



**Lean at  
Children's  
Hospital!**



# Lean at Children's

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## Vision

- Ideal Patient Care: Every Patient, Every Time

## Mission

- Develop people to solve problems to deliver the best value to our patients.

## Goals

- Zero Harm
- No Waste
- No Wait
- 100% Engaged Employees

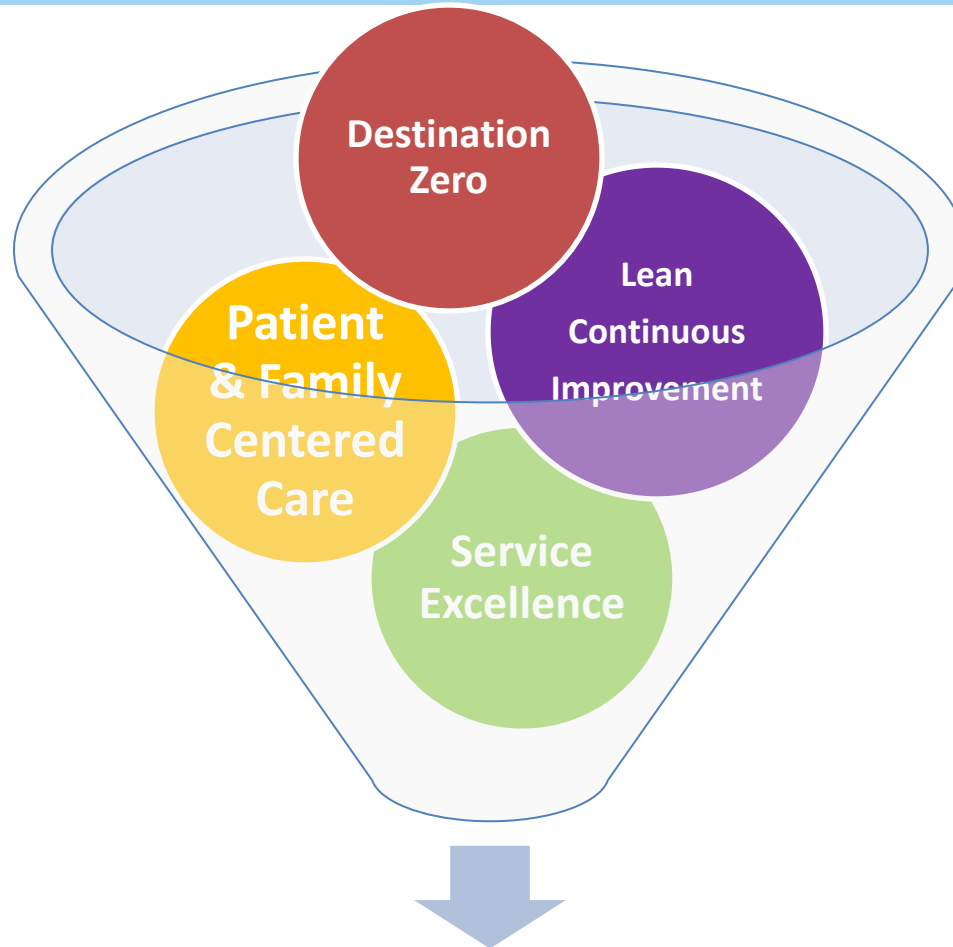
# Why Ideal Patient Care?



Every Patient  
Every Time

# Lean at Children's

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**Ideal Patient Care**



# Improvements at Children's

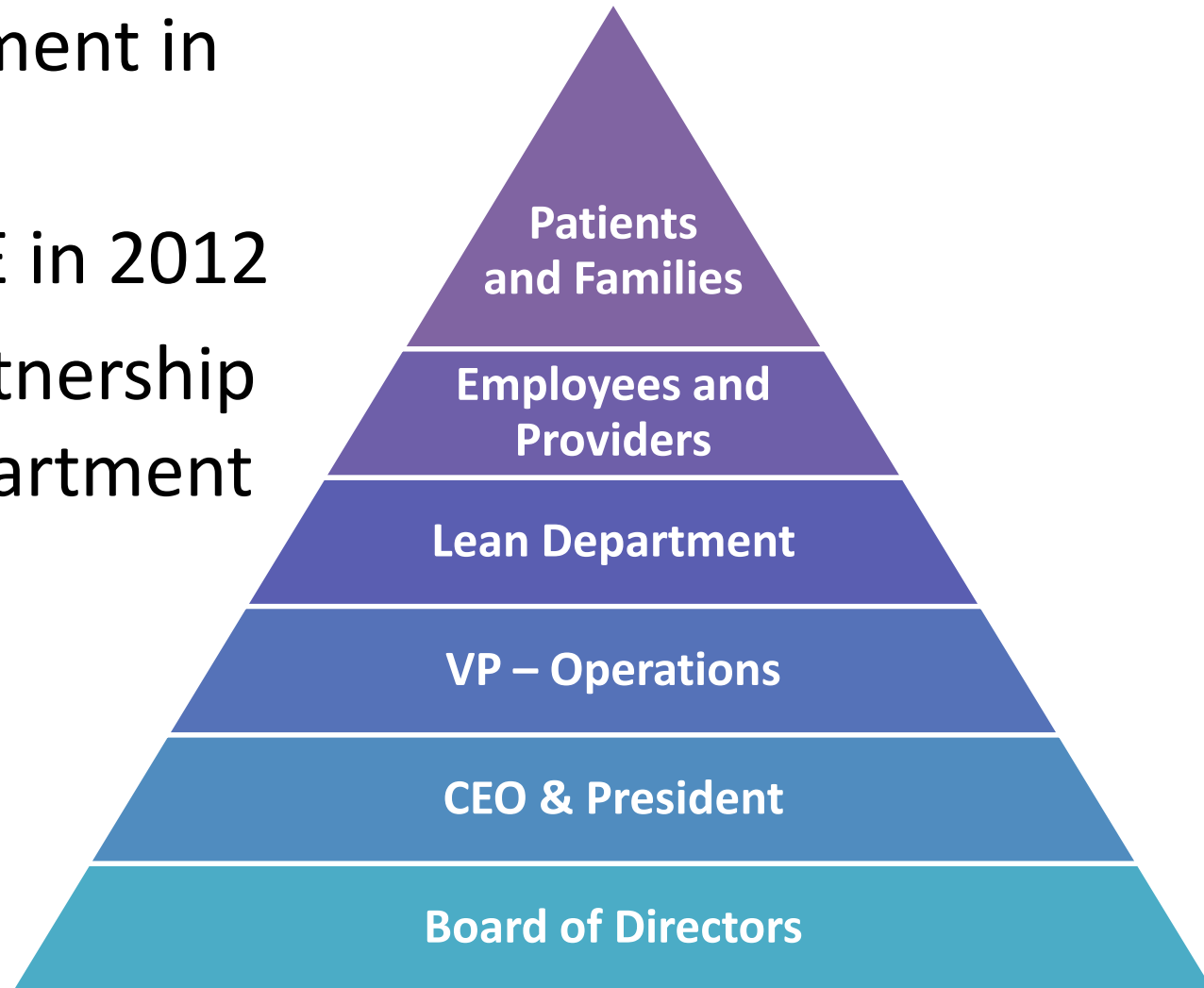
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# Department Background

