Infant-Toddler Court Program National Resource Center

More Than ‘Positive’ or ‘Negative’: Complexities of Drug Testing in the Child Welfare Environment

Mollie Nisen, MD, FASAM

June 6, 2024

Safe Babies
A Program of ZERO TO THREE™

Dr. Mollie Nisen, MD, FASAM

Subject Matter Expert

Infant-Toddler Court Program National Resource Center

The National Infant-Toddler Court Program was made possible through the support of the Health Resources and Services Administration (HRSA) of the U.S. Department of Health and Human Services (HHS) as part of an award totaling $8,820,368 with 0 percent financed from non-governmental sources. The contents are those of the authors and do not necessarily represent the official views of, nor an endorsement by, HRSA, HHS, or the U.S. Government. For more information, please visit HRSA.gov.

Safe Babies

A Program of ZERO TO THREE™

Learning Objectives

1. Compare the sensitivity and specificity of various forms of toxicological testing.
2. Identify common misinterpretations in urine toxicological screening.
3. Examine drug testing policies in your organization and identify areas for improvement.

Agenda

Background: Substance Use Disorders and Child Welfare

Toxicological Screening Basics

Interpreting Drug Tests

Forms of Toxicological Screening

Drug Supply Adulterants and Toxicology Screening

Best Practices

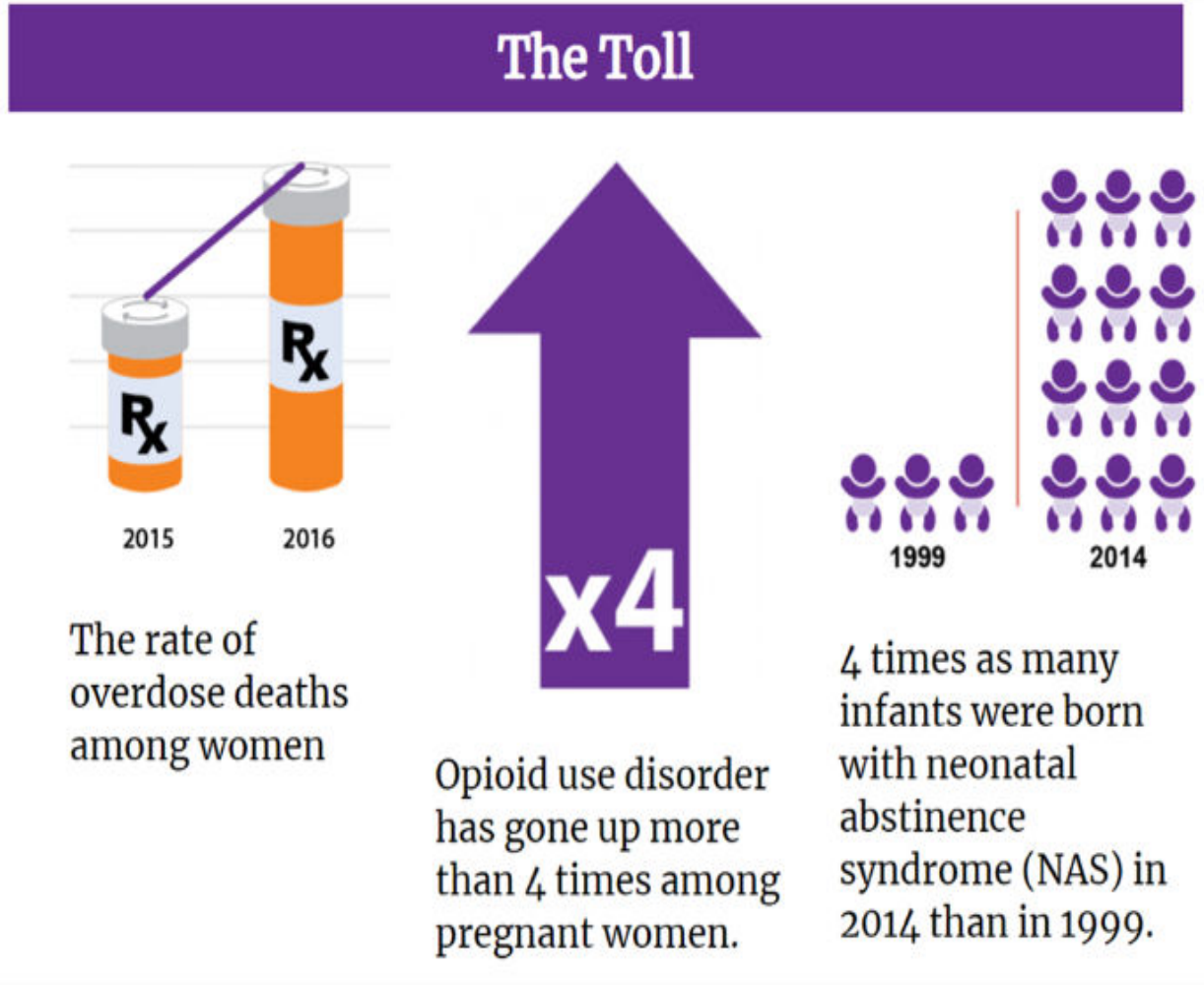
Background

Safe Babies
A Program of ZERO TO THREE™

Parental Substance Use and Child Welfare

- As rates of (particularly opioid and stimulant) use among reproductive age populations continue to increase, child welfare involvement related to parental SUD increases in parallel (Radel, 2019)

