time journey is spent "waiting" for care to start, mostly in the waiting room. We view these wait times as potentially detrimental to the patient experience, but more importantly amenable to improvement. The goal of our project was to alleviate barriers to timely care of the patient in the ED.

Our innovation was coupled into a research project to assess the impact of implementing an innovative solution basket of three designed interventions on the patient experience in the emergency department. The solution basket of our patient centered throughput strategy is comprised of three specific interventions targeting care processes and the prevailing ED "culture" associated with patient wait times and expectations. Figure 1 illustrates the barriers and implications that existed at the time of the innovation development.

Figure 1: ED Throughput Time-Flow Map
Solution Basket

1. High Performance Staffing Model
Physicians will work in a high-performance staffing model without individual zones. Historically our department assigned physicians to a fixed, often contiguous number of bed assignments or a "zone". In a zone department physicians tend to narrow their focus to their individual zones. We felt zones were very ineffective in our Department, as they required overlap and due to inpatient boarding. It was a common occurrence to have providers with a full "zone" of boarding patients not seeing new patients, while many new patients were waiting to be seen in the waiting room. The high-performance physician staffing eliminated the zone complex in favor of viewing the whole department including the waiting room as one large zone (see Figure 2).

Figure 2: Staffing Zones

Our tracking board allows patients to be viewed in a manner of next to be seen by time in the department and acuity. The physicians reoriented themselves to see the next to be seen patient by viewing the tracking board in this manner. The mechanics of the high-performance staffing is seven, 9 hour shifts. The shifts start at 6 AM with a new provider coming on every two hours essentially up until 5 PM. With the exception of the 6 AM provider, all incoming physicians start their shift immediately able to see new patients because the sign out from earlier providers is not linear; it is staggered to be at least one hour into any oncoming providers shifts.

2. Limit Waiting Times
A time sensitive trip was initiated for a maximum wait for physician assessment for patients in the waiting room. This time was set to be four hours. Wait times up to, and exceeding eight hours were observed in our Department.
The consequences of this "unnecessary" wait time included denied care (left before care is delivered), high risk environment (error-prone), as well as patient and staff dissatisfaction. We adopted a system that made a patient who was approaching, or at the four hour wait time the "next to be seen." (See Figure 3)

3. Horizontal and Vertical Sorting
Waiting room patients are designated as either "vertical" or "horizontal" depending on their need to be placed in a physical bed. This process of horizontal and vertical sorting is well described in being adopted across many emergency departments as an effective measure to utilize what is often the rate limiting asset of any emergency department, a physical bed. Vertical patients, once identified by the physician and adequately assessed would remain vertical in either our large triage area or waiting room during their visit." The new process is illustrated in Figure 3 below.

Figure 3: Patient Entry to ED (new model)
Innovation Implementation
The core team comprised: John Pettini D.O., FACEP assistant director, emergency department co-investigator; Patti LaMonica RN, MSN service line Dir. emergency medicine co-investigator; Danyal Ibrahim M.D., MPH. Director of Quality and Research, Chief of Toxicology, primary investigator

Our hospital like many others runs chronically short of available inpatient beds and thus creating a chronic boarding situation depriving the ED of adequate beds. In 2011 our department moved into a new, larger physical plant; however that did nothing to improve our metrics or throughput. We are one of the few ED's nationally that has tried the physician in triage concept. With nearly 3 years of consistently having a physician in triage, we felt it was a much less than adequate answer. Primarily the triage physician concept falls short in the queuing theory because one line feeding into multiple providers is much more effective than one line feeding into one provider. Since we had the FTE approved for the physician in triage, we pulled that physician out of triage and placed him into the mix of a high-performance schedule with a new provider entering the department every two hours during the peak inflow curve of the day. Thus, the culture of our physicians in this open geography high-performance model is to immediately see the next patient wherever they may be at that moment including the waiting room. It should also be noted we had previously implemented immediate bedding with minimal triage and bedside registration prior to our new patient centered throughput program.

