Boston Children's Hospital
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Adolescent Substance Use and Addiction Program

SUBSTANCE USE CARE FOR ADOLESCENTS AND YOUNG ADULTS

Maria Alden, LICSW & Miriam Schizer, MD, MPH

January 2022

MCPAP
Massachusetts Child Psychiatry Access Program

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INTRODUCTION

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Adolescent Substance Use and Addiction Program (ASAP)
Division of Developmental Medicine
Boston Children's Hospital

LEARNING OBJECTIVES

Describe how to utilize virtual substance use counseling service available through MCPAP

Understand how PCPs can collaborate with substance use clinicians to provide care to their patients

Explore clinical examples of patients receiving virtual care through ASAP

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ASAP-MCPAP COUNSELING SERVICE

Virtual substance use care provided to adolescents and young adults who are currently treated by providers affiliated with MCPAP in Massachusetts

Clinical Social Worker

Provides:

- Comprehensive Substance Use Evaluation
- Individual Substance Use Counseling
- Parent Guidance
- Referrals, as needed
- Group Therapy *(Coming Soon)!*

ASAP Medical Consultants

Available to assist Providers with:

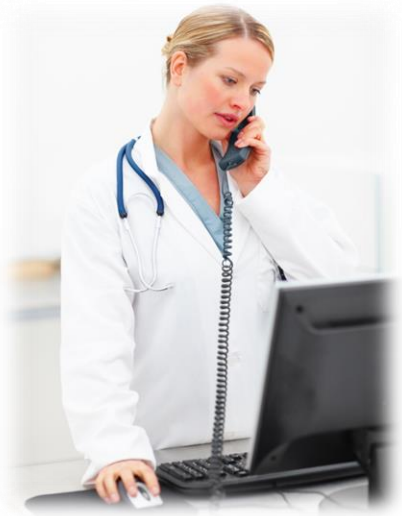
- Medications for Substance Use Disorders
- Clinical Drug Testing

HOW DO I MAKE A REFERRAL?

Call your MCPAP Regional Team

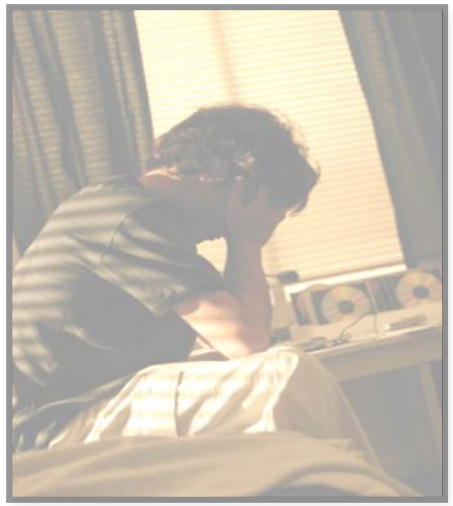
Ask for the ASAP Consultant

Let them know that you are seeking substance use counseling for your patient



CASE VIGNETTE 1
MICHAEL

- Michael (16) was referred for substance use counseling by his PCP due to concerns related to patient vaping nicotine and marijuana
- Patient expresses that he wants to stop both marijuana and nicotine