- States with higher levels of criminalization of parental or perinatal substance use have higher rates of family separation (Sanmartin, 2021)



Parental Substance Use and Child Welfare

- Common scenarios:
  - Child ingestion/passive exposure
  - Parental substance use or substance use disorders
  - Perinatal substance exposure
- Reporting mandates vary from **state to state**
- Decisions for testing and reporting remain **vulnerable to bias** (Cohen et al 2023, Palusci et al 2021)
- Drug testing has particular psychosocial and medicolegal implications/consequences for **pregnant people**

What are the policies in my state?

RESOURCE

WHAT YOU NEED TO KNOW FOR PROVIDERS

Prenatal Drug Exposure: CAPTA Reporting Requirements for Medical Professionals[1]

Note: This resource is up to date as of February 2024.

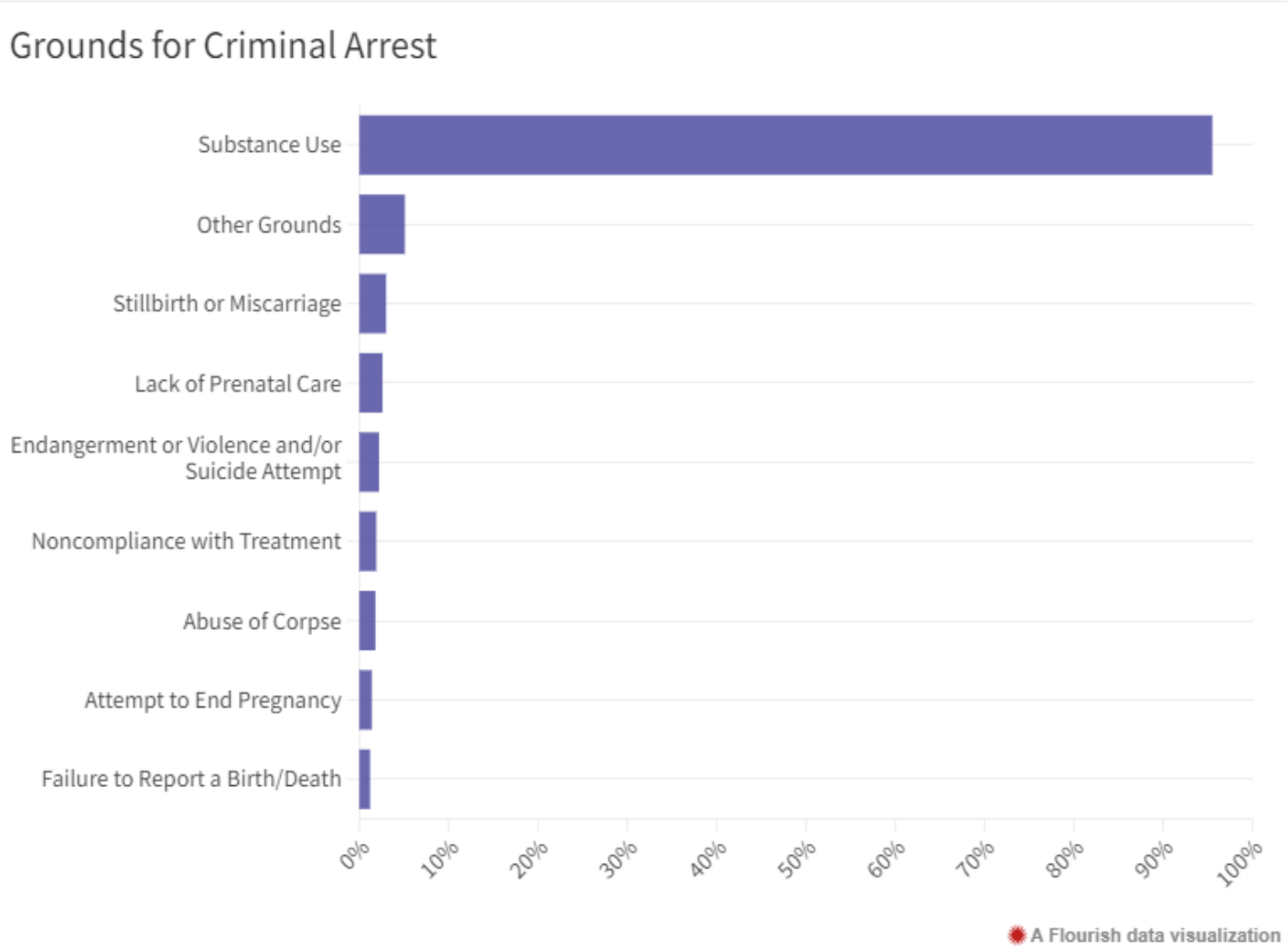
[Prenatal Drug Exposure: CAPTA Reporting Requirements for Medical Professionals – If/When/How (ifwhenhow.org)]

