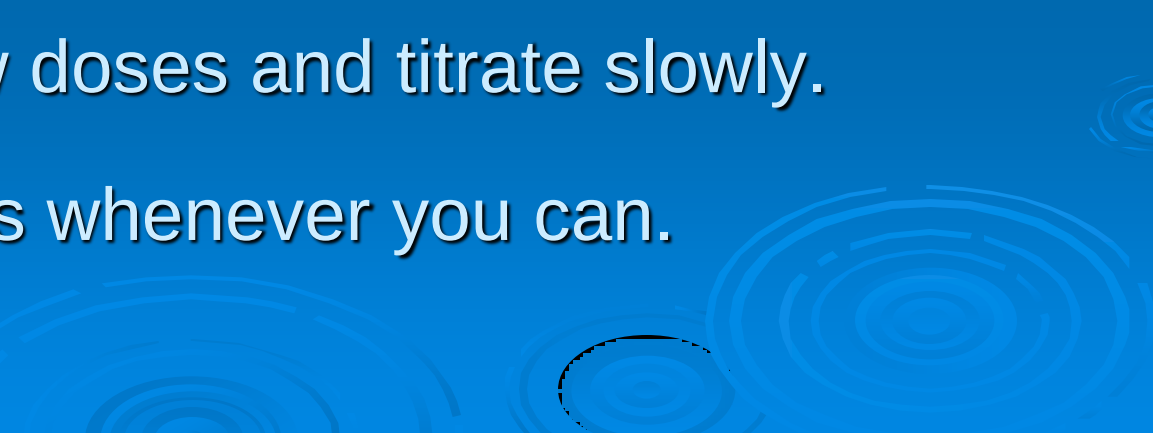


Prescribing Considerations in AKI

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In Short....

- Avoid and/or stop known nephrotoxins.
 - Avoid drugs which raise the serum potassium.
 - Stop/review antihypertensives.
 - Adjust doses of drugs which are to continue in light of reduced renal clearance.
 - Start with low doses and titrate slowly.
 - Monitor levels whenever you can.
 - Prevention...
- 
- The bottom right corner of the slide features a decorative graphic of several concentric, light blue circles, resembling ripples on water, set against the solid blue background.

Avoid / Stop Potential Nephrotoxins

➤ Aminoglycosides

➤ Vancomycin

➤ NSAIDs

Where possible....

➤ ACE Inhibitors / ARBs

➤ Tacrolimus

➤ Aciclovir

Drugs which Raise Serum Potassium

- Potassium Sparing Diuretics
- ACE Inhibitors / ARBs
- Supplements: IV and Enteral

Stop / review antihypertensives

- Stop antihypertensives if relative hypotension
- Stop diuretics if evidence of dehydration



“Renal Dose Adjustments”

- Calculate eGFR using the Schwartz equation

Child over 1 year:

$$\text{Estimated GFR (mL/min/1.73 m}^2\text{)} = \frac{40 \times \text{height (cm)}}{\text{serum creatinine (micromol/l)}}$$

Neonate:

$$\text{Estimated GFR (mL/min/1.73 m}^2\text{)} = \frac{30 \times \text{height (cm)}}{\text{serum creatinine (micromol/l)}}$$

(Unless you are in Nottingham....)

- Histopathology
- Immunology
- Cardiology
- Clinical Neuro Mindex
- Clinical Neuro Prism
- Electrodiagnostics
- Other results
- Responses
- Activity Summary
- Documents
- Alerts

Urea And Electrolytes (Includes Creatinine)

Registered: 12-JUN-2014 11:11 Laboratory No: 0014P221436

SODIUM	138	mmol/L	[	134 - 145	]
POTASSIUM	3.8	mmol/L	[	3.5 - 5.3	]
UREA	5.7	mmol/L	[	2.9 - 7.5	]
CREATININE	80	umol/L			

CREATININE Creatinine is an insensitive method of identifying impaired renal function in children. GFR should be estimated using the formula: $eGFR (ml/min/1.73m^2) = k \text{ height (cm)} / \text{serum creatinine (umol/l)}$ where $k = 36$ in males older than 13 years and $k = 30$ in all other cases. An eGFR less than 90 needs further clinical evaluation.

CREATININE

CREATININE

CREATININE

CREATININE

CREATININE

CREATININE

Paediatric Renal Dosing

- BNFC
- Renal Drug Handbook
- Others....?



An example:

➤ Patient JD:

- 4 years old
- Weight 17kg
- Height 99cm
- Cefuroxime and gentamicin to be prescribed for severe pneumonia.

Cefuroxime

➤ Patient JD:

- 4 years old
- Weight 17kg
- Height 99cm

➔ eGFR = 9.6mL/min/1.73m²

➤ BNFC:

CEFUROXIME

Additional information interactions ([Cefuroxime](#)).

