


INDOMETACIN (Indomethacin)

Indication	<ul style="list-style-type: none"> • Risk reduction for severe IVH in high-risk neonates^{1,2}: <ul style="list-style-type: none"> ○ Less than 28 weeks gestation or less than 1000 grams and ○ With platelet count greater than $50 \times 10^9/L$ • PDA closure in premature neonates^{3,4} 												
Presentation	<ul style="list-style-type: none"> • Vial: 1 mg (no diluent included)³ • Vial: 50 mg (powder) • Not available via QH Central Pharmacy 												
Dosage³ (IVH reduction)	<ul style="list-style-type: none"> • Total of 3 doses given at 24 hour intervals • First dose within 24 hours of life (aim: within first 6 hours) <table border="1" data-bbox="424 600 1318 680"> <thead> <tr> <th>1st dose</th> <th>2nd dose</th> <th>3rd dose</th> </tr> </thead> <tbody> <tr> <td>0.1 mg/kg</td> <td>0.1 mg/kg</td> <td>0.1 mg/kg</td> </tr> </tbody> </table> <p>(High risk medication: 0.1 mg/kg=100 microgram/kg)</p>		1 st dose	2 nd dose	3 rd dose	0.1 mg/kg	0.1 mg/kg	0.1 mg/kg					
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0.1 mg/kg	0.1 mg/kg		0.1 mg/kg										
Dosage^{3,4} (PDA closure)	<ul style="list-style-type: none"> • Total of 3 doses given at 24 hour intervals (equivalent to one course) <ul style="list-style-type: none"> ○ Maximum of two courses <table border="1" data-bbox="424 801 1318 922"> <thead> <tr> <th>Age at first dose</th> <th>1st dose</th> <th>2nd dose</th> <th>3rd dose</th> </tr> </thead> <tbody> <tr> <td>Less than 48 hours</td> <td>0.2 mg/kg</td> <td>0.1 mg/kg</td> <td>0.1 mg/kg</td> </tr> <tr> <td>48 hours or more</td> <td>0.2 mg/kg</td> <td>0.2 mg/kg</td> <td>0.2 mg/kg</td> </tr> </tbody> </table> <p>(High risk medication: 0.1 mg/kg=100 microgram/kg)</p>	Age at first dose	1 st dose	2 nd dose	3 rd dose	Less than 48 hours	0.2 mg/kg	0.1 mg/kg	0.1 mg/kg	48 hours or more	0.2 mg/kg	0.2 mg/kg	0.2 mg/kg
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INTRAVENOUS	1 mg vial												
	50 mg vial												
	Administration (all vials)												

High risk medication	<ul style="list-style-type: none"> • Discuss with SMO before prescribing • Contraindicated if platelet count less than $50 \times 10^9/L$ • If ELBW with severe pulmonary hypertension, where patent ductus relieves right ventricular afterload, indometacin may worsen clinical condition
Special considerations	<ul style="list-style-type: none"> • Not preferred agent of choice for PDA closure (SMO discretion) • Avoid if systemic infection: may mask signs of infection • If anuria or marked oliguria (urinary output less than 0.6 mL/kg/hour) at the time of the second or third dose, withhold indometacin until renal function normalises⁷ • If dedicated IV access unavailable, cease glucose, PN and insulin infusion during administration <ul style="list-style-type: none"> ◦ Flush with 0.5 mL before and after administration ◦ Consider BGL according to individual requirements
Monitoring	<ul style="list-style-type: none"> • FBC³, renal function³, hepatic function³, serum electrolytes³, glucose³, coagulation parameters (at SMO discretion) • Serum levels of aminoglycosides • Blood pressure³ • In case of undiagnosed duct dependant cardiac lesion (risk low), observe for post-ductal perfusion (e.g. femoral pulses, pallor, and signs of shock)¹ • Extravasation: may cause local irritation⁵
Compatibility	<ul style="list-style-type: none"> • Fluids <ul style="list-style-type: none"> ◦ 0.9% sodium chloride⁵, water for injection⁵ • Via Y-site <ul style="list-style-type: none"> ◦ Do not mix with other drugs.⁵ Consult pharmacist⁵
Incompatibility	<ul style="list-style-type: none"> • Fluids <ul style="list-style-type: none"> ◦ Glucose 10%⁵ • Drugs <ul style="list-style-type: none"> ◦ Adrenaline (epinephrine)⁵, hydrochloride⁵, amikacin⁵, argipressin⁵, atracurium⁵, calcium chloride⁵, calcium gluconate⁵, dobutamine⁵, dopamine⁵, erythromycin⁵, esmolol⁵, gentamicin⁵, haloperidol lactate⁵, hydralazine⁵, isoprenaline⁵, magnesium sulfate⁵, midazolam⁵, morphine sulfate⁵, noradrenaline (norepinephrine)⁵, phenylephrine⁵, protamine⁵, pyridoxine⁵, suxamethonium⁵, thiamine⁵, tobramycin⁵, vancomycin⁵
Interactions	<ul style="list-style-type: none"> • Anticoagulants and antiplatelet medications: increased risk of GI bleed⁸ • Aminoglycosides: may decrease clearance of aminoglycosides⁸ • Digoxin: increase concentration/prolong half-life • Corticosteroids: concurrent use may increase risk of NEC⁸ • Nephrotoxic medications (e.g. furosemide): concurrent use may increase risk of acute renal injury
Stability	<ul style="list-style-type: none"> • Store below 25 °C⁹. Protect from light⁹ and moisture⁹
Side effects	<ul style="list-style-type: none"> • Blood pathology: thrombocytopenia³, hypoglycaemia³ • Digestive: GI haemorrhage³, intestinal perforation³ • Urinary: oliguria³, fluid retention¹⁰, acute renal failure⁶ altered renal function³
Actions	<ul style="list-style-type: none"> • Non-steroidal anti-inflammatory drug⁵ with analgesic³ and antipyretic activity³ • Inhibits prostaglandin synthesis³ by decreasing the activity of the enzyme cyclooxygenase, decreasing formation of prostaglandin precursors • Decreases cerebral, renal, and gastrointestinal blood flow³
Abbreviations	ELBW: extremely low birth weight, FBC: full blood count, GI: gastrointestinal, IV: intravenous, IVH: intraventricular haemorrhage, NEC: necrotising enterocolitis, PN: parenteral nutrition, QH: Queensland Health SMO: most senior medical officer, PDA: patent ductus arteriosus
Keywords	ELBW infant, intraventricular haemorrhage, IVH, patent ductus arteriosus, PDA, indomethacin, indometacin, indocid

