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CONFIDENTIAL

Demo Report

Report Issued 04/02/2020 14:45

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

Patient Name 8092SP-POS
Patient ID 8092SP-POS
Chain 20000858
Age Not Given **DOB** Not Given
Gender Not Given
Workorder 20000858

Positive Findings:

Compound	Result	Units	Matrix Source
Ethanol	**85**	**mg/dL**	**001 - Serum or Plasma**
Alprazolam	**50**	**ng/mL**	**001 - Serum or Plasma**
Delta-9 THC	**50**	**ng/mL**	**001 - Serum or Plasma**
Cocaine	**50**	**ng/mL**	**001 - Serum or Plasma**
Gabapentin	**5.0**	**mcg/mL**	**001 - Serum or Plasma**
Fentanyl	**5.0**	**ng/mL**	**001 - Serum or Plasma**

See Detailed Findings section for additional information

Testing Requested:

Analysis Code	Description
8092SP	Postmortem, Expert, Serum/Plasma (Forensic)

Specimens Received:

ID	Tube/Container	Volume/ Mass	Collection Date/Time	Matrix Source	Miscellaneous Information
001	Clear vial	Not Given	Not Given	Serum or Plasma	

All sample volumes/weights are approximations.

Specimens received on 03/31/2020.

Detailed Findings:

Analysis and Comments	Result	Units	Rpt. Limit	Specimen Source	Analysis By
Ethanol	85	mg/dL	10	001 - Serum or Plasma	Headspace GC
Alprazolam	50	ng/mL	5.0	001 - Serum or Plasma	LC-MS/MS
Delta-9 THC	50	ng/mL	0.50	001 - Serum or Plasma	LC-MS/MS
Cocaine	50	ng/mL	20	001 - Serum or Plasma	GC/MS
Gabapentin	5.0	mcg/mL	0.10	001 - Serum or Plasma	LC-MS/MS
Ethanol	Confirmed	mg/dL	10	001 - Serum or Plasma	Headspace GC
Fentanyl	5.0	ng/mL	0.10	001 - Serum or Plasma	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. Alprazolam (Xanax®) - Serum or Plasma:

   Alprazolam is a DEA Schedule IV second-generation benzodiazepine, which is effective at very low doses. It shares the actions of other benzodiazepines in the management of anxiety disorders and short-term relief of anxiety associated with depressive symptoms. Alpha-hydroxyalprazolam is an active metabolite of alprazolam. Common CNS-depressant side effects of alprazolam include drowsiness and fatigue. 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 reported cases involving driving under the influence, alprazolam concentrations ranged from 8 - 640 ng/mL. Alcohol greatly enhances the activity of benzodiazepines.

   Reported blood concentrations of alprazolam in alprazolam-related fatalities ranged from 100 - 400 ng/mL (mean, 200 ng/mL). In combination with other central nervous system depressants such as ethyl alcohol, alprazolam can become toxic at low concentrations.

2. Cocaine - Serum or Plasma:

   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. The average blood cocaine concentration in 37 cocaine related fatalities was 4600 ng/mL (range 40 - 31000 ng/mL).

3. Delta-9 THC (Active Ingredient of Marijuana) - Serum or Plasma:

   Marijuana is a DEA Schedule I hallucinogen. Pharmacologically, it has depressant and reality distorting effects. Collectively, the chemical compounds that comprise marijuana are known as Cannabinoids.

   Delta-9-THC is the principle psychoactive ingredient of marijuana/hashish. It rapidly leaves the blood, even during smoking, falling to below detectable levels within several hours. Delta-9-carboxy-THC (THCC) is the inactive metabolite of THC and may be detected for up to one day or more in blood. Both delta-9-THC and THCC may be present substantially longer in chronic users.
   Usual peak levels in serum for 1.75% or 3.55% THC marijuana cigarettes: 50 - 270 ng/mL at 6 to 9 minutes after beginning smoking, decreasing to less than 5 ng/mL by 2 hrs.

Reference Comments:

4. Ethanol (Ethyl Alcohol) - Serum or Plasma:

   Ethyl alcohol (ethanol, drinking alcohol) is a central nervous system depressant and can cause effects such as impaired judgment, reduced alertness and impaired muscular coordination. Ethanol can also be a product of decomposition or degradation of biological samples.

5. Fentanyl (Duragesic®; Sublimaze®) - Serum or Plasma:

   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

6. Gabapentin (Neurontin®) - Serum or Plasma:

   Gabapentin is an antiepileptic/anticonvulsant drug used in adults and children. Gabapentin is marketed in capsules (100, 200 and 300 mg), tablets (600 and 800 mg) and an oral solution (250 mg/5 mL). The common daily oral dose range for adults is from 900 to 1800 mg per day in divided doses; pediatric doses (3 to 12 years of age) are dependent of the child's body weight and range from 10 to 15 mg/kg per day.

