

Dexmedetomidine Sedation Standard Operating Procedure for Awake Fiberoptic Intubation

Contents

Background	2
Evidence for AFOI	2
Contraindications.....	2
Precautions	2
Setup.....	3
Monitoring	3
Drug setup	3
AFOI set up and procedure guide	3
WFSA suggested dosing regime ⁴	4
Appendix 1	5
Vial appearance.....	5
Appendix 2	6
Pump set up picture guide	6
Appendix 3	7
Dexmedetomidine dosing table based on weight	7
Appendix 4	8
Calculations for weight-based dosing.....	8
Appendix 5	9
Ramsay Sedation Scale	9

Background

Evidence for Dexmedetomidine sedation for awake tracheal intubation

- 2014 Cochrane review¹
 - vs Propofol TCI
 - Lower levels of procedural discomfort
 - Similar intubation times
 - Less airway obstruction
 - No significant increase in cardiovascular adverse effects when compared with fentanyl, midazolam or propofol-based techniques
 - vs Remifentanyl
 - Higher rates of recall
 - Higher oxygen saturations

Contraindications

- Known hypersensitivity to dexmedetomidine

Precautions

- Advanced heart block, bradycardia
- Significant cardiac dysfunction (e.g. ventricular dysfunction, congestive cardiac failure, pulmonary hypertension) and patients in whom sympathetic tone is critical for maintaining hemodynamic balance
- Desensitised autonomic nervous system control e.g.: elderly, diabetics
- Hypovolemia

Dexmedetomine sedation setup

Monitoring

- Secure peripheral IV access
- Continuous ECG monitoring
- Non-invasive blood pressure
- Continuous pulse oximetry

Drug presentation

- Glass ampoule – 200mcg/2ml

Infusion preparation and administration

1. Dilute Dexmedetomidine 200mcg in 50ml 0.9% Sodium Chloride.

Final concentration 4mcg/ml

2. Weight-based dosing
 - a. BMI <30 - use patient's actual body weight (ABW)
 - b. BMI >30 – use patient's adjusted body weight (AdjBW)
3. Set up infusion pump to give appropriate weight-based loading dose followed by infusion. Agilia pumps allow this to be programmed uninterrupted.

Recommended regime:

Loading dose – 1mcg/kg over 10 minutes

Infusion dose – 0.2-0.7 mcg/kg/h titrated to effect

4. Commence Dexmedetomidine infusion as you commence topicalization as per DAS ATI guidelines².

- Note Dexmedetomidine may take more than 10 minutes to have an effect

5. Proceed with ATI, titrating maintenance dose of Dexmedetomidine, aiming for 2 or 3 on the Ramsay Sedation Scale (as suggested in Cochrane review)³

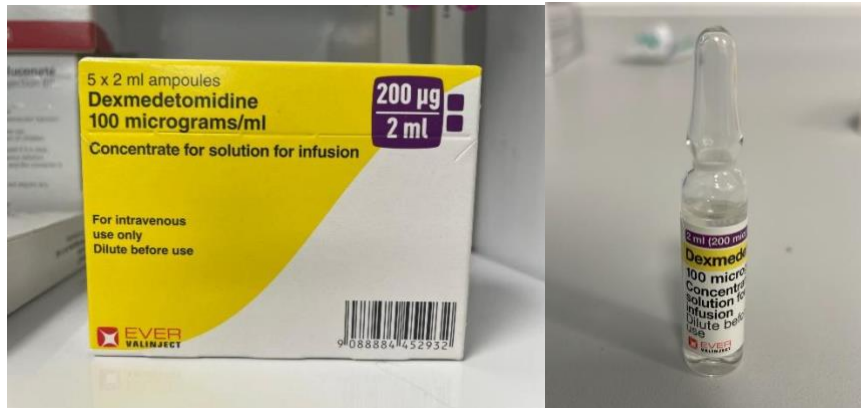
- Appendix 1 for drug appearance
- Appendix 2 for step-by-step guide using Agilia pump
- Appendix 3 for manual dosing when Agilia pump not available
- Appendix 4 for body weight calculations
- Appendix 5 for Ramsay Sedation Scale

