

Pain Management Compliance Drug Testing

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Disclosures

- The views and opinions expressed herein are those of the author and do not necessarily reflect the views of VCU Health, VCU, or their employees.

Objectives

- A. Explain the chemical differences between opioid and opiates.
- B. Explain the expected metabolism of the opiates.
- C. Explain the basics of urine drug testing.
- D. Explain the basics of how to interpret urine drug testing results.
- E. Explain drug testing legislation versus regulation.

Warm Up Questions

- Are all Opioid drugs, Opiates?
 - True
 - False

Warm Up Questions

- Which is a metabolite of Oxycodone?
 - A. 6-Acetyl Morphine
 - B. Benzoylecgonine
 - C. Oxymorphone
 - D. Fentanyl

Warm Up Questions

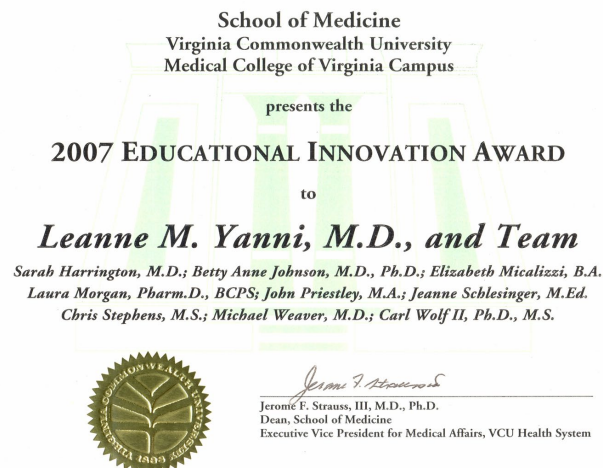
- UDS screens Presumptive Pos for Opiates:
 - A. Heroin is Present
 - B. Oxycodone may be Present
 - C. Methadone is Present
 - D. Can't be sure

MCVH Pain Management Team



- Routine urine drug testing is part of a well managed program
- Testing assures that patients take only prescribed pain medications.
- Patients are not taking non-prescribed drugs

2002
2003



2016 National Health Interview Survey

- **~\$560 Billion**

2019

2023

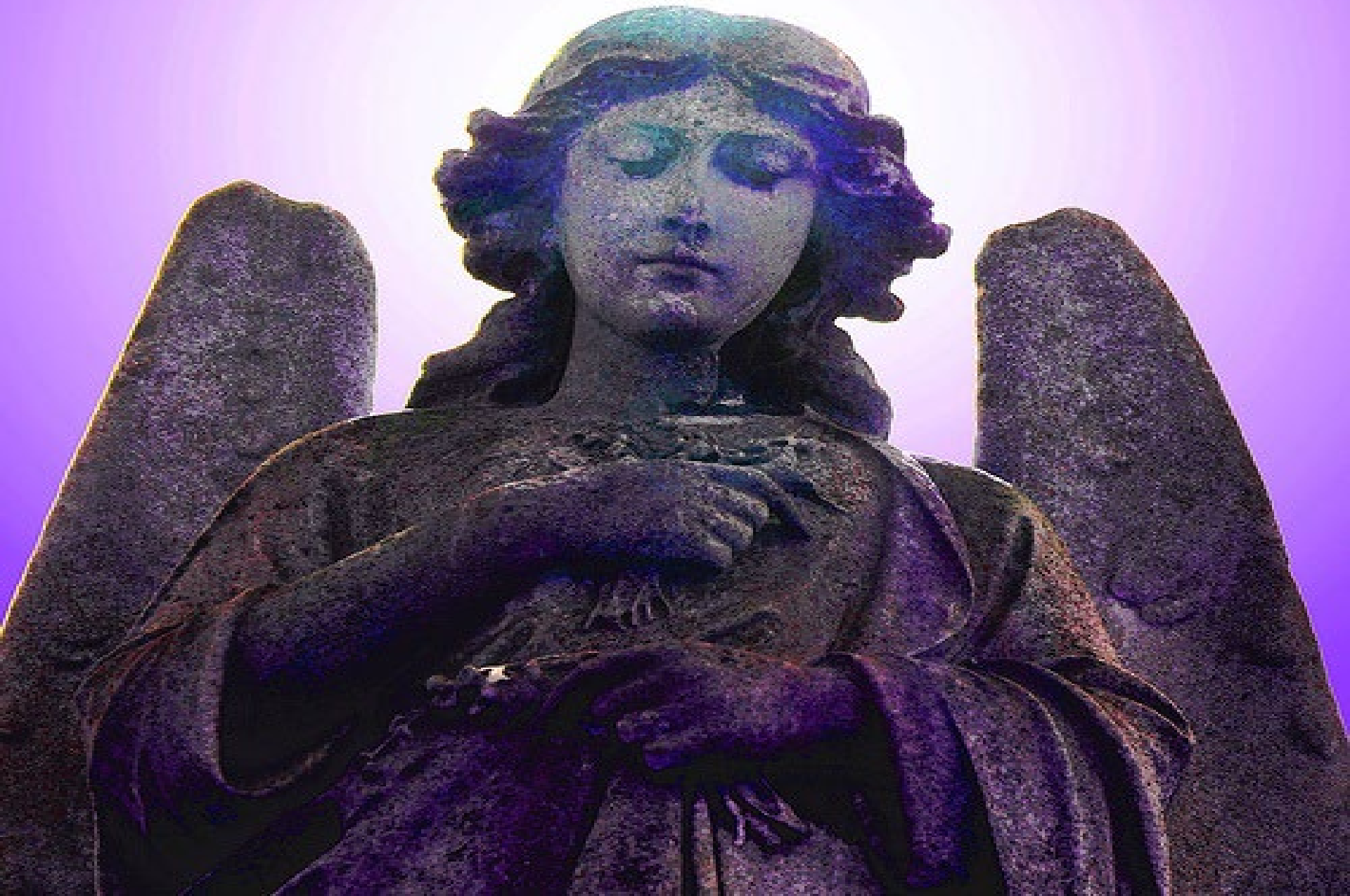
Direct Medical/Productivity/Disability Programs

Chronic Pain %	20.4	20.9	25.4
Women / Men	20.8/17.8	22.0/19.7	25.4/23.2
High-impact Chronic %	8.0	6.9	8.5
Women / Men	8.9/7.0	7.6/6.2	9.6/7.3

More Prevalent

Older adults	Veterans	Metro/Rural	20.5/31.1
Unemployed	Poverty	<30/>65	12.3/36.0
Rural areas	Public Insurance		

Opiate/Opioid Drugs



Opiate/Opioid Drugs

- Act at opioid receptors (GPCR)
- Similar pharmacological response
- Structurally different

Opiates

- Classic / Traditional
- Semi-synthetic
- Synthetic

Opiate Class

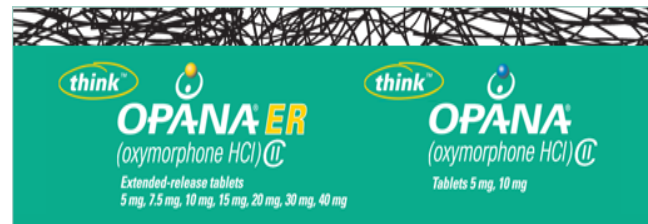
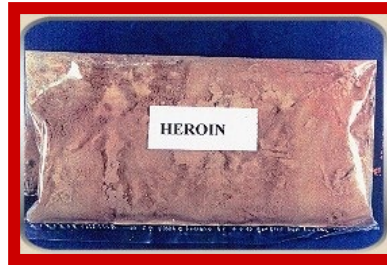
- Naturally occurring alkaloids derived from the opium poppy plant - *Papaver Somniferum*
 - Morphine (10 – 20%)
 - Codeine (1 – 2%)
 - Papaverine (0.5 – 1%)
 - Noscopine (2 – 8%)
 - Thebaine (0.15 – 0.5%)

