

# Midline Catheter Usage in the Neonatal Population

Kelly Freeland, RNC-NIC

Reducing PIV attempts by advocating for a MC when empirical antibiotic therapy is needed for >48hrs



## PROBLEM

- Neonatal sepsis is associated with increased mortality and morbidities which include lengthy hospital stays (Smith & Benjamin, 2011).
- Neonates may present with subtle signs and symptoms that are nonspecific to sepsis such as lethargy, temperature instability, irritability, and feeding intolerance (Kendall & Karlsen, 2012).
- Due to the immaturity of the neonate's immune system, and the high susceptibility of sepsis-associated mortality, neonates are commonly administered empirical antibiotics such as antibiotics ampicillin and gentamicin (Clark, Bloom, Spitzer, & Gerstmann, 2006).
- Guidelines, recommendations, and standards point to the need for evidence-based indications when selecting a vascular access device (VAD) for administering intravenous treatments (Moureau & Chopra, 2016).
- Antibiotics are an essential treatment for sepsis and the delivery of the medication is dependent on the use of a VAD. All of these devices raise the complication factors.



## OBJECTIVES

**Specific Aim:** Decrease the number of PIV attempts by 25% on neonates in the NICU by developing a policy and procedure that identifies qualifiers and processes for MC placement for neonates who may require antibiotic therapy for more than 48 hours by December 2017. This change must be approved by the Neonatal Joint Practice Committee.

**Setting:** 26 bed level 3 NICU in the Sacramento region. Mercy San Juan Medical Center is a level 1 trauma center and is part of Dignity Health.

