Lean Six Sigma

*Why it’s important, how it’s being applied and some ways you can get involved moving forward*

Jarrod McDonald
Project Manager, Health System Operations
UC San Diego Health

Melinda Hudson
Assoc. Project Manager, Health System Operations
UC San Diego Health
Learning objectives

1. Understand why Lean Six Sigma matters in healthcare

2. See how the methodology is being applied

3. Discover applications for “lean thinking” through a successful LSS healthcare anecdote

4. Learn how to facilitate everyday problem-solving with a few tips & tricks
Why LSS Matters in Healthcare
The state of US healthcare

1. What was the US total health care spend in 2016?
   A. $0.7 trillion
   B. $1.3 trillion
   C. $1.9 trillion
   D. **$3.4 trillion**
   E. $5.1 trillion

...or $10,523 per person. 4.8% increase from 2015.

2. Rank these nations from best to worst in quality of health care systems:
   39. A. Cuba
   1. B. France
   2. C. Italy
   30. D. Canada
   37. E. United States
Importance of improvement

Healthcare Spending per capita vs. Average Life Expectancy Among OECD Countries

- Linear Trend line
Two hospitals win the 2013 Malcolm Baldrige National Quality Award, the nation's highest presidential honor for innovation and performance excellence, U.S. Commerce Secretary Penny Pritzker announced on Wednesday.

The change Dean is talking about is kind of like what happened when most companies stopped offering pensions. Instead, many just contribute money to their workers' retirement accounts.

With health care now, some companies are saying: "Here's $300 to $400 a paycheck. Go use that toward buying insurance on a 'private exchange.'"
Improvement is typically not taught in medical schools

Do you believe your instruction in the following areas was inadequate, appropriate, or excessive? (Answers from medical students)

<table>
<thead>
<tr>
<th>GRADE</th>
<th>TOPICS</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>1. Disease management, privacy, pt interview, communication with pt, problem solving, professionalism</td>
</tr>
<tr>
<td>B</td>
<td>2. Clinical decision making, physical exam, ethics, teamwork, disease prevention</td>
</tr>
<tr>
<td>C</td>
<td>3. Physician communication, biostatistics, community medicine, culturally appropriate care, underserved populations</td>
</tr>
<tr>
<td>F</td>
<td>4. Health systems, health care quality improvement, policy, financing, managed care, economics, public health, community health</td>
</tr>
</tbody>
</table>
Changes in our environment

Healthcare Reform

We Now Compete on

- Improved Patient Experience
- Lower Cost (Efficiency)
- Improved Quality (Outcomes)
What’s one remedy for the problem?
Lean Six Sigma optimizes the ability to problem solve and supports strategic initiatives with a new way of thinking

- **Performance Management** is enhanced with strong tools/methodology for problem solving, implementation, and sustainment
- **Patient and staff experience** improve with better outcomes, less re-work, and more value added tasks
- **Growth** occurs with better patient outcomes, increased capacity, and improved experience
- **Clinical excellence** is promoted by reducing process variation, eliminating waste/errors, and improving access

*Lean Six Sigma is a FOUNDATIONAL METHODOLOGY that will drive:*

1. **QI & COST SAVING INITIATIVES**
2. **STRATEGIC GOALS**
3. **A CULTURAL TRANSFORMATION**
4. **HIGH RELIABILITY**
What is high reliability?

- **$6\sigma = 99.9997\%$ compliance.** It is a process that produces no more than 3.4 defects per 1 million opportunities!

- Let’s conceptualize that…. 

- **Certain situations may call for different sigma goals**
  - Pharmaceutical company – always at risk for wrongful death lawsuit
  - ED Left Without Being Seen – inevitable that some people will get triaged and walk out before seeing a physician (i.e. they feel better)
Applying LSS in Healthcare
Understanding the difference

Lean
- Remove waste
- Increase process speed
- Eliminate non-value added steps and time in process
- Fix connections between steps
- Improve process efficiency

Six Sigma
- Reduce variation
- Improve quality and accuracy
- Optimize remaining process steps
- Improve process effectiveness

Drive Performance Management

↓ Waste
↑ Speed

↓ Defects
↑ Accuracy
DMAIC Process

**Improve the efficiency and effectiveness of existing services and processes**

**Define**
- Gather information on nature and extent of problem

**Measure**
- Identify and measure potential causal factors

**Analyze**
- Study the data to determine root cause(s)

**Improve**
- Pilot interventions and assess improvement

**Control**
- Create Control Plan and follow-up

**Lean Six Sigma = Six Sigma + Lean**
DMAIC vs. Change Management

Define

Build Awareness of the change.

