



How hospitals can transition from meconium to umbilical cord testing

by Heather Sliwinski
Sales and Marketing Associate

In October 2007, United States Drug Testing Laboratories (USDTL) launched a new service, CordStatSM, which utilizes umbilical cord tissue as the testing matrix instead of meconium. The idea to test umbilical cords for newborn drug exposure came from a nurse who, at the time, was using our MecStatSM test. Dianne Montgomery, a neonatal nurse practitioner at McKay-Dee Hospital in Ogden, Utah, was frustrated with some of the limitations of meconium testing that many NICUs know all too well.

“Most hospitals have the same issues that we had with meconium testing,” said Montgomery. “Some babies do pass meconium before they’re born, and so we are not able to collect any after their birth.”

“Most hospitals have the same issues that we had with meconium testing.” - Dianne Montgomery, NNP

When meconium is present, it is usually passed over a two- to three-day period, necessitating repeat collections to obtain sufficient sample for screening and confirmation, delaying results.

“Our nurses just didn’t like to collect meconium,” said Montgomery. She knew there had

to be an easier method.

“I started to think of the different tissues that we could look at to check for drug use in the mom,” said Montgomery. “I started thinking about cords, and how the cord is with the baby from the very beginning, and maybe that lining that’s there, or the jelly, would collect anything, any illicit drugs in that tissue.”

After speaking with USDTL toxicologists and partnering in successful research demonstrating umbilical cords had equal or greater sensitivity for most drugs, CordStatSM was developed for commercial use.

“So then it became a process of just figuring out what exactly do we need, how much cord we need, how we package it, those kind of questions,” said Montgomery.

Once her Labor and Delivery nurses learned how to collect umbilical cord, Montgomery said they actually found it quite easy. Since then, USDTL has developed collection instructions specific to umbilical cord testing.

For a hospital that has been doing meconium testing, transitioning to umbilical cord testing will mean some changes in procedure, but these changes are very manageable relative to the benefits gained for infants by doing umbilical cord testing.

First, with meconium testing, hospital staff has the opportunity to observe the infant for a day or so prior to initiating the collection of



Labor and delivery nurses can collect umbilical cords from every baby and wait up to a week to decide whether or not drug testing is advantageous.

meconium. Only babies for which there is suspicion are sampled and tested. In the case of umbilical cord testing, a section of umbilical cord is taken from each baby at birth, the relevant information entered in the Umbilical Cord Collection Log, and after subsequent observation, the decision to test or not is made.

“The nurse would label it immediately, and we put it in the refrigerator and then within an hour be able to send it,” said Montgomery. “Or if we had some suspicions that there might be some drug abuse in the mom we maybe would wait and keep that cord for up to a week deciding whether or not we needed to send it.”

Samples to be tested are sent to USDTL, **continued pg. 2 (see Cord transition)**

Prescription drug use among pregnant women on the rise

by Robert Demaree
Clinical Projects Manager

Women using illicit drugs during pregnancy place the newborn at risk for low birth weight, premature delivery, possible drug withdrawal and behavioral problems. With the exception of marijuana, the nonmedical use of prescription pain medication is the most common form of illicit drug use in the United States.

The National Survey on Drug Use and Health is a nationwide survey conducted each year by the Substance Abuse and Mental Health Services Administration. Information is collected from more than 65,000 individuals. The most recent survey (2007-2008) found 5.1 percent of pregnant women have used illicit drugs within 30 days of the interview, an increase from 4 percent from the previous survey. In addition to more common drugs like marijuana, the survey includes the illegal use of prescription drugs.

This group of drugs includes oxycodone, hydrocodone, hydromorphone, codeine, morphine, methadone, meperidine, propoxyphene, fentanyl, tramadol and buprenorphine. Illicit use of these drugs often results in an unexplained withdrawal in the newborn following birth. Neonatal withdrawal is a common outcome to fetal exposure to pain medication occurring in 60 percent of fetuses exposed to drugs. Neonatal withdrawal symptoms include irritability, jitteriness, tremors, hypertonia, sneezing, yawning, sweating, GI dysfunction and feeding problems.

