



# Clinical Safety & Effectiveness Cohort 16 Team #5

**Improve reporting of Code Blue  
for All Inpatient Units**



# The Team

- Division:

- Rachel E. Garvin, MD**

- **Sidney Nau, RN, CPHRM**, Director of Quality Risk Management

- **Heidy Colón-Lugo, Ph.D. (c)**, Sr. Quality Data Analyst

- **Christopher Copeland, MHA**, Director of Professional Staff Services

- **Suanne Oliver, RN**, Sr. Analyst

- **Dalia Leal**, Assistant of Quality & Process Improvement

- **Edna Cruz, M.Sc., RN, CPHQ**, Facilitator

- Sponsor Department:

- **James Barker, MD**, Medical Director for Clinical Services

# AIM Statement

- The aim of this project is to increase the completion and submission of **Code Blue** audit forms for the Resuscitation Committee for all Code Blue events from **60%** to **90% compliance** between March 6<sup>th</sup> through May 15, 2015.
- The process begins when a patient goes into cardiac arrest and ends when the resuscitation committee evaluates each Code Blue case using the audit forms completed by each department.

# Project Milestones

January	February			March			April			May			June
Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early	Mid	Late	Early
Creation													
	Aim Statement Revised												
	Weekly Meetings												
	Past Data, Workflow & Fishbone												
				Interventions Implemented									
				Data Collection and Follow Ups with Directors									
					Data Analysis								
													Presentation

# Background

Policy No.: 9.09  
Page Number: 1 of 3  
Effective Date: 10/13/11

**TITLE:** RESUSCITATION SERVICES

**PURPOSE:** To ensure prompt and appropriate response by qualified University Health System (Health System) personnel in the event of a cardiopulmonary dysfunction or arrest. This is a revised policy and supersedes the policy dated 02/01/05. [Key Words: Resuscitation, CPR, Code Blue]

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**POLICY STATEMENT:**

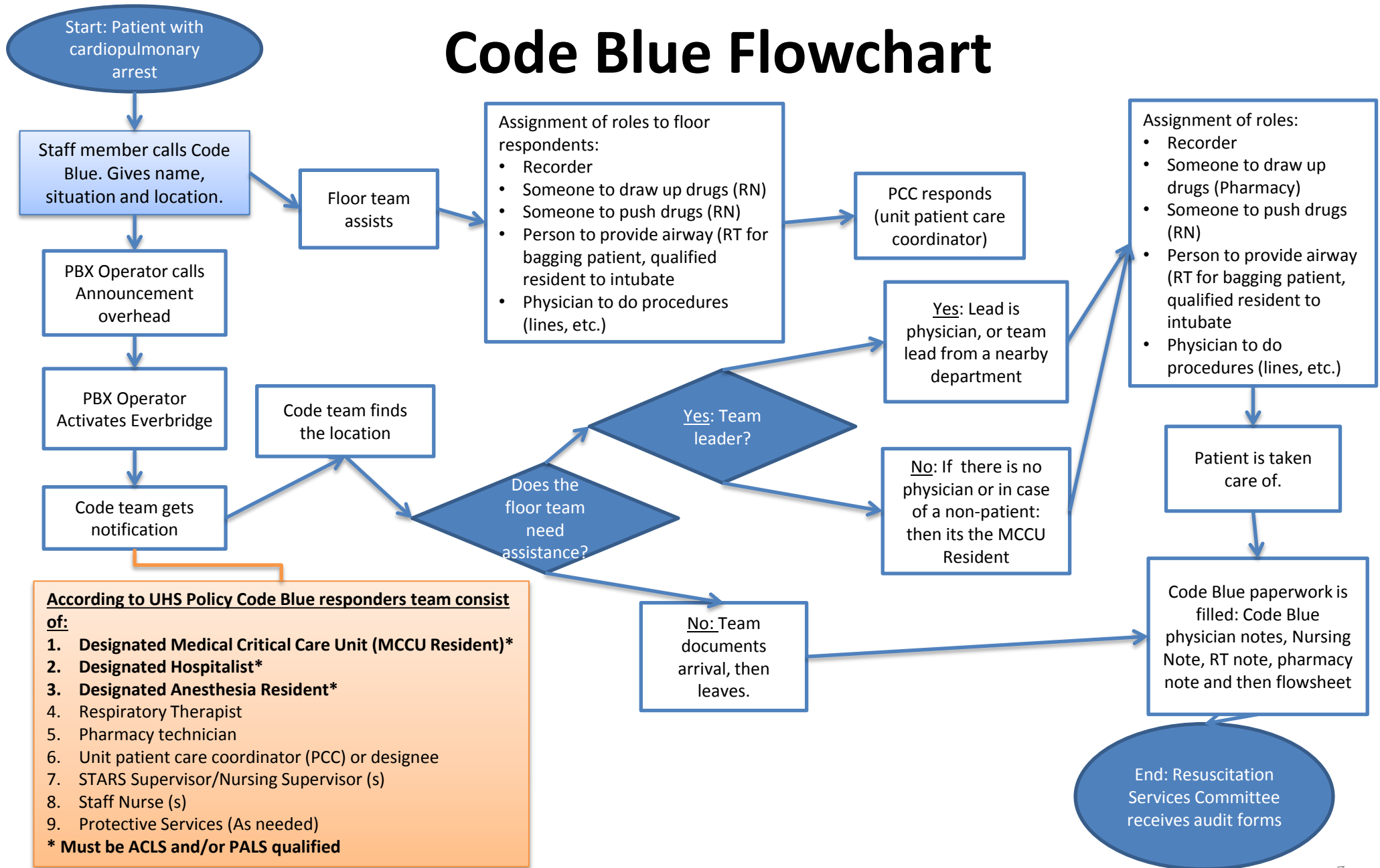
The Health System will provide prompt and appropriate cardiopulmonary resuscitation (CPR) and preventive measures, including therapeutic hypothermia, to individuals with cardiopulmonary dysfunction or arrest who do not have care limitation directives or orders prohibiting such actions. This policy applies to all situations where CPR is performed within Health System facilities. Any provider may request the activation of the Code Blue system by calling the operator for overhead announcement. Even though not all Code Blue events are called overhead by the operator, all applicable paperwork and reports will be forwarded to the Resuscitation Services Committee for review.

