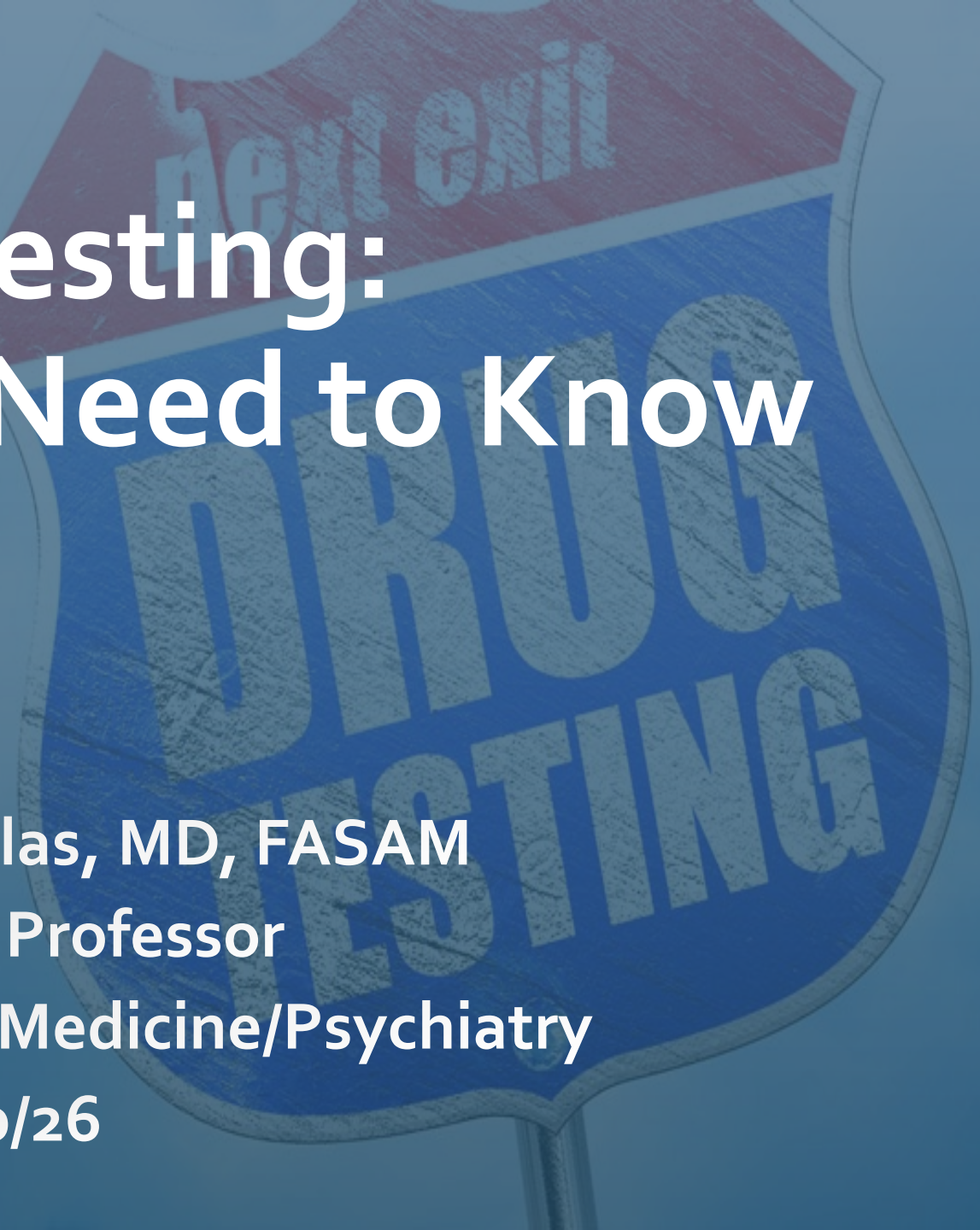
Drug Testing: What Judges Need to Know



Michael Baca-Atlas, MD, FASAM
Associate Professor
UNC Dept of Family Medicine/Psychiatry