Semi-Synthetic Opiates

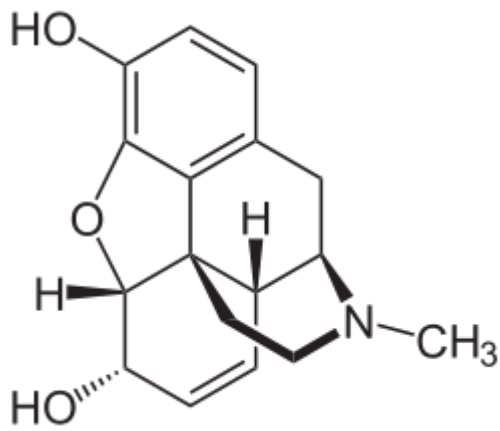
Derived from Natural Opiates

Pharmacologically and Structurally Similar

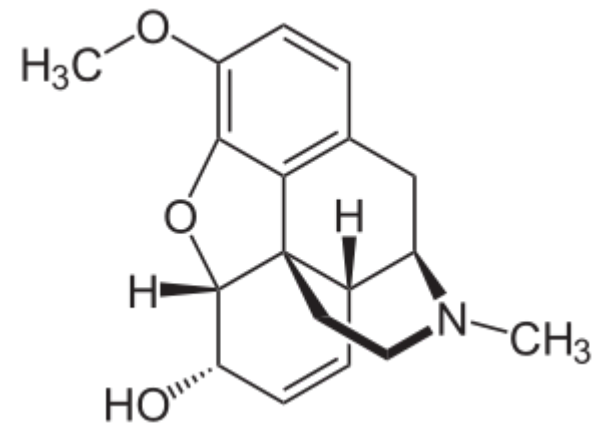
- Heroin
- Hydrocodone
 - Lortab[®], Vicodin[®]
- Hydromorphone
 - Dilaudid[®]
- Oxycodone
 - Oxycotin[®], Percodan[®], Roxicodone[®]
- Oxymorphone
 - Numorphan[®], Opana[®]



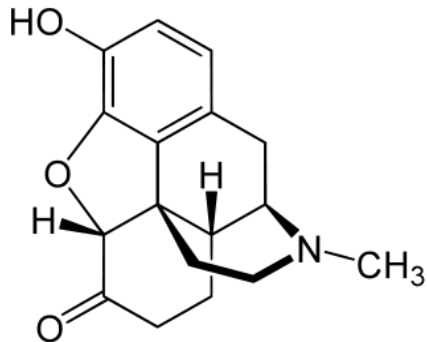
Opiates



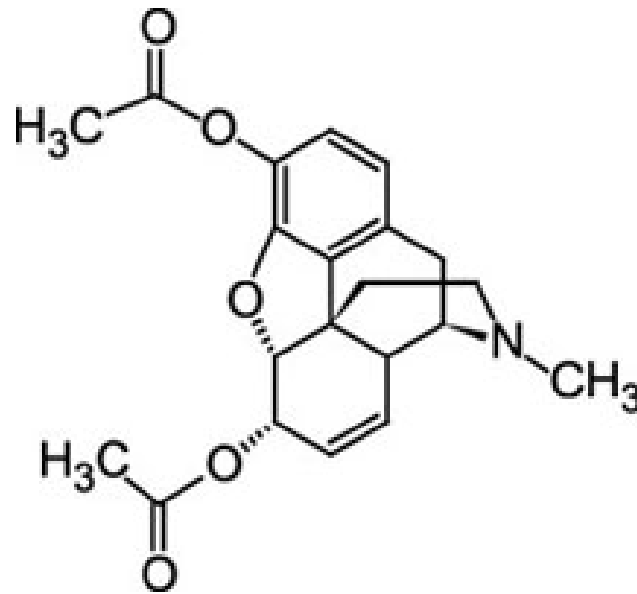
Morphine



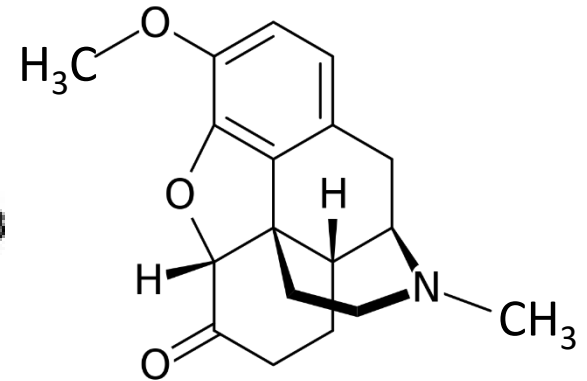
Codeine



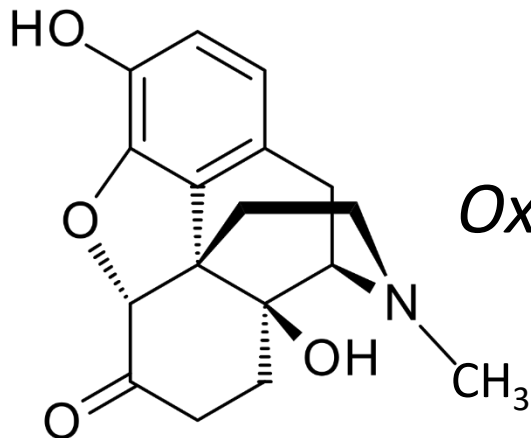
Hydromorphone



Heroin

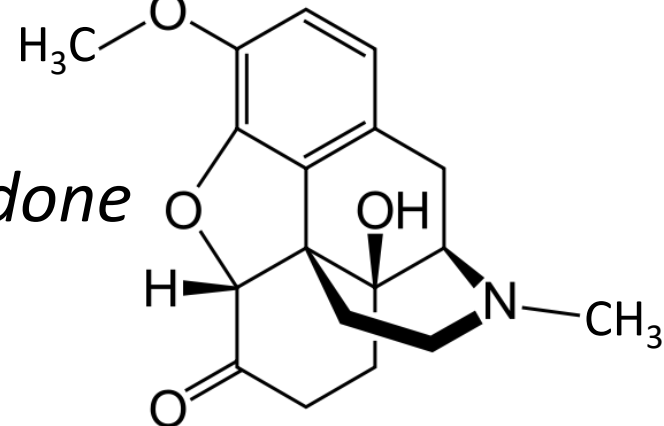


Hydrocodone



Oxycodone

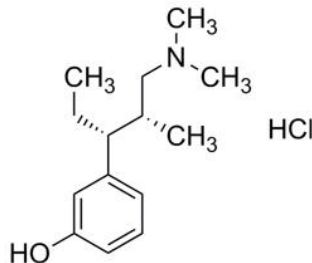
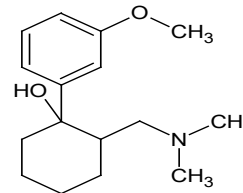
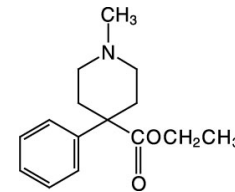
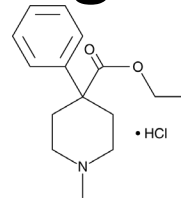
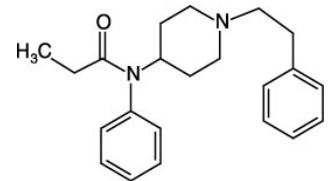
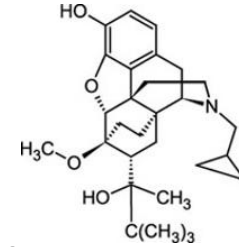
Oxycodone



