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What's New in the Patient Safety World

September 2021

Another Unusual Cause for a 10-Fold Overdose

Our May 4, 2021 Patient Safety Tip of the Week "More 10x Dose Errors in Pediatrics" discussed multiple examples of errors leading to 10-fold (or higher) overdoses of medications and discussed many factors contributing to such errors.

A recent case from New Zealand (Connor 2021) highlights yet another factor contributing to such events. A 4-year-old boy with cerebral palsy was admitted to a New Zealand hospital for a surgical procedure intended to reduce his lower extremity spasticity. At one point during his recovery from the surgery he became confused and looked angry. Staff gave him morphine, thinking his symptoms may have been secondary to pain. However, he became lethargic, then obtunded, with his tongue "hanging out" and snoring. Despite his mother's pleas that something was terribly wrong, "it took three-and-a-half hours for them to agree that there was something really wrong - and that's when he coded".

Staff originally suspected the morphine as the reason for his deterioration. But his mother insisted the changes had begun to take place prior to administration of morphine. That finally led to a review of all his medications.

At the time of admission, hospital policy required his mother to hand over any of the medicines she gives her son while he is at home. One of those was baclofen, which he took for his spasticity. The staff used the baclofen from his home supply. But, at some point, they got the pharmacist in the hospital to make up his medicine and switched to the hospital supply. The concentration of the patient's personal supply of baclofen was 1 mg/ml and that of the hospital pharmacy supply was 10 mg/ml. Up until then they'd been giving 7 ml out of the home supply bottle and it was supposed to swap to 0.7 ml out of the hospital supply bottle. "The poor nurse had gone away and checked, and he was told that 7 ml was right, came back and gave it" according to the mother. Thus, he had received a 10-fold overdose of the baclofen. He required transfer to the Pediatric ICU but ultimately recovered fully.

Hospitals in the US generally do not allow administration of medications brought in from home while a patient is an inpatient. However, occasionally a patient might be taking a

medication that is not on the hospital formulary. In such cases, hospital staff may temporarily use the patient's home supply, as was done at the New Zealand hospital. The time of subsequent transition to a hospital's supply of a medication is obviously a period of vulnerability.

It's not really surprising that a nurse, used to administering 7 ml from a vial, would expect to continue administering that amount. We assume there was a new order when the switch to the hospital supply occurred. But even that may have been confusing. Would one use the same size syringe (or whatever instrument was used for administration) for the new dose was supposed to be less than 1 ml? The nurse apparently did some sort of check about the amount to be given, but concluded that 7 ml was still appropriate, not recognizing the disparity in concentration of the preparation.

A second lesson learned here is not to ignore the observations and concerns of a patient's family member. There are many incidents, including the Josie King case that was a seminal event in the patient safety movement, in which concerns of a parent went unheeded as clinical deterioration was occurring.

We suggest you go back to our May 4, 2021 Patient Safety Tip of the Week "More 10x Dose Errors in Pediatrics" for many more details on factors contributing to 10-fold overdoses.

Some of our other columns on 10-fold medication dose errors:

March 12, 2007	"10x Overdoses"
September 9, 2008	"Less is More and Do You Really Need that Decimal?"
January 18, 2011	"More on Medication Errors in Long-Term Care"
April 17, 2012	"10x Dose Errors in Pediatrics"
May 4, 2021	"More 10x Dose Errors in Pediatrics"

Some of our other columns on pediatric medication errors:

November 2007	"1000-fold Overdoses by Transposing mg for micrograms"
December 2007	"1000-fold Heparin Overdoses Back in the News Again"
September 9, 2008	"Less is More and Do You Really Need that Decimal?"
July 2009	"NPSA Review of Patient Safety for Children and Young People"
June 28, 2011	"Long-Acting and Extended-Release Opioid Dangers"
September 13, 2011	"Do You Use Fentanyl Transdermal Patches Safely?"
September 2011	"Dose Rounding in Pediatrics"
April 17, 2012	"10x Dose Errors in Pediatrics"
May 2012	"Another Fentanyl Patch Warning from FDA"
June 2012	"Parents' Math Ability Matters"
September 2012	"FDA Warning on Codeine Use in Children Following Tonsillectomy"

May 7, 2013	"Drug Errors in the Home"
May 2014	"Pediatric Codeine Prescriptions in the ER"
November 2014	"Out-of-Hospital Pediatric Medication Errors"
January 13, 2015	"More on Numeracy"
April 2015	"Pediatric Dosing Unit Recommendations"
September 2015	"Alert: Use Only Medication Dosing Cups with mL Measurements"
November 2015	"FDA Safety Communication on Tramadol in Children"
October 2016	"Another Codeine Warning for Children"
January 31, 2017	"More Issues in Pediatric Safety"
May 2017	"FDA Finally Restricts Codeine in Kids; Tramadol, Too"
August 2017	"Medication Errors Outside of Healthcare Facilities"
August 2017	"More on Pediatric Dosing Errors"
September 2017	"Weight-Based Dosing in Children"
February 19, 2019	"Focus on Pediatric Patient Safety"
June 2020	"EMR and Medication Safety: Better But Not Yet There"
December 2020	"Guidelines for Opioid Prescribing in Children and Adolescents After Surgery"
May 4, 2021	"More 10x Dose Errors in Pediatrics"

References:

Connor F. Young boy 'almost killed' after 'accidentally' given 10 times normal dose of medication at Starship Hospital. Newshub 2021; July 26, 2021 https://www.newshub.co.nz/home/new-zealand/2021/07/young-boy-almost-killed-after-accidentally-given-10-times-normal-dose-of-medication-at-starship-hospital.html

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Home

Tip of the Week Archive

What's New in the Patient Safety World Archive