Perinatal Toxicology

From Lab to Law: Understanding Fentanyl Testing in Dependency Cases

November 13th, 2025

Collin Schenk, MD and Mollie Limb, MD
Swedish Addiction Recovery Services

Who are we and what do we do?

- Board certified in Family Medicine (primary care for all ages – children and adults, prenatal and obstetric care)
- Board certified in Addiction Medicine (specialty care for substance use disorders)

- Our clinical practice with Swedish Addiction Recovery Services:
  - Full-time patient care, >50% working with pregnant/newborn population
  - Primarily inpatient (hospital setting)
    - Pregnant/postpartum patients: withdrawal management/medication stabilization and 26-day inpatient treatment (SUPP program)
    - Manage labor and deliver babies
    - Newborn care, including withdrawal management
  - Outpatient (clinic) settings
    - Prenatal care for pregnant patients with substance use disorders

Defining Scope:

- We primarily take care of **newborns!** (not older children)
- Our recommendations for toxicology testing apply to:
  - Birthing parents – during pregnancy and immediately postpartum
  - Newborns – during their newborn hospital stay
- We are *not* commenting on when/if toxicology testing (of parents or children) might be indicated later in childhood

Outline

- Drug testing (toxicology) overview
- Contextualizing positive test results
- Fentanyl drug testing
- Care of the substance-exposed newborn
- Newborn toxicology
- Policy and practice implications

Drug Testing Overview

Drug Tests

- Screening (rapid) vs. Confirmatory tests
- Qualitative (positive/negative) vs. Quantitative (numerical) tests
- At Swedish, fentanyl tests are separate (not included in standard drug panels)
- Window of Detection = how long will a person test positive for a drug after the last drug use?

Window of Detection

- How long will a person test positive for a drug after the last drug use?
- Varies **greatly** based on:
  - The drug (does it accumulate in fat storage?)
  - Quantity and duration of use (infrequent use vs. heavy daily use)
  - The biologic sample being tested (urine vs. umbilical cord vs. meconium)
  - The person's metabolism (affected by pregnancy, body composition, liver health, etc.)
- **Urine testing** is the most accurate way to assess for recent use
  - Many drugs remain in urine for only 2-4 days
  - A few drugs remain in urine for several months…
    - Cannabis
    - Fentanyl

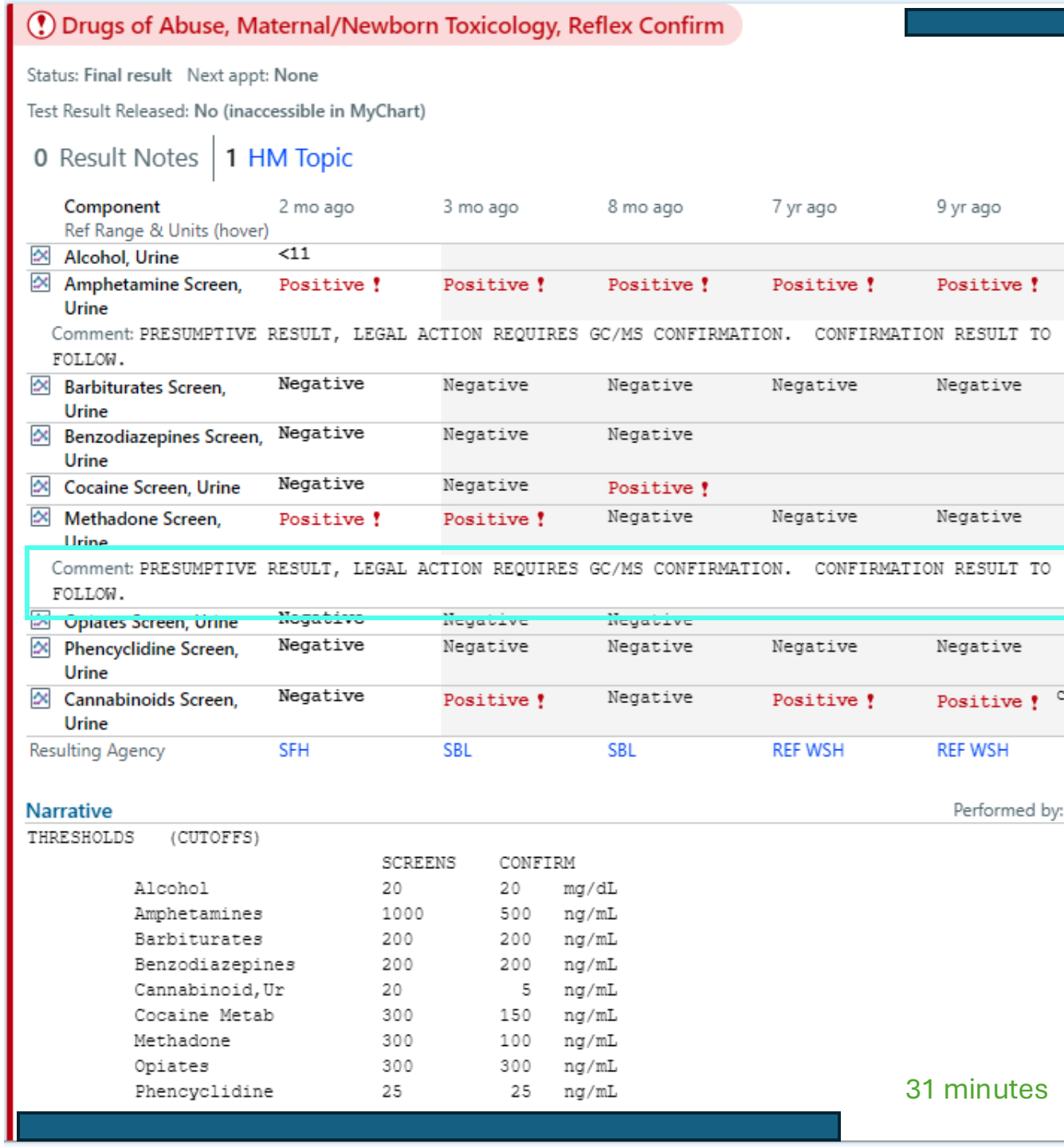
Table 1. Length of Time Selected Drugs Are Detected in Urine

Drug	Time After Ingestion
Alcohol	7-12 h
Amphetamines	2-3 days
Benzodiazepines	
Short-acting (e.g., lorazepam)	3 days
Long-acting (e.g., diazepam)	30 days
Marijuana	
Single use	3 days
Moderate use (4×/wk)	5-7 days
Daily use	10-15 days
Long-term heavy smoker	>30 days
Opioids	
Codeine	48 h
Heroin	48 h
Hydromorphone	2-4 days
Methadone	3 days
Morphine	48-72 h
Oxycodone	2-4 days

Source: References 1-4.

Rapid “screening” drug tests:

- Fast => results take hours
- Immunoassays: detect substances present above a set “threshold” level
- **Qualitative** = positive or negative
- Provide no information about:
  - Amount of substance present
  - Time of last use
- Imprecise: can’t distinguish between similar substances => High false positive rates
- A positive screening test should ALWAYS be sent for confirmatory testing to ensure it’s a TRUE positive.



Drugs of Abuse, Maternal/Newborn Toxicology, Reflex Confirm

Status: Final result Next appt: None

Test Result Released: No (inaccessible in MyChart)

0 Result Notes | 1 HM Topic

Component Ref Range & Units (hover)	2 mo ago	3 mo ago	8 mo ago	7 yr ago	9 yr ago
Alcohol, Urine	<11				
Amphetamine Screen, Urine	Positive !	Positive !	Positive !	Positive !	Positive !
Comment: PRESUMPTIVE RESULT, LEGAL ACTION REQUIRES GC/MS CONFIRMATION. CONFIRMATION RESULT TO FOLLOW.					
Barbiturates Screen, Urine	Negative	Negative	Negative	Negative	Negative
Benzodiazepines Screen, Urine	Negative	Negative	Negative		
Cocaine Screen, Urine	Negative	Negative	Positive !		
Methadone Screen, Urine	Positive !	Positive !	Negative	Negative	Negative
Comment: PRESUMPTIVE RESULT, LEGAL ACTION REQUIRES GC/MS CONFIRMATION. CONFIRMATION RESULT TO FOLLOW.					
Opiates Screen, Urine	Negative	Negative	Negative		
Phencyclidine Screen, Urine	Negative	Negative	Negative	Negative	Negative
Cannabinoids Screen, Urine	Negative	Positive !	Negative	Positive !	Positive !
Resulting Agency	SFH	SBL	SBL	REF WSH	REF WSH

Narrative Performed by:

