

## Delayed Transition of Urine Drug Immunoassay from Negativity to Positivity in a Toddler with Exploratory Ingestion of Methadone

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### BACKGROUND

Exploratory ingestion of prescription opioids can be dangerous to young children. Hospitalizations for opioid poisoning among children have increased over the past decade. There is uncertainty among emergency healthcare providers regarding the appropriate length of time to keep an asymptomatic young child under medical observation after a possible methadone ingestion, and there is uncertainty regarding the role of urine drug test results in decision making.

### CASE REPORT

A 16-month-old boy gained access to his grandfather's pill bottle containing two 10mg methadone tablets and one lorazepam at 17:30. His mother found the lorazepam and one of the methadone tablets untouched, and one methadone table was swept "mostly intact" from his mouth. A urine sample was obtained from the boy at 7 hours 20 minutes after the exposure: it was qualitatively negative for methadone on the Vitros 5600 system (Ortho Clinical Diagnostics) at a threshold concentration of 150 ng/mL (quantitative value 112 ng/mL). The immunoassay was repeated using a urine sample collected 16 hours post-exposure, and this sample tested qualitatively positive (quantitative value 361 ng/mL). Presence of methadone in the urine was confirmed using gas chromatography / mass spectroscopy. The boy remained asymptomatic and well.

### DISCUSSION

In therapeutic doses ingested by adults, methadone has a bioavailability of 40-90% and peak plasma concentrations are reached between 1 to 7.5 hours. There is concern that peak respiratory depression may occur later than peak analgesia. Methadone undergoes biotransformation and is eliminated by renal and fecal routes; the Vitros system tests for methadone in urine. We present a case demonstrating that a young child may have a negative urine drug immunoassay at 7 hours, using a reporting threshold of 150 ng/mL, that will subsequently become positive. Once again, grandparent medications in containers bypassing child-resistant closures is noted as a risk factor for pediatric poisoning injury.

### CONCLUSION

Poison control centers and emergency providers are cautioned against using urine methadone immunoassay results, with samples obtained within 7 hours of ingestion, to "medically clear" exposed pediatric patients. The test performance characteristics, and optimal threshold values, in this setting merit further elucidation.