

Applicable area: **ICU**

These guidelines are intended for and to be used only by experienced critical care staff under direct supervision of HNELHN Intensive Care Specialists in designated HNE Intensive Care Area Clinical Stream units. The authors are not responsible for inappropriate use of these guidelines.

ADULT	Dexmedetomidine (Precedex®) IV [section 1 of 2]
Authorised prescribers	Under the direction of an ICU Specialist or Fellow only
Indication for use ^{1,2}	<ol style="list-style-type: none"> Facilitate weaning of benzodiazepine and/or opioid based sedation regimen in mechanically ventilated patients (over 18 years old) who are developing or at high risk of developing clinical agitation and/or delirium. Management of severely agitated or delirious patients when butyrophenone (<i>e.g.</i> haloperidol) and/or benzodiazepine based sedation regimens have failed. <i>Note: High drug cost.</i> <p>**NOT for deep sedation** <i>Approximately \$800/day at maximum dose rate</i></p>
Background ¹⁻⁴	<p>A selective α_2 agonist with sedative, anxiolytic, anti-delirium and opioid-sparing effects; reduces stress response and produces minimal respiratory depression. Possible risk of α_2 - mediated cerebral vasospasm; direct vasoconstriction and reduction in microvascular flap blood flow (see Precautions).</p> <p>Onset: 15 mins, Peak effect: within 1 hour, Elimination $t_{1/2}$: 2 hours Extensively metabolised by the liver to inactive metabolites. Clearance not affected by severe renal dysfunction¹. No data for renal replacement.</p>
Precautions ¹	<p>Avoid in the following patient groups:</p> <ol style="list-style-type: none"> Refractory haemodynamic instability (<i>e.g.</i> SBP <90 mmHg on vasopressors, HR <55bpm) Severe liver dysfunction (Child-Pugh class C) Acute epilepsy, uncontrolled seizures Traumatic brain injury and neurovascular (<i>e.g.</i> subarachnoid haemorrhage, recent intervention for cerebral aneurysms, high risk cerebral vasospasm) In selected patients, maximum 0.5microgram/kg/h used in practice³ Microvascular free flap procedures Pregnancy or breast feeding
Dosage ^{1,3}	Off-license. Has been used safely beyond licensed dose ⁵⁻⁷
NEVER bolus, do NOT use loading dose – will cause bradycardia and/or hypotension	
<ul style="list-style-type: none"> Use actual body weight up to a maximum of 100kg Usual dose 0.1 to 1.5 microgram/kg/h (= 1 to 15 mL/h see table on Page 2) Start at 0.4 microgram/kg/h for 2 hours then titrate by increments of 0.1 to 0.2 microgram/kg/h every 30 minutes to achieve light sedation. 2 hours after starting infusion, wean down or cease other sedative agents. <p><u>Rescue sedation:</u> IV Midazolam 1 mg <i>OR</i> IV Propofol 20 mg boluses PRN to targeted sedation score</p> <p><u>Severe delirium or agitation:</u> Exclude organic causes. Dexmedetomidine should be at maximum rate before consider adding haloperidol IV 2.5 mg to 5 mg repeated boluses or regular doses (max. 30 mg in 24 hours) <i>OR</i> quetiapine NG titrate 25 to 150 mg BD <i>OR</i> olanzapine NG 2.5 to 10 mg nocte</p>	
Duration of therapy	Up to 72 hours in total. Infusion may be continued post-extubation to facilitate delirium management ¹ .
Stopping therapy	<p>Stop infusion when no longer needed⁸.</p> <p><u>Recommend:</u> If more than 24 hours, halve infusion rate every 30 minutes until 0.1microgram/kg/hour then stop.</p> <p><u>Monitor for withdrawal symptoms:</u> nervousness, agitation and headaches accompanied or followed by rapid BP increase⁹. If occurs, slow down weaning rate.</p>

ADULT**Dexmedetomidine (Precedex®) IV** [section 2 of 2]

Prescription
(See dosing table below)

Date 28/10	Medication (Print Generic Name) Dexmedetomidine	Date	
Route IV	Dose & Hourly Frequency 1 to 15mL/h	Time	
Indication Agitation, delirium	Pharmacy 1ml = 0.1microgram/kg/h. See guidelines.	Dose	
Prescriber Signature A. Doctor	Print Name	Route	
	Contact	Sign	

Preparation and administration¹

IV continuous infusion: Peripheral or Central Venous Line

Via controlled infusion pump device – syringe pump where available

Label “DO NOT BOLUS” on infusion line and pump.

