



# PROJECT ECHO: OD-FIT

Overdose Fatality Investigation Techniques

Differentiating between Suicidal and Accidental  
Drug Overdoses  
April 26, 2022



## Agenda

- Introductions and Warm-Up
- Didactic Presentation: Differentiating between Suicidal and Accidental Drug Overdoses
- BREAK
- Practice cases

# PROJECT ECHO: OD-FIT

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## Differentiating between Suicidal and Accidental Drug Overdoses

### **Mrs. Kelly Keyes**

Board-certified medicolegal death investigator with over 25 years of experience

Research Forensic Scientist at RTI International

### **Dr. Bruce Goldberger**

Professor and Chief of the Forensic Medicine Division in the Department of Pathology, Immunology, and Laboratory Medicine in the College of Medicine at the University of Florida

### **Dr. Daniel Dye**

Associate Coroner/Medical Examiner for Jefferson County, Alabama

Associate Professor of Pathology at the University of Alabama at Birmingham

# Scene Findings



# Scene Findings

- Cup
- Computer
- Trashcan
- Cell phone
- Journals
- Paperwork (medical, Notes, financial)



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# Records Reviews

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- Medical records
- PDMP
- Pharmacy
- Criminal records
- School records
- Social Media
- Address History







# Interviews

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- Family
- Friends/roommates
- Partner
- Colleagues
- If juvenile, school resource officer
- Last person to know they were alive
- Doctor(s)

# Suicide vs. Accident vs. Could not be Determined

(\*and rarely homicide)



# Intentional Overdose at Autopsy

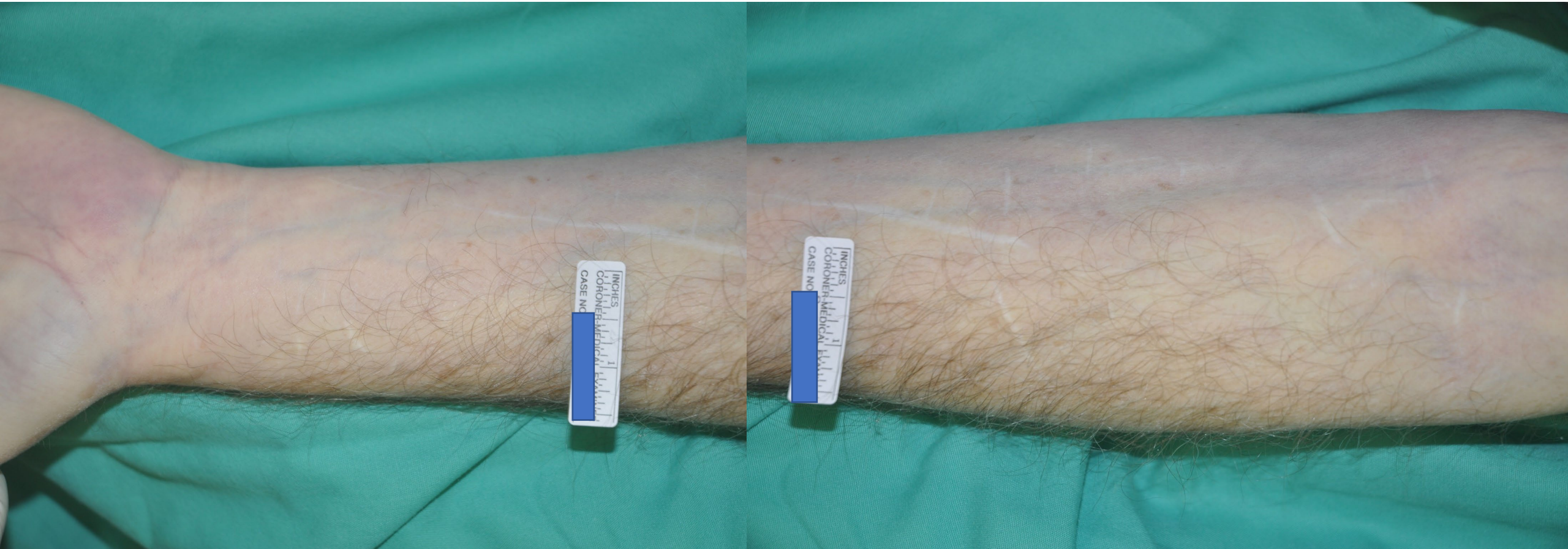
- External Examination
  - Scars
  - Foam cone
  - Nothing
- Internal Examination
  - Gastric contents
  - Findings in overdose deaths
    - Pulmonary congestion/edema
    - Bladder distention by urine
    - Cerebral edema
  - Nothing

