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# Neonatal care bundles

In 2007 the National Patient Safety Agency (NPSA) commissioned the Royal College of Paediatrics and Child Health to undertake a two year project focusing on developing and piloting service improvement – specifically care bundles in neonatal care. The project was undertaken in conjunction with BLISS, the Royal College of Nursing, the Neonatal Nurses Association and the British Association of Perinatal Medicine and has been led by Professor Neena Modi (Professor of Neonatal Medicine, Imperial College, London). The areas focused on were prevention of medication errors and the prevention of neonatal blood stream infection. A third area of transport was identified, but it was decided that a survey to establish further evidence was needed before developing a care bundle for this topic.

The neonatal project has drawn together valuable information around possible systematic surveillance of neonatal infection, advanced understanding of the safety issues surrounding the administration of gentamicin and improved incident reporting for neonatal incidents in general. In addition new evidence from the transport survey will be utilised by the current Neonatal Transport Task Force Review.

A full report of the project will be available later this Spring. This article provides an overview of care bundle methodology and discusses how care bundles have the potential for delivering improvements in neonatal care.

## What are care bundles?

Care bundles are one of a number of quality improvement tools. They are defined as:

“A group of evidence based interventions related to a disease or care process that, when executed together, result in better outcomes than when implemented individually”

*Institute for Healthcare Improvement, 2005<sup>1</sup>*

A bundle is dependent on all elements being delivered at the right time. It is the ability to measure this compliancy and thus demonstrate reliability that is the essential focus of the care bundle<sup>2</sup>. One of the first areas in which care bundles were developed and successfully implemented was in the prevention of ventilator-associated pneumonia (VAP). Initial work carried out by Berenholtz and co-workers reviewed the research evidence in critical care over a 35-year period in order to identify interventions which might prevent avoidable mortality and reduce morbidity in the adult intensive care environment<sup>3</sup>. This work identified only six interventions that had level one or two evidence to support them:

- Effective assessment of pain
- Appropriate use of blood transfusions
- Prevention of ventilator-associated pneumonia
- Use of sedation
- Peptic ulcer prophylaxis
- Deep vein thrombosis prophylaxis

The VAP care bundle was then developed from four of these interventions. The bundle not only improved patient outcomes, but also improved process outcomes with more effective treatment of the patient, and a reduced average length of stay in hospital. As well as the direct patient benefits care bundle methodology has been shown to encourage collaborative working and lead to new insights in care pathways and processes. Collaborative working is more than just the multidisciplinary team meeting, it is about taking responsibility for outcomes and the will to implement them<sup>4</sup>. It is this behavioural change that is one of the most important aspects of care bundles, where collaborative team working is recognised as having a direct affect on patient outcomes<sup>5</sup>.

Other examples of care bundles in the adult area include bundles to prevent infection and bundles to improve the care of central lines<sup>6,7</sup>. To date there are no published reports of use of bundles within neonatal care although some have used adapted adult bundles for line care in the US. Care bundles are often developed around a clinical procedure, or guideline. The steps in developing a bundle are:

- Identification of a practice theme
- Identification of up to six interventions within this theme
- Performing a literature search on each intervention
- Extraction and categorisation of evidence according to quality
- Removal of interventions with insufficient evidence
- Development of care bundle elements from the analysed evidence retrieved.

All the interventions should easily integrate into the patient's day-to-day care, and a collaborative approach will encourage ownership by staff, and motivate them to implement the bundle.

Lord Darzi<sup>8</sup> suggests that quality improvement should be key to how services are led. It is having the will to put into action these tools that is the vital ingredient. As the care bundle methodology is based on practice that is evidence-based, it can bring together a clinical team and allow ownership of the process while at the same time improving organisational outcomes. So although care bundles may not be new, perhaps as a methodology they should be explored further within the neonatal environment?

## References

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