Drug Therapy Protocols: Ceftriaxone

Policy code	DTP_CEF_0323
Date	March, 2023
Purpose	To ensure a consistent procedural approach to ceftriaxone administration.
Scope	Applies to Queensland Ambulance Service (QAS) clinical staff.
Health care setting	Pre-hospital assessment and treatment.
Population	Applies to all ages unless stated otherwise.
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Author	Clinical Quality & Patient Safety Unit, QAS
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Ceftriaxone

March, 2023

Drug class[1,2]

Antibiotic

Pharmacology

Ceftriaxone is a third generation cephalosporin antibiotic with a bactericidal action.[1,2]

Metabolism

Ceftriaxone is excreted as a variety of active and inactive metabolites from the body through urine, bile and faeces.[1]

Indications

- **Suspected meningococcal septicaemia** (with a non-blanching petechial AND/OR purpuric rash)

Contraindications

- **Absolute** contraindications:
  - Allergy AND/OR Adverse Drug Reaction to cephalosporin antibiotics
  - Known immediate OR severe hypersensitivity to penicillin OR carbapenem based drugs
- **Relative** contraindications (requires consultation with the *QAS Clinical Consultation & Advice Line*):
  - Patients less than 1 month of age

Precautions

- Any allergy or hypersensitivity to penicillin or carbapenem – (isolated minor drug rash attributed to penicillin does not contraindicate the use of ceftriaxone)

Side effects[1–3]

- Pain and/or inflammation at the injection site.

Presentation

- Vial (powder), 1 g *ceftriaxone*

Onset	Duration	Half-life
Dose/route variable	Approx. 1 day	6–9 hours

Ceftriaxone

Schedule

- S4 (Restricted drugs).

Routes of administration

Intramuscular injection (IM)	ACP1, ACP2, CCP
Intravenous infusion (IV INF)	ACP2, CCP
Intraosseous infusion (IO INF)[4]	CCP

Special notes

- Ambulance officers must only administer medications for the listed indications and dosing range. Any consideration for treatment outside the listed scope of practice requires mandatory approval through the *QAS Clinical Consultation and Advice Line*.
- Due to the adverse affects associated with IM administration, IV ceftriaxone administration is preferred over IM.
- Rapid IV administration of large doses may result in seizures.
- All cannulae and IV lines must be flushed thoroughly with sodium chloride 0.9% following each medication administration.
- All parenteral medications must be prepared in an aseptic manner. The rubber stopper of all vials must be disinfected with an appropriate antimicrobial swab and allowed to dry prior to piercing.

Adult dosages[1–4]

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

ACP1, ACP2, CCP	IM	**2 g (2 x 1 g IM injections)** **Single dose only.** ***Syringe preparation:*** *Reconstitute two separate vials each containing 1 g of ceftriaxone with 2.4 mL of water for injection or lidocaine 1% (lignocaine 1%) in a 3 mL syringe to achieve a final concentration of 1 g/3 mL.*
ACP2, CCP	IV	**2 g** Slow push over 5 minutes. **Single dose only.** ***Syringe preparation:*** *Reconstitute 2 g of ceftriaxone with 18.8 mL of water for injection in a 20 mL syringe to achieve a final concentration of 2 g/20 mL. Ensure syringe is appropriately labelled.*
CCP	IO	**2 g** Slow push over 5 minutes. **Single dose only.** ***Syringe preparation:*** *Reconstitute 2 g of ceftriaxone with 18.8 mL of water for injection in a 20 mL syringe to achieve a final concentration of 2 g/20 mL. Ensure syringe is appropriately labelled.*

Paediatric dosages[1–4]

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

ACP1 ACP2 CCP

IM

QAS Clinical Consultation and Advice Line consultation and approval required in all patients less than 1 month of age.

50 mg/kg (rounded up to the nearest 5 kg)
Total maximum dose 1 g.*
Single dose only.