### Lewin's Model of change

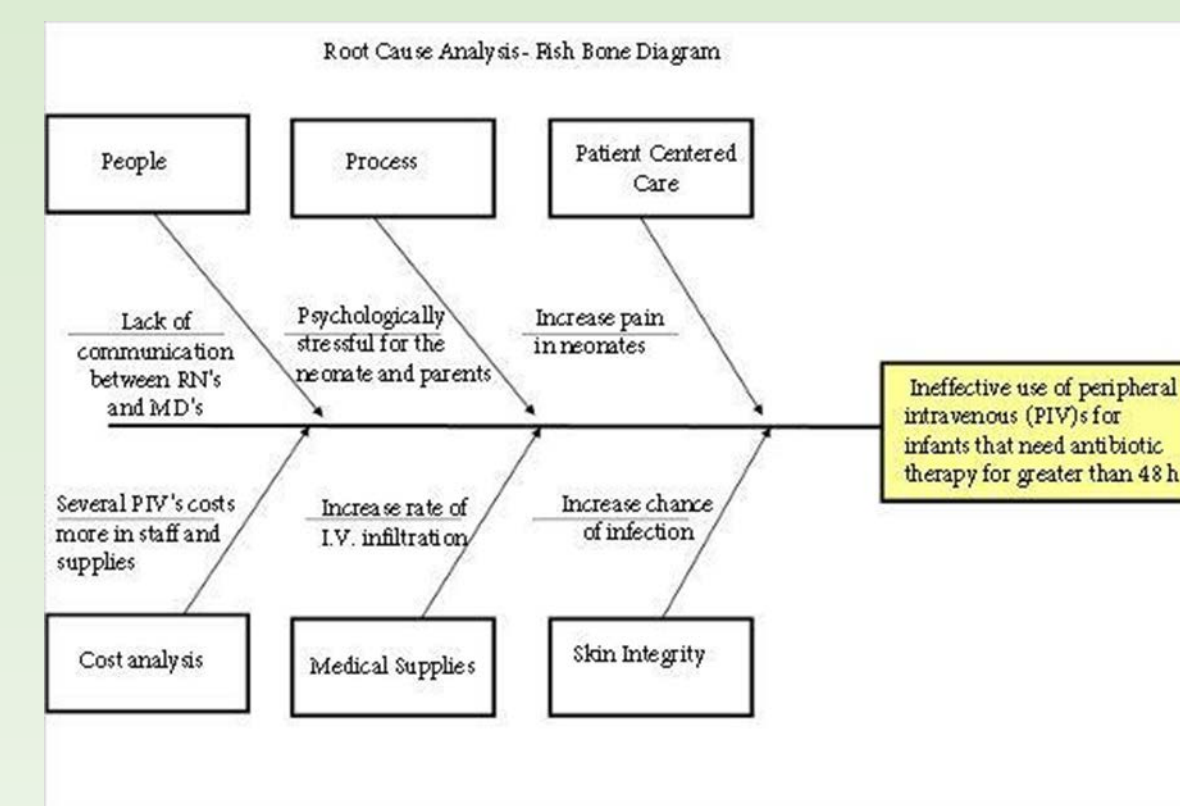


## METHODS

Antibiotic stewardship recognizes the need to both preserve antimicrobial agents and reduce antimicrobial resistance by using antibiotics appropriately. This is done by guidelines, that incorporate the appropriate selection, dosing, route and duration of antimicrobial therapy. MSJ NICU participates in the California Perinatal Quality Care Collaborative (CPQCC) for the antibiotic stewardship collaborative.

Retrospective chart audit was performed cases ranging from June 2016 - June 2017 using the antibiotic stewardship excel spreadsheet. Sampling size included all infants that needed antibiotics > 48 hours who did not require a central VAD.

### Root Cause Analysis- Fish Bone Diagram



SWOT analysis was performed to help identify how MC could benefit the neonate and healthcare team.

### SWOT analysis matrix

		helpful	impact	harmful
internal	<b>Strengths</b> Decrease Pain, Maintain skin Integrity, Reliable, Better Hemodilution	<b>Weaknesses</b> Requires Specialized Trained Neonate Nurses		
external	<b>Opportunities</b> Increase (neonate) Patient Centered Care	<b>Threats</b> Lack of Management or Administrator Support, Physician Preferences		

