MONOGRAPH

Taurolidine/ Sodium citrate/Heparin 100 units Monograph - Paediatric

(TaurolockHep100®)

Scope (Staff):	Medical, Pharmacy, Nursing
Scope (Area):	All Clinical Areas (Perth Children's Hospital)

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

HIGH RISK MEDICINE

TaurolockHep100® must not be flushed.

QUICKLINKS

Dosage/Dosage Adjustments	Administration	Compatibility	Monitoring

DRUG CLASS

- Taurolock Hep 100® contains taurolidine 1%, sodium citrate 4% and heparin100units/mL and is an antimicrobial lock solution for central venous access devices (CVAD).
- Taurolidine has a broad spectrum of antimicrobial activity against Gram-positive and Gram-negative bacteria as well as fungi. It also has anti-adherence properties reducing biofilm formation.[1, 2]
- Sodium citrate and heparin are included for their anticoagulant properties. Sodium citrate removes calcium from the clotting cascade.[3] Heparin inactivates clotting factors IIa and Xa by binding to antithrombin III.[4]

Taurolock Hep 100® is a High Risk Medicine.

INDICATIONS AND RESTRICTIONS

- Taurolock Hep 100® is indicated for prophylaxis against central line related bloodstream infections (CLABSI) in children who have a CVAD and prophylaxis against biological occlusion in the CVAD. (2, 4)
- TaurolockHep100® may be commenced upon insertion of a new CVAD (preferable) or commenced in a child with an existing CVAD.

IV: Monitored (orange) lock solution

- Where use is consistent with a standard approved indication, this must be communicated to ChAMP by documenting that indication on all prescriptions (inpatient and outpatient).

The ChAMP team will review if ongoing therapy is required and/or if the order does not meet ChAMP Standard Indications. If use is not for a standard approved indication, phone approval must be obtained from ChAMP before prescription.

CONTRAINDICATIONS

- Hypersensitivity to taurolidine, sodium citrate, heparin or any component of the formulation. (3)
- Contraindicated in patients with heparin induced thrombocytopaenia or increased bleeding risk.(3)

TaurolockHep100® is only indicated for locking central venous access devices. It should not be used for peripheral lines or mid-lines.

- TaurolockHep100® **must not** be flushed into circulation and **must** be aspirated from the line after the required dwell time due to the risk of anticoagulation. (3)
- In the event of line occlusion please discuss with the CVAD clinical specialist and the treating team.

PRECAUTIONS

- Check ampoules for any precipitation prior to use.(3) TaurolockHep100® contains Heparin, please see Heparin Monograph (internal link)

FORMULATIONS

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

- Taurolidine 1% with sodium citrate 4% and heparin 100units/mL ampoule (available as a 3mL ampoule).(5)

Imprest location: Formulary One

DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Not routinely used in neonates, contact Infectious Disease or Clinical Microbiology consultants for advice.

Lock therapy:

- The volume to be administered is determined by the fill volume of the CVAD (see below).
- The required volume is to be instilled into the device for a minimum of 2 hours with administration only occurring once in 24 hours. Please discuss the duration of instillation with the ID team.[2]
- In the event that line access is required, the TaurolockHep100® should be aspirated from the line, flushed with sodium chloride 0.9% and may then be used for administration of medications or other IV fluids as required.[3]

CVAD Device	Volume of TaurolockHep100® to prescribe per lumen
Tunnelled cuffed central venous access device e.g. Broviac, Hickmans or Infusaport	2mL
Peripherally inserted central catheter (PICC)	1mL

- The lock can be left in situ for up to 7 days. After this time, the line should be aspirated and flushed with sodium chloride 0.9% prior to re-locking with TaurolockHep100® or using the line.[6]

Renal impairment:

- No dosage adjustment is required in renal dysfunction. However the fill volume of the device being locked must be strictly adhered to.[5]

Hepatic impairment:

- No dosage adjustment is required in hepatic dysfunction. However the fill volume of the device being locked must be strictly adhered to.[5]

ADMINISTRATION

TaurolockHep100® is only to be used as a lock solution for CVADs. It is not to be used for locking peripheral lines or mid lines.

