



IN-BRIEF

Opioid Crisis: A Public Health Enemy Webinar Series



“Comparing the drugs seen in Phoenix to those seen in Pittsburgh was very interesting. Pittsburgh trends are comparable with those seen at my lab and learning more about different trends across the nation was eye-opening.”

—Webinar Attendee

Overview

Rates of opioid use and misuse have reached epidemic proportions and are impacting many aspects of the criminal justice community. Opioid addiction is the driving force behind this increase, with nearly 2.5 million Americans reporting an addiction to prescription pain relievers or heroin in 2015 [1]. This situation has fueled a steady increase in fatalities to an estimated 91 U.S. deaths daily. These rates are not slowing; rather, they are doubling, quadrupling, and in some areas, increasing even more alarmingly. Law enforcement, medical professionals, laboratories, and legal agencies are battling with unmanageable caseloads, economic shortfalls, and other challenges related to safety, analytical preparedness, and basic education and training, among others.

Beginning in July 2017, the Forensic Technology Center of Excellence (FTCoE) hosted a 13-part webinar series that brought a multifaceted perspective to how diverse criminal justice disciplines are addressing these challenges, sharing their knowledge, and advancing science, technology, and law. Dealing with the impacts of the opioid crisis on the criminal justice system requires enhanced reporting, surveillance, research, technology, and policy than are currently in use. The need to understand the epidemic and its effects goes beyond knowing one's own profession; it takes a global perspective to fully act and make a difference.

Objectives

- ▶ Provide an overview of the opioid crisis and its impact on society and the criminal justice community.
- ▶ Describe the severity of opioid addiction and how it has led to a steady increase in deaths.
- ▶ Understand the challenges that the criminal justice system faces in response to the opioid crisis.
- ▶ Inform forensic scientists, law enforcement officers, and other stakeholders about current analysis techniques for opioids.
- ▶ Provide insights from several forensic science professionals, including forensic toxicologists, medical examiners (MEs), researchers, and other relevant parties.

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About the FTCoE

The FTCoE, led by RTI International, is supported by a cooperative agreement with the National Institute of Justice (NIJ), award 2016-MU-BX-K110. The FTCoE is committed to improving the practice and strengthening the impact of forensic science through effective knowledge transfer and education. One way the FTCoE accomplishes its mission is through hosting virtual educational opportunities that provide a setting in which practitioners, researchers, stakeholders, and other professionals can discuss and cultivate ideas.

Project Team

RTI International

The RTI team consisted of Dr. Jeri Roper Miller and Josh Vickers. Dr. Roper Miller is the Chief Scientist of RTI’s Center for Forensic Sciences and has more than 20 years of experience in the field of forensic toxicology. Mr. Vickers is a project management specialist and is responsible for coordinating all FTCoE webinars.

Presenters

The presenters were an integral part of this webinar series, helping to accomplish the overall goal of providing an overview of the opioid epidemic and addressing the related challenges. **Table 1** summarizes the presenters involved in the entire series.

Table 1. A snapshot of each webinar in the series, including the title, date, and presenter(s).

Webinar	Presenter(s)
Identify Opioids Using Ambient Ionization TOF-MS July 19, 2017	Sabra Botch-Jones, MS, MA, D-ABFT-FT Boston University School of Medicine
Opioids and the Drain on Laboratory Resources August 2, 2017	Paul J. Speaker, PhD West Virginia University
Fentalogs—Pharmacology, Toxicology, & Analytical Approaches August 8, 2017	Barry Logan, PhD NMS Labs
Opioid Substances: A Threat to Animal Welfare and Safety August 29, 2017	Martha Smith-Blackmore, PhD Tufts University

Webinar	Presenter(s)
Dreamland: Sam Quinones Explores America’s Opiate Epidemic September 5, 2017	Sam Quinones, BA Author of Dreamland: The True Tales of America’s Opiate Epidemic
Opioids & Death Investigation: A “Perfect Storm” October 3, 2017	Andrew Baker, MD Hennepin County Medical Examiner’s Office
Making the Case for Prevention: Fighting the Opioid Epidemic October 18, 2017	Phillip W. Graham, DrPH, MPH RTI International Elvira Elek, PhD RTI International
Strategies & Considerations for Trace Detection of Fentalogs October 26, 2017	Edward Sisco, PhD National Institute of Standards and Technology
The Opioid Overdose Epidemic in America: CDC Response November 14, 2017	John Halpin, MD, MPH Centers for Disease Control and Prevention
The Industry’s Response to the Opioid Crisis November 16, 2017	Donna M. Iula, PhD Cayman Chemical Roxanne E. Franckowski, MS Cayman Chemical
The NC Statewide Medical Examiner System Laboratory Approach November 21, 2017	Ruth E. Winecker, PhD, F-ABFT State of North Carolina’s Office of the Chief Medical Examiner Justin Brower, PhD State of North Carolina’s Office of the Chief Medical Examiner
Collaboration in the Fight Against Fentanyl December 13, 2017	M.J. Menendez, JD U.S. Department of Justice Victor Weedn, MD George Washington University
Regional Fentanyl Trends, Safety, and Field Testing Technology March 2, 2018	Roger Schneider, BS Phoenix Police Department Laboratory Services Bureau Joshua Yohannan, MS Allegheny County Office of the Medical Examiner



Identify Synthetic Opioids Using Ambient Ionization TOF-MS

Presenter

Sabra Botch-Jones, MS, MA, D-ABFT-FT

Assistant Professor | Boston University

Objectives

- ▶ Describe the utility of direct sample analysis time-of-flight mass spectrometry (DSA-TOF-MS) for the analysis and identification of fentanyl analogs and synthetic opioids.
- ▶ Discuss the policies surrounding the use, abuse, and analysis of opioids.

Summary

This webinar described the evaluation of DSA-TOF-MS to provide rapid identification of 18 fentanyl analogs and related synthetic opioids. Additionally, this webinar discussed the policies surrounding the use, abuse, and analysis of these drugs.

