MINISTRY MEDICAL GROUP – Managing Pain, Improving Lives

Urine drug screening (UDS) is an important safe prescribing practice for all controlled substances. For patients with chronic pain and chronic opioid therapy, UDS is one component of the initial and ongoing risk assessment. UDS does not diagnose substance use disorders; unexpected results require further evaluation of the patient.

The Wisconsin Medical Examining Board (MEB) opioid prescribing guideline recommends a UDS prior to initiating chronic opioid therapy and at minimum once yearly; more frequent UDS is recommended for higher risk patients.

There is opportunity to improve UDS monitoring within Ministry Health Care. Among patients receiving opioids, only 10% received a UDS within the past year. Clinicians cite lack of understanding of available tests, what test to order, and how to interpret the test result as barriers to use of UDS. Over the next few weeks, basic concepts related to UDS, information on how to interpret results and clinical application of result findings will be covered.

METHODS OF TESTING

**Immunoassay (IA)** urine drug tests are qualitative screening tests that identify presence or absence of drug classes. IA tests rely on the binding of an antibody designed to detect a specific chemical or group of closely related chemicals. IA tests can be performed in a lab or as a point of care test.

Variables that can influence the test result include test specific drug cutoff levels (minimum concentration of a drug or metabolite that must be present to produce a positive result), cross-reactivity within the drug class of interest, cross-reactivity of unrelated drugs, drug dose, dosing frequency and timing related to testing, metabolism (patient pharmacokinetics), urine dilution and urine pH.

**Advantages of IA:**
- Simultaneously screen for multiple drugs
- Fast results, inexpensive

**Disadvantages of IA:**
- In general, specific drugs are not detected within a drug class (for example opioid IA test detects several opioids in the class, not just morphine, codeine, etc)
- Variable sensitivity and specificity by test manufacturer; review of product insert is helpful
- A drug with concentration below the drug class cutoff will be reported as negative (the drug or metabolite in the class is present, just not detected); a false negative test if the goal is to detect presence of any concentration of drug in the class
- Polypharmacy may not be detected (for example morphine and hydromorphone are prescription drugs that could be taken, yet not separately identified by any opiate IA drug test)

**Gas Chromatography and Liquid Chromatography-Mass Spectrometry (GC-MS/LC-MS)** urine drug tests are quantitative, confirmatory tests identifying specific drugs and their metabolites and their respective concentrations.

**Advantages of GC-MS/LC-MS:**
- Highly specific (few false-positives); highly sensitive (few false-negatives) due to lower cutoff levels for detection
- Results are definitive for specific measurable substances
- Can detect multiple drugs within the drug classes, assisting interpretation (many drugs within a class, such as opioids will be reported if detected above the measuring limit)

**Disadvantages of GC-MS/LC-MS:**
- Results take 2-3 days; the test is typically run at an outside lab due to the need for specialized equipment
- More expensive (but may be more cost effective depending on the drug information needed)

For questions, contact Peggy Lutz, Service Line Director, Pain Management peggy.lutz@ascension.org or Robert Sedlacak, MD, Family Medicine, Merrill robert.sedlacak@ascension.org