Measure

Create Desire to Change amongst those affected

Analyze

Train Knowledge for the change.

Improve

Ensure Ability to change.

Control

Reinforcement of the change.
How is Lean Six Sigma like clinical care?

Obtain patient history & symptoms & set the goal for plan of care - **DEFINE**

Perform physical and diagnostics (e.g. blood work, x-ray, etc...) - **MEASURE**

Study findings and diagnose root cause - **ANALYZE**

Implement treatment and assess patient improvement - **IMPROVE**

Prescribe treatment plan and follow-up with patient - **CONTROL**
Different projects require different tools

<table>
<thead>
<tr>
<th>Scope</th>
<th>Methods</th>
<th>Duration</th>
<th>Expected ROI per Project</th>
</tr>
</thead>
<tbody>
<tr>
<td>Big projects</td>
<td>More formal</td>
<td>4 to 7 months</td>
<td>$500K – $1 million</td>
</tr>
<tr>
<td>Black Belt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Small projects</td>
<td>Less formal</td>
<td>2 to 4 months</td>
<td>$100K - $250K</td>
</tr>
<tr>
<td>Green Belt</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Day to Day</td>
<td>More formal</td>
<td>0 to 2 weeks</td>
<td>$1K or more</td>
</tr>
<tr>
<td>Go See</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Think</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Do</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Application of the methodology

**Why LSS?**

**Applying LSS**

**Anecdotes**

**Tips & Tricks**

### DMAIC Level

<table>
<thead>
<tr>
<th>Black Belt DMAIC</th>
<th>Green Belt DMAIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>5%*</td>
<td>Problem related to multiple service lines or the entire hospital. Heavier statistic analysis.</td>
</tr>
<tr>
<td>15%*</td>
<td>Problem related to multiple areas or a department, requiring complex problem solving tools. Little to no statistics.</td>
</tr>
<tr>
<td>80%*</td>
<td>Problems that are smaller in scope (i.e. one unit or area). Require minimal data collection.</td>
</tr>
</tbody>
</table>

* Directional percentages. May vary depending on the area and year.
LSS Healthcare Anecdotes
LSS examples in healthcare

1. Throughput improvement / capacity optimization (i.e. length of stay)
2. Reducing infection rates / infectious diseases (e.g. sepsis, CDI, CLABSI)
3. **Improving EVS turnaround times**
4. Reducing medication errors (e.g. chemotherapy, medical waste)
5. Reducing OR cancellation % and turnaround times
6. Revenue cycle optimization and payment authorization turnaround time reduction
7. Reducing # of hypoglycemic events in ICUs
8. Outpatient clinic optimization (e.g. reduce wait times / no-shows)
9. Reducing overtime utilization through elimination of waste
10. Reconfigure sterile processing
EVS Bed Turnover Reduction: DEFINE
# EVS Room Turnover Time Reduction - Project Charter

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Room Turnover</th>
<th>Department</th>
<th>EVS, Facilities</th>
<th>Date Start / End</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Project Sponsor</strong></td>
<td>Carl Solomon and Margaritta Baggett</td>
<td>Carl Solomon</td>
<td>Landon</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Project Leads</strong></td>
<td>Kelvin, Geoffrey, and Landon</td>
<td>Blanca D.</td>
<td>Kelvin</td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Lean Facilitator</strong></td>
<td>Melinda Hudson</td>
<td>Toranda</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

## Situation / Problem Statement
Evs staff not able to meet room turnover demand in appropriate amount of time during their shift. Nursing and NHS feel patients are waiting for available beds.