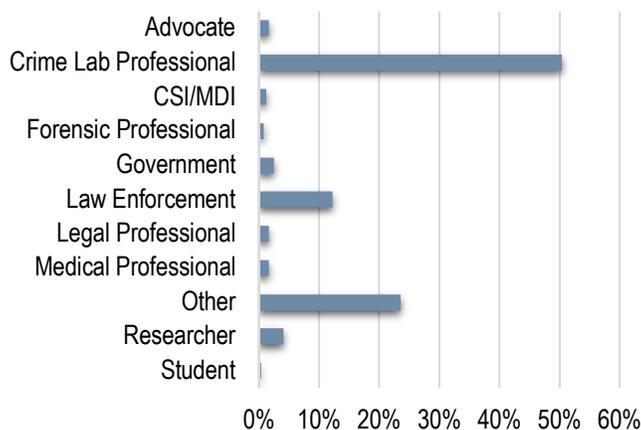
As of March 2016, the Drug Enforcement Administration (DEA) placed two fentanyl analogs (beta-hydroxythiofentanyl and butyrylfentanyl) under Schedule I of the Controlled Substance Act because of their imminent threat to public health. In June 2017, acetylfentanyl was also placed under Schedule I. These drugs elicit analgesic effects similar to heroin, making them desirable drugs to abuse. Novel fentanyl analogs and designer opioids are expected to become more prominent in forensic casework in the near future. Many legal jurisdictions are acting to address the threat these compounds pose and have enacted changes in how criminal cases involving these drugs are handled. These drugs can be seen in forensic casework either alone or mixed with other drugs of abuse, such as heroin. Therefore, it is necessary to have an efficient methodology to identify these compounds.

Analytes evaluated included the following: heroin, 6-monoacetylmorphine, morphine, fentanyl, norfentanyl, acetylfentanyl, butyrylfentanyl, beta-hydroxythiofentanyl, furanylfentanyl, valerylfentanyl, AH-7921, U-47700, buprenorphine, norbuprenorphine, desomorphine, MT-45, W-15, and W-18. In-source collision-induced dissociation (CID) was performed to

generate compound-specific fragmentation as further confirmation of the presence of the analytes. The parent mass and two fragment ions were selected for each analyte for positive identification. The limit of detection was determined to be 0.1 ppm for all compounds.

Matrix effects resulting from the presence of commonly used cutting agents and adulterants were also investigated. Samples were prepared using both heroin and fentanyl mixed with commonly encountered cutting agents and adulterants and were analyzed in triplicate. Even at 90% adulteration (10% target analyte), good detection levels and mass accuracy were achieved. This method was successfully applied to 83 forensic case samples from the Forensic Chemistry Section of the Maine Health and Environmental Testing Laboratory. Additionally, DSA-TOF was used for the successful identification of furanylfentanyl (C₂₄H₂₆N₂O₂) in an unknown case sample before a reference material and library spectra were available.

Attendee Professions



“This webinar improved my knowledge of fentanyl analogs and the analytical methods used to detect them.”

—Webinar Attendee



Opioids and the Drain on Laboratory Resources



Presenter

Paul J. Speaker, PhD

Faculty Member | Finance Department, West Virginia University

Objectives

- ▶ Provide laboratories with the ability to measure, monitor, and understand changes in key performance ratios.
- ▶ Educate participants on how to recognize changes in productivity and couple metrics to fully interpret the effects on key areas of investigation.
- ▶ Provide laboratories with the ability to measure indirect costs and allocate resources via the concept of opportunity costs.

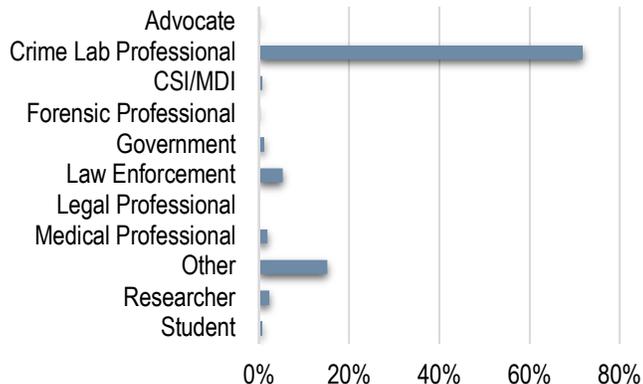
Summary

This webinar used data from Project FORESIGHT to examine the effects of the opioid crisis on the demands for laboratory resources and the direct and indirect effects on the work of forensic laboratories.

The dramatic increase in the abuse of opioids impacts all facets of society. Using data from Project FORESIGHT for a few of the most highly impacted jurisdictions, this webinar examined some of the trends in forensic laboratories as the opioid crisis grows. This examination included a look at the direct changes in case volume, productivity, and processing costs for drug/controlled substances, toxicology antemortem, and toxicology postmortem, in addition to an examination of the indirect effects on all other areas of investigation in the laboratory. The implications identified from a review of the data suggest that laboratories must monitor their own trends and plan accordingly or risk having diverted resources begin to cripple the laboratory's ability to handle all its casework.

Data is needed to help support legislation and policy change in order to combat the challenges that are faced in this opioid epidemic. This webinar provides current data to help laboratories allocate their resources and provide a driving force for policy change.

Attendee Professions



“We are currently working on a cost per sample analysis, so this topic was beneficial to my lab.”

—Webinar Attendee



Fentalogs—Pharmacology, Toxicology, & Analytical Approaches

Presenter

Barry Logan, PhD

Sr. Vice President of Forensic Science Initiatives and Chief Scientist | NMS Labs

Objectives

- ▶ Recognize and discuss the major groups of prescription and illicit fentanyl.
- ▶ Implement approaches to updating the scope of testing for toxicological analysis.
- ▶ Interpret and recognize limitations on the interpretation of fentanyl analogs detected in postmortem casework.