WFSA (World Federation of Societies of Anaesthesiologists)
suggested dosing regimen for Dexmedetomidine AWFOI⁴

		Example for 60 kg adult	Notes
Step 1	Loading dose 1 mcg/kg Over 10-15 mins	60 mcg over 10-15 mins	This can be given whilst topically anaesthetising the airway
Step 2	Infusion 0.2-0.7 mcg/kg/hr	0.7 mcg/kg/hr	Titrated to effect

Appendix 1

Dexmedetomidine ampoule appearance

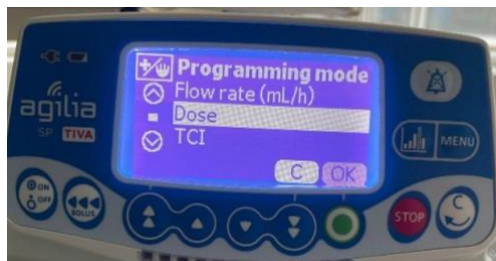
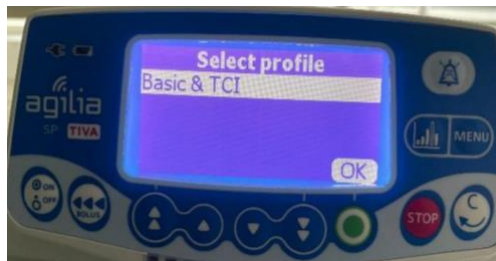


[NB] Drug appearance subject to change depending on the pharmaceutical supply

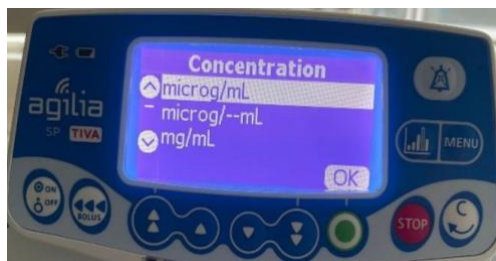
Appendix 2

Agilia infusion pump set up pictorial guide

Step 1 – choose dose (not TCI)



Step 2 – Concentration - choose mcg/mL



Step 3 – input the dilution

Standard dilution of Dexmedetomidine is
 $200\text{mcg}/50\text{ml} = 4\text{mcg}/\text{ml}$



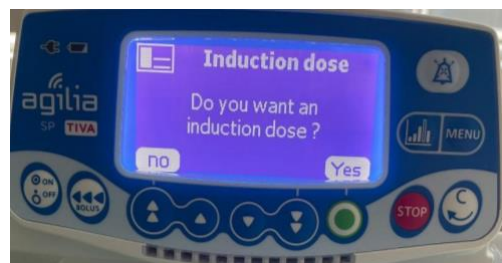
Step 4 – Choose infusion rate

This will be the maintenance rate that will
start after the loading dose.

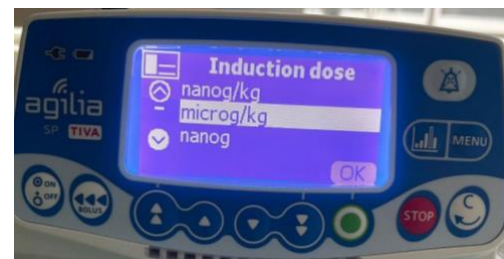


Step 5 – Induction dose

Select yes (induction dose = loading dose)



Choose mcg/kg



Choose induction dose and duration



Usual induction dose 1mcg/kg over 10 mins
Picture above: 1mcg/kg for 70kg adult
The pump will deliver 17.5ml
After the loading dose, the pump will
automatically continue at the maintenance
infusion rate.

Appendix 3

Dexmedetomidine dosing table based on weight

St. George's local clinical guideline.