## Improvement Measures

<table>
<thead>
<tr>
<th>Metric</th>
<th>Current</th>
<th>Target</th>
</tr>
</thead>
<tbody>
<tr>
<td>Room Turnover Time (mins) La Jolla</td>
<td>60</td>
<td>75</td>
</tr>
<tr>
<td>Room Turnover Time (mins) Hillcrest</td>
<td>52</td>
<td>60</td>
</tr>
</tbody>
</table>

## Timeline

<table>
<thead>
<tr>
<th>Activity</th>
<th>Due</th>
<th>Who</th>
<th>Status</th>
</tr>
</thead>
<tbody>
<tr>
<td>Process map</td>
<td>March</td>
<td>EVS team</td>
<td>100</td>
</tr>
<tr>
<td>Audit transport prob</td>
<td>March</td>
<td>Nursing Work Group</td>
<td>2</td>
</tr>
</tbody>
</table>

## Background & Benefits
Patient able to be roomed quicker. Benefit to staff- improved employee ergonomics and morale.

## Goals/Objectives
Improve multidisciplinary communication. Reduce waste in turnover process to improve turnover times closer to national benchmark.

## Risks & Mitigation Strategy
Notify unions of bed stripping responsibility for Nursing and EVS. Reached out to other UC campuses who have this shared responsibility between those two departments.

## Scope
From the time that a nurse discharges a patient to the time the room is marked clean in EPIC for the next patient.

## Constraints / Assumptions
Bed stripping owned by Nursing Department. It is a large root cause to delaying EVS start times.

## Next Steps
Quarterly Report to Nursing Exec team about turnover times. Maintain Weekly Status Report on turnover times, by stage.
It was important to have a clear problem statement and scope defined by various stakeholders.

**The problem statement:**
- Inpatient rooms were being turned over too slowly, which could lead to a downstream effect of not being able to admit patients in a timely manner.
- EVS staff did not have a formalized process for how to handle STAT requests with their current staffing model.
- Poor communication between multidisciplinary departments regarding the room turnover process.

**The scope** of room turnover is from when nursing requests a discharge/transfer order in EPIC to when the room is marked cleaned/complete in EPIC.

Nursing (enters discharge/transfer request) → Transport moves patient and notifies EPIC of dirty bed request → EVS responds to room turnover request → Patient room cleaned and ready for new patient.

Room Turnover in EPIC
Terms for this project were uniformly defined for all three departments: EVS, Patient Flow, and Nursing.

In EPIC, Turnaround = dirty unassigned bed to cleaned bed.

Turnaround Process:
- Dispatch Time
- Travel Time
- Clean Time
EVS Bed Turnover Reduction: MEASURE
Stakeholders created a current state room turnover process map to identify pain points.

### Room Turnover Process

<table>
<thead>
<tr>
<th>Nursing</th>
<th>Transport</th>
<th>EVS</th>
<th>Nursing House Supervisor</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nurse enters request for transport in chart</td>
<td>Transport receives EPIC page for request</td>
<td>EPIC Bedboard shows any unscheduled request</td>
<td>Room goes on hold in RMS 1.9 with the assigned EVS custodian unless removed by EVS Supervisor</td>
</tr>
<tr>
<td>Transport receives EPIC page for request</td>
<td>EPIC assigns transporter to the request</td>
<td>What is the current availability of EVS customer?</td>
<td>STAF order to start room clean</td>
</tr>
<tr>
<td>Transport assigns transporter to the request</td>
<td>Transporter acknowledges request &amp; scheduled transport</td>
<td>EVS Customer assigned to a room &amp; travels to room; request is marked as complete</td>
<td>Charge Nurse calls PAH for STAT room clean</td>
</tr>
<tr>
<td>Transporter attaches transporter to the request</td>
<td>What type of request?</td>
<td>In the room ready to be cleaned?</td>
<td>Start the process</td>
</tr>
<tr>
<td>Patient is discharged</td>
<td>Transporter logs in or out of EPIC system</td>
<td>If the room is ready to be cleaned?</td>
<td>If there is a normal cleaning request</td>
</tr>
<tr>
<td>Patient's EMR stays on unit &amp; patient goes on hold until the room is ready to be cleaned</td>
<td>Patient's EMR stays on unit &amp; patient goes on hold until the room is ready to be cleaned</td>
<td>The request is assigned?</td>
<td>Room goes on hold; room stays with the assigned custodian unless removed by EVS Supervisor</td>
</tr>
<tr>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Certain logs out of EPIC as complete when room is cleaned</td>
<td>Certain logs out of EPIC as complete when room is cleaned</td>
</tr>
<tr>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Room waits in room until turnover &amp; night supervisor confirms room is clean</td>
<td>Room waits in room until turnover &amp; night supervisor confirms room is clean</td>
</tr>
<tr>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>EPIC shows dirty bed to RMS</td>
<td>EPIC shows dirty bed to RMS</td>
</tr>
<tr>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td>Nurse calls EVS custodian to turnover room before request is removed into EPIC</td>
<td></td>
</tr>
</tbody>
</table>