- UHS policy doesn't require calling a Code Blue overhead.
  - leads to differences in procedures and outcomes
- Not calling codes overhead leads to inconsistencies in patient care and a lack of accountability in regards to the audit forms.

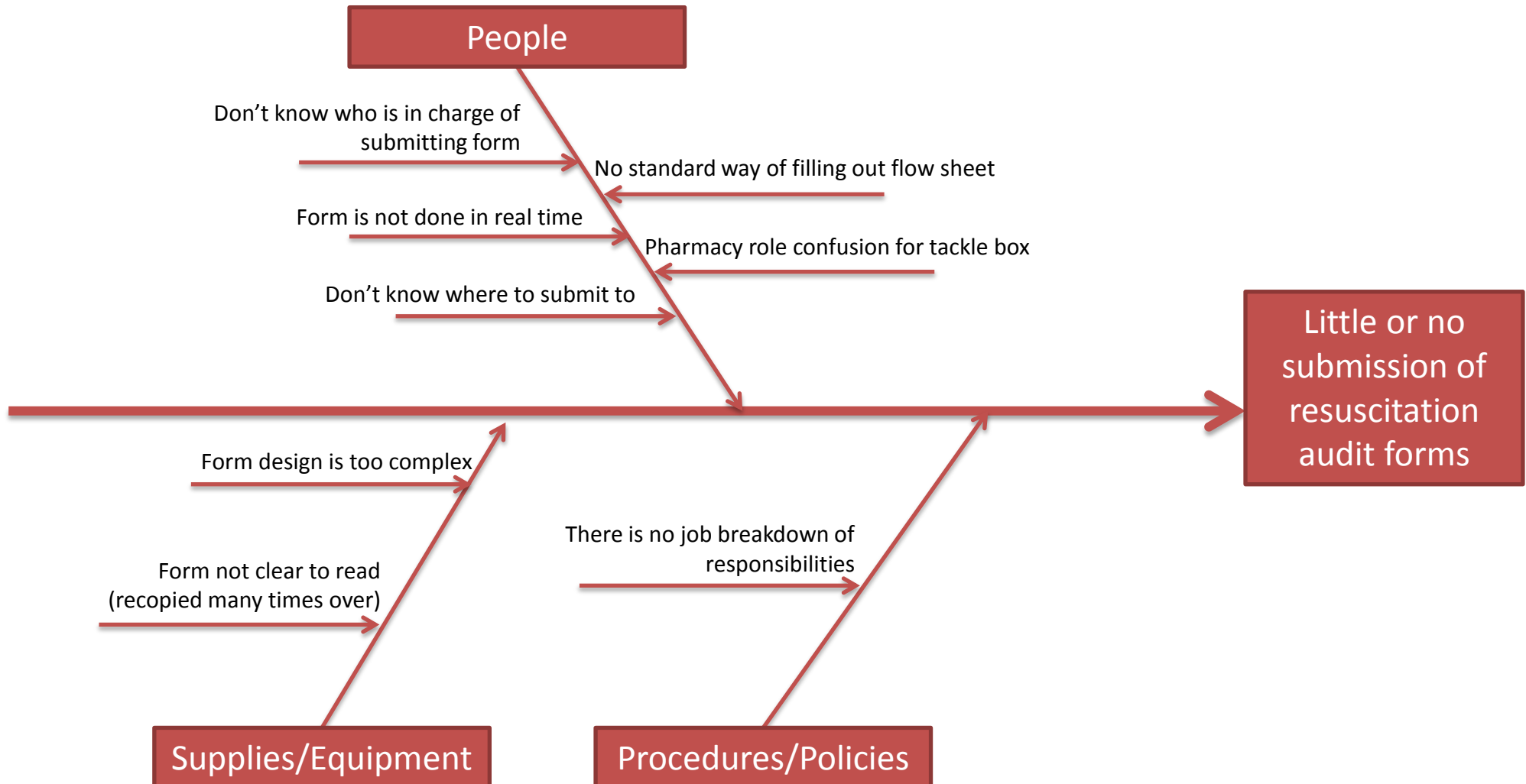
# Importance

- Our project is important because it standardizes the **Code Blue process** in order to ensure:
  - optimal resuscitative care throughout the hospital,
  - that ACLS guidelines and Joint Commission standards are followed,
  - data to guide resource allocations related to personnel, equipment and supplies used during resuscitations
  - data for research questions
  - that morbidity/mortality can be uniformly tracked from a metrics standpoint
  - Provide information to help answer questions from family members, and to continue patient care
  - reduce the risk of medical litigation

