# Does early antibiotic therapy in neonatal sepsis (proven or presumed) negatively impact enteral feeding and neonatal hyperbilirubinaemia?

**Authors: Daniel Ng, A/Prof Wei Qi Fan**

RESEARCH WEEK
5-9 OCTOBER 2020
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## Background, Aims & Objectives, Methods

### Background

- Empirical antibiotic therapy is frequently observed in preterm infant care for the treatment of early-onset sepsis (EOS) (onset at ≤ 72 hours of life).
- Of major concern are its deleterious effects on the gut microbiome which may predispose the infant towards hyperbilirubinaemia and feeding intolerance (FI).
- Current literature exploring the effects of early antibiotic therapy on hyperbilirubinaemia and FI among preterm infants is scarce.

### Aims & Objectives

To examine the effects of early antibiotic therapy on the development of hyperbilirubinaemia and FI among preterm infants with proven or presumed EOS.

### Methods

**Design:** Retrospective analysis comparing hyperbilirubinaemia, FI and length of stay (LOS) between infants on EOS antibiotic therapy (ABX) (n = 357) to infants not requiring antibiotic therapy (No ABX) (n = 289).

**Participants:** Preterm infants (<37 weeks) admitted to The Northern Hospital's Special Care Nursery (SCN) between January 2016 to December 2019.

**Statistical Analysis:** Data analysis was performed with IBM SPSS Statistics version 26. Non-parametric comparisons were made using Chi-square/Fisher's Exact tests for categorical outcomes, Mann-Whitney rank-sum/Kruskal-Wallis H tests for continuous outcomes. Multivariate logistic and Cox regression analyses were used to account for confounding effects.