Timeline
We implemented our program in March of 2012. This was at a time of critically high inpatient boarding in the ED, with very long waits and all the accompanying undesirable consequences that come with that situation. There was also a high degree of staff dissatisfaction across all levels of providers, due to the tension filled milieu created by patients and family members that are made to needlessly wait extended periods of time in the emergency department. This concept had been discussed for nearly 2 years prior at the management level but the main reluctance to implement revolved around some hesitation of having the physicians not be assigned to a set zone of beds. It was worrisome that the physicians may not be as productive when asked to see patients who are located physically in many locations throughout the department including the waiting room. However during the two-years this program is periodically discussed the physician compensation structure changed to include an incentive program based on productivity and quality. That aligned at the time with what was felt to be a crisis level in regards to the metrics of door to Dr. time, wait in waiting room greater than four hours, high left without being seen rates, and low physician and nursing staff morale.

We essentially implemented two of the three interventions immediately which were the high-performance physician schedule and the four hour trip to be seen for anyone waiting up to the four hour point. The vertical horizontal sorting concept was implemented a few months into the program. The rollout was similar to previous procedural changes in communications by e-mail and direct staff meetings as well as one-to-one sessions with the ED rank-and-file. ED management increased their presence on the unit particularly in the first couple of months. We had long before had some automation to capture metrics through our ED tracking system. One of the architect physicians of this concept took on the responsibility of tracking and reporting the metrics for both the ED staff and is part of the research project. The hospital awarded the ED a $10,000 "best care" grant to study the effectiveness of the innovation.
Results

As alluded to previously, the components of this innovation in one form or another had been floated within the ED management for nearly 2 years prior to the onset. Once the decision was made to green light the idea, it was implemented within one month.

This innovation literally resulted in what can be described as dramatic overnight results that have sustained over a 16 month period since initiation. In the first month we saw the following results over the previous month: (See Figures 4 and 5)

- Door-to-doc time went from 72 minutes to 46 minutes
- Patients waiting greater than four hours to be seen dropped from 6% to 1%
- Left without being seen dropped from 4.5% to 2%

<table>
<thead>
<tr>
<th>Month</th>
<th>Registrants</th>
<th>Visits</th>
<th>LWBS</th>
<th>%LWBS</th>
<th>Door to MD</th>
<th>&gt; 4 hour Wait</th>
</tr>
</thead>
<tbody>
<tr>
<td>January '12</td>
<td>6573</td>
<td>6327</td>
<td>246</td>
<td>3.7%</td>
<td>75</td>
<td>6%</td>
</tr>
<tr>
<td>February '12</td>
<td>6362</td>
<td>6178</td>
<td>184</td>
<td>2.9%</td>
<td>72</td>
<td>6%</td>
</tr>
<tr>
<td>March '12</td>
<td>6852</td>
<td>6698</td>
<td>154</td>
<td>2.2%</td>
<td>46</td>
<td>1%</td>
</tr>
</tbody>
</table>
Cost/Benefit Analysis
This was a zero cost innovation for our department. It was more a matter of realigning the existing workforce and processes. It required no additional manpower. Now at 16 months since implementation, we have maintained a 2.5% reduction in our left without being seen rate. With our annual census of 80,000 patients, we expect to realize $1 million in revenue per each 1% reduction in our left without being seen. This translates to $2.5 million annually for a zero cost innovation. Additionally, the 30 min. reduction in door to M.D. time allows our department to see approximately 10% more patients per day than prior to the intervention.
Advice and Lessons Learned

- There is never a perfect time to start any large initiative. Sometimes you have to just start where you stand and get the project up and running. A few good champions at the start-up of a good project can overcome many of the perceived missing pieces until those pieces come into place.
- No matter how much preamble in staff education is given, it is never enough. Start the overview early, and include every member possible of the department in the educational process. The benefits and the goal must be known by all members of the team. (See Figure 6)
- Cultures are very difficult to change, but by no means are impossible to change.

Figure 6: Saint Francis Solution Framework
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**Sustainability**

The sustainability of any plan in an emergency department hinges on the ability to execute that plan without deviation across all shifts on all days of the week. There cannot be the allowance for variation or inter shift deviations. Departmental buy in across all levels of providers is critical and can be sustained by a constantly feeding back both positive and negative to the entire staff. We make our dashboard metrics now a part of the culture in every meeting we can. This includes the physician business meeting, the all staff meetings, shared governance, as well as upper management. Specific to maintaining the high-performance schedule our physicians work in, we feel it incentive and quality based compensation plan is key to sustainability. *(See Figure 7)*

