Systematic Review on Provider Safety

Draft Report – January 2018
Definition of the Problem

• As synthetic opioid analog production, distribution, and potency have increased, the unintentional exposure of first responders to opioids is possible.

• Unverified popular media reports have described unintentional exposures to law enforcement and first responders that have had life threatening consequences.
Example of Media Reports

• September 14th, 2016; Hartford, CT

• A flash-bang grenade tossed into a stash house on sprayed powdered fentanyl and heroin that SWAT officers raiding the building breathed.

• Eleven officers were exposed and symptoms included dizziness. Nausea and a few vomited. Team was sent to the hospital for treatment.

• No data on treatments necessary but all returned to work the next day.
Example Media Reports

• May 17th 2017; East Liverpool, Ohio
• A police offer suffered an accidental overdose after coming into contact with fentanyl during an arrest.
• He returned to the police station and another officer pointed out that the officer had powder on his shirt. He instinctively brushed at the powder while not wearing gloves.
• An hour later, the officer passed out at the station after contact with the powder.
• Per report, officer nearly died requiring 4 doses of narcan.
Goal of Work

• No specific peer-reviewed articles or case reports have described unintentional exposures and provided complete medical outcomes.

• Goal of this work is to evaluated the evidence related to unintentional exposure of law enforcement and EMS providers to opioids.
Question:

“What are the potential harms to emergency responders from unintended exposure to opioids?”
Search Strategy

• To identify studies eligible for review, an information specialist performed computerized searches of bibliographic databases:
  • MEDLINE/PubMed
  • PsycINFO
  • CINAHL
  • Cochrane Library
• Terms used in this search were mapped to Medical Subject Headings (MeSH), and other terms as defined by the question.
• Dates: database inception to Dec 2017.
Search Terms

(overdose or drug overdose or opiates or opioids or heroin)

AND

(paramedic or EMS or emergency medical service or prehospital or pre-hospital or ambulance or emergency medical technician or EMT or emergency responders or firefighters or fire fighters or law enforcement or police or cops or officers)

AND

(occupational injury or occupational exposure or injury or exposure).
Inclusion Criteria

• **Inclusion criteria**: reports that satisfied the question, were published in English, and whose subjects were human (no basic science or animal models).

• **Exclusion criteria**: studies that did not specifically address unintentional exposure to opioids, did not include law enforcement or emergency responders, and studies not in the prehospital setting.
Figure 1

- Literature identified through database collection (n = 803)
- Hand searched records (n = 37)
- Records screened after duplicates removed (n = 838)
  - Records screened by abstract (n = 838)
  - Records screened by full text (n = 50)
  - Records excluded (n = 788)
  - Records excluded (n = 38)
- Records included in review (n = 12)
<table>
<thead>
<tr>
<th>Literature</th>
<th>Document Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>American College of Medical Toxicology and American Academy of Clinical Toxicology (2017).</td>
<td>Consensus statement</td>
</tr>
<tr>
<td>InterAgency Board. (2017). Recommendations on Selection and Use of Personal Protective Equipment and Decontamination Products for First Responders Against Exposure Hazards to Synthetic Opioids, Including Fentanyl and Fentanyl Analogues.</td>
<td>Consensus statement</td>
</tr>
</tbody>
</table>
Outcomes

• A total of 838 records were extracted. After independent evaluation by two reviewers, 12 records satisfied inclusion.

• Recommendations for provider safety were specified by one journal article (Lynch et. al. 2017) as well as four reports from different government agencies.

• There were four consensus statements from multiple organizations: The Office of Drug Control Policy, The President’s Commission, American College of Medical Toxicology and Clinical Toxicology, and the Interagency Board
Individual Reports
ACMT and AACT Position Statement: Preventing Occupational Fentanyl and Fentanyl Analog Exposure to Emergency Responders

- Incidental dermal absorption is unlikely to cause opioid toxicity.
- For routine handling of drug, nitrile gloves provide sufficient dermal protection.
- For drug particles or droplets suspended in the air, an N95 respirator provides sufficient protection.
- In the unlikely event of poisoning, naloxone should be administered to those with objective signs of hypoventilation or a depressed level of consciousness, and not for vague concerns such as dizziness or anxiety.
- July 12th, 2017
In July 1999, NIOSH representatives conducted a health hazard evaluation (HHE) of the narcotics evidence holding room at the State Police Division of Narcotics Enforcement facility in Des Moines, Iowa.

- There were three reported cancer cases among workers.
- Low levels of VOCs, some of which could have come from the stored chemicals.
- The three cancer cases were of two different types, and their timing did not suggest an occupational origin.

