Letters to the Editor

Letter to the Editor: Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection

Dear Editor,

We want to applaud and acknowledge the work done by Wimmer et al. regarding their study, "Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection." This retrospective study demonstrates how risk calculators can potentially lead to overutilization of the medical system and may cause harm or developmental consequences to neonates (1). We appreciated that this paper discussed that utilizing laboratory techniques may not be beneficial and, in some instances, harmful. Not only the pain that multiple pokes can cause to the infant but also transferring the baby to the NICU may disrupt the development of the parent-infant bond by prolonging chestfeeding (2). Additionally, we commend the investigators for highlighting the effects of antibiotic use on the infant's microbiota and the development of long-term chronic illnesses such as obesity, asthma, and other atopic diseases. Determining whether prophylactic antibiotics are necessary to prevent neonatal sepsis is a worthwhile, medically and financially endeavor. Furthermore, the obligation to antibiotic stewardship is ever-growing as resistance increases yearly.

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After reviewing the guidelines for the Neonatal Early Onset Sepsis Calculator (NEOSC) and this study's methods, we noticed a discrepancy in the data. The NEOSC is a tool utilized by neonatologists to calculate the risk of neonatal sepsis in infants > 34 weeks gestation based on a variety of maternal factors. Maternal factors include the EGA, the mother's highest antepartum temperature, duration of rupture of membranes, Group B Streptococcus (GBS) status, and type and timing of intrapartum antibiotics given. However, this study investigated the treatment and handling of chorioamnionitis-exposed infants at EGA ≥ 35 weeks based on symptomatology rather than NEOSC score. Symptomatic infants were admitted to the NICU and treated through their standard treatment early-onset sepsis (EOS) guidelines. Infants who did not meet the symptom criteria were considered asymptomatic; they were exempted from laboratory evaluation and not treated with antibiotics.

The most significant discrepancy between infants being evaluated using the NEOSC and the methods proposed in this study lies in the EGA. The NEOSC is designed for neonates with an EGA of > 34 weeks, whereas this study only investigated neonates with an EGA of ≥ 35 weeks. While realizing this, we decided to test the NEOSC tool ourselves. We inputted a hypothetical patient with only the maternal risk factors for intrapartum temperature elevation ≥ 100.4 F, one of the selection criteria presented in this study (CPT code of intrapartum fever ≥ 100.4 F.) Other maternal factors were set to 0.5/1000 live births incidence of EOS, 12 hours duration of rupture of membranes, negative GBS status, and no intrapartum antibiotics given. With this selection criteria, the risk of neonatal sepsis in a well-appearing, asymptomatic neonate with an EGA of 34.1 weeks was more than double the risk than in a neonate with an EGA of 35 weeks under the same parameters (3.61 per 1000 live births versus 1.71 per 1000 live births.) Additionally, the suggested management of these infants changes from empiric antibiotics to blood cultures, respectively. Altering other maternal risks for infection, such as GBS status or intrapartum antibiotic treatment, only enhances this discrepancy.

" Given this, we are concerned about the efficacy of this study due to the lack of data evaluation for infants between EGA 34.1 and 35 weeks. With this extra six days of data, the study results could be altered significantly concerning the infection rate, readmission, and disease outcome. While the newly proposed method could be effectively and positively utilized in infants of EGA ≥ 35 weeks, the study does not address or discuss the differences in care and evaluation between EGA 34.1 and 35 weeks."

This remarkable difference in care should not be ignored. Though a single week in gestational age may seem like a minuscule difference in everyday life, for a neonate, one week could mean the difference between life and death. Invasive infection is the cause of about one-third of neonatal deaths each year, and the rate of sepsis is inversely proportional to gestational age (3,4). Therefore, there is a significant increase in neonatal interventions between premature infants EGA 34 weeks compared to EGA 35 weeks (5). Given this, we are concerned about the efficacy of this study due to the lack of data evaluation for infants between EGA 34.1 and 35 weeks. With this extra six days of data, the study results could be altered significantly concerning the infection rate, readmission, and disease outcome. While the newly proposed method could be effectively and positively utilized in infants of EGA ≥ 35 weeks, the study does not address or discuss the differences in care and evaluation between EGA 34.1 and 35 weeks. To effectively compare NEOSC and symptomatic infant treatment, we propose that further data analysis be performed in this patient population for this gestational age discrepancy, along with further data collection at additional hospital sites.

