

UNDERSTANDING AND CHALLENGING CAUSE OF DEATH: FORENSIC PATHOLOGY AND CORONERS SYSTEMS

Presenters:

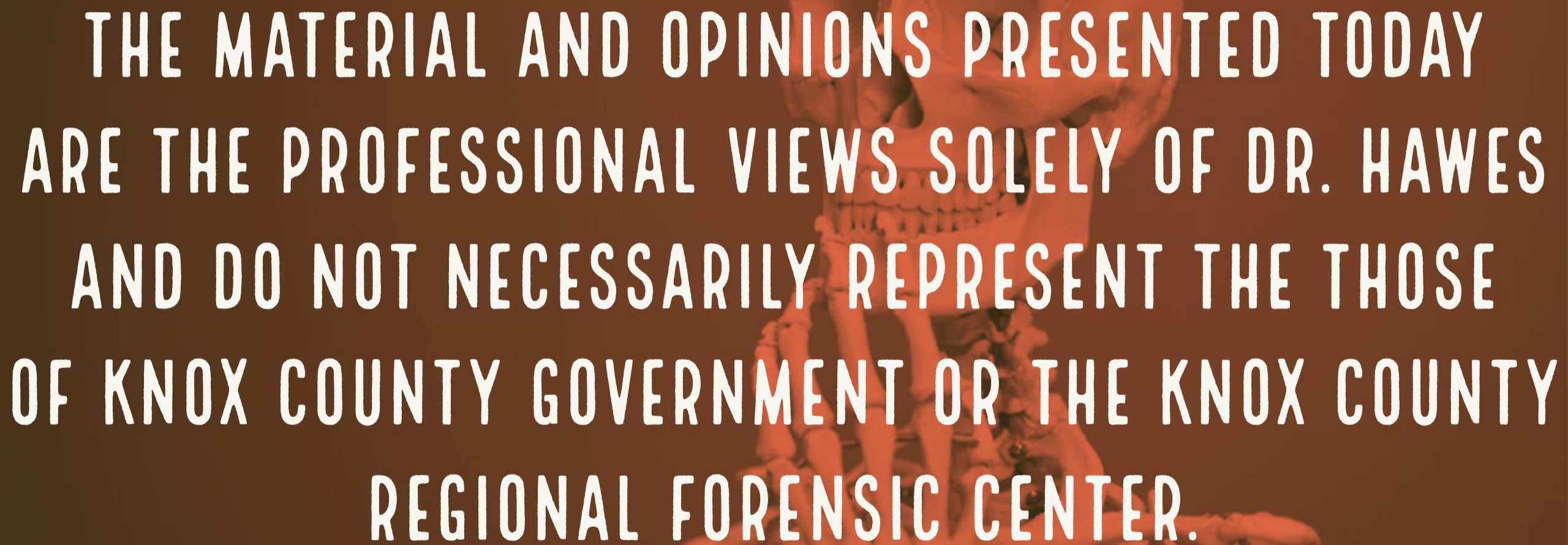
- Dr. Amy Hawes, Hawes Forensic Consulting, Knox County Medical Examiner
- Douglas Coffey, Assistant Public Defender, Forensics Division, Maryland Office of the Public Defender



**IS A DRUG DEATH A
HOMICIDE?**

DR. AMY HAWES

**Knox County Regional
Forensic Center**



THE MATERIAL AND OPINIONS PRESENTED TODAY
ARE THE PROFESSIONAL VIEWS SOLELY OF DR. HAWES
AND DO NOT NECESSARILY REPRESENT THE THOSE
OF KNOX COUNTY GOVERNMENT OR THE KNOX COUNTY
REGIONAL FORENSIC CENTER.

