# Centura Laboratory Services



18MV43



AP
**Bradforth, Braden**
M, 19 yrs, 5/10/1999
1318 7TH AVE, NEPTUNE NJ 07753
H: 732-915-1624

*Finney County Clerk - Autopsy*
*311 N Ninth St*
*Garden City Kansas 67846*

**Authorizing Provider**
**Bradley Keith Stucky, DO** F: 620-276-8739

**AUTOPSY** (Final result) WA18-000025

| | | | |
|---|---|---|---|
| Authorizing Provider: | Bradley Keith Stucky, DO | Ordering Provider: | |
| Pathologist: | Eva J Vachal, MD | | |

## Specimens

A Autopsy

## Final Diagnosis

PRIMARY DIAGNOSES

Overweight muscular decedent (BMI 36.5 and abdominal wall subcutaneous fat thickness of 5.0 cm)

Enlarged heart (620 grams) with left ventricular hypertrophy

Epicardial petechial hemorrhages

Blood in and around nostrils

Lungs with zones of edema and marked interstitial and intra-alveolar hemorrhage (left 730 grams and right 780 grams)

Congestion of viscera

ACCESSORY DIAGNOSES

Urine screen for drugs of abuse and blood alcohol performed at St. Catherine Hospital Lab were negative

Post-mortem blood toxicology performed at NMS Labs was negative (see attached report)

Centrilobular congestion and minimal steatosis of liver

Minimal intimal thickening of coronary arteries and aorta

Interstitial hemorrhage, focal minimal, of myocardium

Electronically signed by Eva J Vachal, MD on 11/16/2018 at 1220

## Clinical Information Autopsy

The following information was obtained from the Coroner, the EMS report and the hospital record. This is the case of a 19-year-old male found collapsed and unresponsive following football practice at Garden City Community College on 8/1/2018. Subsequently, he was transported to St. Catherine Hospital Emergency Department; he arrived at 10:36 PM and was was prounced dead at 11:06 following extensive recusutative efforts. A complete autopsy was ordered by the Coroner, Brad Stucky, DO. The decedent had moved to Garden City apparently from New Jersey two days prior to his death. The football practice ended at approximately 9:30 PM. The decedent did not attend the post practice meeting but proceeded toward his dorm room. About 20 minutes later he was found down and unconscious outside his dorm room by the athletic trainer. A bystander reported that he was vomiting and seemed to be choking. EMS quickly took him to the St. Catherine Hospital emergency department. See Coroner report, EMS report and emergency department report for additional detailed information.

## External Examination

The body is that of a stocky muscular well-nourished young adult male. The body is clothed in black and white striped Fruit of the Loom boxer shorts. There is also a red plastic bracelet on the arm. There is an endotracheal tube in place and a green nasal tube. EKG pads are affixed to the anterior trunk. There is an IV in the left antecubital fossa and the left foot. There is a left tibial intraosseous infusion site.

Body position: Supine
Length: 190 cm (6 feet 4 inches)
Weight: 300 lbs (136 kg)
Rigor: Rigor mortis is well established (4+)
Lividity: Dependent on back
Edema: Not identified
Eyes: Brown with contacts--no petechiae
Ears: Normal
Nose: Some blood within nostrils that has drained onto upper lip and left face
Mouth: Oral endotracheal tube in place
Teeth: Normal
Tongue: Normal
Hair: Black shoulder length dreadlocks and short black beard
Back: Lividity
Scars: None identifed
Tattoos: Left forearm with depiction of flames with inscription "The Strong Survive"
Laceration: None identified
Abrasion: None identified
Fractures: None identified
Neck: No abnormalities
Lymph nodes: No enlargement identified

## Internal Examination

BODY CAVITIES:
The abdominal wall fat measures 5.0 cm in thickness. The organs of the thorax and abdomen are in their normal anatomic relationships. There is no increase in pericardial, pleural or peritoneal fluid. The meninges and bones of the cranium are normal.