Overall, we appreciate the authors' commitment to antibiotic stewardship and the development of the parent-baby bond. While NEOSC offers a beneficial tool for centers to determine

the degree of treatment a neonate requires, this article describes a valuable alternative. These physicians were able to mitigate the potential morbidity and mortality of neonatal sepsis while maximizing families' ability to bond and minimizing overutilization of healthcare resources and dollars. The providers treated 12% fewer infants for neonatal sepsis than indicated using the NEOSC tool without any negative impacts on individual patient safety. We suggest that the authors further investigate how the conclusions drawn from this retrospective study may differ regarding the preterm population that falls between 34.1 and 35 weeks of gestational age, as even a week's difference significantly impacts the maturity of a newborn's immune system (3).

Thank you for contributing to perinatology, antibiotic stewardship, and preserving families' integrity.

References:

1. 1. Wimmer, J., Chandler, N., Clark, R., & Gable, K. (2024). Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection. Neonatology Today, 19(1).
2. 2. Mukhopadhyay S, Lieberman E, Puopolo K, Riley L, Johnson L. Effect of early-onset sepsis evaluations on in-hospital breastfeeding practices among asymptomatic term neonates. Hosp Pediatr. 2015;5(4):203–210
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4. 4. Cai, Shirley, Deanne K. Thompson, Peter J. Anderson, and Joseph Yuan-Mou Yang. 2019. "Short- and Long-Term Neurodevelopmental Outcomes of Very Preterm Infants with Neonatal Sepsis: A Systematic Review and Meta-Analysis" Children 6, no. 12: 131. https://doi.org/10.3390/children6120131
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Sincerely,

Carisa Swason OMS III, Lexi R M Lavell OMS III, PdTF, Aden Copeland OMS III, Nicole Lin OMS III

Dear Carisa Swason OMS III, Lexi R M Lavell OMS III, PdTF, Aden Copeland OMS III, and Nicole Lin OMS III

The editorial's authors have articulated insightful commendations towards Wimmer et al. for their significant contribution through the study titled "Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection." (1) This retrospective analysis serves as a critical examination of the utilization of risk calculators within the medical domain, shedding light on the potential ramifications of overreliance on such tools, particularly concerning the well-being of neonates. Indeed, the authors emphasize the prudent use of laboratory techniques and antibiotic treatment resonates within the medical community, highlighting the imperative of mitigating potential harm to neonatal health and preserving the crucial parent-infant bond.

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However, the Letter to the Editor underscores a concern regarding a discrepancy between the study's methodology and the Neonatal Early Onset Sepsis Calculator (NEOSC), a widely employed tool for risk assessment in neonatal care. The divergence primarily stems from differences in gestational age criteria, as the study predominantly focused on neonates with a gestational age of ≥ 35 weeks, deviating from the NEOSC's designated scope of infants > 34 weeks. This discrepancy prompts a critical reevaluation of the implications for clinical practice and patient outcomes.

The letter's authors meticulously examined NEOSC parameters, revealing substantial disparities in the calculated risk of neonatal sepsis and subsequent management strategies between infants aged 34.1 and 35 weeks. Such findings underscore the profound impact of even minor variations in gestational age on risk assessment and treatment algorithms, warranting thorough scrutiny and refinement of existing clinical frameworks.

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While acknowledging the study's valuable contributions to antibiotic stewardship and family-centered care, the letter advocates for continued inquiry into the gestational age discrepancy and

its potential implications for clinical decision-making. The authors propose further empirical investigation and data collection within the population between 34.1 and 35 weeks of gestational age to ensure comprehensive evaluation and refinement of current clinical practices.

In conclusion, the letter underscores the imperative for ongoing scrutiny and refinement to optimize neonatal care practices across all gestational age cohorts.

References:

1. Wimmer, J., Chandler, N., Clark, R., & Gable, K. (2024). Antibiotic Treatment of Chorioamnionitis-Exposed Neonates Based Only on Signs of Infection. Neonatology Today, 19(1).

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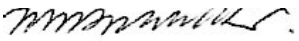

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Editor in Chief

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