1066898 - TENFOLD MEDICATION ERRORS IN PEDIATRIC HOSPITAL PRACTICE

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Introduction: Tenfold medication errors are a significant source of patient risk especially so in pediatric practice due to wide variations in age, weight, dosing ranges, formulations, drug dilutions and off-label practices. When tenfold medication errors occur in pediatric practice they can have a significant impact on patient morbidity, however, very little study has been done to characterize tenfold medication errors, the drugs involved and the etiology of these errors in pediatric practice. Our aim in this study was to examine all tenfold medication errors reported within an academic, university-affiliated pediatric hospital over a prolonged period of time in order to better understand tenfold medication errors in pediatric practice.

Methods: In a 300-bedded quaternary pediatric centre we evaluated all medication-related safety reports submitted to a voluntary safety reporting database over a five year study period. Main outcome measures comprised - reporting rates, type of errors, frequency of errors, drugs and drug classes involved, patient harm, sources, mechanisms and contributing causes to tenfold pediatric medication errors.

Results: From 6,000 medication-related safety reports, 272 tenfold medication errors were identified between July 1st 2004 and June 31st 2009. Tenfold medication errors accounted for a mean annual reporting percentage of 4.5% of all medication-related safety reports and were reported at a mean rate of 0.62 per thousand total patient days. 178 overdoses were reported and 74 underdoses. Morphine was the most frequently reported drug and opioids the most frequently reported drug class. 22 reports described patient harm due to tenfold medication error. Intravenous formulations, CPOE, paper ordering and drug delivery pumps were frequent error enablers and errors of dose calculation, documentation of decimal points and multiple zeroes were frequent contributing causes to tenfold drug error. PICU and NICU were common sites of tenfold medication error but most patient harm occurred on hospital wards when tenfold errors with morphine, hydromorphone, fentanyl, insulin and heparin were reported.

Discussion: This is the first study to comprehensively report tenfold medication errors and their causative factors in pediatric practice, it is also the largest database of pediatric tenfold medication errors reported to date. We discuss recommendations of vigilance for specific drugs in specific hospital locations, recommendations for pharmacotherapy clinical care bundles for sepsis in ER, PICU and NICU. We discuss recommendations for opioid ordering and dispensing, and for the development of new intravenous pumps and drug delivery systems.