# Code Blue Flowchart



# Cause and Effect Diagram (Fishbone)

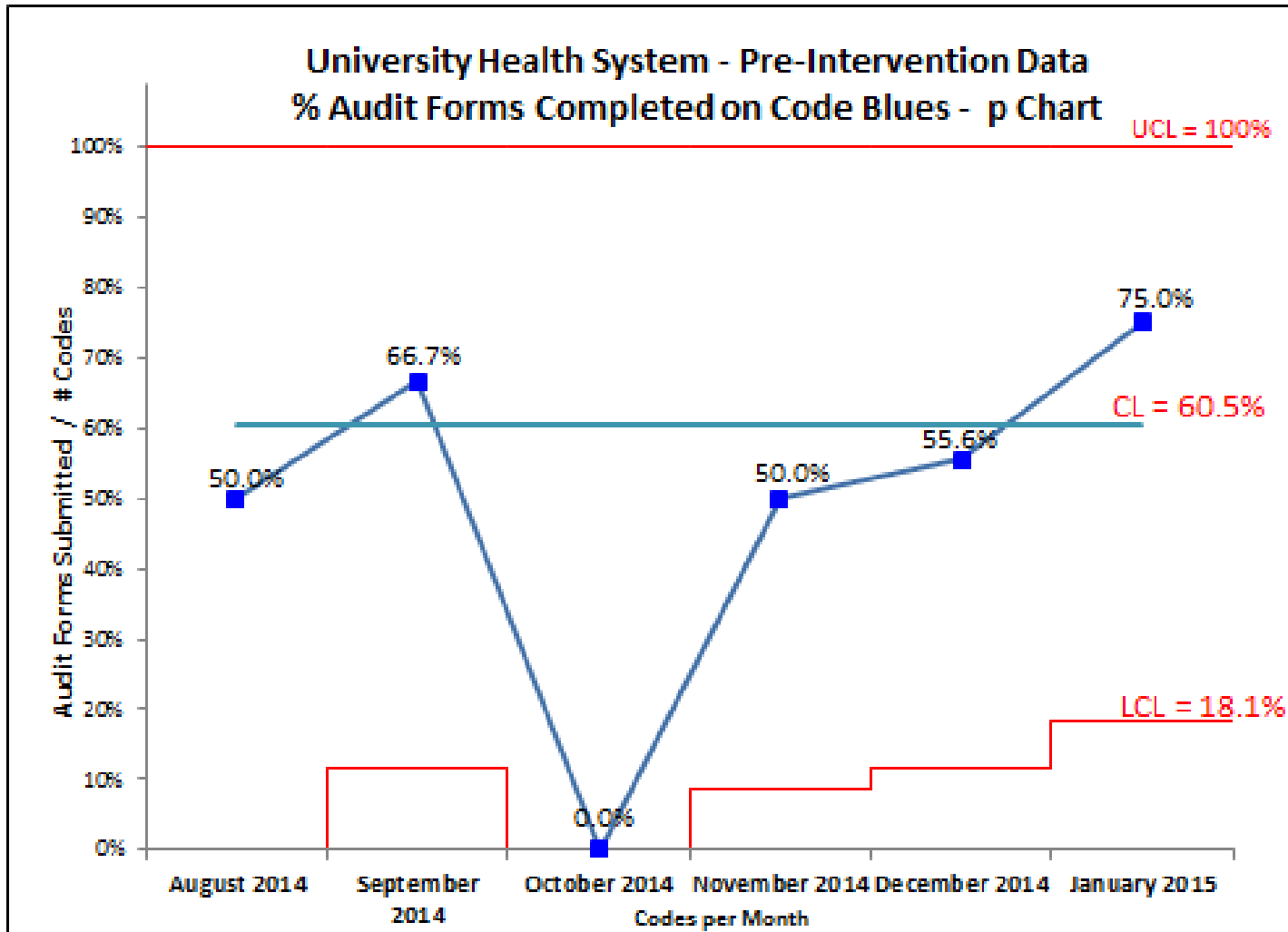






# DATA & INTERVENTIONS

# Pre-intervention Data



- **Denominator:** # of Code Blues called overhead as documented by operator system (Everbridge) for floors 5, 7 and 9 of the Sky Tower
  - These floors were selected due to the difficulty of getting the reports
- **Numerator:** # of audit forms completed that matched with codes reported in Everbridge.
- Audit forms are tracked by:
  - Quality Risk Management
  - Resuscitation Committee