## DATA

### Data:

Admission rate for 2016 = 320 neonates

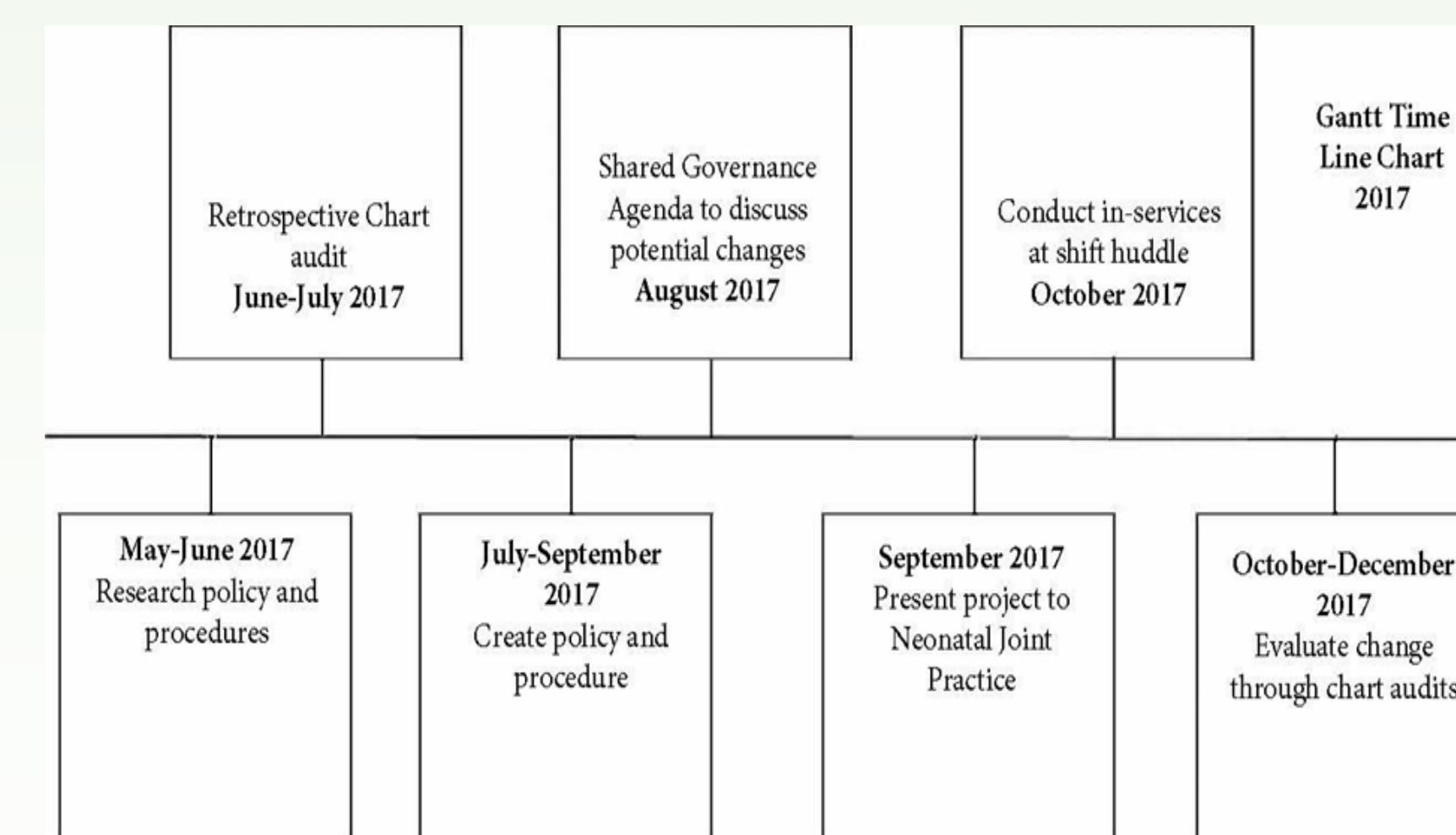