# Intentional Overdose at Autopsy

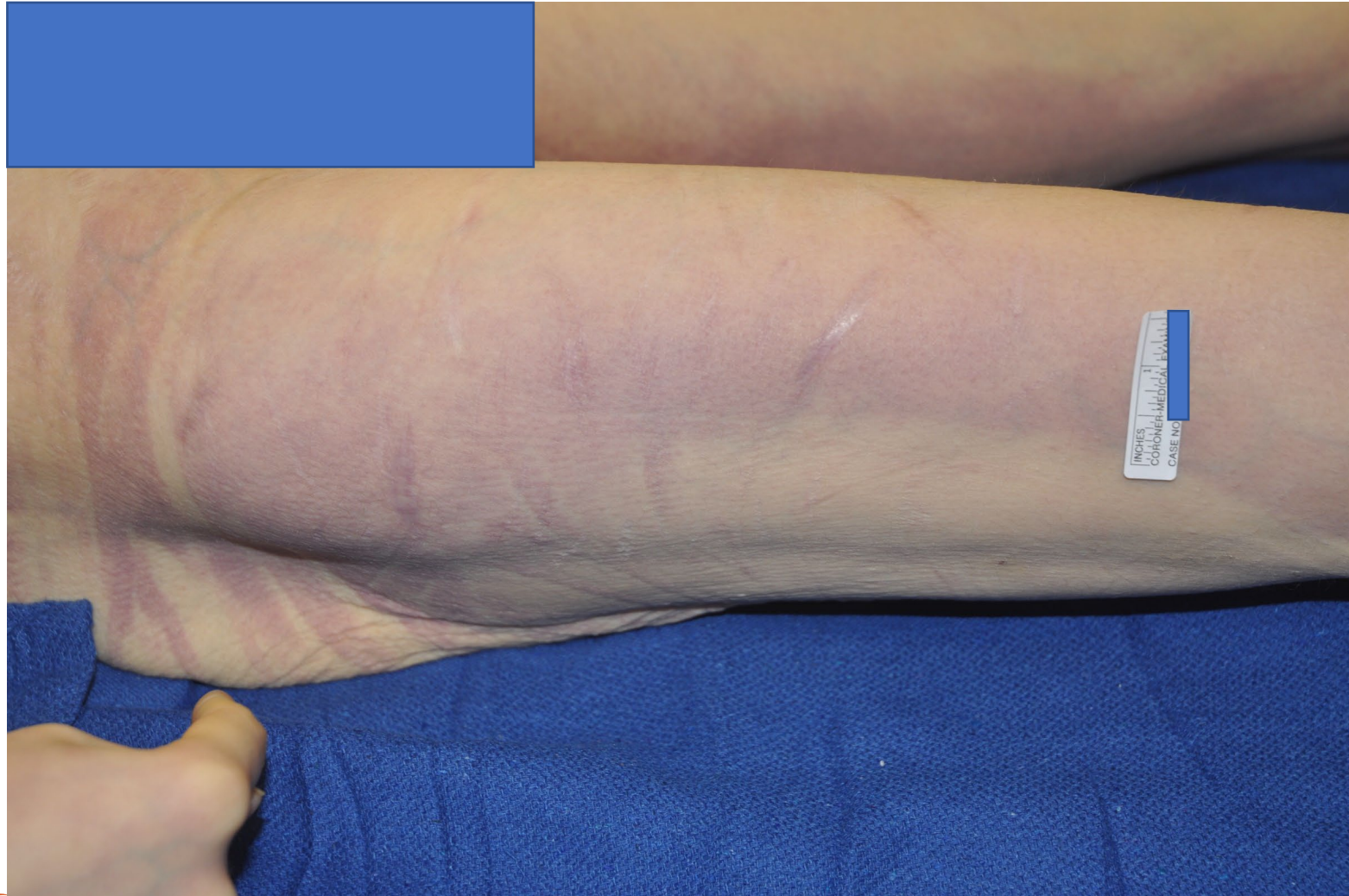