Patient shares that he is **really struggling with cravings** for nicotine

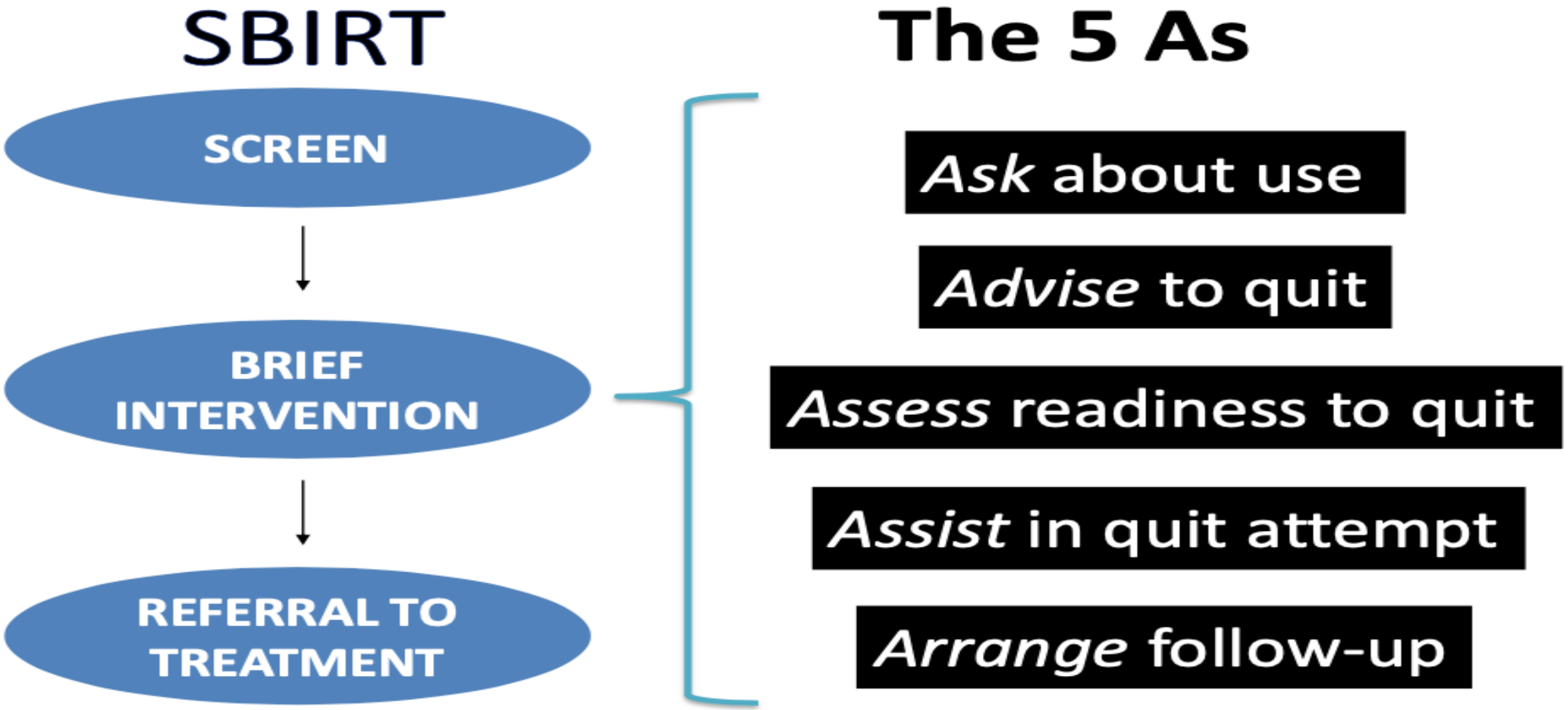
CASE VIGNETTE 1 INTERVENTIONS

Michael

- Motivational Interviewing
- Exploring triggers to cravings and use
- Identifying alternative strategies to reduce use
- NRT

Treatment strategies

Slide content courtesy of Nic Chadi



U.S. Department of Health and Human Services. Treating tobacco use and dependence: 2008 update: Practice guideline executive summary: http://www.ncbi.nlm.nih.gov/books/NBK63956

Slide content courtesy of Nic Chadi

Cigarettes and Vaping: Treatment Tips

#1 Advice and Support

- Advise that non-use is best
- Ask about cravings and symptoms of nicotine withdrawal (increased appetite, fatigue, headaches, irritability, anxiety, depression). If patient is experiencing either, offer nicotine replacement therapy
- Assess for exercise intolerance, shortness of breath, or other respiratory symptom. If present, refer to Pulmonary Division at BCH for evaluation
- If possible, connect to counseling for support
- Offer support line 1-800-QUITNOW and TEENSMOKEFREE.GOV
- Ask patients to initiate a brief quit trial when initiating NRT or set a quit date

Nicotine Replacement Therapy

Mechanism	Full agonist that binds to nicotinic cholinergic receptors
Clinical indications	•Daily vaping of nicotine-containing products •Withdrawal symptoms or cravings that interfere with cessation attempts •Hospitalization or other circumstances that preclude vaping