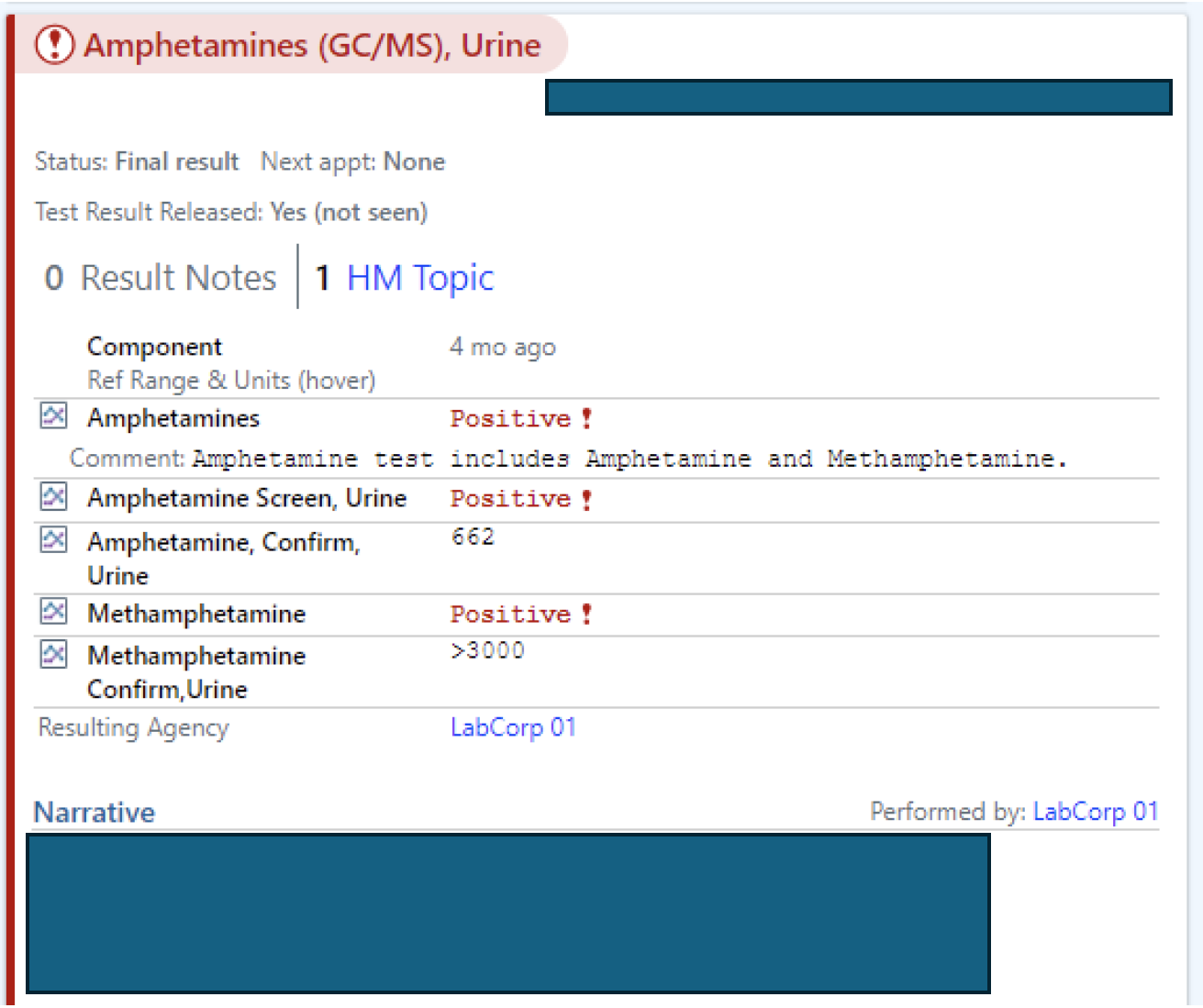
THRESHOLDS (CUTOFFS)

	SCREENS	CONFIRM	
Alcohol	20	20	mg/dL
Amphetamines	1000	500	ng/mL
Barbiturates	200	200	ng/mL
Benzodiazepines	200	200	ng/mL
Cannabinoid,Ur	20	5	ng/mL
Cocaine Metab	300	150	ng/mL
Methadone	300	100	ng/mL
Opiates	300	300	ng/mL
Phencyclidine	25	25	ng/mL

31 minutes

Confirmatory “send out” drug tests:

- Slow => results take days to weeks
- GC/MS (gas chromatography-mass spectrometry): confirms the specific drug metabolite and its concentration
- Usually **Quantitative**: give numerical information about the *amount* of substance present
- Precise: very low false positive rates
- Confirmatory tests should be used to **verify** positive screening test results



Amphetamines (GC/MS), Urine

[redacted]

Status: Final result Next appt: None

Test Result Released: Yes (not seen)

0 Result Notes | 1 HM Topic

Component	4 mo ago
Ref Range & Units (hover)	
Amphetamines	Positive !
Comment: Amphetamine test includes Amphetamine and Methamphetamine.	
Amphetamine Screen, Urine	Positive !
Amphetamine, Confirm, Urine	662
Methamphetamine	Positive !
Methamphetamine Confirm,Urine	>3000
Resulting Agency	LabCorp 01

Narrative Performed by: LabCorp 01

[redacted]

7 days

Summary: Drug Testing Overview

- **Rapid "screening" drug tests**:
  - High false positive rates
  - Provide no information about when a person last used

- **Confirmatory "send out" drug tests:**
  - Low false positive rates
  - In *some* cases, quantitative results can help distinguish between:
    - Recent last use
    - Distant last use (with "lingering" low level of drug still present in the urine)

Contextualizing Positive Test Results

Newborn "Report of Suspected Harm":

- Initial report written by hospital MSW
- Typically done at 1-2 days of life
- Includes toxicology results for parent and baby:
  - ONLY **unconfirmed** “screening” drug test results are available
  - ”Positive” results may be:
    - 1) False positives (detecting other medications)
    - 2) True “expected” positives (detecting pain medication given in labor)
    - 3) True positives (detecting drug use)

“Presumptive result, legal action requires GC/MS confirmation”

- **Does NOT include confirmatory (GC/MS) testing**
  - Often these tests are not ordered
  - If ordered, results aren’t available yet (take days toweeks)

UA/BAL results (time collected):

Pt's utox:

Just now | All Rows | Time Mark

TOXICOLOGY	SWEDISH ...	SWEDISH ...	SWEDISH ...
Alcohol, Urine			<11
Amphetamine Screen, Urine	Positive !	Positive !	Negative
Barbiturates Screen, Urine	Negative	Negative	Negative
Benzodiazepines Screen, Urine	Negative	Negative	Negative
Cannabinoids Screen, Urine	Negative	Negative	Negative
Cocaine Screen, Urine	Negative	Negative	Negative
Fentanyl and Metabolite Screen, U...	Positive !		
Methadone Screen, Urine	Negative	Negative	Negative
Opiates Screen, Urine	Negative	Negative	Negative
Phencyclidine Screen, Urine	Negative	Negative	Negative

Baby's utox:

Just now | All Rows | Time Mark

TOXICOLOGY	SWEDISH ...
Amphetamine Screen, Urine	Negative
Barbiturates Screen, Urine	Negative
Benzodiazepines Screen, Urine	Negative
Cannabinoids Screen, Urine	Negative
Cocaine Screen, Urine	Negative
Fentanyl and Metabolite Screen, U...	Positive !
Methadone Screen, Urine	Negative
Opiates Screen, Urine	Negative
Phencyclidine Screen, Urine	Negative

1) False positives

- Dozens of medications (prescription and over-the-counter) cause false positive results on “screening” drug tests
- Only confirmatory testing can distinguish between true and false positives
- #1 most common false positive: **amphetamines**
  - Common causes in the labor & delivery setting: labetalol, ephedrine, metronidazole, metformin, trazodone, fluoxetine, bupropion, aripiprazole and more…

Table 2. Agents Causing Potential False-Positive Results With Urine Drug Screening

Medication	AMP/MET	BAR	BZO	THC	LSD	MTD	OPI	PCP	TCA
Amitriptyline					X				
Bupropion	X				X				
Buspirone					X				
Carbamazepine									X
Cyclobenzaprine									X
Dextromethorphan							X	X	
Diltiazem					X				
Diphenhydramine						X		X	
Doxylamine						X	X	X	
Fentanyl					X				
Fluoxetine	X				X				
Ibuprofen		X		X				X	
Labetalol	X				X				
Lamotrigine								X	
Metformin	X								
Methylphenidate	X				X				
Metoclopramide					X				
Naproxen		X		X					
Prochlorperazine					X				
Promethazine	X								
Pseudoephedrine	X								
Quetiapine						X			X
Quinolones[a]							X		
Ranitidine	X								
Risperidone					X				
Sertraline			X		X				
Tramadol								X	
Trazodone	X				X				
Venlafaxine								X	
Verapamil					X	X			

[a] *False-positive amphetamine results have only been seen with ofloxacin.*
AMP/MET: amphetamine/methamphetamine; BAR: barbiturate; BZO: benzodiazepine; LSD: lysergic acid diethylamide; MTD: methadone; OPI: opiate; PCP: phencyclidine; TCA: tricyclic antidepressant; THC: cannabinoid.
Source: References 1-4, 8, 9, 11-16.

