

# CORRECTLY IDENTIFYING DEATHS DUE TO DRUG TOXICITY WITHOUT A FORENSIC AUTOPSY

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## NO FINANCIAL DISCLOSURES



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## NAME FORENSIC AUTOPSY PERFORMANCE STANDARDS

- 2003: Dr. Michael Bell assigned a committee to determine "the feasibility of developing practice standards"
- 2003-2004: Members of the committee compiled and revised information from meetings, email correspondence, and surveys to develop a list of 30 "standards" and 204 "tasks" (activities).
- 2004: The final list of "standards" and "tasks" was used to form a national survey sent to all active and emeritus NAME members.
- October 17, 2005: Based on survey responses the NAME Forensic Autopsy Performance Standards was approved at the NAME Annual Meeting, Los Angeles, CA



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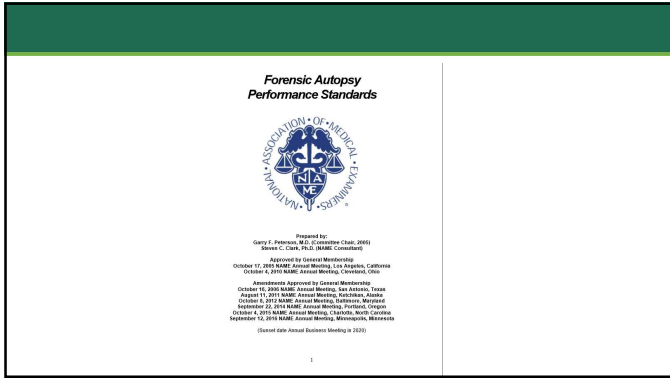
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- Standard B3.7: "The forensic pathologist shall perform a forensic autopsy when the death is by apparent intoxication by alcohol, drugs, or poison, unless a significant interval has passed, and the medical findings and absence of trauma are well documented."
- Opiate numbers from JCCME....
- Many cases of deaths due to drug toxicity had no gross or microscopic COD at autopsy. "COD: Pending TOX"

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**HYPOTHESIS**

- However, in many cases of deaths due to a drug toxicity, it is our experience that the autopsy does not offer information that will override:
  - 1) the investigative information
  - 2) information from the external examination.
  - 3) information from toxicological testing.
- This observation brought into question the value of the internal examination in classifying a death due to drug toxicity.
- H<sup>0</sup>: A full autopsy is not necessary to correctly classify the cause and manner of death in cases of drug toxicity.

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**METHODS**

- We will create a test for three of our pathologists using full autopsies from the Jefferson County Coroner/Medical Examiner Office to determine if they can correctly classify the COD and MOD in cases of drug(s) toxicity without information from the internal examination.
- Excluded: homicides, suicides, and accidental deaths due to physical trauma were excluded.
- All cases from the three pathologists taking the "test" were excluded.
- We used SurveyMonkey to collect the results.

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**METHODS**

- 60 cases:
  - Mix of accidental deaths due to drug toxicity (38 cases) and natural deaths (22 cases).
  - Age of decedents ranged from 21-77 years (mean 44 years).
  - Cases were primarily males (44 decedents) with 16 females.
- The pathologist was given a narrative that was comprised of three parts:
  - Scene/Investigation
  - External Exam
  - Tox results
- Each pathologist was asked to classify COD and MOD for every case.

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**EXAMPLE 1**

- Scene/Investigation: Law enforcement responded to a residence on a call of unresponsive person. The decedent was known to law enforcement as an IV drug user and had been to the residence multiple times for overdose call from the decedent and wife (also IV drug user). NOTE: No drug paraphernalia was observed at the scene.
- External exam: 60 year old white male (BMI 23.5 kg/m<sup>2</sup>). No evidence of recent injury. NOTE: Linear scars identified on both antecubital fossae.
- Toxicology results:
 

Blood, Heart	Ethanol-ND
Urine	Benzodiazepines, P; 6-MAM, P; Opiates, P
Blood, Fem	Codeine P<0.025 mg/L
	Morphine 0.052 mg/L
	Benzo-ND

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**EXAMPLE 1**

- Case File:
  - COD: Heroin Toxicity
  - MOD: Accident
- Reviewer 1:
  - COD: Heroin Toxicity
  - MOD: Accident
- Reviewer 2:
  - COD: Heroin Toxicity
  - MOD: Accident
- Reviewer 3:
  - COD: Heroin Toxicity
  - MOD: Accident

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**EXAMPLE 2**

- History/Investigation: The decedent was found unresponsive on her bed by her husband. The decedent's past medical history was significant for hypertension, chronic low back pain, and manic depression. No evidence of foul play/drug abuse and pill counts did not reveal any discrepancies.
- External Exam: 70 year old white female (BMI 31.2 kg/m<sup>2</sup>). Contusions on head and extremities in various states of healing.
- Toxicology results:
 

Blood, Heart	Ethanol	0.23 mg/dL
Vitreous	Ethanol	0.28 mg/dL
Bile	DA	None detected

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**EXAMPLE 2**

- Case File:
  - COD: Mitral valve prolapse
  - MOD: Natural
- Reviewer 1:
  - COD: Alcoholism
  - MOD: Natural
- Reviewer 2:
  - COD: Chronic substance abuse
  - MOD: Natural
- Reviewer 3:
  - COD: Ethanol intoxication
  - MOD: Accident

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**RESULTS**

Percent Agreement for Cause of Death

	Reviewer 1	Reviewer 2	Reviewer 3
All 60 cases	71.6%	66.6%	80.0%
Overdose deaths	82.5%	80.0%	80.0%
Natural deaths	50.0%	40.0%	80.0%

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**RESULTS**

Percent Agreement for Manner of Death

	Reviewer 1	Reviewer 2	Reviewer 3
All cases	85.0%	70.0%	85.0%
Overdose deaths	92.5%	85.0%	82.5%
Natural deaths	70.0%	40.0%	90.0%

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**RESULTS**

Kappa Values for Manner of Death

	Reviewer 1	Reviewer 2	Reviewer 3
All cases	0.71	0.46	0.69
Overdose deaths	0.73	0.40	0.29
Natural deaths	0.43	0.25	0.75

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**RESULTS**

- The inter-rater kappa values were 0.54, 0.61, and 0.53 indicating, only moderate agreement between reviewers.
- History of drug use or drug paraphernalia at scene: Percent agreement between reviewer and case file for COD ranged from 80%-83%.
- NO history of drug use, and no drug paraphernalia at scene: Percent agreement for COD ranged from 40%-80%.
- Kappa values for MOD in cases with a history of drug use: 0.73, 0.39, and 0.28.
- Kappa values for MOD in cases without a history of drug use: 0.43, 0.25, and 0.75.

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**CONCLUSIONS**

- In selected cases, the correct COD and MOD can be classified in 75-80% of cases without an internal exam. History, external exam, and tox testing are adequate.
- Questions:
  - 1) Is 75-80% accuracy acceptable?
  - 2) Does an office need a forensic pathologist?

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**CONCLUSIONS**

- We are satisfied that the accuracy provided from the extra work of autopsy justifies the additional time and resources required to perform a full postmortem examination for our office and, to our thinking, for the nation.
- Our own practice will be to continue to follow the NAME Autopsy Standards by continuing to autopsy suspected overdose deaths.

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## THANK YOU

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