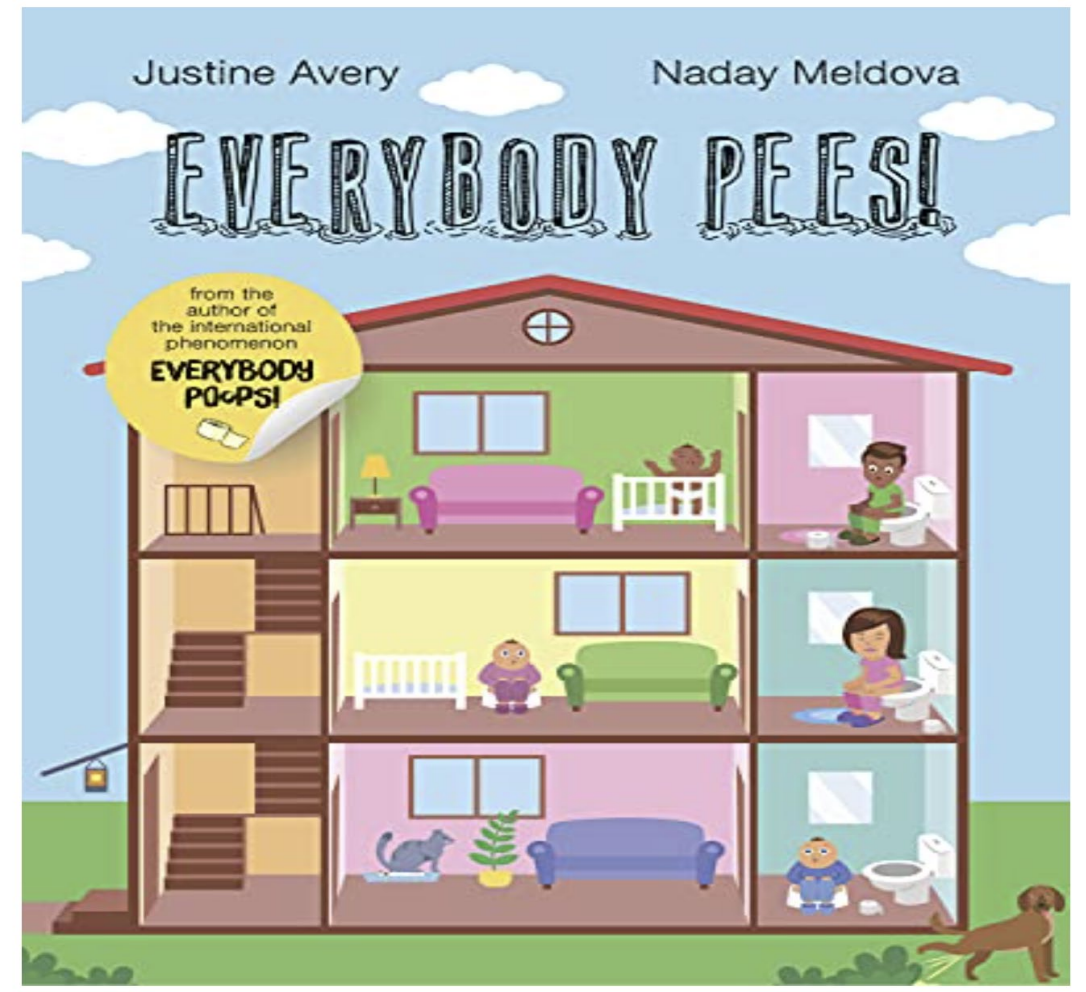
5/20/26

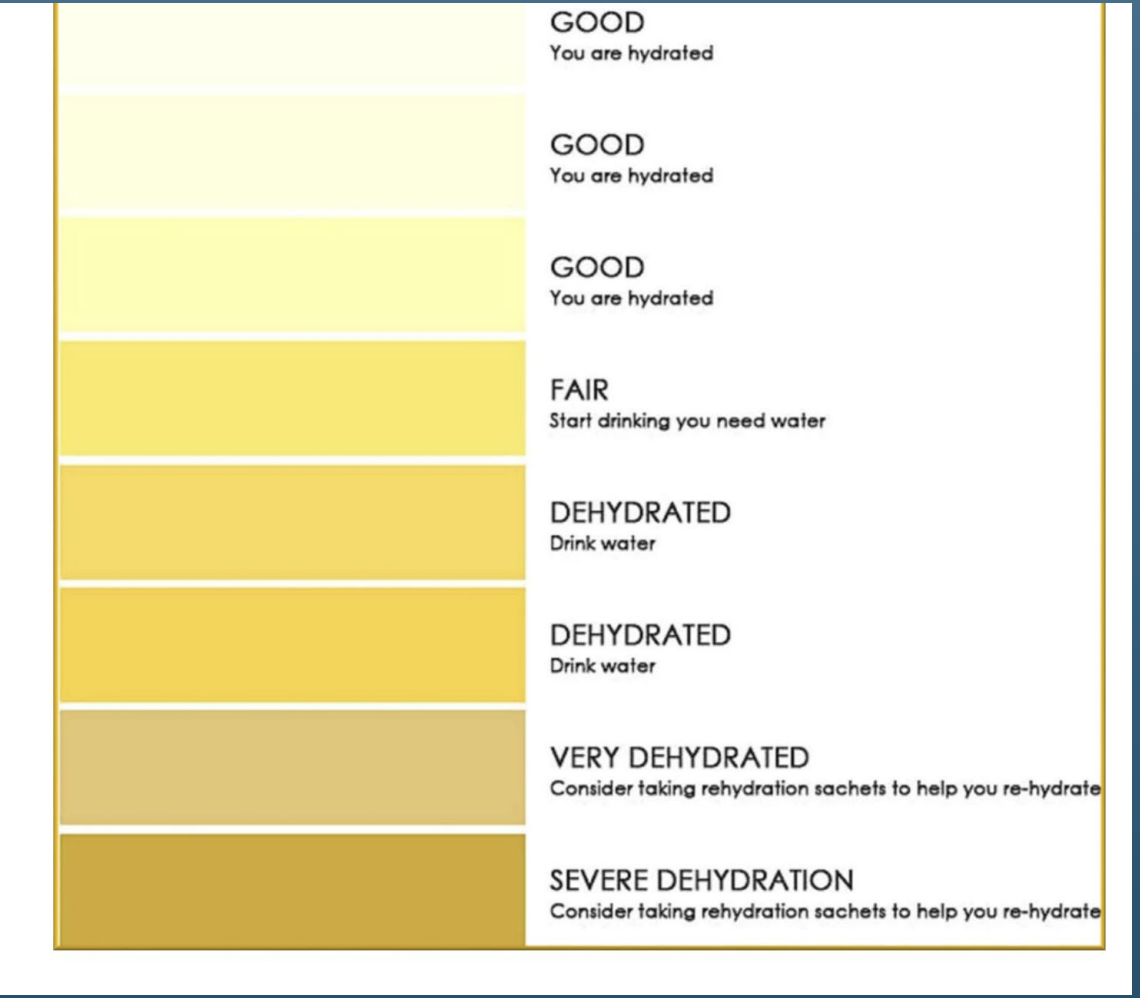
Objectives

- Discuss various type of drug testing modalities
- Review pros and cons of presumptive vs. confirmatory tests
- Discuss how drug testing is utilized to guide clinical decision making
- Review cases of commonly screened for substances

"Drug testing serves as a primary prevention, diagnostic, and monitoring tool to identify the presence or absence of drugs of abuse or therapeutic agents related to addiction management in multiple settings."

Only Thing I am Certain Of…





https://justineavery.com/books/everybody-pees

Mahoney E, Kun J, Smieja M, et al. Review: point-of-care urinalysis with emerging sensing and imaging technologies. J Electrochem Soc. 2020;167(3):037518.

Timely Discussion of Drug Testing…

Do No Harm? Rethinking Urine Drug Screens in Treatment of Opioid Use Disorder

COMMENTARY

Cathleen Beliveau, MPH; Michael Baca-Atlas, MD, FASAM

Guest Editorial: One of These Things Is Not Like the Others

Stephen A. Martin, MD, EdM, FAAFP, FASAM

of a two-part series on drug testing.

Guest Editorial: A Reality Check

By R. Corey Waller, MD, MS, FACEP, DFASAM

This guest editorial is part two of a two-part series on drug

› Am J Obstet Gynecol MFM. 2023 Dec;5(12):101206. doi: 10.1016/j.ajogmf.2023.101206. Epub 2023 Oct 21.

Reconsidering the use of urine drug testing in reproductive settings

EDITORIAL · Volume 53, Issue 2, P93-95, March 2024 Download Full Issue

Drug Testing of Pregnant Patients

Lisa M. Cleveland, PhD, APRN, CPNP, FAAN · Kelly McGlothen-Bell, PhD, RN, IBCLC, FAWHONN

Article Info

What does a drug test tell you?