- Brief describing standard safe operating procedures, training, PPE use and decontamination.
- Provide specific PPE recommendations.
- No data.

<table>
<thead>
<tr>
<th>Personal protective equipment recommendations for protection against fentanyl</th>
<th>Pre-Hospital Patient Care</th>
</tr>
</thead>
<tbody>
<tr>
<td>Exposure Level</td>
<td>Minimal</td>
</tr>
<tr>
<td><strong>Respiratory Protection</strong></td>
<td></td>
</tr>
<tr>
<td>Disposable N95, R100, or P100 FFR</td>
<td>✓</td>
</tr>
<tr>
<td>Elastomeric APR</td>
<td></td>
</tr>
<tr>
<td>PAPR</td>
<td></td>
</tr>
<tr>
<td>SCBA</td>
<td></td>
</tr>
<tr>
<td><strong>Face and Eye Protection</strong></td>
<td></td>
</tr>
<tr>
<td>Safety goggles/glasses</td>
<td>✓</td>
</tr>
<tr>
<td><strong>Hand Protection</strong></td>
<td></td>
</tr>
<tr>
<td>Nitrile gloves</td>
<td>✓</td>
</tr>
<tr>
<td>Nitrile gloves, double or use of thicker gloves</td>
<td></td>
</tr>
<tr>
<td><strong>Dermal Protection</strong></td>
<td></td>
</tr>
<tr>
<td>Wrist/arm protection</td>
<td></td>
</tr>
<tr>
<td>Particulate hazardous protective ensemble (e.g., NFPA 1999 Single or Multi-Use or NFPA 1980 Class 4 Ensemble)</td>
<td></td>
</tr>
<tr>
<td>Chemical hazardous protective ensemble (i.e., NFPA 1994 Class 3 Ensemble or Higher)</td>
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</tbody>
</table>
The goal was to develop an effective set of recommendations for the President to combat the opioid crisis and drug addiction in our nation.

Recommendation #30: “develop a national outreach plan for the Fentanyl Safety Recommendations for First Responders. Federal departments and agencies should partner to develop and standardize data collection, analytics, and information-sharing related to first responder opioid-intoxication incidents.”

• Provides specific recommendations to first responders concerning PPE.
• “If observed, personnel should utilize, at a minimum, nitrile gloves, eye protection, and N-95 dust mask (which should be part of their Personal PPE kit).”
• No specific data
InterAgency Board. (2017). Recommendations on Selection and Use of Personal Protective Equipment…

• Document establishes guidance for PPE selection for first responders.
• Defines exposure type, PPE based on exposure, and treatments.
• Provides specific guidance on selection based on exposure risk
• No specific data
Justice Institute of British Columbia. Fentanyl Safety For First Responders, from https://www.fentanylsafety.com/

• Website specifically directed at training of first responders.
• Written with multiple stakeholders from British Columbia, Canada

- Peer reviewed article which proposes recommendations to assist medical directors in providing guidance and education to their providers minimizing the risk of provider exposure
- Covers pharmacology, prehospital exposure, scene assessment, PPE, patient care considerations and provider exposure.
- No specific data presented.

• Defines agent characteristics, PPE, and emergency response.
• Also defines occupational exposure limits (defined as not established), and acute exposure guidelines (not determined).
• References for analysis provided.
• No references for exposure
• No new data

<table>
<thead>
<tr>
<th></th>
<th>5 min</th>
<th>10 min</th>
<th>30 min</th>
<th>1 hr</th>
<th>4 hr</th>
<th>8 hr</th>
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<tbody>
<tr>
<td>AEGL 1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
(discomfort, non-disabling) – mg/m³ | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined |
| AEGL 2 | 
(irreversible or other serious, long-lasting effects or impaired ability to escape) – mg/m³ | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined |
| AEGL 3 | 
(life-threatening effects or death) – mg/m³ | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined | Not established/ determined |

- Objective: The Fentanyl Safety Recommendations for First Responders provides *unified, scientific, evidence-based recommendations* to first responders so they can protect themselves when the presence of fentanyl is suspected.
- Provides printable version of the Fentanyl Safety Recommendations for First Responders that is best suited for 8.5” X 11” paper.
- No new data

• Workplace Solutions handout from NIOSH
• Describes PPE in detail including gloves, gowns and respiratory protection and eye/face protection.
• No new data
• No specific references to exposures.
• Published October 2008.

- Peer reviewed article concerning the comparison of police officer and clerk involved in drug trafficking who were positive for heroin in hair samples.
- Comparison was made to whole narcotic police team (11 offices). None had heroin markers in hair samples.
- No evidence of passive contamination of officers with daily exposure to drugs of abuse.
Thank you!!

Questions?