



W5 The Opioid Epidemic: Trends, Challenges, and a Path Forward

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After attending this presentation, attendees will be able to: (1) describe the current epidemiology of prescription and non-prescription opioid drugs in North America and around the world; (2) identify and distinguish between the various chemical categories of novel emerging opioid drugs; (3) implement a drug-screening protocol for novel emerging opioid drugs, looking for the most relevant drugs; and, (4) apply data from intoxication cases involving traditional and emerging opioid agonists in the interpretation of forensic toxicology and death investigation casework.

This presentation will impact the forensic science community by providing an update to the current state of the opioid epidemic in which emerging novel opioid drugs are challenging professionals in forensic chemistry, toxicology, emergency response, and death investigation.

In recent years, opioid use has increased dramatically due to the overprescribing of painkillers such as hydrocodone and oxycodone, the increased demand for heroin and other illicit drugs sold as either contaminants or substitutions, and the emergence of novel synthetic opioids, including repurposed pharmaceutical cast-offs (e.g., U-47700, AH-7921) and non-pharmaceutical fentanyls (e.g., furanyl fentanyl, β -hydroxythiofentanyl). Opioid use and abuse has garnered national attention; news stories vary from celebrity overdose deaths, to presidential campaign promises to address the opioid crisis, to the approval of nasal naloxone spray to reverse overdoses. Despite being a familiar drug class with a long history. These changes make it necessary for the forensic science community to revisit and understand the current state of the opioid problem.

The demand for heroin and other pharmaceutical painkillers has become so intense that it has created a dynamic marketplace for illicit drug manufacturers. Across the United States and Europe, users are able to buy these substances not only through a neighborhood dealer, but also through online cryptomarkets, making more substances accessible to more people. Besides the multiple ways in which these illicit drugs can be obtained, clandestine drug makers are also distributing a variety of substances that pose substantial risks to end users who do not know what, and how much, they are consuming. Perspectives regarding both the United States experience and the European experience with the current state of the opioid market will be discussed.

This workshop has been designed to provide an end-to-end update on the current opioid crisis including a discussion and review of the current trends in opioid deaths and intoxications in the United States, and a deeper look at some of the factors contributing to the increased popularity and the links between overprescribing and escalation to more intense illicit opioid abuse. The United States illicit opioids market will also be described and examine



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available knowledge about approaches to illicit opioid synthesis and distribution, including use of signature analysis to track the origins of illicit opioids. An emergency medical physician dealing with opioid intoxications will discuss some of the features of current intoxications with novel opioids and its impact on effectiveness of opioid reversals, and consequences for naloxone programs.

The opioid trade is now international and the experience of professionals in other parts of the world often presages our experience in the United States. Experts from the European Monitoring Center for Drugs and Drug Addiction (EMCDDA) in Lisbon will share international intelligence on the opioid trade and what may be in store for the United States. The known and emerging knowledge about factors affecting the potency of opioids including their receptor binding and functional affect, as well as structure activity relationships will be reviewed in attempts to explain the relative potency of suspected agonists.

Among the more unusual trends is an increase in abuse of the mu-opioid agonist loperamide reviewing recent reports of toxicity and fatalities associated with abuse of this drug.

The session will conclude with a panel presentation of forensic toxicology case series involving the most recently identified compounds of concern, including acetyl fentanyl, butyryl fentanyl, furanyl fentanyl, MT-45, AH-7921, U-47700, 3-methyl fentanyl, W-15, and W-18, the latest and most mysterious of the alleged novel opioids.

Opioids, Fentanyl Analogues, Heroin