- Drug tests measure if a **particular drug** is in the patient's **sample** (urine, blood, saliva, etc.) at a specific **point in time.**

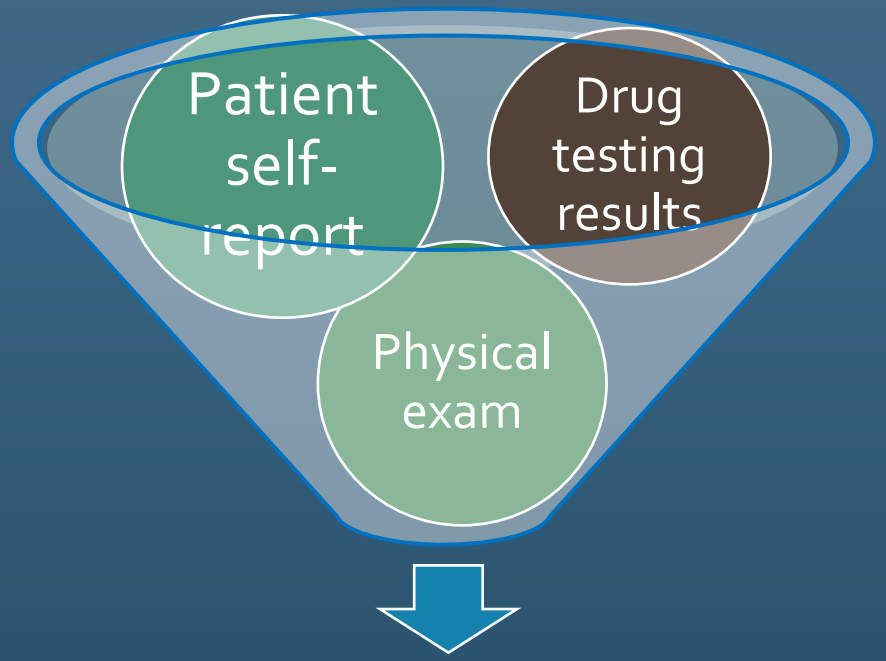
Drug tests **CANNOT**:

- Prove that a substance *hasn't* been taken
- Identify every substance that may have been taken
- Detect if the patient is intoxicated/impaired
- Rule out or diagnosis a Substance Use Disorder

Drug testing in different contexts

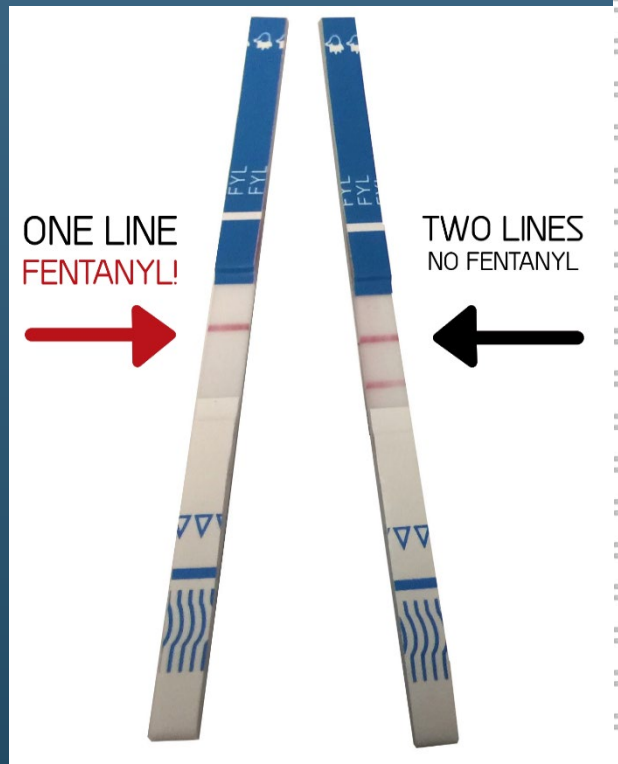
Context	Question
	Is the individual violating their parole? Did the individual drive while intoxicated?
	Was the employee intoxicated? Is the employer financially responsible for the worker's injury?
	Has the patient recently used these *specific* substances (drugs or medications)? Which clinical approach is most likely to help the patient?

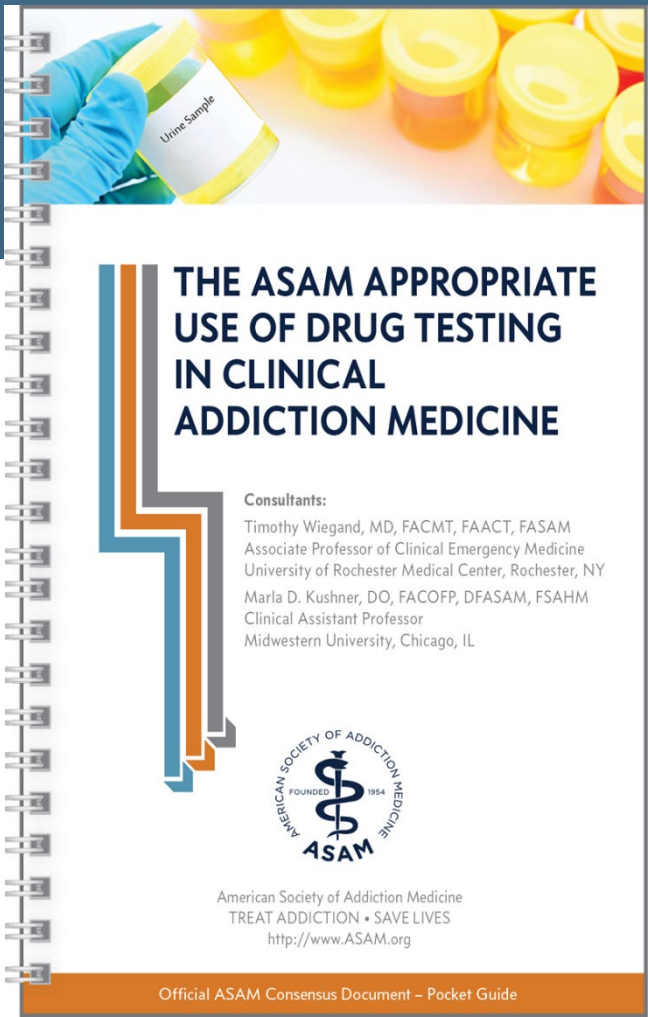
Drug Testing Results Are Just One Component Used in Clinical Decision Making



Drug Testing in Addiction Treatment

- Screening and diagnostic evaluation
- Long-term monitoring after initial treatment
- Harm Reduction (identify fentanyl)
- *PHPs (Physician Health Programs)





Urine Drug Testing Versus Screening

Urine Drug Monitoring	
Urine Drug Screening (UDS)	**Urine Drug Testing (UDT)**
Immunoassay screen (e.g., cup)	GC-MS or LC-MS
PRESUMPTIVE	**DEFINITIVE**
In-office, point-of-care, or lab-based	Laboratory, highly specific and sensitive
Results within minutes	Results in hours or days
Various cups detect a majority of legal and illicit medications by structural class	Measures all drug/metabolite concentrations
Guidance for preliminary treatment decisions	Definitive identification and analysis
Cross-reactivity common: more false positives	False-positive results are rare
Higher cutoff levels: more false negatives	False-negative results are rare
$	$$$