Topics for discussion

- 1) Components of a drug death investigation
- 2) Cause of death
 - Legal versus medical
- 3) Postmortem toxicology
 - How to read a report
 - PMR
- 4) Know your expert
 - Appropriate opinions

- Autopsy photos and death scene photos

Alabama doctor acquitted in rock guitarist's overdose death

Associated Press, AP

Published 1:25 p.m. CT May 22, 2018

Department of Justice
U.S. Attorney's Office
Western District of Kentucky

FOR IMMEDIATE RELEASE

Clinton County Doctor Sentenced To 30 Months In Prison For Illegally Prescribing Opioids

Additionally, he was ordered to pay \$400,000 fine and pay cost of incarceration



OFFICE *of the* DISTRICT ATTORNEY GENERAL
6th Judicial District • Knox County, Tennessee



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Drug Dealer Convicted of Murder Sentenced to Thirty-Seven Years

Posted: 05/11/2018

Prosecutors in DA Charmé Allen's Felony Drug Unit obtained a thirty-seven-year sentence against a career criminal whose drug dealing led to the death of a thirty-year-old woman. Kenyon Demario Reynolds, 43, was

Department of Justice

U.S. Attorney's Office

Eastern District of Kentucky

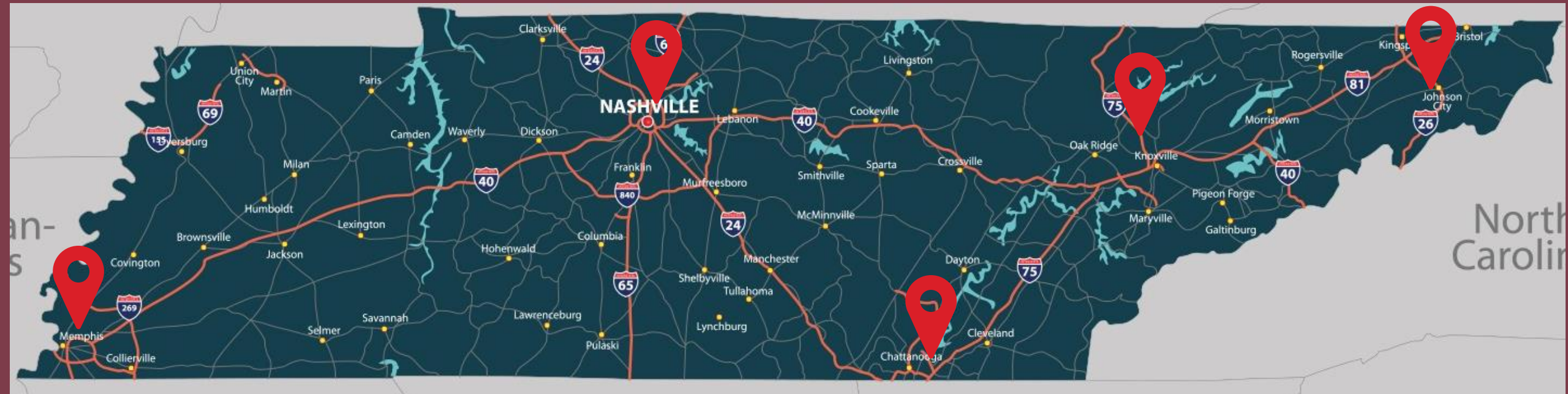
SHARE ↗

FOR IMMEDIATE RELEASE

Friday, July 26, 2019

Detroit Man Convicted of Conspiring to Distribute Opioids and Distribution of Fentanyl Resulting in Death

95 counties, 95 medical examiners, 5 RFC



Is a drug overdose a murder?

Paradigm shift

- It depends
 - Investigative perspective
 - Goals of the investigation
 - Legal norms of the jurisdiction
- Drug cops working homicides
 - Homicide dets working drug case
- *All death investigation is local*

Quiz!

Cause of death and manner of death

- Cause of death:
 - Injury or illness that sets into motion a chain of events that leads to death
- “But-for” cause of death for legal standard: varies in state and federal jurisdictions
 - Burrage
 - Significantly contributed to
- Manner of death
 - Circumstances in which someone has died
 - Natural
 - Suicide
 - Accident
 - Homicide
 - Undetermined

NAME OF DECEASED

- Some college credit, but no degree
- Associate degree (e.g., AA, AS)
- Bachelor's degree (e.g., BA, AB, BS)
- Master's degree (e.g., MA, MS, MEng, MEd, MSW, MBA)
- Doctorate (e.g., PhD, EdD) or Professional degree (e.g., MD, DDS, DVM, LLB, JD)
- Unknown

- Yes, Mexican, Mexican American, Chicano
- Yes, Puerto Rican
- Yes, Cuban
- Yes, other Spanish/Hispanic/Latino (Specify) _____
- Unknown

- (Name of the enrolled or principal tribe) _____
- Asian Indian
 - Chinese
 - Filipino
 - Japanese
 - Korean