- Determine the fill volume of the device to be locked (see above).
- Flush the CVAD with 10mL of sodium chloride 0.9% using the pulsatile 'push-pause' technique. If fluid-restricted, use <10mL as per Central Venous Access Device (CVAD) and Midline Management Guideline.[3] Instil the required volume of TaurolockHep100® into the access device. This should be done slowly at a rate of no more than 1mL per second in children and no more than 0.2mL per second in infants and children <2 years.[3]
- Discard any excess solution remaining in the ampoule.
- Leave the solution in situ for a minimum of 2 hours (with administration only occurring once in 24 hours) and for a maximum of 7 days.[2, 6]
- Ensure that the line is not flushed accidentally during this time. On a Hickmans or Broviac line with lumens external to the patient, label each lumen containing TaurolockHep100® by writing

TaurolockHep100® on the white medicine line label and attaching this as per the PCH Labelling of Injectable Medicines and Fluids Policy.

- Before utilising the line for administration of medication, aspirate the TaurolockHep100® volume added to each lumen. If in the event of line occlusion, discussion of the need to flush the line with the treating team should occur prior to flushing.
- Flush the line with 10mL of sodium chloride 0.9% before instilling next TaurolockHep100® (or next treatment) using the pulsatile 'push-pause' technique. If fluid-restricted, use <10mL as per Central Venous Access Device (CVAD) and Midline Management Guideline.
- Document any reported taste disturbance or line occlusions or any other potential adverse events on the CVAD Nursing Management Record.

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:

- Sodium chloride 0.9%.[5]

Compatible at Y-site:

- TaurolockHep100® is used as a lock solution, it must not be mixed with any other fluids prior to use as a lock and all lumens should be flushed well with sodium chloride 0.9% prior to instillation.

MONITORING

- Monitor for line patency.

ADVERSE EFFECTS

Common: metallic or unusual taste (particularly if instilled at a rate faster than recommended), nausea and vomiting.[3, 7]

Infrequent: line occlusion, hypocalcaemia symptoms (if instilled at a rate faster than recommended).[3, 6, 7]

STORAGE

- Store below 30°C[3]

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 **taurolidine 1% with sodium citrate 4% and heparin100units/mL**. 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
Labelling of Injectable Medications and Fluids
Taurolock Patient information leaflet (currently under review)
CVAD policy (awaiting update on healthpoint)

References

1. Handrup MM MJ, Schroder H,. Central Venous Catheters and Catheter Locks in Children With Cancer: A prospective Randomized Trial of Taurolidine Versus Heparin. Pediatr Blood Cancer. 2013;60:1292-8.
2. Łyszkowska M, Kowalewski G, Szymczak M, Polnik D, Mikołajczyk A, Kaliciński P. Effects of prophylactic use of taurolidine-citrate lock on the number of catheter-related infections in children under 2 years of age undergoing surgery. J Hosp Infect. 2019;103(2):223-6.
3. TauroPharmGmbH. TauroLock - product information. Germany: TauroPharmGmbH; 2015.
4. Rossi S, editor. Australian Medicines Handbook. Adelaide, S. Aust.: Australian Medicines Handbook; 2021.
5. Tauro-ImplantGmbH. Taurolock - Frequently asked questions Germany2010 [Available from: http://www.taurolock.com/en/faq.
6. TauroPharmGmbH. Stability in catheter. Germany2013. p. 1.
7. Liu Y, Zhang AQ, Cao L, Xia HT, Ma JJ. Taurolidine lock solutions for the prevention of catheter-related bloodstream infections: a systematic review and meta-analysis of randomized controlled trials. PLoS One. 2013;8(11):e79417.

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