### Anecdote: EVS Room Turnover

**Room Turnover Process**

- Nurse enters the request for transport in the chart.
- Transport receives the EPIC page for the request.
- EPIC assigns a transporter to the request.
- Transporter assigns a transporter to the request.
- Transporter acknowledges the request and schedules the transport.
- What type of request is it?
- Patient is discharged.
- Transporter logs in or out of EPIC system.
- Patient's EMR stays on unit and patient goes on hold until the room is ready to be cleaned.
- Nurse calls EVS custodian to turnover room before the request is removed into EPIC.

### No formal or standardized process

- Transport surface was uncleaned before being made for transport.
- Nursing must now enter a discharge vs. transfer request so that EVS is notified.
- Patient’s EMR stays on unit and patient goes on hold until the room is ready to be cleaned.
- Nurse calls EVS custodian to turnover room before the request is removed into EPIC.

### Kaizen

- No formal or standardized process.
Our team used various tools to measure the complexity of the process.

**SIPOC**

### Supplier
- Storehouse
- Nursing
- Transport
- EVS
- Patient Flow
- EPIC

### Input
- Nurse enters discharge request
- Nurse enters transfer request
- NHS manages STATS
- Transporter moves patient
- EVS custodian

### Process
- EVS receives page from EPIC
- Travel to room
- Log in to EPIC as in progress
- Clean room
- Dress for isolation room
- Remove isolation curtains if isolation

### Output
- Room cleaned
- Nurse ready for next patient

### Customer
- Patient may be admit
The team established baseline metrics and compared them to other UCs and industry standards. Routine Clean times were drilled down into by shifts.

<table>
<thead>
<tr>
<th>Location &amp; Shift</th>
<th>Routine Clean Turnaround Time in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>CVC</td>
<td>52</td>
</tr>
<tr>
<td>Day</td>
<td>49</td>
</tr>
<tr>
<td>Evening</td>
<td>58</td>
</tr>
<tr>
<td>Overnight</td>
<td>52</td>
</tr>
<tr>
<td>Hillcrest</td>
<td>67</td>
</tr>
<tr>
<td>Day</td>
<td>55</td>
</tr>
<tr>
<td>Evening</td>
<td>76</td>
</tr>
<tr>
<td>Overnight</td>
<td>72</td>
</tr>
<tr>
<td>JMC</td>
<td>79</td>
</tr>
<tr>
<td>Day</td>
<td>69</td>
</tr>
<tr>
<td>Evening</td>
<td>88</td>
</tr>
<tr>
<td>Overnight</td>
<td>77</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Location &amp; Shift</th>
<th>Routine Clean Turnaround Time in Minutes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thornton</td>
<td>58</td>
</tr>
<tr>
<td>Day</td>
<td>57</td>
</tr>
<tr>
<td>Evening</td>
<td>61</td>
</tr>
<tr>
<td>Overnight</td>
<td>41</td>
</tr>
<tr>
<td>Total</td>
<td>65</td>
</tr>
</tbody>
</table>

**Key Takeaways:**

- Routine cleans took 67 mins. for Hillcrest and 63 mins. for La Jolla.
- These averages were higher than industry standards.
- Evening shifts had the highest turnover times.
In order to continue to track our progress we created a measurement tool that was sent to all key stakeholders.