Drugs of Abuse, Screen, Urine

Status: Final result Next appt: None

Test Result Released: No (inaccessible in MyChart)

0 Result Notes | 1 HM Topic

Component Ref Range & Units (hover)	3 mo ago
Amphetamine Screen, Urine	Positive !
Comment: PRESUMPTIVE RESULT, LEGAL ACTION REQUIRES GC/MS CONFIRMATION. CONFIRMATION RESULT TO FOLLOW.	
Barbiturates Screen, Urine	Negative
Benzodiazepines Screen, Urine	Negative
Cocaine Screen, Urine	Negative
Methadone Screen, Urine	Positive !
Opiates Screen, Urine	Negative
Phencyclidine Screen, Urine	Negative
Cannabinoids Screen, Urine	Negative
Resulting Agency	SFH

Narrative Perform

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Screening Thresholds (Cutoffs):

Amphetamines 1000 ng/mL
Barbiturates 200 ng/mL
Benzodiazepines 200 ng/mL
Cannabinoid, Ur 20 ng/mL
Cocaine Metabolites 300 ng/mL
Methadone 300 ng/mL
Opiates 300 ng/mL
Phencyclidine 25 ng/mL

(Results below the threshold are reported as NEG)

Unconfirmed results should only be used for medical rather than legal purposes.
```

51 minutes

Amphetamines (GC/MS), Urine

Status: Final result Next appt: None

Test Result Released: No (inaccessible in MyChart)

0 Result Notes | 1 HM Topic

Component Ref Range & Units (hover)	3 mo ago
Amphetamines	Negative
Comment: Amphetamine test includes Amphetamine and Methamphetamine.	
Resulting Agency	LabCorp 01

Narrative

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Performed at:  01 - Labcorp OTS RTP
1904 TW Alexander Drive, RTP, NC  277090153
Lab Director: Ntei Abudu PhD, Phone:  8008333984
```

7 days

2) True “expected” positives

- >90% of patients receive pain medication in labor
  - Fentanyl
  - Morphine
  - Benzodiazepines (IV midazolam – commonly given during C-section)
- These medications cause “positive” test results for both parent and newborn
  - These results should NOT be interpreted as evidence of illicit drug use by the parent
  - There is no way to distinguish “street” fentanyl from hospital “fentanyl” on a drug test

3) True positives

- Positive test due to drug use by the parent
  - Unintentional use – contaminated drug supply or smoking equipment
  - Intentional use
    - Recent use
    - Distant use (with “lingering” low level of drug still present in the urine)

Summary: Contextualizing Positive Results

- Screening drug tests results are often inaccurate and unreliable.
- Accurate interpretation of results typically requires additional information and context, which can be requested from the medical team.
- Unexpected positive results (i.e. for a person who denies recent drug use) should always be sent for confirmatory testing.
- In many situations, results cannot be used to tell whether a person recently used or not.

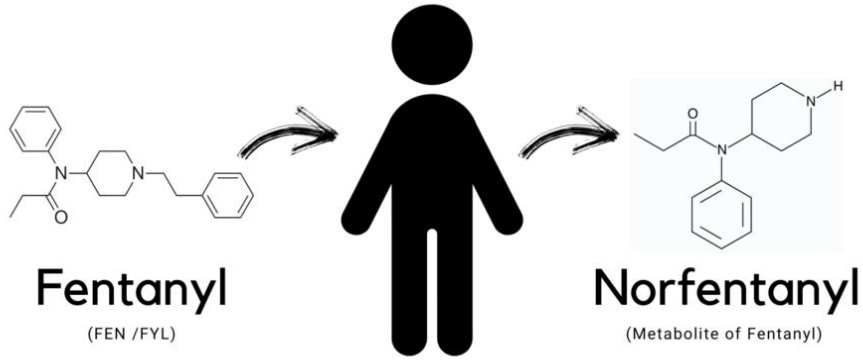
Common Misconceptions

#1:“Toxicology testing is incontrovertible proof of active drug use that can be relied upon in court.”

- Facts: Screening drug tests results are often inaccurate and unreliable.
  - Confirmatory testing should be performed to distinguish between true and false positives.
  - Many true positive results are "expected" (ex: birthing person received a fentanyl epidural during labor) and cannot be used as evidence of drug use.
    - *We're not saying they didn’t use. We’re just saying that you can’t use these test results to determine whether they used or not*.

Fentanyl Drug Testing

Fentanyl



- The body metabolizes **fentanyl** into **nor-fentanyl.**
- Both fentanyl and nor-fentanyl are excreted in urine.

- One-time fentanyl use → **present in urine for ≤ 96 hours**
- Chronic heavy fentanyl use → fentanyl accumulates in adipose (fat) tissue, creating a fentanyl ”reservoir”.
  - Fentanyl is slowly released back into circulation and eventually removed by the kidney.
  - This process takes **weeks to months.**

- Once a person stops using fentanyl:
  - The **amount (level)** of fentanyl and nor-fentanyl in their urine will start to decrease slowly over time.
  - Low levels will still be **present in urine for months after last use.**
    - Fentanyl may be detected >30 days after last use.
    - Nor-fentanyl may be detected >9 months after last use.

Non-Perinatal Case Study

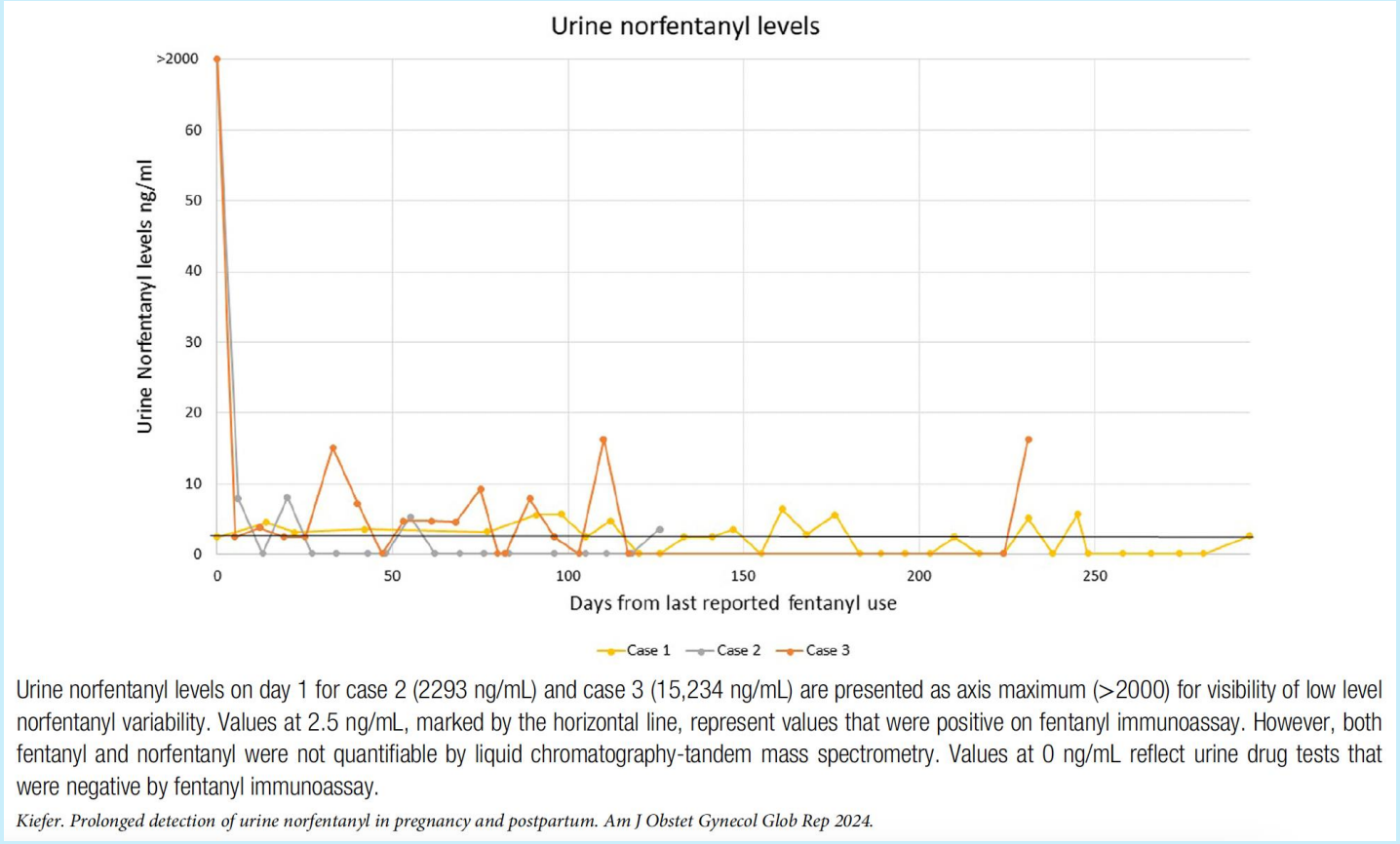
- Table of fentanyl/nor-fentanyl levels by GC/MS
  - Fentanyl: above test threshold for 95 days after last use.
  - Nor-fentanyl: above test threshold for 245 days (8 months) after last use.
- Nor-fentanyl and fentanyl both **fluctuated** between detectable and undetectable levels