# Pre-intervention Data by Units: August 14-January 15

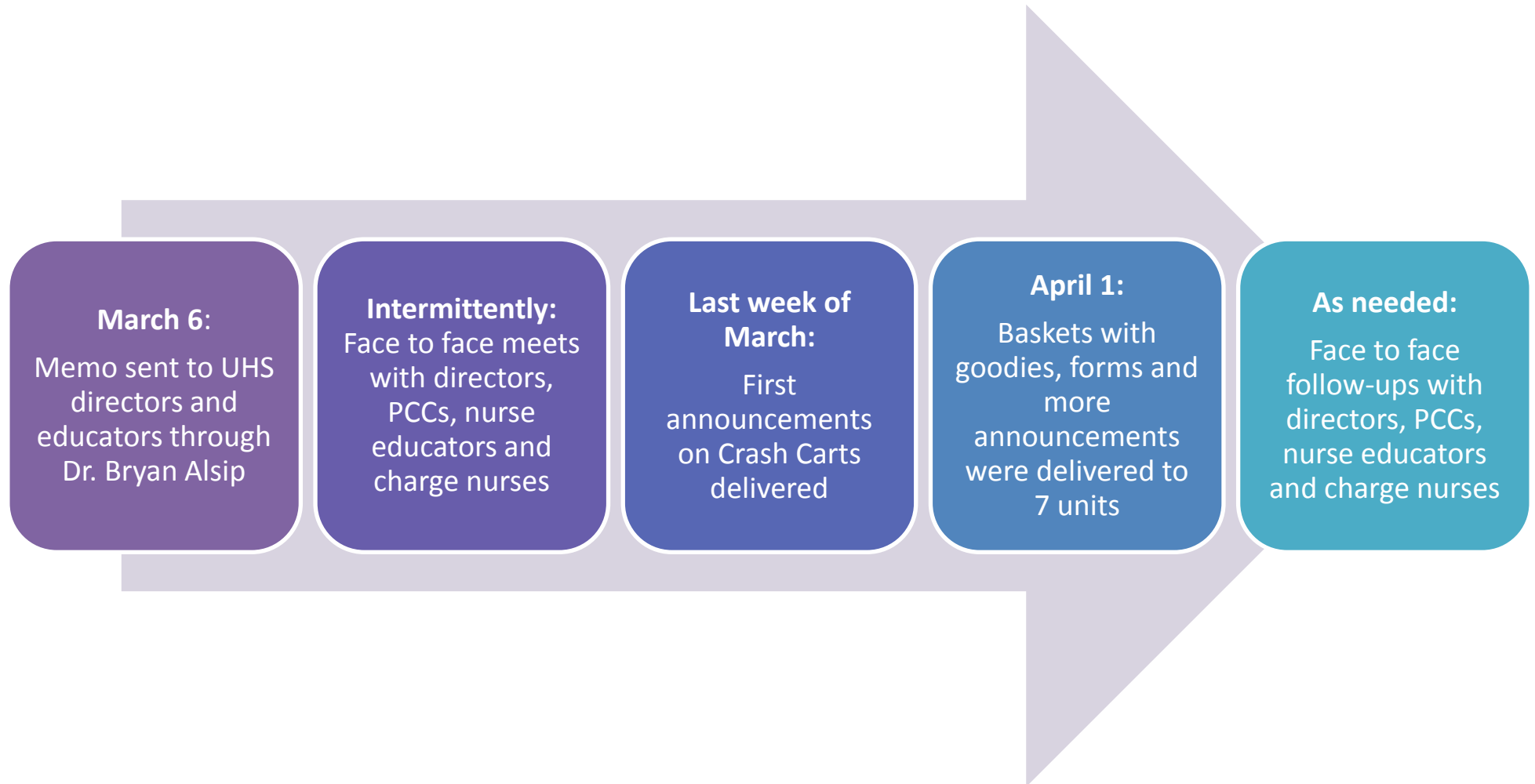
Tower	Units	% audit forms completed (events total)
Sky	10NR/10SU	
	9ACU/9ICU	31% (16 events)
	8ACU/8ICU/8FIMRI	
	7ACU/7ICU	0% (1 event)
	6ACU/6ICU	
	5ACU/5ICU	73% (26 events)
	EC	
Rio	9-Med overflow	
	8-CAU	
	6-Hem-Onc/Infusion Ctr/CDU	
	5-Pedi Dialysis	
	4-Women's Health/L&D/Newborn	
Horizon	Cath Lab	
	Non-invasive Cardiology	
	Endoscopy	
	Radiology/Interventional Radiology	
	Rehab (Reeves)	
	9-Pedi	
	7-Psychiatry	
	11 FI OR	

- Acquiring and analyzing the reports was somewhat difficult and thus we only requested information for these 3 floors

# PLAN: Intervention

- Guided by the results from the cause and effect chart we determined that the biggest issues were found in a lack of knowledge of **who, how and where to submit the audit forms to**.
- Thus our plan consisted in **educating** unit directors and managers about the audit forms, and making front-line staff aware of the audit form process.

# DO: Implementing the Change



## Intervention:

### *Crash Cart Reminders*

A total of 100 announcements were placed across the Hospital, in the same area as the crash carts to give personnel a visual cue for signing the audit forms.



Resuscitation Services  
Audit Form

Please return this form to the Resuscitation Services Unit.  
DO NOT PLACE IN MEDICAL RECORD