### EVS Weekly Dashboard

<table>
<thead>
<tr>
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<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Average Daily Requests</td>
<td>66.43</td>
<td>63.57</td>
<td>59.43</td>
<td>65.43</td>
<td>66.00</td>
<td>60.57</td>
<td>64.57</td>
<td>67.00</td>
<td>59.00</td>
<td>65.72</td>
<td>65.79</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Average Daily Holds</td>
<td>5.14</td>
<td>2.86</td>
<td>1.57</td>
<td>2.71</td>
<td>6.29</td>
<td>3.71</td>
<td>3.29</td>
<td>2.43</td>
<td>3.86</td>
<td>4.86</td>
<td>4.74</td>
<td>6.21</td>
<td></td>
</tr>
<tr>
<td>Percent Stat Requests</td>
<td>9%</td>
<td>4%</td>
<td>9%</td>
<td>9%</td>
<td>12%</td>
<td>8%</td>
<td>10%</td>
<td>11%</td>
<td>11%</td>
<td>14%</td>
<td>11.77%</td>
<td>20%</td>
<td>15%</td>
</tr>
<tr>
<td>Percent Next Requests</td>
<td>0%</td>
<td>3%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>1%</td>
<td>0.62%</td>
<td>1%</td>
<td></td>
</tr>
<tr>
<td>Average of Last Assign to In-Progress</td>
<td>7.63</td>
<td>7.89</td>
<td>9.21</td>
<td>7.85</td>
<td>8.42</td>
<td>8.42</td>
<td>8.46</td>
<td>8.46</td>
<td>8.68</td>
<td>8.32</td>
<td>8.80</td>
<td>10</td>
<td></td>
</tr>
<tr>
<td>Average of Turnaround Time</td>
<td>49.44</td>
<td>51.82</td>
<td>51.95</td>
<td>57.24</td>
<td>56.62</td>
<td>55.09</td>
<td>54.32</td>
<td>53.93</td>
<td>49.95</td>
<td>49.12</td>
<td>53.84</td>
<td>69.71</td>
<td>60</td>
</tr>
<tr>
<td>Average of Cleaning Time</td>
<td>24.73</td>
<td>25.35</td>
<td>25.43</td>
<td>25.41</td>
<td>25.69</td>
<td>25.89</td>
<td>22.56</td>
<td>24.08</td>
<td>25.20</td>
<td>25.56</td>
<td>24.45</td>
<td>21.85</td>
<td>30</td>
</tr>
<tr>
<td>Average of Stat Turnaround</td>
<td>35.11</td>
<td>37.31</td>
<td>38.70</td>
<td>45.44</td>
<td>41.91</td>
<td>40.72</td>
<td>35.58</td>
<td>41.62</td>
<td>42.31</td>
<td>40.60</td>
<td>42.33</td>
<td>49.07</td>
<td>45</td>
</tr>
</tbody>
</table>

Highlights volume, daily vs. stat cleans and breaks down various steps in process to identify areas of opportunity.
EVS Bed Turnover Reduction: ANALYZE
We created a fishbone diagram to identify root causes and asked the 5 Whys for each.

**Room not ready to be cleaned**
- Bed not stripped or items in room
- Nurse busy with patient care and unable to respond

**Patient left in room**
- Transport beat EVS
- Paging sequence problems with EPIC

**No Page for Dirty Bed**
- STATs page and override current assignment (causes that room to be on hold)
- On another assignment
- # of workers weren’t meeting demand

**Staff unavailable**
- Nurse entered Transport Adhoc in EPIC
- EVS not paged

**Anecdote:** EVS Room Turnover

**Tips & Tricks**

**Applying LSS**
Our team was able to prioritize the top problems contributing to the root causes.

- **EVS**
  - 42% Working on another request
  - 17% Assigned another request in same room

- **Nursing**
  - 16% Bed Strip

- **Transport**
  - 13% Patient Still in Room

![Bar chart showing top reasons for room holds](chart.png)
During handoff between the day and evening shifts, the peak demand time was around 3:00 p.m. Unmet requests were inappropriately being escalated to STATs, which caused further confusion among staff.