Synthetic Opiates/Opioids

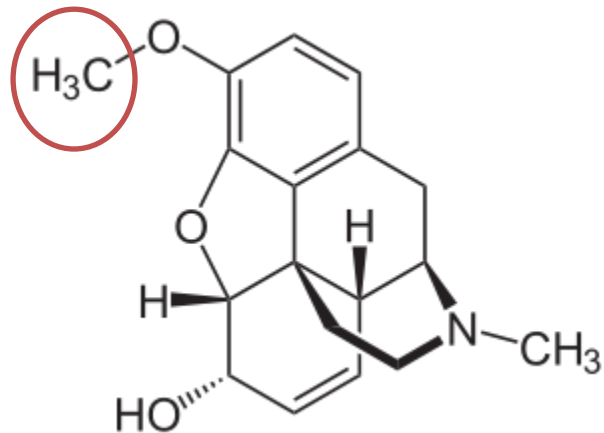
Pharmacologically Similar, Not Necessarily Structurally

- Buprenorphine (Suboxone[®])
- Fentanyl (Sublimaze[®], Duragesic[®])
- Meperidine (Demerol[®])
- Methadone (Dolophin[®])
- Tramadol (Ultram[®])
- Tapentadol (Nucynta[®])

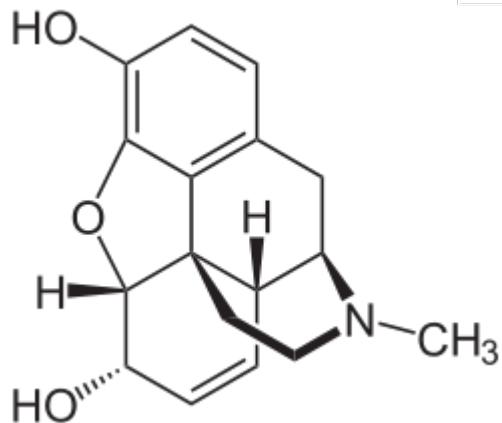
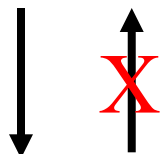


Opiate Metabolism

What to expect or Not

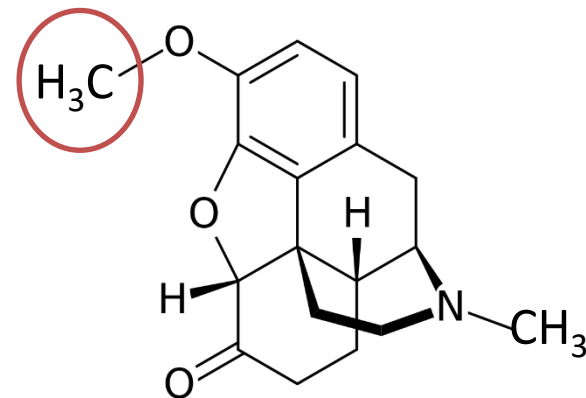


Codeine

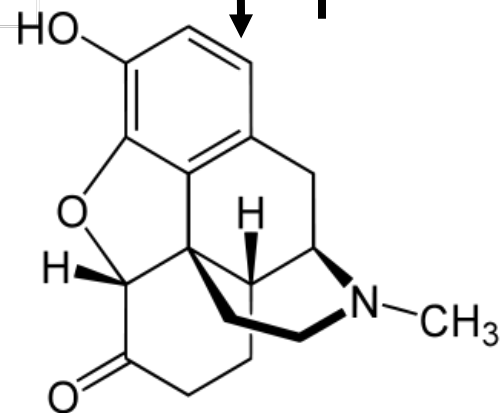
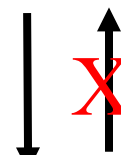


Morphine

Lesser
Gut



Hydrocodone



Hydromorphone

Metabolism

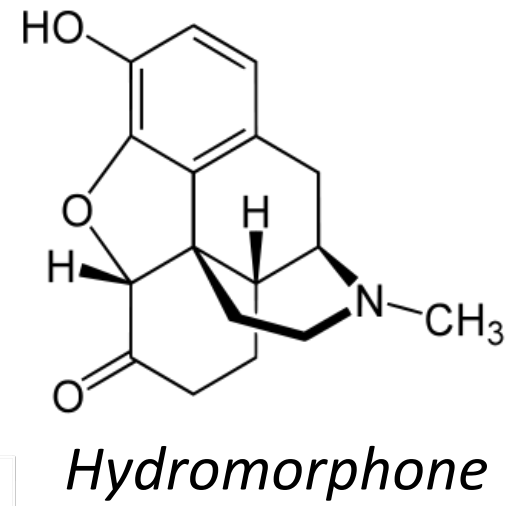
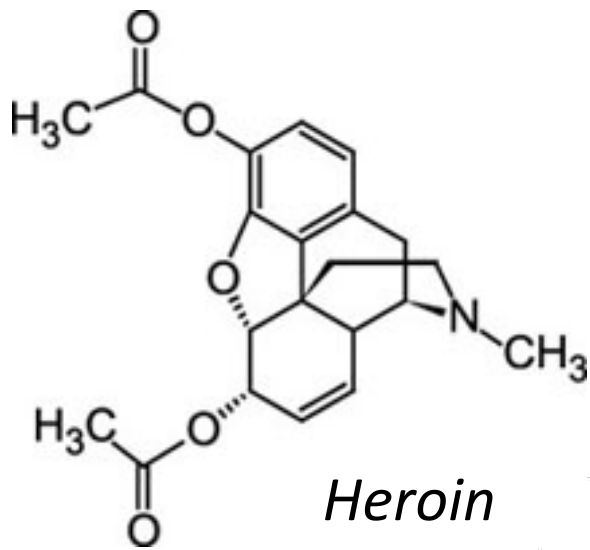
Lesser
Gut



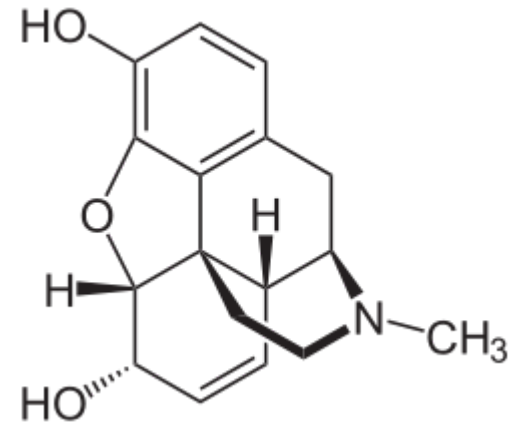
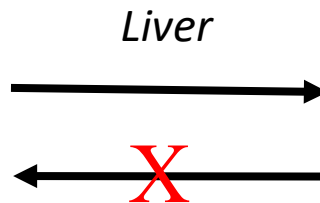
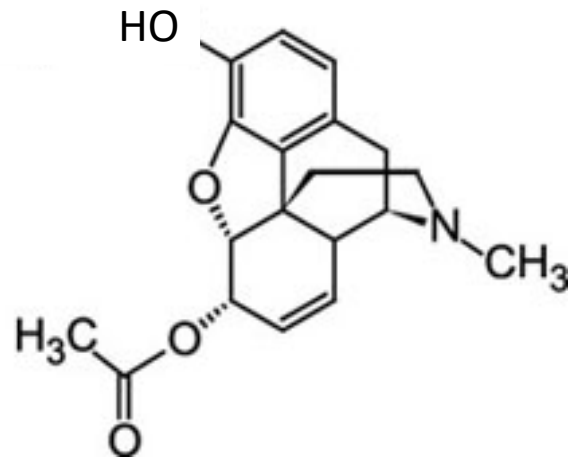
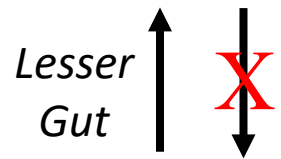
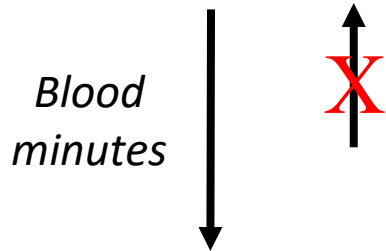
Glucuronide Metabolite.