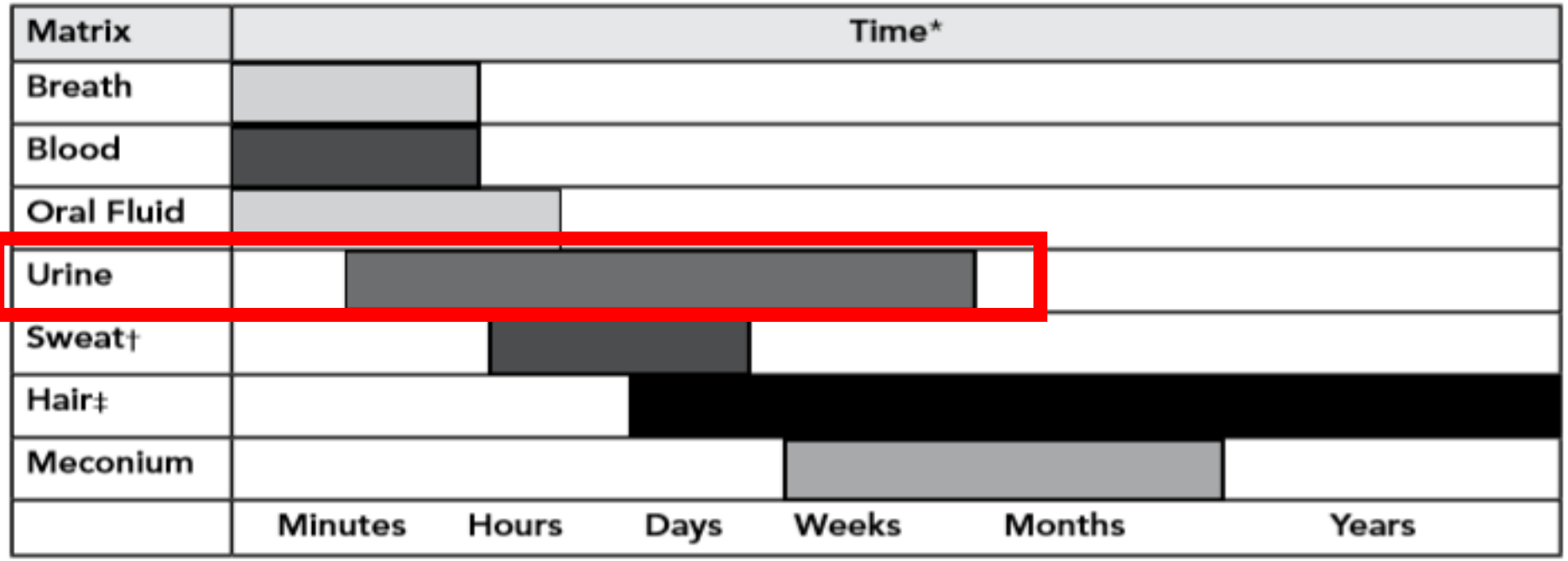
GC-MS: gas chromatography-mass spectrometry
LC-MS: liquid chromatography-mass spectrometry

Moeller KE, Lee KC, Kissack JC. Urine drug screening: practical guide for clinicians. *Mayo Clin Proc*. 2008;83(1):66-76.

PCSS Providers Clinical Support System

Detection Windows

Exhibit 2-1. Window of Detection for Various Matrices



*Very broad estimates that also depend on the substance, the amount and frequency of the substance taken, and other factors previously listed.
†As long as the patch is worn, usually 7 days.
‡7–10 days after use to the time passed to grow the length of hair, but may be limited to 6 months hair growth. However, most laboratories analyze the amount of hair equivalent to 3 months of growth.

Sources: Adapted from Cone (1997); Dasgupta (2008).

*Each sample type has its own limitations and benefits; consult with a clinical pathologist or toxicologist to determine the best testing for your needs

Urine Drug Detection Times

Urine Drug Detection Times	
Drug	**Detection Time After Ingestion**
Alcohol	7 to 12 Hours
Amphetamines	2 to 3 Days
Benzodiazepines (Short-Acting)	3 Days
Benzodiazepines (Long-Acting)	30 Days
Marijuana (Single Dose)	3 Days
Marijuana (4x/Week)	5 to 7 Days
Marijuana (Daily)	10 to 15 Days
Marijuana (Long-Term)	>30 Days
Codeine	2 Days
Heroin	2 Days
Hydromorphone	2 to 4 Days
Methadone	3 Days
Morphine	2 to 3 Days
Oxycodone	2 to 4 Days

Schwebach A and Ball J. Urine drug screening: minimizing false-positives and false-negatives to optimize patient care. US Pharm. 2016;41(8):26-30.

False Positives

Urine Drug Screening False Positives	
Substance	**UDS Cross-Reactant**
Alcohol	asthma inhalers and isopropyl alcohol
Amphetamine Methamphetamine	amantadine, bupropion, chlorpromazine, desipramine, labetalol, phentermine, phenylephrine, promethazine, pseudoephedrine, selegiline, trazodone
Barbiturates	ibuprofen and naproxen
Benzodiazepines	oxaprozin, sertraline and some herbals
Cannabinoids	dronabinol (synthetics), NSAIDs (ibuprofen/naproxen), efavirenz, PPIs (pantoprazole), promethazine
Opioids	chlorpromazine, dextromethorphan, diphenhydramine, doxylamine, poppy seeds, quinine, quinolones, rifampin, verapamil
Methadone	quetiapine
Tricyclic antidepressants (TCAs)	carbamazepine, cyclobenzaprine, quetiapine

https://pcssnow.org/wp-content/uploads/2023/03/SLIDES_Feb2-PCSS-Webinar_UDT_PCSS.pdf

Specimen Quality

- Normal temp 90-100F within 4 minutes
- Appearance
  - Color (nitrates can darken, vit B/laxatives)
  - Soapy appearance
  - Cloudiness or particles (also medical problems)
- Specific gravity: 1.003-1.3
  - Higher specific gravity suggests adulterant
  - Low suggests dilution (water ingestion, kidney issues/diabetes)
- pH 4.5-8.0
  - Bleach, acids, soap, detergent vinegar alter
  - UTI or diet high/low in protein

https://www.mlive.com/public-interest/2022/06/michigan-moves-to-outlaw-fake-urine-as-marijuana-popularity-soars.html

Starting the Conversation

If unexpected results occur when ordering a UDT, remember that the focus is to improve patient safety. Have a plan in place for communicating results and practice the difficult conversations you may have with your patients.

tips

TALKING WITH PATIENTS ABOUT URINE DRUG TESTING RESULTS:

- Always keep the focus on the patient's well-being and safety.
- Do not jump to conclusions about unexpected results; have a candid conversation with the patient about possible explanations.
- Do not dismiss patients from care based on UDT results.
- Consider using the CDC mobile app to practice the types of conversations you may encounter with patients.

