

Cost-Minimization Analysis of Dexmedetomidine Compared to Other Sedatives for Short-Term Sedation During Mechanical Ventilation in the United States [Corrigendum]

Aggarwal J, Lustrino J, Stephens J, Morgenstern D, Tang WY. *Clinicoecon Outcomes Res.* 2020;12:389–397. Tables 1–4 on pages 391-394, the reference citations listed in the Data Source columns are incorrect. The correct Tables 1–4 are shown below.

Table 1 Key Model Input Parameters

Parameter	Dexmedetomidine	Propofol	Midazolam	Data Source
Patient weight (kg)	82.5	82.5	82.5	Average weight of an adult in the US, Centers for Disease Control and Prevention ²²
Length of stay in ICU (days)	1.9	3.0	3.0	Maldonado et al ¹⁸
Duration of MV (days)	0.496	0.463	0.529	Intubation time, Maldonado et al ¹⁸
Sedative				
Treatment duration (hours)	13	11	10	Maldonado et al ¹⁸
% that receive loading dose (%)	100	0	0	Assumption based on study protocol, Maldonado et al ¹⁸
Loading dose (µg/kg)	0.4	–	–	
Duration of loading dose (min)	10	–	–	Assumption based on prescribing information ²⁴
Maintenance dose (µg/kg/hr or mg/kg/hr) ^a	0.35	1.578	0.018	Calculated dose for midazolam based on average patient weight used in model, Maldonado et al ¹⁸
Time to prepare one bag of sedative (seconds) ^b	35	–	35	Assumption based on time to prepare one emergency syringe, Fraind et al ²⁷ and Jelacic et al ⁴¹
Pain medication				
Total dose of morphine (mg)	50.3	51.6	122.5	Maldonado et al ¹⁸
Adverse events				
Occurrence of delirium (%)	10.0	44.4	42.5	ITT population, Maldonado et al ¹⁸

Notes: ^aDexmedetomidine: µg/kg/hr; propofol and midazolam: mg/kg/hr; ^b200 µg/bag of dexmedetomidine; 50 mg/bag of midazolam.

Abbreviations: ICU, intensive care unit; ITT, intention-to-treat; LOS, length of stay; MV, mechanical ventilation; US, United States.

Table 2 Cost Inputs

Variables	Cost (2018)	Data Source
ICU room and board, cost per day		
Day 1	\$11,421.91	Dasta et al ³
Day 2	\$5989.35	Dasta et al ³
Day 3+	\$5454.83	Dasta et al ³
MV, cost per day		
Day 1	\$7070.38	Dasta et al ³

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Table 2 (Continued).

Variables	Cost (2018)	Data Source
Day 2 Day 3+	\$2227.16 \$1343.15	Dasta et al ³ Dasta et al ³
Sedative preparation Pharmacist hourly rate	\$55.23	Society of Critical Care Medicine ²⁶
Respiratory monitoring costs Arterial blood gases, per ICU day	\$26.07	CPT 82,803, Blood gases any combination, CMS ²⁸
Physician consultation cost, per ICU day	\$226.80	CPT 99,291, Critical care first 30–74 minutes, CMS ²⁹
Tracheal intubation cost, per ICU stay	\$155.52	CPT 31,730, Introduction of indwelling tube for oxygen therapy ²⁹
Toxicology testing Benzodiazepine testing cost, per ICU treatment day if primary sedative was midazolam, per ICU stay if midazolam is administered for rescue sedation only	\$71.83	CPT 80,307, Drug test by chemistry analyzers ²⁸
Medication costs (wholesale acquisition cost per vial)		
Dexmedetomidine	\$42.00	200 µg vial, Truven Health Analytics ³⁰
Midazolam	\$1.92	50 mg vial, Truven Health Analytics ³⁰
Midazolam	\$0.55	5 mg vial for rescue sedation, Truven Health Analytics ³⁰
Propofol	\$3.88	500 mg vial, Truven Health Analytics ³⁰
Morphine	\$7.05	250 mg vial, Truven Health Analytics ³⁰
Atropine, 0.5 mg per bradycardia event	\$1.61	1 mg vial, Truven Health Analytics ³⁰
Haloperidol, 10 mg per delirium event	\$0.88	5 mg vial, Truven Health Analytics ³⁰
Labetalol, 20 mg per hypertension event	\$3.35	100 mg vial, Truven Health Analytics ³⁰
Norepinephrine, 4 mg per hypotension event	\$4.60	4 mg vial, Truven Health Analytics ³⁰
Cefazolin, 1 g per infection event	\$6.33	2 g vial, Truven Health Analytics ³⁰