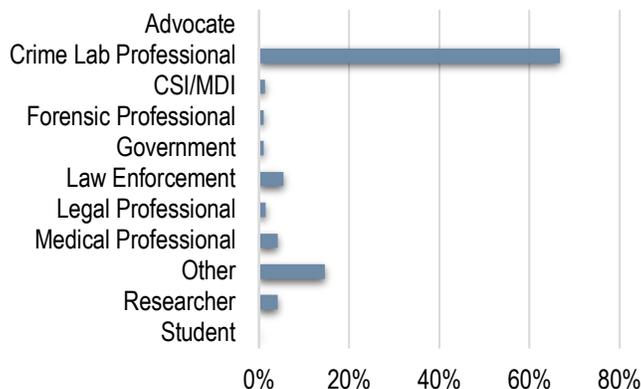
Summary

This webinar reviewed the chemistry of fentanyl, its analogs and precursors, pharmacology and relative potency, and approaches to identifying novel fentanyl analogs in forensic toxicology casework.

Fentanyl and its analogs, sometimes called “The Fentalogs,” are among the most dangerous of the novel psychoactive substances (NPS) and create significant challenges to forensic toxicologists attempting to recognize and definitively identify them, quantify them, and interpret these results. Maintaining a current and relevant scope of testing in death investigation casework is critical to certify drug-related deaths and use that information for threat assessment, harm reduction, and drug interdiction.

This webinar reviewed the structural families of fentanyl analogs and aspects of their chemistry that assist in their detection and identification. Additionally, this webinar described analytical methods for the screening and confirmation of fentanyl and its analogs, considerations about methods and detection limits, the challenges of separating close structural isomers, and the interpretation of toxicological results for priority fentanyl-derived drugs and their metabolites. These metabolites include fentanyl, norfentanyl, 4-ANPP, acetylfentanyl, carfentanil, butyrylfentanyl, furanylfentanyl, 3-methyl fentanyl, and emerging related compounds.

Attendee Professions



“This webinar helped us to learn the trends in fentanyl analog detection over the past year.”

—Webinar Attendee



Opioid Substances: A Threat to Animal Welfare and Safety

Presenter

Martha Smith-Blackmore, PhD

Adjunct Professor | Tufts University Cummings School of Veterinary Medicine

Fellow | Center for Animals and Public Policy

Objectives

- ▶ Learn about common types of animal maltreatment (neglect and abuse) cases that result from the opioid crisis.
- ▶ Learn steps to take to reduce the risk of opioid exposure in working K9s (canines), including emergency preparation with Narcan kits and other safety equipment.
- ▶ Learn to recognize the signs of opioid intoxication in dogs and steps to take in an emergency.

Summary

The opioid crisis has impacted animal welfare and safety in several ways. This webinar reviewed the risks to pets of opioid abusers and working K9s and made recommendations to help keep K9s safe, including risk mitigation and emergency preparation. Some of the key take away points covered during this webinar include the following:

- Pets belonging to people with opioid use disorder (addiction) may suffer because of their human caretakers' inability to provide adequate care (starvation or other forms of neglect).
- Some addicts have deliberately harmed their animals in an effort to obtain narcotic drugs from a veterinarian.
- Accidental exposure of pets and working K9s to opioid substances through ingestion or inhalation is increasing in frequency.

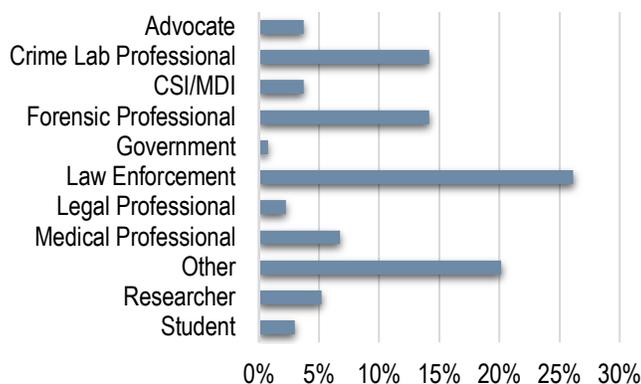
Working K9s are especially at risk of sniffing and ingesting drugs, potentially leading to overdose. "Anecdotally we've seen more stories about working dogs being exposed to dangerous, illegally obtained opioids, but we don't have any statistics to show how often this is happening, or if it's actually happening more often, or it's

just an increase in awareness and reporting," according to the American Veterinary Medical Association's spokesman Michael San Filippo. Anyone working with K9s in settings where they may be accidentally exposed to an opioid substance should be prepared to treat in the case of an emergency.

The increasing amounts of ultra-potent illicit narcotics, such as fentanyl and carfentanyl, have contributed to the potential for accidental overdoses in working K9s. Because toxic doses of these substances are very small, the exposure itself may not be observed when it happens. Signs of opioid exposure in animals include stumbling or "walking drunk," staring into the distance, failure to respond to commands, vomiting, pinpoint pupils, severe sedation, slowed respiratory rate, slowed heart rate, coma, respiratory arrest, and death.

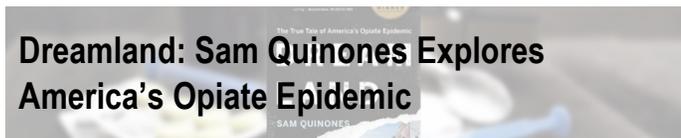
K9 officers can prepare themselves to assist their four-footed partners in such an emergency, but it is important to remember that an opioid exposed K9 is also potentially an opioid-contaminated K9. Personal protective equipment should be used when working on an animal that may have been exposed to opioids. In addition to administering Narcan, there are steps to take while en-route to the emergency veterinary hospital that will increase the chance for survival. This webinar reviewed steps to take to protect your own safety while taking lifesaving action when an animal has an opioid exposure emergency.

Attendee Professions



"This webinar provided me with more confidence so that I can react correctly and quickly in case my K9 partner becomes exposed."

—Webinar Attendee



Dreamland: Sam Quinones Explores America's Opiate Epidemic

Presenter

Sam Quinones, BA

Author | *Dreamland: The True Tale of America's Opiate Epidemic*

Objectives

- ▶ Provide the history of the opioid epidemic and some of its root causes.
- ▶ Discuss the role of prescribed pills in the opioid epidemic.
- ▶ Describe how fentanyl has played a role in the opioid crisis and contributed to an already existing problem.

