

## Short Communication

# Formula for Ensuring Accurate Loading Dose of Dexmedetomidine

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Dexmedetomidine is a very commonly used sedative agent for procedural sedation, as a part of balanced anaesthesia and in intensive care units for to facilitate mechanical ventilation or for sedation [1]. A loading dose of 1 µg/kg is administered intravenously over 10-15 minutes followed by a maintenance infusion of 0.2-0.7 µg/kg/hour. Many clinicians do not infuse a loading dose and prefer a maintenance infusion due to bradycardia and hypotension [2]. On several occasions, the loading dose is not interrupted in time which leads to undesirable hemodynamic outcomes. Avoiding a loading dose might lead to an inadequate sedation. What is described below is a loading dose calculation technique which delivers the exact dose that a clinician wants to infuse in 10 minute. In this method, the infusion has to be prepared in a 50 cc syringe in which a 2 ml ampoule of dexmedetomidine i.e. 200 µg has to be diluted using 48 ml normal saline. The solution now has 4 µg/ml of dexmedetomidine. The clinician should decide the loading dose which is required as per body weight as some clinicians prefer a lesser loading dose i.e. 0.5 µg/kg or 0.75 µg/kg in patients with renal dysfunction, hepatic dysfunction or elderly patients where dose adjustment is recommended [3]. Once loading dose is decided, find out how much ml of the prepared solution contains the required dose. Multiply it by 6 (which is 60 min). Divide the number that you get by 10. The number obtained by this is the rate at which dexmedetomidine infusion has to be started for next 10 minutes. This will precisely infuse the required dose of dexmedetomidine which the clinician desires. For ex. a dose of

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Submitted: 03 July 2017

Accepted: 11 July 2017

Published: 13 July 2017

ISSN: 2333-6641

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60 µg has been decided as a loading dose over 10 minutes. 60 µg will be present in 15 ml. multiply 15 by 60, which is 900. We get 90 when we divide 900 by 10. So, in order to infuse 60 µg in 10 minutes an infusion has to be 90 ml/hr for 10 minutes.  $15 \times 60 = 900$   $900 / 10 = 90$  ml/hr over 10 min.] Some clinicians prefer a loading dose over 15 minutes so as to avoid bradycardia and hypotension due a faster loading rate. For loading in 15 minutes, again a solution of dexmedetomidine in 50 cc syringe with a concentration of 4 µg/ml is required. Decide a loading dose and start infusion at a rate of the decided loading dose per hour. At the end of 15 minutes, the desired loading dose will be accurately infused intravenously.

For ex: a dose of 60 µg is required as a loading dose in 15 minutes. Start the infusion at 60 ml/hr. At the end of 15 minutes, 15 ml will be infused which equals to 60 µg.]

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### Cite this article

Nair AS (2017) Formula for Ensuring Accurate Loading Dose of Dexmedetomidine. *Int J Clin Anesthesiol* 5(3): 1073.