

Abstract Title: DESIGN AND IMPLEMENTATION OF AN EHR-BASED PROPOFOL DECISION SUPPORT TOOL FOR TOTAL INTRAVENOUS ANESTHESIA

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Introduction: Propofol-based total intravenous anesthesia (TIVA) is used increasingly due to its smaller carbon footprint compared to inhalational anesthesia and association with decreased incidence of post-anesthesia nausea and emergence delirium. Propofol must be drawn up into syringes from vials for each patient and large volumes of propofol are often wasted for short procedures because only 10 mL and 50 mL vials are available. Clinicians also often use a “set-and-forget” approach to propofol dosing, resulting in over-dosing and delayed anesthesia emergence. Thus, we designed and implemented a propofol dosing calculator in our electronic health record (EHR) system to display anticipated propofol volume to draw up for each case and guide dosing changes to maintain a target effect site concentration of 3 mcg/mL. We calculated the potential propofol savings that would have occurred if this tool had been used.

Methods: A team of EHR analysts and clinical champions designed and implemented a propofol dosing tool in the EHR (Epic™, Verona, WI). Patient weight and age are used to generate a table of total anticipated propofol volume based on expected infusion duration. An age-appropriate dosing table based on pharmacokinetics and electroencephalography was generated. Estimated propofol saved using the dosing tool was calculated for microlaryngoscopy and bronchoscopy (MLB), a common short procedure usually performed with TIVA, from January 1 to June 17, 2021.

Results: The tool was built and added to the EHR pre-procedure navigator (Figure 1). During the study period, 117 MLBs were conducted in patients with mean age 3.8 years, mean weight 16 kg, and mean procedure duration 44 minutes. The standard approach consists of drawing up 50mL propofol; the tool recommends 25 mL of propofol. Given a hypothetical (nonsensical) scenario of 100% adherence and all patients with the mean characteristics, a total of 2.9 L of propofol could have been saved using the tool for MLBs.

Conclusion: An EHR-based propofol decision support tool is feasible and can potentially optimize propofol dosing, infusion management, and drug usage. Future plans include measuring the use of the tool, collecting user feedback, and comparing propofol use and dosing with and without the tool.

Propofol Dosing

Today's Date:
Age:

Patient weight, kg	12	
Propofol bolus dose, mg/kg	3	
Infusion time period and dosing	mcg/kg/min	Propofol bolus + infusion quantity, mL
0-15 minutes	200	7
16-30 min	175	10
31-60 min	156	16
61-120 min	149	27
121-180 min	143	37
181-300 min	136	57

Age group	<u>0-1 mo</u>	<u>1-3 mo</u>	<u>3-6 mo</u>	<u>6-12 mo</u>	<u>12-36 mo</u>	<u>3-12 yrs</u>	<u>13-21 yrs</u>
Propofol bolus mg/kg	3.5	3	3	3	3	3	3
Propofol 0-15 min ($\mu\text{g/kg/min}$)	183	200	200	208	217	250	200
Propofol 16-30 min ($\mu\text{g/kg/min}$)	167	183	192	200	200	217	175

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