

Introducing a change to the management of early-onset neonatal infection: Intravenous to oral antibiotic switch

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Background

Currently in the UK, standard management of suspected early-onset neonatal infection (EOI) involves a minimum of 36 hours of intravenous (IV) antibiotics. Antibiotics are typically stopped after 36 hours if the baby is well, CRP results are reassuring and any cultures taken are negative. However, when there are ongoing concerns about neonatal infection, intravenous antibiotics are continued for up to 7 days.¹

Intravenous antibiotics carry a number of disadvantages including increased duration of hospital stay and multiple cannulation attempts.² We intend to introduce a switch from IV to oral antibiotics for eligible babies. This poster describes this project to change local practice and the accompanying service evaluation.

Evidence

There is evidence to suggest that switching from IV to oral antibiotic therapy is safe in term babies who are clinically well^{2,3,4}

The RAIN study³, conducted in the Netherlands, recruited 510 neonates with suspected EOI in whom a prolonged course of antibiotics was indicated. Neonates were randomised to either standard IV therapy or to a switch to oral antibiotics. The RAIN study found no significant difference in re-infection rates or adverse events between the two groups and the median duration of hospital stay was significantly shorter in the oral group (3.4 vs 6.8 days)³.

A prospective multi-centre cohort study evaluated the real-life impact of the adoption of an IV-to-oral antibiotic switch policy. In Denmark², of the 531 eligible neonates, 90% were switched to oral antibiotics. In this group, there were no re-admissions due to infection. Median duration of hospitalisation was 3 days for switch therapy, and 7.4 days for IV therapy.² There was no increase in antibiotic usage.

The IV-to-oral switch pilot at RDUH East

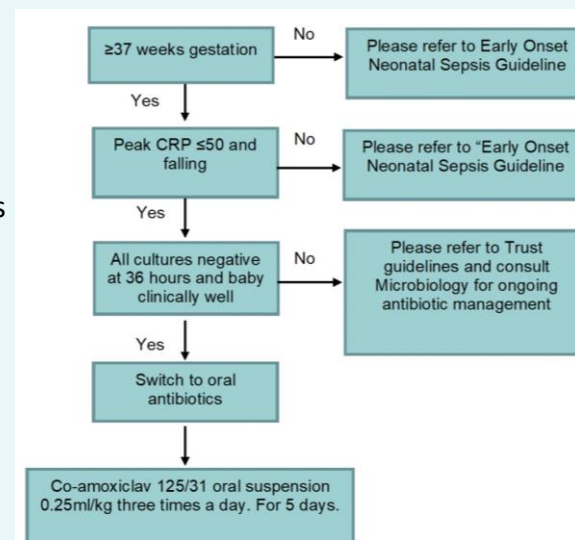
We plan to pilot our new guideline from June 2024. This follows a period of extensive stakeholder engagement, seeking opinions from local and regional neonatal MDT members.

In order to evaluate the potential impact of this change to practice, we conducted a retrospective analysis of babies born in 2022. This found a total of 66 babies who received a 5-day course of IV antibiotics. Of these, 50 babies (76%) would have been eligible to switch to oral antibiotics based on the criteria in our guideline. This equates to a reduction in hospital stay of 150 days per year.

A formal economic evaluation is intended to further assess the impact of this.

Criteria for eligibility:

- Babies ≥ 37 weeks
- Clinically well
- Negative blood cultures at 36 hours after starting IV antibiotics
- Ongoing infection concerns warranting an extended course of antibiotics (eg- CRP >10).
- Peak CRP <50 and falling



All babies treated with oral antibiotics at home will have a telephone consultation with a doctor prior the end of their antibiotic course to ensure that the baby remains well and is tolerating the oral antibiotic. A standardised proforma will be used. In addition, parents will be given a telephone number to contact if they have questions or concerns once discharged on oral antibiotics. Any baby requiring review will be advised to attend the neonatal unit.

Evaluation

Quantitative outcomes will be recorded including the number of babies switched to oral antibiotics, the estimated number of hospital days avoided, rates of re-attendance for review, re-admission rates up to 28 days of age, suspected or confirmed infection up to 28 days of age and any adverse events.

We will also seek parental feedback through the inclusion of evaluation questions in the telephone consultation. Staff feedback will also be sought in order to inform further development and the potential implementation of this change at other centres.

Patient information leaflet

The leaflet is titled "Neonatal Infection" and features a photograph of a baby's feet. It contains the following sections:

- Why does my baby need antibiotics?** Explains that the baby is receiving antibiotics because there are concerns for infection, or they have been identified as being at risk of developing an infection.
- Information sources:** Lists the National Institute for Health and Care Excellence (NICE) guidelines and the NHS Choices website.
- What is early onset neonatal infection?** Defines EOI as infection in the first 72 hours of life, where babies are more at risk of infection due to their developing immune system.
- What are the risk factors of early onset neonatal infection?** Lists factors such as waters breaking more than 24 hours before birth, maternal temperature during labour, bacteria in the birth canal, and premature labour.
- What are the signs and symptoms of infection?** Lists signs like unusual behaviour, irritability, and abdominal temperature.
- What are the risks of antibiotic treatment?** Explains that the oral antibiotics are considered safe in newborns but may cause side effects like diarrhoea or vomiting.

Conclusion

To our knowledge, we are the first centre in the UK to pilot this change in practice and we hope that, through proactively sharing our successes and challenges as well as the outcomes of our rigorous evaluation, we can inspire other teams to consider incorporating IV-to-oral antibiotic switch in the management of neonatal EOI.

References

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