The Queensland Clinical Guideline *Neonatal Medicines* is integral to and should be read in conjunction with this monograph. Refer to the disclaimer. Destroy all printed copies of this monograph after use.

References

- Schmidt BMD, Davis PMD, Moddemann DMD, Ohlsson AMD, Roberts RSM, Saigal SMD, et al. Long-term effects of indomethacin prophylaxis in extremely-low-birth-weight infants. *The New England Journal of Medicine* 2001;344(26):1966-72.
- Bada HS, Green RS, Pourcyrous M, Leffler CW, Korones SB, Magill HL, et al. Indomethacin reduces the risks of severe intraventricular hemorrhage. *J Pediatr* 1989;115(4):631-7.
- IBM Micromedex®/Neofax®. Indomethacin In: IBM Micromedex® NeoFax®/Pediatrics (electronic version). IBM Watson Health, Greenwood Village, Colorado, USA. 2022 [cited 2023 February 8]. Available from: <http://neofax.micromedexsolutions.com/neofax>.
- Evans P, O'Reilly D, LFlyer J, Soll R, Mitra S. Indomethacin for symptomatic patent ductus arteriosus in preterm infants (Review). *Cochrane Database of Systematic Reviews*. [Internet]. 2021, [cited 2023 December 13]. Issue 1. Art No.: CD013133. DOI:10.1002/14651858.CD013133.pub2.
- Australian Injectable Drugs Handbook. Nicolette Burrridge, Keli Symons, editors. Indometacin. 8th ed. [Internet]. New South Wales: Society of Hospital Pharmacists of Australia (SHPA); November 2022 [cited 2023 February 7]. Available from: <https://aidh.hcn.com.au>.
- Paediatric Injectable Drugs (online). Indomethacin Sodium Trihydrate. [Internet]: Royal Pharmaceutical Society; 2023 [cited 2023 February 08]. Available from: <https://www.medicinescomplete.com/>.
- Australian Medicines Handbook Children's Dosing Companion. Indometacin. [Internet]. Adelaide: Australian Medicines Handbook Pty Ltd; January 2023 [cited 2023 February 8]. Available from: <https://amhonline.amh.net.au>.
- IBM Micromedex®. Indometacin in IBM Micromedex® (electronic version). Greenwood Village, Colorado, USA. 2023 [cited 2023 March 02]. Available from: <http://www.micromedexsolutions.com>.
- Therapeutic Goods Administration (TGA). Indomethacin product information. [Internet]. Canberra: Australian Government; February 2022 [cited 2023 February 09]. Available from: <https://www.tga.gov.au>.
- British National Formulary for Children (BNFC) online. Indometacin (Indomethacin). [Internet]: Royal Pharmaceutical Society; February 2022 [cited 2023 February 8]. Available from: <https://www.medicinescomplete.com>.

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