CARDIOVASCULAR SYSTEM:
Heart: The heart weighs 620 g and has a normal configuration. There are scattered petechiae on the epicardial surface. The heart is opened following the flow blood. No endocardial plaques are seen. There is no dilatation of the cardiac chambers. The myocardium is uniformly brown and firm. The left ventricle is thick and measures 2.5 cm across at mid-cavity. The right

ventricle measures 0.6 cm in thickness at mid-cavity. The valves are unremarkable; there are no calcifications. The coronary arteries are serially sectioned and no significant atherosclerosis is identified. The heart is also examined by Bruce Melin, MD who agrees with the findings.

Vascular system: The aorta contains a few fatty streaks. No abnormalities of the renal, common iliac or carotid arteries are identified. The pulmonary artery is examined in situ and there is no evidence of pulmonary thromboembolism.

RESPIRATORY TRACT:
Upper respiratory tract: The oropharynx and hypopharynx are not examined. The larynx is congested. The mucosa of the distal trachea is congested. No obstructions are identified in the larynx or trachea.

Lung: The left lung weighs 730 g and the right lung weighs 780 g. The bronchi are opened and no significant amounts of mucus are identified. The vasculature is opened and there is no evidence of shower emboli. Sectioning of the pulmonary parenchyma discloses deep red markedly hemorrhagic zones mainly involving the lower lobes.

DIGESTIVE SYSTEM:
Gastrointestinal tract: The length of the esophagus contains scattered particles of food consisting of dark plant material and corn. No abnormalities of the esophageal mucosa are identified. The stomach contains approximately 350 mls of dark green fluid admixed with corn and dark green plant material with leaves. The gastric mucosa is tan and normal in appearance. The small bowel contains a large amount of tan chyme. No abnormalities of the small bowel mucosa are identified. The large bowel is filled with soft light brown stool. No abnormalities of the colonic mucosa are identified. The appendix is present and normal.

Liver: The liver weighs 2310 g and the surface is slightly pale. Serial sectioning of the liver discloses no abnormalities.

Biliary system: Compression of the gallbladder results in flow of bile into the duodenum. The gallbladder contains a large amount of thin yellow bile. No stones are identified. The wall and mucosa of the gallbladder are normal. The extrahepatic biliary system is unremarkable.

Pancreas: The pancreas is of normal size shape and consistency. There appears to be some possible foci of fat necrosis surrounding the pancreas.

HEMATOPOIETIC SYSTEM:
Spleen: The spleen weighs 300 g and has a normal-appearing deep red surface. Sectioning the spleen also discloses a deep red cut surface. There is also a small accessory spleen.

Thymus: The thymus weighs 130 g. Sectioning discloses a tan focally hemorrhagic cut surface.

Lymph nodes: There is no lymph node enlargement.

Bone marrow: The bone marrow is pale reddish brown.

GENITOURINARY SYSTEM:
Kidney: The left kidney weighs 160 g and the right kidney weighs 150 g. The surfaces are smooth and deep red. Sectioning of the kidneys discloses a distinct cortical medullary junction. There does appear to be a small amount of thick tan material on sectioning.

Urinary bladder: The mucosa of the urinary bladder is normal. Approximately 60 mls of straw-colored slightly cloudy urine is retained.

Testis: The testes are normally distended.

Prostate: The prostate is unremarkable.

ENDOCRINE SYSTEM:

Adrenal glands: The adrenal glands are normal size, shape and consistency.

Thyroid gland: The thyroid gland is not enlarged.

Parathyroid glands: The parathyroid glands are not examined.

Pituitary gland: Pituitary gland is not enlarged.

NERVOUS SYSTEM:
Brain: The brain weighs 1650 g. There is no gross evidence of edema, hemorrhage or purulence. Serial sectioning of the brain discloses no evidence of hemorrhage, infarct or tumor.