An analysis was completed regarding supply and demand. We found that STATs caused a problem with staff’s ability to be available.

**Demand vs Stats**

- Peak demand at close of day shift

- During handoff between the day and evening shifts, the peak demand time was around 3:00 p.m. Unmet requests were inappropriately being escalated to STATs, which caused further confusion among staff.
STATs led to room holds, which slowed down the process. Often room holds became ordered as STATs. That was a cyclical pain point in the process.

**Correlation between STATs and Holds**

**Anecdote:** EVS Room Turnover

**STATs are overused**
Work groups were broken out by pain point topics that were discovered during the team’s analysis.

- This work group structure encouraged standardization among different locations by having multidisciplinary teams address issues across the entire health system.
EVS Bed Turnover Reduction: IMPROVE
The work groups helped EVS, Nursing and Patient Flow implement the following improvements.

1. UCSD Health notified labor unions that EVS would help Nursing with bed stripping
   - This removed a root cause contributing to clean delays

2. Cross trained EVS custodians to better meet demand during peak times.

3. Streamlined the cleaning process for isolation rooms - the team removed non-value added steps regarding curtain removal and replacement.

4. Nursing directors and managers re-educated the nursing units about how to request transfers and discharges in EPIC so that EVS is always notified
New Current State Process Map

CURRENT STATE ROOM TURNOVER PROCESS

Melinda Hudson | October 16, 2017

Why LSS?
Applying LSS
Anecdote: EVS Room Turnover
Tips & Tricks

Improved Processes

New Processes
Overall, we saw progress in reducing our routine clean times since the project began in Feb. FY17.

EVS plans to improve CVC and Thornton times by adopting some of Hillcrest’s best practices.

### Routine-room turnover time averages by month

<table>
<thead>
<tr>
<th>Location</th>
<th>Baseline</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillcrest</td>
<td>70</td>
<td>64</td>
<td>52</td>
<td>57</td>
<td>53</td>
<td>50</td>
<td>50</td>
</tr>
<tr>
<td>CVC</td>
<td>59</td>
<td>57</td>
<td>60</td>
<td>67</td>
<td>65</td>
<td>62</td>
<td>63</td>
</tr>
<tr>
<td>JMC</td>
<td>79</td>
<td>77</td>
<td>81</td>
<td>70</td>
<td>69</td>
<td>64</td>
<td>70</td>
</tr>
<tr>
<td>Thornton</td>
<td>68</td>
<td>65</td>
<td>75</td>
<td>74</td>
<td>65</td>
<td>62</td>
<td>65</td>
</tr>
</tbody>
</table>

**Goal** (Hillcrest, Thornton, CVC) | 60 | 60 | 60 | 60 | 60 | 60 | 60
**Goal (JMC)** | 75 | 75 | 75 | 75 | 75 | 75 | 75

*Baseline pulled post JMC opening in Nov. FY17 - Jan. 29 FY17

### Isolation-room turnover time averages by month

<table>
<thead>
<tr>
<th>Location</th>
<th>Baseline</th>
<th>February</th>
<th>March</th>
<th>April</th>
<th>May</th>
<th>June</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hillcrest</td>
<td>83</td>
<td>81</td>
<td>69</td>
<td>71</td>
<td>70</td>
<td>68</td>
<td>66</td>
</tr>
<tr>
<td>CVC</td>
<td>72</td>
<td>64</td>
<td>77</td>
<td>79</td>
<td>93</td>
<td>77</td>
<td>95</td>
</tr>
<tr>
<td>JMC</td>
<td>92</td>
<td>105</td>
<td>101</td>
<td>117</td>
<td>91</td>
<td>91</td>
<td>92</td>
</tr>
<tr>
<td>Thornton</td>
<td>79</td>
<td>73</td>
<td>91</td>
<td>95</td>
<td>75</td>
<td>76</td>
<td>83</td>
</tr>
</tbody>
</table>

**Goal** (Hillcrest, Thornton, CVC) | 75 | 75 | 75 | 75 | 75 | 75 | 75
**Goal (JMC)** | 95 | 95 | 95 | 95 | 95 | 95 | 95

*Baseline pulled post JMC opening in Nov. FY17 - Jan. 29 FY17

---

**Hillcrest Best Practices:**

- Cross train and pull daily clean or police employees whenever necessary.
- Don’t allow EPIC to impede work flow. Empower staff to begin working on a room as soon as possible.
- Managers should consistently be monitoring the board to resolve potential dispatch problems.
Routine Clean times are meeting or trending towards goal times.
The group revisited the initial FTE request from Feb. and found an overall decrease in staff needed to meet the demand due to improved processes and productivity.

