

# NONATAL CLABSI: The Yellow Brick Road to "ZERO"

## St. Joseph Medical Center – Houston, Texas

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### HISTORY

In 2015, St. Joseph Medical Center marked its 128<sup>th</sup> birthday. There was a time when approximately one in three Houstonians was born at St. Joseph.



St. Joseph Medical Center Houston, Texas

The hospital has documented families with three and four generations born there. Maternity facilities have been a cornerstone of the comprehensive medical complex since 1938, although babies were born at St. Joseph's Infirmary in 1887, the institution's first year. As early as 1943, St. Joseph established Houston's first premature nursery, and was the first hospital in the city to use an

incubator. The Bloxom Air Lock Incubator was developed by St. Joseph staff member Dr. Allen Bloxom. His invention is credited with saving thousands of premature babies. Changing times brought new affiliations and name changes. In partnership with IASIS Healthcare, St. Joseph is the largest physician-owned hospital in the nation, with the approximate 100 doctors maintaining 22-percent ownership in St. Joseph Medical Center. In 2012, St. Joseph Medical Center in the Heights opened its doors, taking care of general population in a slightly more suburban area of Houston.

### OBJECTIVES

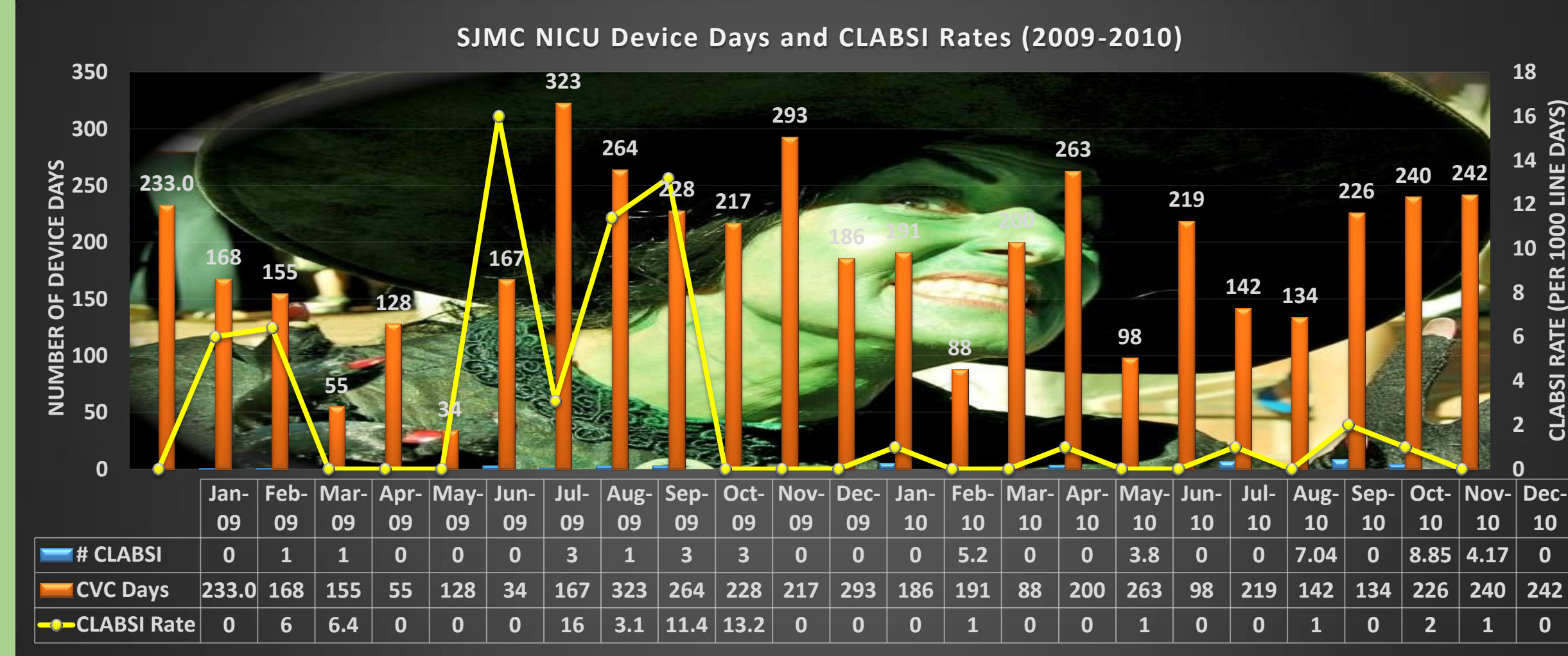
- Identify common components of insertion bundles used for central lines in neonates
- List three care processes with proven efficacy in decreasing CLABSI
- Distinguish two avenues beyond the insertion and maintenance bundles that have proven success in reducing and sustaining CLABSI reduction efforts

