



MONOGRAPH

Daptomycin Monograph - Paediatric

Scope (Staff):	Medical, Pharmacy, Nursing
Scope (Area):	All Clinical Areas

Child Safe Organisation Statement of Commitment

CAHS commits to being a child safe organisation by applying the National Principles for Child Safe Organisations. This is a commitment to a strong culture supported by robust policies and procedures to reduce the likelihood of harm to children and young people.

This document should be read in conjunction with this [DISCLAIMER](#)

QUICKLINKS

Dosage/Dosage Adjustments	Administration	Compatibility	Monitoring
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DRUG CLASS

Cyclic lipopeptide antibiotic.⁽¹⁻⁴⁾

INDICATIONS AND RESTRICTIONS

- Daptomycin is used in the treatment of complicated skin and soft tissue infections, bacteraemia, infective endocarditis and osteomyelitis due to Gram positive bacteria (such as Methicillin Resistant *Staphylococcus aureus* (MRSA), or Vancomycin Resistant Enterococci (VRE)) in patients intolerant to other agents or where first line therapy has failed.^(1, 5)
- Daptomycin is inactivated by lung surfactant and is therefore **not** recommended for the treatment of pneumonia.^(1, 5, 6)
- IV: Restricted (red) antibiotic

ChAMP approval is required prior to prescribing

CONTRAINDICATIONS

- Hypersensitivity to daptomycin or any component of the formulation.^(3, 4, 7)

PRECAUTIONS

- Daptomycin has been shown to increase creatine kinase (CK) levels and increase the risk of myopathy. Care should be taken in patients who have a pre-existing increased risk of myopathy (e.g. currently being treated with a statin); Consider withholding contributing agents and measure CK frequently (see monitoring section for further information).^(1, 4, 8)
- Daptomycin has been associated with the development of eosinophilic pneumonia, generally after courses of 2 to 4 weeks. Patients should be monitored for signs and symptoms of eosinophilic pneumonia (see monitoring section for further information).^(4, 8)
- Cases of peripheral neuropathy have been reported with daptomycin. Care should be taken in patients with pre-existing peripheral neuropathy. Patients should be monitored for signs and symptoms of neuropathy whilst on treatment and advised to report any numbness, tingling, muscle pain or tenderness, weakness or cramps. Consider ceasing daptomycin if any signs of peripheral neuropathy occur.^(4, 7)
- A high minimum inhibitory concentration (MIC) to vancomycin may reflect a high MIC to daptomycin; confirm susceptibility to daptomycin in this setting before altering treatment.⁽⁸⁾
- Daptomycin is not routinely used in patients less than 12 months old. Animal studies have documented neuromuscular adverse effects.^(3, 4, 8)

FORMULATIONS

Listed below are products available at PCH, other formulations may be available, check with pharmacy if required:

- 500 mg powder for injection vial

Imprest location: [Formulary One](#)

DOSAGE & DOSAGE ADJUSTMENTS

Neonates:

- The manufacturer recommends avoiding use of daptomycin in neonates due to the musculoskeletal, neuromuscular and nervous system effects seen in canine models.^(3, 4, 8)
- There is very limited information regarding neonatal dosing.
- IV doses of 6 mg/kg/dose given 12 hourly have been used. Discussion with Infectious Diseases is required.^(4, 7)

Children ≥ 1 month to < 12 months old:

- Daptomycin is not routinely used first line in children <12 months old due to the musculoskeletal, neuromuscular and nervous system effects seen in canine models.^(3, 4, 8)
- There is limited information regarding dosing in 1 to 12 months of age.
- IV doses of 8-10 mg/kg/dose given 24 hourly have been used. Discussion with Infectious Diseases is required.^(4, 7)

Children ≥12 months old:

Age	Indication			
	MRSA Bacteraemia, bone and joint infections ^(1, 2, 4, 6, 7)	Complicated MRSA skin and soft tissue infections ^(1, 2, 4, 6, 7)	Infections due to VRE ⁽⁷⁾	Endocarditis ^(4, 7)
≥ 1 to < 2 years	12 mg/kg/dose given 24-hourly	10 mg/kg/dose given 24-hourly	8 -10 mg/kg/dose given 24-hourly	10 mg/kg/dose given 24-hourly
≥ 2 to < 7 years		9 mg/kg/dose given 24-hourly		
≥ 7 to < 12 years	9 mg/kg/dose given 24-hourly	7 mg/kg/dose given 24-hourly		6 mg/kg/dose given 24-hourly
≥ 12 to < 18 years	7 mg/kg/dose given 24-hourly	5 mg/kg/dose given 24-hourly		

