We are pleased to present the quarterly newsletter focusing on the latest services and technologies for hospital laboratory testing. Our goal at MEDTOX has always been to provide our clients with the highest level of service in the industry and the Quarterly Review is another way to keep you informed and up-to-date on what is new at MEDTOX and in the industry.

NonMedical Use of Prescriptions increase ER Visits

A study by the Substance Abuse and Mental Health Services Administration (SAMSHA) and the Centers for Disease Control and Prevention (CDC) over a five-year period, showed a 111% increase in Emergency Department visits involving nonmedical use of prescription opioid pain relievers.

The three prescription opioid pain relievers most frequently involved in hospital emergency department visits from 2004 to 2008 were:

*Oxycodone products – Nonmedical use ER visits increased 152%  
Picked up on MEDTOXScan Profile V at 100 ng/ml under OXY assay
*Hydrocodone products – Nonmedical use ER visits increased 123%  
Picked up on MEDTOXScan Profile V at 400 ng/ml under OPI assay
*Methadone products – Nonmedical use ER visits increased 73%  
Picked up on MEDTOXScan Profile V at 200 ng/ml under MTD assay

Prescription pain relievers such as *morphine, fentanyl and **hydromorphone were found to be involved in fewer incidents of nonmedical use ER visits, but showed sharp increases.  
Hydromorphone-related nonmedical ER visits increased 259% during the study period.  
*Morphine is picked up on MEDTOXScan Profile V at 100 ng/ml under OPI assay  
**Hydromorphone is picked up on MEDTOXScan Profile V at 800 ng/ml under OPI assay

The full article is available at: http://www.cdc.gov/media/pressrel/2010/r100617.htm

Meconium Testing at MEDTOX

Meconium is the initial stool a baby produces for 1 – 3 days after birth. Meconium is the gold standard for detecting drugs a baby was exposed to before birth because of the long drug detection window. Meconium panels can test up to 10 drugs, including Oxycodone, one of today’s most highly abused drugs.

Drug Detection Period Comparison:
Meconium: Drug use detection of generally 140 days  
Urine: Drug use detection is 1 – 4 days  
Blood & Saliva: Drug use detection is maximum 1 day
Meconium Testing Statistics at MEDTOX

<table>
<thead>
<tr>
<th>Test Code</th>
<th>% Positive</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oxycodone</td>
<td>2.7%</td>
</tr>
<tr>
<td>Amphetamines</td>
<td>2.2%</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>0.5%</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>0.2%</td>
</tr>
<tr>
<td>Cocaine</td>
<td>2.9%</td>
</tr>
<tr>
<td>Opiates</td>
<td>3.9%</td>
</tr>
<tr>
<td>Phencyclidine</td>
<td>0.0%</td>
</tr>
<tr>
<td>Cannabinoids</td>
<td>9.3%</td>
</tr>
<tr>
<td>Propoxyphene</td>
<td>1.0%</td>
</tr>
<tr>
<td>Methadone</td>
<td>4.1%</td>
</tr>
</tbody>
</table>

Meconium positive rates have remained consistent over years of testing at MEDTOX. More than 10% of samples are positive for at least one drug. Although positive rates in high risk groups are reported to be very high (up to 30 – 50%), a large study in a general population (all babies were tested) found a 4.5% positive rate overall. MEDTOX has a mix of clients - some testing all babies and some testing only high risk babies.

**POLICY STATEMENT on Meconium Testing**

**AMERICAN ACADEMY OF PEDIATRICS: Neonatal Drug Withdrawal Committee on Drugs** *(PEDIATRICS Vol. 101 No. 6 June 1998, pp. 1079-1088)*

**DIFFERENTIAL DIAGNOSIS**

A physician who is unaware of a mother’s drug ingestion may mistake the signs of withdrawal for other neonatal problems, such as colic or infection. If the signs in the infant are consistent with drug withdrawal, specimens of neonatal urine or meconium should be obtained for testing. Differentiating neonatal signs of drug withdrawal from irritability of the CNS resulting from infectious or metabolic disorders, such as hypoglycemia and hypocalcemia, may be difficult; no clinical signs should be attributed solely to drug withdrawal without the appropriate assessment and diagnostic tests to rule out other causes. Thus, the identification of infants at risk for withdrawal is important. A detailed maternal drug history should be obtained, including prescription and nonprescription drugs received, social habits of the parents, and whether the mother is breastfeeding. **Maternal self-reporting frequently underestimates drug exposure, and maternal using screening during pregnancy fails to identify many cases of drug use. Urine screening of the newborn will have a high false negative rate because only results for infants with recent exposure will be positive. Meconium drug testing, although not conclusive if results are negative, is more likely to identify infants of drug abusing mothers than is infant urine testing.**

**MEDTOX New Test: Synthetic Cannabinoids (K2, Spice)**

Synthetic Cannabinoids have been identified as an additive in various herbal products such as Spice and K2. These products began appearing in Europe in 2006 and started showing up in the United States last year. Many European countries have banned these products and many U.S. states have begun prohibiting their possession and use. Poison centers and emergency departments have begun seeing increases in incidents involving the use of the synthetic cannabinoids.