Days since last use	Fentanyl (ng/mL)	Norfentanyl (ng/mL)
−79	11.5	< 0.5
−35	> 500	> 500
−32	34.8	> 500
−18	< 0.5	> 500
−9	> 500	> 500
−3	> 500	> 500
5	26.1	> 500
10	7.2	46.3
19	2.7	17.7
23	1	4.1
29	1.8	5.2
33	1.4	3.9
43	< 0.5	2.6
48	< 0.5	6.7
51	< 0.5	1
54	< 0.5	1.6
57	< 0.5	2.6
62	0.5 *	1.9
65	0.7	3.2
69	< 0.5	< 0.5
72	< 0.5	1.1
76	< 0.5	1.3 *
86	0.5 *	1.2
93	< 0.5	1.6
95	0.7 *	0.6
100	< 0.5	1.7
110	< 0.5	< 0.5
113	< 0.5	1.2 *
124	< 0.5	0.6
127	< 0.5	0.7
135	< 0.5	< 0.5
141	< 0.5	< 0.5
154	< 0.5	< 0.5
161	< 0.5	< 0.5
173	< 0.5	< 0.5
176	< 0.5	0.8 *
180	< 0.5	< 0.5
184	< 0.5	< 0.5 *
187	< 0.5	1.1
190	< 0.5	< 0.5
205	< 0.5	0.9 *
210	< 0.5	< 0.5
218	< 0.5	< 0.5
223	< 0.5	< 0.5
238	< 0.5	< 0.5
245	< 0.5	1.2 *

Celik, M., Zimmerer, E., Maxwell, B., & Aloezos, C. (2024). Challenges of Drug Testing in Addiction Treatment: A Case Report of Protracted Fentanyl Clearance in a Patient Involved With Child Protective Services and Probation. Journal of Addiction Medicine, 10-1097.

Perinatal Case Series

- Pregnant and postpartum (n=3)
- Urine nor-fentanyl levels
- All 3 had urine positive for nor-fentanyl for >4 months
- 2 had urine positive for nor-fentanyl for >7 months
- In all 3, urine **fluctuated** between undetectable and detectable levels



Urine norfentanyl levels on day 1 for case 2 (2293 ng/mL) and case 3 (15,234 ng/mL) are presented as axis maximum (>2000) for visibility of low level norfentanyl variability. Values at 2.5 ng/mL, marked by the horizontal line, represent values that were positive on fentanyl immunoassay. However, both fentanyl and norfentanyl were not quantifiable by liquid chromatography-tandem mass spectrometry. Values at 0 ng/mL reflect urine drug tests that were negative by fentanyl immunoassay.

Kiefer. Prolonged detection of urine norfentanyl in pregnancy and postpartum. Am J Obstet Gynecol Glob Rep 2024.

Kiefer, M. K., Cowen, J., Hinely, K. A., & Rood, K. M. (2024). Prolonged detection of urine norfentanyl in individuals enrolled in a medication for opioid use disorder in pregnancy and postpartum program: a case series. *AJOG Global Reports*, *4*(2), 100313.

Perinatal Case Study

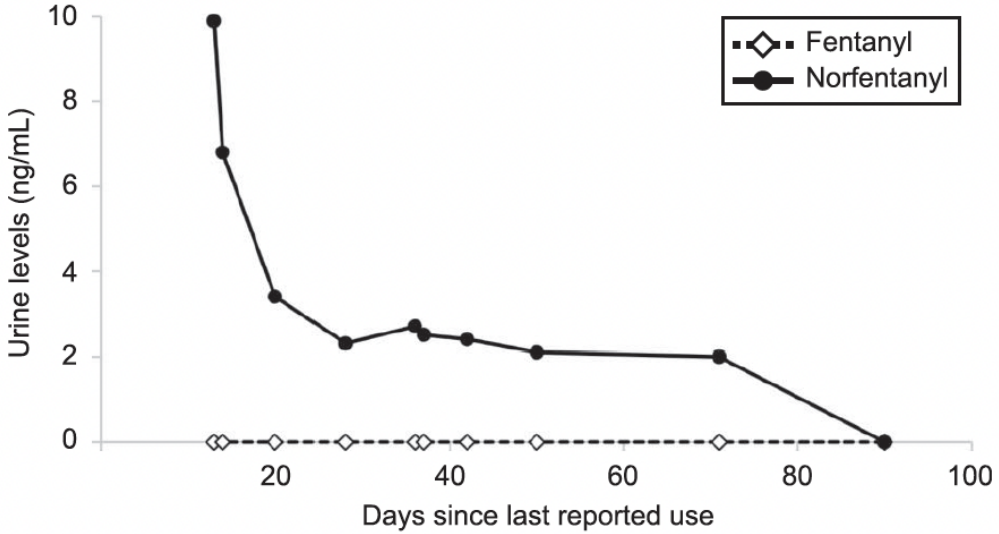


Fig. 1. Fentanyl and norfentanyl urine concentrations (ng/mL) determined from gas chromatography and mass spectrometry testing. Laboratory results from two early measurements are not depicted for scaling issues but are reproduced here. Those laboratory results were as follows: Zero days since last reported use: fentanyl 244.1 ng/mL, norfentanyl >500 ng/mL. Six days since last reported use: fentanyl 38 ng/mL, norfentanyl 390.6 ng/mL.

Pregnant woman's urine is positive for nor-fentanyl for 70 days after last use

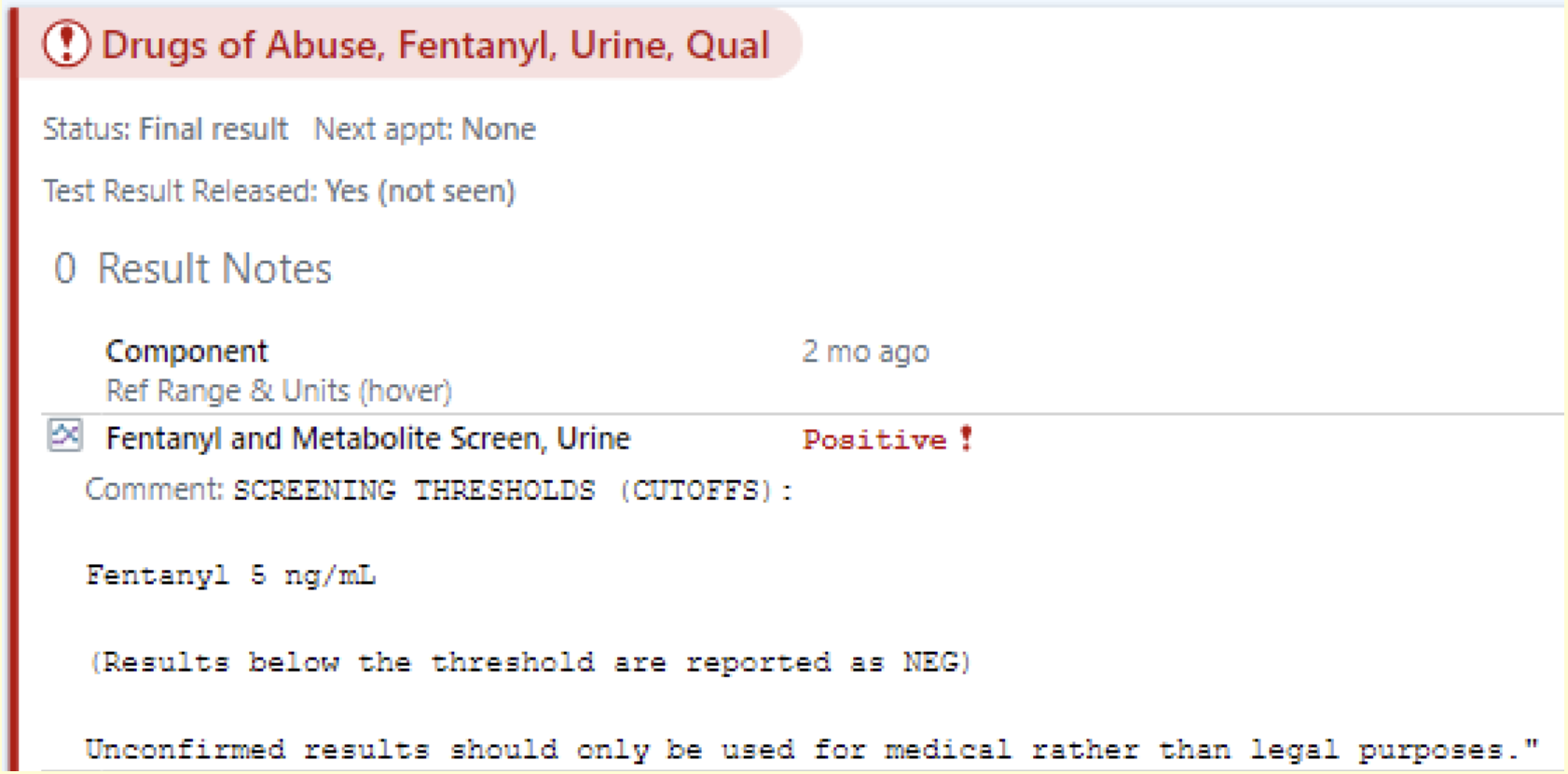
Wanar, A., Saia, K., & Field, T. A. (2020). Delayed norfentanyl clearance during pregnancy. *Obstetrics & Gynecology*, *136*(5), 905-907.