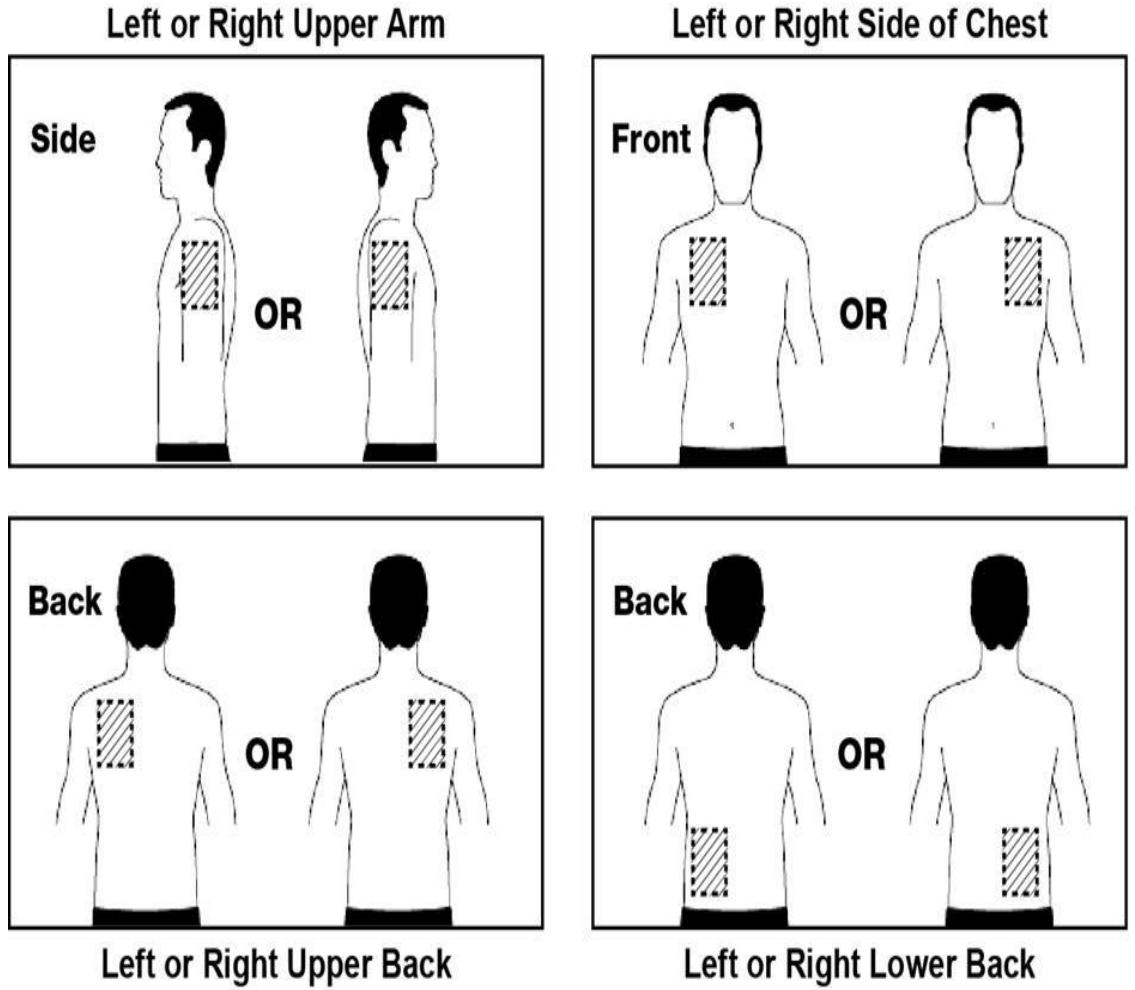
Nicotine Replacement Therapy

- Can be used to help teens quit or cut down
  - **Patches, lozenges and gums**
  - Sprays and inhalers not recommended in teens
- Safe and minor side effects
  - Skin irritation, dry mouth

Recommendation: Combine the nicotine patch with a short-acting nicotine product to reduce cravings.

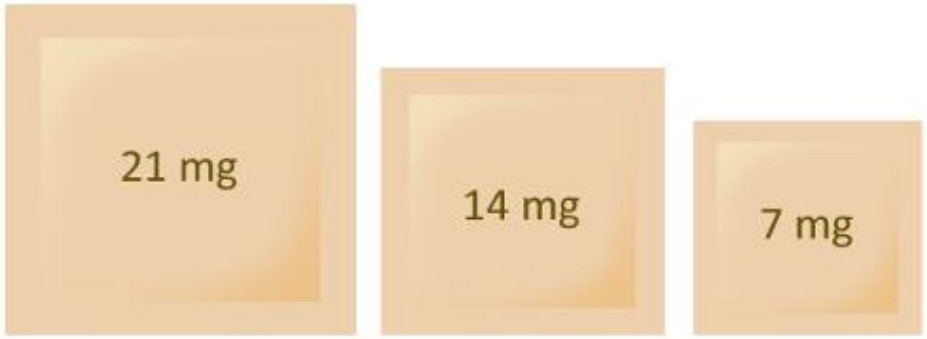
Nicotine Patch Instructions

- Apply to smooth skin
- Change position every day to avoid skin irritation
- Apply every morning by pressing firmly for 10 seconds
- May sleep with it on however if develop nightmares then remove before bedtime
- Fold in half when discarding.