Histories of Punitive Policies

- Criminalization of parent
  - Charges from child endangerment to murder
- 23 states and the District of Columbia consider substance use during pregnancy to be child abuse (Guttmacher Institute)
- Compulsory Treatment Statutes
- Punitive policies associated with poor clinical outcomes
  - “Chilling effect”
  - Increase NAS rates
- Disproportionate Impact on people of color, people requiring public defense

In 95.5% of cases where the grounds for arrest were documented, the reasons given for the arrest included allegations of substance use.

1 of 2



Source: Data Center: Pregnancy Criminalization | Pregnancy Justice (pregnancyjusticeus.org)

Toxicological Screening Basics

Drug tests should not be collected without patient consent.

(Except for in urgent clinical scenarios such as obtundation etc.)

Presumptive and Definitive Tests

Technology

- Immunoassay
- Various chromatography and mass spectrometry techniques

Capability

- Sensitivity
- Specificity

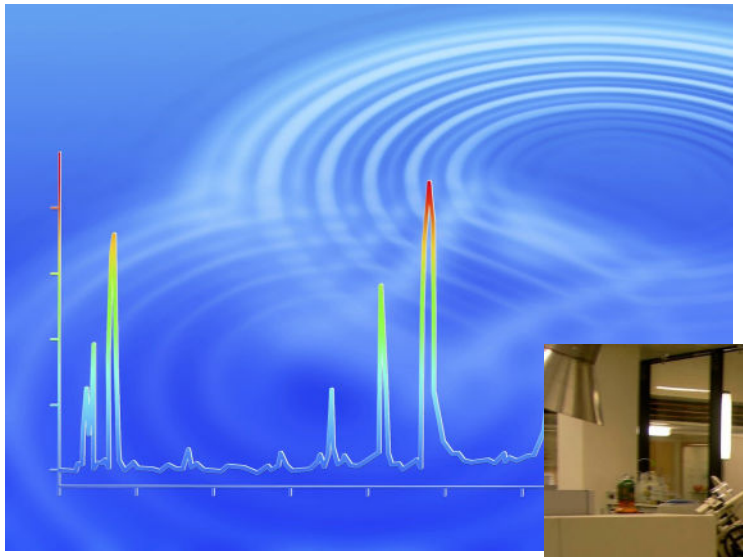
Common model

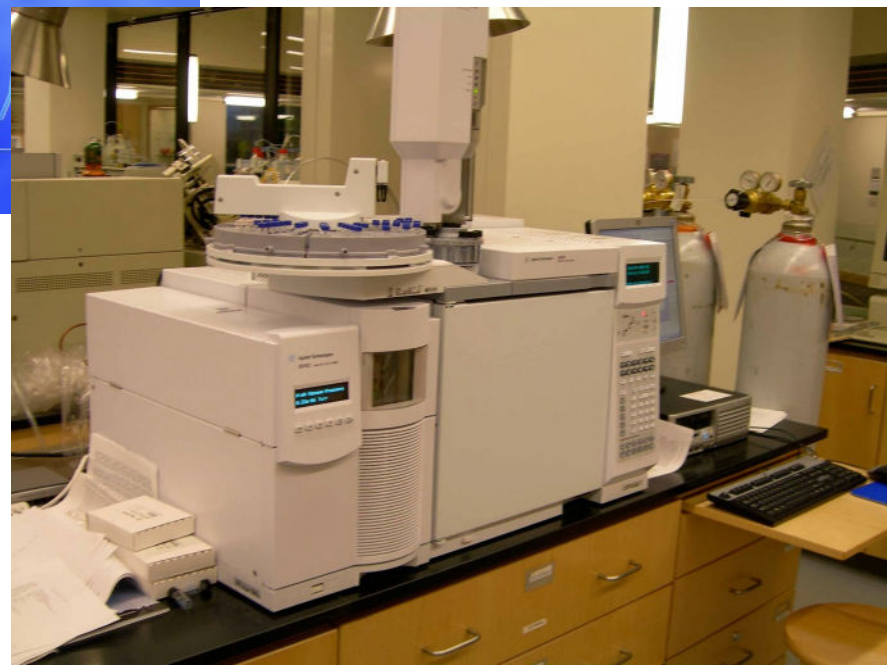
- Screen with immunoassays
- Confirm with a more specific test to rule out false-positives