Cautions see under [Cefaclor](#); **interactions:** Appendix 1 (cephalosporins)

Contra-indications see under [Cefaclor](#)

Renal impairment reduce parenteral dose if estimated glomerular filtration rate less than 20 mL/minute/1.73 m²

• By intravenous injection or infusion or by intramuscular injection

Neonate under 7 days 25 mg/kg every 12 hours; dose doubled in severe infection, intravenous route only

Neonate 7–21 days 25 mg/kg every 8 hours; dose doubled in severe infection, intravenous route only

Neonate 21–28 days 25 mg/kg every 6 hours; dose doubled in severe infection, intravenous route only

Child 1 month–18 years 20 mg/kg (max. 750 mg) every 8 hours; increase to 50–60 mg/kg (max. 1.5 g) every 6–8 hours in severe

➤ Renal Drug Handbook

DOSE IN RENAL IMPAIRMENT GFR (mL/MIN)

20–50	750 mg – 1.5 g every 8 hours
10–20	750 mg – 1.5 g every 8–12 hours
<10	750 mg – 1.5 g every 12–24 hours

➤ Can give 20-60mg/kg every 12-24 hours

- Bear in mind the risk of underdoing as well as toxicity

Gentamicin

➤ Patient JD:

- 4 years old
- Weight 17kg
- Height 99cm

➔ $eGFR = 9.6 \text{ mL/min/1.73m}^2$

➤ BNFC:

- **Once daily dose regimen (not for endocarditis or meningitis) by intravenous infusion**

Child 1 month–18 years initially 7 mg/kg, then adjusted according to serum-gentamicin concentration

Renal impairment

Excretion of aminoglycosides is principally via the kidney and accumulation occurs in renal impairment. Ototoxicity and nephrotoxicity occur commonly in patients with renal failure. If there is impairment of renal function, the interval between doses must be increased; if the renal impairment is severe, the dose itself should be reduced as well. Serum-aminoglycoside concentrations **must** be monitored in patients with renal impairment, see Serum Concentrations above; renal, auditory, and vestibular function should also be monitored. A once-daily, high-dose regimen of an aminoglycoside should be avoided in children over 1 month of age with a creatinine clearance less than 20 mL/minute/1.73 m².

➤ Renal Drug Handbook-

DOSE IN RENAL IMPAIRMENT GFR (mL/MIN)

30–70	3–5 mg/kg daily and monitor levels
10–30	2–3 mg/kg daily and monitor levels
5–10	2 mg/kg every 48–72 hours according to levels

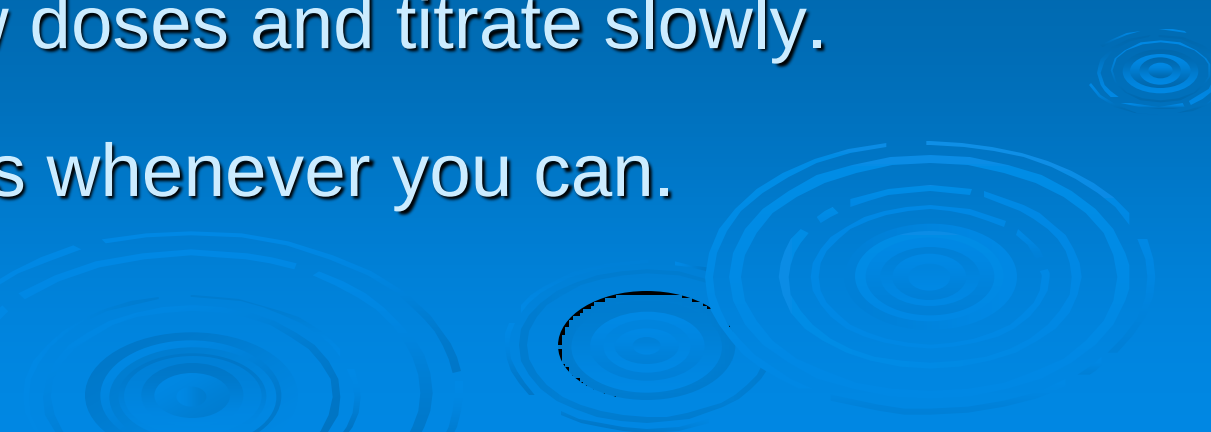
- Give 2mg/kg as a one-off dose. Check levels in 24 hours.
 - Be careful with nephrotoxic drugs!

Prevention

- Avoid Nephrotoxic preparations / combinations.
 - If unavoidable, monitor patients very closely.
 - Remember that 25-50% of kidney function may have been lost before any rise in creatinine seen.

- Sick day rules for patients on ACE Inhibitors / ARBs.

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Any questions?