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Metabolism

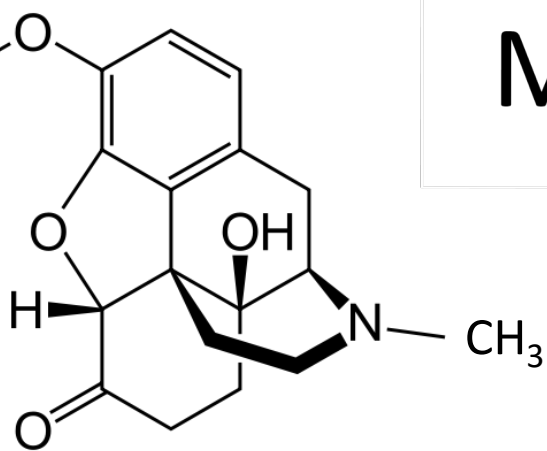


Morphine

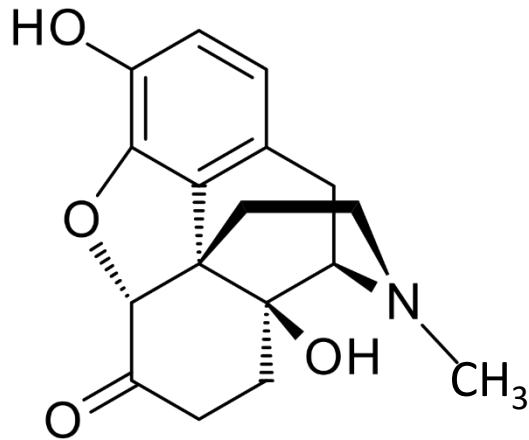
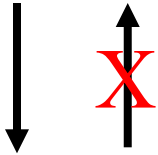
6-Acetyl Morphine
Urine – Detection 8-12 hr.

Metabolism

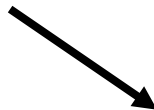
H₃C



Oxycodone



Oxymorphone



Glucuronide Metabolite.

Codeine

Heroin

Hydrocodone

Hydromorphone

Morphine



Cocaine

Marijuana

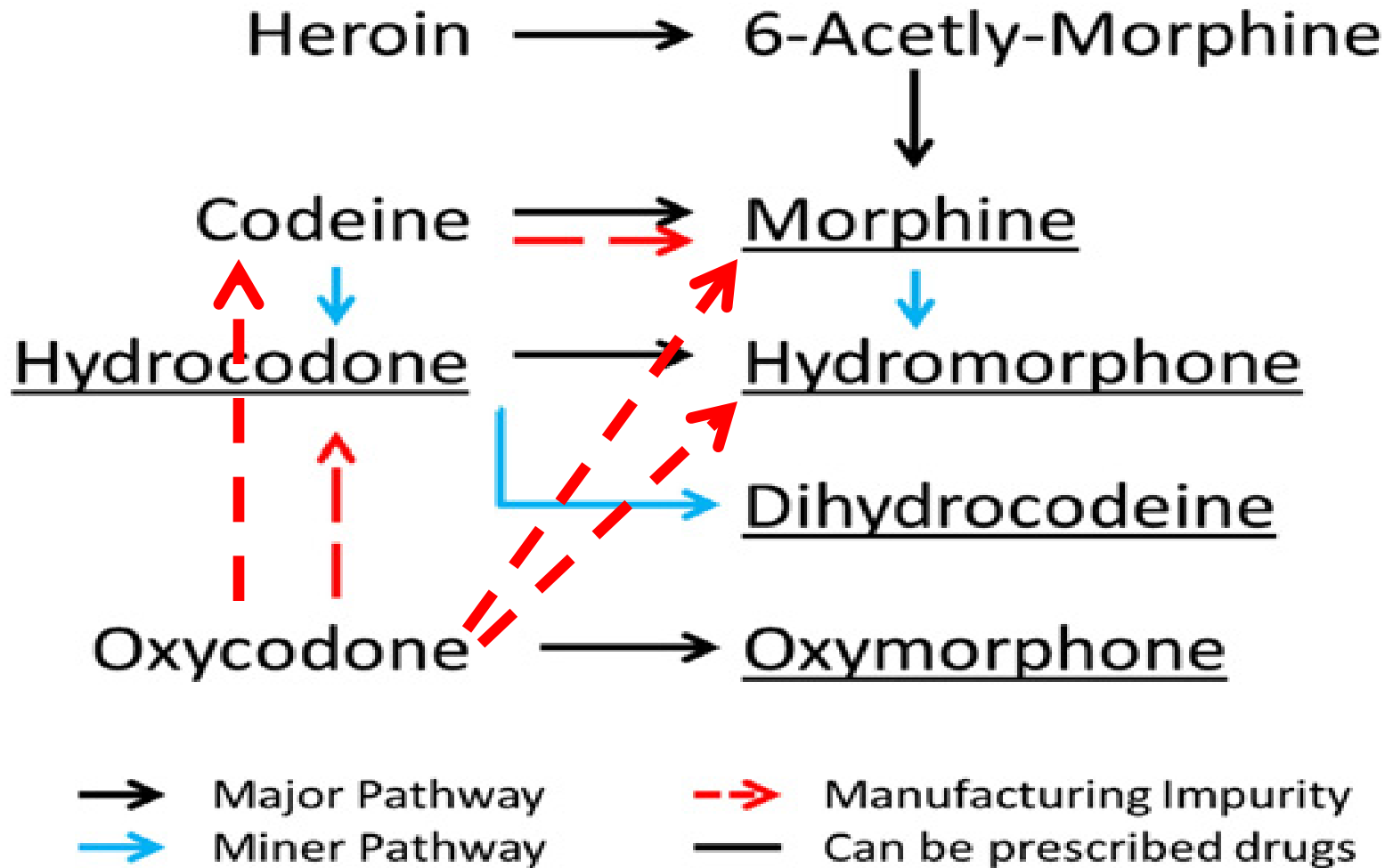
Methadone

Fentanyl



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PMCT: Opiates' major/minor metabolism pathways & manufacturing impurities (<2%).



Analysis

- Immunoassay
 - Initial screening technique
 - Does not identify which drug in a drug class
 - Not used for confirmation
 - Results - Negative, Presumptive Positive
- Definitive Testing (Confirmation)
 - GC/MS or LC/MS
 - Qualify - Identify specific drug(s) detected
 - Quantify

Analysis

- Immunoassay Screening
 - Designed to eliminate the negatives.
 - Determine if further testing is needed.
 - Negative
 - Not enough of a substance for a response greater than the administrative cutoff
 - Presumptive Positive
 - Enough of a substance for a response \geq the administrative cutoff

Analysis

- Immunoassay Screening
 - Potential False Negative
 - Opiate Immunoassays
 - » Opioids (i.e. buprenorphine, fentanyl, methadone, tramadol)
 - » Low dose oxycodone
 - Benzodiazepine Immunoassays
 - » Clonazepam
 - » Lorazepam
 - » Temazepam (high dose)

Analysis

- Immunoassay Screening
 - Potential False Positive
 - Opiate and Fentanyl Immunoassays
 - » Fluoroquinolone antibiotics (i.e. Cipro[®])
 - Amphetamine
 - » Body building or weight loss substances, Trazodone
 - Barbiturate
 - » Topiramate (Topamax[®])
 - PCP (phencyclidine)
 - » Dextromethorphan (DM in allergy/cold medications)
 - Methadone
 - » Tapentadol

Analysis

- Immunoassay Screening

Routinely Available – Drugs of Abuse Screening
Compliance Drug Screen

- Amphetamines
- Barbiturates
- Benzodiazepines
- Buprenorphine
- Cocaine
- Fentanyl
- Methadone
- Opiates
- Oxycodone
- PCP (Phencyclidine)
- THC (Marijuana)
- Tramadol

What don't you see?