- Native Hawaiian
- Guamanian or Chamorro
- Samoan
- Other Pacific Islander (Specify) _____
- Other (Specify) _____
- Unknown

PARENTS

18. FATHER'S NAME (First, Middle, Last)

19. MOTHER'S NAME PRIOR TO FIRST MARRIAGE (First, Middle, Last)

DISPOSITION

20a. INFORMANT'S NAME

20b. RELATIONSHIP TO DECEDENT

20c. MAILING ADDRESS (Street and Number, City, State, Zip Code)

- 21a. METHOD OF DISPOSITION
- Burial
 - Cremation
 - Donation
 - Entombment
 - Removal from State
 - Other (Specify) _____

21b. PLACE OF DISPOSITION (Name of cemetery, crematory, other place)

21c. LOCATION - City or Town and State

22a. SIGNATURE OF FUNERAL DIRECTOR

22b. LICENSE NUMBER

22c. SIGNATURE OF EMBALMER

22d. LICENSE NUMBER

23a. NAME AND ADDRESS OF FUNERAL HOME

23b. LICENSE NUMBER OF FUNERAL HOME

REGISTRAR

24. REGISTRAR'S SIGNATURE

25. DATE FILED (Month, Day, Year)

CERTIFIER

26. CERTIFIER (Check only one):

26a. PHYSICIAN - To the best of my knowledge, death occurred at the date and place, and due to the cause(s) and manner stated.

26b. MEDICAL EXAMINER - On the basis of examination, and/or investigation, in my opinion, death occurred at the date, and place, and due to the cause(s) and manner stated.

PHYSICIAN OR MEDICAL EXAMINER EXECUTING CAUSE OF DEATH MUST COMPLETE AND SIGN WITHIN 48 HOURS.

27a. SIGNATURE OF CERTIFIER

27b. LICENSE NUMBER
JN 2000

27c. DATE SIGNED (Month, Day, Year)
6/22/16

27d. NAME AND ADDRESS

28. PART I. Enter the chain of events (diseases, injuries, or complications) that directly caused the death. Do NOT enter terminal events such as respiratory arrest, or ventricular fibrillation without showing the etiology. Enter only one cause on a line.

Approximate interval: *known*
Onset to death: *1N 379*

IMMEDIATE CAUSE
(Final disease or condition resulting in death)

Sequentially list conditions, if any, leading to the cause listed on line a. Enter the UNDERLYING CAUSE (disease or injury that initiated the events resulting in death) LAST

- a. *Cardiac Arrest*
Due to (or as a consequence of)
- b. _____
Due to (or as a consequence of):
- c. _____
Due to (or as a consequence of):
- d. _____
Due to (or as a consequence of):

0241

MEDICAL CERTIFICATION

PART II. Other significant conditions contributing to death but not resulting in the underlying cause given in PART I.

29a. WAS AN AUTOPSY PERFORMED?
 Yes No

29b. WERE AUTOPSY FINDINGS AVAILABLE TO COMPLETE THE CAUSE OF DEATH? Yes No

30. MANNER OF DEATH
- Natural
 - Homicide
 - Accident
 - Pending Investigation
 - Suicide
 - Could not be determined

31. DID TOBACCO USE CONTRIBUTE TO DEATH?
- Yes
 - Probably
 - No
 - Unknown

32. IF FEMALE:
- Not pregnant within past year
 - Pregnant at time of death
 - Not pregnant, but pregnant within 42 days of death
 - Not pregnant, but pregnant 43 days to 1 year before death
 - Unknown if pregnant within the past year

33. IF TRANSPORTATION INJURY, SPECIFY:
 Driver/Operator

34a. DATE OF INJURY (Month, Day, Year)

34b. TIME OF INJURY

34c. INJURY AT WORK? Yes No

34d. PLACE OF INJURY -at home, farm, street, factory, office, building, etc. (Specify)

3. PART I. Enter the chain of events – diseases, injuries, or complications – that directly caused the death. DO NOT enter terminal events such as cardiac arrest, respiratory arrest, or ventricular fibrillation without showing the etiology. DO NOT ABBREVIATE. Enter only one cause on each line.

IMMEDIATE CAUSE (Final disease or condition resulting in death) →

a. ACUTE COMBINED DRUG TOXICITY

DUE TO (OR AS A CONSEQUENCE OF):

Sequentially list conditions, if any, leading to the cause listed on line a.

b.