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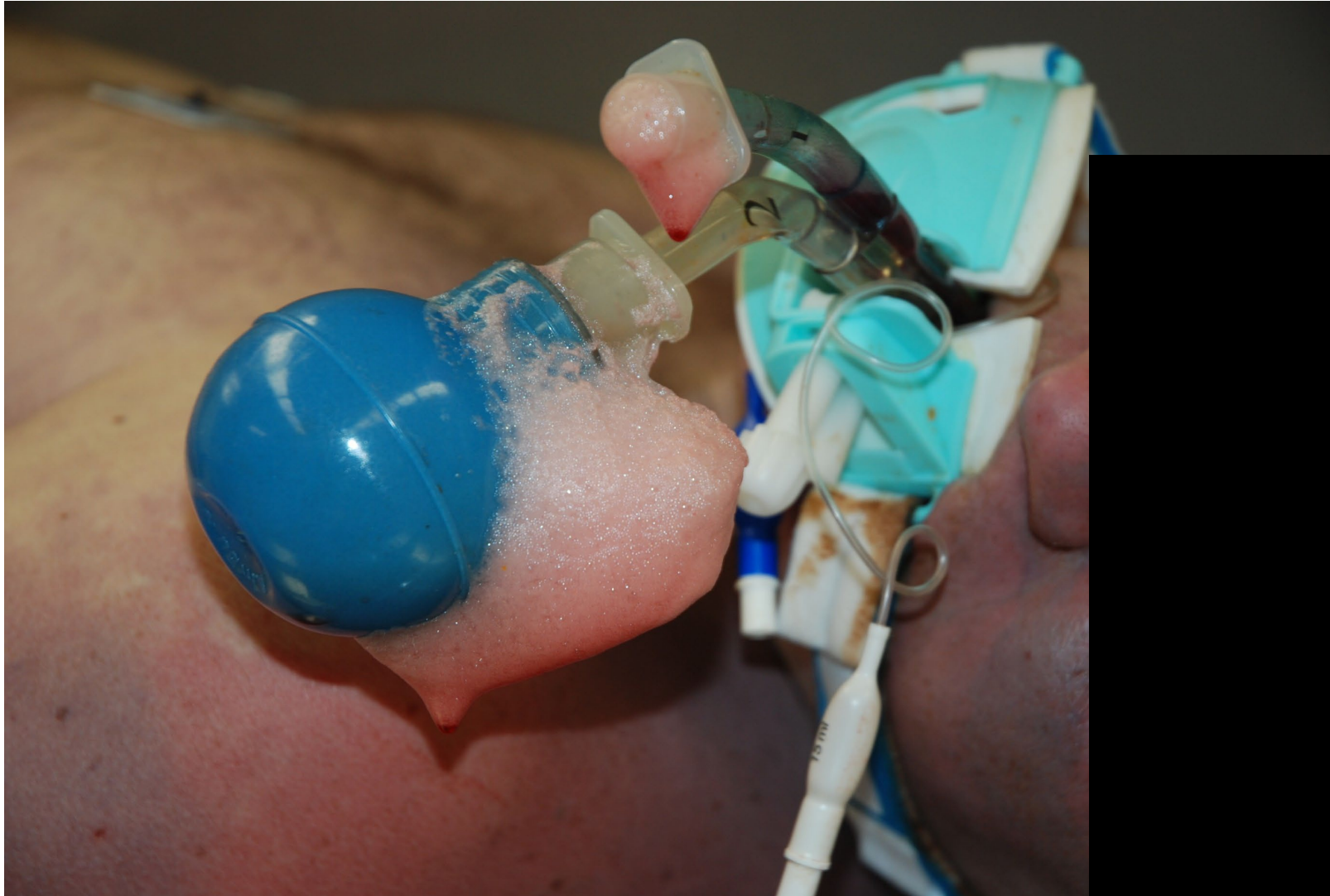


