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CONFIDENTIAL

Demo Report

Report Issued 08/15/2022 09:25

To: **88888**
Forensic Example Report
Attn: Example Reports
200 Welsh Road
Horsham, PA 19044

Patient Name	8151B-POS
Patient ID	8151B-POS
Chain	21001909
DOB	Not Given
Sex	Not Given
Workorder	21001909

Positive Findings:

Analyte	Result	Units	Matrix Source
Ethanol	**85 ±6**	**mg/dL**	**001 - Blood**
Blood Alcohol Concentration (BAC)	**0.085 ±0.006**	**g/100 mL**	**001 - Blood**
Amphetamine	**50 ±15**	**ng/mL**	**001 - Blood**
Methamphetamine	**50 ±15**	**ng/mL**	**001 - Blood**
MDA	**50 ±15**	**ng/mL**	**001 - Blood**
MDMA	**50 ±15**	**ng/mL**	**001 - Blood**
MDEA	**50 ±15**	**ng/mL**	**001 - Blood**
Alprazolam	**50 ±15**	**ng/mL**	**001 - Blood**
Delta-9 THC	**5.0 ±1.5**	**ng/mL**	**001 - Blood**
Cocaine	**50 ±15**	**ng/mL**	**001 - Blood**
6-Monoacetylmorphine - Free	**50 ±15**	**ng/mL**	**001 - Blood**
Fentanyl	**20 ±6**	**ng/mL**	**001 - Blood**

Quantitative results are reported as Result +/- Uncertainty of Measurement (UM). Ethanol results are reported at a coverage probability of 99.73%; all other analytes are reported at a coverage probability of 95.45%.

See Detailed Findings section for additional information

Testing Requested:

Test	Test Name
8151B	DUID/DRE Panel (w/Alcohol) ProofPOSITIVE®, Blood (Forensic)

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Labeled As
001	Clear vial	Not Given	Not Given	Blood	Not Applicable

All sample volumes/weights are approximations.

Specimens received on 12/13/2021.

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Ethanol	85	mg/dL	10	001 - Blood	Headspace GC
Blood Alcohol Concentration (BAC)	0.085	g/100 mL	0.010	001 - Blood	Headspace GC
Ethanol	Confirmed	mg/dL	10	001 - Blood	Headspace GC
Amphetamine	50	ng/mL	5.0	001 - Blood	LC-MS/MS
Methamphetamine	50	ng/mL	5.0	001 - Blood	LC-MS/MS
MDA	50	ng/mL	5.0	001 - Blood	LC-MS/MS
MDMA	50	ng/mL	5.0	001 - Blood	LC-MS/MS
MDEA	50	ng/mL	5.0	001 - Blood	LC-MS/MS
Alprazolam	50	ng/mL	5.0	001 - Blood	LC-MS/MS
Delta-9 THC	5.0	ng/mL	0.50	001 - Blood	LC-MS/MS
Cocaine	50	ng/mL	20	001 - Blood	GC/MS
6-Monoacetylmorphine - Free	50	ng/mL	1.0	001 - Blood	LC-MS/MS
Fentanyl	20	ng/mL	0.20	001 - Blood	LC-MS/MS

Other than the above findings, examination of the specimen(s) submitted did not reveal any positive findings of toxicological significance by procedures outlined in the accompanying Analysis Summary.

Reference Comments:

1. 6-Monoacetylmorphine - Free (6-MAM; Heroin Metabolite) - Blood:

   6-monoacetylmorphine (6-MAM) is the 6-monoacetylated form of morphine, which is pharmacologically active. When present, it is generally indicative of heroin (diacetylmorphine) use. 6-MAM has also been reported to occur as an artifact in samples with unusually high blood morphine concentrations.

   A healthy man administered 12 mg heroin intravenously achieved peak blood concentrations at two minutes post injection of 150 ng/mL of 6-MAM and 44 ng/mL of morphine, which declined with half-lives of 6 minutes and 33 minutes, respectively.