Immunoassay Testing

- PRELIMINARY Testing
- Point of care or rapid testing
- High ‘sensitivity,’ low ‘specificity’
- Qualitative
- Risk for inter-reader variability (“Do you see that line?”)
- Different substances with different rates of false positives/negatives
- Positives should be sent for confirmation
- FDA approved rapid fentanyl test 10/2023

Gas Chromatography





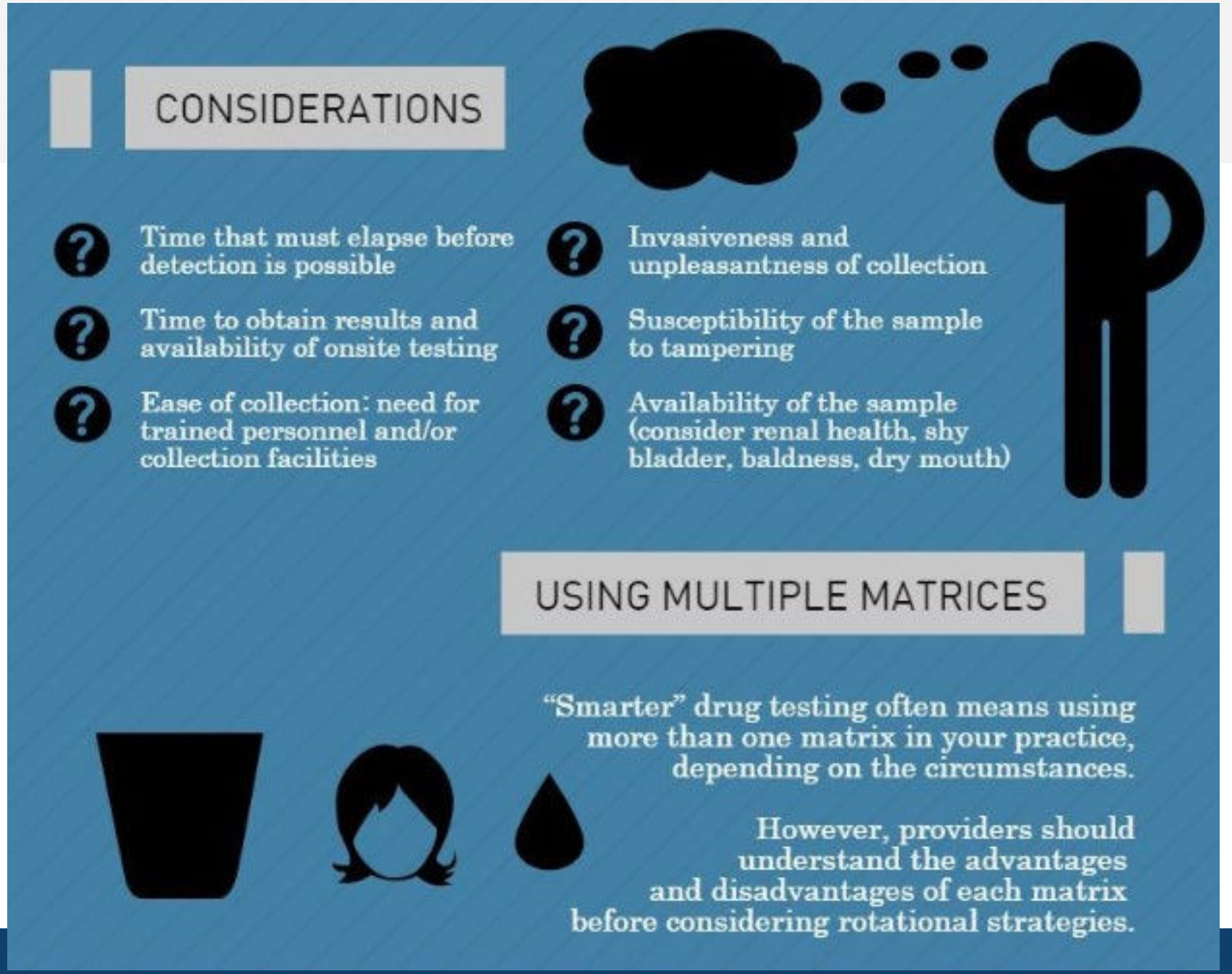
- CONFIRMATORY Testing
- “Send out”
- High sensitivity and specificity
- Quantitative
- Costly
- Slow return time (3-7 days)
- Able to detect a wider variety of substances
- Available for newer adulterants

Other principles of drug testing:

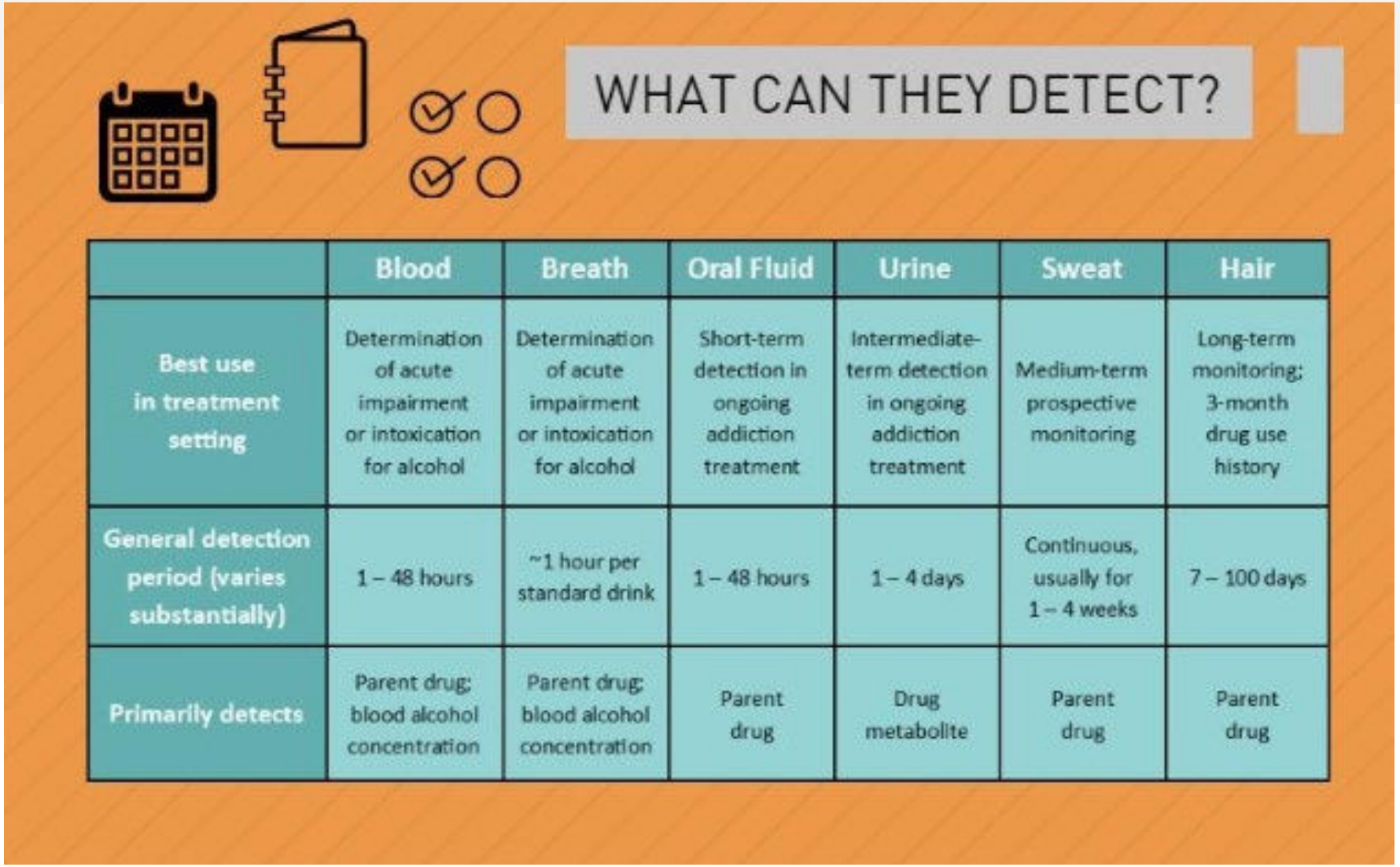
- Combined with a patient's **self-report**
- Used as a **therapeutic tool**
- **Performed at intake** to assist in a patient's initial assessment and treatment planning
- **Used to monitor** recent substance use in all addiction treatment settings
- Used to monitor the effectiveness of a patient's **treatment plan**

ASAM American Society of Addiction Medicine

Forms of Toxicological Testing



Source: Infographics (asam.org)