## Microscopic Description

CIRCULATORY SYSTEM:
Left main coronary artery (A1): Focal minimal intimal thickening

Left anterior descending coronary artery (A2, A9): Focal minimal intimal thickening

Left circumflex coronary artery (A3): Minimal intimal thickening

Right coronary artery (A4): Minimal intimal thickening

Aorta: (A18): Focal minimal intimal thickening

Myocardium (A5-A9; A39-A41): Focal minimal interstitial and adventitial hemorrhage. No neutrophilic infiltrate. Sections from the septum (A39-A41) show no evidence of myofiber disarray. This finding was further confirmed with properly controlled trichrome stains of the myocardial sections .

RESPIRATORY SYSTEM:
Trachea (A18): No evidence of acute inflammation.

Lungs (A10-A13; A36-A38): Zones edema and marked interstitial and intra-alveolar hemorrhage. One large bronchus with a few minute particles of foreign material.

DIGESTIVE SYSTEM:
Esophagus (A18): Congestion

Stomach (A19): Superficial mucosal autolysis. Congestion

Small bowel (A18): Mucosal autolysis. No other abnormalities.

Colon (A18): Mucosal autolysis. No other abnormalities.

Appendix (A20): Inspissated intraluminal fecal material. Mucosal autolysis. No inflammatory changes identified.

Liver (A17): Centrilobular congestion and minimal steatosis. No inflammation.

Pancreas: (A21, A19): Mild autolytic change.

HEMATOPOIETIC SYSTEM:
Spleen: (A22, A23): Congestion

Thymus (A23, A24, A30): Congestion and patchy recent hemorrhage

Lymph nodes (A23, A26): Congestion

GENITOURINARY SYSTEM:
Kidneys (A27): Congestion. No hypertensive vascular changes identified. Early autolysis.

Prostate (A30): No abnormality.

Urinary bladder: (A29): No abnormality.

ENDOCRINE SYSTEM:
Adrenal glands: (A31): Medullary congestion and focal hemorrhage

Thyroid gland (A15): Congestion

NERVOUS SYSTEM:
Mid brain (A32, A33): Congestion

Cerebellum (A34): Congestion

Cerebrum (A35): Congestion with focal perivascular microhemorrhage

## Epicrisis

**A complete autopsy was performed (trunk, head and toxicology) on 8/2/2018 at 0730. The morgue assistant was Terry Lee, BS, MS. The 300 lb muscular decedent was judged to be overweight with a BMI of 36.5 and an abdominal wall subcutaneous fat thickness of 5.0 cm. The most prominent abnormalities were observed in the heart and lungs. The heart was heavy (620grams) and there was left ventricular hypertrophy. The left ventricle measured 2.5 cm in thickness. Hypertension and physiologic change due to athleticism are the two most likely causes of the left ventricular hypertrophy. It is not known if the decedent was hypertensive; however, no hypertensive vascular changes were observed in the kidneys; therefore, the cardiac deviations from normal values are judged most likely to be physiologic due to the decedent's athleticism and overall size. There were patchy petechial hemorrhages on the epicardium. Microscopic examination of the myocardium disclosed focal minimal interstitial hemorrhage. The diagnostic features of hypertrophic cardiomyopathy were not seen. There was no evidence of coronary artery disease or an acute myocardial infarct. The distal tracheal mucosa was erythematous. The lungs were heavy and microscopic examination disclosed zones of edema and intraalveolar hemorrhage. There was no evidence of pulmonary thromboembolism. The characteristic features of an acute asthma attack were not observed. There were approximately 350 mls of gastric content consisting of dark green-black fluid admixed with corn and dark green leaves from plant material. There was no overt gastric hemorrhage; microscopically the gastric wall was congested. No significant aspirated gastric content was seen in the lungs. There was centrilobular congestion of the liver and minimal steatosis; no inflammatory changes were observed in the liver. There was cerebral congestion with microfocal perivascular hemorrhage. No sickle cells were seen. There was no evidence of trauma. There were signs of a hemorrhagic diathesis characterized by generalized congestion of the viscera with areas of hemorrhage. A basic metabolic panel was performed on vitreous at St. Catherine Hospital Lab and no significant postmortem changes were identified; there was no postmortem chemical evidence of diabetes mellitus or kidney disease. A urine screen for drugs of abuse and a blood alcohol both performed at St. Catherine Hospital Laboratory were negative. Heart blood was sent to NMS Labs for basic post-mortem toxicology with alcohol; the blood toxicology results were negative (see attached NMS Labs report). Considering the facts surrounding the case (decedent's first intense workout of the year; ambient temperature in the 80s F with humidity; stomach containing food and vomiting; signs of a hemorrhagic diathesis; tachycardia; tachypnea; possible complicating comorbidities of overweight, cardiac hypertrophy, and history of asthma), the cause of death is judged to be exertional heat stroke. Photographs are on file in the pathology department and are available for viewing by the coroner upon request.**

