MONOGRAPH

PropOFol

Scope (Staff):	Medical, Pharmacy, Nursing, Anaesthetic Technicians
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

⚠ HIGH RISK MEDICINE ⚠

QUICKLINKS

DRUG CLASS

Propofol is a short-acting general anaesthetic agent.[1]

Propofol is a High Risk Medicine.

INDICATIONS AND RESTRICTIONS

- Induction and maintenance of general anaesthesia in the Operating Theatre.
- Short-term sedation for:[1,2]
  - Procedural sedation
  - Sedation for a ventilated patient in the weaning process and preparation for extubation in the Paediatric Critical Care (PCC)
  - Adjunctive sedation in ventilated patients
- Anticonvulsant in refractory status epilepticus[2]

Propofol must only be used by trained personnel with advanced airway management skills (i.e. endotracheal intubation) such as anaesthesia staff, staff in ED and PCC.

CONTRAINDICATIONS

- Hypersensitivity to propofol or any component of the formulation, see Precautions.[2]

PRECAUTIONS

- Confirmed hypersensitivity to egg, soya or peanut protein.[2,3]

  Note, a genuine serious allergic reaction to propofol is rare and is not reliably predicted by a history of food allergy.[2,3]
- Severe respiratory compromise – may cause further respiratory depression. Consider alternative agents, e.g. ketamine.[1]
- Muscular dystrophies and myotonias – respiratory depression prolonged or potentiated; reduce dose.[1]
- Increased intracranial pressure or impaired cerebral circulation – substantial decrease in arterial pressure and subsequent decrease in cerebral perfusion. Consider administration as a continuous infusion or a slow bolus and monitor carefully.[1,2]
- Haemodynamic instability or hypovolaemia – correct before administration if possible as propofol causes hypotension, especially if bolus dosing is used. Consider reducing dose and monitor.[1,2]
- Hyperlipidaemia and lipid metabolism disorders – increased risk of developing pancreatitis, due to hypertriglyceridemia. Consider monitoring serum lipid levels if given for >24 hours and reduce intake of other fats.[1,2]
- Pre-existing pancreatitis – propofol infusion may exacerbate condition.[2]
- Seizure disorder – seizures episodes may occur during recovery. Use with caution in patients with history of seizures.[2]

Propofol-related infusion syndrome (PRIS)

Note: PRIS has occurred following use in critical care settings for sedation during ventilation. It is rare but has a high mortality rate.

High infusion rate (>4 mg/kg/hour), cumulative dosage (>240 mg/kg) and infusion duration of more than 48 hours are risk factors for PRIS.[4-6] However, PRIS may occur even at low infusion rates and cumulative doses. Limit the infusion rate to the lowest possible rate for the shortest time possible and consider using multimodal sedation regimen.[4-6]

Mitochondrial disorders, high fat and low carbohydrate intake, and concomitant catecholamine infusion or glucocorticoid therapy are associated with increased risk of PRIS. Consider avoiding/limiting use of propofol in these patients.[5,6]

FORMULATIONS

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

- Propofol 1% MCT/LCT 500 mg/50 mL injection, vial

- Propofol 1% MCT/LCT 200 mg/20 mL injection, ampoule

Imprest location: Formulary One

INTRAVENOUS DOSAGE & DOSAGE ADJUSTMENTS

Neonates: Refer to Neonatal Medication Protocols

For obese and overweight children, refer to Drug Dosing in Overweight and Obese Children 2-18 Years of Age.

Dosing for children ≥ 4 weeks to 18 years:

Sedation during ventilation in PCC

0.3 – 4 mg/kg/**hour**; titrate to response.[7]

Maximum infusion rate of 4 mg/kg/**hour** and for up to 48 hours including bolus doses.[2]

Bolus for inadequate sedation: 0.5-1 mg/kg (maximum 50 mg/dose).[2,8]

Refer to Analgesia and Sedation in Paediatric Critical Care Guideline.

Anaesthesia

Induction

1-3 mg/kg; titrate to response over 30-60 seconds.[2,7]

- Consider using the lower end of the dose range for obese and unwell children.[8,9]
- Higher doses of 4 - 5 mg/kg may be used in anxious children if used as a sole agent.[9,10]

Maintenance (for use by the anaesthetic team only)

7.5 - 15 mg/kg/**hour** or use a target-controlled infusion (TCI) pump; titrate to clinical effect at the discretion of the anaesthetist.[7,11]

- Children <3 years may require higher infusion rates than older children.[7]
- Dose should be reduced when used with other drugs that cause CNS depression (e.g. opioids, benzodiazepines).
- Monitor closely for any signs of PRIS, see Precautions.

Procedural sedation – for use under the direction of a PCC consultant

0.5 - 2 mg/kg over 30 - 60 seconds; start at the lower end of the dose range and titrate to response.[2,7]

- For short procedures (non -intubated patients), re-bolus to effect at 0.5 -1 mg/kg.[2]
- Dose should be reduced when used with other drugs that cause CNS depression (e.g. opioids, benzodiazepines), especially in non-intubated patients.