Summary

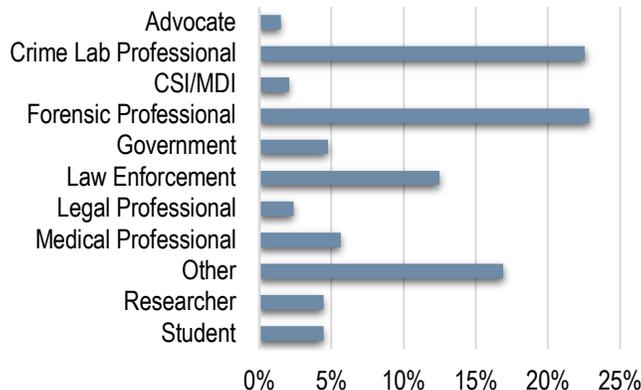
Sam Quinones is a Los Angeles-based freelance journalist and author of three books¹ of narrative nonfiction. Mr. Quinones is a former reporter with the L.A. Times, where he worked for 10 years (2004-2014). He is a veteran reporter and has covered immigration, gangs, drug trafficking, and the Mexico-U.S. border. His latest book, *Dreamland: The True Tale of America's Opiate Epidemic* (Bloomsbury, 2015), was discussed in this webinar.

Dreamland recounts twin stories of drug marketing in the 21st century: a pharmaceutical corporation flogs its legal new opiate prescription painkiller as nonaddictive. Meanwhile, immigrants from a small town in Nayarit, Mexico, devise a method for retailing black-tar heroin like pizza in the U.S. and take that system nationwide—riding a wave of addiction to prescription pills from coast to coast. The collision of those two forces has led to America's deadliest drug scourge in modern times.

This webinar provided Mr. Quinones' thoughts on the history of the opioid epidemic and some of the root causes. He also discussed the role of prescription pills in the opioid epidemic and the issue of dependency caused by unnecessary prescriptions. Finally, Mr. Quinones talked about how fentanyl has democratized the opioid industry and contributed to worsening the already present epidemic.

¹ 1) *Antonio's Gun And Delfino's Dream: True Tales of Mexican Migration*; 2) *True Tales From Another Mexico: The Lynch Mob, the Popsicle Kings, Cholino and the Bronx*; 3) *Dreamland: The True Tale of America's Opiate Epidemic*.

Attendee Professions



“WOW! Where to begin? The history of how we got to this opioid epidemic was fascinating.”

—Webinar Attendee



Opioids and Death Investigation: A “Perfect Storm”

Presenter
Andrew Baker, MD

Chief Medical Examiner | Hennepin County Medical Examiner’s Office

Objectives

- ▶ Describe the strains placed on the medicolegal death investigation system by the unprecedented number of opioid-related fatalities.
- ▶ List typical and less-common autopsy findings encountered in opioid-related fatalities.
- ▶ List the factors that MEs and coroners (ME/Cs) must consider when approaching, investigating, and certifying a potential opioid-related fatality.

Summary

The scope of the opioid epidemic presents unprecedented challenges to the ME/C community. This webinar explored the intersection of the opioid epidemic with the work of America’s ME/Cs.

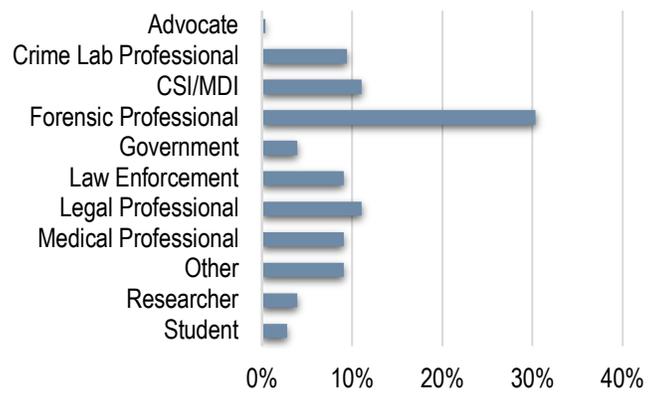
The opioid epidemic in the U.S. has resulted in historic numbers of drug-related fatalities. ME/Cs are responsible for investigating and certifying all unnatural deaths in their jurisdictions, in accordance with state statutes. Such unnatural deaths include apparent drug intoxications. Components of ME/C death investigations include assessing the scene of death, reviewing medical records, coordinating with law enforcement and first responders, performing an autopsy, collecting appropriate specimens for toxicological analysis, interpreting laboratory results, and performing death certification. This labor-intensive process requires involvement from both medicolegal death investigators and forensic pathologists (FPs).

The addition of the opioid epidemic to the numerous challenges already facing the ME/C system in the U.S. has resulted in what some MEs have called a “perfect storm.” Workforce issues—particularly the shortage of FPs in the U.S.—have stretched many ME/C offices to a breaking point, threatening their accreditation. Approximately 500 FPs practice full time in the U.S., a number far below the estimated 1,000–1,100 needed to provide ME and forensic pathology coverage to all U.S. jurisdictions. This

dearth of qualified FPs predated the opioid epidemic, and workforce projections through 2030 foresee a worsening shortage of pathologists in the U.S.

The opioid epidemic is taxing on many institutions in the U.S., including law enforcement, courts, healthcare systems, laboratories, first responders, and death investigation systems. The latter are particularly strained by this epidemic, given the variable nature of death investigation in the U.S. and the marked shortage of qualified FPs. At present, no ready solution to this “perfect storm” in medicolegal death investigation exists.

Attendee Professions



“Excellent, concise presentation of the state of forensic pathology and the opioid crisis in the U.S.”
—Webinar Attendee



Making the Case for Prevention: Fighting the Opioid Epidemic

Presenters

Phillip W. Graham, DrPH, MPH

Senior Director, Drug, Violence, & Delinquency Prevention Program | RTI International

Elvira Elek, PhD

Research Public Health Analyst | RTI International

Objectives

- ▶ Demonstrate the importance of universal/primary prevention to combat the prescription drug and opioid misuse and abuse epidemic.
- ▶ Provide a brief overview of the Substance Abuse and Mental Health Services Administration's (SAMHSA's) Center for Substance Abuse Prevention's (CSAP's) efforts to prevent and reduce prescription drug misuse (PDM) and abuse.
- ▶ Describe how RTI is using analytic innovation and archival data to assess intervention effectiveness.

