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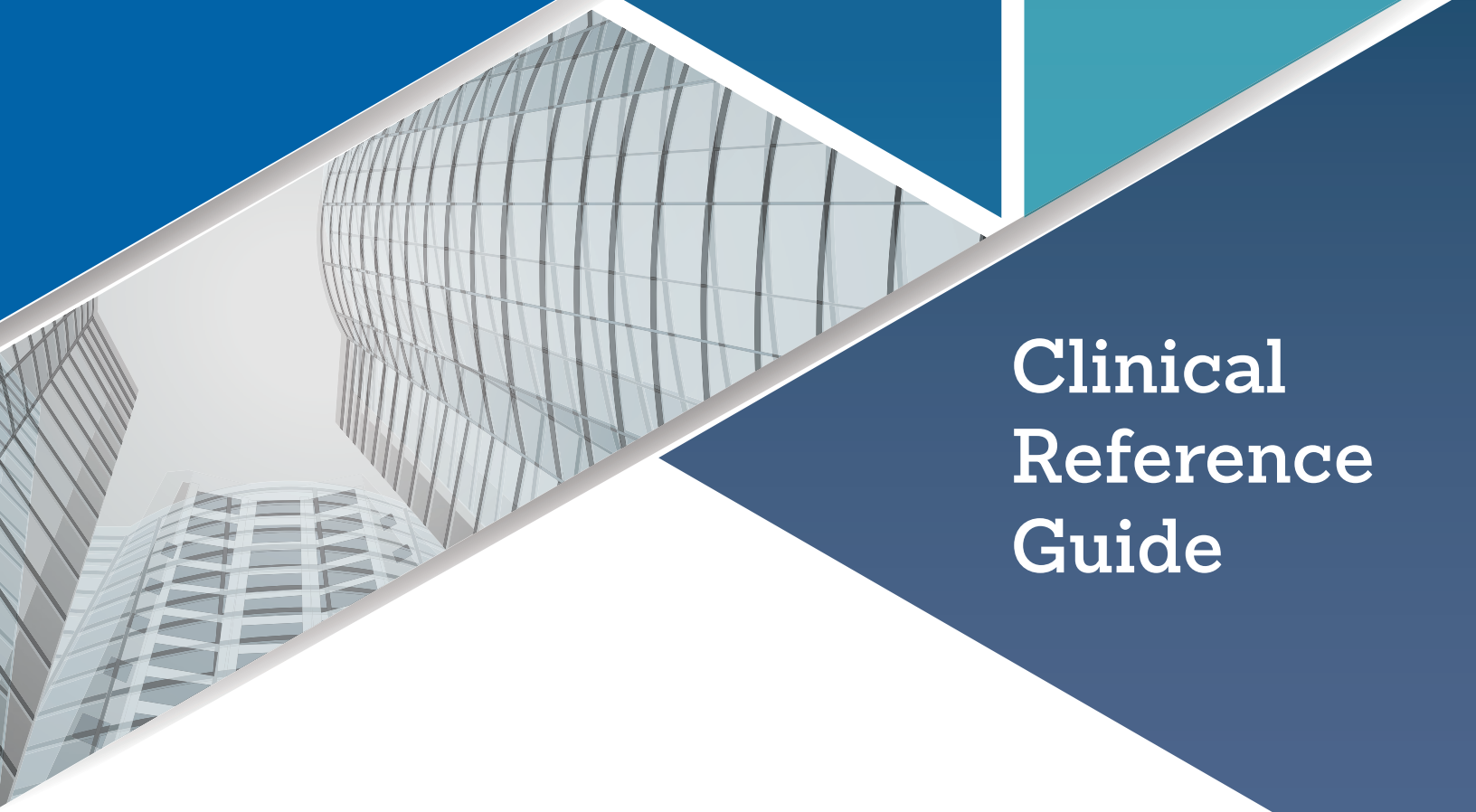

Clinical Reference Guide

Selection of Specimen Type: Urine, Oral Fluid, Blood, and Hair

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When ordering a drug test, a clinician should be aware of the collection and interpretation differences between specimen types.

As analytical techniques have evolved, more specimen types have become available for testing in pain management. This section reviews the advantages and disadvantages of each.

A. Urine

Urine is the gold standard and boasts the most experience in drug testing. Drugs and metabolites are typically present in high concentrations in urine, and drug presence may persist up to five times longer in urine than in plasma.[1] Consequently, urine offers a longer detection period than blood or oral fluid.

Urine is relatively easy to collect, but may be subject to tampering or adulteration. Examples of results that deserve further attention include (but are not limited to): temperature below 90°F or above 100°F (within 4 minutes of starting the collection), abnormal pH, low creatinine (less than 20 mg/dL), or unusually high concentrations of drugs in the absence of any metabolites. If concerns arise regarding sample integrity, an alternative specimen such as oral fluid or blood may be collected.

B. Oral Fluid

Oral fluid is an acceptable alternative to urine in pain management, especially in cases of shy bladder or severe renal impairment (e.g., the patient cannot provide a urine sample), or suspected urine tampering/substitution. Use of this specimen type is increasing due to the ease of collection, limited invasiveness, and the opportunity for direct observation. The medications of interest in pain management, both licit and illicit, are detectable in oral fluid.[2,3] Studies in pain management and addiction treatment with simultaneously collected oral fluid and urine specimens have shown substantial agreement between results, despite period of detection differences.[4-7] Oral fluid could potentially be the preferable specimen type for detection of some illicit drugs (i.e., heroin and cocaine), as the oral fluid positivity rate for these drugs has been noted to exceed that of urine.[4,5,8,9]

C. Blood

Blood is typically not the preferable specimen type due to invasiveness of collection and cost. The detection window for blood is limited to current use, and medications with a short half-life (such as opiates) may not be detectable for more than a few hours.[10] Low dosages of drugs such as alprazolam and fentanyl may not be readily detectable at ng/mL-range thresholds.[11]

D. Hair

Hair testing is generally not recommended in the clinical setting due to difficulties of interpretation. The detection window is longest in hair and can potentially reveal drug use during the past weeks, months, or even years, depending on the length of hair tested. However, substances may not be detectable in hair for several days following exposure, limiting the utility of hair testing when used for current patient assessment. In addition, the use of segmental hair analysis to make determinations regarding time period of exposure is subject to variability, and its usefulness may be open for debate.[10]

There are several caveats to interpretation of hair toxicology results. Surface contamination can be difficult to rule out, as some drugs may break down into metabolites (e.g., cocaine to benzoylecgonine) even though the drug itself was not ingested.[12] Drugs tend to bind more readily to dark hair than lightly-pigmented hair, thus introducing a color bias. Hair treatments such as bleaching, dyeing, or permanent waves may alter the disposition of drugs.[10]

Due to the difficulties with interpretation of hair testing results, Aegis does not perform this type of drug testing in healthcare at this time.

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