Actions to take post-urine drug testing:

- Discuss unexpected results with the local laboratory or toxicologist if assistance is needed with interpretation.
- Inform the patient of the test results.
- Take time to discuss unexpected results with the patient and refer to pre-UDT information the patient may have shared with you.
- Review the treatment agreement and focus conversations around patient safety.
- Determine if frequency and intensity of monitoring should be increased and keep the patient informed.

https://www.cdc.gov/drugoverdose/pdf/prescribing/CDC-DUIP-UrineDrugTesting_FactSheet-508.pdf

Unexpected Results…

https://www.seethegirl.org/ending-human-trafficking-the-critical-shift-needed-for-true-lasting-change/

https://www.thehotline.org/identify-abuse/power-and-control/

Put Your Skills to the Test! #1

	Ref Range & Units	(1/9/23)
Amphetamines, Urine POCT	<500 ng/mL	NEGATIVE
Barbiturates, Urine POCT	<200 ng/mL	NEGATIVE
Benzodiazepines, Urine POCT	<150 ng/mL	NEGATIVE
Buprenorphine, Urine POCT	<10 ng/mL	PRESUMPTIVE POSITIVE !
Cannabinoids, Urine POCT	<50 ng/mL	NEGATIVE
Cocaine, Urine POCT	<150 ng/mL	NEGATIVE
Methadone, Urine POCT	<200 ng/mL	NEGATIVE
Methamphetamine, Urine POCT	<500 ng/mL	NEGATIVE
Opiates, Urine POCT	<100 ng/mL	NEGATIVE
Oxycodone, Urine POCT	<100 ng/mL	NEGATIVE

1. Taking Suboxone daily
2. Injection of buprenorphine 1 month ago
3. Injection of buprenorphine 6 months ago
4. Someone else's urine specimen

Put Your Skills to the Test! #2

Ref Range & Units	
Amphetamines, Urine POCT <500 ng/mL	NEGATIVE
Barbiturates, Urine POCT <200 ng/mL	NEGATIVE
Benzodiazepines, Urine POCT <150 ng/mL	NEGATIVE
Buprenorphine, Urine POCT <10 ng/mL	PRESUMPTIVE POSITIVE !
Cannabinoids, Urine POCT <50 ng/mL	NEGATIVE
Cocaine, Urine POCT <150 ng/mL	NEGATIVE
Methadone, Urine POCT <200 ng/mL	NEGATIVE
Methamphetamine, Urine POCT <500 ng/mL	PRESUMPTIVE POSITIVE !
Opiates, Urine POCT <100 ng/mL	NEGATIVE
Oxycodone, Urine POCT <100 ng/mL	NEGATIVE

1. Using methamphetamines
2. False positive methamphetamines
3. Someone elses urine to appear like taking buprenorphine
4. Machine/Lab Error

Put Your Skills to the Test! #3

Urine Drug of Abuse Screen

Component	12/27/25 2035
Amphetamine, Urine Screen	NEGATIVE
Barbiturate, Urine Screen	NEGATIVE
Benzodiazepines, Urine Screen	NEGATIVE
Cannabinoids, Urine Screen	NEGATIVE
Cocaine, Urine Screen	NEGATIVE
Methadone, Urine Screen	NEGATIVE
Opiate, Urine Screen	NEGATIVE
Oxycodone, Urine Screen	NEGATIVE
Fentanyl, Urine Screen	POSITIVE !

1. Used fentanyl 3 days ago
2. Used fentanyl 14 days ago
3. Given fentanyl by EMS
4. Given fentanyl by hospital
5. Actively using fentanyl daily

Put Your Skills to the Test! #4

Urine Drug of Abuse Screen

Component	12/27/25 2035
Amphetamine, Urine Screen	NEGATIVE
Barbiturate, Urine Screen	NEGATIVE
Benzodiazepines, Urine Screen	NEGATIVE
Cannabinoids, Urine Screen	POSITIVE !
Cocaine, Urine Screen	POSITIVE !
Methadone, Urine Screen	NEGATIVE
Opiate, Urine Screen	NEGATIVE
Oxycodone, Urine Screen	NEGATIVE
Fentanyl, Urine Screen	NEGATIVE

1. False positive for cocaine
2. Using cocaine daily
3. Someone else's urine specimen
4. Cocaine use 1 month ago
5. In a car with people using cocaine

Put Your Skills to the Test! #5

Amphetamines, Urine POCT	NEGATIVE
Barbiturates, Urine POCT	NEGATIVE
Benzodiazepines, Urine POCT	NEGATIVE
Cannabinoids, Urine POCT	NEGATIVE
Cocaine, Urine POCT	NEGATIVE
Methadone, Urine POCT	NEGATIVE
Methamphetamine, Urine POCT	PRESUMPTIVE POSITIVE !
Opiates, Urine POCT	NEGATIVE
Oxycodone, Urine POCT	NEGATIVE
Resulting Agency	WPCPOC

What is going on here?

Put Your Skills to the Test! #5

Amphetamines, Urine POCT	NEGATIVE
Barbiturates, Urine POCT	NEGATIVE
Benzodiazepines, Urine POCT	NEGATIVE
Cannabinoids, Urine POCT	NEGATIVE
Cocaine, Urine POCT	NEGATIVE
Methadone, Urine POCT	NEGATIVE
Methamphetamine, Urine POCT	PRESUMPTIVE POSITIVE !
Opiates, Urine POCT	NEGATIVE
Oxycodone, Urine POCT	NEGATIVE
Resulting Agency	WPCPOC

Amphetamine, Urine Confirmation

Status: **Final result** Next appt: **None** Dx: **Opioid use diso**

Test Result Released: **Yes (not seen)**

0 Result Notes

Component Ref Range & Units (hover)	11/21/23 0925
Amphetamine Confirm	Negative
Phentermine	Negative
Methamphetamine Confirm, Ur	Negative
Pseudoephedrine	Negative
MDA	Negative
MDMA Confirm	Negative
Amphet Interp, Urine	Negative.