Syringe preparation: *Reconstitute 1 g of ceftriaxone with 2.4 mL of water for injection or lidocaine 1% (lignocaine 1%). Withdraw the required dose of ceftriaxone from the vial using a 3 mL syringe(s).*

Weight	Dose	Volume
≤ 5 kg	250 mg	0.75 mL
> 5 – 10 kg	500 mg	1.5 mL
> 10 – 15 kg	750 mg	2.25 mL**
> 15 kg	1 g	3 mL**

*** QAS administered paediatric doses are capped at 1 g. For paediatrics over 20 kg, clinicians must advise the receiving hospital that a partial dose only has been administered and the balance of the dose must be administered by the hospital.**

**** All doses greater than 2 mL must be administered by two separate injections in alternate Vastus Lateralis muscles.**

Paediatric dosages *(cont.)*

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

ACP2 CCP

IV

Greater than 20 kgs (approx. older than 4 yrs)
50 mg/kg (rounded up to the nearest 5 kg)
Slow push over 5 minutes.
Total maximum dose 2 g.
Single dose only.

Syringe preparation: *Reconstitute 2 g of ceftriaxone with 18.8 mL of water for injection in a 20 mL syringe to achieve a concentration of 100 mg/mL (2 g/20 mL).*

Draw up the contents of the vial into the suitably sized syringe and then expel any excess ceftriaxone not required for the dose, leaving the required volume in the syringe for administration.

Weight	Dose	Volume
> 20 – 25 kg	1.25 g	12.5 mL
> 25 – 30 kg	1.5 g	15 mL
> 30 – 35 kg	1.75 g	17.5 mL
> 35 kg	2 g	20 mL

Paediatric dosages *(cont.)*

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

ACP2 CCP

IV

QAS Clinical Consultation and Advice Line consultation and approval required in all patients less than 1 month of age.

Less than 20 kgs (approx. younger than 4 yrs)
50 mg/kg (rounded up to the nearest 5 kg)
Slow push over 5 minutes.
Total maximum dose 1 g.
Single dose only.

Syringe preparation: *Reconstitute 1 g of ceftriaxone with 9.4 mL of water for injection in a 10 mL syringe to achieve a concentration of 100 mg/mL (1 g/10 mL).*

Draw up the contents of the vial into the suitably sized syringe and then expel any excess ceftriaxone not required for the dose, leaving the required volume in the syringe for administration.

Weight	Dose	Volume
≤ 5 kg	250 mg	2.5 mL
> 5 – 10 kg	500 mg	5 mL
> 10 – 15 kg	750 mg	7.5 mL
> 15 – 20 kg	1 g	10 mL

Paediatric dosages *(cont.)*

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

CCP

IO

Greater than 20 kgs (approx. older than 4 yrs)
50 mg/kg (rounded up to the nearest 5 kg)
Slow push over 5 minutes.
Total maximum dose 2 g.
Single dose only.

Syringe preparation: *Reconstitute 2 g of ceftriaxone with 18.8 mL of water for injection in a 20 mL syringe to achieve a concentration of 100 mg/mL (2 g/20 mL).*

Draw up the contents of the vial into the suitably sized syringe and then expel any excess ceftriaxone not required for the dose, leaving the required volume in the syringe for administration.

Weight	Dose	Volume
> 20 – 25 kg	1.25 g	12.5 mL
> 25 – 30 kg	1.5 g	15 mL
> 30 – 35 kg	1.75 g	17.5 mL
> 35 kg	2 g	20 mL

Paediatric dosages *(cont.)*

Suspected meningococcal septicaemia
(with a non-blanching petechial AND/OR purpuric rash)

CCP

IO

QAS Clinical Consultation and Advice Line consultation and approval required in all patients less than 1 month of age.

Less than 20 kgs (approx. younger than 4 yrs)
50 mg/kg (rounded up to the nearest 5 kg)
Slow push over 5 minutes.
Total maximum dose 1 g.
Single dose only.

Syringe preparation: *Reconstitute 1 g of ceftriaxone with 9.4 mL of water for injection in a 10 mL syringe to achieve a concentration of 100 mg/mL (1 g/10 mL).*

Draw up the contents of the vial into the suitably sized syringe and then expel any excess ceftriaxone not required for the dose, leaving the required volume in the syringe for administration.

Weight	Dose	Volume
≤ 5 kg	250 mg	2.5 mL
> 5 – 10 kg	500 mg	5 mL
> 10 – 15 kg	750 mg	7.5 mL
> 15 – 20 kg	1 g	10 mL