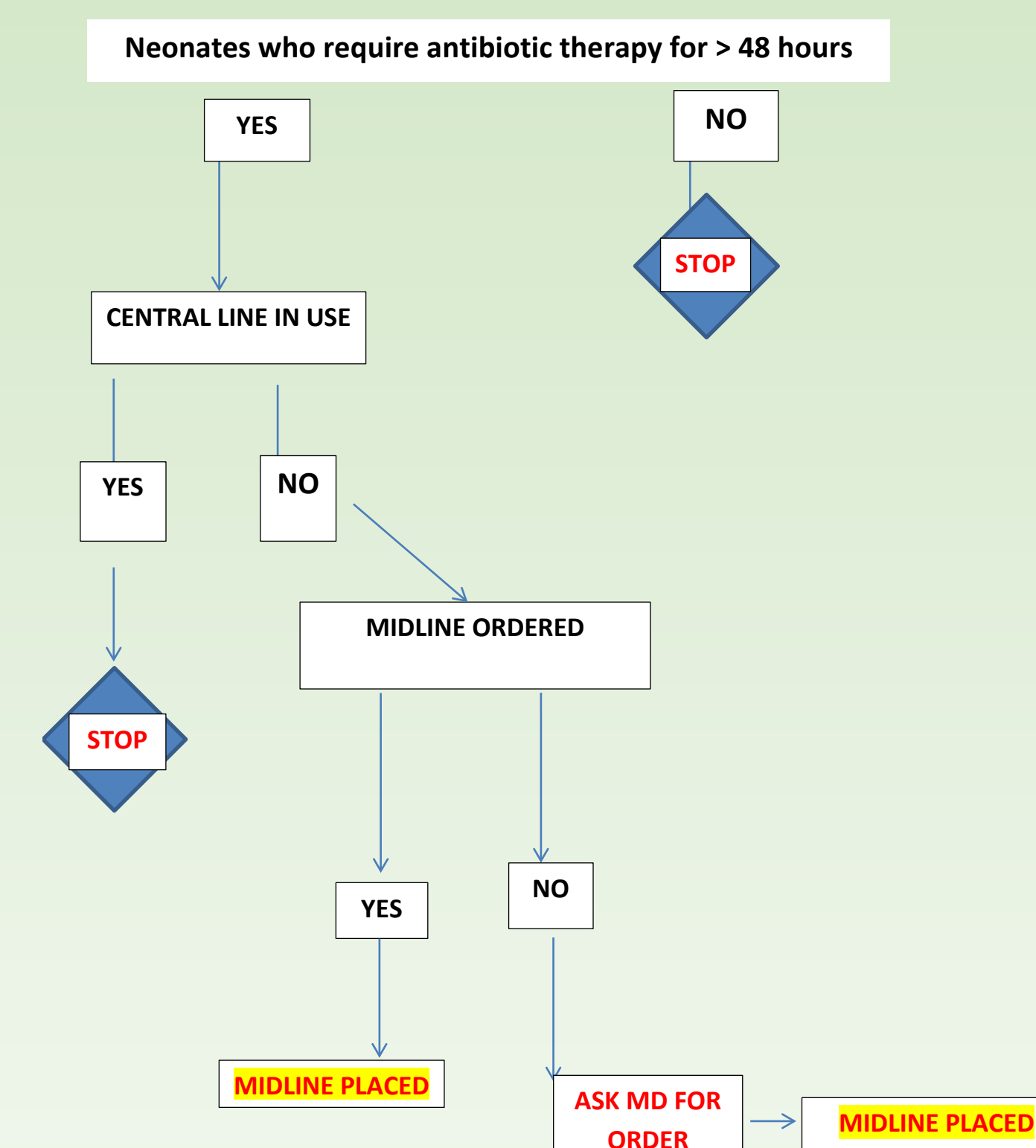
- 23 neonates had multiple PIVs versus MCs as the most appropriate VAD = 7.5%