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- New department in 2009
- Hired 2<sup>nd</sup> FTE in 2012
- Informal partnership with UT Department of Industrial Engineering



# Current State

## Department Functions

### Daily Continuous Improvement

- Ideal Patient Care
- Destination Zero
- A3 Problem Solving Coaching

### Project Work

- Value Stream Mapping
- Kaizen Events
- New Building Planning

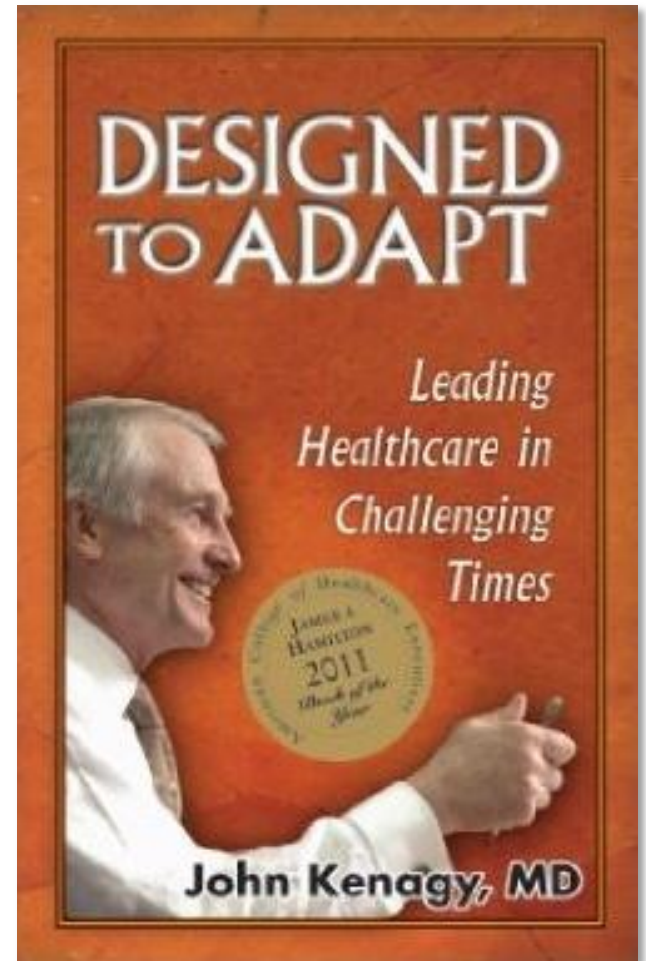
### Ad Hock Consulting

- General Project Request and Consultation
- UT Industrial Engineering Students

# Daily Continuous Improvement

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- Ideal Patient Care Model
- Started November 2011
- Utilized in 31 areas





# Who is the expert?

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***Past***

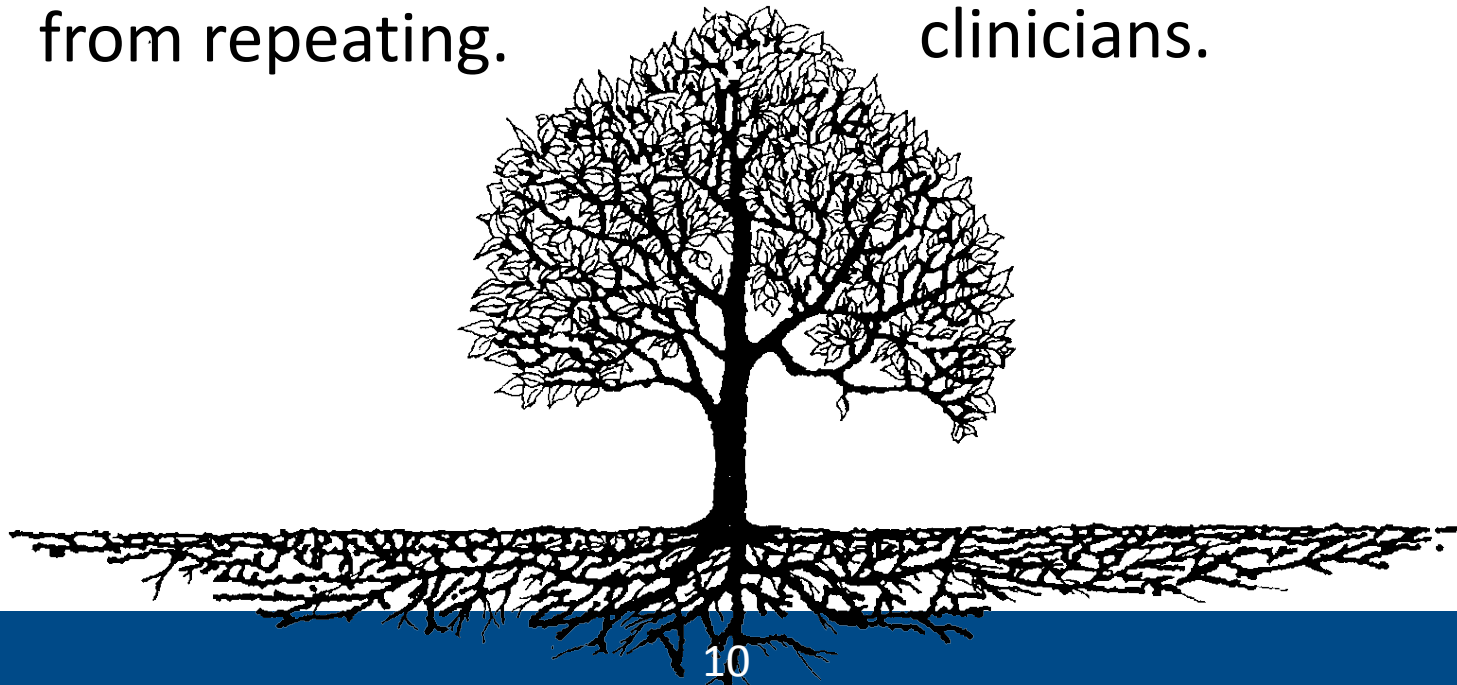


***Present***

# Types of Problem Solving

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- First Order:
  - A quick temporary fix “workaround” that does nothing to prevent the problem from repeating.
- Second Order:
  - Gets at the root cause and solves the problem for future patients and clinicians.