   Mean steady-state plasma levels (+/- SD) following daily regimens of:
   900 mg/day = 1.88 (+/- 0.70) mcg/mL
   1200 mg/day= 2.62 (+/- 0.86) mcg/mL
   Reported threshold for seizure control: Greater than 2 mcg/mL.

   The drug is also used to treat postherpetic neuralgia in adults. The common adult dosage for this indication is 1800 mg per day in divided doses following lower doses during initial treatment.

   The most common adverse effects of gabapentin are related to the central nervous system and include sedation, dizziness, nystagmus, ataxia and fatigue. All of these adverse effects are reversible and subside with reduction of dosage or discontinuation of therapy with the drug.

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.

Acode 50012SP - Benzodiazepines Confirmation, Serum/Plasma

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

Analysis Summary and Reporting Limits:

Compound	Rpt. Limit	Compound	Rpt. Limit
7-Amino Clonazepam	5.0 ng/mL	Flurazepam	2.0 ng/mL
Alpha-Hydroxyalprazolam	5.0 ng/mL	Hydroxyethylflurazepam	5.0 ng/mL
Alprazolam	5.0 ng/mL	Hydroxytriazolam	5.0 ng/mL
Chlordiazepoxide	20 ng/mL	Lorazepam	5.0 ng/mL
Clobazam	20 ng/mL	Midazolam	5.0 ng/mL
Clonazepam	2.0 ng/mL	Nordiazepam	20 ng/mL
Desalkylflurazepam	5.0 ng/mL	Oxazepam	20 ng/mL
Diazepam	20 ng/mL	Temazepam	20 ng/mL
Estazolam	5.0 ng/mL	Triazolam	2.0 ng/mL

Acode 50013SP - Cannabinoids Confirmation, Serum/Plasma

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

Compound	Rpt. Limit	Compound	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		

Acode 50014SP - Cocaine and Metabolites Confirmation, Serum/Plasma

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

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

Acode 52144SP - Gabapentin Confirmation, Serum/Plasma

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

Compound	Rpt. Limit	Compound	Rpt. Limit
Gabapentin	0.10 mcg/mL		

Acode 52250SP - Alcohols and Acetone Confirmation, Serum/Plasma

-Analysis by Headspace Gas Chromatography (GC) for:

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

Acode 52484SP - Fentanyl and Acetyl Fentanyl Confirmation, Serum/Plasma

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

Compound	Rpt. Limit	Compound	Rpt. Limit
Acetyl Fentanyl	0.10 ng/mL	Norfentanyl	0.20 ng/mL
Fentanyl	0.10 ng/mL		

Acode 8092SP - Postmortem, Expert, Serum/Plasma (Forensic)

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

Compound	Rpt. Limit	Compound	Rpt. Limit
Benzodiazepines	100 ng/mL	Cannabinoids	10 ng/mL
Buprenorphine / Metabolite	0.50 ng/mL	Cocaine / Metabolites	20 ng/mL

Analysis Summary and Reporting Limits:

Compound	Rpt. Limit	Compound	Rpt. Limit
Opiates	20 ng/mL	Salicylates	120 mcg/mL
Oxycodone / Oxymorphone	10 ng/mL		

-Analysis by Gas Chromatography/Mass Spectrometry (GC/MS) for: The following is a general list of compound classes included in the Gas Chromatographic screen. The detection of any particular compound is concentration-dependent. Please note that not all known compounds included in each specified class or heading are included. Some specific compounds outside these classes are also included. For a detailed list of all compounds and reporting limits included in this screen, please contact NMS Labs.

Amphetamines, Analgesics (opioid and non-opioid), Anorectics, Antiarrhythmics, Anticholinergic Agents, Anticonvulsant Agents, Antidepressants, Antiemetic Agents, Antihistamines, Antiparkinsonian Agents, Antipsychotic Agents, Antitussive Agents, Antiviral Agents, Calcium Channel Blocking Agents, Cardiovascular Agents (non-digitalis), Local Anesthetics Agents, Muscle Relaxants and Stimulants (Amphetamine-like and others).

-Analysis by Gas Chromatography/Mass Spectrometry (GC/MS) for: Anesthetics, Anticoagulant Agents, Antifungal Agents, Antihypertensive Agents, Anxiolytics (Benzodiazepine and others), Hypnosedatives (Barbiturates, Non-Benzodiazepine Hypnotics, and others) and Non-Steroidal Anti-Inflammatory Agents (excluding Salicylate).

-Analysis by Headspace Gas Chromatography (GC) for:

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