Remifentanil
Newborn use only

2019

Alert	Remifentanil is a Schedule 8 drug. Chest wall rigidity has been reported in 10–20% of infants given it as a bolus (over <60 seconds) or at higher dose, particularly in preterm infants. Chest wall rigidity can be treated with naloxone and muscle relaxants.
Indication	1. Premedication for non-emergency intubation; 2. Infusion for analgesia/sedation
Action	Remifentanil is a potent μ receptor agonist with rapid onset of action – peak analgesic action within 1 minute. Rapidly metabolised into inactive metabolites by non-specific plasma esterases with a half-life of 3-5 minutes.
Drug Type	Remifentanil is a synthetic opioid analgesic drug related to fentanyl.
Trade Name	DBL Remifentanil, Remifentanil Alphapharm, Remifentanil APOTEX, Remifentanil-AFT, Ultiva.
Presentation	Remifentanil Powder [remifentanil hydrochloride] for infusion 1 mg, 2 mg, 5 mg. Also contains glycine, hydrochloric acid and/or sodium hydroxide.
Dosage / Interval	**Premedication for intubation:** 1 to 3 microgram/kg; may be repeated in 2–3 minutes if needed. **Infusion for analgesia in spontaneously breathing infants:** 0.03 microgram/kg/minute as intravenous infusion [highest safe dose unknown]. **Infusion for analgesia/sedation in ventilated infants:** 0.15–1 microgram/kg/minute as intravenous infusion.
Maximum daily dose	1 microgram/kg/minute.
Route	Intravenous.
Preparation/Dilution	**IV bolus as premedication for intubation** Add 1 mL of water for injection to 1 mg vial of remifentanil to make a 1 mg/mL solution. FURTHER DILUTE Draw up 0.2 mL (200 microgram) of the above solution and add glucose 5% or sodium chloride 0.9% to make a final volume of 40 mL with a concentration of 5 microgram/mL. **0.2 mL/kg of this diluted solution = 1 microgram/kg**. **IV infusion for spontaneously breathing infants (≥ 2.5 kg only)** **2-STEP DILUTION**

Prescribed amount	Infusion rate
200 **microgram**/kg remifentanil and make up to 50 mL with glucose 5% or sodium chloride 0.9%	0.5 mL/hour = 0.03 microgram/kg/min

Step 1: Add 1 mL of water for injection to 1 mg vial of remifentanil to make a 1 mg/mL solution.
Step 2: From the above solution, draw up 0.2 mL/kg (200 **microgram**/kg) and further dilute with glucose 5% or sodium chloride 0.9% to make a final volume of 50 mL. Infusing at a rate of **0.5 mL/hour = 0.03 microgram/kg/minute.**

IV infusion for analgesia/sedation in ventilated infants
2-STEP DILUTION

Prescribed amount	Infusion rate
3 mg/kg remifentanil and make up to 50 mL with glucose 5% or sodium chloride 0.9%	1 mL/hour = 1 microgram/kg/minute

Step 1: Add 1 mL of water for injection to 1 mg vial of remifentanil to make a 1 mg/mL solution.

	<u>Step 2</u>: From the above solution draw up 3 mL/kg (3 mg/kg) and further dilute with glucose 5% or sodium chloride 0.9% to make a final volume of 50 mL. Infusing at a rate of **1 mL/hour = 1 microgram/kg/minute.**
Administration	**IV BOLUS:** Administer over at least 1 minute. Flush with 1 mL of sodium chloride 0.9%. Onset of action is immediate. Half-life is approximately 3–10 minutes. **CONTINUOUS IV INFUSION**: Via syringe driver. Upon ceasing the continuous infusion, flush the line with 1 mL of sodium chloride 0.9% over 1 hour. Note: It is advisable to use a dedicated IV line where possible.
Monitoring	Full cardiorespiratory monitoring. Monitor for urinary retention.
Contraindications	Known hypersensitivity to fentanyl or remifentanil.
Precautions	Rapid injection (<60 seconds) of remifentanil is associated with chest wall rigidity. Remifentanil in a bolus dose of 5 microgram/kg may cause hypotension.
Drug Interactions	Remifentanil enhances the action of other sedatives and hypnotics. Cardiovascular effects may be enhanced by beta blockers and calcium channel blockers.
Adverse Reactions	Respiratory depression, chest wall rigidity (can be treated with naloxone and muscle relaxants), bradycardia and asystole (may respond to atropine), hypotension, postoperative hypertension.
Compatibility	Fluids: Glucose 5%, glucose 5% in sodium chloride 0.9%, sodium chloride 0.9%, sodium chloride 0.45%, water for injection. Not tested with glucose 10%.[19] Y-site: Aciclovir sodium, adrenaline (epinephrine) hydrochloride, alfentanil hydrochloride, amikacin sulfate, aminophylline, amiodarone hydrochloride, ampicillin sodium, azithromycin, aztreonam, buprenorphine hydrochloride, calcium gluconate, cefazolin sodium, cefepime hydrochloride, cefotaxime, cefotetan disodium, cefoxitin, ceftazidime, ceftriaxone sodium, cefuroxime, , ciprofloxacin, clindamycin phosphate, dexamethasone sodium phosphate, digoxin, dobutamine hydrochloride, dopamine hydrochloride, fentanyl, fluconazole, ganciclovir sodium, gentamicin sulfate, heparin sodium, hydrocortisone sodium succinate, imipenem-cilastatin sodium, insulin regular, isoprenaline hydrochloride, lidocaine (lignocaine) hydrochloride, magnesium sulfate, mannitol, methylprednisolone sodium succinate, metoclopramide hydrochloride, metronidazole, midazolam hydrochloride, milrinone lactate, morphine sulfate, netilmicin sulfate, nitroglycerin, noradrenaline (norepinephrine) bitartrate, octreotide acetate, ondansetron hydrochloride, pancuronium bromide, phenylephrine hydrochloride, piperacillin sodium-tazobactam sodium, potassium acetate, potassium chloride, potassium phosphates, ranitidine hydrochloride, rocuronium bromide, sodium acetate, sodium bicarbonate, sufentanil citrate, sulfamethoxazole-trimethoprim, theophylline, thiopental sodium, ticarcillin disodium-clavulanate potassium, tobramycin sulfate, vancomycin hydrochloride, vasopressin, vecuronium bromide, zidovudine.
Incompatibility	Amino acid/glucose and lipid infusion: No information. Propofol, amphotericin, chlorpromazine, diazepam, furosemide (frusemide).
Stability	Reconstituted product should be used promptly and any unused material discarded according to local Schedule 8 drug policy.
Storage	Store below 25° C. The 1 mg presentation should be stored protected from light.
Special Comments	Treat chest wall rigidity with supportive measures, neuromuscular blocking agents or naloxone. Chest wall rigidity can last a few minutes. Duration of action 5 to 10 minutes.
Evidence summary	Refer to full version.
References	Refer to full version.

Original version Date: 12/04/2019	**Author: ANMF Consensus Group**
Current Version number: 1.0	**Current Version Date:** 30/04/2019
Risk Rating: Low	**Due for Review: 30/04/2024**

Approval by: As per Local policy	Approval Date:

Authors Contribution

Original author/s	David Osborn
Evidence Review	David Osborn
Expert review	
Nursing Review	Eszter Jozsa
Pharmacy Review	Michelle Jenkins, Jing Xiao, Cindy Chen
ANMF Group contributors	Nilkant Phad, Himanshu Popat, Srinivas Bolisetty
Final editing and review of the original	Ian Whyte
Electronic version	Cindy Chen, Ian Callander
Facilitator	Srinivas Bolisetty