<table>
<thead>
<tr>
<th>Month</th>
<th>Shift</th>
<th>Current Staffing</th>
<th>Staff Needed</th>
<th>Staff Variance</th>
</tr>
</thead>
<tbody>
<tr>
<td>July</td>
<td>6AM-2PM</td>
<td>0.25</td>
<td>2.54</td>
<td>-2.29</td>
</tr>
<tr>
<td></td>
<td>2PM-10PM</td>
<td>4.63</td>
<td>5.79</td>
<td>-1.16</td>
</tr>
<tr>
<td></td>
<td>10PM-6AM</td>
<td>1.88</td>
<td>0.84</td>
<td>1.03</td>
</tr>
<tr>
<td>Feb</td>
<td>6AM-2PM</td>
<td>0.25</td>
<td>4.13</td>
<td>-3.88</td>
</tr>
<tr>
<td></td>
<td>2PM-10PM</td>
<td>4.63</td>
<td>9.63</td>
<td>-5.01</td>
</tr>
<tr>
<td></td>
<td>10PM-6AM</td>
<td>1.88</td>
<td>1.26</td>
<td>0.62</td>
</tr>
</tbody>
</table>

Take away: there was a cost avoidance of $286,800 (4.78 FTEs X $60,000 annual custodian salary, including benefits)
EVS Bed Turnover Reduction: CONTROL
To maintain progress, room turnover stakeholders implemented the following controls and new processes.

1. Removed the “hold” function from EPIC. Created a process for EVS staff and the Nursing House Supervisor to communicate the immediate need rather than putting a room on hold.

2. A weekly dashboard continues to be sent to EVS from the Patient Flow Department that shows turnover times during the different stages of the processes by location.

3. Quarterly calls are held between the Patient Flow, Nursing and EVS Departments to monitor turnover times.
Tips & Tricks
When identifying solution strategies...

**Considerations:**

- Eliminate the variable
- Automate the variable
- Standardize the process
- Education/Training
Some problems are “Just Do Its”

Some solutions are clearly just MANAGEMENT DECISIONS. Don’t force the use of tools when it’s not appropriate!

Consider Using Change Management
Control plans are very important!

Most important phase of DMAIC is **CONTROL**

- This is the difference between Lean Six Sigma and other “flavor of the month” fixes

"**Maintain the gains**"
What Leads to Control Breakdowns?

- Lack of clear accountability
- No formal handoff from LSS expert to identified Process Owner
- Not establishing data gathering plan for key project measure and/or project benefits after project has concluded
- No formal reporting process once the project ends. Includes reviewing dashboard on a regular basis

*Don’t fall short during the handoff process!*
Go See Think Do is a quick and easy to learn tool that can be used to solve everyday problems

<table>
<thead>
<tr>
<th>Go See Think Do</th>
<th>DMAIC</th>
</tr>
</thead>
<tbody>
<tr>
<td>No formal project charter</td>
<td>Has formal project charter</td>
</tr>
<tr>
<td>Triggered by day to day problems/events</td>
<td>Triggered by recurring issues, trends or escalated problems and planned through the improvement routine</td>
</tr>
<tr>
<td>Perfect tool for launching an individual quality improvement project</td>
<td></td>
</tr>
<tr>
<td>Triggered by gaps from shiftly and daily measures e.g.</td>
<td>Triggered by gaps from weekly and monthly measures</td>
</tr>
<tr>
<td>• Uncommon occurrences</td>
<td>Possible sources of project identification include:</td>
</tr>
<tr>
<td>• Safety or quality events</td>
<td>• Hospital priorities as identified by ELT</td>
</tr>
<tr>
<td>• Equipment breakdowns</td>
<td>• Operational Executive Steering Committee</td>
</tr>
<tr>
<td>• Other non-conformities</td>
<td>• Recurring problem that impacts specific area</td>
</tr>
<tr>
<td>Lead by almost anyone</td>
<td>Lead by certified Black &amp; Green Belts</td>
</tr>
<tr>
<td>Short duration (1 hour to 2 weeks)</td>
<td>Long duration (approximately 3-6 months)</td>
</tr>
<tr>
<td>A small group of frontline staff coming from the same team or cross functional team</td>
<td>Always a cross functional team of frontline staff</td>
</tr>
</tbody>
</table>
When to use a GSTD