Print Patient's Medical Record Number

Event Location: \_\_\_\_\_ Date: \_\_\_\_\_ Time: \_\_\_\_\_

Event Type: \_\_\_\_\_

Event Details: \_\_\_\_\_

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

Event Review: \_\_\_\_\_

Charge Nurse/PCP Signature: \_\_\_\_\_

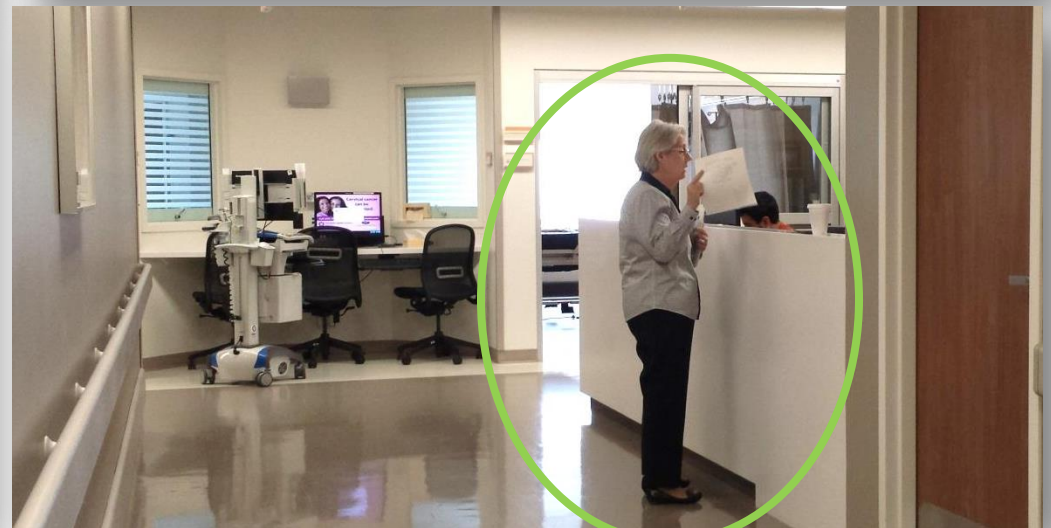
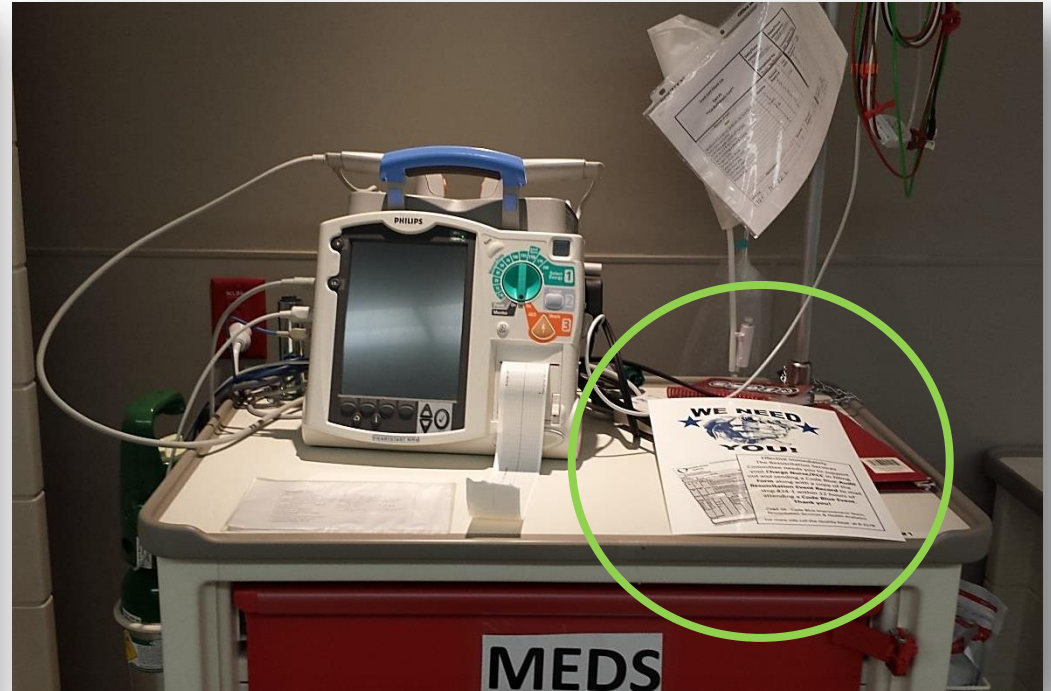
Resuscitation Services Unit Signature: \_\_\_\_\_

Effective immediately.  
The Resuscitation Services Committee needs you to support your **Charge Nurse/PCP** in filling out and sending a **Code Blue Audit Form** along with a copy of the **Resuscitation Event Record** to mail stop #34-1 within 12 hours of attending a **Code Blue Event**.  
**Thank you!**

CS&E 16 - Code Blue Improvement Team,  
Resuscitation Services & Health Analytics