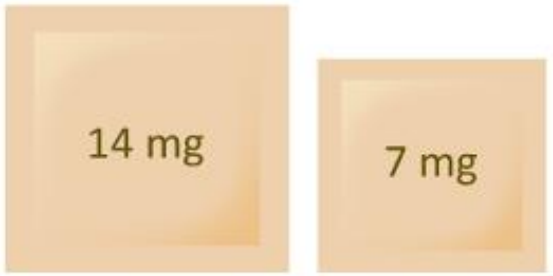


Nicotine Patch Dosing

If you smoke more than 10 cigarettes a day:



If you smoke 10 or less cigarettes a day:



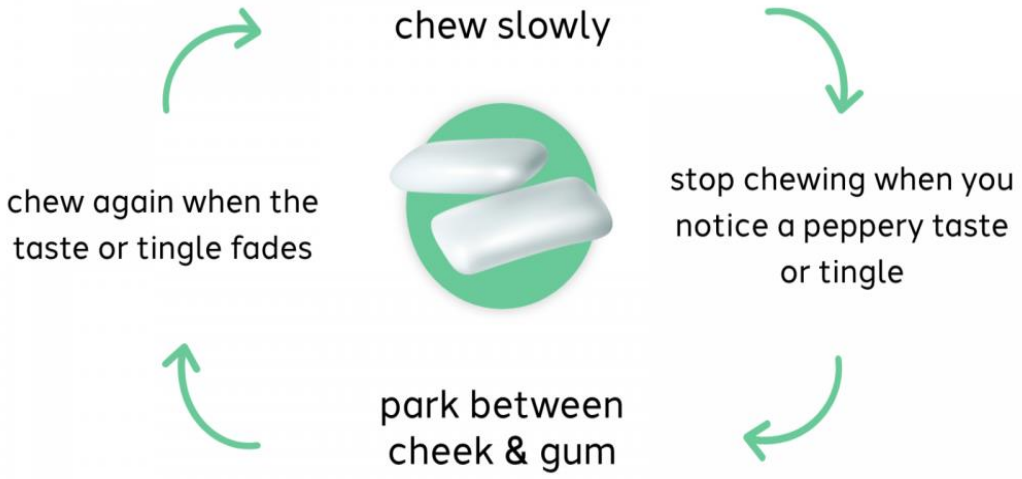
MASSACHUSETTS GENERAL HOSPITAL

Pharmaceuticals for e-cigarette use in youth

- No current guidelines (based on expert opinion)
- NRT dose recommendations: **Patch**
  - **1+ pod/day: 200 puffs: 21 mg**
  - **½-1 pod per day: 14mg**
  - A few "hits" a day: 7mg
- Lozenges and gums
  - 2-4 mg every 1-2 hours as needed
  - Can be used in combination with patch

Short-Acting NRT

Dose and administration (cont.)



For breakthrough cravings or patients who don't tolerate the patch

"Chew and Park Method" for using Nicotine Gum:
Chew gum slowly until taste is apparent, then 'park' it between gums and cheek for optimal absorption.
Chew intermittently for about 30 minutes.

Usually use **2 mg** lozenge or gum (comes in 1 mg, 2 mg, 4 mg)

General Treatment Strategy for Gum or Lozenges:
Weeks 1-6 One piece Q 1-2 hours
Weeks 7-9 One piece Q 2-4 hours
Weeks 10-12 One piece Q 4-8 hours

Varenicline (Chantix)

- Most effective monotherapy for adult smoking cessation
- Appropriate for use in adolescents 17 and older
- Partial agonist at the acetylcholine nicotinic receptor
  - Decreases cravings and withdrawal
- Ideally, start 1-2 weeks before the quit date
- Dosing: *Day 1-3* 0.5 mg daily
  Day 4-7 0.5 mg BID
  Starting Day 8: 1 mg BID
  Continue 12 weeks or longer as tolerated

Varenicline (Chantix)

- FDA Black Box warning (2009-2015) re the possibility of adverse neuropsychiatric events
- Avoid in patients with known seizure disorders
- Common side effects: Nausea, insomnia, abnormal dreams, headaches, nasopharyngitis, xerostomia

Buproprion XL (Wellbutrin)

- Antidepressant. Mechanism of action for smoking cessation not fully understood
- Limited studies supporting use in adolescents under 18
- Dose: Initial dose *150 mg QD =>*
- After 3 days increase to *150 mg BID*
- Continue for 7-12 weeks; longer as tolerated
- Contraindicated for patients with seizure disorder and eating disorders
- Excellent choice for patients with co-occurring depression
- Previous black box warning; monitor for SI

CASE VIGNETTE 2
SAMANTHA

- Samantha (17) was referred for substance use counseling due to her parents' concerns about chronic THC and nicotine use.
- Samantha has a history of depression and four prior psychiatric hospitalizations.
- Samantha's parents have expressed concerns that patient is using excessively.

When Samantha's parents have attempted to address patient's use, **significant conflict has erupted**.