2. Alprazolam (Xanax®) - Blood:

   Alprazolam is a low-dose benzodiazepine used for the treatment of anxiety disorders and short-term relief of anxiety associated with depressive symptoms. Alpha-hydroxyalprazolam is an active metabolite of alprazolam. They share the actions and adverse reactions of other CNS-depressants. Alcohol greatly enhances the activity of benzodiazepines. Common adverse effects of alprazolam include drowsiness, fatigue, sedation, dizziness, weakness, unsteadiness and disorientation. Signs of CNS depression can include the presence of horizontal gaze nystagmus, lack of convergence of the eyes, normal pupil size with slow reaction to light and reduced pulse and blood pressure. For anxiety, daily doses of 0.8 to 4 mg are effective, whereas for phobic and panic disorders, 6 to 9 mg daily is recommended. Reported therapeutic plasma concentrations of alprazolam are proportional to dose given: 3 mg/day produced steady-state levels of 30 ng/mL; 6 mg/day: 60 ng/mL; and 9 mg/day: 100 ng/mL. In a population of 219 drivers arrested for driving under the influence, Alprazolam concentrations ranged from 5 - 1580 ng/mL, with a mean of 103 ng/mL. Other drugs may also have been present. Studies confirm that alprazolam is capable of causing significant impairment to driving and psychomotor abilities across a wide range of concentrations.

3. Amphetamine - Blood:

   Amphetamine (Adderall, Dexedrine) is a central nervous system stimulant. Amphetamine is also a metabolite of methamphetamine, benzphetamine and selegiline. It is used therapeutically in the treatment of narcolepsy and obesity and also in the treatment of attention-deficit hyperactivity disorder (ADHD). Amphetamine has a high potential for abuse. At low doses, amphetamines cause mild stimulation, offset of fatigue, and increase in alertness. It also causes changes in attitude, judgment and impulsivity. At doses taken in abuse, amphetamine causes euphoria, excitation, agitation, hypervigilance, rapid speech, dilated pupils which react slowly to light

Reference Comments:

and increased motor restlessness. Pulse and blood pressure may be elevated. Performance in divided attention tests is often poor. Withdrawal from amphetamine following abuse can result in extreme fatigue and uncontrollable sleepiness, agitation, and depression. In the treatment of narcolepsy, amphetamine is administered in daily divided doses of 5 to 60 mg. In abuse doses of several grams may be used on a daily basis in 'runs' lasting a week or more. Following a single 30 mg dose to adults, an average peak plasma level of 100 ng/mL was reported at 2.5 hr. In a population of 539 drivers arrested for driving under the influence, Amphetamine concentrations ranged from 5 - 5090 ng/mL, with a mean of 76 ng/mL. Other drugs may also have been present. Amphetamine abuse can cause impairment in the skills necessary for safe driving both during the acute phase of intoxication and during withdrawal, across a wide range of blood concentrations.

4. Blood Alcohol Concentration (BAC) - Blood:

   I certify that I am the analyst of record for this report. In this capacity, I am authorized by NMS Labs to provide the final analytical review of the results in this case. This report cannot be released without my review, and I am responsible for the accuracy of results contained herein. This laboratory is accredited and licensed, and complies with accreditation standards for internal chain of custody, standard operating procedures, analysis of appropriate blanks, calibrators and controls, and other quality control and quality assurance measures, all of which I am familiar with, and that ensure test result accuracy. A complete list of accreditations and licensures are listed on our website at www.nmslabs.com. I have considered the information available to me at this time, and it is my opinion that testing was properly performed in compliance with laboratory standards and policies, and the results are supported by the analytical data and accurately reflect the toxicological findings for this subject. If lawfully subpoenaed, I will testify to the above facts in a court of law.

5. Cocaine - Blood:

   Cocaine is a DEA Schedule II controlled central nervous stimulant drug. Effects following cocaine use can include euphoria, excitement, restlessness, risk taking, sleep disturbance, and aggression. A period of mental and physical fatigue and somnolence follow the use of cocaine after the excitant-stimulant effects wear off. Cocaine is metabolized to the inactive compounds benzoylecgonine, ecgonine methyl ester, and ecgonine. Benzoylecgonine and ecgonine methyl ester can form from cocaine breakdown after death and even after sample collection. The average blood cocaine concentration in 906 impaired drivers was 87 ng/mL (range 5 - 2390 ng/mL). Blood cocaine concentrations in patients admitted to an emergency room for cocaine related medical complaints were 260 ng/mL (SD = 500 ng/mL). Cocaine concentrations in plasma following oral administration of 2 g/day over 6 days, averaged 1260 ng/mL.