DUE TO (OR AS A CONSEQUENCE OF):

Enter the UNDERLYING CAUSE (Disease or injury that initiated the events resulting in death) **LAST**

c.

DUE TO (OR AS A CONSEQUENCE OF):

d.

PART II. Enter other significant conditions contributing to death but not resulting in the underlying cause given in Part I

34. MANNER OF DEATH

- Natural Accident
 Homicide Pending Investigation
 Suicide Could not be Determined

5. WAS AN AUTOPSY PERFORMED?

Yes No

37. DID TOBACCO USE CONTRIBUTE TO DEATH?

38. IF FEMALE:

Legal language versus medical language

- Legal definition of causation can be complicated
 - Contribution
 - Acceleration
 - Substantial
- Drug overdoses without intent of self-harm are classified “accident”

CRIME

Pennsylvania Coroner Labels Heroin Overdoses 'Homicide'

By [Julia Bryant](#) | March 27, 2016

What if heroin overdoses were not classified as accidents, but as homicides?

That is what one Pennsylvania coroner is starting to do.

Lawstreetmedia.com

Marcus Andrew BURRAGE, Petitioner
v.
UNITED STATES.

No. 12–7515. | Argued Nov. 12, 2013. | Decided Jan. 27, 2014.

Synopsis

Background: Defendant was convicted in the United States District Court for the Southern District of Iowa, [Robert W. Pratt, J.](#), of distribution of heroin and distribution of heroin resulting in death, and he appealed. The United States Court of Appeals for the Eighth Circuit, [Benton](#), Circuit Judge, [687 F.3d 1015](#), affirmed, and certiorari was granted.

Holdings: The Supreme Court, Justice [Scalia](#), held that:

[1] at least where use of the drug distributed by the defendant is not an independently sufficient cause of the victim's death or serious bodily injury, a defendant cannot be liable under the penalty enhancement provision of Controlled Substance Act applicable when death or serious bodily injury results from use of the distributed substance unless such use is a but-for cause of the death or injury, abrogating [United States v. Monnier](#), 412 F.3d 859, and [United States v. McIntosh](#), 236 F.3d 968, and

[2] defendant, who distributed heroin used by victim who died of a drug overdose after also using other drugs, could not be convicted under the penalty enhancement provision, absent evidence that the victim would have lived but for his heroin use.

Reversed and remanded.

Justice [Alito](#) joined in part.

Justice [Ginsburg](#) filed an opinion concurring in the judgment, in which Justice [Sotomayor](#) joined.

West Headnotes (12)

[1]

Homicide

←Extent of

Although language of the Act requiring substantial bodily injury distributed to the victim that courts have interpreted as the "death" sentence. Prevention of 401(b)(1)(A)

1 Cases that

[2]

Homicide

←Relation

conduct and

Jury

←Particular

Because the Controlled Substance Act minimum sentence defendant was required beyond a Drug Abuse 1970, § 841(b)(1)(A)

4 Cases that

[3]

Homicide

←Controlled substances

Crime charged under Controlled Substance Act provision imposing 20 year minimum sentence when "death results" from use of the distributed substance has two principal elements: (1) knowing or intentional distribution of the substance, and (2) death caused by ("resulting from") the use of that drug. Comprehensive Drug Abuse Prevention and Control Act of

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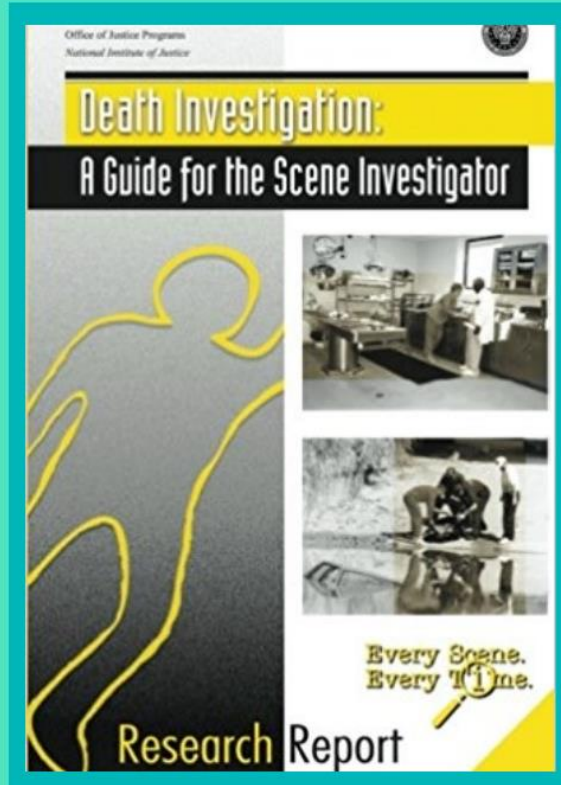
[2] defendant, who distributed heroin used by victim who