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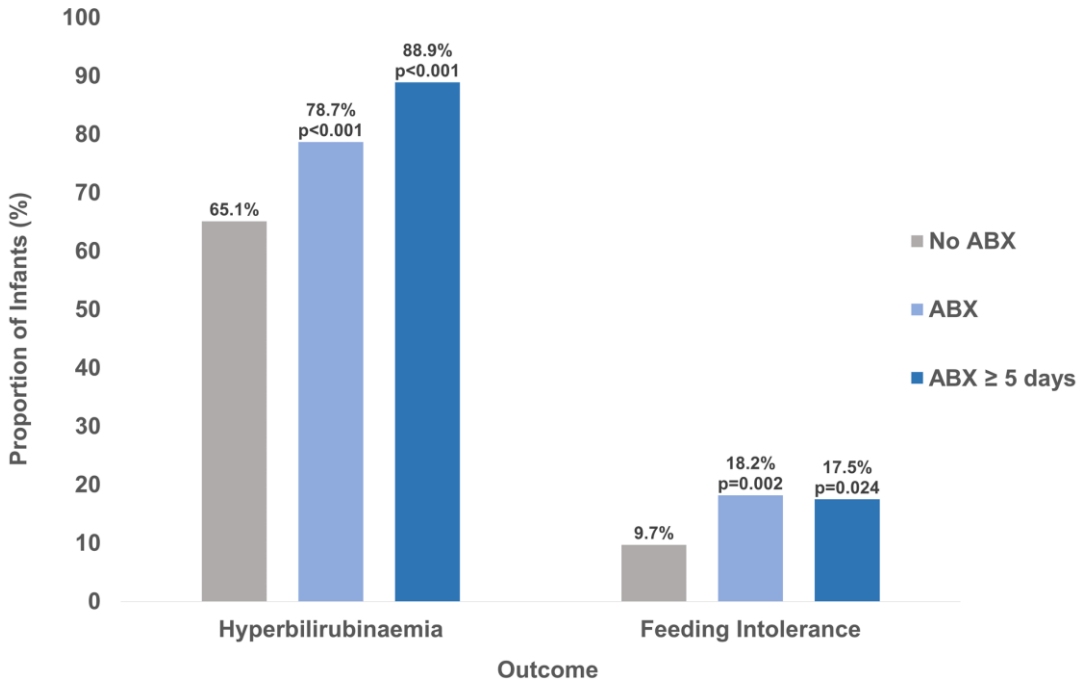
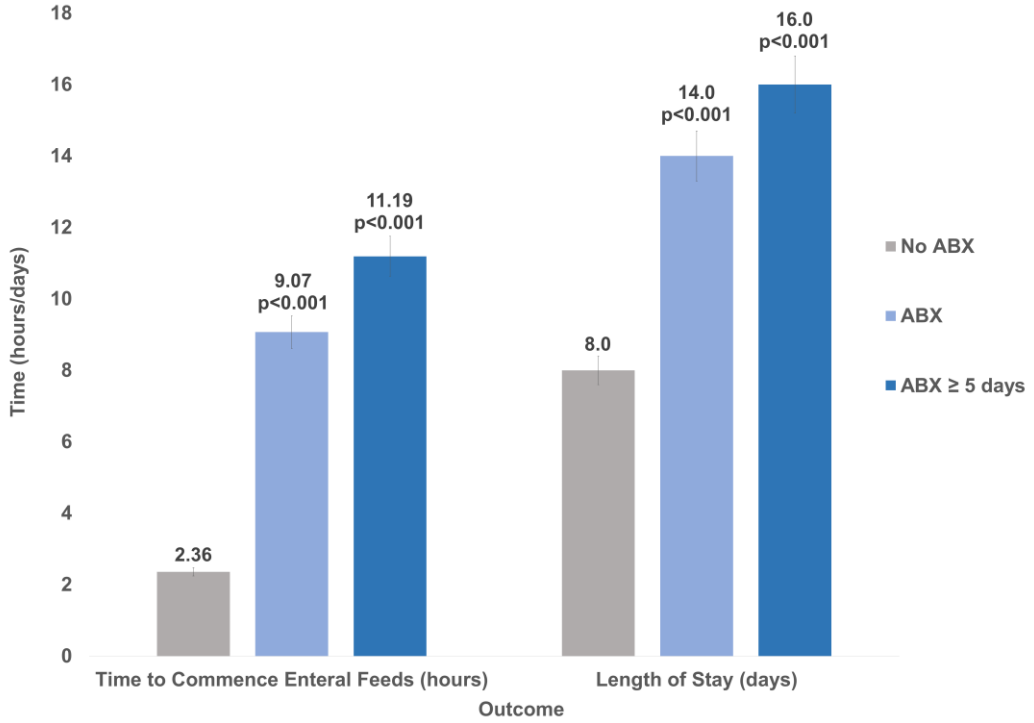
## Results & Discussion

- **Fig 1:** Infants on antibiotic therapy (ABX) and prolonged therapy (ABX ≥ 5 days) had significantly higher rates of hyperbilirubinaemia and FI than the control group (No ABX).




- **Fig 2:** Infants on antibiotic therapy (ABX) and prolonged therapy (ABX ≥ 5 days) had a significantly longer time to commence enteral feeds (hours) and SCN LOS (days) compared to the control group (No ABX).