CASE VIGNETTE 2 INTERVENTIONS

Samantha

- Individual counseling-motivational interviewing, exploring triggers
- Parent Guidance-support, behavioral interventions, exploration of use of clinical drug testing

Drug Testing for Therapeutic Monitoring

- For patients with known substance use or substance use disorders, we often recommend weekly random drug testing to monitor the patients' progress and motivate them to cut back
- Often paired with a contingency management approach
- Patient may initially refuse drug testing but agree after negotiation with parents

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ASAP Drug Testing Program

- Weekly for 12 weeks
- Random, i.e. adolescent does not choose the date (Pre-COVID, parent got text the day before)
- Collection can be done in the lab (Quest Diagnostics) or at home
- We prefer at home supervised collection whenever possible
- First a.m. void optimal; most concentrated

ASAP Drug Testing Program, continued

- If the patient has “an unexpected drug test result”, parent gets a call asking that the adolescent come in to discuss in person with an ASAP physician or NP
- We will tell the parent urgently if the positive drug test result poses an immediate safety concern (e.g. opioid or cocaine use)

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Drug Testing in primary care to monitor adolescents who are attempting behavior change

Discuss how you will use drug testing with patient and parent	• Decide if testing will be done at home, in the lab, or in the office • Confirm that patients and parents will both get results • Determine how results will be shared (by phone, in person visit, etc.)
Make a plan of how drug test results will be used. A sample behavioral plan is provided here.	• 1st negative test: OK to go out with friends, curfew 8 pm • 2nd consecutive negative test: curfew extended to 10 pm • 3rd consecutive negative test: driving privileges restored • 4th consecutive negative test: sleep overs allowed • **If a test is positive at any point, start from the beginning.**

Place orders. Sample orders are provided here.	• Urine drug toxicology monitoring: Panel with Confirmation • Urine drug toxicology monitoring: Specimen Validity • Alcohol metabolite with confirmation • Nicotine and cotinine

Collect the specimen	• Collect a first morning specimen to maximize concentration. • If collection is at home, recommend that parents "supervise" collection to the extent that they are **comfortable. Parents can put dye in the toilet,** listen for running water and keep the door open to prevent a teen from using a stored urine sample. • Check for temperature. Use a cup with a temperature strip if possible. • After collection, be sure to supervise the specimen until it is dropped off at the lab. • For repeated testing, parents can choose the day for collection, and should always collect the next morning if drug use is suspected. At times testing should be two consecutive days (to avoid use immediately after the test). • We recommend testing periods of 8-12 weeks or as clinically indicated.

INTERPRET THE RESULTS

- Check the urine creatinine to confirm specimen integrity.
- MARIJUANA: THC is lipid soluble and is stored in fat tissue in heavy/chronic users. To compare consecutive tests, divide the THC level by the creatinine to correct for urine concentration.
- ALCOHOL: Alcohol metabolites (ethyl glucuronide and ethyl succinate) can be positive in the urine for up to 5 days after heavy alcohol use. Low levels of these metabolites may be detected following incidental exposure to alcohol in many daily use products (mouthwash, hand sanitizer).
- NICOTINE: Cotinine is a metabolite of nicotine that can be detected 3-5 days after consumption. Use of nicotine replacement medications will make tests for cotinine positive and we recommend NOT testing for nicotine while using these medications.

- BENZODIAZEPINES: Sertraline can cross react with the screen for benzodiazepines, resulting in a positive screen with negative confirmatory test. For patients not prescribed sertraline, consider use of benzodiazepines not included in the panel ("designer benzodiazepines") when the screen is positive and the confirmatory test is negative.
- OPIATES: Poppy seeds contain small amounts of naturally occurring opiates, and patients who consume them can have small amounts of morphine and codeine in their urine. For tests with low levels of opiates we recommend advising the patient to avoid poppy seeds and retest.

Quantitative THC levels

- We can monitor progress by reviewing quantitative THC levels
- These levels are obtained by dividing the raw THC value by the random urine creatinine, then multiply by 100
- Generally, levels fall in one of three categories:
- Low levels < 100
- Moderate levels 100 - 1000
- High levels > 1000

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NICOTINE AND COTININE, URINE

Result Date: 01/08/20 09:33 PM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	978		ng/mL
COTININE, URINE	3107		ng/mL

THIS RESULT HAS BEEN VERIFIED BY REPEAT ANALYSIS.

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

This test was developed and its analytical performance characteristics have been determined by Quest Diagnostics Nichols Institute Chantilly, VA. It has not been cleared or approved by the U.S. Food and Drug Administration. This assay has been validated pursuant to the CLIA regulations and is used for clinical purposes.