Urine Fentanyl Tests

1) Rapid Screening Test:

- Qualitative = Positive or negative
- Detects both fentanyl and nor-fentanyl at very low “threshold” levels
- Positive = either fentanyl or nor-fentanyl is present at or above a level of **1-5 ng/mL**

Rapid “screening” fentanyl test



Drugs of Abuse, Fentanyl, Urine, Qual

Status: Final result Next appt: None

Test Result Released: Yes (not seen)

0 Result Notes

Component	2 mo ago
Ref Range & Units (hover)	
Fentanyl and Metabolite Screen, Urine	Positive !

Comment: SCREENING THRESHOLDS (CUTOFFS):

Fentanyl 5 ng/mL

(Results below the threshold are reported as NEG)

Unconfirmed results should only be used for medical rather than legal purposes."

Urine Fentanyl Tests

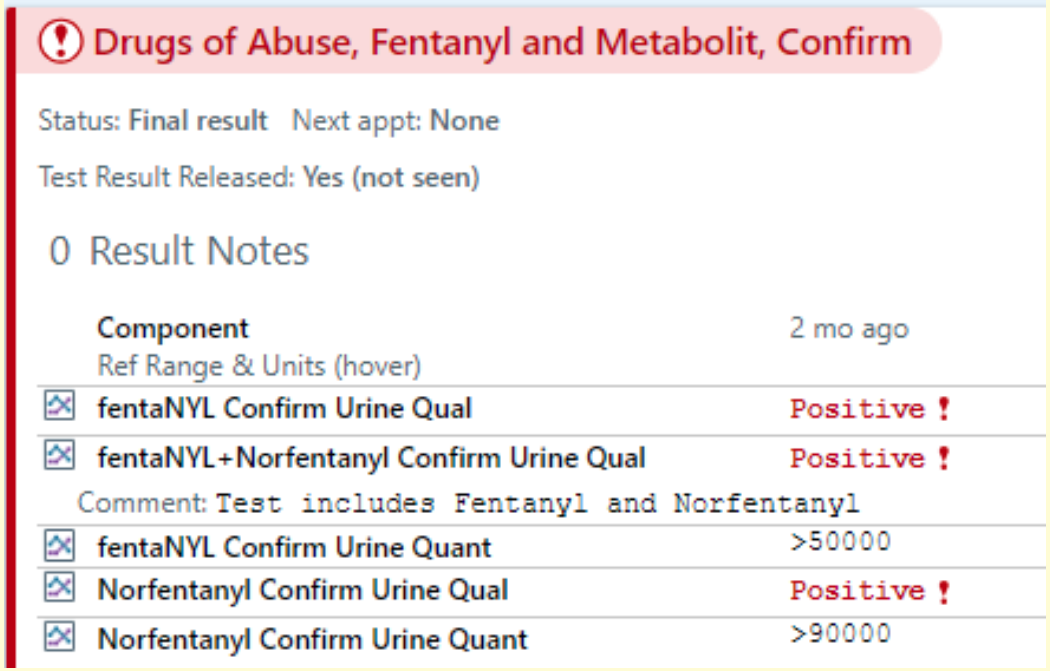
1) Rapid Screening Test:

- Qualitative = Positive or negative
- Detects both fentanyl and nor-fentanyl at very low “threshold” levels
- Positive = either fentanyl or nor-fentanyl is present at or above a level of **1-5 ng/mL**

2) Confirmatory Test:

- Detects both fentanyl and nor-fentanyl
- Quantitative = reports the specific concentration (level) of each:
  - **Recent use** produces very high levels
  - **Distant use** produces “lingering” low levels

Confirmatory fentanyl tests



Drugs of Abuse, Fentanyl and Metabolit, Confirm

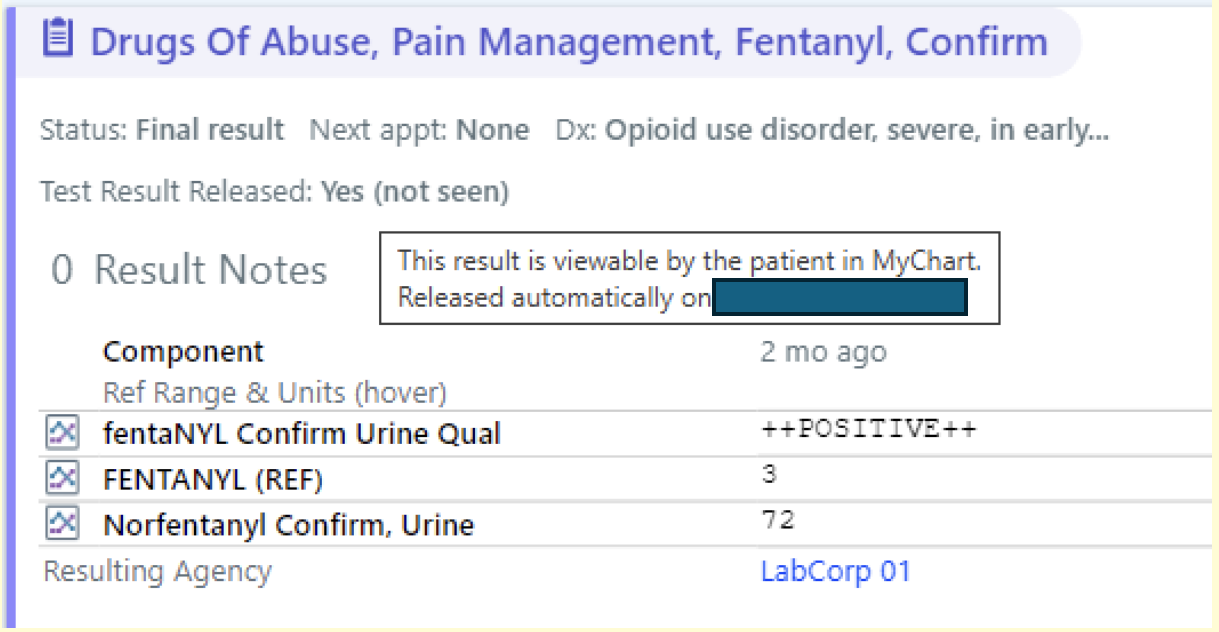
Status: **Final result** Next appt: **None**

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

0 Result Notes

Component Ref Range & Units (hover)	2 mo ago
fentaNYL Confirm Urine Qual	Positive !
fentaNYL+Norfentanyl Confirm Urine Qual	Positive !
Comment: Test includes Fentanyl and Norfentanyl	
fentaNYL Confirm Urine Quant	>50000
Norfentanyl Confirm Urine Qual	Positive !
Norfentanyl Confirm Urine Quant	>90000

Last fentanyl use 6 hours ago.



Drugs Of Abuse, Pain Management, Fentanyl, Confirm

Status: **Final result** Next appt: **None** Dx: **Opioid use disorder, severe, in early...**

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

0 Result Notes

This result is viewable by the patient in MyChart.
Released automatically on [redacted]

Component Ref Range & Units (hover)	2 mo ago
fentaNYL Confirm Urine Qual	++POSITIVE++
FENTANYL (REF)	3
Norfentanyl Confirm, Urine	72
Resulting Agency	LabCorp 01

Last fentanyl use >4 months ago.

*Patient requested drug testing to demonstrate her sobriety.

Both patients would have a "Positive" result on the screening test (threshold is 5 ng/mL).