A positive newborn drug test may be the only indication of a drug use problem within a specific family unit. This result can provide the opportunity for early intervention and treatment for both the mother and the baby.

Ask the President

Got a question for USDTL? Ask our president and scientific director, Douglas Lewis. E-mail heather.sliwinski@usdtl.com with your questions, and you may be featured in our newsletter!

Q: Why isn’t oxycodone (Oxycontin[®]) detected and reported as an opiate in a Cord-StatSM 5-drug panel?



DL: The opiates drug class in the 5-drug panel only includes specific drug substances obtained from the opium poppy (*Papaver somniferum*). These substances were initially dictated by the U.S. Military and then by the Department of Human Services through the

Mandatory Guidelines for Federal Workplace Drug Testing Program. The guidelines specified that the compounds detected and reported would be morphine, 6-monoacetylmorphine, and codeine. These guidelines resulted in reagent manufacturers developing immunoassay reagents that were highly specific for those preferred drugs and metabolites and not very reactive to other opioids, such as oxycodone.

The various opioid drugs, like oxycodone, require an independent initial immunoassay optimized for each opioid. The oxycodone initial immunoassay that USDTL uses is highly sensitive and specific for oxycodone and its metabolite oxymorphone, but not sensitive for mor-

Newborn drug panels

5 panel
Amphetamines
Cannabinoids
Cocaine
Opiates
Pcp

7 panel
Methadone
Barbiturates

9 panel
Benzodiazepines
Propoxyphene

12 panel
Meperidine
Tramadol
Oxycodone

Add-on: buprenorphine

phine and codeine. As prescription drug abuse became an increasing problem in the mid-1990s, USDTL added various opioid assays to the initial immunoassay screening so that drugs like methadone, propoxyphene, tramadol, meperidine and oxycodone would be covered in the expanded panels. These assays then had their own confirming assays developed by GC/MS, GC/GC/MS, or LC/MS/MS. In order to detect these prescription opioids, an expanded panel containing the opioids desired must be ordered. Newborn assays go up to a 12-drug panel, with a buprenorphine add-on assay available to any ordered panel.

Cord transition (cont.)



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Umbilical cords can be kept up to a week before sending for testing.

Because testing infants for drugs of abuse has both medical and forensic implications, transitioning to umbilical cord testing will require some changes in the manner chain-of-custody is handled. The storage container for each umbilical cord is sealed by a security sticker and the Umbilical Cord Collection Log initiated for each umbilical cord sample. The Umbilical Cord Collection Log is essential in maintaining and documenting the integrity and accountability of the specimen for forensic purposes. The

following a collecting and shipping protocol, and the samples not to be tested are destroyed, generally following a five- to seven-day retention period. Information on whether the sample is tested or destroyed is entered into the final column of the Umbilical Cord Collection Log.

Umbilical Cord Collection Log, when complete, is entered into a logbook and stays at the hospital for a two-year period of time, as required by accrediting agencies.

If an umbilical cord sample is to be sent to USDTL for testing, the specimen will be removed from temporary storage and placed in the proper shipping container. Completing the USDTL requisition form and placing the bar code sticker over the top of the specimen container maintains the chain-of-custody during shipping to USDTL, at which point USDTL chain-of-custody maintains specimen integrity and accountability.

While the early stages of transitioning may be challenging, the outcomes far exceed the initial set-up.

“Our nurses do now love it because they don’t have to collect any meconium,” said Montgomery. “There’s very little to do to get [the umbilical cord] sent off.”

USDTL is excited about the benefits associated with the CordStatSM service and is committed to assisting clients in establishing CordStatSM testing in their hospitals. Switching to

CordStatSM can mean even greater success for the health of the newborn.

“We’re able to ship that cord out within hours after the baby’s born,” said Montgomery. “We’re able to get the results back a lot faster, and we’re able to treat the baby.”

To see the full interview with Dianne Montgomery, visit www.usdtl.com for USDTL’s live web series.

References

-Substance Abuse and Mental Health Services Administration. (2009). Results from the 2008. National Survey on Drug Use and Health: National Findings (Office of Applied Studies, NSDUH Series H-36, HHS Publication No. SMA 09-4434). Rockville, MD