## Cause of death

**Considering the facts surrounding the case, the cause of death is judged to be exertional heat stroke (see epicrisis)**

Comments:
The previously reported component Preliminary Diagnosis is no longer being reported.
The previously reported component Provisional Diagnosis is no longer being reported.

## Related Orders

**Basic Metabolic Panel** (Final result)

| Component | Value | Ref. Range |
|---|---|---|
| **Sodium** | 138 | 136-145 mmol/L |
| **Potassium** | 7.2 (HH) | 3.5-5.1 mmol/L |
| This is a corrected result. Previous result was 6.8 mmol/L on 8/2/2018 at 1430 CDT | | |
| **Chloride** | 121 (H) | 96-111 mmol/L |
| **CO2 Carbon Dioxide** | 2 (L) | 20-30 mmol/L |
| **BUN Urea Nitrogen** | <1 (L) | 6-24 mg/dL |
| **Creatinine** | 0.47 (L) | 0.65-1.36 mg/dL |
| **BUN:Creatinine Ratio** | | 6-25 |
| Unable to calculate, component test(s) outside acceptable range for calculation. | | |
| **Glucose** | <1 (LL) | 70-99 mg/dL |
| **Calcium** | <5.0 (LL) | 8.3-10.1 mg/dL |
| **Anion Gap** | 22 (H) | 6-18 |
| Anion gap = (Na+K) - (Cl+CO2) | | |
| **GFR Glomerular Filtration Rate** | 161.1 | >60.0 mL/min |

Units = mL/min/1.73 m2.GFR results <60 for 3 months or longer: Chronic kidney disease.GFR results <15: Kidney failure.If African American is indicated, calculation includes multiplier of 1.159.

Resulting Lab: SCHLab

Body Fluid specimen 18SC-214C0207 from Blood, Venous Unspecified. Ordered by Unspecified. Authorized by Bradley Keith Stucky, DO. Collected: 8/2/2018 0845 Received: 1328. Verified: 8/2/2018 1448. Resulted by SCHLab.

**Ethanol Serum** (Final result)

| Component | Value | Ref. Range |
|---|---|---|
| **Alcohol, Serum** | <3 | mg/dL |

Levels of >=80 mg/dL are "under the influence" per Colorado and Kansas State law.

Resulting Lab: SCHLab

Blood specimen 18SC-214C0100 from Blood, Venous Unspecified. Ordered by Unspecified. Authorized by Bradley Keith Stucky, DO. Collected: 8/2/2018 0845 Received: 0902. Verified: 8/2/2018 0921. Resulted by SCHLab.