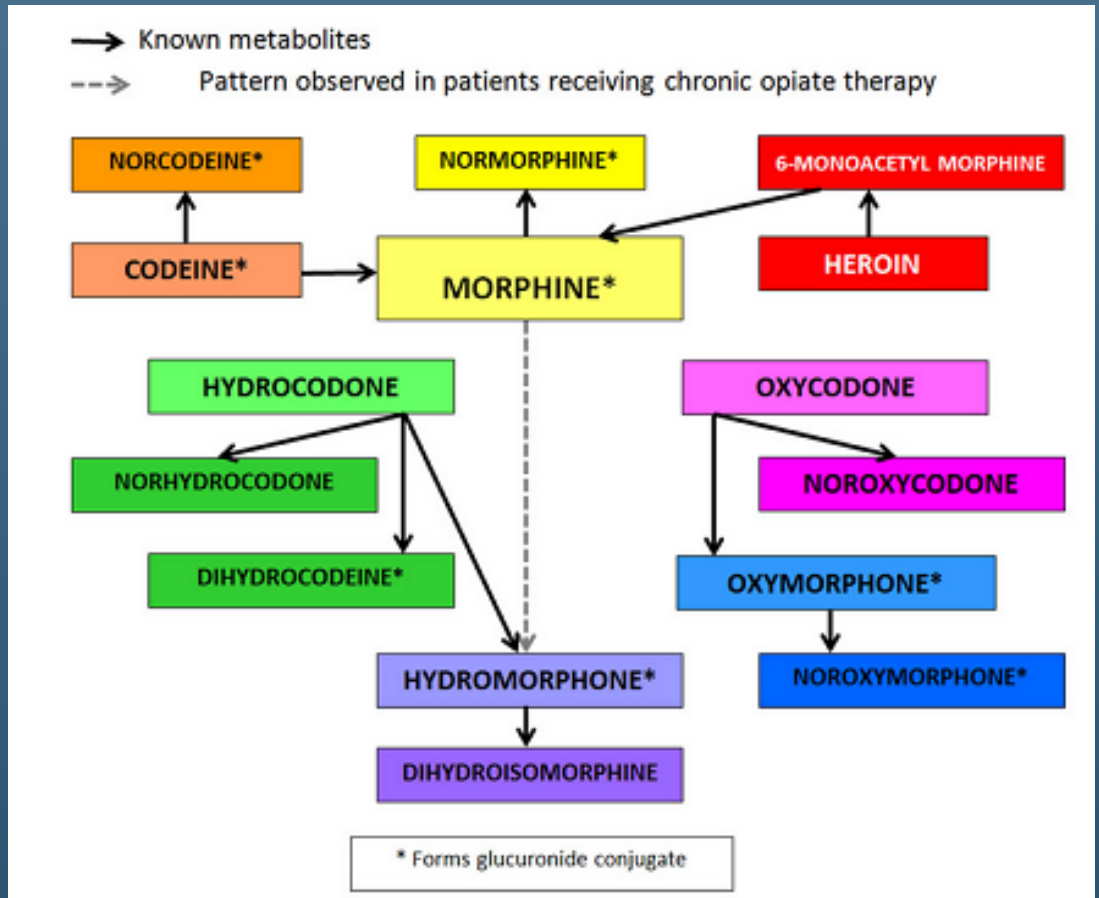
Comment:

Opioid Metabolism

Buprenorphine	Provider Interpretation ng/mL	411
Norbuprenorphine	Provider Interpretation ng/mL	2,259
Codeine Confirm	Provider Interpretation ng/mL	<50
Hydrocodone Confirm	Provider Interpretation ng/mL	<50
Hydromorphone Confirm	Provider Interpretation ng/mL	<50
Morphine Confirm	Provider Interpretation ng/mL	<50
Oxycodone Confirm	Provider Interpretation ng/mL	<50
Oxymorphone	Provider Interpretation ng/mL	<50
6-Monoacetylmrph	Provider Interpretation ng/mL	<20
Opiate Interp		POSITIVE
Resulting Agency		UNCH MCL

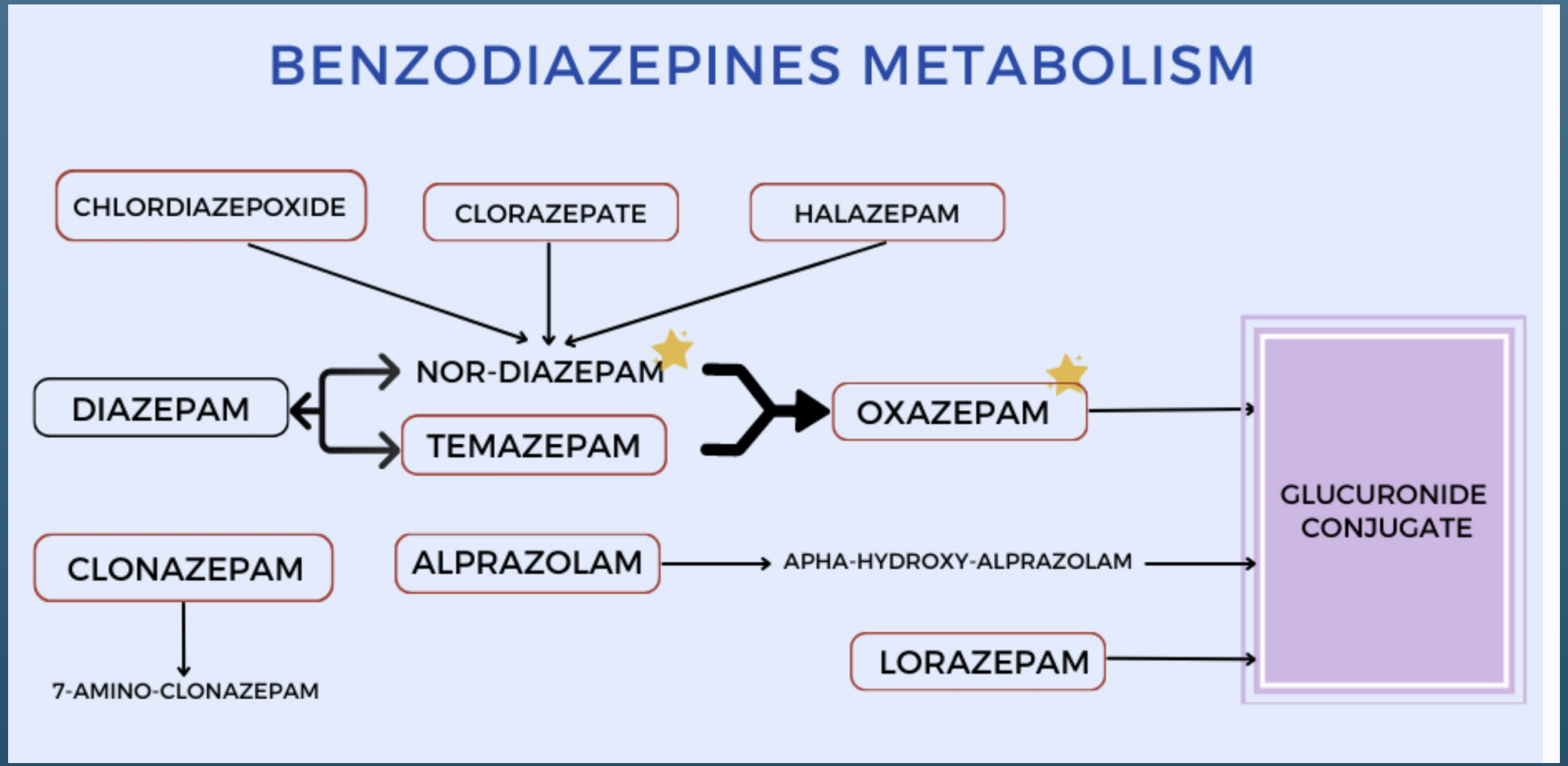
Narrative

This report is intended for use in clinical monitoring and management of pat
related drug testing. This test was developed and its performance characteri
McLendon Clinical Laboratories, UNC HealthCare. This test has not been clear
regulated under CAP and CLIA as qualified to perform high-complexity testing
should not be regarded as investigational or for research. Results should be
clinical data.