**Figure 7: Innovation Results (September 2011 – February 2013)**

<table>
<thead>
<tr>
<th>Registrants</th>
<th>Visits</th>
<th>Door-Doc-Time Main ED (Minutes)</th>
<th>% in Waiting Rm &gt; 4 hours</th>
<th>LWBS</th>
<th>Avg Boarding Time (hours)</th>
<th>% Boarding &gt; 6 hours</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sep '11</strong></td>
<td>6,567</td>
<td>6,258</td>
<td>100</td>
<td>10.0%</td>
<td>309</td>
<td>4.7%</td>
</tr>
<tr>
<td><strong>Oct '11</strong></td>
<td>6,625</td>
<td>6,305</td>
<td>88</td>
<td>8.0%</td>
<td>320</td>
<td>4.8%</td>
</tr>
<tr>
<td><strong>Nov '11</strong></td>
<td>6,600</td>
<td>6,263</td>
<td>91</td>
<td>9.0%</td>
<td>337</td>
<td>5.1%</td>
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<tr>
<td><strong>Dec '11</strong></td>
<td>6,273</td>
<td>6,102</td>
<td>74</td>
<td>5.0%</td>
<td>171</td>
<td>2.7%</td>
</tr>
<tr>
<td><strong>Jan '12</strong></td>
<td>6,573</td>
<td>6,327</td>
<td>87</td>
<td>8.0%</td>
<td>246</td>
<td>3.7%</td>
</tr>
<tr>
<td><strong>Feb '12</strong></td>
<td>6,362</td>
<td>6,178</td>
<td>83</td>
<td>7.0%</td>
<td>184</td>
<td>2.9%</td>
</tr>
<tr>
<td><strong>Average over 6 mo</strong></td>
<td>39,000</td>
<td>37,433</td>
<td>87</td>
<td>7.9%</td>
<td>1567</td>
<td>4.0%</td>
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<tr>
<td><strong>Mar '12</strong></td>
<td>6,852</td>
<td>6,698</td>
<td>51</td>
<td>1.0%</td>
<td>154</td>
<td>2.2%</td>
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<tr>
<td><strong>Apr '12</strong></td>
<td>6,800</td>
<td>6,627</td>
<td>63</td>
<td>3.0%</td>
<td>173</td>
<td>2.5%</td>
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<td><strong>May '12</strong></td>
<td>7,144</td>
<td>6,877</td>
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<td>3.0%</td>
<td>267</td>
<td>3.7%</td>
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<td><strong>Jun '12</strong></td>
<td>6,796</td>
<td>6,553</td>
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<td>3.0%</td>
<td>243</td>
<td>3.6%</td>
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<td><strong>Jul '12</strong></td>
<td>7,198</td>
<td>6,938</td>
<td>71</td>
<td>5.0%</td>
<td>260</td>
<td>3.6%</td>
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<td><strong>Aug '12</strong></td>
<td>7,115</td>
<td>6,861</td>
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<td>4.0%</td>
<td>254</td>
<td>3.6%</td>
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<td><strong>Sep '12</strong></td>
<td>7,143</td>
<td>6,841</td>
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<td>4.0%</td>
<td>302</td>
<td>4.2%</td>
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<tr>
<td><strong>Oct '12</strong></td>
<td>6,988</td>
<td>6,745</td>
<td>62</td>
<td>4.0%</td>
<td>243</td>
<td>3.5%</td>
</tr>
<tr>
<td><strong>Nov '12</strong></td>
<td>6,504</td>
<td>6,344</td>
<td>53</td>
<td>2.0%</td>
<td>160</td>
<td>2.5%</td>
</tr>
<tr>
<td><strong>Dec '12</strong></td>
<td>6,979</td>
<td>6,795</td>
<td>52</td>
<td>2.0%</td>
<td>184</td>
<td>2.6%</td>
</tr>
<tr>
<td><strong>Jan '13</strong></td>
<td>7,264</td>
<td>7,060</td>
<td>54</td>
<td>2.0%</td>
<td>204</td>
<td>2.8%</td>
</tr>
<tr>
<td><strong>Feb '13</strong></td>
<td>5,718</td>
<td>5,630</td>
<td>41</td>
<td>1.0%</td>
<td>88</td>
<td>1.5%</td>
</tr>
<tr>
<td><strong>Average over 6 mo</strong></td>
<td>40,596</td>
<td>39,415</td>
<td>55</td>
<td>2.6%</td>
<td>1,181</td>
<td>2.9%</td>
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