Summary

This webinar focused on universal and primary prevention efforts to address PDM and prescription drug abuse and the use of innovative analytic techniques to evaluate the effectiveness of such efforts.

The current response to the opioid epidemic has appropriately focused on the treatment and prevention of overdose deaths. PDM among young people is the fastest-growing drug problem in the U.S., and after alcohol, prescription drugs are second only to marijuana as the drugs most abused by teens. PDM refers to the use of licit drugs to treat pain, attention deficit disorder, or anxiety without a prescription, in a way other than prescribed, or because of the feelings the drugs may elicit [2].

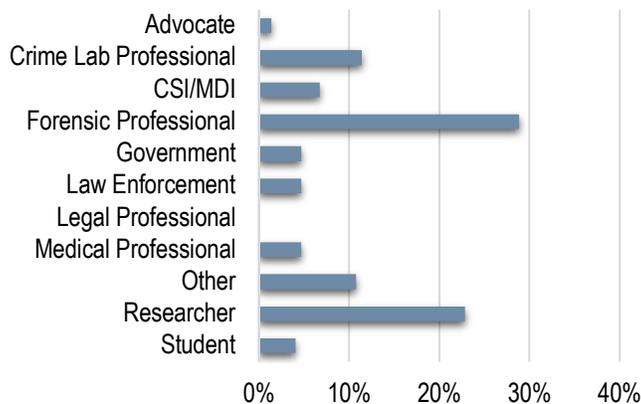
In response to the need for preventative interventions to preclude or reduce the misuse and abuse of prescription drugs, including opioids, CSAP developed the Partnership for Success (PFS) program [3]. PFS addresses underage drinking, PDM, and other substance abuse issues across

more than 600 communities located in 47 states, eight territories/jurisdictions, 13 tribal organizations, and the District of Columbia. RTI has been contracted to evaluate the effectiveness of the program and strategies implemented at the community level.

To evaluate the impact of the program on PDM, data were acquired from the National Poison Data System (NPDS). NPDS has more than 60 million exposure case records and product-specific data about more than 390,000 products dating back to 1983 [4]. The presentation provided the preliminary findings from the PFS cross-site evaluation.

In addition to the preliminary findings obtained using NPDS, this webinar shared preliminary findings from an innovative analytic technique called qualitative comparative analysis (QCA). QCA uses a case-oriented approach that examines the relationships between conditions (similar to explanatory variables in regression models) and an outcome using set theory. It assesses which factors—alone or in combination—identify causal pathways leading to an outcome. Ultimately, this approach allows RTI evaluators to examine the impact of comprehensive prevention programming.

Attendee Professions



“Good, broad perspective on the prevention aspects.”

—Webinar Attendee



Strategies and Considerations for Trace Detection of Fentologs

Presenter

Edward Sisco, PhD

Research Chemist | National Institute of Standards and Technology

Objectives

- ▶ Understand the analytical capabilities and weaknesses of thermal desorption direct analysis in real time mass spectrometry (TD-DART-MS) and ion mobility spectrometry (IMS) analysis of fentologs.
- ▶ Learn what factors need to be considered when trace detection is desired (i.e., safety, exposure, and sample complexity).
- ▶ Understand the stability of trace residues of fentanyl and its analogs under differing environmental conditions.

Summary

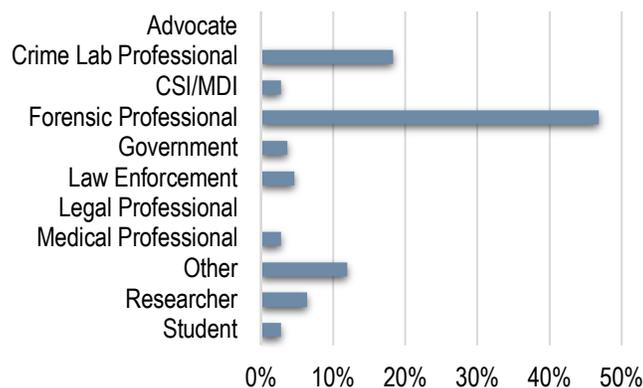
This webinar provided strategies and considerations for the trace detection of fentanyl and its analogs. The focus was on TD-DART-MS and IMS analysis and understanding the fate of fentanyl residues exposed to different environments.

Fentanyl and fentanyl analogs pose a significant and ever-changing threat in the U.S. both as pure compounds and in complex mixtures. Whereas commonly considered detection techniques require visible amounts of powder (i.e., color tests or gas chromatography-mass spectrometry [GC/MS] analysis), trace detection and identification methods present both a unique opportunity and a unique set of challenges. The rapid detection of non-visible residues containing fentanyl or similar compounds can be extremely useful in minimizing the exposure of law enforcement at scenes, assessing public health implications, triaging evidence in forensic laboratories, and gathering intelligence. For trace detection to be successful, the technique used must be rapid, specific, capable of handling complex background matrices, and able to minimize the risk of exposure to the analyst. There also must be confidence that a detectable level of residue exists on the surface and remains there

after exposure to the environment. This webinar highlighted two potential tools for the trace detection of fentanyl and NPS residues—TD-DART-MS and IMS—and provided context around the issues of expected residue contamination levels and environmental stability.

Although trace detection techniques are appealing in certain situations, they commonly lack the chromatographic separation of common bulk analysis techniques (e.g., GC/MS). Therefore, these techniques are required to simultaneously analyze all compounds in the sample. Because of the prevalence of complex mixtures containing heroin, multiple fentanyl analogs, and cutting agents in many forensic cases, understanding the effects of these components on the ability to detect fentanyl and fentanyl analogs is crucial. Additionally, it is important to understand what effect background contaminants, such as dirt or fingerprints, may have on the ability to detect the compounds of interest. This webinar discussed results from studies addressing such complex mixtures to better understand the limitations and strengths of these techniques for trace detection.