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Result Date: 01/08/20 09:33 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	NEGATIVE	<500	ng/mL
See Note 1			
See Note 2			
Creatinine	191.8	> or = 20.0	mg/dL
pH	6.6	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
Norfentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	NEGATIVE	<500	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite	1778	<5	ng/mL
See Note 1			
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

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NICOTINE AND COTININE, URINE

Result Date: 12/09/19 08:46 PM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	2954		ng/mL
THIS RESULT HAS BEEN VERIFIED BY REPEAT ANALYSIS.			
COTININE, URINE	1722		ng/mL

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

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STAND PNL + FENTANYL

Result Date: 12/09/19 08:46 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	NEGATIVE	<500	ng/mL
See Note 1			
See Note 2			
Creatinine	241.8	> or = 20.0	mg/dL
pH	5.6	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
Norfentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	POSITIVE	<500	ng/mL
Amphetamine	>15000	<250	ng/mL
See Note 1			
Methamphetamine	NEGATIVE	<250	ng/mL
See Note 1			
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE CONFIRMED	<100	ng/mL
Alphahydroxyalprazolam	NEGATIVE	<25	ng/mL
See Note 1			
Alphahydroxymidazolam	NEGATIVE	<50	ng/mL
See Note 1			
Alphahydroxytriazolam	NEGATIVE	<50	ng/mL
See Note 1			
Aminoclonazepam	NEGATIVE	<25	ng/mL
See Note 1			
Hydroxyethylflurazepam	NEGATIVE	<50	ng/mL
See Note 1			
Lorazepam	NEGATIVE	<50	ng/mL
See Note 1			
Nordiazepam	NEGATIVE	<50	ng/mL
See Note 1			
Oxazepam	NEGATIVE	<50	ng/mL
See Note 1			
Temazepam	NEGATIVE	<50	ng/mL
See Note 1			
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite	>5000	<5	ng/mL
See Note 1			
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

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Example of Drug Test Results Reviewed with an ASAP Patient

11/21 THC 439, cotinine 228

11/27 THC 181, cotinine 120

12/5 THC 541, cotinine 60 ****12/11 ASAP VISIT**

12/12 THC 514, cotinine negative

12/20 THC 109, cotinine 537

1/3 THC 49, cotinine 310

1/9 THC 26, cotinine negative

1/15 THC 25, cotinine 60 ****1/21 ASAP VISIT**

CASE VIGNETTE 3
LILY

- Lily (21) was referred to substance use counseling by her PCP due to concerns that patient has been huffing rubbing alcohol.
- Lily reported that she has been inhaling rubbing alcohol several times a day for the past couple of years.
- She states that her body "craves" rubbing alcohol and that there are times where she will go through a bottle of rubbing alcohol in a few days.

She expressed that she **wants to stop** because she is **worried about the long-term impact** of inhaling the fumes on her brain and her body.

CASE VIGNETTE 3 INTERVENTIONS

Lily

- Motivational Interviewing
- Self-monitoring
- Cognitive Behavioral Therapy
- Collaboration with PCP

CASE VIGNETTE 4
MICHELLE

- Michelle (16) was referred by her PCP for substance use counseling due to concerns about patient's cannabis use.
- Michelle has been using cannabis and experimented with other substances to cope with the challenges and stressors that she is experiencing in her life.

A common theme discussed in counseling sessions is that she **feels isolated** and alone and **does not have many peers** that she can connect with.

CASE VIGNETTE 4 INTERVENTIONS

Michelle

- Group Counseling - Michelle is an excellent candidate for a **new virtual psychotherapy group** being offered for high school students who use substances.
- The objectives of this new group:
  - Support adolescents' journeys in discovering and/or reconnecting to their beliefs, attitudes, and values about moving through life's stresses and adversity, including their relationship to substances
  - Together, strive to understand the function that substance use plays or has played in their lives
  - It is an opportunity for them to get in touch with what they want in their lives and what they want for themselves, and to connect with others on the same journey

Providers please note:

- Patients who have active suicidal ideation, recent suicide attempts and/or who are currently experiencing psychosis including hallucinations would not benefit from group therapy.
- Referral to group does not guarantee the patient will benefit from group. Group facilitators will meet with patients prior to group to discuss whether it will be good therapeutic fit.

Sample Provider script for patients who may be interested in group:

"We have a virtual psychotherapy group offered by a clinician at Boston Children's Hospital. If you are interested, I would be happy to pass along your name to Maria, who runs the group. You will receive a call from Boston Children's Hospital's PC Plus program to set up an appointment to talk with her to learn more about the group."

HOW TO MAKE A REFERRAL

Call your local MCPAP team and let them know that you want to speak to the ASAP consultant

When you speak to the ASAP consultant, let them know specifically that you are making a referral for group.

The ASAP consultant will ask you for the following information:

- Age of the adolescent and types of substances use
- Any concerns related to acute psychiatric issues/child protection issues/domestic violence noted
- Is the family aware of the referral? Who is aware of the referral? Who is the primary contact person (include name/contact information)?
- What does the patient/family know about the reason for the referral?
- Contact information for the physician seeking consultation

QUESTIONS?