Summary: Fentanyl Drug Testing

- After chronic daily fentanyl use, urine fentanyl drug tests remain positive for weeks to months.
- A positive screening test should never be used as definitive evidence of recent use.
  - Low levels of fentanyl may be detectable for **>3 months after last use**
  - Low levels of nor-fentanyl may be detectable for **>9 months after last use**
- To assess recency of use, request a quantitative (confirmatory) test and look for the trend in fentanyl and nor-fentanyl levels.
- Fentanyl and nor-fentanyl levels can fluctuate between detectable and non-detectable levels. This means **a person can have a negative test, followed by a positive test, without any interval fentanyl use**.
  - In this scenario, a quantitative (confirmatory) test should show very low levels of fentanyl or nor-fentanyl. High levels would be more suggestive of a return to use.

Common Misconceptions

#2: "Toxicology testing can tell me how much/how often the parent is using."

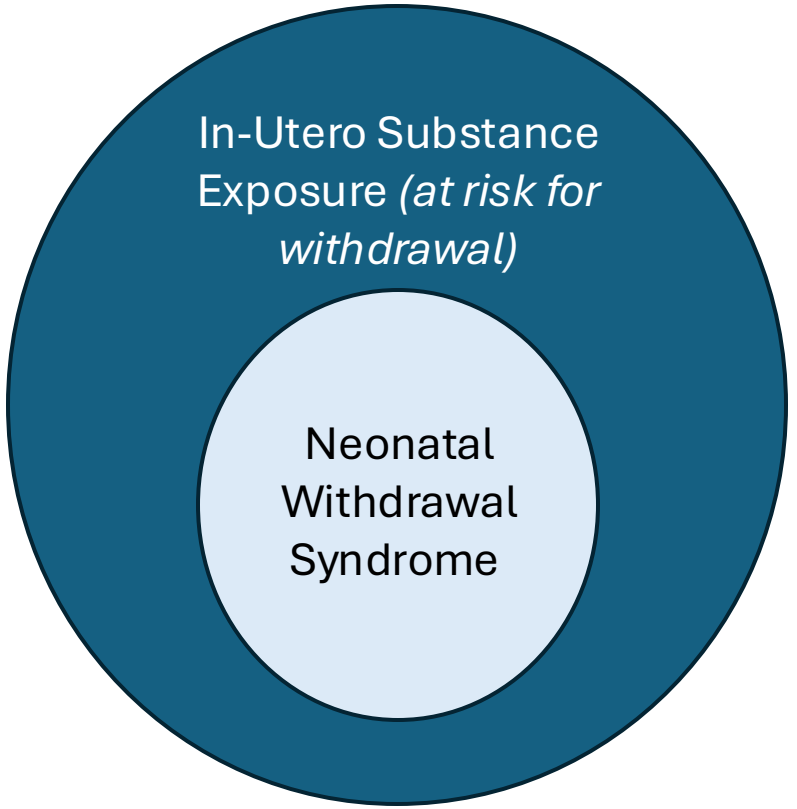
- Facts: For fentanyl specifically:
  - Screening tests provide no information about when a person last used.
  - In some cases, *quantitative* confirmatory tests can help distinguish between recent vs. distant last use.

Care of the Substance-Exposed Newborn

Care of the Substance-Exposed Newborn

- **Neonatal Abstinence Syndrome (NAS)**: term coined in 1975 to refer to withdrawal symptoms exhibited by *some* newborns that were exposed to substances in-utero.
  - In-utero physiologic dependence → abrupt discontinuation of substance exposure (at birth) → a finite period of neonatal withdrawal.

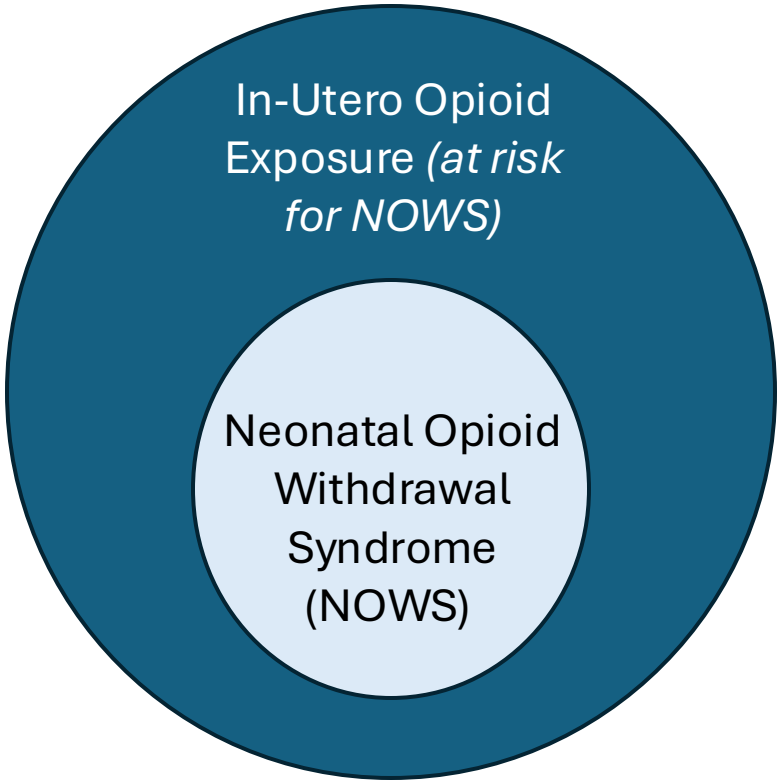
- More accurately described as **"Neonatal withdrawal syndrome".**
  - The newborn is not "abstaining" from drug use.
  - Newborns cannot be "born addicted" to drugs.
    - Addiction is a chronic disease defined by disordered behavior.



Care of the Substance-Exposed Newborn

Updated Terminology:

- **In-utero substance exposure** = at risk for withdrawal
- **Neonatal withdrawal syndrome** = has symptoms



- Newborns exposed to opioids are at risk for Neonatal Opioid Withdrawal Syndrome (NOWS).
  - Opioids are the #1 most common cause of *clinically significant* newborn withdrawal (i.e. withdrawal that requires additional monitoring and possibly medical intervention)

Neonatal Opioid Withdrawal Syndrome (NOWS)

- NOWS is a clinical diagnosis:
  1. In-utero opioid exposure identified **by history** (toxicology testing is not required)
     AND
  2. At least 2 clinical features of withdrawal (excessive crying, fragmented sleep, tremor, increased muscle tone, poor feeding)

- NOWS occurs in 60-80% of neonates who have in utero opioid exposure.

- All newborns at risk for NOWS are monitored in the hospital for at least 96 hours using the "Eat, Sleep, Console" protocol (ESC).
  - This includes babies born to parents who are in stable recovery on medication (methadone or buprenorphine).

Jilani SM, Jones HE, Grossman M, et al. Standardizing the clinical definition of opioid withdrawal in the neonate. J Pediatr. 2022;243, 33-39. e31.

Neonatal Opioid Withdrawal Syndrome (NOWS)

- During pregnancy, we always recommend medication for opioid use disorder (MOUD) - methadone or buprenorphine.
  - We do not recommend "detoxing" from opioids.
  - Being on MOUD is the healthiest and safest choice that a pregnant person can make for their baby and themself.
- NOWS still occurs in 40-60% of newborns born to parents on MOUD.
  - NOWS risk/severity does not depend on the parent's medication dose (a lower dose is not better).
  - There is no way to predict who will have NOWS and/or who will require morphine.
  - NOWS can happen even when the parent has "done everything right" - in recovery and providing excellent newborn care.

Neonatal Abstinence Syndrome - Clinical Overview. ClinicalKey Elsevier Point of Care. https://shorturl.at/7cJYX. Updated May 17, 2022. Accessed Feb 23, 2025.
Harter K. Opioid use disorder in pregnancy. Ment Health Clin. 2019 Nov 27;9(6):359-372. doi: 10.9740/mhc.2019.11.359.
Ecker J, Abuhamad A, Hill W, et al. Substance use disorders in pregnancy: clinical, ethical, and research imperatives of the opioid epidemic: a report of a joint workshop of the SMFM, ACOG, and ASAM. Am J Obstet Gynecol. 2019;221(1):B5-B28. doi:10.1016/j.ajog.2019.03.022

Common Misconceptions

#3: “Newborn toxicology testing is necessary to confirm that a newborn was substance exposed.”

- Fact: “In utero substance exposure” is a clinical diagnosis.
  - Exposure is often confirmed before birth, based on the parent's toxicology results, medication history or reported use.
  - The vast majority time, we do not need to test the baby to know that they were exposed.
- "In-utero substance exposure" is the most accurate terminology.
  - *"Born positive"* - a positive newborn toxicology result is not necessary or sufficient to diagnose exposure.
    - A newborn may test positive for fentanyl because their parent had an epidural.
    - A parent who admits to substance use and/or has positive toxicology → If baby's toxicology testing is negative, we don’t conclude that the baby "wasn't exposed".
  - *"Drug-affected"* - we cannot predict who will develop "effects" from the exposure

Common Misconceptions

#4: "When a newborn develops withdrawal/requires morphine, this should raise additional concern about the birthing parent's stability (severity of use disorder, treatment engagement) and capacity to parent."