# Hospital Staff are Solving Problems

Measurement	Work Around Problem Solving "I don't have the time for this!"	Root Cause Problem Solving Step back and solve it for good.
Time to "solve" the problem (minutes)	2	
Time to solve the problem (hours)	0.03	40
Number of people solving the problem	20	3
Number of times encountered per shift	3	1
Number of shifts per year	730	
Opportunities for error	43,800	1
Hours spent solving the problem	<b>1,460</b>	<b>120</b>
Arbitrary \$USD per hour pay	\$20.00	\$20.00
Real Cost	<b>\$29,200.00</b> Yearly Cost	<b>\$2,400.00</b> One Time Cost

# Tools to Get You to Ideal Patient Care

## Goals of Lean Healthcare

**Zero Harm**

**Employee Engagement**

**No Waste**

**Patient & Family Focus**

## Direct Observation

**OBSERVATION RECORD** (Cross-process / other case dates)

Activity: Respiratory Care in PICU  
 Location: Ward 6 / PICU  
 Date: 11/23/11  
 Observer: Pete Vest

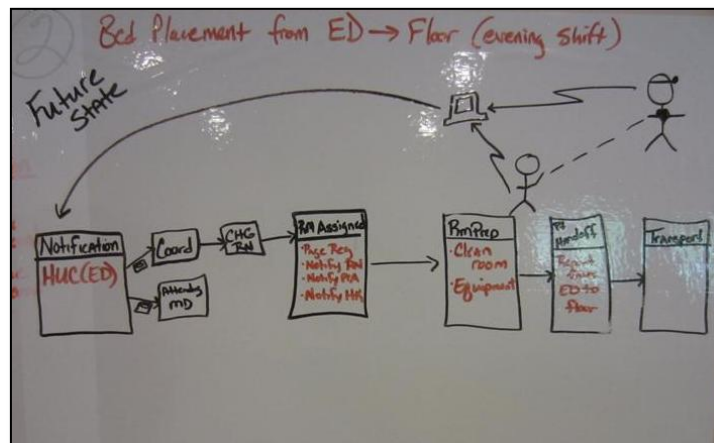
514 13 12 11 10 9 87%

TIME	ACTIVITY	TYPE OF ACTIVITY						NOTES
		patient	caregiver	caregiver	equipment	transport	other	
09:45	Therapist in DR lab	○	○	○	○	○	○	
09:50	FA PICU to check for orders							
10:07	" " " " " "							
10:20	orders left PICU area by staff							
10:25	" " " " " "							
10:28	Therapist views orders							
10:29	Therapist views procedure							
10:30	FA SDT to make road along							
10:35	FA SDT to see if not same as							
10:38	FA had not set up if same as							
10:39	FA Blood Gas Lab							
10:48	Sampling to take SD to DR							
10:58	check PICU area were ordered							
11:00	check SDT what to do for all							

(Cost outside PICU)  
(Cost PICU / 2 usually range of patient care activities)  
No therapist in room to assist in setting up for lab on

## Lean Basics

## Direct Observation



## Value Stream Mapping

**ISSUE** Frontline staff are not involved in problem solving

**TARGET CONDITION** *one problem solving by frontline staff*

**BACKGROUND** The Ideal Patient Care model started in November 2010... *to reduce waiting time for patients*

**CURRENT CONDITION**

Department	PICU	ED	Lab	Pathology	NIU
Problems solved	75	102	81	23	204
Problems solved	51	32	26	37	51
Manager lead	8	5	0	2	0
LLT lead	19	16	5	8	5
Staff lead	16	10	2	7	8

100% Frontline Staff  
100% Frontline Staff  
100% Frontline Staff  
100% Frontline Staff

**PROBLEM ANALYSIS**

1) Why are frontline staff not involved in problem solving?  
 2A) The time taken for problem solving  
 2B) The level of staff involved in problem solving  
 2C) Staff not involved in problem solving  
 2D) Staff not involved in problem solving

**COUNTERMEASURES**


3A) Create budget and know check each for problem solving  
 3B) Evaluate hospital initiatives and create common Mission/Plan/Do/Check/Act (PDCA) cycle manager/leadership specific line items  
 3C, 3D) Evaluate and modify current training method and model


**IMPLEMENTATION PLAN**

what	when	outcome

## A3 Thinking

# It all starts with an idea

**Idea Card:** Ideas / To Do / Doing / Completed 

Date: \_\_\_\_\_ Your name: \_\_\_\_\_ 

Problem: \_\_\_\_\_

Idea: \_\_\_\_\_

Expected Benefit: \_\_\_\_\_

Input Needed From? \_\_\_\_\_

Pre/Post Data Measure: \_\_\_\_\_

Patient and family input needed?  YES  NO Dept.: \_\_\_\_\_

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Leader: \_\_\_\_\_ Team Members: \_\_\_\_\_

Status Updates (Date: Notes:): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_


\_\_\_\_\_


Outcome: \_\_\_\_\_

Results Verified?:  YES  NO Completion Date: \_\_\_\_\_

Wall of fame document created?  Project #

Form No. 30174 (07/14) ss

**I have a concern:** Concern / To Do / Doing / Completed 

Date: \_\_\_\_\_ Your name: \_\_\_\_\_ 

Safety concern: \_\_\_\_\_

Idea: \_\_\_\_\_

Expected Benefit: \_\_\_\_\_

Input Needed From? \_\_\_\_\_

Pre/Post Data Measure: \_\_\_\_\_

Patient and family input needed?  YES  NO Dept.: \_\_\_\_\_

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Leader: \_\_\_\_\_ Team Members: \_\_\_\_\_