6. Delta-9 THC (Active Ingredient of Marijuana) - Blood:

   Delta-9-THC is the principle psychoactive ingredient of marijuana (cannabis, hashish). It is also the active component of the prescription medication Marinol®. Whole blood THC concentrations are typically half those in a corresponding plasma sample. After smoking a user-preferred 300 mcg/kg dose average plasma THC concentrations at 35 minutes were reported at 16.1 (range 4.7 - 30.9) ng/mL, and had declined to 1.5 (range 0.4 - 3.2) ng/mL after 190 minutes. Marijuana use causes relaxation, distorted perception, euphoria and feelings of well being, along with confusion, dizziness, somnolence, ataxia, speech difficulties, lethargy and muscular weakness. Effects of marijuana use on driving ability may include weaving, inattention, poor coordination and slowed reaction time with increased error rates in complex tasks. These effects worsen with increased THC concentrations. Peak effects typically last from 1-4 hours. THC concentrations in the blood decline rapidly after use, and may be undetectable within 1-3 hours following smoking. Numerous studies have associated marijuana use with impaired driving performance.

7. Ethanol (Ethyl Alcohol) - Blood:

   Ethanol (beverage alcohol) is a central nervous system depressant. It causes impairment of cognitive, perceptual and psychomotor capabilities manifested as decrements in alertness, judgment, perception, coordination, response time and sense of care and caution. Potential effects on driving include, but are not limited to, weaving, crossing center or fog lines, failure to obey traffic signals, wide turns, inappropriate speed for conditions, and involvement in collisions. Generally, a person's level of intoxication will increase with rising blood alcohol concentration. Effects are more pronounced in individuals with limited tolerance, especially minors, however at blood alcohol concentrations of 80 mg/dL (0.08 g/100 mL or 0.08% w/v), virtually all individuals exhibit impairment on some critical driving measures.

   Analysis performed in duplicate by, internally standardized, headspace Gas Chromatography (GC). The average of the two headspace GC results is reported.

   NMS Labs is an approved Laboratory for Alcohol analysis in the Commonwealth of Pennsylvania.

Reference Comments:

8. Fentanyl (Duragesic®; Sublimaze®) - Blood:

   Fentanyl is a DEA Schedule II synthetic morphine substitute anesthetic/analgesic. It is reported to be 80 to 200 times as potent as morphine and has a rapid onset of action as well as addictive properties.

   It is reported that patients lost consciousness at mean plasma levels of fentanyl of 34 ng/mL when infused with 75 mcg/Kg over a 15 min period; peak plasma levels averaged 50 ng/mL.

   After application of a fentanyl transdermal preparation (patch), serum fentanyl concentrations are reported to be in the following ranges within 24 hours:
   25 mcg/hour patch: 0.3 - 1.2 ng/mL
   50 mcg/hour patch: 0.6 - 1.8 ng/mL
   75 mcg/hour patch: 1.1 - 2.6 ng/mL
   100 mcg/hour patch: 1.9 - 3.8 ng/mL

   Following removal of the patch, serum fentanyl concentrations are reported to decrease with a mean elimination half-life of 17 hours (range, 13 to 22 hours).

   The mean peak plasma serum fentanyl concentration in adults given an 800 mcg oral transmucosal fentanyl preparation over 15 minutes is reported at 2.1 ng/mL (range, 1.4 - 3.0 ng/mL) at approximately 0.4 hours.

   Signs associated with fentanyl toxicity include severe respiratory depression, seizures, hypotension, coma and death. In fatalities from fentanyl, blood concentrations are variable and have been reported as low as 3 ng/mL.