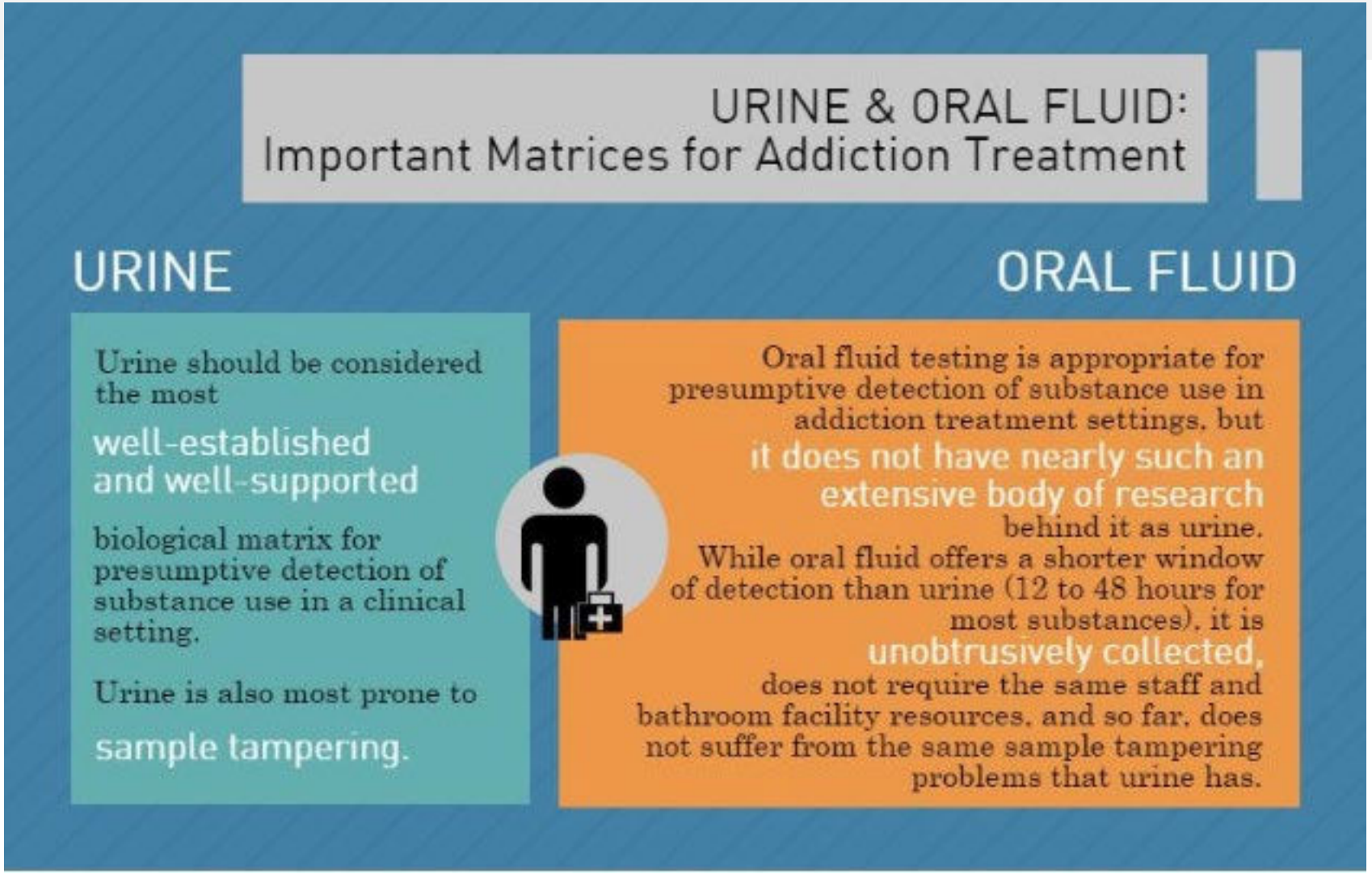
	Blood	Breath	Oral Fluid	Urine	Sweat	Hair
Best use in treatment setting	Determination of acute impairment or intoxication for alcohol	Determination of acute impairment or intoxication for alcohol	Short-term detection in ongoing addiction treatment	Intermediate-term detection in ongoing addiction treatment	Medium-term prospective monitoring	Long-term monitoring; 3-month drug use history
General detection period (varies substantially)	1 – 48 hours	~1 hour per standard drink	1 – 48 hours	1 – 4 days	Continuous, usually for 1 – 4 weeks	7 – 100 days
Primarily detects	Parent drug; blood alcohol concentration	Parent drug; blood alcohol concentration	Parent drug	Drug metabolite	Parent drug	Parent drug

Source: Infographics (asam.org)

WHAT ELSE SHOULD YOU KNOW?

	Blood	Breath	Oral Fluid	Urine	Sweat	Hair
Is an on-site test available?	Yes, primarily for alcohol	For alcohol	Yes	Yes	No	No
Ease of collection	Requires training	Easily collected	Easily collected	Requires restroom	Easily collected	Easily collected
Intrusiveness of collection	Typically high	Low	Low	High	Low	Low
Resistance to tampering	High	High	High, but some uncertainty	Low	High, but some uncertainty	High when hair is chemically untreated
Can you retain and retest a sample?	Difficult	Generally not possible	Difficult	Possible	Possible with some patches	Easy

Source: Infographics (asam.org)



Source: Infographics (asam.org)

Hair Follicle Testing: ASAM Consensus Statement (2017)

PART 4: BIOLOGICAL MATRICES

- Further research is needed to develop a protocol for evaluating sample tampering in urine drug testing. Further research is also needed to clarify what methods should be employed to verify specimen validity in alternative matrices.
- Additional study is required to determine the detectability of cannabis use in multiple matrices, namely oral fluid and hair.
- Research is lacking on which substances' metabolites can be helpfully detected through hair testing. More information on false positives, environmental adulterants, and detection windows would be beneficial.
- More research is needed on whether hair and nail testing is clinically useful in ascertaining substance use patterns and history.
- More research is needed on the utility of sweat testing in addiction treatment settings.
- Additional research is needed on oral fluid, including which specific drugs/metabolites oral fluid testing might best detect.
- Further research on tobacco testing in the context of addiction treatment would be useful.