**Drug Screen Urine** (Final result)

| Component | Value | Ref. Range |
|---|---|---|
| **Amphetamine Screen, Urine** | None Detected | None Detected |

Threshold Level (1000 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request.

| Component | Value | Ref. Range |
|---|---|---|
| **Barbiturate Screen, Urine** | None Detected | None Detected |
| Threshold Level (200 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| **Benzodiazepine Screen, Urine** | None Detected | None Detected |
| Threshold Level (200 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| **Cannabinoid Screen, Urine** | None Detected | None Detected |
| Threshold Level (50 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| **Cocaine Screen, Urine** | None Detected | None Detected |
| Threshold Level (300 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| **MDMA (Ecstasy), Urine** | None Detected | None Detected |
| Threshold Level (500 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| **Opiate Screen, Urine** | None Detected | None Detected |
| Threshold Level (300 ng/mL) Unconfirmed, must not be used for non-medical purposes. Confirmation of positive results done upon request. | | |
| Resulting Lab: SCHLab | | |

Urine specimen 18SC-214C0090 from Urine, Clean Catch Unspecified. Ordered by Unspecified. Authorized by Bradley Keith Stucky, DO. Collected: 8/2/2018 0845 Received: 0845. Verified: 8/2/2018 0858. Resulted by SCHLab.

**Resulting Labs**

| | | |
|---|---|---|
| **SCHLab** | SCH LABORATORY, 401E SPRUCE, GARDEN CITY KS 67846 | 620-272-2256 |

**Legend**

L - Low H - High LL - Low Panic HH - High Panic

NMS LABS

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Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

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## Toxicology Report

**Report Issued** 09/14/2018 13:09

60159
Laboratory Corporation of America
Attn: Referral Testing
8490 Upland Drive, Suite 100
Englewood, CO 80112

**Patient Name** BRADFORTH, BRAYDEN
**Patient ID** 24956610760
**Chain** 18262887
**Age** 19 Y **DOB** 05/10/1999
**Gender** Not Given
**Workorder** 18262887

**Received** 09/08/2018 11:48

Chain of custody documentation has been maintained for the analyses performed by NMS Labs.

Unless alternate arrangements are made by you, the remainder of the submitted specimens will be discarded six (6) weeks from the date of this report; and generated data will be discarded five (5) years from the date the analyses were performed.

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**Sample ID** 18262887-001
**Matrix** Blood
**Patient Name** BRADFORTH, BRAYDEN
**Patient ID** 24956610760
**Container Type** Gray Vial

**Collect Dt/Tm** 09/06/2018
**Source** Not Given

**Approx Vol/Weight** 3.75 mL

**Receipt Notes** None Entered

| Analysis and Comments | Result | Units | Reporting Limit | Notes |
|---|---|---|---|---|
| **8051B Postmortem, Basic, Blood (Forensic)** | | | | |
| Analysis by Enzyme-Linked Immunosorbent Assay (ELISA) | | | | |
| Opiates | None Detected | ng/mL | 20 | |
| Cocaine / Metabolites | None Detected | ng/mL | 20 | |
| Benzodiazepines | None Detected | ng/mL | 100 | |
| Cannabinoids | See Comment | ng/mL | 10 | |
| Comment: Based on this screening result, confirmation testing was performed. Refer to the confirmation test result(s). | | | | |
| Amphetamines | None Detected | ng/mL | 20 | |
| Barbiturates | None Detected | mcg/mL | 0.040 | |
| Methadone / Metabolite | None Detected | ng/mL | 25 | |
| Phencyclidine | None Detected | ng/mL | 10 | |
| Synonym(s): Sherm; PCP; Angel Dust | | | | |

Results for sample 18262887-001 are continued on next page

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Robert A. Middleberg, PhD, F-ABFT, DABCC-TC, Laboratory Director

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**Sample ID** 18262887-001
**Matrix** Blood
**Patient Name** BRADFORTH, BRAYDEN
**Patient ID** 24956610760