Abbreviations: CMS, Centers for Medicare and Medicaid Services; CPT, current procedural code; ICU, intensive care unit; MV, mechanical ventilation.

Table 3 Sensitivity Analysis Clinical Inputs for Propofol Comparison

Parameters	Dexmedetomidine Arm		Propofol Arm		Data Source
	Lower Value	Upper Value	Lower Value	Upper Value	
Length of stay in ICU (days)	0.96	1.90	0.96	3.00	Corbett et al, ³² Maldonado et al ¹⁸
Duration of MV (days)	0.23	0.50	0.25	0.54	Djaiani et al, ¹⁴ Srivastava et al ¹⁵
Sedative Treatment duration relative to MV duration (± hours) ^a	-0.59	6.00	-0.44	-0.10	Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
% that receive loading dose (%)	90	100	0	100	Dexmedetomidine inputs did not vary in published literature, varied by 10% for analysis. Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵

(Continued)

Table 3 (Continued).

Parameters	Dexmedetomidine Arm		Propofol Arm		Data Source
	Lower Value	Upper Value	Lower Value	Upper Value	
Loading dose ($\mu\text{g}/\text{kg}$ or $\text{mg}/\text{kg}/\text{hr}$) ^a	0.40	1.00	0.00	4.00	Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Duration of loading dose (minutes) ^a	10.00	20.00	0.00	15.00	Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Maintenance dose ($\mu\text{g}/\text{kg}/\text{hr}$ or $\text{mg}/\text{kg}/\text{hr}$) ^b	0.31	0.55	0.04	2.00	Corbett et al, ³² Djaiani et al, ¹⁴ Srivastava et al ¹⁵
Time to prepare bag (200 μg) of dexmedetomidine or vial of propofol(seconds)	25	115	0	59	Fraind et al, ²⁷ Jelacic et al, ⁴¹ van der Linden ⁴²
Rescue sedation, midazolam % that receive rescue sedation (%)	0	100	0	100	Corbett et al, ³² Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Rescue sedative dose (mg)	0	1.5	0	1	Corbett et al, ³² Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Pain medication % treated with pain medication (%)	90	100	90	100	Inputs did not vary in published literature, varied by 10% for analysis. Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Total dose of morphine (mg)	2.95	50.30	6.00	51.60	Corbett et al, ³² Herr et al, ¹⁹ Maldonado et al ¹⁸
Adverse events					
Occurrence of bradycardia (%)	0	3	0	1	Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Occurrence of delirium (%)	0	12	0	44	Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Occurrence of hypertension (%)	0	12	0	4	Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Occurrence of hypotension (%)	0	81	0	67	Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Occurrence of infection (%)	0	10	0	10	Inputs did not vary in published literature, varied by 10% for analysis. Corbett et al, ³² Djaiani et al, ¹⁴ Herr et al, ¹⁹ Maldonado et al, ¹⁸ Srivastava et al ¹⁵

Notes: ^aDexmedetomidine: $\mu\text{g}/\text{kg}$; propofol: $\text{mg}/\text{kg}/\text{hr}$; ^bDexmedetomidine: $\mu\text{g}/\text{kg}/\text{hr}$; propofol: $\text{mg}/\text{kg}/\text{hr}$.