PROBLEM

Do You Know the Root Cause?

Yes → Just Do It!

No → Is the scope too large for a GSTD?

Yes → Escalate to manager or initiate DMAIC project

No → Apply Go See Think Do

Was the problem eliminated?

Yes → Celebrate the wins!

No
Purpose and Outputs

**Purpose:**
- Understand the problem

**Output:**
- Problem area pinpointed
- Goal is defined
- Process is mapped

---

**Purpose:**
- Implement and standardize solutions

**Output:**
- Actionable solutions identified and implemented
- Results positively impacted
- Standard created or updated

---

**Purpose:**
- Brainstorm root causes & validate with data when appropriate

**Output:**
- Verified root causes
Go See Think Do – Form

<table>
<thead>
<tr>
<th>Problem Statement</th>
<th>Data Collection: Dig Deeper to Find the True Root Causes (Attach graphs when applicable)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ref #</td>
<td>Question to Answer</td>
</tr>
<tr>
<td>1</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4</td>
<td></td>
</tr>
</tbody>
</table>

**GO SEE**

| Task to Implement Solution | Assigned To | Due Date | Task Status (Due:In-Progress)
|-----------------------------|-------------|----------|-----------------------------|

**THINK**

<table>
<thead>
<tr>
<th>List of TRUE Root Causes</th>
<th>Brainstormed Solution(s) for Solving Root Cause</th>
</tr>
</thead>
</table>

**DO**

<table>
<thead>
<tr>
<th>Project Title (Pg 13)</th>
<th>Project Status (Pg 13)</th>
<th>Project Description (Pg 13)</th>
</tr>
</thead>
</table>

**RESULTS**

<table>
<thead>
<tr>
<th>Metrics</th>
<th>Control Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Project Title:</td>
<td>Project Status:</td>
</tr>
</tbody>
</table>

**Tips & Tricks**

- The Go See Think Do methodology is a structured approach to problem-solving in Lean Six Sigma projects.
- **Go**: Identify the problem or opportunity.
- **See**: Understand the current state of the process.
- **Think**: Analyze the process to identify root causes.
- **Do**: Implement solutions and measure the results.

**Anecdotes**

- **Why LSS?**
- **Applying LSS**
Step 1 - Outline problem & goal [Go See]

Objectives:

- Identify and assemble project team
- Build your focused problem statement (Use M.O.M.S Criteria)
- Align on your goal statement (Use a S.M.A.R.T Goal)
- Map the process
- Record observations seen at the site of the problem
Step 2 - Determine the Root Cause \textit{[Think]}

Objectives:
- Brainstorm potential root causes
- List and group similar potential causes in a clear and visual way

Tools to Use:
1. Brainstorming or Brain writing
2. Cause & Effect Diagram
3. Data Collection Plan
Step 3 – Implement the Solutions – [Do]

1. Build Action Plan and Implement Solutions
2. Standardize & Communicate Changes
3. Monitor & validate progress
4. Develop Control Plan

Objectives:
- Brainstorm solutions
- Weigh pros & cons for each solution
- Develop implementation/pilot plan
- Monitor results and validate goal was achieved
- Standardize, develop control plan, and hand off to process owner

Tools to Use:
1. Brainstorming or Brain writing
2. Implementation Plan
3. Communication Plan
4. Graphs
5. Control Plan
That’s all Folks!