For more info call the Quality Dept. at 8-2278

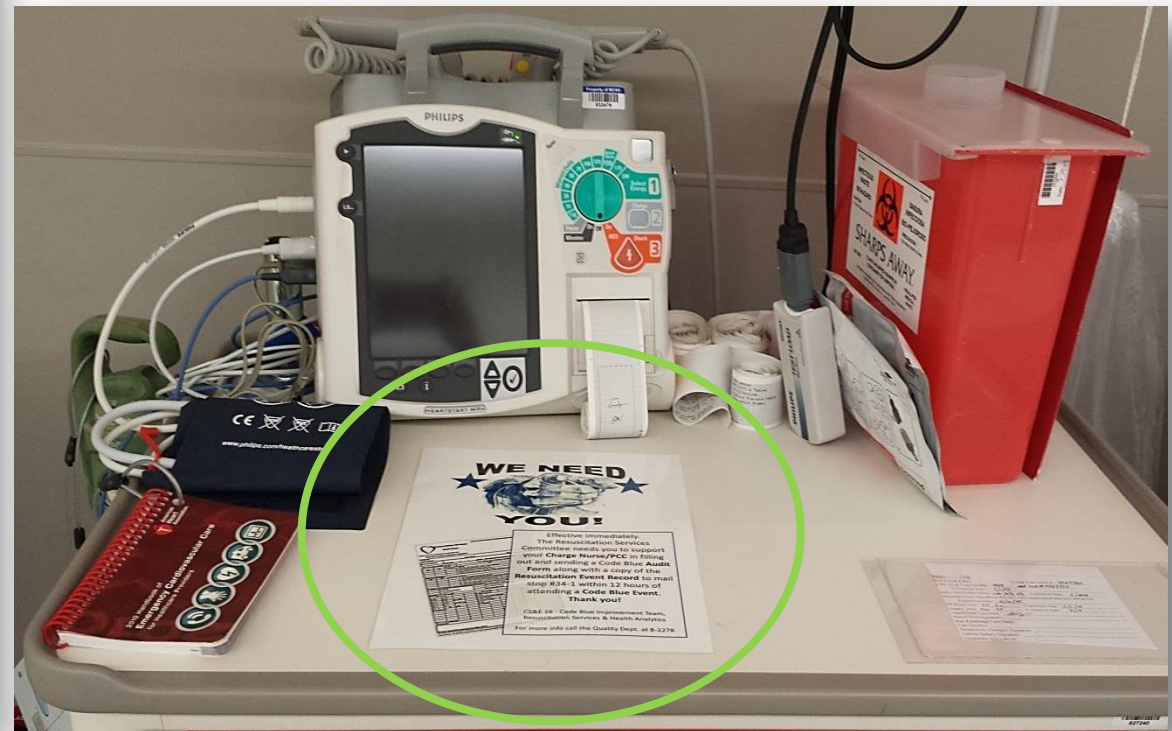






Some units like Pedi ICU (left) and Neuro ICU (below) had already posted them...

Like 







## Intervention: *Nurse Bait*

7 baskets were prepared and placed on different units. The baskets included a sign with the importance of submitting audit forms (left), the forms themselves (right), and both healthy, and not-so-healthy snack.

**We hand-delivered one basket at each of the following Sky Tower floors:**

- **Ground - ED & Trauma**
- **5 - MICU**
- **6 - Surgical ICU**
- **7 - PEDI ICU**
- **8 - Neuro ICU**
- **9 - Cardiology, Transplant ICU**
- **10 – Hem/Onc, Ortho, GYN, Surgery**