Status Updates (Date: Notes:): \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

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\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Outcome: \_\_\_\_\_

Results Verified?:  YES  NO Completion Date: \_\_\_\_\_

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# Continuous Improvement Board Meeting





# Continuous Improvement Board Times

- **2<sup>nd</sup> Clinic:** Monday at 3:00PM (2nd Clinic back hall)
- **2<sup>nd</sup> Floor:** Wednesday at 3:30PM and nights as needed (2nd Floor outside of the teen room)
- **3<sup>rd</sup> Clinic:** Payday weeks on Wednesday at 3:00PM, Other weeks on Monday at 1:30 PM (Outside of Clinic break room)
- **3<sup>rd</sup> Floor:** Tuesday at 11:00AM and night shift alternating Saturdays & Wednesdays at 11:00PM (3rd Floor outside of the CPG office)
- **Admitting:** Friday at 12:45PM (Admitting break room)
- **BioMed:** Monday at 7:30AM (BioMed Office)
- **Business Office:** Thursday at 10:30AM (Business Office)
- **Central Supply:** Thursday at 2:30AM (Central Supply work room)
- **Child Life:** 3<sup>rd</sup> Tuesday of the month at 2:30 PM (Child Life back hallway)
- **Echo:** Friday at 3:00PM (Echo Office)
- **ED:** 2<sup>nd</sup> and 4<sup>th</sup> Tuesday of the month at 2:00PM and night shift as needed (ED between Pod 2 and Pod 3)
- **ER Registration:** Day shifts on Tuesday at 3:00PM and night shifts on Wednesday at 9:00PM (Entrance of ER Registration)
- **Engineering:** Monday at 9:15AM (Engineering work room)
- **Environmental Services:** Payday weeks on Thursday at 4:30PM, Other weeks on Thursday at 9:05AM (Environmental Services Office)
- **Food & Nutrition:** Day shifts on Monday at 2:00PM and night shifts as needed (Outside F&N supervisors office)
- **HIM:** Wednesday at 3:00PM (HIM Transcription Room)
- **Information Systems:** Monday at 8:15AM (Information Systems Office)
- **Interpretive Services:** 1<sup>st</sup> Tuesday of the month at 1:30PM (Interpretive Services back hallway)
- **Lab:** Thursday at 2:00PM (Outside of Lab break room)
- **Neurology:** Thursday at 3:30PM (Neurology office hallway)
- **NICU:** Thursday at 3:00PM (Outside of the NICU 1 situation room)
- **ODL and PE:** Tuesdays at 10:00AM (ODL Break Room)
- **OPS and IPS:** Thursday at 1:00PM (4W next to patient waiting room)
- **Pharmacy:** 1<sup>st</sup> week of the month on Thursday at 2:00PM remaining weeks on Tuesdays at 2:00PM (Main Pharmacy)
- **PICU:** Wednesday at 2:30PM (PICU between room 13 and room 14)
- **Purchasing:** Tuesday at 2:30PM (Receiving Entrance)
- **Respiratory Care:** Wednesday at 3:00PM (Outside of the RC Office)
- **Radiology:** Tuesday at 3:00PM (Outside of the Radiology break room)
- **Social Work:** 2<sup>nd</sup> Wednesday of the month at 1:00PM (Social Work back hallway)
- **Surgery, Holding, PACU:** Monday at 2:00PM (Hallway between OR and PACU)

# Continuous Improvement Board Meeting Guide

**1) Welcome:** Assign a time keeper to ensure 20 minute meeting length.

**2) Review 'Completed' Idea Cards:** Celebrate completed project by having the project leader briefly present the outcome.

**3) Review 'Doing' Idea Cards:** Have the project leaders give brief updates and write the status on the Idea Card or A3.

**4) Review Idea Cards:** Review ideas cards in the 'Idea' column. Clarify and ensure understanding of the idea with the group and move card the 'To Do' column. Ask for volunteers to lead 'To Do' ideas and move to 'Doing' column.

**5) Wrap-Up:** Ask for ideas or problems the group encountered over the past week. Add ideas to new cards. Ask staff to initial the Front-line Walks sheet.



**20 Minute Meeting**

# Problem Solving

- Idea cards can turn into A3 problem solving projects

**Idea Card:** Ideas / To Do / Doing / Completed

Children's Hospital

Date: \_\_\_\_\_ Your name: \_\_\_\_\_

Problem: \_\_\_\_\_

Idea: \_\_\_\_\_

Expected Benefit: \_\_\_\_\_

Input Needed From? \_\_\_\_\_

Pre/Post Data Measure: \_\_\_\_\_

Patient and family input needed?  YES  NO Dept.: \_\_\_\_\_

Leader: \_\_\_\_\_ Team Members: \_\_\_\_\_

Status Updates (Date: Notes): \_\_\_\_\_

Outcome: \_\_\_\_\_

Results Verified?:  YES  NO Completion Date: \_\_\_\_\_

Wall of fame document created?  Project # \_\_\_\_\_ Form No. 30174 (07/14) ss

**A3 Problem Solving**

**Title:** What we are talking about. **Date:** \_\_\_\_\_ **Owner(s):** \_\_\_\_\_

**Issue** What is this report about? State it through the eyes of the patient/customer.

**Background** Clarify the issue. Add historical data. Determine significance of the problem.

**Current Situation**  
Draw how the work happens now (from your observation)

- \* Easily see and quickly grasp how the current process works
- \* Identify problems from "storm clouds"
- \* Summarize your direct observations

**Problem Analysis** Drill down into specific issues with current condition

- \* Use outlining format and ask WHY 5 times to get to the root cause

Why? XXXXXXXX  
 Why? XXXXXXXX  
 Why? XXXXXXXX  
 Why? XXXXXXXX  
 Why? XXXXXXXX ← Root Cause

**Target Condition**

- \* Draw the proposed better way to work
- \* Add "fluffy clouds": good features
- \* Validate with staff
- \* Does this move you closer to Ideal?

**Counter Measure** What are we going to do that will move us from the Current Condition to our proposed Target Condition? What are you going to do to address your root causes?