Attendee Professions



“This webinar was very informative. I learned new information about trace detection.”

—Webinar Attendee



The Opioid Overdose Epidemic in America: CDC Response

Presenter

John Halpin, MD, MPH

Medical Officer for the Opioid Overdose Epidemiology and Surveillance Team | National Center for Injury Prevention and Control, Centers for Disease Control

Objectives

- ▶ Describe the evolving nature of the opioid overdose epidemic in terms of the roles of prescription opioids, heroin, and illicitly manufactured synthetic opioids.
- ▶ Describe the main tenets of the *CDC Guideline for Prescribing Opioids for Chronic Pain*.
- ▶ Describe available clinical, educational, and media campaign tools to aid in opioid overdose prevention.

Summary

In this webinar, the Centers for Disease Control and Prevention (CDC) presented an overview of the opioid overdose epidemic and its public health burden, followed by a description of the multifaceted public health approach.

Drug overdose deaths and opioid-involved deaths continue to increase in the U.S. From 2000 to 2015, more than half a million people died from drug overdoses. The majority of drug overdose deaths (more than six out of ten) involve an opioid.

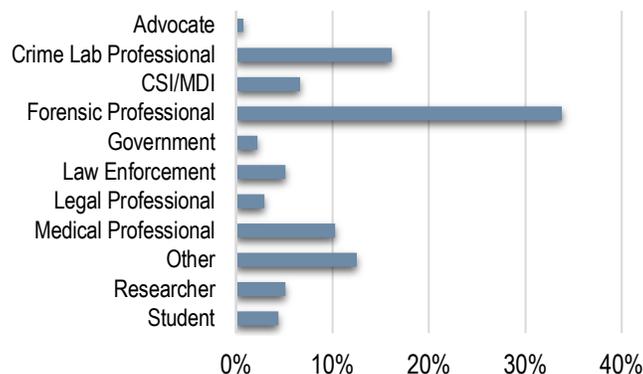
From 2002 to 2013, past-month heroin use, past-year heroin use, and heroin addiction all increased among 18–25 year olds. The number of people who started to use heroin in the past year is also increasing. Among new heroin users, approximately three out of four report misusing prescription opioids prior to using heroin. The increased availability, lower price, and increased purity of heroin in the U.S. have been identified as possible contributors to rising rates of heroin use. According to data from the DEA, the amount of heroin seized each year at the southwest border of the U.S. was approximately 500 kg during 2000–2008. This amount quadrupled to 2,196 kg in 2013. Heroin-related deaths more than tripled

between 2010 and 2015, with 12,989 heroin deaths occurring in 2015.

This presentation provided an overview of the CDC's response to this growing and evolving opioid epidemic. The CDC's response is based on three main pillars: improving the prescribing of opioids, expanding the availability of treatment for addiction, and reducing access to illicit opioids. Some of the key activities described include the following:

- Using the *CDC Guideline* to improve opioid prescribing to reduce exposure to opioids and prevent opioid use disorder and overdose.
- Expanding access to evidence-based substance abuse treatment.
- Expanding access to and the use of naloxone, commonly known by the brand name Narcan.
- Promoting the use of state prescription drug monitoring programs, which give health care providers information to improve patient safety.
- Implementing and strengthening strategies in health systems that help prevent high-risk prescribing and prevent opioid overdose.
- Improving the detection of the trends of illicit opioid use.

Attendee Professions



“This webinar helped me to gain a better sense of the scope of the issue.”

—Webinar Attendee



The Industry's Response to the Opioid Crisis

Presenters

Donna M. Iula, PhD

Director of Forensic Chemistry | Cayman Chemical

Roxanne E. Franckowski, MS

ISO Quality Manager | Cayman Chemical

Objectives

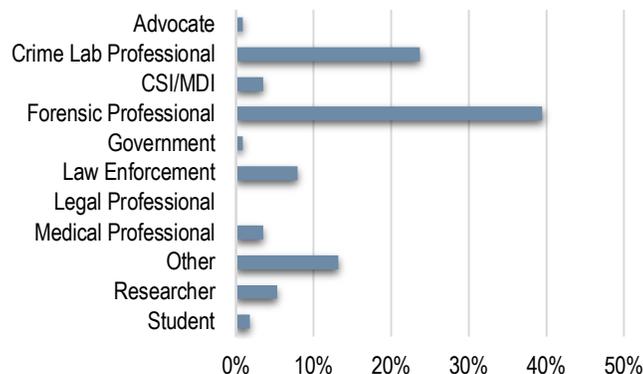
- ▶ Describe Cayman Chemical's current relationship with the forensic community and discuss how it can be strengthened.
- ▶ Discuss the synthesis, standardized naming, and safety aspects of fentanyl derivatives.
- ▶ Discuss the variety of quality control measures in place to offer International Organization for Standardization (ISO) 17025 and ISO Guide 34 standards.
- ▶ Share what services and free webtools (e.g., spectral libraries) are available to aid in the identification of unknown cases.

Summary

Whether by rapidly providing authentic reference standards of novel emerging drugs of abuse or developing the analytical instrumentation necessary to identify them in casework, private forensic industry partners play a critical role in the response to the opioid crisis. The speed at which NPS are encountered in forensic casework has increased significantly over the past few years. To aid the forensic community in identifying new substances in seized bulk materials and counterfeit pills or metabolites in bodily fluids, reference material manufacturers, such as Cayman Chemical, have had to overcome challenges to synthesize and qualify materials in the most expedient manner.

Rapid communication and collaboration with industry are needed to adequately respond to the current crisis. This webinar described the role that reference material manufacturers play by providing the tools needed to respond to the current opioid epidemic. Recent examples of how this has been successful and tips for strengthening this connection were presented during this webinar.

Attendee Professions



"This webinar increased knowledge and awareness regarding drug trends and analytical challenges."

