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Frequently asked questions about naloxone: IM vs. IN naloxone

What types of naloxone dosage forms are available?

After naloxone was taken off the prescription drug list, the primary dosage form was an intramuscular (IM) injection (Krieter et al., 2016; Lewis et al., 2017). In 2016 intranasal (IN) naloxone was approved by Health Canada (Health Canada Allowing Immediate Access to Naloxone Nasal Spray, 2016). Evidence shows that both dosage forms are effective at reversing opioid overdoses (Rzasa Lynn & Galinkin, 2018).

Are there pharmacokinetic differences between IM and IN naloxone?

The two dosage forms commonly used in Canada, the IM injection and the Narcan™ nasal spray, have not been tested head to head for differences in onset or duration of action. However there have been studies in other jurisdictions comparing IM vs. IN routes of administration. A few studies have reported slightly delayed Tmax values for IN doses compared to IM doses: 30 min vs. 22.8 min (Tylleskar et al., 2017) and 15-30 min vs. 10 min (McDonald et al., 2018). Conversely, one study found that the IN formulation resulted in a faster rise in plasma concentration, by 2.5 minutes, which suggests a potential advantage compared to IM naloxone. Despite these and other differences, there is no indication that one product is superior over the other Also remember - Narcan™ nasal spray nasal administration of naloxone was done using the IM product with improvised atomizers.

How do IM and IN naloxone compare when used in the real world?

Again, the two dosage forms commonly used in Canada, the IM injection and the Narcan™ nasal spray, have not been tested head to head for differences in efficacy in Canada. In other jurisdictions using different formulations, differences have been measured in clinical trials between the two routes of administration. However, a systematic review of IN and IM naloxone concluded that both provided adequate exposure to reverse an opioid overdose with IN naloxone being appropriate for most patients excluding those with known nasal pathology (Ryan & Dunne, 2018). With respect to training and comfort around naloxone, IN naloxone was administered faster and more effectively than IM naloxone by members of the public in a simulated overdose situation (Eggleston et al., 2018).

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