Toxicology Focus

Toxicology Updates for Health Care Providers

October, 2014

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POISON Help 1-800-222-1222

Virginia Poison Center

POISONS IN THE NEWS

Twelve d-CON® Mouse and Rat Control Products being Cancelled

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A 'Notice of Intent to Cancel' for products containing long-acting coagulants was released by the EPA in February 2013. Distribution of these products ended on March 31, 2014 and by December 31, 2014, twelve of the d-Con® rat and mouse bait products will no longer be in production. Eight of the twelve products being discontinued contain brodifacoum, a second generation long-acting anticoagulant. The EPA's decision to discontinue these products is in response to high levels of pediatric, domestic and wild animal exposures reported by poison control centers nationwide. In 2013, the Virginia Poison Center received 89 human exposure calls to long-acting anticoagulants, with 30 exposures to children 5 years and younger and 8 intentional exposures in adults. Since January, 2014, there have been a total of 39 reported human exposures and 20 animal exposures related to brodifacoum based products.

Brodifacoum and other long-acting anticoagulants induce long term coagulopathies through inhibition of the active form of Vitamin K (subunit 1of the Vitamin K epoxide reductase complex) ultimately inhibiting coagulation factors II, VII, IX, and X production. Acute toxicity is rare and in a retrospective review of 10,733 cases involving a single, acute, unintentional brodifacoum ingestion in children less than 7 years old, no deaths or major adverse effects were reported. Ingestions of less than a box (1.5 oz.) of a 0.01% brodifacoum containing product rarely cause clinical or laboratory evidence of coagulopathy. So action is being based on the number of exposures and not necessarily the risk for inadvertent pediatric exposures. Animals and wildlife however, can readily eat large amounts and human exposures from intentional ingestions can develop coagulopathies lasting upwards of four months or more.

References:

Micromedex® Health Care Series © 2014 Truven Health Analytics Inc. MICROMEDEX(R) Healthcare Series Vol. 161
http://www2.epa.gov/rodenticides/canceling-some-d-con-mouse-and-rat-control-products

"BOLO": Be on the Lookout

Powdered Caffeine: This hit the news mid-summer with the death of a teen wrestler in Ohio. The problem: it is marketed as a "dietary supplement" under the FDA dietary and nutrition regulations. A single dose of 1/16th teaspoon contains an average 200 mg caffeine which equals a single over the counter stimulate tablet or about two large cups of coffee. Risks: CNS stimulation, seizures, tachycardia, myocardial events.

Nicotine refills: Over the last few years, e-cigarettes and "vaping" has increased in popularity. The e-cigarette cartridge itself can contain varying amounts of nicotine along with flavoring agents, glycerin and propylene glycol. FDA analysis indicate some brands contain diethylene glycol and tobacco specific nitrosamines. Additional concerns are with the E-cigarette refill bottles. There are no safety control measures (such as child resistant caps) to deter childhood curiosity and inadvertent exposures. Concentrations of nicotine can be as high as 100 mg/ml and noted mg concentrations on labels can vary as much as 20%. Products also can be in a 100% propylene glycol base or a mix of 70% - 30% propylene glycol to glycerin blend. Refill bottles may contain upwards of 30-60 ml per bottle equivocating to 3000 to 6000 mg of available nicotine for a child to drink. Clinical effects include gastritis, tremors, diaphoresis, hypertension, tachycardia, and severe effects include seizures, bradycardia, hypotension and respiratory muscle paralysis.

References: M L Goniewicz, et.al. *Nicotine Levels in Electronic Cigarettes.* Nicotine & Tobacco Research, Volume 15, No. 1 (January, 2013), 158-166.
B Davis, et.al. *Nicotine Concentrations in Electronic Cigarette Refill and Do-It-Yourself Fluids*. Nicotine & Tobacco Research, first published online May 26, 2014 doi:10.1093/ntr/ntu/080

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NACCT

The North American Congress of Clinical Toxicology is an annual scientific meeting which brings health care professionals and scientists together from around the world to share knowledge, research and innovations in the field of clinical toxicology.