### CLABSI AND NEONATES

Central Line Associated Blood Stream Infections (CLABSI) cause substantial mortality and morbidity in neonates. CLABSI's are the most common hospital acquired infection in NICUs. A CLABSI not only increases patient morbidity and length of stay, it quickly drives up hospital costs. The National Healthcare Safety Network (NHSN) definition of a healthcare-associated infection (HAI) is a localized or systemic condition resulting from an adverse reaction to the presence of an infectious agent(s) or its toxin(s) that was not present on admission to the acute care facility.

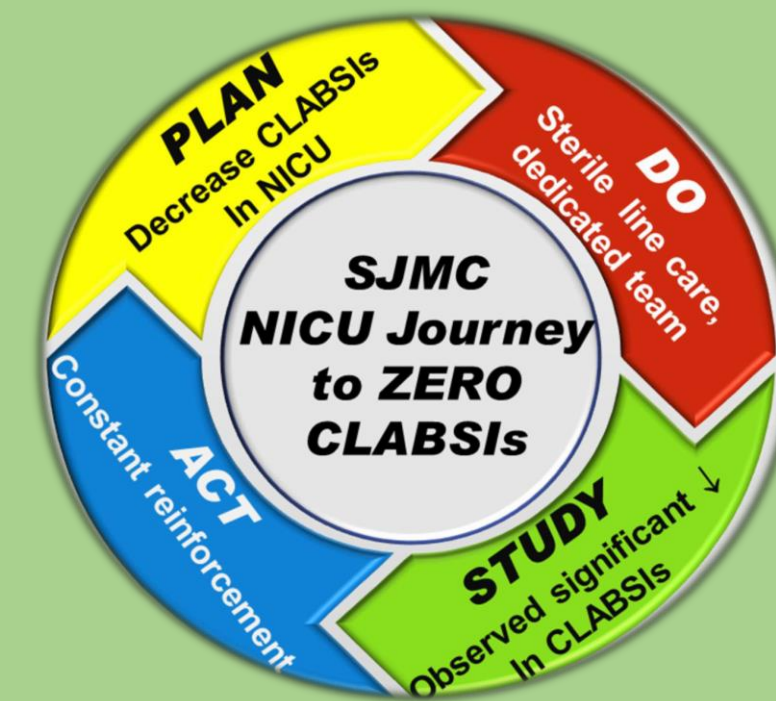
### 2010 - 2015 – THE SJMC CLABSI JOURNEY

In 2010, a dedicated group of Neonatal Intensive Care (NICU) nurses began a quest to investigate ways to decrease the CLABSI rate in their unit. In collaboration with medical staff, in April, 2010, twelve NICU RNs attended PICC line insertion class, followed by preceptorship under medical team for actual insertions until competency was established. In May, 2010, The Pediatrix 100,000 Babies Campaign was brought to SJMC by the medical staff.



Utilizing the PDSA methodology, in a joint effort to reduce CLABSIs in the SJMC NICU, the following steps were taken:

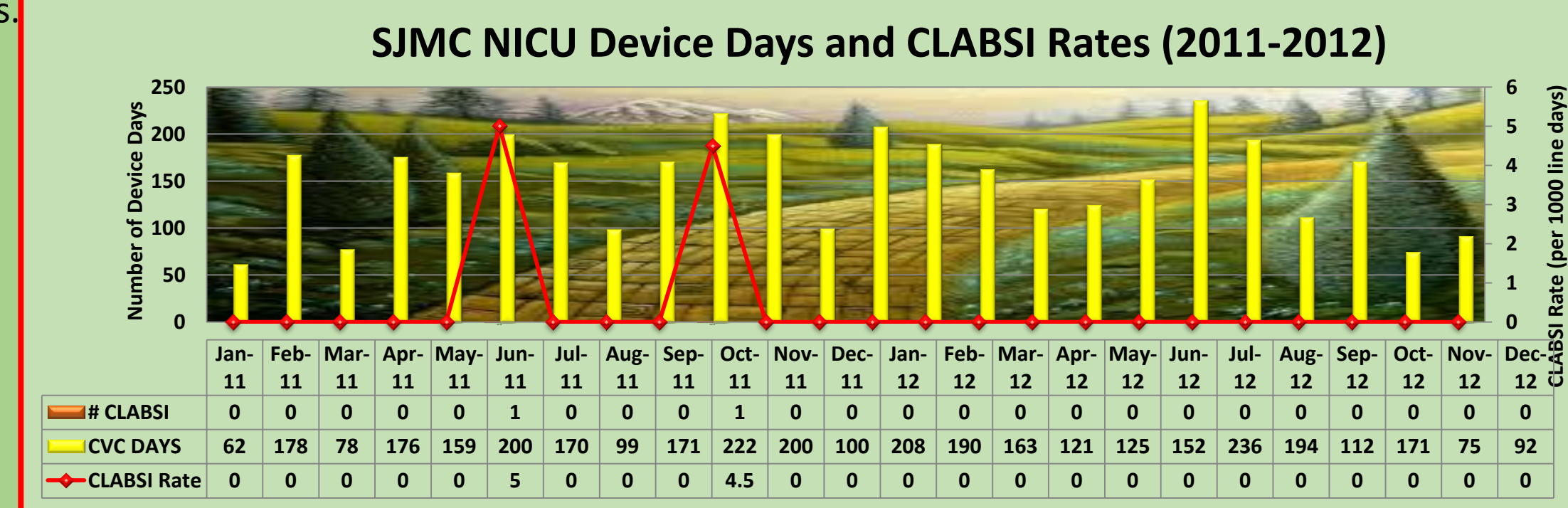
- Central Line Insertion Bundle
- Central Line Maintenance Bundle
- Policies were revised
- Maximal barrier precautions for central line insertions, including hat and mask for all individuals within 3 feet of the sterile field.
- Reinforced hand hygiene and scrub the hub
- Revised Central Line insertion checklist



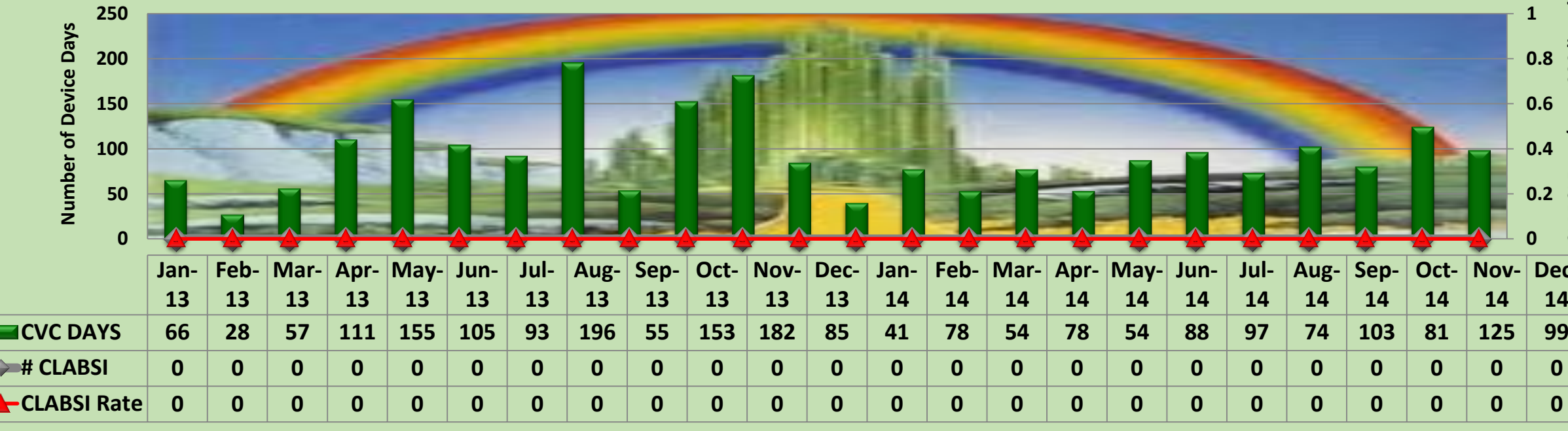
- Daily assessment for need for central line with goal of removal when feeds at ~120 ml/kg
- Chloraprep (2% chlorhexidine gluconate (CHG) and 70% isopropyl alcohol formulation) was introduced and used for all punctures (including PICC insertion) with adequate drying time
- Chlorasrub (3.15% chlorhexidine gluconate (CHG) with 70% isopropyl alcohol) for all hubs, and connectors to create closed IV systems

### FURTHER STEPS – WHEN A CLABSI OCCURRED

When CLABSI occurred, an investigation took place for the cause of the CLABSI. If found, re-education on hand hygiene, scrub the hub, dressing assessment and changes. Also discussed with Medical Director when central lines left in when feeds at ~120 ml/kg in absence of need for IV antibiotics. Developed a more dependable system for ordering supplies to ensure availability at all times. 2011 brought the implementation of donor breast milk for infants under 1500 grams whose mothers could not or chose not to provide breast milk, allowing for better tolerance and advancement; therefore, earlier achievement of full feeds with subsequent earlier removal of central lines.