Admission rate for 2017 (to date) = 204 neonates

- 20 neonates had multiple PIVs versus MCs as the most appropriate VAD = 10%

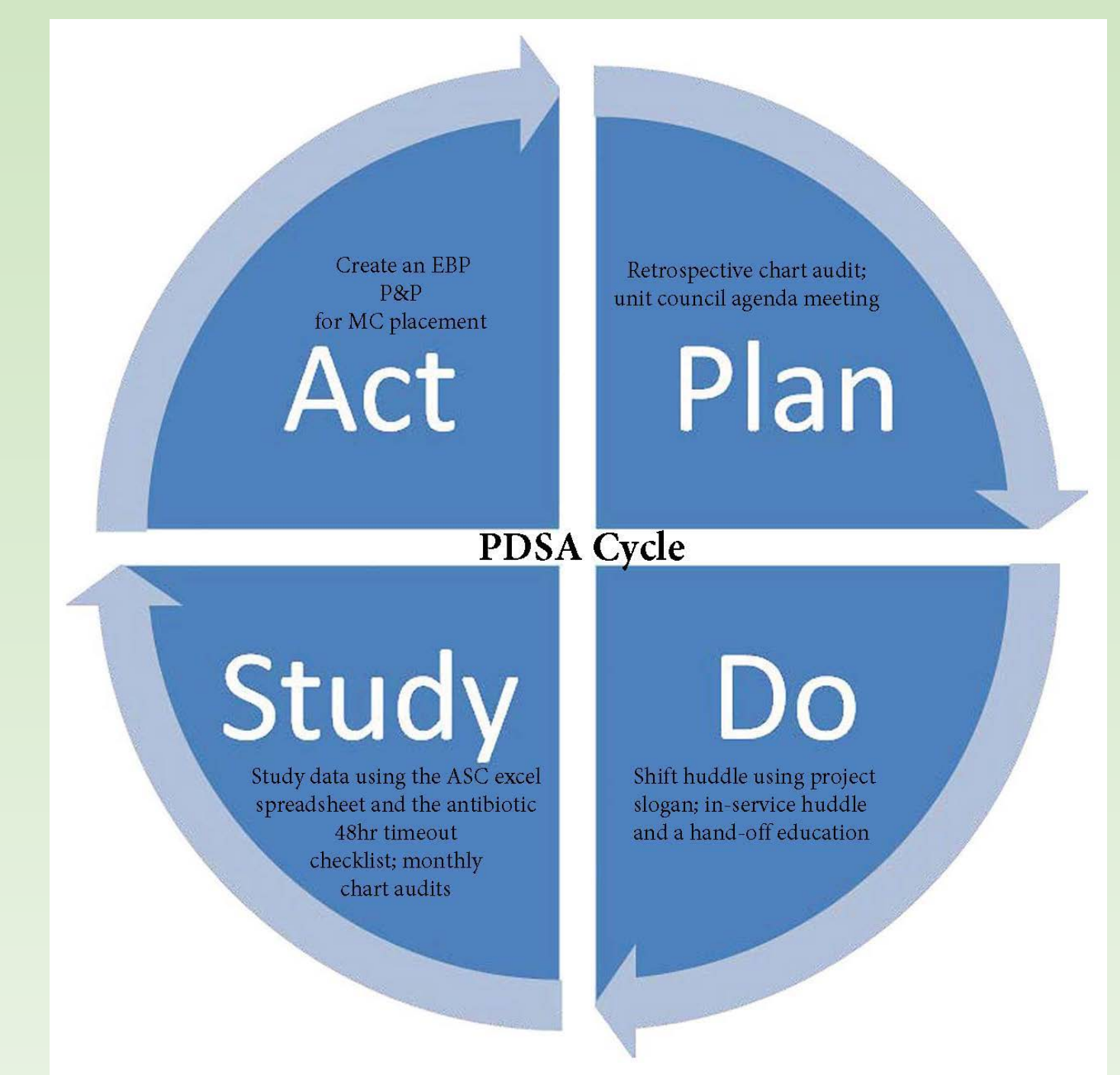
The average PIV attempt was 2.5 however there were gaps in consistency with documentation of PIV attempts in the EMR thus data could not be fully verified.

### Algorithm for identifying neonatal candidates for a MC placement



## EXPECTED RESULTS

- The expected goal of this project is to reduce the number of PIV attempts by 25% by the end of 2017 by inserting more MCs in lieu of PIVs for neonates that need antibiotics for greater than 48 hours.
- Implementing the project's slogan "You don't need an order to advocate".
- Implemented Huddle and a Handoff.
- Implemented the addition of a VAD section in the antibiotic 48 hour timeout checklist for physicians.



## CONCLUSIONS AND FURTHER CONSIDERATIONS

Nurses in my NICU lack the confidence to collaborate with physicians. Doing an anonymous pre-implementation questionnaire that encourage staff to be truthful as to their perceived knowledge, skills and confidence level in collaborating with physicians would greatly benefit this project in the future. By continuing this project it is my hope to encourage the nurses to become paladins which means to be a determined advocate or defender of a noble cause. This highly vulnerable population is in need of this type of nurse.

Other findings were inconsistent documentation in the EMR about the number of PIV attempts. An additional project isolating this gap is warranted.

## REFERENCES

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- Kendall, A. B., Scott, P. A., & Karlsen, K. A. (2012). The S.T.A.B.L.E.® Program: The evidence behind the 2012 update. *The Journal Of Perinatal & Neonatal Nursing*, 26(2), 147-157. doi:10.1097/JPN
- Moureau, N., & Chopra, V. (2016). Indications for peripheral, midline and central catheters: summary of the MAGIC recommendations. *British Journal of Nursing*, 25(8), S15-S24.

## ACKNOWLEDGMENTS

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Mercy San Juan Medical Center – NICUs staff