Analysis

– Immunoassay Screening

- Originally developed in Vietnam era for heroin (morphine) detection
- Opiate class – Variable cross-reactivities in relation to morphine
 - Similar detection to morphine
 - » Codeine, hydrocodone & hydromorphone
 - 5-10 times less sensitive
 - » Oxycodone & oxymorphone

Analysis

- Definitive Testing (GC/MS or LC/MS)
 - Secondary technique
 - Positive Identification of drug(s) present
 - Usually GC/MS or LC/MS
 - Results
 - Negative/None Detected
 - Not enough of a substance detected greater than the administrative cutoff
 - Positive/Present
 - Enough of a substance detected greater than the administrative cutoff

Analysis

- Definitive Testing (GC/MS or LC/MS)
 - Positive Identification of Compound
 - Opiates
 - Codeine
 - Morphine
 - Hydrocodone
 - Hydromorphone
 - Oxycodone
 - Oxymorphone
 - 6-Acetyl morphine (Heroin metabolite)



Frequently Asked Questions (FAQ)

- Is Blood better than Urine?
- How low can you go?
- What drug testing should I be ordering?
- How long can I detect Drug X?
- Rx: Drug X but Drug Y is detected?

Frequently Asked Questions (FAQ)

- Is Blood better than Urine?

Generally, No

Blood is a snapshot in time. Good for TDM & alcohol, not for long-term detection of drugs.

Frequently Asked Questions (FAQ)

- How low can you go?

Related to Screen or Definitive Testing

Screening – Varies with drug

Definitive Testing – Can detect use minimally
within last day, usually 2 – 4 days post-use

Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

VARIES

What are you specifically looking for?

Time issue

No defined “universal” test

Quick – Less specific, less expensive

Longer – More specific, more expensive



Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?
Drugs of Abuse Screen, Urine, Stat
Compliance Drug Scrn w w/o Reflex, Urine
Drug Screen with Reflex Confirmation,
Drugs of Abuse, Urine
Comprehensive Drug Profile
POCT Urine Drug Screen Panel 14

Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

Drugs of Abuse Screen, Urine, Stat

- Turnaround Time: 1 hr. in lab
- Immunoassay Screen – No definitive ID
 - Amphetamines
 - Barbiturates
 - Benzodiazepines
 - Cocaine
 - Fentanyl
 - Opiates
 - PCP (Phencyclidine)
 - THC



Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

Compliance Drug Scrn w or w/o Reflx,
Urine

Turnaround Time:

- Immunoassay screen – 1 day
- Positive Screen gets confirmation
 - Barbiturates
 - Benzodiazepines
 - Buprenorphine
 - Cocaine
 - Methadone
 - Opiates
 - Oxycodone
 - PCP (Phencyclidine)
 - THC (Marijuana)
 - Tramadol



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Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

Comprehensive Drug Profile

- Turnaround Time: 5 - 7 days
 - Send out
 - Screen and Definitive Testing
 - Identification of Common Rx and OTC medications

Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

POCT Urine Drug Screen Panel 14

- Turnaround Time:
 - Minutes on site (5 – 15 min)
 - Short interpretation time (5 – 30 min)
- Immunoassay Screen – No definitive ID
 - Varying # assays
 - Varying cutoff conc. (Opiates 300 vs. 2000 ng/mL)
 - Lot & manufacture variability
 - Not well defined cross-reactivity



Frequently Asked Questions (FAQ)

- What drug testing should I be ordering?

Additional Testing

- Turnaround Time: ~3 days
 - *Drug Specific* ID Confirmation, Urine
 - Fentanyl ID Confirmation, Urine
 - Opiate ID Confirmation, Urine

Frequently Asked Questions (FAQ)

- How long can I detect Drug X in urine?

Depends on Drug, Dose & Frequency

Acute Use/ Infrequent	1 – 2 days
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Frequent/ Chronic	2 – 5 days
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Opiates/Benzodiazepines 3 days - 1 week+

Frequently Asked Questions (FAQ)

- Rx: Drug X but Drug Y is detected?

- Rx Should see

– Hydrocodone

Acute – Hydrocodone

Chronic – Hydrocodone & Hydromorphone

– Morphine

Acute – Morphine

Chronic – Morphine & Hydromorphone

– Oxycodone

Acute – Oxycodone

Chronic – Oxycodone & oxymorphone

– Codeine

Acute – Codeine & Morphine

Chronic – Codeine, Morphine, Hydrocodone &
Hydromorphone



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Frequently Asked Questions (FAQ)

- Rx: Drug X but Drug Y is detected?
- | <u>Rx</u> | <u>Should see</u> |
|---|-----------------------------------|
| – Diazepam
(Valium®)
or Chlordiazepoxide (Librium®) | Nordiazepam, Oxazepam & Temazepam |
| – Temazepam
(Ristaril®) | Temazepam & Oxazepam |
| – Alprazolam
(Xanax®) | Alprazolam metabolite |
| – Methadone | Methadone & EDDP |



Frequently Asked Questions (FAQ)

- Rx: Drug X but Drug Y is detected?
- | <u>Rx</u> | <u>Should NOT see</u> |
|---------------|--|
| – Hydrocodone | Codeine, Morphine, Oxycodone, Oxymorphone |
| – Morphine | Codeine, Hydrocodone, Oxycodone, Oxymorphone |
| – Oxycodone | Morphine*, Hydromorphone, Codeine*, Hydrocodone* |
| – Alprazolam | Diazepam metabolites |
| – Diazepam | Alprazolam metabolites |
| – Medication | No drug detected in urine 24 hr. later
Cocaine, THC or Heroin metabolites |

Aches & Pains

- Interpretation questions
 - Are drug testing results consistent with medications being prescribed?
 - Yes
 - Maybe so
 - Slim to None, and Slim just left the building
 - Authentic MCV patients

Aches & Pains

- Drug X but see Drug Y ?

Rx: 10/325 mg Percocet, BID, am & pm

Screen: Opiates – Negative, always

Oxycodone – Positive, always

Yes

Aches & Pains

- Drug X but see Drug Y ?

Rx: 10/325 mg Percocet, BID, am & pm

Screen: Opiates – Positive, sometimes

Oxycodone – Positive, always

Yes & No

Aches & Pains

- Drug X but see Drug Y ?

Rx: 1mg Xanax, TID, regularly, Last dose, Monday night, Wednesday UDS

Screen: Benzodiazepines - Negative

NO

Aches & Pains

- Drug X but see Drug Y ?

Rx: Tylenol #3, Codeine, prn

See: Definitive –

Codeine & Morphine

Yes

Aches & Pains

- Drug X but see Drug Y ?

Rx: 30 mg Morphine MS Contin

See: Definitive –

Morphine and Hydromorphone

Yes

Aches & Pains

- Drug X but see Drug Y ?

Rx: 1 mg Morphine, prn

See: Definitive –

Morphine and Hydromorphone

No

Aches & Pains

- Drug X but see Drug Y ?

Rx: 1 mg Xanax (alprazolam), bedtime

See: Definitive –

Valium (diazepam) metabolites

NO

Aches & Pains

- Drug X but see Drug Y ?

Rx: 10 mg oxycodone daily

See: 3400 ng/ml oxycodone &
2000 ng/ml oxymorphone

NO

Aches & Pains

- Drug X but see Drug Y ?