Dosing in Overweight and Obese Children:

There is limited information regarding the safety and efficacy in obese and overweight patients. Based on limited studies in obese adult patients, no dose adjustment is required.^(2-4, 8)

Renal impairment:

- [eGFR calculator](#)
- Dosage adjustment may be required in cases of impaired renal function (with creatinine clearance of less than 30 mL/min).^(5, 8)
- There is limited information about dose adjustment in paediatric patients with impaired renal function. Discuss appropriate dosing for patients with renal impairment and endocarditis or VRE infections with ChAMP.
- Daptomycin should be used with caution and renal function checked regularly.^(2, 4)

eGFR	Recommended dosing schedule ^(4, 9)	
	MRSA Bacteraemia, bone and joint infections	Complicated MRSA skin and soft tissue infections
≥ 1 to < 2 years		
≥ 30 mL/minute/1.73m ²	Normal dose: 12 mg/kg/dose given 24-hourly	Normal dose: 10 mg/kg/dose given 24-hourly
≥15 to <30mL/minute/1.73m ²	12 mg/kg/dose 48 hourly	10 mg/kg/dose 48 hourly
<15mL/minute/1.73m ²	8 mg/kg/dose 48 hourly	6 mg/kg/dose 48 hourly

≥ 2 to < 7 years		
≥ 30 mL/minute/1.73m ²	Normal dose: 12 mg/kg/dose 24-hourly	Normal dose: 9 mg/kg/dose 24-hourly
≥15 to <30mL/minute/1.73m ²	12 mg/kg/dose 48 hourly	9 mg/kg/dose 48 hourly
<15mL/minute/1.73m ²	8 mg/kg/dose 48 hourly	7 mg/kg/dose 48 hourly
≥ 7 to < 12 years		
≥ 30 mL/minute/1.73m ²	Normal dose: 9 mg/kg/dose 24-hourly	Normal dose: 7 mg/kg/dose 24-hourly
< 30 mL/minute/1.73m ²	9 mg/kg/dose 48 hourly	7 mg/kg/dose 48 hourly
≥ 12 to < 18 years		
≥ 30 mL/minute/1.73m ²	Normal dose: 7 mg/kg/dose 24-hourly	Normal dose: 5 mg/kg/dose 24-hourly
< 30 mL/minute/1.73m ²	7 mg/kg/dose 48 hourly	5 mg/kg/dose 48 hourly

Hepatic impairment:

- No dosage adjustment is required in patients with mild to moderate hepatic impairment. There is limited information on patients with severe impairment however available information suggests no dose adjustment is necessary.^(3, 4, 7, 8)

Dosage adjustment required in cases of elevated creatine kinase (CK):

- An increase in CK levels has been demonstrated in 6-7% of paediatric patients who receive daptomycin^(3, 4, 7, 8)
 - CK >5 times the upper limit of normal: reconsider the need for treatment (or consider alternative agent) and monitor CK more frequently.^(1, 7)
 - CK >10 times the upper limit of normal, **OR** >5 times the upper limit of normal with signs of myopathy: daptomycin should be ceased.^(1, 7)

RECONSTITUTION & ADMINISTRATION**Reconstitution:**

- To reconstitute daptomycin, **slowly** add the required volume of sodium chloride 0.9% as per the table below via a 21 gauge (or smaller) needle to prepare a 50 mg/mL solution.^(7, 8, 10)
- Rotate the vial to wet the powder. **DO NOT SHAKE.**^(7, 8, 10, 11)
- Allow the vial to stand for 10 minutes then rotate again to ensure complete dissolution of the powder.^(7, 8, 10)

- Further dilution is required prior to administration.^(1, 8)

Vial strength	Volume of sodium chloride 0.9% required	Resulting concentration ^(8, 10)
500 mg	10 mL	50 mg/mL
350 mg	7 mL	50 mg/mL

Administration:

IV infusion:

- Children < 1 year:** There is very limited information available regarding appropriate dilution for children < 1 year of age. The final dose can be diluted to a final volume of 25 mL OR a suitable volume with a final concentration between 2.5 mg/mL to 20 mg/mL and infused over 60 minutes.^(4, 11, 12)
- Children ≥ 1 to <7 years:** Add the required dose to 25 mL of compatible fluid and infuse over 60 minutes.^(1, 2, 4, 7, 10)
- Children ≥ 7 to 18 years:** Add the required dose to 50 mL of compatible fluid and infuse over 30 minutes.^(1, 2, 4, 7, 10)

COMPATIBILITY (LIST IS NOT EXHAUSTIVE)

Compatible fluids:

- Hartmann's
- Sodium chloride 0.9%⁽¹⁰⁾

Compatible at Y-site:

- [Compatibilities of IV drugs](#) must be checked when two or more drugs are given concurrently.

Incompatible drugs:

- Daptomycin is incompatible with glucose containing solutions.^(3, 10)

MONITORING

- Patients should have their CK measured at baseline and weekly throughout treatment. More frequent monitoring is required if:
 - There are signs of myopathy (muscle pain or weakness, especially in the extremities)
 - Pre-existing elevated CK prior to commencement of daptomycin.⁽²⁾
 - The patient is currently being treated with other agents that can cause myopathy (e.g. statins).^(1, 2, 4)
 - The patient is at increased risk of myopathy (e.g. renal impairment).^(1, 2, 4)
 - Refer to dosage adjustment section for advice on dose alterations if the CK is elevated.

- Peripheral neuropathy has occurred during treatment with daptomycin. Patients should be instructed to report any tingling, muscle pain, tenderness, weakness or cramps.^(1, 4)
- Full blood count, hepatic and renal function should be measured regularly throughout therapy, as should signs of peripheral neuropathy.^(6, 7)
- Eosinophilic pneumonia may develop whilst on daptomycin (usually after 2 to 4 weeks).⁽⁶⁻⁸⁾
 - Patients should be monitored for new onset or worsening of fever, dyspnoea, new infiltrates on chest imaging, and/or >25% eosinophils on bronchoalveolar lavage (BAL).⁽⁴⁾
 - Daptomycin should be discontinued if signs of eosinophilic pneumonia develop.^(1, 8)
- Re-exposure may result in reoccurrence, so documentation of a drug allergy ([Clinical Alert](#)) should be made.^(4, 7, 8)

ADVERSE EFFECTS

Common: headache, nausea, vomiting, diarrhoea, constipation, flatulence, rash, skin reactions, injection site reactions, increased creatine kinase (CK), increased liver enzymes, hypotension, hypertension, abdominal pain, anaemia, anxiety, asthenia, dizziness, insomnia.^(1, 2, 8)

Infrequent: paraesthesia, myalgia, muscle weakness, renal impairment, reduced appetite, arrhythmias, arthralgia, electrolyte imbalance, flushing, glossitis, dyspepsia, hyperglycaemia, altered taste, thrombocytosis, tremor, vertigo.^(1, 2, 8)

Rare: eosinophilia, hypersensitivity, eosinophilic pneumonia, jaundice, rhabdomyolysis, hepatotoxicity, *Clostridioides difficile*-associated disease, multi-organ hypersensitivity syndrome.^(1, 2, 8)

STORAGE

- Storage requirements are brand dependent
 - Pfizer brand: store below 25°C⁽⁸⁾
 - Dr Reddy's, Juno and Lupin brands store between 2 and 8°C and protect from light.^(8, 10)
- Store products prepared by Pharmacy Compounding Service (PCS) between 2 and 8°C.⁽¹⁰⁾

INTERACTIONS

This medication may interact with other medications; consult PCH approved references (e.g. [Clinical Pharmacology](#)), a clinical pharmacist or PCH Medicines Information Service on extension 63546 for more information.

****Please note:** The information contained in this guideline is to assist with the preparation and administration of **daptomycin**. Any variations to the doses recommended should be clarified with the prescriber prior to administration**

Related CAHS internal policies, procedures and guidelines

[Antimicrobial Stewardship Policy](#)

[ChAMP Empiric Guidelines and Monographs](#)

[KEMH Neonatal Medication Protocols](#)

References

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