—Webinar Attendee



The NC Statewide Medical Examiner System Laboratory Approach

Presenters

Ruth E. Winecker, PhD, F-ABFT

Chief Toxicologist | State of North Carolina's
Office of the Chief Medical Examiner

Justin Brower, PhD

Forensic Toxicologist | State of North Carolina's
Office of the Chief Medical Examiner

Objectives

- ▶ Understand the advantages of using both targeted and untargeted screening techniques when undertaking a general unknown screen in postmortem casework.
- ▶ Describe the changes to the number and types of drug overdose deaths in North Carolina and consequences to the statewide system and the laboratory.
- ▶ Recognize the importance of testing physical evidence and applying it to postmortem casework.

Summary

This webinar focused on the North Carolina Medical Examiner System and the toxicology laboratory that serves it. Included was information on the changing landscape of death certification and changes to the laboratory approach to testing.

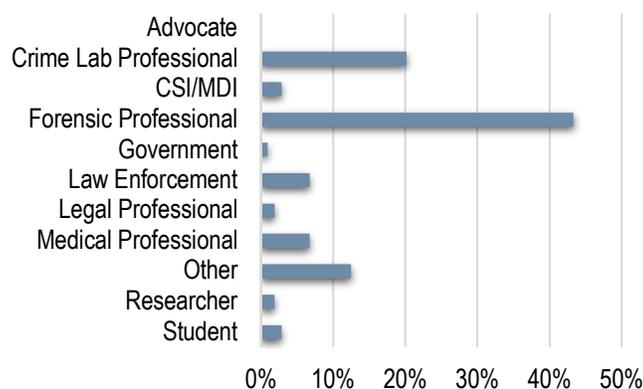
As the number of opioid overdoses has increased since the late 1990s, the primary agents have shifted from prescription medications, such as methadone and oxycodone, to heroin, fentanyl, fentanyl analogs, and other opioids. The modern ME system and laboratory have had to shift resources and analytical approaches to cope.

The North Carolina Office of the Chief Medical Examiner (NC OCME) investigates all sudden, unexpected deaths statewide, including all suspected drug-related deaths. The NC OCME collects data from autopsy reports, death certificates, investigation reports, and toxicology reports on all deaths investigated by the ME system. The data collected by the NC OCME can be used to identify trends

relating to deaths in North Carolina, inform public health initiatives, and develop prevention strategies. As the number of deaths suspicious for drug overdose has increased, so has the number of autopsies performed by the ME system. The testing scheme utilizes both targeted and untargeted screening procedures and is based on case history and pathologist request, with the most expansive testing performed on suspected drug overdose cases. As the numbers of autopsies and drug overdoses have increased, so too has the number of novel compounds detected by the laboratory.

This webinar reviewed how the drugs detected have changed over the years and the general approach to detecting these compounds. To combat the increased workload, strategies for initiating efficiencies in testing were also discussed. In addition, there was a discussion of the various analytical techniques (GC-MS, liquid chromatography-tandem mass spectrometry [LC-MS/MS], and Orbitrap LC-MS/MS) utilized in the laboratory detection scheme, the advantages and disadvantages to each, and how using all these available techniques may be the best approach. Case studies were also utilized to illustrate the approach.

Attendee Professions



"I am a drug toxicology trainee, so this was an excellent introduction to looking for fentanyl and its analogs."

—Webinar Attendee



Collaboration in the Fight Against Fentanyl

Presenters

M.J. Menendez, JD

Assistant United States Attorney | Department of Justice, Organized Crime Drug Enforcement Task Forces

Victor Weedn, MD

Forensic Pathologist, Attorney, and Professor |
The George Washington University Department of Forensic Sciences

Objectives

- ▶ Educate attendees on the whole of government approach being deployed in the fight against fentanyl importation.
- ▶ Explain the importance of timely and accurate data in seized drug identification and testing and in medicolegal death investigation postmortem toxicological testing and discuss how building information-sharing platforms could link the two vital information components.
- ▶ Elucidate innovative partnerships and procedures being used in the fight against fentanyl analogs.

Summary

This webinar identified partnerships and innovative efforts involved in the whole of government approach to identifying and interdicting fentanyl analogs. It also aimed to heighten awareness and strengthen legal mechanisms for dealing with the illicit fentanyl crisis.

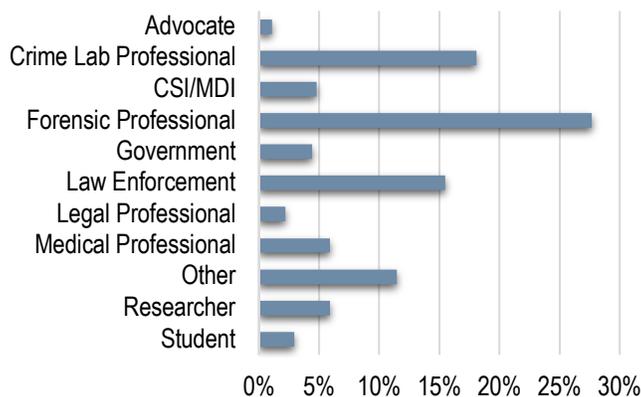
The intrusion of Illicitly manufactured fentanyl into U.S. drug markets is significantly contributing to an opioid epidemic that is claiming thousands of lives each year. Illicit fentanyl and its analogs are imported predominantly from China, with Mexico and Canada serving as trans-shipment points. Fentanyl is illegally ordered via the dark web and the open internet and is delivered by private express shippers or the U.S. Postal Service to businesses and residences across the U.S.².

This presentation reviewed the prevalence, modes of importation, and availability of fentanyl in the U.S. illicit market based on de-identified drug seizure and

postmortem findings and unclassified law enforcement data. Challenges to fentanyl identification in the law enforcement and medicolegal death investigation communities were discussed, in addition to federal legal standards relating to fentanyl identification and prosecution. Using and sharing information on new fentanyl analogs obtained through federal, state, local, or private testing of seized drugs and postmortem toxicology are essential to achieve a baseline understanding of the scope of the problem and the identification of new fentanyl analogs and NPS.

