

Patient Safety Alert

NPSA/2010/PSA001 09 February 2010

NHS National Patient Safety Agency

National Reporting and Learning Service

Safer use of intravenous gentamicin for neonates

Patient safety incidents have been reported involving administration of gentamicin at the incorrect time, prescribing errors and issues relating to blood level monitoring.

Gentamicin is a broad spectrum aminoglycoside antibiotic that is widely used as the first choice antibiotic for the treatment of neonatal infection.

An NPSA telephone survey of 180 neonatal units in England carried out in 2007 indicated that 89 per cent (166) used gentamicin. Side effects of gentamicin administration can include vestibular and auditory damage, and nephrotoxicity. In addition, gentamicin has a narrow therapeutic range which necessitates its administration within an accurate timing regime, as well as regular monitoring of blood serum concentrations¹.

Patient safety incidents

A review of neonatal medication incidents reported to the Reporting and Learning System (RLS) between April 2008 and April 2009, identified 507 patient safety incidents relating to the use of intravenous gentamicin – 15 per cent of all reported neonatal medication incidents.

Analysis of these incidents highlighted that in 36 per cent of cases (182 incidents) the reason for the incident related to administration of the medicine at the incorrect time. In 24 per cent (124 incidents) of cases there had been a prescribing error, and in 17 per cent (86 incidents) there were issues relating to gentamicin blood level monitoring.

Ninety-six per cent (483) of incidents reported to the RLS resulted in no harm or low harm, and four per cent (23 incidents) were reported as causing moderate harm. However, it should be noted that the incidence of long-term hearing or renal damage as a result of gentamicin toxicity may not be apparent until some time after discharge from the neonatal unit, and therefore may not be captured in incident reports.

Supporting information

Further information and support materials to implement this guidance are available from **www.nrls.npsa.nhs.uk/alerts**

Further information

- E: gentamicin@npsa.nhs.uk
- T: 020 7927 9500

Action for the NHS

NHS organisations, clinical directors and those responsible for the provision of neonatal services should ensure that by **9 February 2011:**

- 1. a local neonatal gentamicin protocol is available that clarifies the initial dose and frequency of administration, blood level monitoring requirements, and arrangements for subsequent dosing adjustments based on these blood levels;
- local policies and procedures are developed or revised to state that intravenous gentamicin should be administered to neonates using a care bundle² incorporating the following four elements:
 - When prescribing gentamicin, the 24-hour clock format should be used and the unused time slots in the prescription administration record blocked out at the time of prescribing 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 to indicate that they should not be disturbed.
 - A double-checking prompt should be used during the preparation and administration of gentamicin³.
 - The prescribed dose of gentamicin should be given within one hour of the prescribed time.
- neonatal units implement this care bundle using small cycles of change with a sample group of patients⁴;
- **4.** compliance with the care bundle is measured daily for each patient in the sample group until full compliance for all patients receiving gentamicin is achieved;
- 5. all staff involved in the prescribing and administration of intravenous gentamicin are provided with training relating to its use. This should include education regarding the interpretation and management of gentamicin blood levels including actions to be taken in relation to dose or frequency following a blood level result⁵.

- Paediatric Formulary Committee. British National Formulary for Children 2009. London: BMJ Publishing Group, Royal Pharmaceutical Society of Great Britain, and RCPCH Publications; 2009.
- A care 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 offers a structured way of improving the processes of care and patient outcomes.
- ³ Double-checking prompt is available to download as a word document from the supporting materials.
- 4 As outlined in the supporting tool 'A guide to help you implement the neonatal gentamicin care bundle'.
- 5 Support for this is provided in the PowerPoint presentation and frequently asked questions of the supporting materials.



Both members of staff are to use the prompt.

gentamicin to neonates*

• Ultimate responsibility for the process lies with checker one whose additional responsibilities are highlighted in bold	1.
Blood level monitoring: Any actions required in the section below should be prioritised to ensure doses are not delayed:	
1. Check the date and time of the next blood level required. Are any blood levels required prior to, or post administration?	
Do any blood level results need action prior to administration of this dose? i.e results chasing or results interpreted.	
3. If yes to question two, has the person responsible for the interpretation of result been informed?	
4. Has the blood level result been interpreted correctly? If not escalate as per local policy.	
5. Does the dose or dosing interval need changing as a result of the blood level result? If yes ensure this is actioned as per local policy.	
Prescription chart details:	
6. Check the time recorded when dose last given and the frequency prescribed. Is a dose due now?	
7. Is the patient's current weight recorded on the prescription chart correct? Caution: Ensure the weight is recent and realistic.	
8. Has the correct dose been prescribed based on the weight? Each checker to calculate the dose separately.	
9. Is the dosing regimen and frequency correct for gestational age? Check against local neonatal gentamicin policy. <i>Caution: Any deviation from approved prescribing practices should be escalated as per local policy.</i>	
10. Has the prescription been signed by the prescriber?	
Vial or CIVAS details:	
11. Is this the correct medication?	
12. Is this the correct strength of gentamicin, i.e. 20mgs/2mls? (N/A for CIVAS)	
13. Has the correct volume been drawn up? Each checker to calculate dose separately.	
14. Does the patient's identity match the patient details on the prescription chart?	
15. Has the prescription chart been signed by the administrator with details of the time of administration?	

Double-checking prompt for the preparation and administration of intravenous

Please use this prompt every time a dose of gentamicin is prepared and administered.

*A word version of this document can be downloaded from the supporting material.

Organisations endorsing this alert:











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NPSA Reference Number: NPSA/2010/PSA001 Gateway Reference: 13534 1085 February 2010 National Patient Safety Agency 4–8 Maple Street, London, W1T 5HD T: 020 7927 9500 F: 020 7927 9501 www.npsa.nhs.uk