Hair Follicle Testing (Cuypers et al, 2018)

Hair Samples

- Drugs/metabolites can arise not only from deliberate drug admin, but also environmental/atmospheric exposure.
- Can transfer from atmosphere to fingers to hair etc.
- Cosmetic procedures can remove analytes
- Hair color, texture and area on head; storage; processing can all alter results

"Decontamination Procedures"

- "Washing" samples to remove analytes (drugs) on hair surface are inconsistent and scientifically questionable.
- Some procedures might even move analyte from outside to inside the hair matrix.
- This particularly confounds segmental analysis and claims it can determine pattern of use over time.
- No clinical consensus

Interpretation

- "Cut offs" are not evidence based and cannot differentiate between intentional and environmental exposure
- Segmenting- ~1cm/month- different growth patterns, diffusion of analyte via sweat or sebum into hair
- In the court setting, often done by unqualified/untrained individuals

What are we testing for?

Most "opioid" tests detect morphine derivatives only and not synthetic opioids like fentanyl. Or MOUD like methadone or buprenorphine.

Detecting fentanyl requires a specific test.

Novel synthetic opioids, benzos and adulterants like xylazine are not included in standard drug testing panels.

know what's in your drugs

TRANQ | XYLAZINE

Xylazine is a veterinary tranquilizer that is cut in dope to give fentanyl longer legs. It's known as "anestesia de caballo" in Puerto Rico and "tranq"in Philly.

Tranq was found in over

90%

of dope samples tested in Philly in 2021

Dope with tranq was first seen in Puerto Rico. Today, it is being found in more and more places across the US.

When tranq is mixed with another drug (like fentanyl, heroin, or a benzo), the chance of overdose increases. If someone is overdosing administer naloxone like you normally would. If the person starts breathing again but is still sedated, they don't need more naloxone. Put them in rescue position and keep an eye on them.

Tranq has been associated with severe wounds, which spread and worsen very quickly.

These wounds are seen regardless of how people use: smoking, snorting, or injecting. It's very difficult for these wounds to heal on their own so it is important to get medical attention if you have one.

What can you do if you think there is tranq in your dope?

First, try to ask around and see how the drug is making other people feel before you buy or use it. Since tranq can cause a really heavy nod, try to use somewhere that you will be safe and won't fall and hurt yourself. Finally, if you think there is tranq in your dope let others know--including someone at your local exchange program--so folks know to be careful.

carry narcan (naloxone)