- Fact: All babies with known in-utero opioid exposure are at risk for developing withdrawal (NOWS).
  - When a baby develops NOWS or requires morphine, this should not automatically raise our level of concern about the birthing parent's stability (severity of use disorder) or capacity to parent safely.
- Having NOWS does not mean that the baby will require a higher level of parenting care after discharge.
  - We will not discharge the baby until they've been weaned off morphine and NOWS has completely resolved.
  - This is different from a baby who discharges home with ongoing complex medical needs (ex: a feeding tube).

Newborn Toxicology

Newborn Toxicology Testing

- Utilized as a proxy for the birthing parent's drug use (to assess for in-utero drug exposure).
- **1) Urine**
  - Short window of detection: reflects exposure in the last 2-4 days
  - Rapid "screening" tests: results take 1-2 hours
    - Often positive due to medications given during labor (ex: fentanyl)
    - High **false positive** rate, especially for **amphetamines (#1)**
  - Confirmatory tests (GC/MS):
    - Often not ordered
    - Results take ~7-21 days

Newborn Toxicology Testing

- **2) Meconium (newborn poop)**
  - Accumulates in the fetal intestine from 12 weeks GA until delivery
  - Long window of detection: reflects exposure starting from **end of first trimester** (before many people even know they're pregnant)
    - Can be positive even if last substance use **was 6 months ago**
    - There is no way to distinguish distant vs. recent substance use
  - Confirmatory test (GC/MS): results take 5-10 days
- **3) Umbilical Cord**
  - Long window of detection: 20 weeks GA (4.5 months pregnant)
    - Can be positive even if last substance use **was 5 months ago**
    - There is no way to distinguish distant vs. recent substance use
  - Confirmatory test (GC/MS): results take 7-10 days
  - *Rarely done at Swedish

Newborn Toxicology Testing

- The best indicators of whether a newborn is at risk for withdrawal are 1) parent's last reported use/prescribed medications and 2) parent's urine.
- Newborn Urine
  - Is subject to all the same inaccuracies as urine testing for the parent
  - If you have the parent's urine, this test adds no new information
- Meconium and umbilical cord testing
  - Only tell you that the parent used this drug at some point during pregnancy (there's no way to know if that use occurred yesterday or 6 months ago).
  - Provide no information about the newborn's risk of withdrawal

Newborn Toxicology Testing

- Newborn toxicology does not influence medical care (length of hospitalization, diagnosis and treatment of withdrawal, breastfeeding clearance).
- If DCYF opens an investigation, the hospital must send DCYF all toxicology results (required by law).
- DCYF typically receives screening test results (positive or negative only), **without** additional context:
  - Physician interpretation, meds given in labor, suspected false positives, etc.
  - Window of detection for tests (meconium)

Summary: Newborn Toxicology Testing

- Is often redundant (provides no new information).
- Does not influence medical care for the parent or the infant.
- May be interpreted incorrectly by both medical providers and the legal system.
- Are often conducted inequitably, leading to disproportionate risk of harm to families of color.
- For this reason, there is movement towards putting an end to universal newborn toxicology testing and only ordering these tests when they are clinically indicated (ex: Yale).

Common Misconceptions

#5: “Without newborn toxicology testing that documents substance exposure, children may not be able to access the early childhood support services they need".

- Fact: We refer all substance-exposed newborns to early intervention services at time of hospital discharge.
  - This includes babies who showed no symptoms of withdrawal and babies who were exposed to stimulants only (not opioids).
- Any infant with a diagnosis of "in-utero substance exposure" qualifies for services. Exposure does NOT have to be substantiated by toxicology testing results.
  - We document this diagnosis in the newborn's medical record and on the ESIT (Early Support for Infants and Toddlers) referral form.

Practice and Policy Implications

Practice and Policy Implications

1. When should newborn toxicology testing be performed?
2. When is consent required for toxicology testing?
3. In what format are toxicology results provided to DCYF?

Policy #1: When should newborn toxicology testing be performed?

Current Policy at Swedish (and in much of WA state):

- Newborn toxicology testing is performed for all babies born to a birthing parent who has a history of substance use in the last 12 months.
- Both urine and meconium testing are performed.
- Parent consent is not required.

Policy #1: When should newborn toxicology testing be performed?

Reasons to reconsider this policy:

- In the vast majority of cases, newborn toxicology testing is unnecessary - results do not change our medical management. As a rule, medical providers should not perform testing without a clinical indication.

- Results can have negative consequences:
    - False positives
    - Risk of misinterpretation by medical providers and community partners
    - Increased parent stress/guilt
    - Decreased parent trust in the medical team/community support system
    - Cost of testing (time, money and resources)

Policy #1: When should newborn toxicology testing be performed?

- **Yale**
  - Newborn with known substance exposure based on parent self-report or parent toxicology => NO newborn testing is performed.
  - Newborns are only tested when medically necessary (to determine if observation is needed):
    - The provider ordering the test is required to enter the specific clinical question being addressed.
    - ONLY urine toxicology is performed (never meconium)
- **Boston Children's Hospital**
  - Policy changed in 2022
  - Indications for newborn urine toxicology (to help guide medical management of the infant):
    - Birthing parent with substance use disorder and NO parent toxicology testing
    - Unexplained symptoms concerning for neonatal substance withdrawal
  - No meconium toxicology testing
- **Harvard (Massachusetts General Brigham for Children)**
  - Policy changed in 2024
  - Newborn toxicology testing is only performed "when results will change medical management of the infant".

Urine Toxicology Screening: WB/NNICU

Pathway context

Related Pathways

- Neonatal Opioid Withdrawal Syndrome: Pediatric Inpatient
- Substance Use in Pregnancy and Immediate Postpartum: Women's Health

Other Info

- Goals/Metrics / Authors / References

Reviewed: 9/16/2024

The following algorithm provides guidance on which newborns may benefit from toxicology screening and obtaining consent to screen

Newborn with known prenatal substance exposure (i.e. by self report or toxicology testing of the birthing person)?

- Newborn toxicology has NO role in the setting of in utero cannabis exposure

NO

Develops signs or symptoms of newborn withdrawal?

NO

No toxicology testing indicated

YES

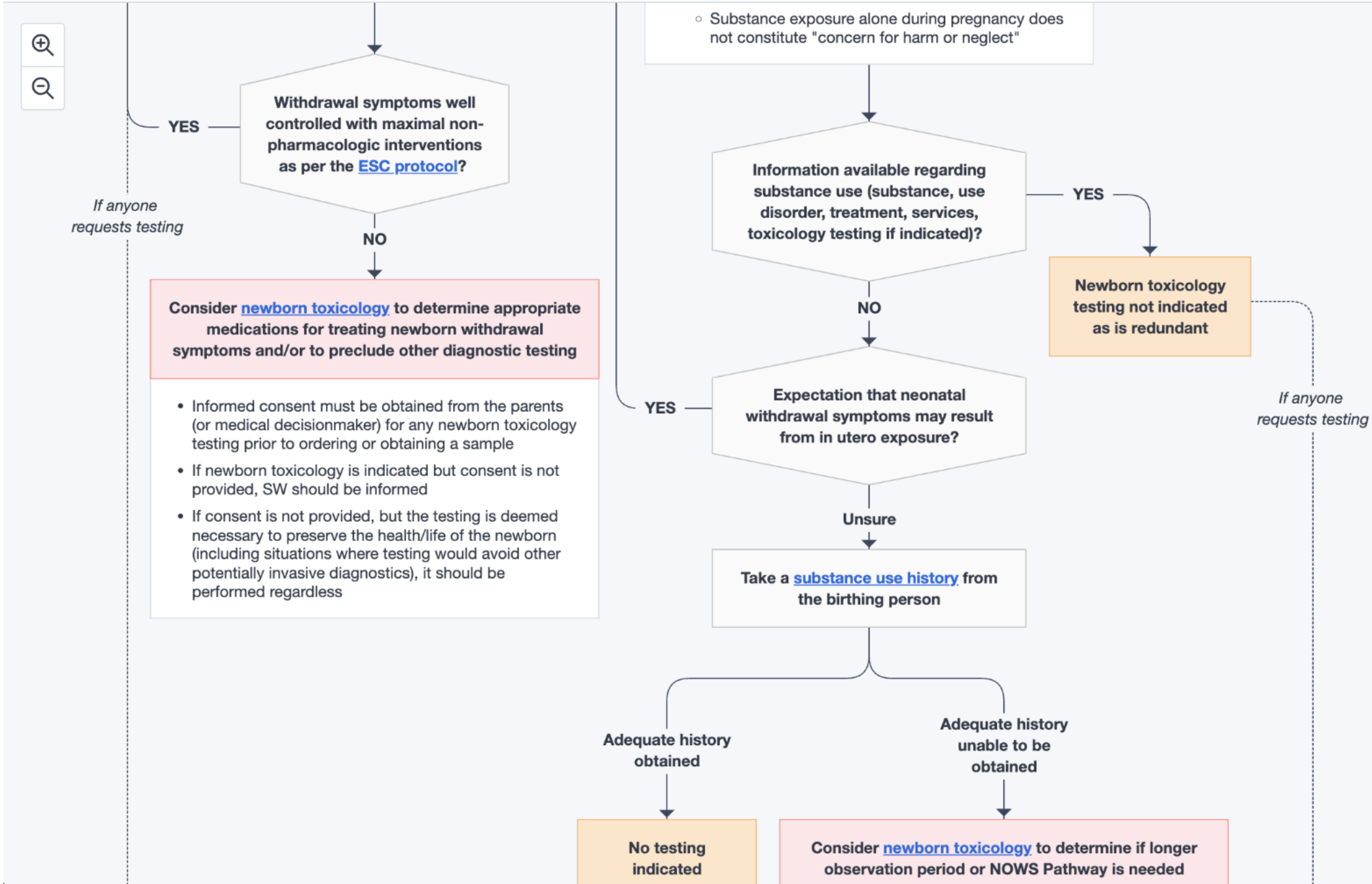
Take a substance use history from the birthing person and follow NOWS care pathway

