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### E47 The Impact of Fentanyl Use and Abuse

Breanna M. Cuchara\*, 31 McDermott Street, Milford, CT 06460; and Thomas A. Andrew, MD, OCME, 246 Pleasant Street, Ste 218, Concord, NH 03301

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After attending this presentation, attendees will understand the impact pharmaceutical-grade fentanyl and its synthetic analogues being sold on the street have on individuals. The most common sources of the latter agents are also discussed.

This presentation will impact the forensic science community by showing the potential dangers of fentanyl both in a medical setting as well as a street drug of abuse, particularly recreational drug users whose drug of choice has been heroin.

Fentanyl is a potent, synthetic opioid analgesic that acts quickly and has a long duration. Unlike heroin, fentanyl can be used in a pharmaceutical setting and in an illegal setting. When produced legally, it is made in a pharmaceutical laboratory under a license.<sup>1</sup> In a pharmaceutical setting, fentanyl can be used for surgical anesthesia and pain relief.<sup>1</sup> It can be used to treat pain in cancer patients as well as chronic, unremitting, non-cancer pain. Transdermal fentanyl patches may be prescribed for this purpose. This patch can lead to an accidental overdose or death due to its long-lasting effects even when used correctly. Additionally, the patch has the potential of being misused.<sup>2</sup>

An example of misuse is a case researched by reading the police report, toxicology report, and the medical examiner's report, as well as through discussion with the medical examiner. In this case, a mother put her prescription fentanyl patch on her crying child, who was younger than 12 months old. This led to the child's death by acute fentanyl intoxication.

Fentanyl is typically prescribed in microgram amounts due to its potency.<sup>3</sup> When combined with other drugs such as heroin, the likelihood of fatal intoxication is enhanced due to fentanyl being much more potent than heroin, with both having the capacity for profound respiratory depression.<sup>3</sup>

Fentanyl is also used illegally and sold on the black market. Used alone or when combined with other agents, particularly opiates/opioids, it can easily bring about fatal respiratory depression, similar to morphine or heroin.<sup>4</sup> In this medicolegal jurisdiction, many users have purchased what they may have believed was heroin that had been combined with fentanyl or an even more potent fentanyl analogue and its use has caused death.

Fentanyl has a chemical structure that can be easily manipulated to synthesize variations of the drug.<sup>4</sup> Many analogues are sold on the street and are known as either "synthetic heroin" or "China White."<sup>4</sup> Many users are led to believe that they are buying heroin, but the drug is actually fentanyl or one of its analogues. More than 12 different analogues of fentanyl are being produced illegally, most commonly in Mexico.<sup>5</sup> Across the nation, overdose deaths from fentanyl or from heroin/fentanyl combinations have increased tremendously.<sup>3</sup>

Although fentanyl is very important for pain relief, it also has enormous potential to be abused by both the persons to whom it has been prescribed and by people using it illegally. In the presented case, it was believed to have been improperly used to sooth a young child. The mother's explanation of the incident was that the patch accidentally migrated from her body to her infant during a nap together. Regardless of the specific mechanism by which the patch came to be on the infant, the case further demonstrates the risk of unintentional fatal intoxication due to ease of use (transdermal patch) and its long duration of action.

#### Reference(s):

1. Schulz W. Fentanyl. *Chemical & Engineering News: Top Pharmaceuticals*. Web. 30 July 2015.
2. Welcome. What Is DURAGESIC®? DURAGESIC® (fentanyl Transdermal System) CII Pain Patch. Web. 31 July 2015.
3. Leinw D. DEA: Deaths from Fentanyl-laced Heroin Surging. *USA Today*. Gannett, 18 Mar. 2015. Web. 31 July 2015.
4. Fentanyl Drug Information. *Fentanyl Drug Information*. Web. 30 July 2015
5. Fentanyl. *Ginad.org*. Web. 31 July 2015.

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#### Fentanyl, Painkillers, Drug Abuse