**Implementation Plan** Details of how we'll make the countermeasures happen (what, who, when) Realistic and achievable plan

What	Who	When	Outcome

**Cost** **Cost/Benefit/Recognition**

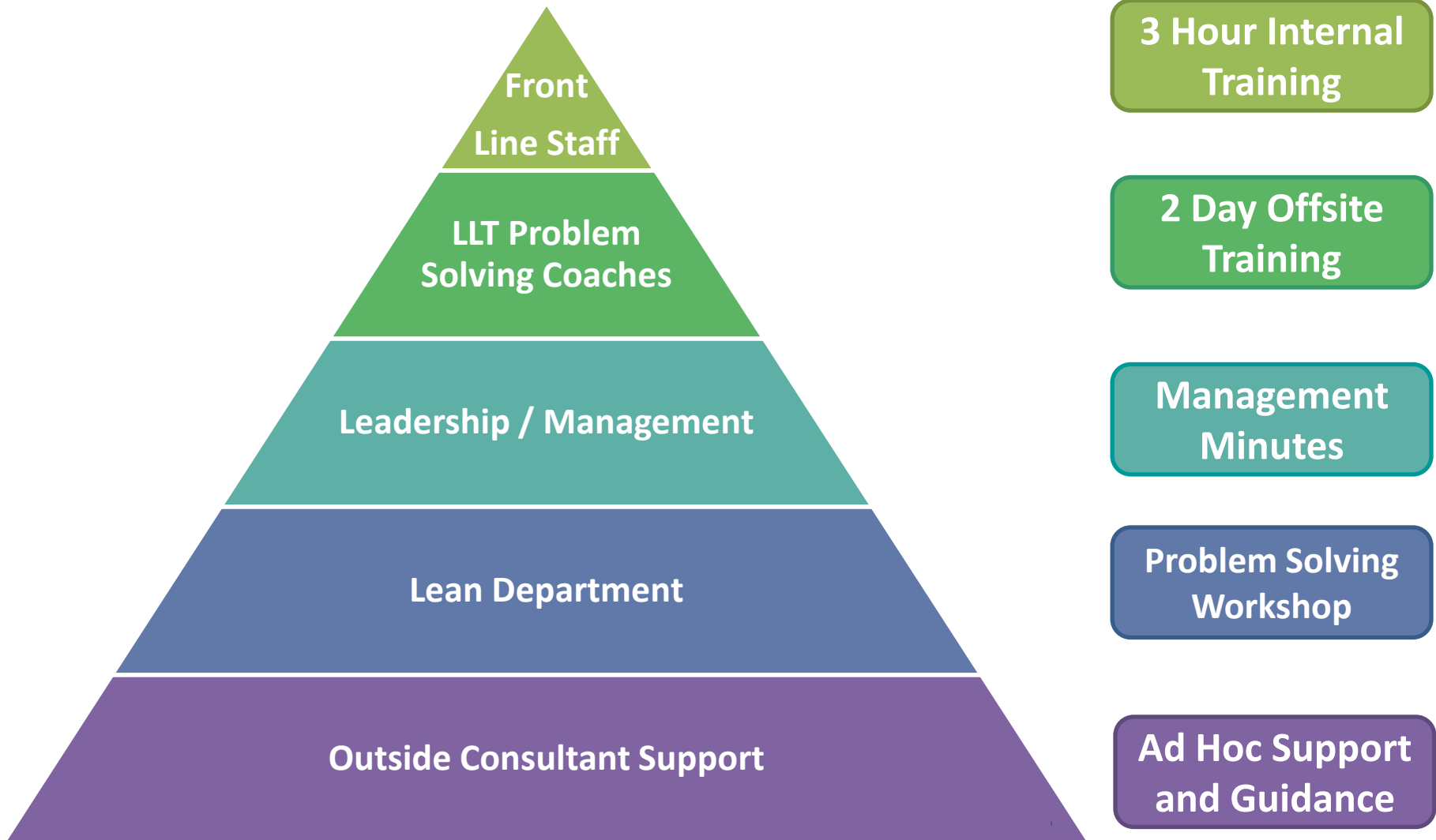
**Test** Implement for a defined period of time in a selected area. Validate it works before you change the process.

**Follow-up** How/who/when will monitor that the implementation has changed the work for the better?

# Celebration



# Support System Structure



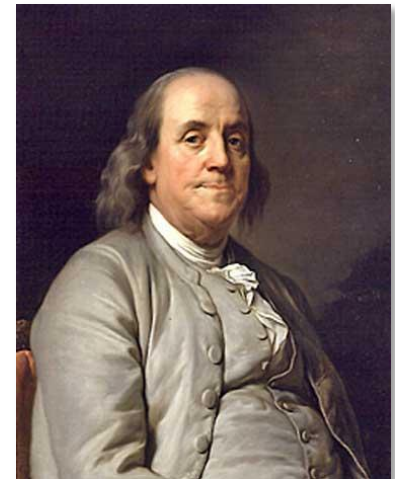
# LLT Support System

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- **LLT Problem Solving Coach**