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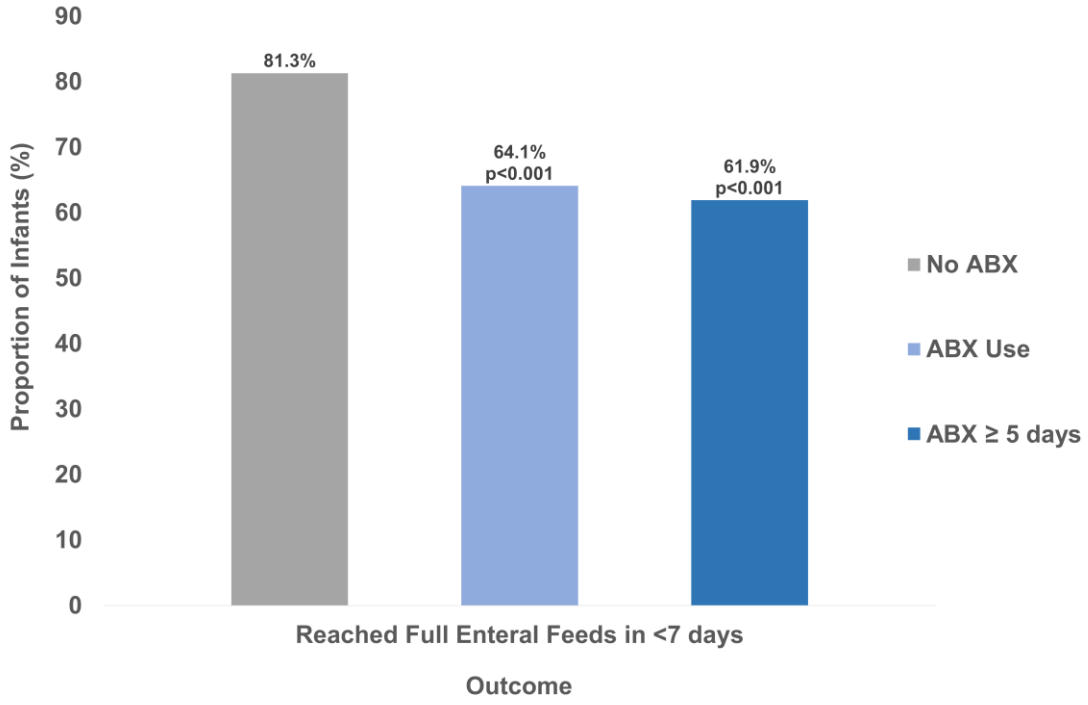
## Results & Discussion, Conclusion

- **Fig 3:** Infants on antibiotic therapy (ABX) and prolonged therapy (ABX ≥ 5 days) had a significantly delayed time to reach full enteral feeds (total fluid intake ≥ 150ml/kg/day).




- **Table 1:** On accounting for confounders, antibiotic therapy use (ABX) and prolonged therapy (ABX ≥ 5 days) significantly increased the odds of hyperbilirubinaemia, FI and SCN LOS.

**Multivariate regression analysis for infants on antibiotic therapy compared to the control group (n = 646), OR = odds ratio, HR = hazards ratio, CI = confidence interval.**

| Outcome | Ratio | 95% CI | P-value |
|---|---|---|---|
| **Neonatal hyperbilirubinaemia** | | | |
| Use of antibiotic therapy | OR: 2.48 | 1.23 - 4.98 | 0.011 |
| ABX ≥ 5 days | OR: 2.94 | 1.23 - 7.06 | 0.016 |
| **Feeding intolerance** | | | |
| Use of antibiotic therapy | OR: 1.48 | 0.89 - 2.45 | 0.130 |
| ABX ≥ 5 days | OR: 1.32 | 0.60 - 2.94 | 0.491 |
| **Time to commence enteral feeds** | | | |
| Use of antibiotic therapy | OR: 6.51 | 3.30 - 12.87 | <0.001 |
| ABX ≥ 5 days | OR: 9.55 | 4.47 - 20.38 | <0.001 |
| **Time to reach full enteral feeds** | | | |
| Use of antibiotic therapy | HR: 0.824 | 0.684 - 0.993 | <0.001 |
| ABX ≥ 5 days | HR: 0.738 | 0.545 - 0.998 | 0.048 |
| **Length of stay** | | | |
| Use of antibiotic therapy | OR: 1.21 | 1.07 - 1.36 | 0.003 |
| ABX ≥ 5 days | OR: 1.33 | 1.12 - 1.58 | 0.001 |

## Conclusion

**Prolonged antibiotic therapy in preterm infants with early-onset sepsis negatively impacts on enteral feeding, neonatal hyperbilirubinaemia & LOS.**

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