A test is now available at MEDTOX to identify the two synthetic compounds of synthetic cannabinoids.

Citizen Printer—Error Light is ON

A number of MEDTOXScan users have called technical support regarding a steady ERROR light on the Citizen CT-S280 Thermal Printer. The steady error light is due to one of three conditions: 1) paper is getting low, 2) out of paper or 3) Cover Open. Initially the error light is turned on when the diameter of the roll of paper reaches a specific minimum threshold. The amount of the paper left on the roll can vary with the diameter of core used, paper thickness, and the rolls position inside of the printer. It may appear at times that the error light comes on earlier than expected. This can be due to the position of the paper in the paper well versus the roll diameter sensor. Some users have noted that ‘you can open/close the printer door, or reposition the paper and the light goes out, but then it comes on again after the next results are printed’. Repositioning the paper or opening/closing the printer cover can be frustrating and really accomplishes nothing permanently. The best approach to the ‘Steady Error Light ON’ is to verify that you have replacement rolls of paper on hand—and if not, to order more, and then ignore the light. The printer will continue to print results until it runs out of paper. When it runs out of paper, the printer sends a message to the MEDTOXScan Reader. The following message is then displayed: “PRINTER ERROR. The printer is out of paper. Please install a fresh roll of paper and PRESS OK TO REPRINT”. So, even if you run out of paper during the middle of printing results, you can always reprint the current results by pressing ‘OK’ to reprint when the paper is replaced. In the event you pressed “C” to clear the message, you can still reprint the last test or any test result stored from the MENU, using RECALL RESULTS. See the MEDTOXScan manual (page 21) for help, if needed.

Note, the printer can display ‘other’ error messages which include ‘blinking lights’-- for a complete listing of all ‘Printer Error’ messages, check page 23 of the Citizen printer’s ‘User’s Manual’ which was included with the printer.

Q: Can Vyvanse, a new attention deficit hyperactivity disorder (ADHD) medication, be the cause of a positive amphetamine screen? Will it also cause a positive methamphetamine screen?

A: Yes, Vyvanse (Lisdexamfetamine) is a prodrug that is rapidly metabolized to d-amphetamine. It is the d-amphetamine that is detected on the MEDTOX AMP screening panel. Note: the mAMP (methamphetamine) screen should remain negative since amphetamine does not cross react with the mAMP screen.

Q: The patient’s pain management physician is questioning the labs results for the opiate screen. The lab reported the opiate screen as negative---this can’t be correct because the patient is wearing a fentanyl patch on their back. Shouldn’t the opiate screen be ‘Positive’--why is the opiate screen negative?

A: Fentanyl is a synthetic opiate that is structurally different from codeine or morphine. A look at their two or three dimensional structure will confirm this fact. Remember that immunoassays are based on an antigen/antibody reaction similar to a key fitting into a lock. The ‘target drug’ (key) used to produce the antibody (lock) for the common OPIATE drug screens is codeine or morphine. Because the synthetic opiates like fentanyl (and its analogues), and others (meperidine, tramadol, propoxyphene, etc) are structurally different from codeine/morphine, they don’t fit into the lock and thus the opiate screen is negative. This is true even at high concentrations for these synthetic opiates. In order to screen for each of these synthetic opiates, an antibody needs to be produced to the drug of interest and incorporated into an assay. MEDTOX has an onsite based drug screen for propoxyphene (PPX), Methadone (MTD), Oxycodone (OXY) and Buprenorphine (BUP) but not for: fentanyl (and analogues), or meperidine or tramadol. These synthetic opiates can be screened and confirmed in lab based testing at MEDTOX Laboratories. There is also a special lab based ‘pain management’ panel known as TOXASSURE that may be of interest to physicians for assessing patient compliance in the use of their pain and related medications.
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We’d love to hear from you. Please send any comments to: hmarketing@medtox.com  
We welcome any remarks, feedback or suggestions that you may have. Please forward this letter to a friend or business associate who may be interested as well.