Body Weight	Dexmedetomidine		Sodium chloride 0.9% volume	Total volume	Final concentration
	Dose	Volume			
50 kg	200 microgram	2 mL	38 mL	40 mL	1 mL = 0.1 microgram/kg/h
55 kg	200 microgram	2 mL	34 mL	36 mL	1 mL = 0.1 microgram/kg/h
60 kg	200 microgram	2 mL	31 mL	33 mL	1 mL = 0.1 microgram/kg/h
65 kg	400 microgram	4 mL	56 mL	60 mL	1 mL = 0.1 microgram/kg/h
70 kg	400 microgram	4 mL	52 mL	56 mL	1 mL = 0.1 microgram/kg/h
75 kg	400 microgram	4 mL	48 mL	52 mL	1 mL = 0.1 microgram/kg/h
80 kg	400 microgram	4 mL	46 mL	50 mL	1 mL = 0.1 microgram/kg/h
85 kg	400 microgram	4 mL	42 mL	46 mL	1 mL = 0.1 microgram/kg/h
90 kg	400 microgram	4 mL	40 mL	44 mL	1 mL = 0.1 microgram/kg/h
95 kg	400 microgram	4 mL	38 mL	42 mL	1 mL = 0.1 microgram/kg/h
100 kg	400 microgram	4 mL	36 mL	40 mL	1 mL = 0.1 microgram/kg/h

Compatibilities

See [Australian Injectable Drugs Handbook via CIAP](#) or hard copy on the ward

Monitoring requirements

Common side effects are bradycardia and hypotension.
If occurs, stop infusion or reduce rate.

Basis of guideline

1. Shehabi Y, Botha J, Ernest D, et al. Clinical application, the use of dexmedetomidine in intensive care sedation. *Crit Care & Shock* 2010; 13: 40 – 50.
2. Shehabi Y, Nakae H, Hammond N, et al. The effect of dexmedetomidine on agitation during weaning of mechanical ventilation in critically ill patients. *Anaesth Intensive Care* 2010; 38: 82 – 90.
3. Shehabi Y - Medical Director ICU, Prince of Wales, NSW. Personal communication (email) Nov 26, 2010.
4. Szumita P, Baroletti S, Anger K, et al. Sedation and analgesia in the intensive care unit: evaluating the role of dexmedetomidine. *Am J Health-Syst Pharm* 2007; 64: 37 – 44.
5. Riker R, Shehabi Y, Bokesch P, et al. Dexmedetomidine vs midazolam for sedation of critically ill patients [SEDCOM]. *JAMA* 2009; 301: 489 – 499.
6. Pandharipande P, Pun B, Herr D, et al. Effect of sedation with dexmedetomidine vs lorazepam on acute brain dysfunction in mechanically ventilated patients [MENDS]. *JAMA* 2007; 298: 2644 – 2653.
7. Tan J and Ho K. Use of dexmedetomidine as a sedative and analgesic agent in critically ill adult patients: a meta-analysis. *Intensive Care Med* 2010 [online]
8. Rowntree, R. – Hospira Precedex representative. Personal communication (email) – Dexmedetomidine in ICU Nov 9, 2010.
9. Precedex® (dexmedetomidine) Product Information, 2009 via MIMS Online.

Groups consulted

Staff specialists, medical trainees, senior nursing and pharmacists (or relevant directors of pharmacy) of the Intensive Care Area Clinical Stream

Keywords	HNE Intensive Care Area Clinical Stream, ICU, dexmedetomidine, prescribing guideline
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