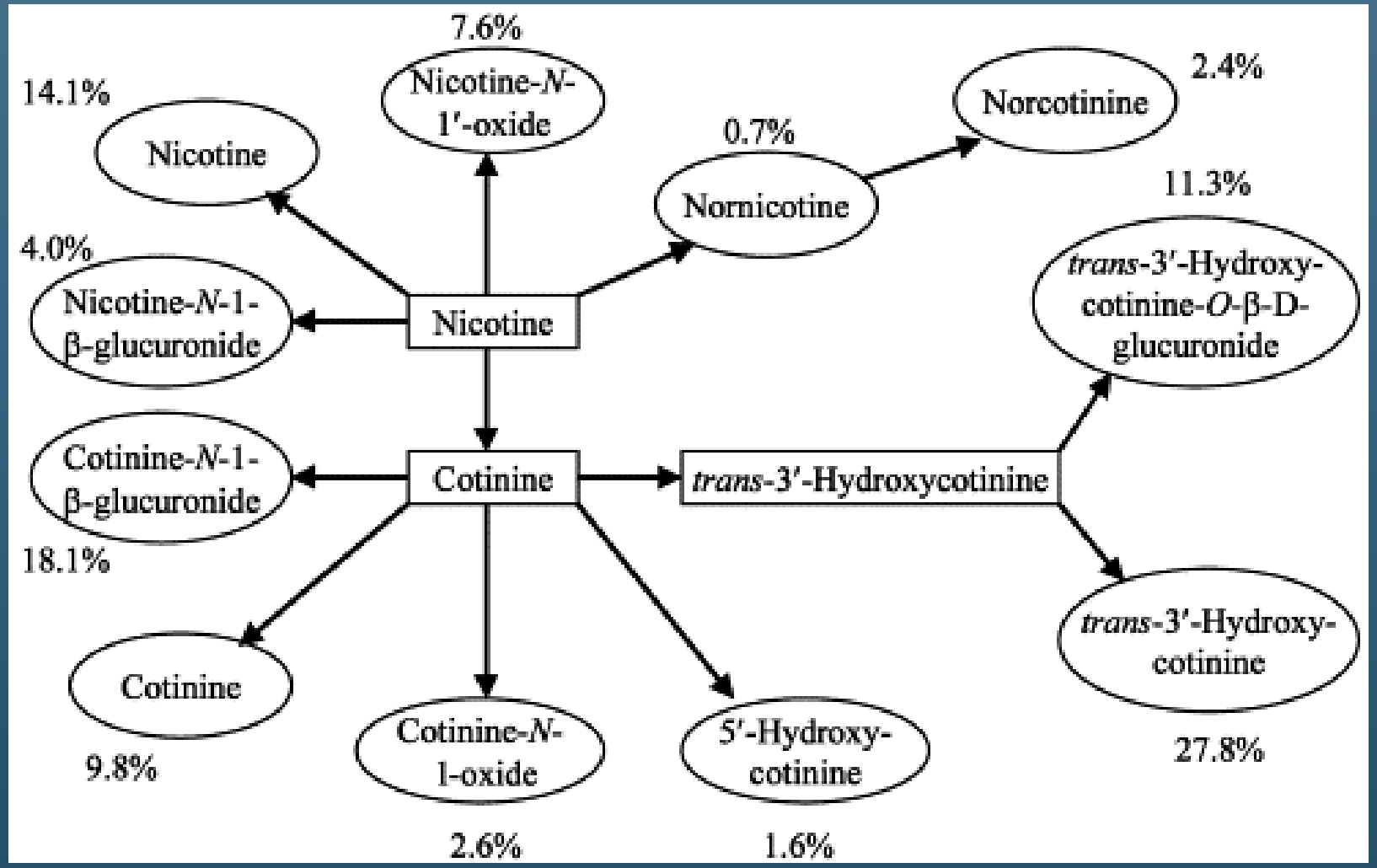
https://pcssnow.org/courses/appropriate-interpretation-of-urine-drug-screen-results/

Benzodiazepine Metabolism



Understanding Urine Drug Testing for Benzodiazepines – Psychiatry Education Forum

Nicotine Metabolism



Nicotine metabolism, human drug metabolism polymorphisms, and smoking behaviour - ScienceDirect

Harms/Issues with UDT

- Clinician/Judge Proficiency – need more education
- Misinterpreting Tests:
  - Loss of employment/housing/child custody, dismissal from care, parole/probation violations
- Few studies with poor quality, lacking RCTs!

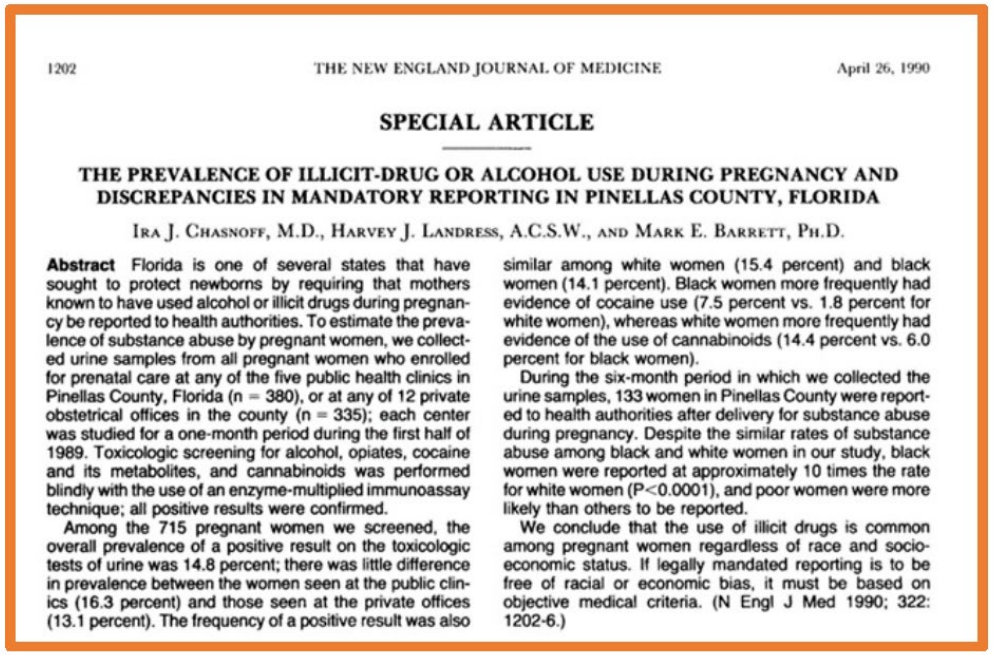
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC9562722/

https://www.sciencedirect.com/science/article/abs/pii/S0740547221003731

https://www.sciencedirect.com/science/article/abs/pii/S0376871623013054?via%3Dihub

https://www.researchgate.net/publication/372288416_Are_urine_tests_within_opioid_agonist_treatment_a_justified_practice

Racial Inequities in Child Welfare Reporting



1202 THE NEW ENGLAND JOURNAL OF MEDICINE April 26, 1990

SPECIAL ARTICLE

THE PREVALENCE OF ILLICIT-DRUG OR ALCOHOL USE DURING PREGNANCY AND DISCREPANCIES IN MANDATORY REPORTING IN PINELLAS COUNTY, FLORIDA

IRA J. CHASNOFF, M.D., HARVEY J. LANDRESS, A.C.S.W., AND MARK E. BARRETT, PH.D.

