



## Shared Learning

from the Dental Patient Safety Foundation Reporting Tool

“What gets measured gets managed” is the DPSF philosophy to encourage reporting. All received information about patient safety events (unsafe conditions, near misses or adverse events) are de-identified contextually (confidentiality is fully protected under federal law), aggregated, analyzed and abstracted by selected experts from our DPSF committees. Reports are generated and disseminated as the only means to learn from our errors. The information in these peer-reviewed reports is provided for its educational value only, and does not purport to establish any legally binding standard of care. Feedback is encouraged.

### Case 2022.2A: Medication Dosing Errors, Again.

#### SITUATION:

A combative 28 y/o male, 6'2", 240<sup>#</sup> (BMI = 30.8) with autism spectrum disorder and well controlled grand mal seizure disorder (last seizure 2 years prior) presents for dental rehabilitation, including several extractions. Current medications include levetiracetam (Keppra™), Lorazepam (Ativan™), amphetamine/dextroamphetamine (Adderall™) and medical cannabis. Prior anesthetic history for prior dental work is positive for PONV, no other complications. Lungs are clear to auscultation, pulse is regular at 72bpm, and airway is a Mallampati II. The patient's behavior precluded routine IV or inhalation induction. Planned premedication included IM ketamine 300mg and midazolam 2mg, in one syringe.

A resident in training prepared the syringe for IM injection and showed it to the attending doctor. The syringe containing both drugs showed the appropriate volume and the resident confirmed the dosage. After IM injection into the vastus lateralis, the patient became extremely somnolent, much more so than one would anticipate given the prescribed dose. Monitors were applied and the patient was intubated and maintained with sevoflurane for the three hour case.

Upon completion of the procedure, the patient was extubated after meeting extubation criteria. However, recovery from anesthesia was noticeably prolonged and the patient remained somnolent although vital signs were stable and he was ventilating well to maintain acceptable SpO<sub>2</sub> levels. The conduct of the anesthesia was reviewed; no reasons for delayed recovery were identified (*see DPSF Case 2018.8A.*) Upon reviewing the premedication, it became apparent that the resident prepared the midazolam as 2cc from a 5mg/cc vial, rather than 2cc from a 1mg/cc vial. Thus the patient received 300mg ketamine + **10mg midazolam** instead of 300mg ketamine + **2mg midazolam**. Aside from delayed recovery, there were no adverse outcomes and the patient eventually met discharge criteria.

#### WHAT WE LEARNED:

This case reinforces the importance of double and triple checking drug concentrations, storage vials and appropriate syringe labelling prior to drug administration. Extra care is required when drugs are diluted from their original supplied concentrations and/or when multiple drugs are combined in the same syringe. Syringes must always be accurately labelled with drug name and final concentration in the syringe. Mixing drugs in the same syringe may not be considered best practice by some, however, clinical utility for this case mandated that method of drug delivery. All drugs are “mixed” in the body, it makes little difference on which side of the IV catheter mixing occurs, as long as the mixed drugs are chemically compatible.

**Medication errors are not infrequent and continue to occur, especially when vials are similar in appearance (size, shape, color.)** This error received national attention in 2007, when newborn twins of a noted movie actor received the wrong dose of heparin. No permanent harm occurred, and the manufacturer eventually placed a red caution label on the vials to help reduce future errors.



1. Those who do not remember or learn from history are doomed to repeat it
2. This case, like many others, highlights human error and the continual need for systems to prevent adversity from error. Human factor engineering makes it easier to do the right things and more difficult to do the wrong things.
3. Paying close attention to the little things often make a huge difference
4. Closed claims or patient registries would have missed this “close call”. The DPSF encourages reporting so all can learn from the mistakes of others. Near misses and close calls are wonderful opportunity to improve the quality and safety of patient care, as they are much more frequent than, and do not cause patient injury.

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