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222. Unintentional pediatric opioid exposures reported to the ToxIC Case Registry

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Background: As prescribing rates and availability of prescription opioid analgesics has dramatically increased since the 1990's so did unintentional pediatric exposures to these medications. Buprenorphine is a partial agonist at the mu receptor and as such it has a ceiling effect related to CNS and respiratory depression. It is reported to be a safer opioid with regard to the risk of respiratory failure during exposure compared to full mu receptor agonists yet it is one of the most common opioids reported in pediatric patients hospitalized from unintentional exposure to opioid analgesic agents.

Hypothesis: Toxicity from unintentional pediatric opioid ingestions may result in different pattern and severity of toxicity depending upon the specific agent exposure.

Methods: Retrospective review of the Toxicology Investigators Consortium Case Registry (ToxIC) for unintentional pharmaceutical exposures in children aged 0-2 and 2-6 years from 1/1/2010 to 2/19/2015.

Results: 1,762 cased of unintentional pharmaceutical exposures were reported, 13.5% of these involved opioids (n = 238). The most common opioid was buprenorphine (91), followed by methadone (37), oxycodone (30), morphine (14), tramadol (14), hydrocodone (5), and codeine (5). Buprenorphine was the most common opioid in every year (2010-2015) and in both age groups (< 2 and 2 to 6). Naloxone was given in a higher % of morphine exposures (57%) compared to buprenorphine (47%), methadone (43%), oxycodone (40%), and hydrocodone/codeine (both 20%). No tramadol exposures were given naloxone. Tramadol had less reported CNS depression/coma (18%) compared to buprenorphine (59%), methadone (57%), oxycodone (53%) and morphine 57%). Bradypnea (RR < 10) was reported most commonly for morphine (21%) and methadone (19%) compared to buprenorphine (7%), oxycodone (4%), tramadol (0) and hydrocodone (0) and codeine (0). Seizures were reported in 27% of tramadol exposures. 2 deaths were reported one each in methadone and morphine.

Discussion: The ToxIC Case Registry represents a novel mechanism for understanding the types of pediatric poisonings that require Medical Toxicology consultation. Despite the partial agonist effect unintentional buprenorphine exposures appear to result in similar toxicity as other opioid medications in children. Effects other than mu activity are important in the toxicity profile of opioids as a significant proportion of tramadol exposures had seizures whereas none of the other opioid exposures did.

Conclusions: Data from the ToxIC Registry involving therapeutic use helps characterize and understand the more severe type of intoxications associated with this type of ingestion