Neonatal Antibiotic Stewardship

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Problem/Background

- Current practice is that all newborns exposed to maternal chorioamnionitis should have a limited diagnostic evaluation and receive antimicrobial therapy for 24-48 hours
- Newer data shows that well appearing newborns seldom if ever develop an infection
- Newborns born at ≥35 0/7 weeks' gestation can be stratified into well defined risk levels for early onset sepsis utilizing a neonatal early onset sepsis (EOS) risk calculator and serial physical examination to detect the presence of clinical signs of illness after birth
- Kaiser Permanente developed a web-based risk assessment calculator that combines the individual newborn's clinical assessment and the maternal risk factors (gestational age, maternal temperature, length of rupture, maternal group B streptococcus (GBS) status and treatment) to calculate the possibility of EOS (Early Onset Sepsis) (Figure 1)

Project Implementation

- Sepsis Score to be calculated on all newborns at 2 hours of age by the nurse (Figure 3)
- Physician will be notified if the calculator recommends any action other than routine newborn care (Figure 2)
- The goal is to only obtain septic work ups and/or start antibiotics if the newborn's risk score indicates the need for intervention
- Staff was provided education on practice change at Obstetric (OB) Education Day and at OB staff meeting

Results

- Staff education and systemic intervention using a PSDA model can significantly impact patient care by decreasing the administration of antibiotics to newborns at risk for early onset sepsis
- Use of the EOS calculator along with serial clinical assessment of the newborn can decrease the number of septic work ups and administration of antibiotics while identifying and managing the care of newborns at risk for EOS (Figure 4)
- Other studies in the literature support the use of the EOS calculator to decrease the exposure to antibiotics for newborns without missing any cases of EOS

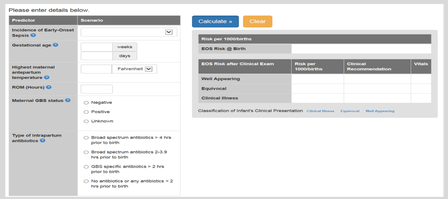


Figure1. Kaiser Early Onset Sepsis Calculator

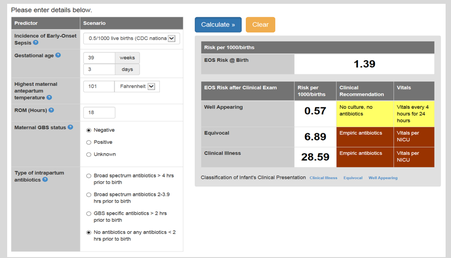


Figure 2. Physician Notification

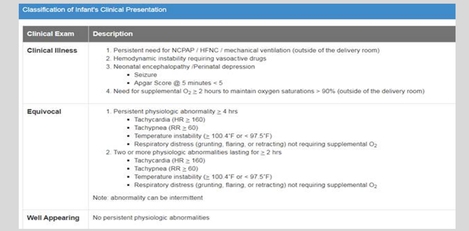


Figure 3. Screen at 2 Hours of Life

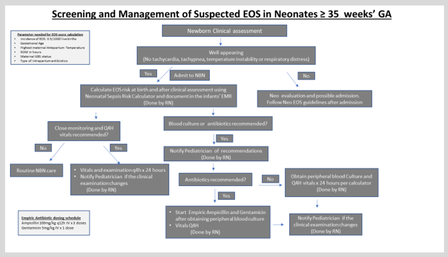
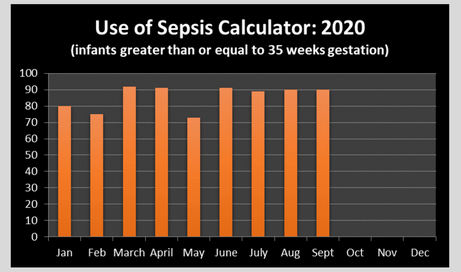


Figure 4. Screening & Management



Use of Sepsis Calculator, Compliance Data 2020

Conclusions

- Future research is needed to decrease the use of antibiotics in premature newborns <35 0/7 weeks gestation utilizing a risk assessment calculator and clinical assessment
- Continue the practice change for newborns ≥35 0/7 weeks gestation as the risk calculator has been validated for this population

Acknowledgements/Hospital Team

- Advocate Aurora Health Neonatal Intensive Care Unit Antimicrobial Stewardship Team

References

- Kuzniewicz MW, Puopolo KM, Fischer A, Walsh EM, Li S, Newman TB, Kipnis P and Escobar GJ. (2017) A quantitative, risk-based approach to the management of neonatal early-onset sepsis. JAMA Pediatrics. 2017, April; 171 (4): 365-371
- Puopolo, K.M., Benitz, W.E., Zaoutis, T.E. (2018) Management of neonates born at >=35 0/7 weeks gestation with suspected or proven early-onset bacterial sepsis. Pediatrics 2018: vol 142, no 6. Online address: http://pediatrics.aappublications.org/content/142/6/e20182894By Committee on Fetus and Newborn & Committee on Infectious Diseases
- Sepsis Calculator https://neonatalsepsiscalculator.kaiserpermanente.org