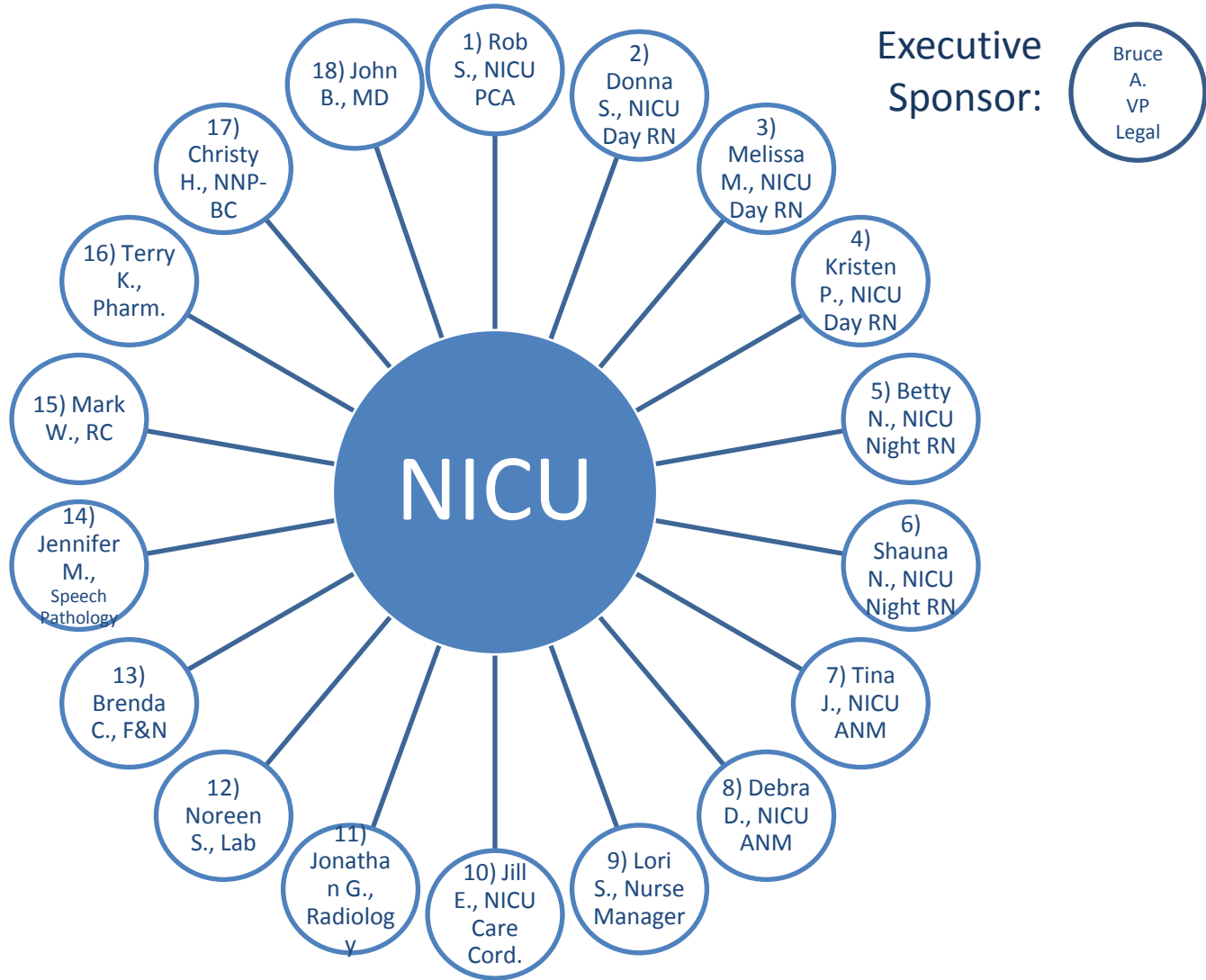
- **Learner:** Learn Ideal Patient Care tools by practice
- **Leader:** Lead front line staff in problem in solving and tools
- **Teacher:** Teach future LLT's and staff to spread knowledge and improvements

*“Tell me and I forget.  
Teach me and I remember.  
Involve me and I learn.”*  
-Ben Franklin





# Sample LLT Group



# LLT Responsibilities

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- **Responsibilities:**

- Identify opportunities to better serve our patients and families with excellence
- Lead and teach staff in A3 problem solving
- Initiate, create, and complete A3 problem solving projects
- Act as a department liaison for projects

- **Time Commitment**

- Attend a two day LLT training session
- Attend weekly 15 min quick stand up meetings around the department continuous improvement board

# Manager/Leaders Responsibilities

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- **Responsibilities:**

- Provide time and opportunities for Ideal Patient Care
- Remove barriers that prevent ideal patient care
- Give input on the effect of the changes at hospital wide level
- Coach frontline staff on problem solving
- Run continuous improvement board meetings

- **Time Commitment:**

- Attend weekly 15 min quick stand up meetings around the department continuous improvement board.

# Employee Responsibilities

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- **Responsibilities:**

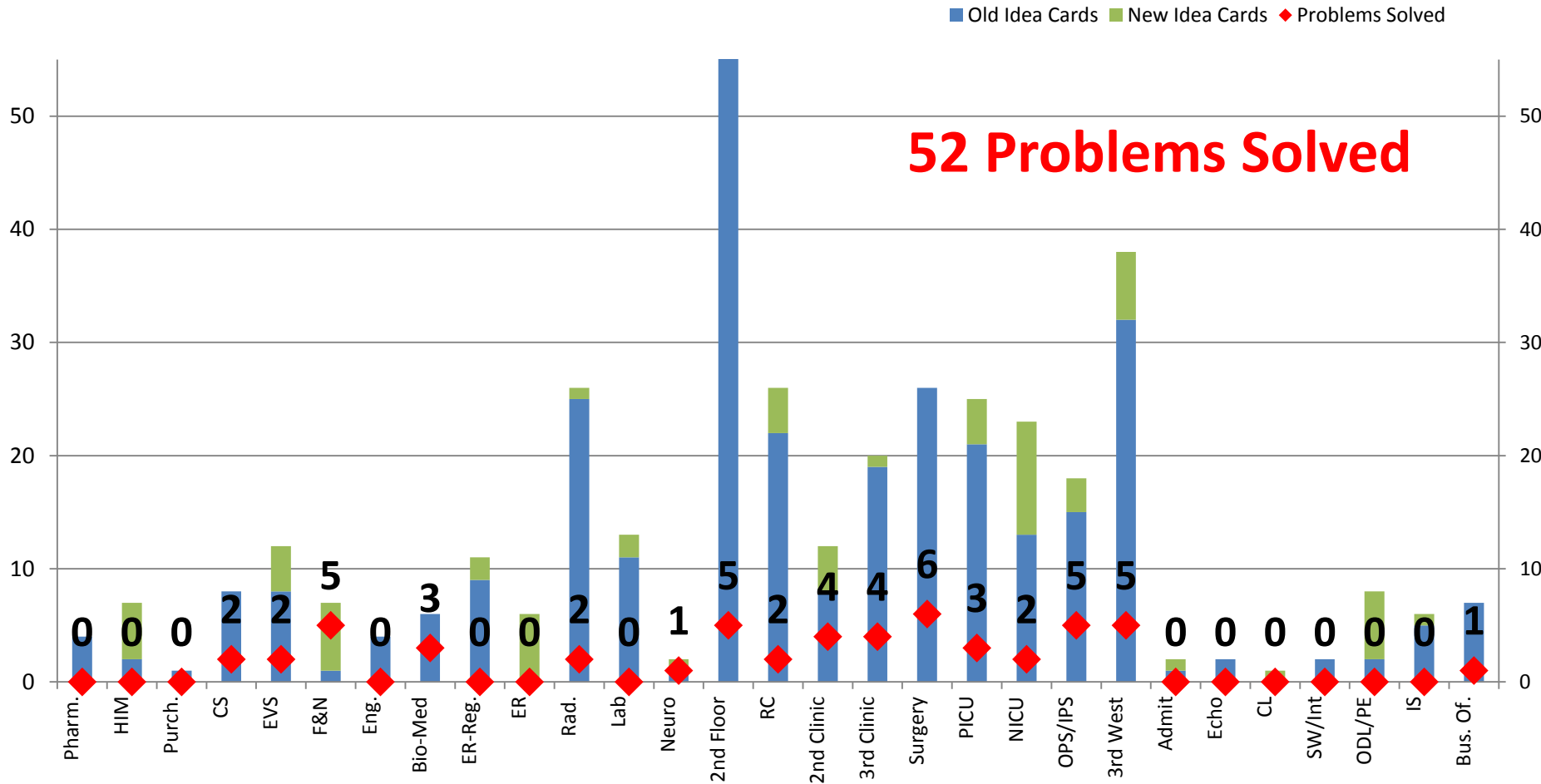
- Identify opportunities to better serve our patients and families with excellence
- Participate in A3 problem solving. Use your LLTs to help