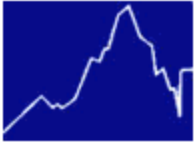
Rx: 10/325 mg Percocet, BID, am & pm

See: Positive – Amphetamines,
Barbiturates, Benzodiazepines,
Cocaine, Methadone, THC

6-acetyl morphine

NO

Virginia Board of Medicine



Virginia Department of
Health Professions



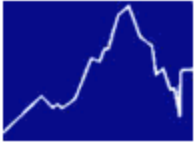
Dear Prescriber,

In response to the escalating opioid crisis in Virginia – and recently passed legislation – the Board of Medicine has promulgated regulations on the prescribing of opioids for pain. These regulations, which take effect March 15th, 2017, revised August 8, 2018, June 9, 2021, & January 2, 2025.



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Virginia Board of Medicine



Virginia Department of
Health Professions



Legislation v. Regulation

Legislation may be proposed by a head of state

Regulations are simply enforcements by regulators and head of state doesn't interfere.

Criminal penalties v. Administrative penalties



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Frequently Asked Questions (FAQ)

- Urban myth clarification

Drug

Cocaine

Illicit – Crack or powder

Medical – ENT or DDS (TAC)

Coca Tea – CII, Illegal to import into USA

Poppy Seeds

No – Single dose

Yes – Chronic consumption

THC

Secondhand smoke

Detection

Frequently Asked Questions (FAQ)

- Poppy Seeds – FDA max 0.10%

No – Single dose

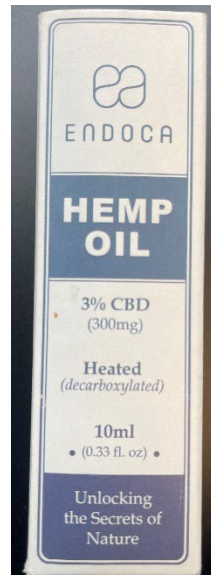
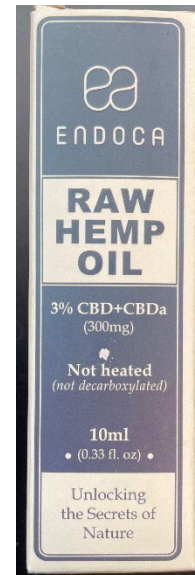
Yes – Chronic consumption, Urine conc. < 500 ng/mL



% (w/w)	Penzeys	Superstition Mountain	Sauers	Spice Time	NM	472
Codeine	<0.001	<0.001	0.002	<0.001	0.001	< 0.001
Morphine	<u>0.020</u>	0.008	<0.001	0.001	<0.001	<0.001

Frequently Asked Questions (FAQ)

- Hemp Oil
 - Phytocannabinoids
 - None
 - CBD
 - “THC Free” (AIA 2018, < 0.3%)
 - < 1% THC < 10 mg/mL, < 1 mg/~2 drops
 - Urine screen 20 ng/mL THC-COOH
 - 1000 ng/mL
 - Excrete ~20% in urine as THC-COOH
 - » ~50 x cutoff



Follow up Questions

- Are all Opioid drugs, Opiates?
 - True
 - False

Follow up Questions

- Are all Opioid drugs, Opiates?

–True

–FALSE

- Morphine
- Codeine
- Heroin
- Hydrocodone

Hydromorphone

Oxycodone

Oxymorphone

Follow up Questions

- Which is a metabolite of Oxycodone?
 - A. 6-Acetyl Morphine
 - B. Benzoylecgonine
 - C. Oxymorphone
 - D. Fentanyl

Follow up Questions

- Which is a metabolite of Oxycodone?
 - A. 6-Acetyl Morphine (Heroin)
 - B. Benzoylecgonine (Cocaine)
 - C. Oxymorphone
 - D. Fentanyl

Follow up Questions

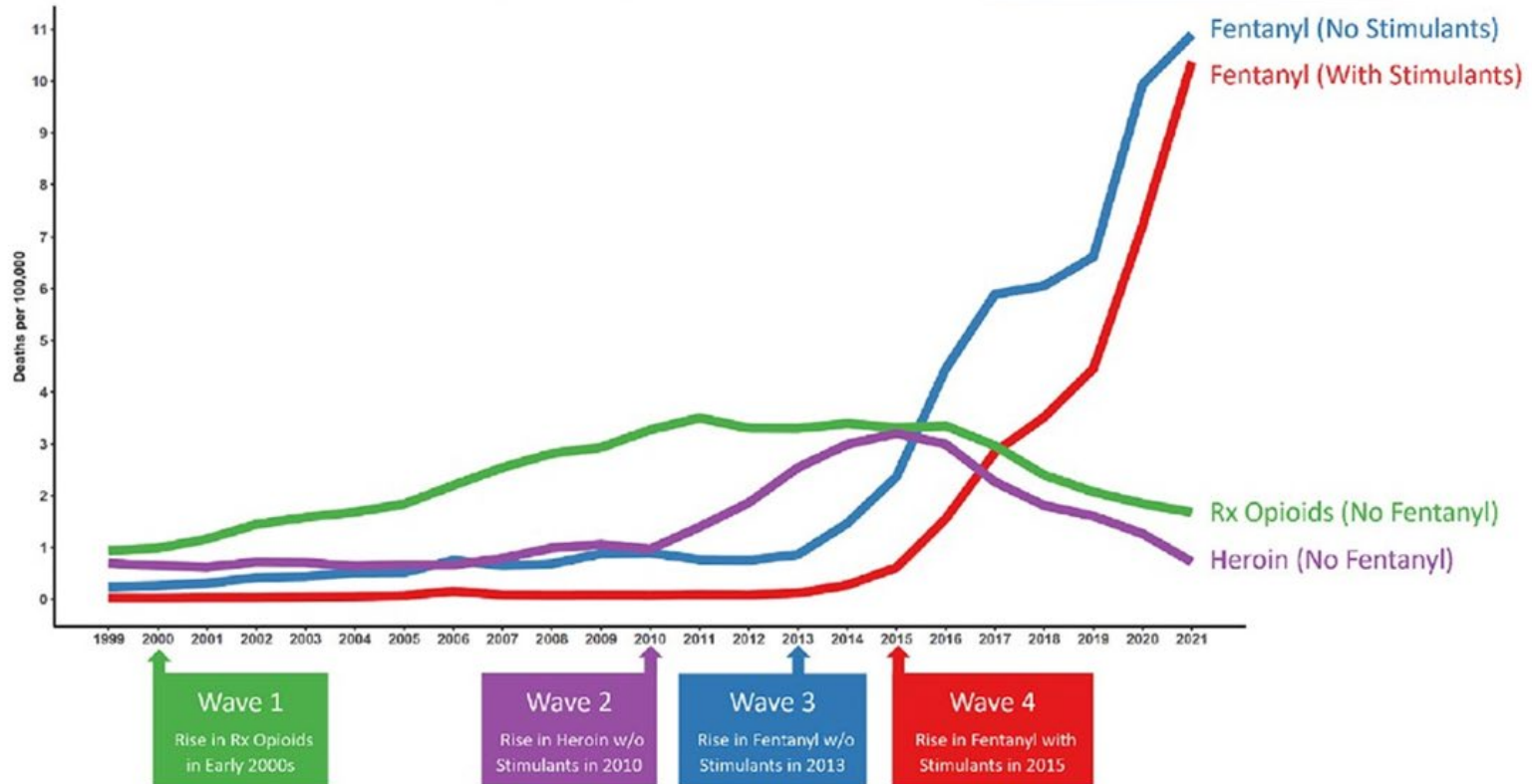
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Follow up Questions

- UDS screens Presumptive Pos for Opiates:
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Recent US DEA Data

CHARTING THE FOURTH WAVE: POLYSUBSTANCE TRENDS



Sources: CDC NVSS/WONDER; Friedman J, Shover CL. Charting the fourth wave: Geographic, temporal, race/ethnicity and demographic trends in polysubstance fentanyl overdose deaths in the United States, 2010-2021. *Addiction*. 2023 Dec;118(12):2477-2485. doi: 10.1111/add.16318. Epub 2023 Sep 13. PMID: 37705148.