Refractory status epilepticus[2]

Loading dose

1- 2 mg/kg

Maintenance

- 1 mg/kg/**hour**; titrate to desired effect up to 4 mg/kg/hour.
- Higher doses may be used at the discretion of a PCC consultant [2,12]

Renal impairment:

No dosage adjustment necessary.[2]

Hepatic impairment:

No dosage adjustment necessary.[2]

ADMINISTRATION

- Propofol must be administered under the direct supervision of medical staff.
- Shake well before use.[13]
- DO NOT use a microbiological filter.[14] Use filters with a pore size no smaller than 5 microns.[15]
- Give undiluted or dilute to a minimum concentration of 2 mg/mL with glucose 5% or a compatible fluid.[13]
- Flush the line well or remove the line when it is no longer in use to avoid re-sedation during recovery.[13] If the line is flushed, this should be clearly documented and handed over.
- Complete infusion set (syringes and line) should be replaced after 12 hours at the latest.[13]
- **Bolus doses during continuous infusions MUST be prescribed by Medical Staff including dosage and frequency**

COMPATIBILITY *(LIST IS NOT EXHAUSTIVE)*

Compatible fluids:[13]

- All products: glucose 5%
- Fresolol® MCT/LCT: sodium chloride 0.9%
- Lipuro®, Provive® MCT-LCT: sodium chloride 0.9%, glucose 4% and sodium chloride 0.18%

Y-site:[13]

Sodium chloride 0.9%, glucose 5%, glucose 4% with sodium chloride 0.18%

Only commonly used drugs are listed below. This is not a complete list of compatible/incompatible drugs. Compatibilities of IV drugs must be checked when two or more drugs are given concurrently.

Compatible at Y-site:[12]

Aciclovir, amoxicillin/clavulanate, calcium gluconate, cephazolin, cefotaxime, droperidol, fentanyl, furosemide (frusemide), heparin, hydrocortisone, hydromorphone, ketamine, naloxone, phenobarbital (phenobarbitone), sodium bicarbonate.

INCOMPATIBLE drugs:[12]

Blood and blood products, amphotericin B, calcium chloride, cefepime, ceftazidime, ceftriaxone, gentamicin, methylprednisolone sodium succinate, midazolam, pantoprazole, tobramycin, vancomycin, vecuronium.

MONITORING

Continuous cardio-respiratory monitoring including ECG, BP, HR, pulse oximetry, capnography and facilities for maintaining patent airway, artificial ventilation and other resuscitation facilities must be available immediately and at all times.[14]

ADVERSE EFFECTS

Common: pain on injection, bradycardia, hypotension, apnoea, flushed skin or rash, cough, excitation at induction (involuntary movements – including twitches, tremors, hypertonus and hiccup).[1,14]

Infrequent: arrhythmias, thrombosis and phlebitis at injection site.[1]

Rare: Propofol-related infusion syndrome (PRIS): Clinical features of PRIS are metabolic acidosis, ECG changes, hyperlipidaemia, acute kidney injury, rhabdomyolysis, hypotension, heart failure, hyperkalaemia.[2]

Anaphylactic/anaphylactoid reactions, seizure, fever, pancreatitis.[1] Fever, hepatomegaly, and cumulative dose of >240 mg/kg are associated with an increased risk of mortality in children.[4]

STORAGE

Propofol is a Restricted Schedule 4 (S4R) medication and must be stored securely within an Automatic Dispensing Machine (ADM) as outlined in the Schedule 8 and Restricted Schedule 4 Medication Policy.

- Store below 25°C. Do not freeze.[13]
- Protect from light.[13]

INTERACTIONS[12]

Drugs that cause bradycardia - may further reduce heart rate.

Antihypertensives - may cause increased hypotension. Do not stop antihypertensives abruptly. Monitor BP carefully and reduce propofol dose if necessary.

CNS depressants - Increases sedative, respiratory, hypotensive and cardiovascular depressant effects. Monitor carefully and reduce doses if necessary.

Vancomycin - the combination increases the risk of vancomycin infusion-related adverse effects. Complete vancomycin infusion before administering propofol.

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 **propofol**. Any variations to the doses recommended should be clarified with the prescriber prior to administration

Related CAHS internal policies, procedures and guidelines
Drug Dosing in Overweight and Obese Children 2-18 Years of Age
Schedule 8 and Restricted Schedule 4 Medication Policy.
Analgesia and Sedation in Paediatric Critical Care
Status Epilepticus - PCH Emergency Department Guideline.
Seizure Medication - PCH Emergency Department Guideline

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Document Owner:	Chief Pharmacist		
Reviewer / Team:	Senior Pharmacist, Anaesthetist Consultant, PCC Consultant, PCC Nurse Educator.		
Date First Issued:	Feb 2016	**Last Reviewed:**	Jan 2024
Amendment Dates:	Aug 2020, Feb 2016	**Next Review Date:**	Aug 2028
Approved by:	PCHN Medication Safety Committee	**Date:**	Apr 2025
Endorsed by:	CAHS Drug & Therapeutics Committee	**Date:**	Aug 2025
Standards Applicable:	NSQHS Standards: NSMHS: N/A Child Safe Standards: N/A		

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