- **Time Commitment:**


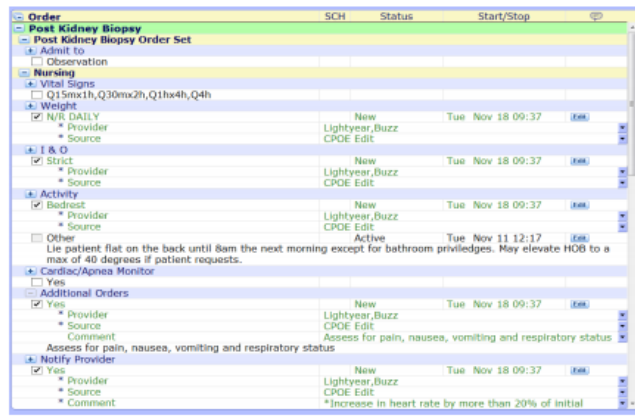
- Attend weekly 15 min quick stand up meetings around the department continuous improvement board

# Management Reporting

## Idea Cards on the Board and Problems Solved



# Wall of Fame Project Highlight

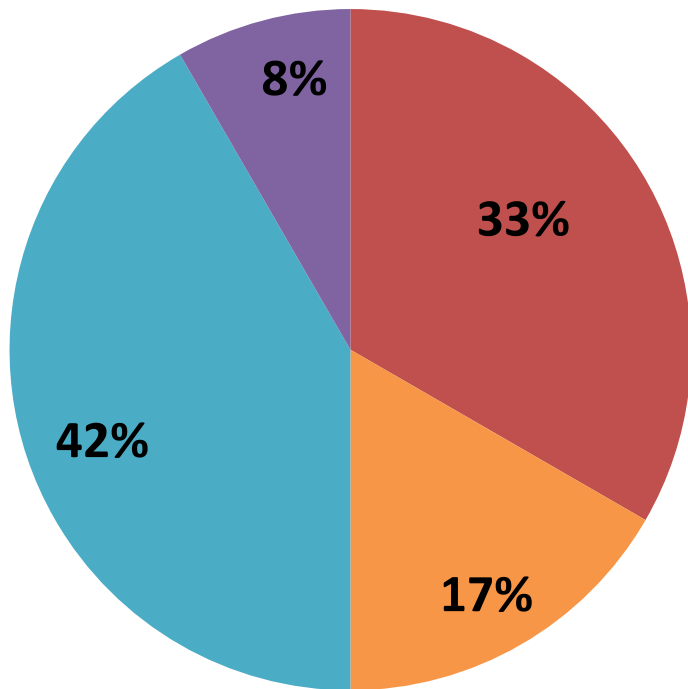
Title: <i>Kidney Biopsy Ordersets from Paper to CPOE</i>		Idea By: <i>Stephanie Roberts</i>	Card #: <i>74</i>	
Before		After		
<i>Orders were on paper and located in chart. Had to be entered into Meditech by HUC. Two processes</i>		<i>Orders created in Meditech and entered by provider. No further need for paper orders. One process</i>		
<p align="center"><b>Post Kidney Biopsy Order Sheet</b></p> <ul style="list-style-type: none"> <li>Admit patient for 24 hours observation following kidney biopsy</li> <li>Receive report from Procedure Room nurse and/or review record</li> <li>Complete nursing assessment within 10 minutes of arrival</li> <li>Lie patient flat on the back until 8 am next morning except for bathroom privileges</li> <li>Continuous cardiorespiratory monitoring until awake from sedation</li> <li>Assess for pain, nausea, vomiting, and respiratory status</li> <li>Monitor vital signs:               <ul style="list-style-type: none"> <li>Q15 minutes for 1 hour</li> <li>Q30 minutes for 2 hours</li> <li>Q1 hour 4 hours</li> <li>Q4 hours thereafter</li> </ul> </li> <li>Strict ins and outs monitoring; daily weight</li> <li>Notify Physician for:               <ul style="list-style-type: none"> <li>Increase in heart rate by more than 20% of initial heart rate or steadily increasing trend</li> <li>More than 20% drop in systolic blood pressure of initial value or steadily decreasing trend</li> <li>Nausea and/or vomiting not responding to medication</li> <li>Abdominal pain, back pain unrelieved by medication</li> <li>Bleeding at the biopsy site</li> <li>Temperature elevation</li> <li>Respiratory distress</li> <li>No urine output for more than 8 hours</li> </ul> </li> <li>Medications               <ul style="list-style-type: none"> <li>Tylenol <u>650</u> mg PRN pain maximum q4h; call Dr. Hopp if pain does</li> </ul> </li> </ul>				
The Effect of the Change/Improvement				
<i>Increased efficiency - orders immediately available to the nurse within Meditech. Decreased transcription errors - no longer need to re-enter orders. One process decreases confusion and missed orders. Order sets created: pre-kidney biopsy and post-kidney biopsy.</i>				
Name/Team Members	Department	Date	Benefit and/or Cost Savings (Optional)	
<i>Amy Hill, Dr. Hopp, Stephanie Roberts</i>	<i>3rd Floor</i>	<i>11/11/2014</i>	<i>Increased accuracy and efficiency.</i>	

- Additional Wall of Fames documents can be found on the Lean ETCHnet page.