VCUHealth

Aches & Pains

- Interpretation questions
 - 4 Cases
 - Are drug testing results consistent with medications being prescribed?
 - Yes
 - Maybe so
 - Slim to None, and Slim just left the building

Ms. C: 68 yr old BF

Cancer

- Diagnosed with Ovarian CA w/mets
- Surgery, chemo

Social

- Widowed
- 2 daughters and 1 son
- Lived with significant other

Psychological History

- Past childhood trauma – psychiatrist - duloxetine, venlafaxine, seroquel, diazepam, bupropion

Substance Use

- Oxycodone 15mg – (self-escalating)
- Smoker
- History of obtaining opioids not prescribed

Ms. C's UDS

Home opioid regimen:

- Buprenorphine 15mcg/hr Q7D
- Hydrocodone-Acet 10-324mg Q6H PRN

UDS results also show:

- Cocaine metabolites
- Oxycodone (not prescribed)

Counseled patient:

- If another UDS positive for cocaine, we will not continue to prescribe hydrocodone-acetaminophen
- Will refer to addiction medicine

Interpretation notes:

Oxazepam from diazepam a couple of days ago.
HC expected from daily use, but likely only 1-2 times per day.
Buprenorphine: regular use.
Benzoyllecgonine likely from cocaine use 1-2 days ago.
Oxycodone & metabolites likely from daily use 10-50mg/day

Comprehensive Drug Analysis, Urine

Comment: =====

Comprehensive Drug Analysis,Ur

Test	Result	Flag	Units
Drug Present			
Oxazepam	18		ng/mg creat

Oxazepam may be administered as a scheduled prescription medication; it is also an expected metabolite of other benzodiazepine drugs, including diazepam, chlordiazepoxide, prazepam, clorazepate, halazepam, and temazepam.

Benzoyllecgonine	45		ng/mg creat
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Benzoyllecgonine is a metabolite of cocaine; its presence indicates use of this drug. Source is most commonly illicit, but cocaine is present in some topical anesthetic solutions.

Hydrocodone	104		ng/mg creat
Hydromorphone	107		ng/mg creat
Dihydrocodeine	45		ng/mg creat
Norhydrocodone	145		ng/mg creat

Sources of hydrocodone include scheduled prescription medications. Hydromorphone, dihydrocodeine and norhydrocodone are expected metabolites of hydrocodone. Hydromorphone and dihydrocodeine are also available as scheduled prescription medications.

Oxycodone	978		ng/mg creat
Oxymorphone	1150		ng/mg creat
Noroxycodone	3763		ng/mg creat
Noroxymorphone	233		ng/mg creat

Sources of oxycodone are scheduled prescription medications. Oxymorphone, noroxycodone, and noroxymorphone are expected metabolites of oxycodone. Oxymorphone is also available as a scheduled prescription medication.

Buprenorphine	1		ng/mg creat
Norbuprenorphine	8		ng/mg creat

Norbuprenorphine is an expected metabolite of buprenorphine.

Bupropion	PRESENT		
Hydroxybupropion	PRESENT		

Hydroxybupropion is an expected metabolite of bupropion.

Duloxetine	PRESENT		
Mirtazapine	PRESENT		
Quetiapine	PRESENT		
Acetaminophen	PRESENT		

Test	Result	Flag	Units	Ref Range
Creatinine	135		mg/dL	>=20

Mr. L: 58 yr old WM

Cancer

- Esophageal adenocarcinoma
- Stable disease in 2023/24
- New dx neuro-endocrine carcinoma w/ metastatic disease 2025

Psychosocial & Behavioral

- Anxiety
- Early refills, potential diversion of prescribed opioids

Substance Use

- History of opioid use disorder, alcohol use disorder
- Followed by Addiction Medicine, transition to suboxone

Prescribed opioids

- Buprenorphine-naloxone + full agonist

Mr. L's UDS

Home opioid regimen:

- Buprenorphine-naloxone 8mg/2mg twice a day
- Hydromorphone 2mg p.o. Q12H PRN

Other opioids:

- Patient reported taking oxycodone (not prescribed) daily, 15-30mg

Interpretation notes:

Hydromorphone expected from daily use, but <2mg/day.

Buprenorphine: regular use.

Bupropion: regular, recent use.

Carboxy-THC estimating 1-3 days ago

Estimate Oxycodone & metabolites from daily use 100+ mg/day

Oxymorphone: regular use, Noroxycodone: recent.

Comprehensive Drug Analysis, Urine

Analysis, Urine

Comment: =====

Comprehensive Drug Analysis,Ur

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Test	Result	Flag	Units
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Drug Present

Carboxy-THC	76		ng/mg creat
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Carboxy-THC is a metabolite of tetrahydrocannabinol (THC). Source of THC is most commonly herbal marijuana or marijuana-based products, but THC is also present in a scheduled prescription medication. Trace amounts of THC can be present in hemp and cannabidiol (CBD) products. This test is not intended to distinguish between delta-9-tetrahydrocannabinol, the predominant form of THC in most herbal or marijuana-based products, and tetrahydrocannabinol.

Hydromorphone	92		ng/mg creat
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Hydromorphone is a scheduled prescription medication; it is also an expected metabolite of hydrocodone.

Oxycodone	8786		ng/mg creat
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Oxymorphone	>11364		ng/mg creat
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Noroxycodone	>11364		ng/mg creat
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Noroxymorphone	5916		ng/mg creat
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Oxycodone, oxymorphone, noroxycodone, and noroxymorphone are scheduled prescription medications.

Oxymorphone, noroxycodone, and noroxymorphone are expected metabolites of oxycodone. Oxymorphone is also available as a scheduled prescription medication.

Buprenorphine	397		ng/mg creat
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Norbuprenorphine	>1136		ng/mg creat
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Source of buprenorphine is a scheduled prescription medication.

Norbuprenorphine is an expected metabolite of buprenorphine.

Gabapentin	PRESENT		
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Duloxetine	PRESENT		
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Olanzapine	PRESENT		
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Acetaminophen	PRESENT		
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Test	Result	Flag	Units	Ref Range
Creatinine	88		mg/dL	>=20

Declared Medications:

Medication list was not provided.

Mr. R: 45 yr old BM

Cancer & Pain

- Metastatic small cell lung cancer
- Cancer-related pain in shoulder & arm

Alcohol Use Disorder

- Recurrent episodes of alcohol-induced pancreatitis
- July 2025 admission PETH 1076
- Follow-up scheduled with Addiction Medicine

Opioids

- Opioid tolerant, July 2025 MEDD 150
- Cannot tolerate methadone due to prolonged QTc

Mr. R's UDS

Home opioid regimen

- Fentanyl 25mcg Q72H
- Morphine IR 15mg PO Q4H PRN

Hospitalization for alcohol withdrawal July 2025

- Discontinue fentanyl, rotate to oxycodone IR 10mg Q6H PRN
- Discussed with oncology team not to escalate for non-cancer/chronic pain
- Discussed with patient, do not self-escalate
- UDS appropriate: positive for prescribed medications, negative for non-prescribed/illicit

Interpretation notes:

Oxycodone ~2-10, regular.

Fentanyl/Norfentanyl consistent with 25.

Bupropion: regular.

Lorazepam recent.

Alcohol: a couple of drinks.

Carboxy-THC: possibly a couple of days ago, or chronic user & stopped recently.