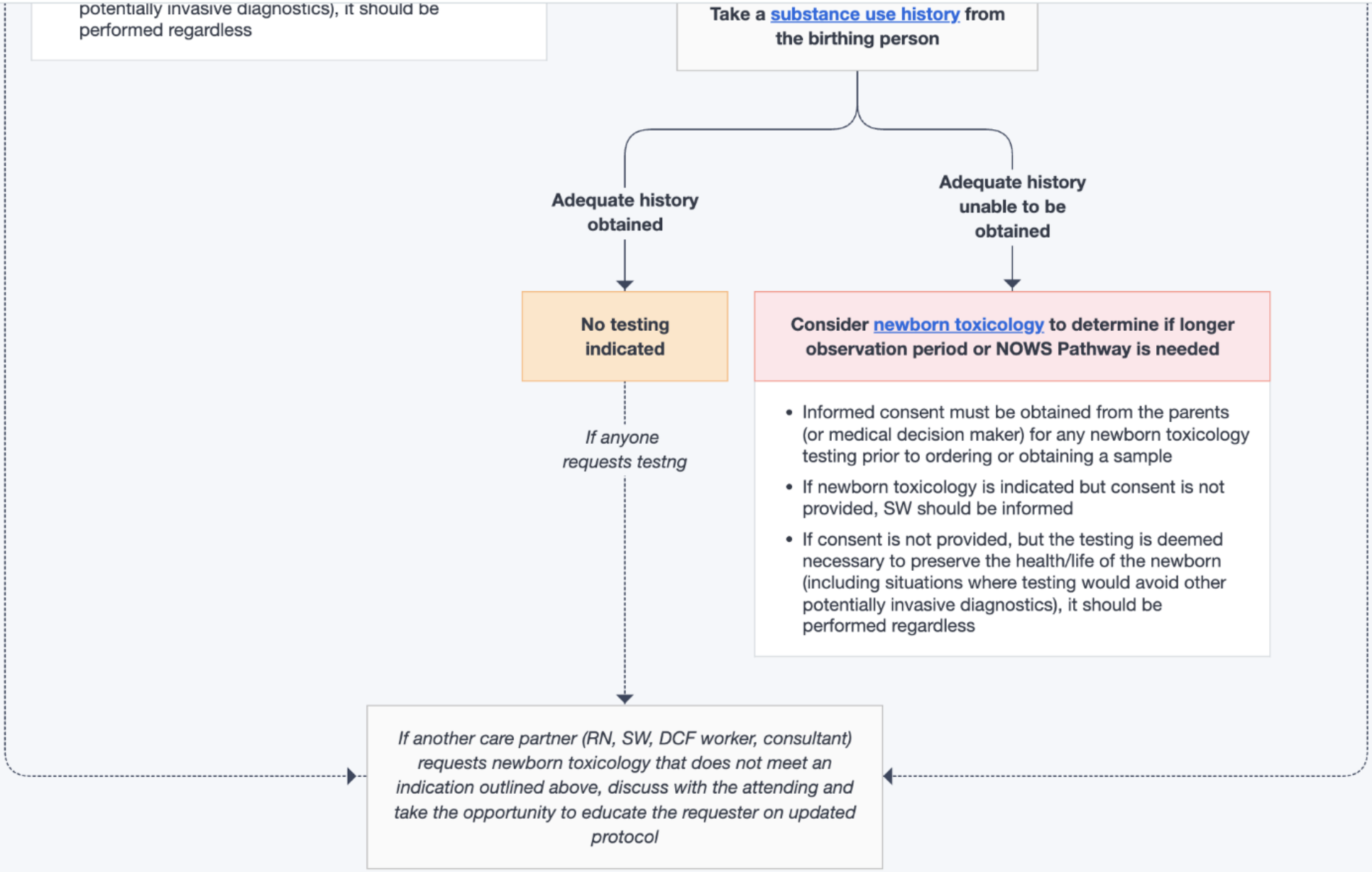
YES

Social Work consult should be placed in the setting of known (or suspected) substance exposure in pregnancy

- CAPTA/CARA Newborn Notification Portal must be filled out during the newborn hospital stay for any newborn with known prenatal substance exposure
  - Online notification form is generally done by Social Work and/or Nursing
  - Family Care Plan must be documented or created during newborn hospital stay, but inability to do so is not an indication for a DCF referral
- DCF referral must be made within 12 hours of delivery if there is a concern for harm or neglect
  - Substance exposure alone during pregnancy does not constitute "concern for harm or neglect"

Urine Toxicology Screening: WB/NNICU




potentially invasive diagnostics), it should be performed regardless
Take a substance use history from the birthing person
Adequate history obtained
Adequate history unable to be obtained
No testing indicated
Consider newborn toxicology to determine if longer observation period or NOWS Pathway is needed
If anyone requests testng
Informed consent must be obtained from the parents (or medical decision maker) for any newborn toxicology testing prior to ordering or obtaining a sample
If newborn toxicology is indicated but consent is not provided, SW should be informed
If consent is not provided, but the testing is deemed necessary to preserve the health/life of the newborn (including situations where testing would avoid other potentially invasive diagnostics), it should be performed regardless
If another care partner (RN, SW, DCF worker, consultant) requests newborn toxicology that does not meet an indication outlined above, discuss with the attending and take the opportunity to educate the requester on updated protocol

Policy #2: When is consent required for toxicology testing?

Swedish/WA State:

- Birthing person toxicology: requires **verbal** consent
- Newborn toxicology: no consent is required

Yale, Boston Medical Center

- Birthing person toxicology: requires **written** consent
- Newborn toxicology: requires the **parent's written consent**
  - *with the exception of a medical emergency

Policy #3: In what format are toxicology test results provided to DCYF?

Swedish/WA State:

- DCYF receives **toxicology results** (positive/negative), typically without clinical context or provider interpretation

Harvard (Massachusetts General Brigham for Children):

- DCYF receives **the doctor's interpretation of toxicology results** (not the results themselves).

  Examples: Positive for Opiates:
  - *Likely represents a prescribed substance, as birthing person was given fentanyl prior to delivery.*
  - *Thought to be a false positive, due to cross-reactivity with ___. Confirmatory testing pending.*
  - *Unexpected positive*
    - *Family did NOT disclose use. Confirmatory testing pending.*
    - *Family DID disclose use. Confirmatory testing not needed due to disclosure.*
  - *Likely represents a non-prescribed substance.*

Summary: Pitfalls of Perinatal Toxicology

- Toxicology testing is inherently flawed and complicated.
- Most medical providers are not trained on toxicology interpretation, even those who work directly with our patient population. Misunderstandings happen all the time, even with the best intentions.
- Fentanyl tests only became available in the last 3 years. As experts, we are still learning how to use and interpret them.
- Assessing a parent's ability to safely care for their newborn is a tremendous and important task.
- When we provide inaccurate or misleading toxicology information to the court system – and ask them to make decisions based on it – we fear we are setting them up for failure.
- If you get toxicology testing that does not match a parent's reported last use, pause and ask the medical team for more context and/or additional testing.

Thank You!

- Administrative Office of the Courts - Tarassa Froberg and Laura Vogel
- Swedish Social Work and Case Management – Elizabeth Cervantes, Leyna Ho, Kelsey Smith
- Department of Children, Youth and Families (DCYF) - Jimmy Vallembois, Michelle Hetzel
- Attendees!

Questions?
Feedback?

mollie.limb@swedish.org

collin.schenk@swedish.org