# Intentional Overdose at Autopsy





# Intentional Overdose at Autopsy

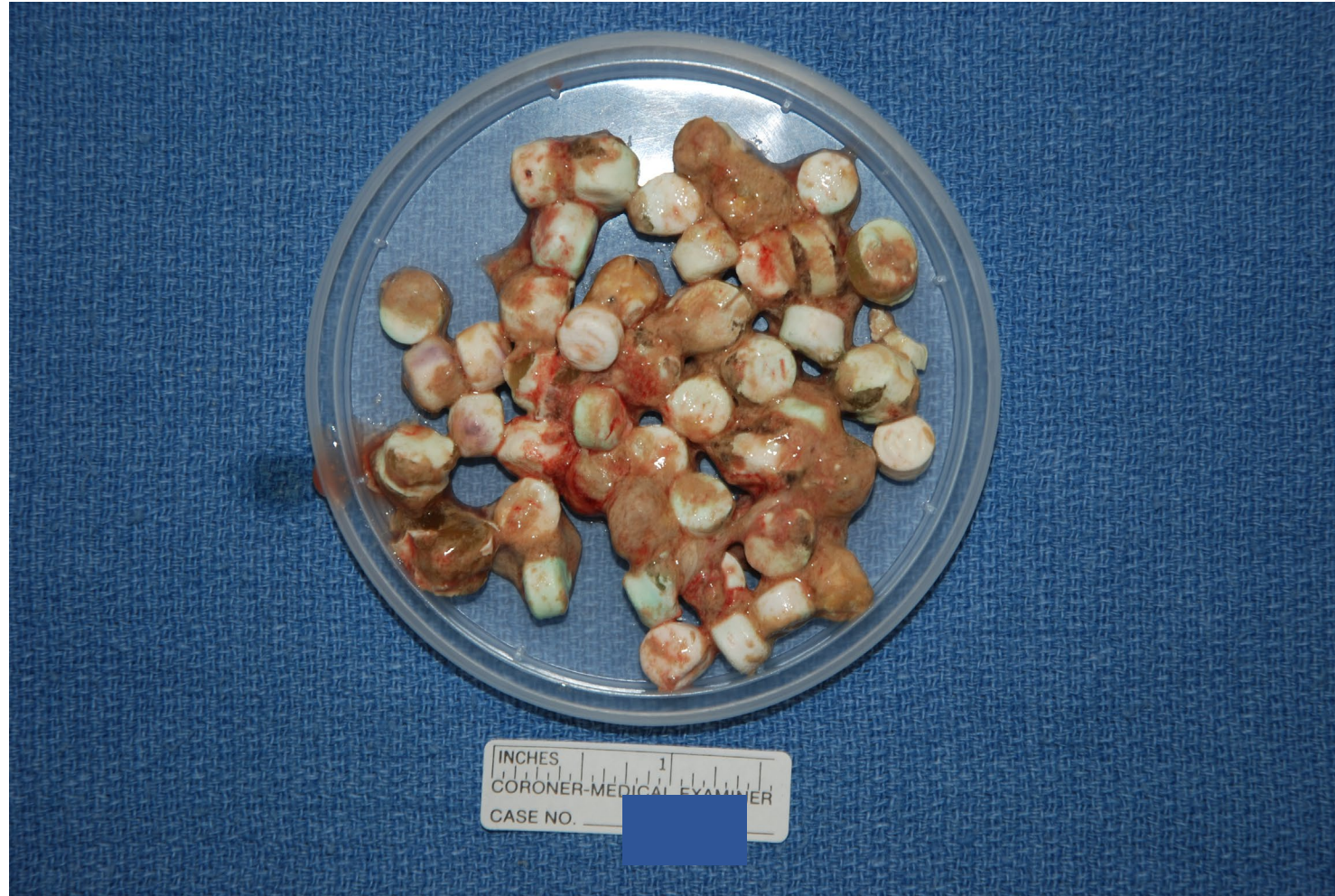


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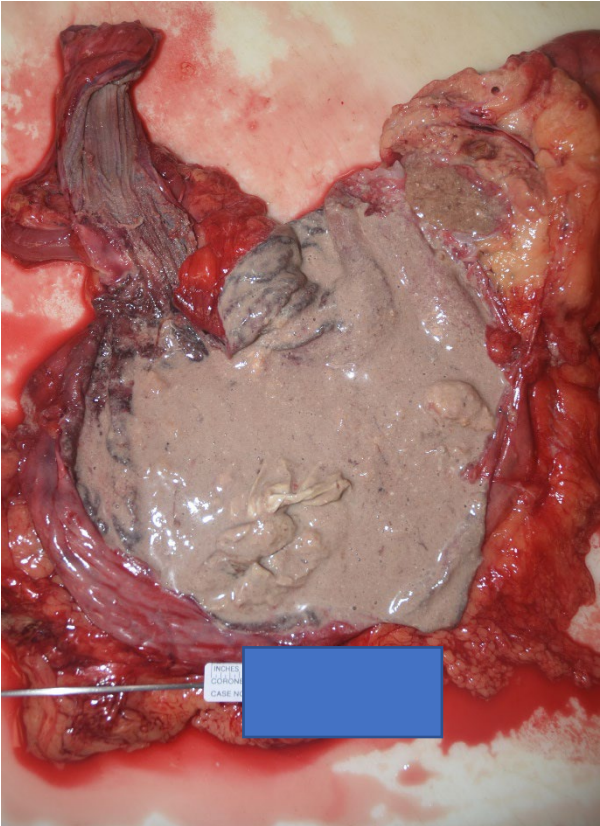
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# Intentional Overdose at Autopsy





# Intentional Overdose at Autopsy



# Psychotherapeutic Drugs in Decedents

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- Medications commonly used to treat psychiatric illness (emotional dysphoria) and often identified in the decedent:
  - Antidepressants
    - treat depression with tricyclic antidepressant and/or SSRI
    - may increase suicidality
  - Antipsychotics
    - treat schizophrenia with suicidal thoughts and behavior
  - Benzodiazepines
    - treat acute anxiety

# Other Drugs in Decedents

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- Other drugs often identified in the decedent:
  - Over-the-counter medications (e.g., analgesics, antihistamines)
  - Prescription medications (e.g., antihypertensives)
  - Opioids – prescription and illicit
  - Stimulants – prescription and illicit

# Interpretation of Toxicology Lab Findings

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- Subtherapeutic, therapeutic, and supratherapeutic concentration
  - acute v. chronic drug administration (underlying tolerance)
  - interpret with caution
  - consult toxicologist
- Ratio of drug:drug metabolite
- Polysubstance use
- Postmortem drug redistribution
  - site of collection (peripheral v. central)
  - postmortem interval
- Stomach contents (total)
- Tissue including liver, kidney, and brain



# Considerations

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- Special lab requests include carboxyhemoglobin and cyanide
- Obtain antemortem specimens (especially in delayed deaths)
- Link toxicological findings with means of suicide
  - drugs may cause disinhibition and increased self-confidence
- Some substances not detectable by routine toxicology
  - gases
  - insulin
  - new psychoactive drugs and NPS
- Cannot calculate dose of drug based on blood drug concentration

# Intentional Overdose at Autopsy

- Suicide results from an injury or poisoning as a result of an intention, self-inflicted act committed to do self harm or cause the death of one's self.
- For classification of Suicide the burden of proof should exceed “more likely than not” (more compelling than 51%).
- NAME suggests 70% or greater certainty that the death was intentional.