2014 NACCT
Annual Meeting
New Orleans, LA
October 17-21, 2014

In October, 2014
Hydrocodone containing drugs
become DEA Schedule II

As of August, 2014
Tramadol is DEA Schedule IV

UTILITY OF THE URINE DRUG SCREEN

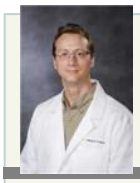
Kevin Maskell, MD, Toxicology Fellow

One of the more common labs sent in any emergency department is the urine drugs of abuse screen (UDS). It is also one of the most commonly misinterpreted. A variety of patients have this lab test done: altered mental status patients with no clear cause, an intoxicated patient as confirmation of a reported ingestions, or even trauma and psychiatry patients as part of established routine bundles. The question that rarely is asked —What does it tell us and do we need it?

What the UDS tells us is one of the biggest points of confusion. Most drug screens were not intended for clinical use. The typically are based around the "NIDA-5," a recommendation from 1988 for a list of five drugs for which federal employees should be screened. As a result, even on larger expanded panels, the detected drugs tend towards substances with legal ramifications rather than those that will affect clinical management. Even in cases where the detected agent might have clinical relevance, UDS panels are generally neither sensitive nor specific. This is especially true when results are described in broad categories. A "negative" screen for opiates only indicates the absence of a particular metabolite of morphine. While heroin and codeine produce this metabolite, others such as fentanyl do not and will give a false negative. A similar situation exists for benzodiazepine screens, which usually detect a common metabolite (oxazepam) generated by some drugs (alprazolam, diazepam, temazepam) but not others (lorazepam). Some screening panels will account for this by including additional substance specific tests, but gaps still remain.

Perhaps more concerning is the possibility for false positives noted on the UDS. A classic example is the amphetamine screen which has known issues with false positives for a wide range of medications from bupropion to pseudoephedrine to ranitidine. Other examples include dextromethorphan testing positive for PCP and diphenhydramine testing positive for tricyclic antidepressants. Confirmatory tests are available and commonly used forensically but have long turn-around times and are rarely used clinically. Therapeutic drugs administered before the urine sample is collected must also be addressed—did the test just detect the midazolam used for sedation, or was the patient already on some other benzodiazepine?

Ultimately, as with any other test, the UDS must be ordered with an eye towards the test's limitations and what clinical management changes will happen with a positive or negative result. Specific tests for specific drugs of concern are always reasonable, such as APAP or ASA levels in suicidal overdose patients. Systems issues may also dictate that a UDS is necessary for a patient's disposition. If a positive UDS will not change your management though, then consider whether the test is truly necessary or not.



HIPPA and the Virginia Poison Center

Kirk Cumpston, DO, Medical Director

Have you ever been concerned about HIPPA implications of providing patient information to the Virginia Poison Center? Sometimes, hospital staff are reluctant to give this information because they fear it may violate the patient's privacy rights or their facility's policy. Here is some clarification on our HIPPA status:

When health care providers consult the poison center, it is for diagnostic and treatment advice regarding a specific patient. The poison center staff cannot advise the treating physician without having complete patient information which includes physical examination findings, laboratory data and results from ancillary testing. These circumstances are certainly no different from when a physician requests consultation from any other specialist. The only difference is that the poison center staff do not evaluate their patients in person, and thus must gather the data via telephone. Since these interactions take place over the phone, the Federal Government has taken steps to clarify the role of poison centers. The following information was published in the Federal Register on Thursday, December 28, 2000, under Rules and Regulations, p. 82626.

HIPPA Privacy Regulations, Federal Register Vol. 65, No. 250:

*"We note that **poison control centers** are health care providers for purposes of this rule. We consider the counseling and follow up consultations provided by **poison control centers** with individual providers regarding patient outcomes to be treatment. Therefore, **poison control centers** and other health care providers can share protected health information about the treatment of an individual without a business associate contract."*

In addition, the Virginia Poison Center, as required by state and national standards, creates a confidential medical record for each patient. Patient names are necessary to accurately identify individual patients so that information is not inadvertently provided for the wrong patient. With the recent increased attention to prevention of medical errors, hospitals should understand and agree with the importance of proper patient information.

So—provision of patient data to poison centers is not only allowable, but is encouraged and the right thing to do.