ASAP Drug Testing Program, Continued

Examples of ASAP patients who are participating in our drug testing program, and typical (or atypical) drug test results

Aidan

15-year-old boy from the Cape with severe cannabis and nicotine use disorder. Also with history of major depression and recurrent suicidal ideation.

NICOTINE AND COTININE, URINE

Result Date: 12/29/19 08:48 AM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	658		ng/mL
COTININE, URINE	1370		ng/mL

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

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STAND PNL + FENTANYL

Result Date: 12/29/19 08:48 AM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites See Note 1 See Note 2	NEGATIVE	<500	ng/mL
Creatinine	172.5	> or = 20.0	mg/dL
pH	6.3	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl See Note 1	NEGATIVE	<0.5	ng/mL
Norfentanyl See Note 1 See Note 2	NEGATIVE	<0.5	ng/mL
Amphetamines	POSITIVE	<500	ng/mL
Amphetamine See Note 1	6666	<250	ng/mL
Methamphetamine See Note 1	10252	<250	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite See Note 1	14	<5	ng/mL
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE CONFIRMED	<100	ng/mL
Codeine See Note 1	NEGATIVE	<50	ng/mL
Hydrocodone See Note 1	NEGATIVE	<50	ng/mL
Hydromorphone See Note 1	NEGATIVE	<50	ng/mL
Morphine See Note 1	NEGATIVE	<50	ng/mL
Norhydrocodone See Note 1	NEGATIVE	<50	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

Methamphetamine in a Drug Test

- Methamphetamine is metabolized into amphetamine (not the other way around)
- Methamphetamine has d- and l-isomers
  - d-methamphetamine is a CNS stimulant
  - l-methamphetamine works peripherally and does not produce euphoric effects
  - Has the patient used Vicks nasal inhaler?
  - Chiral analysis can distinguish between the two isomers if it's important clinically

Analyte	Result Value
d Methamphetamine	95
l Methamphetamine	5

Results greater than 80% l-methamphetamine may be consistent with the use of an over-the-counter nasal inhaler which contains l-methamphetamine or the use of the drug selegiline. Presence of more than 20% d-methamphetamine usually indicates the use of Schedule II or illicit methamphetamine.

Dennis

14-year-old boy with moderate cannabis use disorder, no history of other substance use

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NICOTINE AND COTININE, URINE

Result Date: 01/17/20 11:41 PM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	2		ng/mL
COTININE, URINE	5		ng/mL

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

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STAND PNL + FENTANYL

Result Date: 01/17/20 11:41 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	NEGATIVE	<500	ng/mL
See Note 1			
See Note 2			
Creatinine	133.3	> or = 20.0	mg/dL
pH	7.2	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
Norfentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	NEGATIVE	<500	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite	479	<5	ng/mL
See Note 1			
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	POSITIVE	<100	ng/mL
Codeine	NEGATIVE	<50	ng/mL
See Note 1			
Hydrocodone	NEGATIVE	<50	ng/mL
See Note 1			
Hydromorphone	NEGATIVE	<50	ng/mL
See Note 1			
Morphine	139	<50	ng/mL
See Note 1			
Norhydrocodone	NEGATIVE	<50	ng/mL
See Note 1			
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

Charlie

18-year-old young man with severe nicotine and marijuana use disorders. Engaging is ASAP treatment but not willing to stop his marijuana use. Prescribed amphetamine and sertraline for ADHD and depressive disorder, respectively.

Boston Children's Hospital
Until every child is well

NICOTINE AND COTININE, URINE

Result Date: 12/09/19 08:46 PM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	2954		ng/mL
THIS RESULT HAS BEEN VERIFIED BY REPEAT ANALYSIS.			
COTININE, URINE	1722		ng/mL

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

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STAND PNL + FENTANYL

Result Date: 12/09/19 08:46 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	NEGATIVE	<500	ng/mL
See Note 1			
See Note 2			
Creatinine	241.8	> or = 20.0	mg/dL
pH	5.6	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
Norfentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	POSITIVE	<500	ng/mL
Amphetamine	>15000	<250	ng/mL
See Note 1			
Methamphetamine	NEGATIVE	<250	ng/mL
See Note 1			
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE CONFIRMED	<100	ng/mL
Alphahydroxyalprazolam	NEGATIVE	<25	ng/mL
See Note 1			
Alphahydroxymidazolam	NEGATIVE	<50	ng/mL
See Note 1			
Alphahydroxytriazolam	NEGATIVE	<50	ng/mL
See Note 1			
Aminoclonazepam	NEGATIVE	<25	ng/mL
See Note 1			
Hydroxyethylflurazepam	NEGATIVE	<50	ng/mL
See Note 1			
Lorazepam	NEGATIVE	<50	ng/mL
See Note 1			
Nordiazepam	NEGATIVE	<50	ng/mL
See Note 1			
Oxazepam	NEGATIVE	<50	ng/mL
See Note 1			
Temazepam	NEGATIVE	<50	ng/mL
See Note 1			
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite	>5000	<5	ng/mL
See Note 1			
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

Kristen

23-year-old young woman with severe opioid and alcohol use disorder, history of numerous overdoses, in the ASAP Suboxone Program following prolonged inpatient treatment in the setting of a Section 24.