Abstract Florida is one of several states that have sought to protect newborns by requiring that mothers known to have used alcohol or illicit drugs during pregnancy be reported to health authorities. To estimate the prevalence of substance abuse by pregnant women, we collected urine samples from all pregnant women who enrolled for prenatal care at any of the five public health clinics in Pinellas County, Florida (n = 380), or at any of 12 private obstetrical offices in the county (n = 335); each center was studied for a one-month period during the first half of 1989. Toxicologic screening for alcohol, opiates, cocaine and its metabolites, and cannabinoids was performed blindly with the use of an enzyme-multiplied immunoassay technique; all positive results were confirmed.

Among the 715 pregnant women we screened, the overall prevalence of a positive result on the toxicologic tests of urine was 14.8 percent; there was little difference in prevalence between the women seen at the public clinics (16.3 percent) and those seen at the private offices (13.1 percent). The frequency of a positive result was also similar among white women (15.4 percent) and black women (14.1 percent). Black women more frequently had evidence of cocaine use (7.5 percent vs. 1.8 percent for white women), whereas white women more frequently had evidence of the use of cannabinoids (14.4 percent vs. 6.0 percent for black women).

During the six-month period in which we collected the urine samples, 133 women in Pinellas County were reported to health authorities after delivery for substance abuse during pregnancy. Despite the similar rates of substance abuse among black and white women in our study, black women were reported at approximately 10 times the rate for white women ($P<0.0001$), and poor women were more likely than others to be reported.

We conclude that the use of illicit drugs is common among pregnant women regardless of race and socioeconomic status. If legally mandated reporting is to be free of racial or economic bias, it must be based on objective medical criteria. (N Engl J Med 1990; 322: 1202-6.)

Journal of Behavioral Health Services & Research, 2011. © 2011 National Council for Community Behavioral Healthcare. DOI 10.1007/s11414-011-9247-x

Universal Screening for Alcohol and Drug Use and Racial Disparities in Child Protective Services Reporting

Sarah C. M. Roberts, DrPH
Amani Nuru-Jeter, PhD, MPH

	Chasnoff (1990)	Roberts (2011)
Positive Urine Drug Test		
Black Women	14.1%	14%
White Women	15.4%	14%
Child Welfare Report		
Black Women	10.7%	13.5%
White Women	1.1%	7.6%

Urine Drug Testing

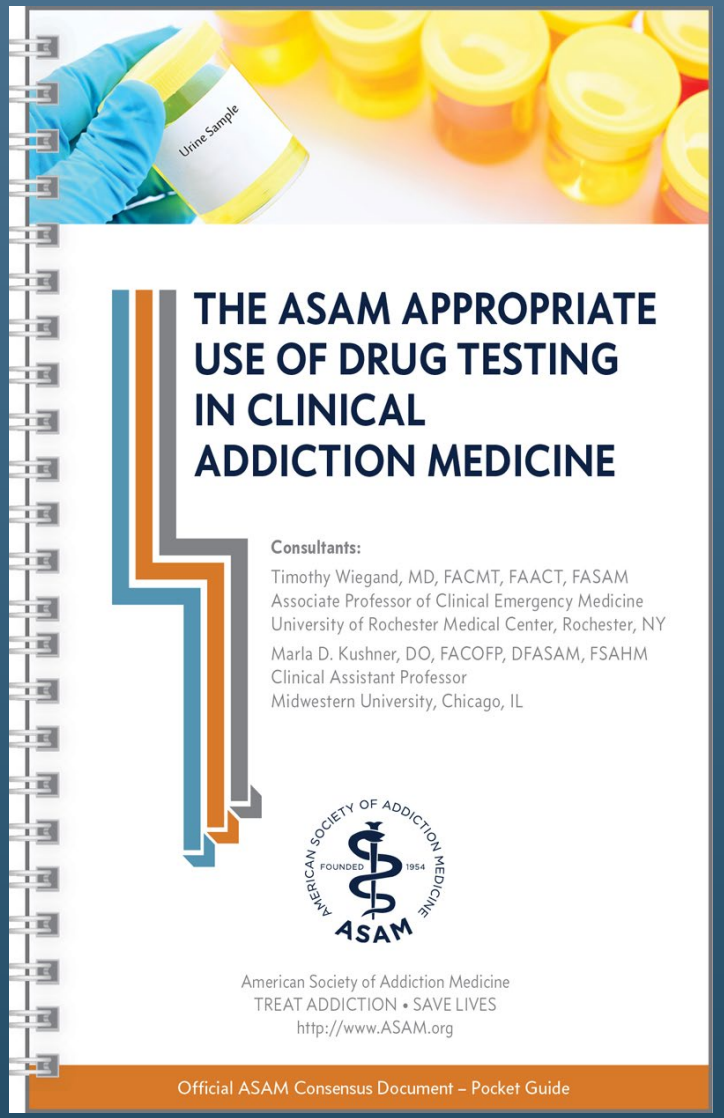
- Designed for abstinence
- Not derived from evidence demonstrating benefit to patient
- Not consistent w/ low threshold care
- Coercive – ethically questionable?
- If diversion primary concern:
  - Use oral fluid (not urine)
  - Only test for methadone or buprenorphine (MOUD)

Take Home-Points about Testing

- Whom to test, what drugs to test for, what matrix to use, and what to do with results
- Ask about any prescribed or over-the-counter medications as well as vitamins and herbal supplements
- Point-of-care (presumptive) tests and Confirmatory (definitive) tests each have pros and cons
- Testing results are just one set of information needed to guide clinical decision making

Links

- Appropriate Interpretation of Urine Drug Tests (PCSS)
- Patient–Centered Urine Drug Testing: Facts You Should Know! (PCSS)
- Essentials of Urine Drug Screens (PCSS)
- Clinical Drug Testing in Primary Care (SAMSHA)
- The Art of Urine Drug Testing: A Patient Centered Approach (AMA)
- Urine Drug Tests: Ordering and Interpretation (AAFP)



https://www.asam.org/quality-care/clinical-guidelines/drug-testing

"Drug testing is done for the patient, not to the patient."

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