Joint Trust Guideline for the Management of: Once Daily Gentamicin In Children

Document Control: *

For Use In:	Buxton ward, Accident and Emergency (A &E), CAU, Theatres		
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Version History:

Version	Date	Author	Reason/Change
V3.1	June 2024	Specialist Pharmacist, Antimicrobial Therapy	Transferred to procedural document template

Previous Titles for this Document:

Previous Title/Amalgamated Titles	Date Revised
None	Not applicable

Distribution Control

Printed copies of this document should be considered out of date. The most up to date version is available from the Trust Intranet.

Consultation

During its development it has been circulated for comment to colleagues in paediatric nursing. This version has been endorsed by the Antimicrobial Subcommittee of the Drugs and Therapeutics Committee.

Monitoring and Review of Procedural Document

The document owner is responsible for monitoring and reviewing the effectiveness of this Procedural Document. This review is continuous however as a minimum will be achieved at the point this procedural document requires a review e.g. changes in legislation, findings from incidents or document expiry.

Relationship of this document to other procedural documents

This document is a clinical guideline applicable to Norfolk and Norwich University Hospitals please refer to local Trust's procedural documents for further guidance.

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1. Introduction

1.1. Rationale

To ensure the effective and appropriate use of gentamicin in children under 16 years. Prescribing gentamicin as a single daily dose will ensure that target peak concentrations are achieved in all patients. Once daily dosing is at least as effective and less nephrotoxic than multiple daily dosing. The guideline is strongly evidence based –see reference below.

1.2. Objective

The objective of the guideline is to:

- Guide on the appropriate dosing of gentamicin in paediatrics
- Guide on the appropriate monitoring of gentamicin in paediatrics

1.3. Scope

This guideline covers the prescribing of intravenous (IV) gentamicin for the treatment of infections in paediatrics

1.4. Glossary

The following terms and abbreviations have been used within this document:

Term	Definition
Gentamicin	An aminoglycoside antibiotic given by intravenous infusion
IV	Intravenous

2. Responsibilities

2.1. Medical staff

Medical staff are responsible for prescribing gentamicin according to this guideline.

2.2. Nursing staff

Nursing staff are responsible for administering gentamicin according to this guideline.

2.3. Pharmacists

Pharmacists are responsible for checking prescriptions against this guideline.

3. Processes to be followed

3.1. Ensure patient doesn't have an exclusion

- Infants <1 month and those on neonatal intensive care unit
- History of renal impairment or estimated or actual glomerular filtration rate (GFR) <60mL/min
- Prophylaxis of infections
- Cystic fibrosis patients (please see separate trust guideline)
- Endocarditis (once daily dosing not suitable)

- The following may not necessarily be excluded but need discussion with a consultant microbiologist
  - Osteomyelitis
  - Major burns
  - Ascites/severe liver disease/jaundice (bilirubin >50micromol/L)

3.2. Calculate Dose

7mg (seven) / kg (maximum 480mg)

- Administer in 100mL (20-50mL for infants and young children) glucose 5% or sodium chloride 0.9%.
- Give over 60 minutes by intravenous infusion.
- If patient is obese use lean body weight.

3.3. Monitoring guidelines

- Give the dose between 9am and 3pm if the patient's clinical condition allows (but don't wait to give the dose if the patient is very sick.) This time allows levels always to be taken in working hours.
- The dose remains constant at 7mg/kg (max dose 480mg).
- Take a single blood sample immediately prior to the 2nd infusion. Please make sure that the time of assay pre-dose is clearly marked on the ICE request.
- The result of the level should be obtained before giving the third dose. (If the level is not available speak to the paediatric Registrar or microbiology for advice).
- Levels
  - If the level is <1mg/L the dose should be given every 24 hours
  - If the level is >1mg/L and < 2.5mg/L then the dosing interval is normally increased by 12 hours (i.e. 7mg/kg every 36 hours).
  - If the level is >2.5mg/L then take another level in 12 hours time. Wait for the level to <1mg/L before giving another dose.
- Peak levels are not normally indicated. 1-hour (after infusion finished) peak levels can be taken with a target range of 16-20mg/L if there are concerns about therapeutic efficacy.
- If there is no change in the dosage regimen or in renal function repeat levels (as above) every 3-4 days or according to clinical situation. This will depend on duration of antibiotic therapy required i.e. if a 5 day course is required it may not be necessary to repeat levels more than once.
- Urea, creatinine and electrolytes should be monitored, frequency decided by clinical situation.
- If there is a change in the dosing regime, levels should be rechecked before

the second dose of the new regime.

3.4. Flow chart for Gentamicin Prescribing and Monitoring

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Administer third dose of gentamicin using appropriate dosing interval based on result of level

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Monitor urea, creatinine and electrolytes

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If there is no change in dosing interval or in renal function then repeat level every 3-4 days.

Review prescription after 7 days.

3.5. Further Information

Paediatric Pharmacist: Bleep 0825 (NNUH),
Pharmacy medicines information: Extension 3139 (NNUH),
Microbiology: Extension 4589 (NNUH)

4. References

1. Despina G, Contopoulos-Ioannidis DG, Nikos D, Giotis MD, Dimitra V, Baliatsa DV and Ioannidis JPA. Extended Interval Aminoglycoside Administration for Children: A meta-analysis. Pediatrics 2004; 114; e111-118.
2. Medicines for children. 2003. RCPCH. Neonatal and Paediatric Pharmacists Group
3. BNF for Children. 2005

5. Monitoring Compliance

Compliance with the process will be monitored through the following:

Key elements	Process for Monitoring	By Whom (Individual / group /committee)	Responsible Governance Committee /dept	Frequency of monitoring
Initial gentamicin doses and dose intervals	Audit	Paediatric dept	Antimicrobial Subcommitee meeting	Yearly
Blood level monitoring	Audit	Paediatric dept	Antimicrobial Subcommitee meeting	Yearly
Datix reports	Ad hoc	Paediatric dept	Antimicrobial Subcommitee meeting	Ongoing

The audit results are to be discussed at Antimicrobial Subgroup Committee meetings to review the results and recommendations for further action.

6. Appendices

There are no appendices for this document.

7. Equality Impact Assessment (EIA)

Type of function or policy	Existing

Division	Clinical Support	**Department**	Pharmacy
Name of person completing form	Caroline Hallam	**Date**	June 2024

Equality Area	Potential Negative Impact	Impact Positive Impact	Which groups are affected	Full Impact Assessment Required YES/NO
Race	No	No	N/A	No
Pregnancy & Maternity	No	No	N/A	No
Disability	No	No	N/A	No
Religion and beliefs	No	No	N/A	No
Sex	No	No	N/A	No
Gender reassignment	No	No	N/A	No
Sexual Orientation	No	No	N/A	No
Age	No	No	N/A	No
Marriage & Civil Partnership	No	No	N/A	No
EDS2 – How does this change impact the Equality and Diversity Strategic plan (contact HR or see EDS2 plan)?		No effect on equality/diversity		

- **A full assessment will only be required if: The impact is potentially discriminatory under the general equality duty**
- **Any groups of patients/staff/visitors or communities could be potentially disadvantaged by the policy or function/service**
- **The policy or function/service is assessed to be of high significance**

IF IN DOUBT A FULL IMPACT ASSESSMENT FORM IS REQUIRED

The review of the existing policy re-affirms the rights of all groups and clarifies the individual, managerial and organisational responsibilities in line with statutory and best practice guidance.