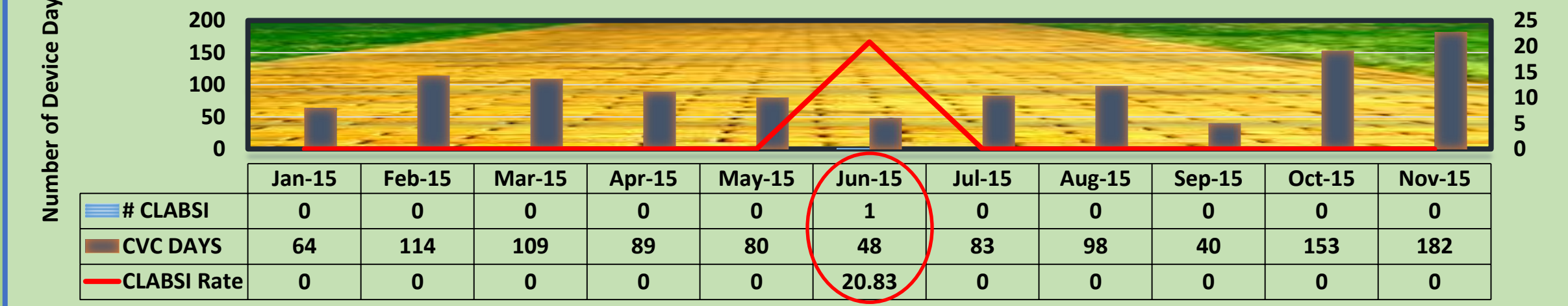


### SJMC NICU Device Days and CLABSI Rates (2013-2014)



In the Fall of 2013, the Pediatrix Group, who had spearheaded the SJMC Neonatal CLABSI PICC team, was replaced by the neonatology group of Texas Children's Hospital. Despite the change in medical coverage, the NICU remained CLABSI free for another 21 months due to nursing's guidance and the team's commitment to ensuring the practices stayed the same. In June 2015, a line was placed in a position that was not optimal in a patient with difficult IV access after several attempts were made. This led to NICU's first CLABSI since October, 2011.

### NICU CLABSI RATE AND DEVICE DAYS 2015



The SJMC Safety Committee wasted no time. Immediately, the St. Joseph Medical Center CLABSI Task Force was formed to address the CLABSI in NICU as well as adult ICU and house wide. A Charter was drawn up and the team performed a Failure Mode Effect Analysis to discover the reason for the increased CLABSI rate.

### HOUSEWIDE MEASURES – FROM CLABSI TASK FORCE

The CLABSI Task Force has made great strides in a very short time. Most of the changes were piloted in adult ICU, to roll out house wide shortly:

- CLABSI rounds every shift, sharing data with staff - data showed greater compliance due to increased staff awareness and just in time education when central line dressing issues needed to be addressed
  - Type of central line dressing was changed within the first two weeks of the Task Force. (In September, there were 92 unscheduled dressing changes; while in November that number dropped by almost 50% (48)).
- Short time frame, significant increase in compliance of the central line maintenance bundle has proved to be making positive changes in the CLABSI rates of ICU.

### NICU - 42 Months CLABSI Free – Starting Over

#### DOWN THE YELLOW BRICK ROAD AGAIN...

Once more the NICU team is faced with the challenge of addressing CLABSI in the neonatal patient utilizing the CLABSI Task Force recommendations and in consideration of the neonatal population.

- House wide switching to "SwabCap" on all connections and ports, even if not used.
- Will discontinue the use of Chlorasrub once the transition is complete.
- Reinforced the need to complete the central line checklist with all central line insertions, including umbilical lines.
- Medical and Nursing staffs to document line necessity on a daily basis.

Since 2010, the dedicated nurses and physicians at SJMC have worked together to produce measurable outcomes and positive results for their tiny, vulnerable patients by using best practice measures for central lines.



October 2014 SJMC NICU Celebration of 3 years CLABSI free!

### REFERENCES

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