Burrage standard

- Burrage sold heroin to Banka
- Banka overdoses and dies
- Heroin, oxycodone, clonazepam, alprazolam
- Doctors could only say that heroin was contributing factor, could not say he wouldn't have died without it
- Scalia said the heroin distributed by Burrage is not an independently sufficient cause of the victim's death or serious bodily injury

02

STANDARDS



ncjrs.gov/pdffiles1/nij/234457.pdf



Recommendations for the Investigation, Diagnosis, and Certification of Opioid Related Deaths

thename.org

Accurate cause of death determination....

- Autopsy is only **ONE** factor in the determination
- Must include additional information
 - Scene information
 - Medical history
 - Tolerance
 - Drug use history (PMP)
 - Toxicology or other lab studies

Scene investigation

- Extremely important for interpretation of findings on body
- Establishes timeline for death and time of drug use
- Can help establish drug source
- Can assist with identifying new drug/analog
- Assist with route of use
 - Time of use







Inventory
should
include:

Comparison of how many pills remain
versus how many dispensed

Administration regimen

Prescriber information

When, where, to whom was it filled?

Make sure pills in bottle match pills
prescribed

- Multiple meds, labels off bottles, mixed pills in one bottle
- Multiple Rx for different people
- Altered transdermal patches
- Needles, baggies, crushed tablets
- Injection sites on body

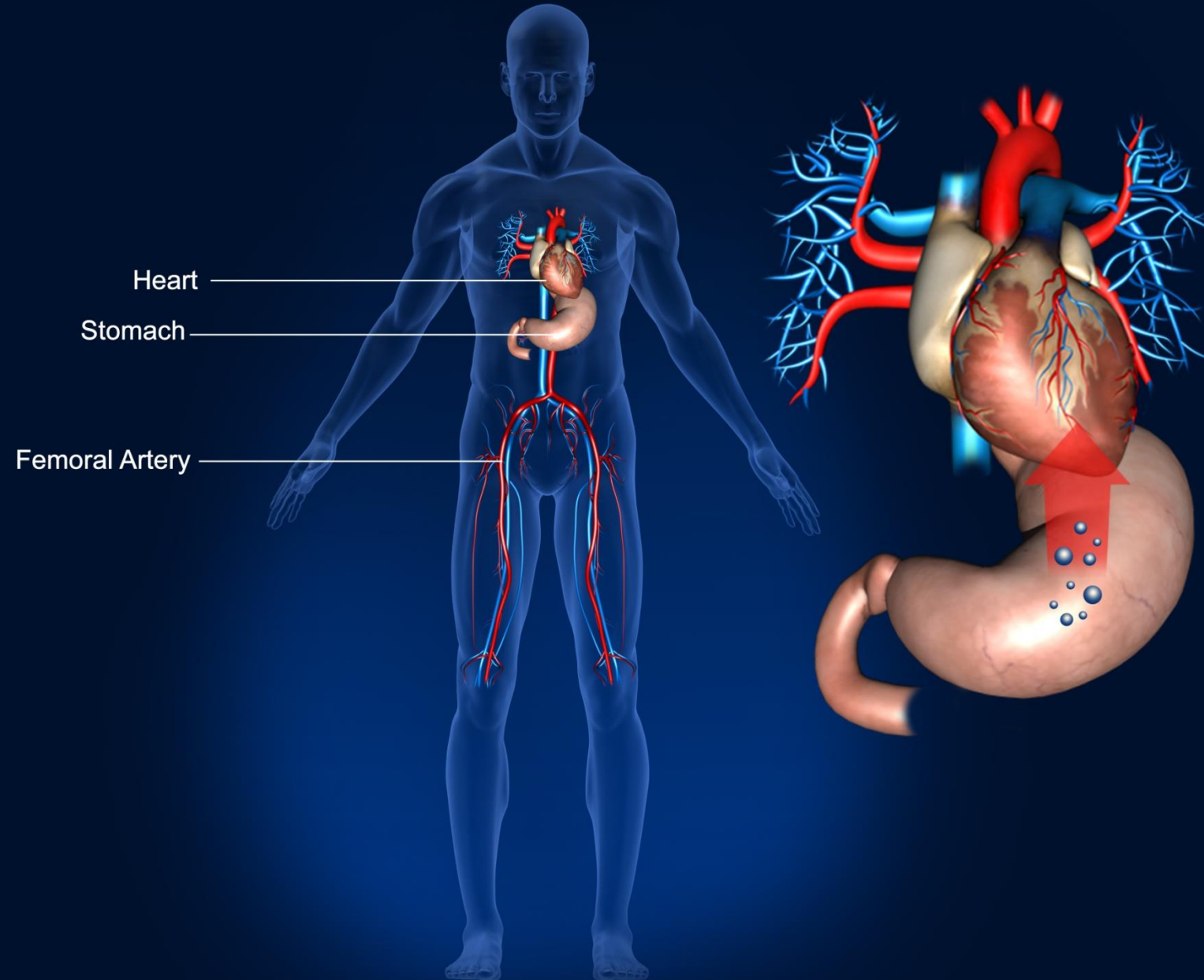
Accurate cause of death determination....