start low and go slow

tell someone you're using

Never Use Alone

English hotline: 800-484-3731

Spanish hotline: 800-928-5330

The Brave App

download in the app store

Department of Public Health CITY OF PHILADELPHIA

Created by the Substance Use and Harm Reduction (SUPHR) division

For more information on tranq in Philadelphia visit substanceusephilly.com/tranq

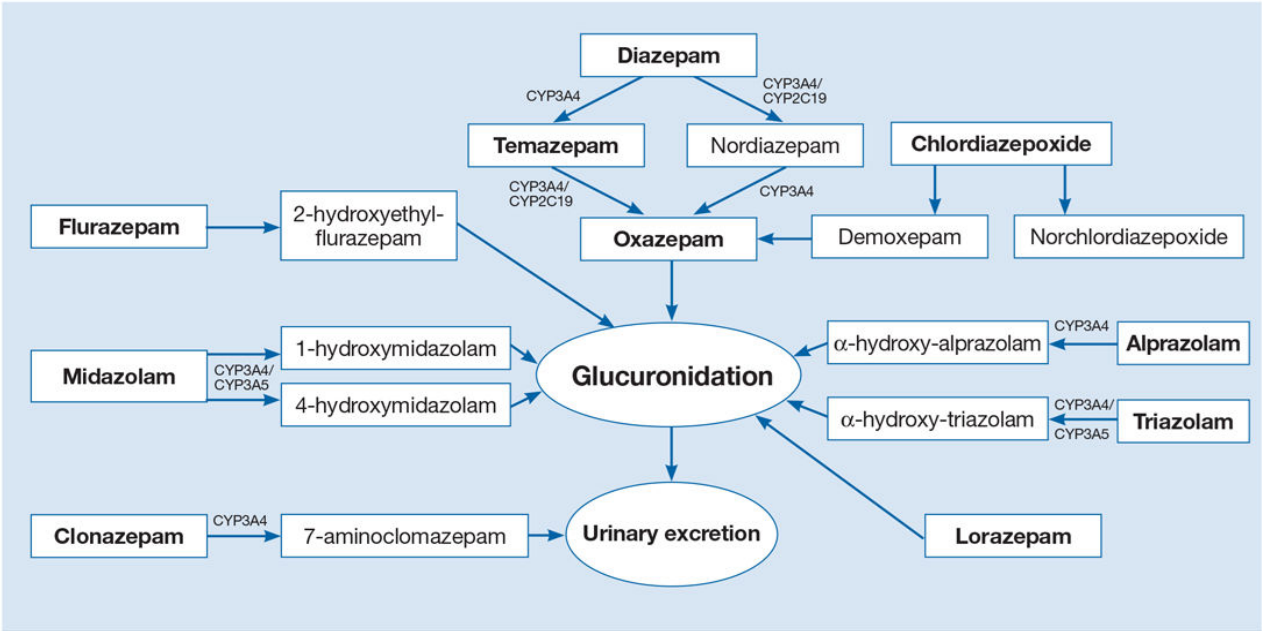
Safe Babies
A Program of ZERO TO THREE

A positive result of naloxone on a drug screen does not indicate a recent overdose reversal.

Typical benzodiazepine tests only detect oxazepam derivatives, missing common drugs of misuse alprazolam (Xanax©) and clonazepam (Klonopin©)

Figure 1

Metabolic pathways of commonly used benzodiazepines[a]



[a]Drugs in bold are commonly used benzodiazepines

CYP: cytochrome P450

Source: Reference 14

Interpreting Toxicological Testing

Can a drug test determine....?

YES

- Presence of a substance in the body within a particular window of time

NO

- Acute intoxication
- Presence or absence of a substance use disorder or “addiction”
- Identify any possible substance present

What can impact result interpretation?

- Validity testing (control)
- Sample collection technique
- Processing procedures
- Chain of custody
- Contamination, Lab Calibration
- “Sample Swapping” or tampering
- Patient history
- Assay cut-offs
- Knowledge of patient history, prescribed medication list

Drug testing should be interpreted by a *trained individual in the context of patient history and medication list.*

Common Cross Reactants

- **Amphetamine immunoassays**: amantadine, bupropion, ephedrine, labetalol, phentermine, pseudoephedrine, ranitidine, selegiline, and trazodone metabolites
- **Benzodiazepine immunoassays**: oxaprozin, sertraline, efavirenz
- **Cannabis immunoassays:** ibuprofen, naproxen, efavirenz, pantoprazole, baby washes
- **Cocaine immunoassays**: few interferences are known, but the medical use of cocaine as a local anesthetic or drinking tea from coca leaves is a possible cause of interference.
- **Opioid immunoassays**: quinolones, verapamil
- **Tricyclic antidepressant immunoassay**s: carbamazepine, cyclobenzaprine, diphenhydramine, phenothiazines

Case Scenario

- Very low fentanyl levels in the setting of high cocaine metabolites. The patient reports no recent intentional fentanyl use.
- Qualitative test says “FENTANYL POSITIVE”
- **Quantitative test s**hows very low concentration (i.e. 6ng/dL), whereas when the patient was actively using fentanyl, concentrations were in the 2000s
- This is **indicative of fentanyl adulterated cocaine supply**

Best Practices

Best Practices

- Policies in compliance with local law without *overreporting*
- Universal screening vs universal testing
- Implicit/explicit bias training for all involved parties
- Basic Substance Use Disorder education for child welfare workers
- *Evidence-based* testing and surveillance methods (i.e. eliminate hair follicle testing)

Takeaways

Takeaways

- Drug screens can have **non-binary (i.e., not positive or negative) results** and should be **interpreted by experts** *alongside patient report*
- Point of care or **rapid drug screens can be unreliable**, and any positive results need to be **confirmed via GCMS (gas chromatography)** if they are going to be used in a legal capacity
- New substances of misuse or adulterants may not be routinely screened for **Hair follicle testing is clinically unreliable**
- A positive drug test **does not indicate active intoxication** or the presence of a SUD

Sources

- Cohen, S., Nielsen, T., Chou, J. H., Hoeppner, B., Koenigs, K. J., Bernstein, S. N., ... & Schiff, D. M. (2023). Disparities in maternal-infant drug testing, social work assessment, and custody at 5 hospitals. *Academic pediatrics*, *23*(6), 1268-1275.
- Palusci, V. J., & Botash, A. S. (2021). Race and bias in child maltreatment diagnosis and reporting. *Pediatrics*, *148*(1).
- Sanmartin, M. X., Ali, M. M., Lynch, S., & Aktas, A. (2020). Association between state-level criminal justice–focused prenatal substance use policies in the US and substance use–related foster care admissions and family reunification. *JAMA pediatrics*, *174*(8), 782-788.
- Radel, Laura, et al. "Substance use, the opioid epidemic, and the child welfare system: Key findings from a mixed methods study." *Office of the Assistant Secretary for Planning and Evaluation* (2018): 1-9.
- Cuypers, E., & Flanagan, R. J. (2018). The interpretation of hair analysis for drugs and drug metabolites. *Clinical Toxicology*, *56*(2), 90-100.

Thank you!

Nisen-Mollie@cooperhealth.edu

Safe Babies
A Program of ZERO TO THREE™