# Intentional Overdose at Autopsy

- If classification as suicide is little more than an informed guess or speculation, accident or undetermined are deemed better options.

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# Case Scenarios

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- Poll: Have you ever felt pressured, either directly or indirectly, to change the cause or manner or death for a decedent?
- Poll: Have you ever felt pressured to change the manner of death for a decedent from suicidal to accidental?

## Kelly: Case 1

- 42M with a history of alcohol abuse, the decedent lives on the streets and was found dead in his encampment on a comfortable day in May by the business owners of a nearby business complex. On inspection at scene, he is noted to be jaundiced with multiple empty bottles of vodka.
- His family was located and indicated that he has been drinking for years and does not have any regular physician or known medical problems, other than several ER visits related to acute alcohol intoxication. The family last saw him the week prior and he was upset that they would not give him money and also that his daughter had indicated that she would not be inviting him to her wedding unless he stopped drinking and cleaned up.
- At autopsy, the forensic pathologist noted he smelled of alcohol and had findings significant for end-stage liver disease.



# Kelly: Case 1 (Con't)

- This office issued a pending death certificate and toxicology was performed. Toxicology returned with a .47 ethanol level and acetone, nothing else. The pathologist felt this was more significant than the chronic liver disease and felt the cause of death should be
  - a) Acute ethanol intoxication
  - Part 2- end-stage liver disease

## Kurt: Case 2

- A 28-year-old woman was found unresponsive in her apartment by paramedics after they and law enforcement officers broke down the door.
- She had called 911 about 30 minutes earlier and told the operator that she tried to kill herself by ingesting a whole container of her Prozac (Fluoxetine) prescription because her boyfriend left her.
- She was feeling “strange”, dizzy, and nauseated. She told the operator that she didn’t want to die and to please send someone to help save her.
- On arrival, the paramedics were unable to arouse her. She was noted to be bradycardic, hypotensive, with a respiratory rate of 6 breaths per minute.
- As the paramedics were starting an intravenous catheter and preparing for intubation, she became apneic, developed ventricular fibrillation, and had a cardiac arrest from which she could not be resuscitated.

## Kurt: Case 2 (Con't)

- There was a long history of depression treated by a series of different antidepressants including, most recently, Prozac. There were no known previous suicide attempts or expressions of suicidal ideation.
- The medicolegal death investigator found no evidence of a suicide note.
- At autopsy, the stomach contained a slurry of green white mostly digested capsules. There were no other significant findings.
- Femoral blood contained a lethal concentration of fluoxetine (4.4 mg/L) and norfluoxetine (0.9 mg/L).
- The cause of death was fluoxetine toxicity.

## Alfie: Case 3

- 19-Year-old male According to the decedent's father, the decedent had a history of suicidal ideations. Per the father, the decedent attempted suicide a year ago by consuming an array of medications.
- Per the father the decedent was known to either not take his prescribed depression medications and anxiety medications or would take too many at one time.
- Per the father, the decedent made a comment to him that the decedent was upset when he woke up in the hospital after he wrecked his vehicle. The decedent was noted to have had an "accidental medication overconsumption" 2 months prior to his death. He was being seen on a behavioral health psychiatry unit 2 months prior to his death.
- The death scene was his residence where he was found in his locked room by his grandmother, who had to pry the door open. Multiple prescription bottles were found for medications prescribed to the decedent in the kitchen of the residence.
- In the bedroom, there were multiple cans located and inside one of the cans was what appeared to be crushed pills. Under the desk in the room, multiple loose pills were found. A few days later, the father called and informed the deputy that additional unlabeled pills were found in the decedent's gaming box.