This presentation primarily focused on the innovative collaborations among public health, public safety, and private industry partners that have arisen based on shared recognition of the importance of timely and accurate identification of evolving designer fentanyls.

Attendee Professions



“The most beneficial part of the webinar was gaining a better understanding of the attack on the opioid crisis from the federal level and what can be expected down the road.”

—Webinar Attendee

²Brown, A. S. “An Unsecure Border and the Opioid Crisis: The Urgent Need for Action to Save Lives.” U.S. Immigration and Customs Enforcement, 2018.
www.ice.gov/sites/default/files/documents/Speech/2018/180530brown.pdf



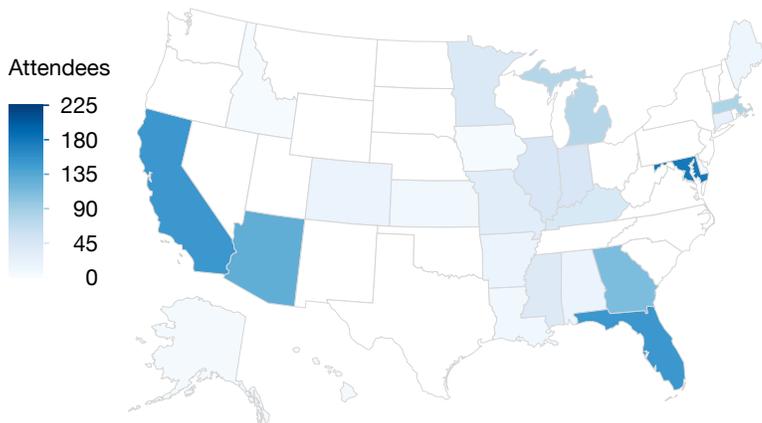
Opioid Crisis—A Public Health Enemy Webinar Series

A Live Online Event Hosted by the Forensic Technology Center of Excellence

July 2017–March 2018 | 13 Webinars | 18 Subject Matter Experts

Attendance Profile

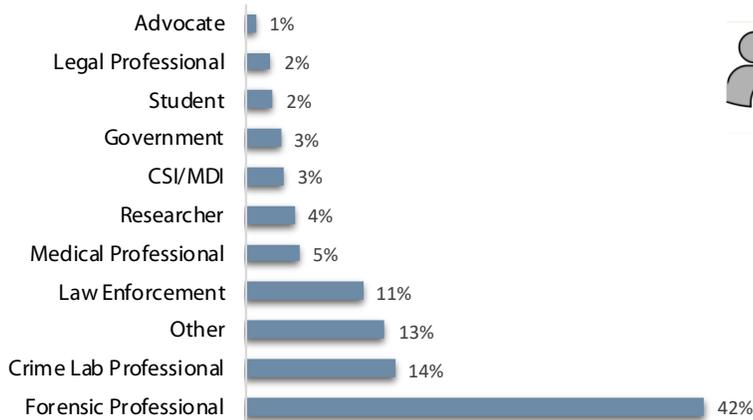
Attendees: 2,914



International Presence:

Argentina 2 • Bahamas 3 • Bosnia and Herzegovina 1 • Brazil 17 • Canada 85 • Columbia 2 • Costa Rica 3 • Dominican Republic 1 • India 1 • Jamaica 1 • Jordan 3 • Kuwait 1 • Mexico 4 • Netherlands 1 • New Zealand 2 • Pakistan 6 • Puerto Rico 17 • South Africa 1 • Trinidad 1 • United Kingdom 13

Professions



Speakers

- Andrew Baker, MD
- Sabra Botch-Jones, MS
- Justin Brower, PhD
- Elvira Elek, PhD
- Roxanne Franckowski, MS
- Phillip Graham, PhD
- John Halpin, MD
- Donna Iula, PhD
- Barry Logan, PhD
- M.J. Menendez, JD
- Sam Quinones, BA
- Roger Schneider, BS
- Edward Sisco, PhD
- Martha Smith-Blackmore, PhD
- Paul Speaker, PhD
- Victor Weedn, MD
- Ruth Winecker, PhD
- Joshua Yohannan, MS

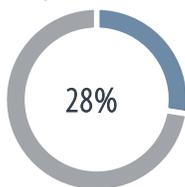
Feedback



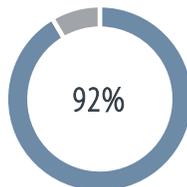
"I really enjoy that I can learn things I need to know to do a better job in my field. I don't have to travel or stay overnight to get this information."

"Comparing the drugs seen in Phoenix to those seen in Pittsburgh was very interesting. Pittsburgh trends are comparable with those seen at my lab and learning more about different trends across the nation was eye-opening."

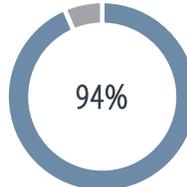
Survey Response Rate



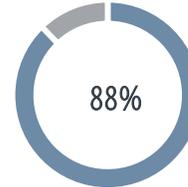
Interest in Topic



Objectives Met



Technical Quality





More Information

Visit <https://forensiccoe.org/webinar/opioid-crisis-a-public-health-enemy-webinar-series/> for more information and presentation archivals.

References

- [1] Hughes, A., Williams, M. R., Lipari, R. N., Bose, J., Copello, E. A. P., & Kroutil, L. A. (2016). *Prescription drug use and misuse in the United States: Results from the 2015 National Survey on Drug Use and Health*. Retrieved from <https://www.samhsa.gov/data/sites/default/files/NSDUH-FFR2-2015/NSDUH-FFR2-2015.htm>
- [2] Cigarette and alcohol use at historic low among teens. National Institutes of Health. (2011). Retrieved from https://www.drugabuse.gov/sites/default/files/nr121411_0.pdf
- [3] SAMHSA, CSAP. (2018). *Strategic Prevention Framework – Partnerships for Success*. Retrieved from <https://www.samhsa.gov/grants/grant-announcements/sp-18-008>
- [4] Injury Center, University of Michigan. (n.d.). *National Poison Data System (NPDS)*. Retrieved from <http://www.injurycenter.umich.edu/dataset-search/national-poison-data-system-npds>

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