   Substance(s) known to interfere with the identity and/or quantity of the reported result: 4-methylphenethyl acetyl fentanyl

9. MDA (3,4-Methylenedioxyamphetamine; Adam; MDMA Metabolite) - Blood:

   3,4-Methylenedioxyamphetamine (MDA) is an amphetamine derivative and a chemical analogue and metabolite of 3,4-methylenedioxymethamphetamine (MDMA). This compound is abused for its central nervous system stimulant and hallucinogenic properties. It displays mixed stimulant, and hallucinogenic properties. Users report that MDA promotes empathy and feelings of love, or emotional closeness to others. Users also report visual and tactile hallucinations, confusion, agitation and coma. Acutely, users typically have elevated pulse, blood pressure and dilated pupils, with slow reaction to light. Typical doses of MDMA are in the range 50 to 200 mg. When present as an MDMA metabolite, MDA concentrations peaked at 4 to 6 hours and never exceeded 5% of the parent compound. The mixed stimulant and hallucinogenic effects of recreational use of this drug create a risk for impairment of the skills needed for safe driving.

10. MDEA (3,4-methylenedioxyethylamphetamine; Eve) - Blood:

    3,4-methylenedioxyethylamphetamine (MDEA) is a sympathomimetic compound with mixed stimulant, and hallucinogenic properties. Users report that MDEA promotes empathy, and feelings of love, or emotional closeness to others. Users also report visual and tactile hallucinations, confusion, agitation, and coma. Acutely, users typically have elevated pulse and blood pressure, and dilated pupils, with slow reaction to light. Typical doses of MDEA are in the range 50 to 200 mg. A single oral 140 mg dose given to 6 adults produced peak plasma concentrations that averaged 260 ng/mL at 2.2 hours. The mixed stimulant and hallucinogenic effects of recreational use of this drug create a risk for impairment of the skills needed for safe driving.

    The blood to serum/plasma ratio is approximately 1.0.

11. MDMA (3,4-Methylenedioxymethamphetamine; Ecstasy) - Blood:

    3,4-Methylenedioxymethamphetamine (MDMA) is a sympathomimetic compound with mixed stimulant and hallucinogenic properties. Users report that MDMA promotes empathy and feelings of love, or emotional closeness to others. Users also report visual and tactile hallucinations, confusion, agitation and coma. Acutely, users typically have elevated pulse and blood pressure and dilated pupils, with slow reaction to light. Typical doses of MDMA are in the range 50 to 20 mg. Peak plasma concentrations at 1.5 to 4 hrs following ingestion of 50 to 150 mg of MDMA were as follows (dose: mean concentration (SD) or range): 50 mg: 20 - 80 ng/mL; 75 mg: 130 ng/mL (40 ng/mL); 100 mg: 190 - 210 ng/mL; 125 mg: 240 ng/mL (0.06); 150 mg: 440 - 490 ng/mL. Plasma MDA (active metabolite) concentrations peaked later (4 to 6 hrs) and never exceeded 5% of the parent compound.

Reference Comments:

Drivers arrested under suspicion of MDMA intoxication generally displayed erratic driving, weaving, failure to obey stop signs, speeding and involvement in collisions. MDMA concentrations in blood from 493 drivers ranged from 5 - 3900 ng/mL (median 100 ng/mL). Other drugs may also have been present. The mixed stimulant and hallucinogenic effects of recreational use of this drug create a risk for impairment of the skills needed for safe driving.

The blood to plasma ratio of MDMA is approximately 1.2 - 1.3

12. Methamphetamine - Blood:

Methamphetamine is a central nervous system stimulant. It is used therapeutically in the treatment of narcolepsy and obesity and also in the treatment of attention-deficit hyperactivity disorder (ADHD). Methamphetamine has a high potential for abuse. At low doses, methamphetamine causes mild stimulation, offset of fatigue and increase in alertness. It also causes changes in attitude, judgment and impulsivity. At doses taken in abuse, methamphetamine causes euphoria, excitation, agitation, hypervigilance, rapid speech, dilated pupils which react slowly to light, and increased motor restlessness. Pulse and blood pressure may be elevated. Performance in divided attention tests is often poor. Driving behaviors associated with methamphetamine abuse include, weaving erratic driving, driving off the road, crossing the centerline and speeding. Withdrawal from methamphetamine following abuse can result in extreme fatigue and uncontrollable sleepiness, agitation and depression. In the treatment of narcolepsy, methamphetamine is administered in daily divided doses of 5 to 60 mg. In abuse, doses of several grams may be used on a daily basis in 'runs' lasting a week or more. A peak blood concentration of methamphetamine of 20 ng/mL was reported at 2.5 hr after an oral dosage of 12.5 mg. In a population of 1159 drivers arrested for driving under the influence, Methamphetamine concentrations ranged from 10 - 9460 ng/mL, with a mean of 310 ng/mL. Other drugs may also have been present. Methamphetamine abuse can cause impairment in the skills necessary for safe driving both during the acute phase of intoxication and during withdrawal, across a wide range of blood concentrations. *In this case, the level of methamphetamine determined has not been differentiated according to its isomeric forms. Differentiation of the isomers of methamphetamine is available upon request.