## RESULTS & CONCLUSION



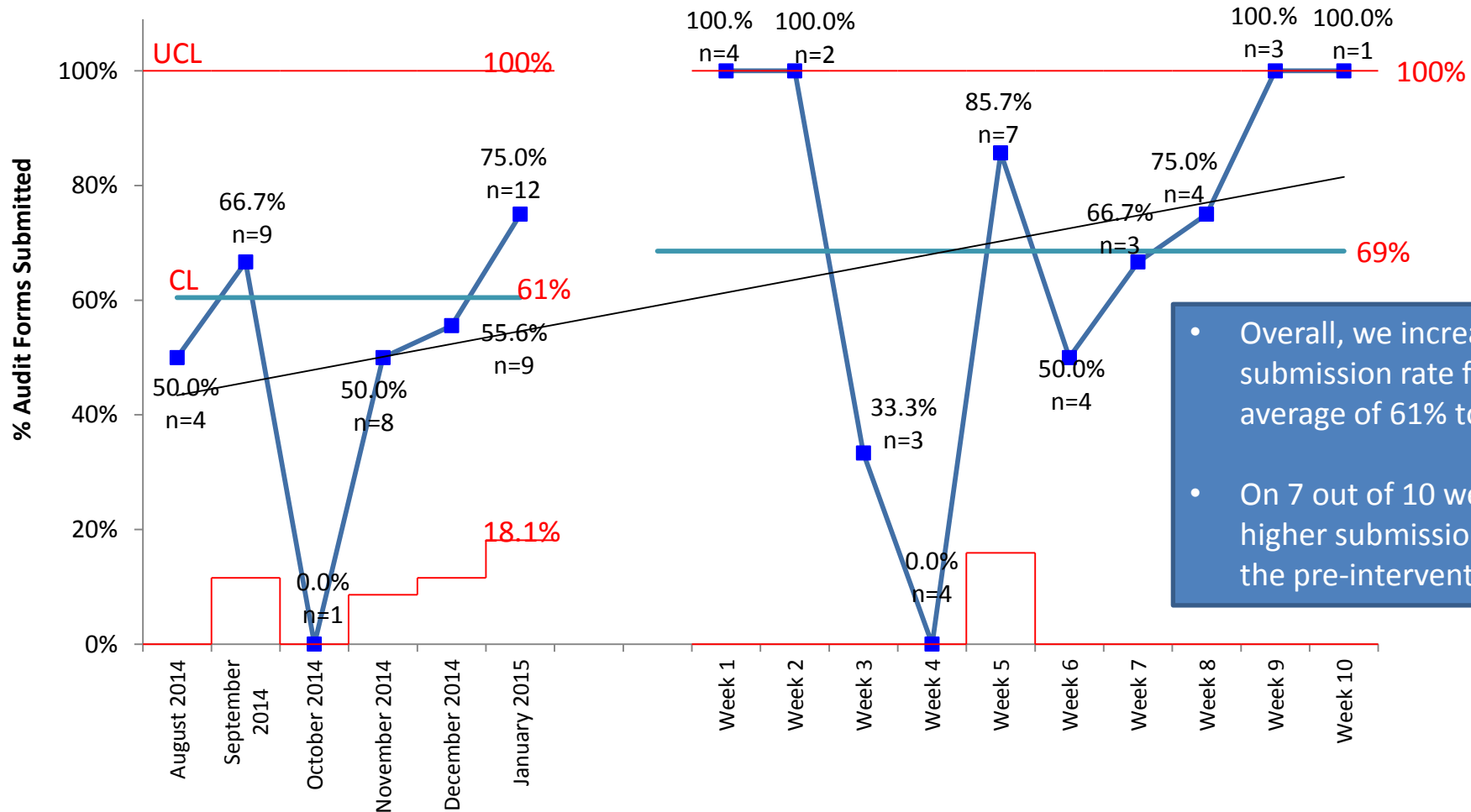
# Interventions Strengths



- Strong:
  - Standardizing process
  - Involvement of leadership
  - Removed unnecessary steps
- Intermediate:
  - Enhance communication







# CHECK: Results

## University Health System - Pre & Post Intervention Data % Audit Forms Completed on Code Blues - p-Chart

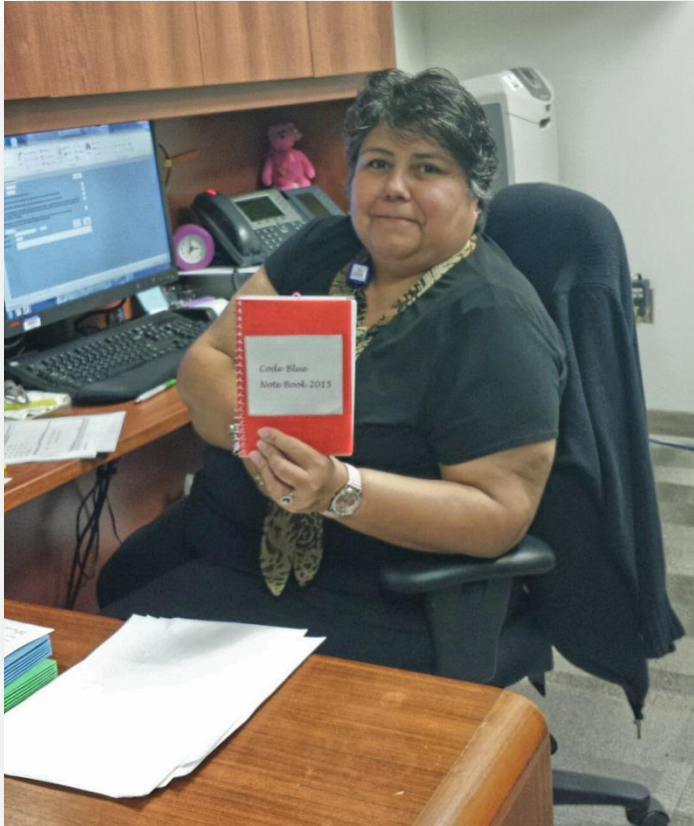


- Overall, we increased the submission rate from an average of 61% to 69%
- On 7 out of 10 weeks we had higher submission rates than the pre-intervention average

# Pre and Post-intervention Data for All Units

Tower	Units	Pre-data: % audit forms completed (events total)	Post-data: % audit forms completed (events total)	
Sky	10NR/10SU		100% (3 events)	
	9ACU/9ICU	31% (16 events)	42% (7 events)	
	8ACU/8ICU/8FIMRI		0% (1 event)	
	7ACU/7ICU	0% (1 event)		
	6ACU/6ICU			
	5ACU/5ICU	73% (26 events)	82% (17 events)	
	EC		100% (1 event)	
Rio	9-Med overflow		100% (1 event)	
	8-CAU			
	6-Hem-Onc/Infusion Ctr/CDU			
	5-Pedi Dialysis			
	4-Women's Health/L&D/Newborn			
Horizon	Cath Lab		0% (2 events)	
	Non-invasive Cardiology			
	Endoscopy		100% (1 event)	
	Radiology/Interventional Radiology			
	Rehab (Reeves)			
	9-Pedi			
	7-Psychiatry			
	11 FI OR			

# ACT: Sustaining the Results



- **Dr. Garvin**, now has access to Everbridge so as to monitor code blues called overhead as part of her role as Chair of the Resuscitation Committee
- **Ms. Dalia Leal**, assistant at the Quality & Process Improvement Office, now keeps track of audit forms submitted and will soon be trained on Everbridge
- **Sidney Nau**, cross checks both Dalia's and Dr. Garvin's lists to determine which units have not submitted audit forms and follows up with them

