CREATING A LEAN EMERGENCY DEPARTMENT

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Why Lean?

- Four years ago, it was not uncommon to have more than 30 patients in the waiting rooms with waits of 5-6 hours to be seen.
- Long waits for admitted patients
We began to wonder...

Is there a better way?
What is Lean?

- Lean applies concepts, tools, and management prescriptions to improve operating process.
- This means trying to get rid of all the things that cause waste in our day…. Walking because the otoscope light is out, waiting for a bed for an admitted patient, not being able to find equipment.
Lean organizations:

- More efficient
- Faster and highly reliable
- Higher quality of care
- More responsive to change
- *Perform way above the rest with MORE SATISFACTION FOR BOTH PATIENTS AND EMPLOYEES!*

Can a single organization redefine health care? At Kaiser Permanente, we think so.
Key Principles

- Focus on the PROCESSES that give customers value
- Examples:
  - MANUFACTURING
    - Cut cloth → Sew Pieces → Assemble Pieces → Add buttons
  - MEDICINE
    - Order CT scan → Prep patient → Perform Scan → Read Scan
Eliminate Waste

- OVERPRODUCTION (too long at triage - MSE)
- MOVEMENT (back to x-ray due to wrong order)
- INVENTORY (where is that equipment?)
- OVER PROCESSING (too many tests/consultants)
- WAITING (not matching staffing to volumes)
- TRANSPORTATION (long delays to take patients)
Goal: Promote Flow

- Synchronize and tighten processes
- Reduce batching
- Establish clear signals
Continuous Process Improvement

- Change the mindset of the organization to a “community of scientists”
- Never be satisfied
- Problems offer opportunities to fix the system
- Use disciplined methodologies for improvement
Key Techniques

- Value stream mapping: sit and observe
- 6-S: set in order, shine, standardize, safety, sustain
- Pull system to replenish inventory, visual controls
- Mistake proofing, root cause analysis
How do Value Stream Maps Help?

- VSM of an ED in Virginia of a patient with an ankle sprain....

**Patient signs in**
- Arrives
- Tech quick look
- Sign in sheet

**Triage**
- Tech triage
- RN signs off

**Bed Assignment**
- Dragged in bed in comp system

**Evaluation & Treatment**
- Nurse evaluation
- MD evaluation
- Tests ordered
- Treatment ordered
- Waiting for results

**Discharge**
- MD orders discharge
- RN takes vitals
- RN discharges pt

- 4 min
- 9.1 min
- 7.1 min
- 17.2 min
- 1 min
- 6 min
- 79.4 Min
- 10 min
- 16.4 Min
So…. A simple ankle sprain

In the ED for 151 minutes!!
After Value Stream Map & Process Change

Patient signs in

Evaluation and treatment in triage bay

Discharge

Patient signs in
Tech quick look
To Fast Track

MD interviews while RN enters in computer
Nurse performs vitals
MD orders treatment
Nurse treats patient while MD charts

MD orders discharge
RN discharged patient

4 min → 5 min → 20 min → 0 min → 5 min
Now... an ankle sprain

- In and out of the ED in 34 minutes!!
- No change in staffing, just a change in PROCESS!!
What have we done?

- Rapid Triage and Treatment
- Team Assignment System
- Clinical Decision Area
- Staffing for Volumes
- Improved Admission Process
Rapid Triage and Treatment

- One solution: Separate out the low acuity patients into a separate queue if volume present.
- For us: RTT- Rapid Triage and Treatment Area
- About 40% of our patients are ESI level 4 or 5
- Basic principle: The patient is in the emergency department to see a doctor. If we put a doctor in the triage area this eliminates many steps and makes the process much more efficient.
- Patients seen in this area with the same Chief Complaint are discharged home in half the time of patients seen in the main ED.
Results

Within one month an immediate improvement in LWBS rates, length of stay.

No change in number of staff working.

Changed culture in the department!!
Results - why did it work?

- Reduced variation in service time for low acuity patients
- Reduced average service time
- Reduced *muda* or waste - highly motivated team within steps of each other
Taking it further: Team Assignment System

- Wanted to bring the efficiencies of the RTT to the main ED.
- Color coded teams consisting of one MD, three RN’s, and a tech in a geographic area.
- Most important: Patients are assigned to a team on arrival in the ED: creating ownership in the waiting room!
Taking it further: Team Assignment System - Results

- Physician ownership for patients in the waiting room
- Time to physician from 55 minutes to 37 minutes immediately
- Decreased length of stay of about 30 minutes for discharged patients.
Clinical Decision Area

- Decreased Admits to Hospital
- Aggressive treatment of all patients in the first 4 hours of admit
- Decreased length of stay for admits
- Utilization markedly improved!

CDA Data

- Discharge home
- Admit
Staffing for Volumes

Average Arrival Rates by Hour, Mondays 2009
This data shows that we are basically TWO ED’s in our arrival data with much higher arrivals Saturday, Sunday and Monday.

But...what hours show the increased volume?
Arrival Data by Hour

- So, surprisingly, this data shows our increased arrivals come on the day shift from 10am-6pm.
Staffing for Volumes

- Now with this data, we can change our shifts to match arrivals, and have different shifts for different days!
- Better for patients and staff!
Improving the Admission Process

Patient Flow Continuum
Improving the ED Admission Process

- Set a target time for ED Admit Decision to Unit Arrival of 45 minutes!
- 15 minutes Decision to Bed Assignment
- 30 minutes Bed Assignment to Arrival on the unit.
Improving the ED Admission Process

- All units give the ED phone numbers that will be answered 24/7
- All patient handoffs are verbal (phone or bedside)
- Quality audits to assure compliance
- Policy changes to reflect the process and create clear expectations.
Improving the ED Admission Process

ED Patient Admit Flow
Reducing the time from Admit Decision to Unit Arrival

**Process Design**

**Action Plan**
1. All Units Provide ED with a Charge RN and Unit Specialist phone number(s) that will be answered 24/7. Include Phone List Maintenance Process Directors/ED Manager
2. All Patient Hand-offs will be Verbal, i.e. by phone or in person. An RN in the receiving unit must be available to take the call or receive the face-to-face report. HQPS, Nursing Admin
4. Update Patient Transfer Policy to reflect this process to include Stds of Behavior, clear expectations and appropriate discipline steps for non-compliance. MTaylor/Directors/ED Mgr

**Admit Decision to Bed Assignment - 15 Minutes (Currently Averaging 30 Minutes)**

**Patient Transferred from ED to Nursing Unit - 30 Minutes (Currently Averaging 90+ Minutes When Bed Read)**
In conclusion....

- Using Lean Principles can make dramatic improvements in patient flow.
- Better for patients AND staff
- Continuous improvement
- Questions?