Analysis Summary and Reporting Limits:

All of the following tests were performed for this case. For each test, the compounds listed were included in the scope. The Reporting Limit listed for each compound represents the lowest concentration of the compound that will be reported as being positive. If the compound is listed as None Detected, it is not present above the Reporting Limit. Please refer to the Positive Findings section of the report for those compounds that were identified as being present.

Test 54000B - Amphetamines Confirmation (DUID/DRE), Blood - Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Amphetamine	5.0 ng/mL	MDMA	5.0 ng/mL
MDA	5.0 ng/mL	Methamphetamine	5.0 ng/mL
MDEA	5.0 ng/mL		

Test 54002B - Benzodiazepines Confirmation (DUID/DRE), Blood - Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
7-Amino Clonazepam	5.0 ng/mL	Lorazepam	5.0 ng/mL
Alpha-Hydroxyalprazolam	5.0 ng/mL	Midazolam	5.0 ng/mL
Alprazolam	5.0 ng/mL	Nordiazepam	20 ng/mL
Chlordiazepoxide	20 ng/mL	Oxazepam	20 ng/mL
Clonazepam	2.0 ng/mL	Temazepam	20 ng/mL
Diazepam	20 ng/mL		

Test 54003B - Cannabinoids Confirmation (DUID/DRE), Blood - Blood

Analysis Summary and Reporting Limits:

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
11-Hydroxy Delta-9 THC	1.0 ng/mL	Delta-9 THC	0.50 ng/mL
Delta-9 Carboxy THC	5.0 ng/mL		

Test 54004B - Cocaine and Metabolites Confirmation (DUID/DRE), Blood - Blood

-Analysis by Gas Chromatography/Mass Spectrometry (GC/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Benzoylecgonine	50 ng/mL	Cocaine	20 ng/mL
Cocaethylene	20 ng/mL		

Test 54006B - Opiates - Free (Unconjugated) Confirmation (DUID/DRE), Blood - Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
6-Monoacetylmorphine - Free	1.0 ng/mL	Hydromorphone - Free	1.0 ng/mL
Codeine - Free	5.0 ng/mL	Morphine - Free	5.0 ng/mL
Dihydrocodeine / Hydrocodol - Free	5.0 ng/mL	Oxycodone - Free	5.0 ng/mL
Hydrocodone - Free	5.0 ng/mL	Oxymorphone - Free	1.0 ng/mL

Test 54459B - DUID/DRE Fentanyl and Acetyl Fentanyl Confirmation, Blood - Blood

-Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Acetyl Fentanyl	0.20 ng/mL	Norfentanyl	0.40 ng/mL
Fentanyl	0.20 ng/mL		

Test 8151B - DUID/DRE Panel (w/Alcohol) ProofPOSITIVE®, Blood (Forensic) - Blood

-Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Amphetamines	20 ng/mL	Methadone / Metabolite	25 ng/mL
Benzodiazepines	20 ng/mL	Methamphetamine / MDMA	20 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Opiates	20 ng/mL
Cannabinoids	10 ng/mL	Oxycodone / Oxymorphone	10 ng/mL
Carisoprodol / Metabolite	0.50 mcg/mL	Phencyclidine	10 ng/mL
Cocaine / Metabolites	20 ng/mL	Tramadol / Metabolite	50 ng/mL
Fentanyl / Acetyl Fentanyl	0.50 ng/mL	Zolpidem	5.0 ng/mL

-Analysis by Headspace Gas Chromatography (GC) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL

Analysis Summary and Reporting Limits:

-Analysis by Headspace Gas Chromatography (GC) for:

Analyte	Rpt. Limit	Analyte	Rpt. Limit
Acetone	5.0 mg/dL	Isopropanol	5.0 mg/dL
Ethanol	10 mg/dL	Methanol	5.0 mg/dL