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INTRODUCTION OF A BLOOD CULTURE INCUBATOR WITHIN A TERTIARY NEONATAL UNIT AND HOW IT IMPACTS ON LENGTH OF HOSPITAL STAY

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BACKGROUND

Early onset neonatal sepsis is a significant cause of neonatal mortality and morbidity. In the United Kingdom, the National Institute for Health and Care Excellence (NICE) guidelines recommend early initiation of antibiotics in babies with suspected early onset neonatal sepsis. Once 36-hour blood culture results are available, and provided that the neonate remains well with reassuring C-reactive protein levels, antibiotics can be stopped.

Delays in the availability of 36-hour blood culture results can lead to prolonged and unnecessary hospital stay of clinically well neonates and their mothers who have been started on antibiotics because of risk factors and have reassuring CRP levels.

These delays have been put down to 2 main reasons:

➢ Delayed transportation
- Non-specific and variable collection times dependant on availability of hospital porters

➢ Blood cultures not placed in incubators out of hours
- Lack of on-site microbiology staff out of hours to place samples in the incubator

A blood culture incubator was therefore procured and placed in the neonatal unit with the aim of eliminating these delays.

Blood cultures were placed immediately into the blood culture incubator by doctors taking the samples from the neonates. They were subsequently collected by microbiology staff in-hours and taken to the lab to continue the remaining period of incubation

AIM

To investigate if introduction of a blood culture incubator within the neonatal unit would impact on the length of hospital stay in clinically well babies with suspected early onset neonatal sepsis and awaiting blood culture results before discharge home

METHODS

Data was collected via electronic records from 2 time periods (before and after introduction of blood culture incubator).
(a) January – March 2015
(b) February – April 2017

Inclusion Criteria	Exclusion Criteria
Started on antibiotics within 12 hours of birth for suspected sepsis	Neonates with positive blood cultures
2 reassuring C-reactive protein results less than 10	C-reactive protein concentration rise above 10
Clinically well and awaiting negative blood culture result prior to stopping antibiotics and being discharged home	Neonates being kept in hospital because of other reasons (e.g. jaundice, poor feeding, maternal reasons)
	Neonates admitted to the neonatal intensive care unit

RESULTS

168 neonates met the inclusion criteria.
- 85 pre blood culture incubator
- 83 post blood culture incubator

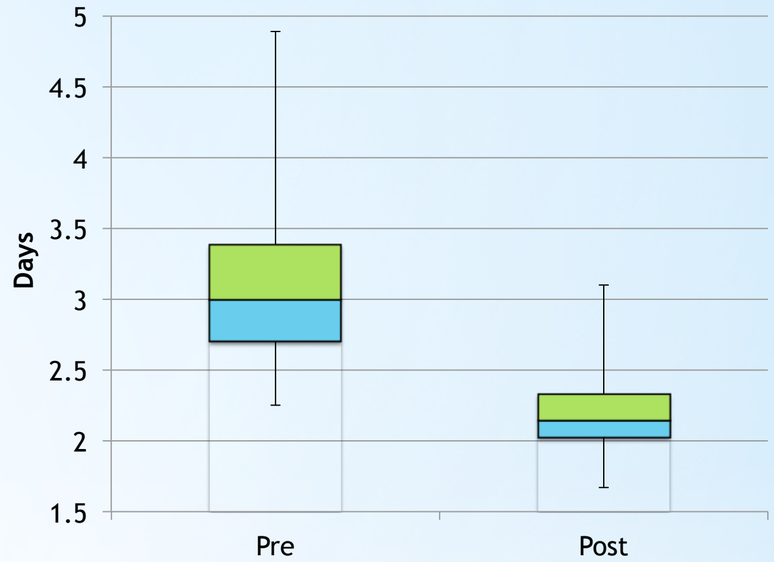

Fig1. Boxplot comparing the length of hospital stay pre and post blood culture incubator introduction.

Introduction of a blood culture incubator significantly reduced the median time of hospital stay by 20.4 hours ($p<0.01$)

CONCLUSION

The introduction of the blood culture incubator within the neonatal unit has resulted in timely availability of results for neonates who are clinically well and awaiting blood culture results prior to stopping antibiotics and being discharged home.

This has improved patient care through timely discharges from hospital, improved hospital bed turnover and antibiotic stewardship by preventing unnecessary prolonged antibiotic treatment in neonates.

References: National Institute for Health and Clinical Excellence (2012) . Neonatal infection (early onset): antibiotics for prevention and treatment. NICE guideline (CG149)