

WS14: Death in Portland, Let Knowledge Service the City. Postmortem Toxicology—How to Complete a Thorough Investigation

Date: Tuesday, October 28

Time: 1:30-5:30 PM

Audience Knowledge: Basic - suitable for individuals new to the field, requires little prior knowledge to the subject matter

Rates:

Membership	Early Bird (June 25 - Sep 10)	Late (Begins Sept 11)	Onsite (Begins Oct 9)
Member	\$150	\$175	\$200
Student	\$150	\$175	\$200
Non-Member	\$200	\$225	\$250

Workshop Chairs:

Craig N Chatterton PhD

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Office of the Chief Medical Examiner, Edmonton, AB, Canada

Chief Toxicologist

Luke N Rodda PhD

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Office of the Chief Medical Examiner, San Francisco, CA, United States

Chief Forensic Toxicologist and Director

Abstract

The success of a forensic postmortem investigation that is suspected to involve drugs or poisons depends on the toxicologist and pathologist/medical examiner working closely together as a team. The pathologist relies on the expertise and experience of the toxicologist and specialized, analytical skills of the toxicology laboratory to provide answers concerning the presence of drugs in autopsy specimens. For this to be successful, the toxicologist relies on the pathologist to provide appropriate specimens for analysis.

Drugs and poisons are not uniformly distributed within the body and may redistribute after death as a consequence of postmortem changes.

The audience will be educated on the importance of collecting appropriate autopsy samples, the analytical limitations of poor-quality samples, and the risks associated with interpreting such samples. The effects of poor-quality samples and postmortem redistribution will be highlighted through a series of real case examples, which will also highlight recent trends observed in deaths associated with the illicit use of fentanyl and other NPS compounds. The audience will be educated on the added value of multi-sample analysis.

Analytical challenges will be discussed, along with approaches to manage comprehensive, large-scale testing effectively while ensuring high quality.

Finally, the audience will be educated on how the medical examiner coordinates the death investigation process, emphasizing the importance of the close working relationship between the medical examiner/pathologist, the death investigators, and the forensic toxicologist.

Learning Objectives

1. Postmortem sample collection best practices and analytical strategies for conventional and non-conventional samples
2. Opioids and Novel Psychoactive Substances in postmortem toxicology
3. Postmortem redistribution considerations for interpretation. The forensic toxicologist and the medical examiner/forensic pathologist's thoughts and opinions

Speakers

Craig N Chatterton PhD
Chief Toxicologist
Office of the Chief Medical Examiner, Edmonton, AB, Canada

Luke N Rodda PhD
Chief Forensic Toxicologist and Director
Office of the Chief Medical Examiner, San Francisco, CA, United States

Russell Handy PhD
Deputy Chief Toxicologist
Office of the Chief Medical Examiner, Edmonton, AB, Canada

Robert Middleberg PhD
Laboratory Director
NMS Labs, Horsham, PA, United States

Matthew Orde MD
Forensic Pathologist and Medical Examiner
Office of the Chief Medical Examiner, Edmonton, AB, Canada

Workshop Agenda

Time	Topic	Speaker
1:30 – 1:40 PM	Introduction	Craig Chatterton Luke Rodda
1:40 – 2:10 PM	Sample Collection	Craig Chatterton
2:10 – 2:30 PM	Routine, Unbiased, and Large-Scope Testing Regimes	Luke Rodda
2:30 – 3:00 PM	Approaches and Challenges	Russell Handy
3:00 – 3:30 PM	Alternate Samples	Robert Middleberg
3:30 – 4:00 PM	Break	
4:00 – 4:20 PM	Opioids and NPS in Postmortem Toxicology	Luke Rodda
4:20 – 4:40 PM	Postmortem Redistribution, PMR	Craig Chatterton
4:40 – 5:10 PM	A Medical Examiner and Forensic Pathologist's View	Matthew Orde
5:10 – 5:30 PM	Panel and Audience Q&A	All

Detailed Workshop Agenda

1. Introduction (10 min, 1:30 pm, Craig Chatterton and Luke Rodda)

- Introduce the topics (us)
- Set up an interactive question entry for audience to submit questions throughout talks and have the QR code up throughout the presentations (us)
- Why we did the workshop and the role in both accurate MOD/COD and public health (us)
- Ask speakers to stand up and present a brief single slide on them and their office (each speaker)

2. Sample Collection (30 min, 1:40 pm, Craig Chatterton)

- Best practice guidelines and standardized protocols to minimize contamination and degradation.
- Ideal collection sites (central vs. peripheral) and sample types.
- Importance of chain of custody and proper storage.

3. Routine, Unbiased, and Large-Scope Testing Regimes (20 min, 2:10 pm, Luke Rodda)

- Comprehensive testing to elicit unexpected findings or unconventional routine substances (e.g., GHB)
- Balancing thorough toxicology with cost-effective logistics.
- Ensuring high-quality forensic practice through standardized workflows.

4. Approaches and Challenges (30 min, 2:30 pm, Russell Handy)

- Comprehensive screening strategies: LC-HRMS and LC-MS/MS.
- Matrix effects and interferences in postmortem samples.
- Role of validated workflows in ensuring reliable results.

5. Alternate Samples (30 min, 3:00 pm, Robert Middleberg)

- Use of bladder washes, vitreous humor, bile, bone/intraosseous fluid, and hair in toxicological analysis.
- Benefits of hair for long-term drug history vs. limitations.
- Interpretation challenges due to external contamination.

6. Break (30 min, 3:30 pm)

7. Opioids and NPS in Postmortem Toxicology (20 min, 4:00 pm, Luke Rodda)

- The epidemic(s) continues
- Opioid analogs and fentanyl derivatives: potency and metabolism.
- Challenges in detecting emerging novel psychoactive substances (NPS) and importance of continuous updates in testing panels.

5. Postmortem Redistribution, PMR (20 min, 4:20 pm, Craig Chatteron)

- Mechanisms of drug movement after death (central vs. peripheral concentrations).
- Impact on interpretation: toxic vs. lethal levels.
- Strategies to account for PMR in reporting and casework.

6. A Medical Examiner and Forensic Pathologist's View (30 min, 4:40 pm, Matthew Orde)

- Toxicology findings in context of case history and autopsy.
- Effective communication with pathologists and legal teams.
- Case examples highlighting the significance of good forensic toxicology

7. Panel and Audience Q&A (20 min, 5:10 pm)

- Have also set questions and problems ideas prepped to discuss
- Answer submitted questions