➤ *Ms. Dalia Leal and her  
Code Blue notebook*

# Return on Investment

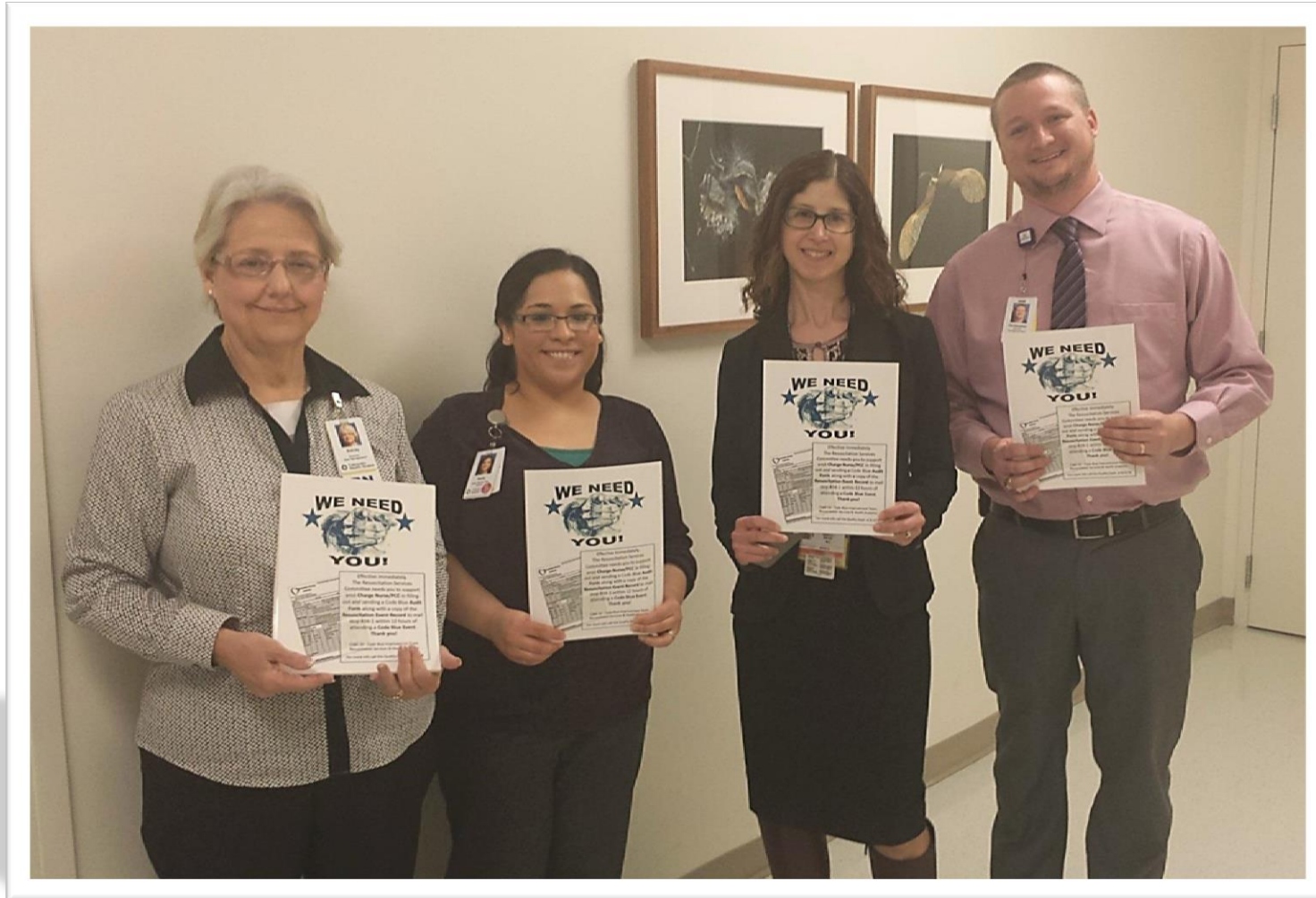
- This project's main return on investment is quality.
  - This is the first step to standardizing care regarding Code Blue events
- However, return on investment could be seen in:
  - Providing information on resource allocation of personnel, equipment and materials for Code Blue events
  - By ensuring ACLS guidelines are appropriately followed thereby decreasing hospital mortality rates



# Conclusion

- Gained deeper insight into one of the many processes that take place in our hospital everyday
  - Strengths vs. Weaknesses
  - Partnerships vs. Barriers
- Current Steps:
  - Standardizing Everbridge reports (lack of location information)
  - Code Blue Subcommittee just for reviewing audit forms
- Next steps:
  - Analyzing data from forms to study the outcomes of Code Blue events (i.e. mortality rates)
    - Focus groups are going to take place so as to study the integration of code blue forms within MIDAS tool
  - Process for false alarms
  - Studying the barriers for Code Blue rapid responders

# Code Blue Team



# References

- Justin B. Rousek & M. Susan Hallbeck (2011) The ergonomics of “Code Blue” medical emergencies: a literature review, IIE Transactions on Healthcare Systems Engineering, 1:4, 197-212, DOI: 10.1080/19488300.2011.628556. Available from: <http://dx.doi.org/10.1080/19488300.2011.628556>
- Goncales, Paulo David Scatena et al. (2012) Reduced frequency of cardiopulmonary arrests by rapid response teams. *Einstein (São Paulo)*, vol.10, n.4 [cited 2015-04-06], pp. 442-448 . Available from: [http://www.scielo.br/scielo.php?script=sci\\_arttext&pid=S1679-45082012000400009&lng=en&nrm=iso&tlng=en](http://www.scielo.br/scielo.php?script=sci_arttext&pid=S1679-45082012000400009&lng=en&nrm=iso&tlng=en)
- Accessed February 10, 2015. <http://www.resuscitationcentral.com/documentation/hospital-code-data/>
- Accessed April 1, 2015: <http://www.hasc.org/hospital-emergency-codes>