FASTING: UNKNOWN

STAND PNL + FENTANYL

Result Date: 09/15/19 07:35 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	POSITIVE	<500	ng/mL
See Note 1			
Ethyl Glucuronide (ETG)	1204	<500	ng/mL
See Note 1			
Ethyl Sulfate (ETS)	662	<100	ng/mL
See Note 1			
See Note 2			
Creatinine	276.2	> or = 20.0	mg/dL
pH	6.1	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	219.0	<0.5	ng/mL
See Note 1			
Norfentanyl	>1000.0	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	NEGATIVE	<500	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	POSITIVE	<5	ng/mL
Buprenorphine	35	<5	ng/mL
See Note 1			
Norbuprenorphine	495	<5	ng/mL
See Note 1			
Cocaine Metabolite	POSITIVE	<150	ng/mL
Benzoylecgonine	237	<100	ng/mL
See Note 1			
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	NEGATIVE	<20	ng/mL
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

Jamie

24-year-old woman with a history of severe opioid use disorder, in the ASAP Suboxone Program for the past 6 years. Briefly relapsed on heroin 5 years ago, but subsequently did well. Started using marijuana a few months ago after years of complete abstinence from substances.

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Result Date: 01/19/20 03:59 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites	NEGATIVE	<500	ng/mL
See Note 1			
See Note 2			
Creatinine	59.0	> or = 20.0	mg/dL
pH	5.8	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl	NEGATIVE	<0.5	ng/mL
See Note 1			
Norfentanyl	1.0	<0.5	ng/mL
See Note 1			
See Note 2			
Amphetamines	NEGATIVE	<500	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	POSITIVE	<5	ng/mL
Buprenorphine	22	<5	ng/mL
See Note 1			
Norbuprenorphine	180	<5	ng/mL
See Note 1			
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	POSITIVE	<20	ng/mL
Marijuana Metabolite	31	<5	ng/mL
See Note 1			
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL

Jessica

15-year-old girl referred to ASAP with marijuana and nicotine use. Coming in for individual counseling with ASAP social worker. Mother seeking a social worker for “Parental Guidance”.

Result Date: 01/20/20 03:52 PM

Analyte	Result Value	Ref. Range	Units
NICOTINE, URINE	<2		ng/mL
COTININE, URINE	<2		ng/mL

Reference Range:

Nicotine, Urine
Smokers: 200-700 ng/mL
Nonsmokers: < or = 17 ng/mL

Cotinine, Urine
Smokers: 300-1300 ng/mL
Nonsmokers: < or = 20 ng/mL

Individuals exposed to second-hand or passive tobacco smoke may demonstrate concentrations of nicotine and cotinine greater than those indicated for non-smokers.

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Result Date: 01/20/20 03:52 PM

Analyte	Result Value	Ref. Range	Units
Alcohol Metabolites See Note 1 See Note 2	NEGATIVE	<500	ng/mL
Creatinine verified by repeat analysis.	<1.0	> or = 20.0	mg/dL
Specific Gravity	1.003	> or = 1.003	
pH	6.5	4.5-9.0	
Oxidant	NEGATIVE	<200	mcg/mL
Fentanyl See Note 1	NEGATIVE	<0.5	ng/mL
Norfentanyl See Note 1 See Note 2	NEGATIVE	<0.5	ng/mL
Amphetamines	NEGATIVE	<500	ng/mL
Barbiturates	NEGATIVE	<300	ng/mL
Benzodiazepines	NEGATIVE	<100	ng/mL
Buprenorphine	NEGATIVE	<5	ng/mL
Cocaine Metabolite	NEGATIVE	<150	ng/mL
Heroin Metabolite	NEGATIVE	<10	ng/mL
Marijuana Metabolite 20	NEGATIVE	<20	ng/mL
MDMA/MDA	NEGATIVE	<500	ng/mL
Methadone Metabolite	NEGATIVE	<100	ng/mL
Opiates	NEGATIVE	<100	ng/mL
Oxycodone	NEGATIVE	<100	ng/mL
Phencyclidine	NEGATIVE	<25	ng/mL