## Alfie: Case 3 (cont.)

- Upon attempting to complete the investigation, the parents were asked about additional information regarding the prior suicide ideations and attempts, including ongoing psychological evaluations, and the parents, stated that they did not want to talk about it.
- Most recent Medications prescribed and counted included Lorazepam 0.5mg filled 2 weeks prior to death for 25 with 0 remaining. All other medications were filled in June and had multiple pills remaining.
- Tox was positive for
  - Diazepam 234ng/mL
  - Nordiazepam 437ng/mL
  - Oxycodone 165ng/mL
  - Oxymorphone 30.4 ng/mL
- Cause of death: Acute Mixed Drug Intoxication (Diazepam, Oxycodone)

## Kelly: Case 4

- 33F with history of drug use since she was 21. She also has had chronic pain since she was in a car accident with injuries that required multiple surgeries at age 28, with the last surgery at age 31.
- She has prescriptions for Dilaudid, Vicodin, and gabapentin, all were filled Weds. She has a history of drug-seeking behaviors and has been known to buy drugs off the street when she runs out of pain medications.
- She lives with her mom and step-dad and shares custody of her 3-year-old son with her ex-boyfriend. She has often made comments about her son being the only thing she has to love. She was recently arrested for her 2nd DUI and was scheduled to appear in court for that on Monday but was afraid she was facing a long time in prison and would not be able to see her son.



## Kelly: Case 4 (cont.)

- Text messages on her phone indicate she is very worried about the court date and not being able to see her son again, she was asking to have him this weekend despite it not being her weekend and his dad said no.
- She posted some poems about death on Facebook and has a journal next to her with recent entries about what a terrible mother she is. She is found dead in bed with all 3 pill bottles empty spilled next to her.
- At autopsy, she is noted to have multiple pill fragments in her gastric contents and toxicology shows she has fatal levels of hydromorphone, hydrocodone, and gabapentin.

# Kelly: Case 5

- 45F with a history of Fibromyalgia and depression for years. She has an old back injury from work and had a laminectomy about 3 years ago. She has been on pain medications for years as well, with ever-increasing dosages. She regularly runs out of her medications early and has to go to the ER for more.
- Her PDMP record is long and shows multiple doctors prescribing medications over the last 6 months, including tramadol and gabapentin. Her primary care doctor says she has depression, but it's fairly well controlled with citalopram. Her family reports she is “always” down and makes statements about not caring if she lives because she is in so much pain, but she has never actually tried to kill herself.
- She was recently a little down about owing money on her taxes and how she was going to afford that, but otherwise no significant complaints or changes.

## Kelly: Case 5 (cont)

- She is found dead in bed by her neighbor when she didn't show up for Bunco. No suicide notes are located, her prescription medications are in the kitchen and on her nightstand and were all filled 6 days ago. Only 3 pills remain in her 2 pain medications, her Citalopram has 10 pills remaining.
- An autopsy and toxicology are done. The cause of death is determined to be Acute citalopram, tramadol, oxycodone, and gabapentin intoxication. Levels of all 4 are in the mid-fatal range.

# Kelly: Case 6

- 28F with a history of pain medication use since she was 15 following an incident where she was involved in a very high-profile school shooting and her best friend was killed. She has had multiple surgeries since, with the last surgery at age 25, and has ongoing issues walking. She was a star athlete prior to this and had aspirations of being a physical therapist, but she has been unable to complete college.
- She has prescriptions for Dilaudid, morphine, and gabapentin, all were filled 10 days ago.
- She lives with her dad, who is a county commissioner, and he tries to control her medications, but she often finds where he hides them and takes more than she should. He found her out of it about 2 ½ weeks ago and she admitted she had taken too many pills because the pain was just so bad, but no medical attention was provided. But he swears she would never kill herself.

# Kelly: Case 6 (Con't)

- As the anniversary of the shooting approaches, she is talking more and more about her deceased friend and saw her psychologist 5 days ago; she denied being suicidal. She has multiple journals from over the years and she has for years talked about wanting to just give up the fight and join her friend. Her last few Instagram posts have been of very spiritual images.
- She is found dead on the bedroom floor. Her pill bottles are in the attached bathroom and are all overused, but still has some pills remaining. Autopsy findings are consistent with an opioid overdose (full bladder, swollen brain, wet, heavy lungs). Toxicology shows fatal levels of all her prescription medications and the forensic pathologist attributes the cause of death to acute combined effects of them.

For discussion- What else could you do as far as an investigation to help with manner?