Table can be used to calculate loading dose and infusion rates in absence of Agilia pump.

Dexmedetomidine			Maintenance (ml/h)									
Loading dose (1 mcg/kg)	Loading (ml/h) for 10 min		Infusion rates with LD					without LD				
BW (kg)	ml/h for 10 min	VTBI (ml)	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0	
50	75	13	3	4	5	6	8	9	10	11	13	
55	83	14	3	4	6	7	8	10	11	12	14	
60	90	15	3	5	6	8	9	11	12	14	15	
65	98	16	3	5	7	8	10	11	13	15	16	
70	105	18	4	5	7	9	11	12	14	16	18	
75	113	19	4	6	8	9	11	13	15	17	19	
80	120	20	4	6	8	10	12	14	16	18	20	
85	128	21	4	6	9	11	13	15	17	19	21	
90	135	23	5	7	9	11	14	16	18	20	23	
95	143	24	5	7	10	12	14	17	19	21	24	
100	150	25	5	8	10	13	15	18	20	23	25	
105	158	26	5	8	11	13	16	18	21	24	26	
110	165	28	6	8	11	14	17	19	22	25	28	
115	173	29	6	9	12	14	17	20	23	26	29	
120	180	30	6	9	12	15	18	21	24	27	30	

(Dosing table from IR conscious sedation for Renal cryoablation guideline – by Dr Ahmed Elwishi ⁵

Appendix 4

Calculations for weight-based dosing

ABW = Actual body weight (kg)

IBW = Ideal body weight (kg)

Devine formula:

Males: $IBW = 50\text{kg} + 0.9\text{kg} \times (\text{height in cm} - 152\text{cm})$

Females: $IBW = 45.5\text{kg} + 0.9\text{kg} \times (\text{height in cm} - 152\text{cm})$

AdjBW = Adjusted body weight (kg)

$AdjBW = IBW + 0.4 \times (ABW - IBW)$

Appendix 5

Ramsay Sedation Scale

The Ramsay Sedation Scale	
Clinical Score	Patient Characteristics
1	Awake; agitated or restless or both
2	Awake; cooperative, oriented, and tranquil
3	Awake but responds to commands only
4	Asleep; brisk response to light glabellar tap or loud auditory stimulus
5	Asleep; sluggish response to light glabellar tap or loud auditory stimulus
6	Asleep; no response to glabellar tap or loud auditory stimulus
Adapted from Ramsay MA, Savage TM, Simpson B, et al : Controlled sedation with alphaxalone-alphadolone. <i>British Medical Journal</i> 22;2(5920):656–659. doi: 10.1136/bmj.2.5920.656	

References:

1. He, X. Y., Cao, J. P., He, Q., & Shi, X. Y. (2014). *Dexmedetomidine for the management of awake fiberoptic intubation*. Cochrane Database of Systematic Reviews, 2014(1), CD009798. <https://doi.org/10.1002/14651858.CD009798.pub2>
2. Ahmad, I., El-Boghdadly, K., Bhagrath, R., Hodzovic, I., McNarry, A. F., Mir, F., O'Sullivan, E. P., Patel, A., Stacey, M., & Vaughan, D. (2019). *Difficult Airway Society guidelines for awake tracheal intubation (ATI) in adults*. *Anaesthesia*, 74(4), 509-528. <https://doi.org/10.1111/anae.14904>
3. Ramsay MA, Savage TM, Simpson B, et al: Controlled sedation with alphaxalone-alphadolone. *British Medical Journal* 22;2(5920):656–659. doi: 10.1136/bmj.2.5920.656
4. Crowe, G., Atterton, B., & Moran, L. (2022). *Perioperative applications of dexmedetomidine*. World Federation of Societies of Anaesthesiologists (WFSA) Virtual Library. <https://resources.wfsahq.org>
5. Elwishi, A. *IR Conscious Sedation for Renal Cryoablation Guideline*. St George's Hospital.