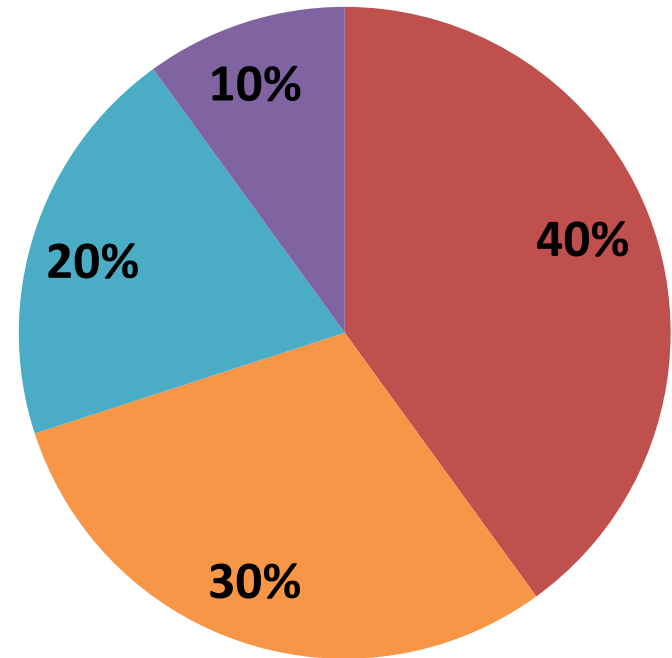


# Who's Problem Solving?

Problems Solved by Staff Type



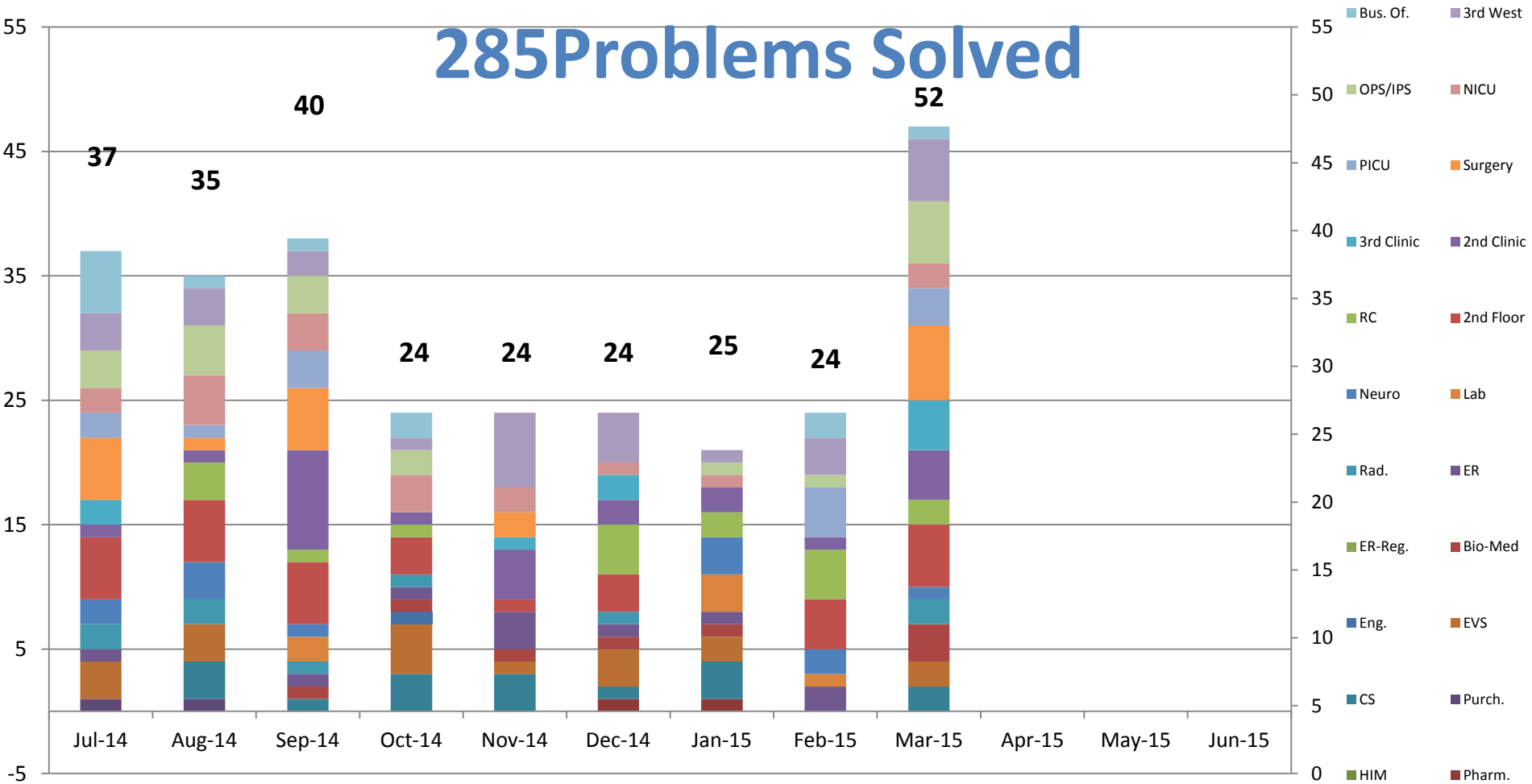
Goal: Problems Solved by Staff Type



■ Frontline ■ LLT ■ Manager ■ Provider

# Problems Solved FY14/15

## Total Ideal Patient Care Problems Solved By Month



# Future State

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- **Strategy Deployment & “Must Do Can’t Fail” Goals**
  - Specific plan with precise goals, actions, timelines, responsibilities and measures and is cascaded to director, manager, and front-line staff activities.
    - Strategy Deployment Initiatives
    - Breakthrough Objectives
    - Daily Continuous Improvement
  - Clear line of sight from C-Suite to the front-line.

# Future State

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- **Leadership Standard Work:**
  - Gap between department/front line staff problem solving with lean tools and managing in a Lean culture
  - Daily stat sheet, daily performance review huddle, process observation

**“The ultimate arrogance is to change the way people work but not to change the way we manage.”**



EAST TENNESSEE

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