Comment: =====				
Comprehensive Drug Analysis, Ur				
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Test	Result	Flag	Units	
Drug Present				
Lorazepam	358		ng/mg creat	
Source of lorazepam is a scheduled prescription medication.				
Alcohol, Ethyl				
	0.077		g/dL	
Sources of ethyl alcohol include alcoholic beverages or as a fermentation product of grains; glucose was not detected in this specimen. Ethyl alcohol result should be interpreted in the context of all available clinical and behavioral information.				
Carboxy-THC				
	4		ng/mg creat	
Carboxy-THC is a metabolite of tetrahydrocannabinol (THC). Source of THC is most commonly herbal marijuana or marijuana-based products, but THC is also present in a scheduled prescription medication. Trace amounts of THC can be present in hemp and cannabidiol (CBD) products. This test is not intended to distinguish between delta-9-tetrahydrocannabinol, the predominant form of THC in most herbal or marijuana-based products, and delta-8-tetrahydrocannabinol.				
Oxycodone				
	430		ng/mg creat	
Oxymorphone	753		ng/mg creat	
Noroxycodone	2298		ng/mg creat	
Noroxymorphone	612		ng/mg creat	
Sources of oxycodone are scheduled prescription medications. Oxymorphone, noroxycodone, and noroxymorphone are expected metabolites of oxycodone. Oxymorphone is also available as a scheduled prescription medication.				
Fentanyl				
	6		ng/mg creat	
Norfentanyl	50		ng/mg creat	
Source of fentanyl is a scheduled prescription medication, including IV, patch, and transmucosal formulations. Norfentanyl is an expected metabolite of fentanyl.				
Bupropion				
	PRESENT			
Hydroxybupropion	PRESENT			
Hydroxybupropion is an expected metabolite of bupropion.				
Mirtazapine				
	PRESENT			
Ibuprofen	PRESENT			
Hydroxyzine	PRESENT			
Lidocaine	PRESENT			
Guaifenesin	PRESENT			
Guaifenesin may be administered as an over-the-counter or prescription drug; it may also be present as a breakdown product of methocarbamol.				
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Test	Result	Flag	Units	Ref Range
Creatinine	199		mg/dL	>=20
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Mr. R's UDS

2 weeks later

- Discussed alcohol use disorder with addiction medicine in clinic follow-up
- Open to gabapentin for AUD

Other notes

- Marijuana for appetite, sleep, anxiety
- Interested in counseling, indicated would seek care at addiction medicine clinic (group therapy)

Interpretation Notes:

Oxycodone 15-75, regular

Morphine/Hydromorphone: 20+ per day

Fentanyl/norfentanyl discontinued a few days ago.

Bupropion & lorazepam gone.

Carboxy-THC: likely a couple of days ago or chronic user and stopped recently.

Alcohol: a couple of drinks per day, baseline maybe ~0.06

Comment: =====
Comprehensive Drug Analysis,Ur

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Test	Result	Flag	Units
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Drug Present

Alcohol, Ethyl	0.081		g/dL
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Sources of ethyl alcohol include alcoholic beverages or as a fermentation product of glucose; glucose was not detected in this specimen. Ethyl alcohol result should be interpreted in the context of all available clinical and behavioral information.

Morphine	>4673		ng/mg creat
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Normorphine	115		ng/mg creat
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Potential sources of large amounts of morphine in the absence of codeine include administration of morphine or use of heroin.

Normorphine is an expected metabolite of morphine.

Hydromorphone	40		ng/mg creat
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Hydromorphone may be present as a metabolite of morphine; concentrations of hydromorphone rarely exceed 5% of the morphine concentration when this is the source of hydromorphone.

Oxycodone	1377		ng/mg creat
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Oxymorphone	1579		ng/mg creat
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Noroxycodone	1557		ng/mg creat
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Noroxymorphone	300		ng/mg creat
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Sources of oxycodone are scheduled prescription medications.

Oxymorphone, noroxycodone, and noroxymorphone are expected metabolites of oxycodone. Oxymorphone is also available as a scheduled prescription medication.

Norfentanyl	2		ng/mg creat
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Norfentanyl is an expected metabolite of fentanyl. Source of fentanyl is a scheduled prescription medication, including IV, patch and transmucosal formulations.

Mirtazapine	PRESENT		
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Acetaminophen	PRESENT		
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Ibuprofen	PRESENT		
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Test	Result	Flag	Units	Ref Range
Creatinine	214		mg/dL	>=20

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Ms. W's UDS

Cancer

- Renal cell carcinoma, oligometastasis
- Pancreatic mass stable
- Under surveillance

Substance Use

- Has been on opioids approx. 30 years
- Interested in buprenorphine-naloxone, will start low dose induction and discontinue other opioids

Other notes

- Pain persistently reported out of proportion with extent of disease
- Anxiety with concerns of chemical coping, withdrawal symptoms

Ms. W's UDS

Home opioid regimen:

- Morphine 15mg Q12h
- Oxycodone 10mg Q8h PRN

Last seen at VCU May 2025:

- Cocaine + metabolite, codeine, morphine, hydrocodone, oxycodone, fentanyl, additional

Acetaminophen	PRESENT
Diclofenac	PRESENT
Ibuprofen	PRESENT
Naproxen	PRESENT
Diphenhydramine	PRESENT
Lidocaine	PRESENT

Test	Result	Flag	Units	Ref Range
Creatinine	209		mg/dL	>=20

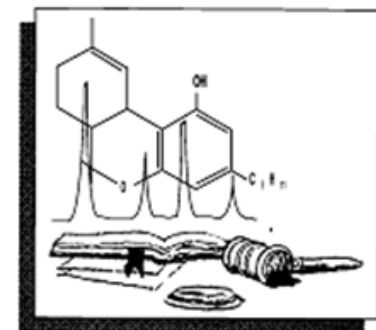
Comment: =====
Comprehensive Drug Analysis, Ur
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Test	Result	Flag	Units
Cocaine	85		ng/mg creat
Benzoylcegonine	>2392		ng/mg creat
Cocaethylene	87		ng/mg creat
Source of cocaine is most commonly illicit, but cocaine is present in some topical anesthetic solutions. Benzoylcegonine is an expected metabolite of cocaine.			
Cocaethylene is a cocaine metabolite formed in the presence of ethanol.			
Codeine	214		ng/mg creat
Morphine	1029		ng/mg creat
Normorphine	43		ng/mg creat
Norcodeine	98		ng/mg creat
Sources of codeine include scheduled prescription medications; morphine is an expected metabolite of codeine. Other sources of morphine include scheduled prescription medications or as a metabolite of heroin.			
Normorphine is an expected metabolite of morphine.			
Norcodeine is an expected metabolite of codeine.			
Hydrocodone	103		ng/mg creat
Dihydrocodeine	31		ng/mg creat
Norhydrocodone	247		ng/mg creat
Dihydrocodeine and norhydrocodone are expected metabolites of hydrocodone. Dihydrocodeine is also available as a scheduled prescription medication.			
Oxycodone	2361		ng/mg creat
Oxymorphone	584		ng/mg creat
Noroxycodone	>4785		ng/mg creat
Noroxymorphone	1060		ng/mg creat
Sources of oxycodone are scheduled prescription medications. Oxymorphone, noroxycodone, and noroxymorphone are expected metabolites of oxycodone. Oxymorphone is also available as a scheduled prescription medication.			
Fentanyl	>239		ng/mg creat
Norfentanyl	>478		ng/mg creat
Source of fentanyl is a scheduled prescription medication, including IV, patch, and transmucosal formulations. Norfentanyl is an expected metabolite of fentanyl.			

Interpretation Notes:

Morphine: 2-10mg/day. Cocaine metabolites: recent use. Cocaethylene with alcohol. Hydrocodone 1-5 per day, not regular. Fentanyl not consistent with patch use. Suspect "speedball," cocaine/morphine-heroin/fentanyl, maybe hydrocodone

Questions ?



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