Frequently Asked Questions

What is the neonatal gentamicin care bundle?
The neonatal gentamicin care bundle incorporates the following four elements:

- When prescribing gentamicin, the 24-hour clock should be used and unused time slots in the prescription administration record should be blocked out to prevent wrong time dosing.
- Interruptions during the preparation and administration of gentamicin should be minimised by the wearing of a disposable coloured apron by staff.
- A double-checking prompt should be used during the preparation and administration of gentamicin.
- The prescribed dose of gentamicin should be given within an hour either side of the administration time.

What are care bundles?
The Institute for Healthcare Improvement (IHI) developed the concept of ‘bundles’ to help healthcare providers more reliably deliver the best possible care for patients undergoing particular treatments with inherent risks. A bundle is a number of evidence-based practices, generally three to five, relating to a disease or care process that when undertaken collectively and consistently for a particular patient group offer a structured way of improving the processes of care and patient outcomes.

Why use care bundles?
Care bundles are a quality improvement tool. The IHI states that ‘when executed together these interventions result in better outcomes than when implemented individually’.

As well as patient benefit, care bundle methodology encourages collaborative working and it is this behavioural change that is considered one of the most important aspects in the use of care bundles.
How were the elements of the care bundle chosen?
The key steps involved in the development of a care bundle are:

- identify a practice/process theme;
- identify within this up to six interventions/practices;
- conduct a literature search on the individual interventions/practices;
- extract the evidence and grade according to the quality or strength;
- remove interventions which do not have sufficient evidence;
- develop care bundle elements on the evidence retrieved iv.

The elements of this care bundle were selected using the methodology described above and were based on data from a national survey of gentamicin use in neonatal units in England, data from the Reporting and Learning System (RLS), root cause analyses of gentamicin incidents, expert opinion from the working group and evidence from a literature review.

Do I have to use all elements of the care bundle or can I just use some of them?
The power of a care bundle comes from its evidence base and the consistency of application of all its elements. The changes in a bundle may not be innovative; they are often well established best practices. However, they have often not been performed uniformly and for every patient, making treatment unreliable. A care bundle ties the changes together into a package of interventions that should followed for every patient, every single time v.

Why was gentamicin chosen and not any other medicine used in neonatal care?
Gentamicin is an aminoglycoside antibiotic widely used as a first choice of antibiotic for the treatment of neonatal infection. A telephone survey was conducted in December 2007 to ascertain gentamicin usage in 180 neonatal units in England which achieved a 100 per cent response rate and established that gentamicin was being used in 89 per cent (166) of the 180 neonatal units surveyed.

Adverse events associated with the administration of gentamicin include ototoxicity and nephrotoxicity relating to high trough concentrations vi, reduced efficiency associated with lower peak levels vii and ineffectiveness of the drug related to the late administration of doses viii.

A review of neonatal medication incidents reported to the RLS in 2008/09 was also carried out. This highlighted that 15 per cent of all neonatal patient safety medication incidents related to the administration of intravenous gentamicin. In addition, 36 per cent of incidents related to the administration of the drug dose at an incorrect timing interval, in 24 per cent a prescription error had led to the incident and in 17 per cent the reason for the error was linked to issues relating to blood level monitoring. The expert working group felt that gentamicin administration was an area of neonatal care with clear but complex processes; a factor which is ideal for care bundle development and use. The group also had anecdotal evidence that many neonatal units across the UK were having problems ensuring safety with gentamicin use because of its complex dosing regimen.

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Swan SK. Aminoglycoside nephrotoxicity. *Semin Nephrol* 1997; 17: 27-33