Abbreviations: ICU, intensive care unit; MV, mechanical ventilation.

Table 4 Sensitivity Analysis Clinical Inputs for Midazolam Comparison

Parameters	Dexmedetomidine Arm		Midazolam Arm		Data Source
	Lower Value	Upper Value	Lower Value	Upper Value	
Length of stay in ICU (days)	1.90	2.73	3.00	4.23	Azeem et al, ¹³ Maldonado et al ¹⁸
Duration of MV (days)	0.19	0.50	0.52	0.54	Azeem et al, ¹³ Srivastava et al, ¹⁵ Wan et al ¹⁶

(Continued)

Table 4 (Continued).

Parameters	Dexmedetomidine Arm		Midazolam Arm		Data Source
	Lower Value	Upper Value	Lower Value	Upper Value	
Sedative					
Treatment duration relative to MV duration (\pm hours)	-0.59	2.80	-2.70	-0.80	Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
% that receive loading dose (%)	0%	100%	0%	100%	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Loading dose ($\mu\text{g}/\text{kg}$ or mg/kg) ^a	0.00	1.00	0.00	0.04	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Duration of loading dose (min)	0.00	15.00	0.00	15.00	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Maintenance dose ($\mu\text{g}/\text{kg}/\text{hr}$ or $\text{mg}/\text{kg}/\text{hr}$) ^b	0.35	0.72	0.02	0.44	Azeem et al, ¹³ Maldonado et al, ¹⁸ Wan et al ¹⁶
Time to prepare one bag of sedative (sec) ^c	25	115	25	115	Fraind et al, ²⁷ Jelacic et al, ⁴¹ van der Linden ⁴²
Rescue sedation, midazolam					
% that receive rescue sedation (%)	0	100	-	-	For the midazolam arm, considered in sensitivity analysis for the primary sedative Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Rescue sedative dose (mg)	0	6.7	-	-	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Pain medication					
% treated with pain medication (%)	90	100	90	100	Inputs did not vary in published literature, varied by 10% for analysis. Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Total dose of morphine (mg)	17.61	50.30	37.21	125.06	Azeem et al, ¹³ Maldonado et al, ¹⁸ Wan et al ¹⁶
Adverse events					
Occurrence of bradycardia (%)	0	25	0	10	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Occurrence of delirium (%)	0	10	0	43	Maldonado et al, ¹⁸ Srivastava et al ¹⁵
Occurrence of hypertension (%)	0	10	0	10	Inputs did not vary in published literature, varied by 10% for analysis. Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Occurrence of hypotension (%)	0	28	0	11	Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶
Occurrence of infection (%)	0	10	0	10	Inputs did not vary in published literature, varied by 10% for analysis. Azeem et al, ¹³ Maldonado et al, ¹⁸ Srivastava et al, ¹⁵ Wan et al ¹⁶

Notes: ^aDexmedetomidine: $\mu\text{g}/\text{kg}$; midazolam: mg/kg ; ^bDexmedetomidine: $\mu\text{g}/\text{kg}/\text{hr}$; midazolam: $\text{mg}/\text{kg}/\text{hr}$; ^c200 $\mu\text{g}/\text{bag}$ of dexmedetomidine; 50 mg/bag of midazolam.

Abbreviations: ICU, intensive care unit; MV, mechanical ventilation.

Page 397, references 41 and 42 are missing from the reference list. These references are shown below.

41. Jelacic S, Craddick K, Nair BG, et al. Relative Costs of Anesthesiologist Prepared, Hospital Pharmacy Prepared and Outsourced Anesthesia Drugs. *Journal of Clinical Anesthesia*. 2017;36:178-183.

42. van der Linden P, Douchamps J, Schmitt C, Forget D. Ready-to-Use Injection Preparations versus Conventional Reconstituted Admixtures: Economic Evaluation in a Real-Life Setting. *PharmacoEconomics*. 2002;20(8):529-536.

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