Antibiotic overkill? Examining the current data in support of current Group B Streptococcus guidelines

Are we using too much?

Introduction: Benefit from Intrapartum Antibiotic Prophylaxis (IAP) against Group B Streptococcus is clear. However, with increasing evidence of the importance of people's microbiome, justification of current dosing is paramount. Current guidelines indicate the goal is to achieve fetal serum levels above the known Minimum Inhibitory Concentration (MIC)

- A targeted Pubmed search was performed to identify studies (n=3288) in which the fetal serum antibiotic levels was measured
  - Studies were screened by title for potential relevance (n=192) and then further evaluated for specific study of Benzylpenicillin (Penicillin G). 8 studies were inaccessible or duplicated, leaving 5 accessible studies on the matter
  - Full text articles were reviewed for lowest and highest reported cord blood antibiotic level and regimen used
- 5 studies published from 1987-2020 assessed 278 women whom received IAP
  - The reported range (in mcg/mL) in cord blood was 0.3 – 35.0
  - Not all studies used modern IAP guidelines as set by RANZCOG/ACOG/RCOG
  - 100% of patients achieved a fetal serum concentration above the MIC for GBS (0.1mcg/mL)
- With emerging evidence showing the importance of the fetal microbiome, more robust data is required to justify current IAP doses
  - Studies included identified an adequate MIC even when current guidelines are not used
  - Future studies could thoroughly examine cord blood antibiotic levels achieved and potentially reduce antibiotic dosing in future regimens

References
Scasso S, Laufer J, Rodriguez G, Alonso JG, Sosa CG. Vaginal group B streptococcus status during intrapartum antibiotic prophylaxis. *Int J Gynaecol Obstet*. 2015;129(1):9-12. doi:10.1016/j.ijgo.2014.10.018
Scasso S, Laufer J, Rodriguez G, Alonso JG, Sosa CG. Vaginal group B streptococcus status during intrapartum antibiotic prophylaxis. *Int J Gynaecol Obstet*. 2015;129(1):9-12. doi:10.1016/j.ijgo.2014.10.018
Viel-Theriault I, Fell DB, Grynspan D, Redpath S, Thampi N. The transplacental passage of commonly used intrapartum antibiotics and its impact on the newborn management: A narrative review. *Early Hum Dev*. 2019;135:6-10. doi:10.1016/j.earlhumdev.2019.05.020
Cayer MP, Girard M, Fournier D, Delage G, Thibault L. Antimicrobial activity in cord blood units: occurrence and levels of antibiotics. *Transfusion*. 2014;54(10):2505-2513. doi:10.1111/trf.12655
McCoy JA, Elovitz MA, Alby K, Koelper NC, Nissim I, Levine LD. Association of Obesity With Maternal and Cord Blood Penicillin Levels in Women With Group B Streptococcus Colonization. *Obstet Gynecol*. 2020;136(4):756-764. doi:10.1097/AOG.0000000000004020
Nau H. Clinical pharmacokinetics in pregnancy and perinatology. II. Penicillins. *Dev Pharmacol Ther*. 1987;10(3):174-198. doi:10.1159/000457744