- Must include additional information
 - 1) Scene information
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- Must include additional information
 - 1) Scene information
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 - 3) Toxicology or other lab studies

Post-mortem Drug Redistribution



POSTMORTEM REDISTRIBUTION

- Postmortem redistribution (PMR) refers to the changes that occur in drug concentrations in the body after death.
- Drugs can move into blood from solid organs such as the lungs, liver, and heart; and vice versa.
- Blood drawn from different areas of the body will have different levels


Compound
Result**Units**
Matrix Source**Oxymorphone - Free****120****ng/mL****002 - Femoral Blood****Buprenorphine - Free****0.77****ng/mL****002 - Femoral Blood****11-Hydroxy Delta-9 THC****1.5****ng/mL****002 - Femoral Blood****Delta-9 Carboxy THC****7.6****ng/mL****002 - Femoral Blood****Delta-9 THC****>50****ng/mL****002 - Femoral Blood****Creatinine (Vitreous Fluid)****0.46****mg/dL****004 - Vitreous Fluid****Sodium (Vitreous Fluid)****141****mmol/L****004 - Vitreous Fluid****Potassium (Vitreous Fluid)****7.4****mmol/L****004 - Vitreous Fluid****Chloride (Vitreous Fluid)****123****mmol/L****004 - Vitreous Fluid****Urea Nitrogen (Vitreous Fluid)****18****mg/dL****004 - Vitreous Fluid**

Container(s): 01:YTB

Urine, Random

COCAINE/METABOLITES

POSITIVE

Benzoylcegonine

POSITIVE

Cause of death?

<u>Compound</u>	<u>Result</u>	<u>Units</u>	<u>Matrix Source</u>
Fentanyl	11	ng/mL	001 - Femoral Blood
Norfentanyl	0.60	ng/mL	001 - Femoral Blood



Cause of death?

Amphetamine	300	ng/mL	001 - Femoral
Methamphetamine	4900	ng/mL	001 - Femoral

Cocaine	250	ng/mL	001 - Femo
Benzoyllecgonine	1600	ng/mL	001 - Femo
11-Hydroxy Delta-9 THC	1.5	ng/mL	001 - Femo
Delta-9 Carboxy THC	12	ng/mL	001 - Femo
Delta-9 THC	4.4	ng/mL	001 - Femo
Fentanyl	13	ng/mL	001 - Femo
Norfentanyl	2.3	ng/mL	001 - Femo
Acetyl Fentanyl	3.5	ng/mL	001 - Femo

No autopsy; toxicology only

Methadone	760	ng/mL	001 - Femoral
EDDP	69	ng/mL	001 - Femoral

“Lethal range 200-1400”

Can we say the methadone killed her?

Current Medications

Methadone 10 years

What was she doing prior to being found?

Frequently asked questions

Several people used at same time...why did one die?