**Collect Dt/Tm** 09/06/2018
**Source** Not Given

| Analysis and Comments | Result | Units | Reporting Limit | Notes |
|---|---|---|---|---|
| Fentanyl / Acetyl Fentanyl | None Detected | ng/mL | 0.50 | |
| Methamphetamine / MDMA | None Detected | ng/mL | 20 | |
| Oxycodone / Oxymorphone | None Detected | ng/mL | 10 | |
| Buprenorphine / Metabolite | None Detected | ng/mL | 0.50 | |
| Synonym(s): Temgesic®; Buprenex®; Suboxone®; Subutex® | | | | |
| Analysis by Headspace Gas Chromatography (GC) | | | | |
| Ethanol | None Detected | mg/dL | 10 | |
| Synonym(s): Ethyl Alcohol | | | | |
| 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. | | | | |
| Blood Alcohol Concentration (BAC) | None Detected | g/100 mL | 0.010 | |
| Methanol | None Detected | mg/dL | 5.0 | |
| Synonym(s): Methyl Alcohol | | | | |
| Endogenous blood levels of methanol from metabolic and dietary sources are approximately 0.15 mg/dL. | | | | |
| Exposure to 800 ppm methanol for 8 hours produced a maximum average blood methanol concentration of 3.1 mg/dL. | | | | |
| Isopropanol | None Detected | mg/dL | 5.0 | |
| Synonym(s): Isopropyl Alcohol | | | | |
| Three workers exposed to 191 - 200 ppm isopropanol in air had blood isopropanol concentrations <1 mg/dL; acetone levels were 4 - 16 mg/dL during the exposure. After a sponge bath with isopropanol, one adult had a blood isopropanol concentration of 10 mg/dL. | | | | |
| In a study of 31 isopropanol deaths, postmortem blood concentrations ranged from 10 to 250 mg/dL (mean, 140 mg/dL) and acetone blood concentrations ranged from 40 - 300 mg/dL (mean, 170 mg/dL). | | | | |
| Acetone | None Detected | mg/dL | 5.0 | |

Results for sample 18262887-001 are continued on next page

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**Sample ID** 18262887-001
**Matrix** Blood
**Patient Name** BRADFORTH, BRAYDEN
**Patient ID** 24956610760

**Collect Dt/Tm** 09/06/2018
**Source** Not Given

| Analysis and Comments | Result | Units | Reporting Limit | Notes |
|---|---|---|---|---|
| Reported normal endogenous acetone levels in blood are up to 3 mg/dL. Levels associated with diabetic or fasting ketoacidosis range from 10 - 70 mg/dL. After exposure to 100 and 500 ppm acetone for 2 hr, reported blood acetone concentrations peaked at 2 and 10 mg/dL, respectively. A blood level of 250 mg/dL was reported in an individual who became lethargic following ingestion of acetone. | | | | |
| **52198B Cannabinoids Confirmation, Blood** | | | | |
| Analysis by High Performance Liquid Chromatography/ Tandem Mass Spectrometry (LC-MS/MS) | | | | |
| 11-Hydroxy Delta-9 THC<br>Synonym(s): Active Metabolite<br>11-Hydroxy Delta-9 THC is an active intermediate metabolite of tetrahydrocannabinol (THC) the active component of marijuana. Usual peak levels: Less than 10% of THC levels after smoking. | None Detected | ng/mL | 1.0 | |
| Delta-9 Carboxy THC<br>Synonym(s): Inactive Metabolite<br>Usual peak levels in Serum for 1.75% or 3.55% THC marijuana cigarettes: 10 - 101 ng/mL about 32 to 240 minutes after beginning smoking, with a slow decline. Usually not detectable after passive inhalation. | None Detected | ng/mL | 5.0 | |
| Delta-9 THC<br>Synonym(s): Active Ingredient of Marijuana<br>THC concentrations in blood are usually about one-half of serum/plasma concentrations. 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. | None Detected | ng/mL | 0.50 | |

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Workorder 18262887 was electronically signed on 09/14/2018 12:06 by:

William M. Schroeder, M.S.
Certifying Scientist



NMS v.39.0