- 37-year-old man with girlfriend and another passenger in car; parked at hotel
- Passerby called EMS; everyone unresponsive in car
- History of IVDA

- 2 other people were resuscitated and lived

Morphine - Free	30	ng/mL
Fentanyl	50	ng/mL
Norfentanyl	0.91	ng/mL
4-ANPP	1.2	ng/mL
Butyrylfentanyl	0.11	ng/mL

Opiates	Presump Pos	ng/mL	003 - Urine
Cannabinoids	Presump Pos	ng/mL	003 - Urine
Fentanyl / Metabolite	Presump Pos	ng/mL	003 - Urine
6-MAM - Free	Positive	ng/mL	003 - Urine

Chocolate chip cookie theory



Tolerance

- Significant overlap in the therapeutic, suprathreshold, and lethal levels of opioids
- Therapeutic level is one person may be fatal in another

MORPHINE

“Therapeutic”:
100 ng/ml

“Lethal”: 50-
4,000 ng/ml

Tolerance

- Medical records with ongoing or previous opiate use
- Controlled substance database records
- Pharmacy records
- Family and friends

CSMD

Fill Date	Product, Str, Form	Quantity	Days	Pt ID
06/27/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	84.00	28	9718
06/13/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	42.00	14	2365
05/30/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	42.00	14	9718
05/02/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	84.00	28	9718
04/04/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	84.00	28	9718
03/07/2017	OXYCODONE HCL-ACETAMINOPHEN, 325 MG-10 MG, TAB	84.00	28	9718

Math is now illegal in Kentucky



CRIME

Pennsylvania Coroner Labels Heroin Overdoses 'Homicide'

By [Julia Bryant](#) | March 27, 2016

What if heroin overdoses were not classified as accidents, but as homicides?

That is what one Pennsylvania coroner is starting to do.

Lawstreetmedia.com

Variation in death investigation personnel

- Forensic pathologist:
 - Physician with special postgraduate training in death investigation, autopsy, and toxicology
 - Board certification by American Board of Pathology in forensic pathology
- Not necessarily the same as medical examiner or coroner
 - No formal death investigation experience
 - No formal training in toxicology interpretation
- Medical death investigator (MDI) American Board of Medical Death Investigation

What are the qualifications specified by law?

No person shall be elected to any county office, except the office of district attorney otherwise provided for by this act, unless he shall be at least eighteen years of age, a citizen of the United States and a resident of the county, and shall have resided within the county for one year next preceding his election. 16 Pa. Stat. Ann. § 13.

(1) The Basic Education Course is a minimum 32 hours of instruction given between the date of each municipal election and December 31 of that year.

The 2009 National Research Council Report, *Strengthening Forensic Science: A Path Forward*, emphasized the need for improving quality assurances, including continued standards-setting and enforcement. They wrote:

...Standards and best practices create a professional environment that allows organizations and professions to create quality systems, policies, and procedures and maintain autonomy from vested interest groups. Standards ensure desirable characteristics of services and techniques such as quality, reliability, efficiency, and consistency among practitioners. Typically

Forensic Toxicologists
“Appropriate” and “Inappropriate” testimony

ANSI/ASB Best Practice Recommendation 037, First Edition
2019

**Guidelines for Opinions and Testimony
in Forensic Toxicology**

A toxicologist should not opine as to the absolute cause of death of an individual. This does not preclude a toxicologist from addressing the toxicological impact of any substances found in the toxicological analysis of specimens from the case.

A toxicologist should not perform extrapolation calculations for drugs other than ethanol.

A toxicologist should not calculate the dose of a drug based on a postmortem drug concentration in blood.

Knox Co/CFSRE study

- Acryl fentanyl (September 2017)
- Revised COD: acryl fentanyl overdose

If you are tired,
Sleep. If unclear,
meditate. If sore,
move. If angry,
forgive. If
unhappy, love. If
bored, give.

Common sense
is not always
common practice
and so we suffer.

-B. Burchard

COMPONENTS OF DRUG DEATH INVESTIGATION



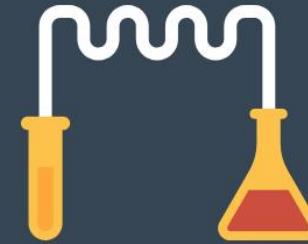
Scene



History



Autopsy



Tox