Safety of a Brief Emergency Department Observation Protocol for Patients With Presumed Fentanyl Overdose

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Study objective: Fentanyl overdoses are increasing and few data guide emergency department (ED) management. We evaluate the safety of an ED protocol for patients with presumed fentanyl overdose.

Methods: At an urban ED, we used administrative data and explicit chart review to identify and describe consecutive patients with uncomplicated presumed fentanyl overdose (no concurrent acute medical issues) from September to December 2016. We linked regional ED and provincial vital statistics databases to ascertain admissions, revisits, and mortality. Primary outcome was a composite of admission and death within 24 hours. Other outcomes included treatment with additional ED naloxone, development of a new medical issue while in the ED, and length of stay. A prespecified subgroup analysis assessed low-risk patients with normal triage vital signs.

Results: There were 1,009 uncomplicated presumed fentanyl overdose, mainly by injection. Median age was 34 years, 85% were men, and 82% received out-of-hospital naloxone. One patient was hospitalized and one discharged patient died within 24 hours (combined outcome 0.2%; 95% confidence interval [CI] 0.04% to 0.8%). Sixteen patients received additional ED naloxone (1.6%; 95% CI 1.0% to 2.6%), none developed a new medical issue (0%; 95% CI 0% to 0.5%), and median length of stay was 173 minutes (interquartile range 101 to 267). For 752 low-risk patients, no patients were admitted or developed a new issue, and one died postdischarge; 3 (0.4%; 95% CI 0.01% to 1.3%) received ED naloxone.

Conclusion: In our cohort of ED patients with uncomplicated presumed fentanyl overdose—typically after injection—deterioration, admission, mortality, and postdischarge complications appear low; the majority can be discharged after brief observation. Patients with normal triage vital signs are unlikely to require ED naloxone. [Ann Emerg Med. 2018;■:1-8.]

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INTRODUCTION

Opioid overdoses accounted for more than 30,000 deaths in the United States in 2015,[1] and fentanyl is a major part of this crisis.[2,3] Literature suggests that fentanyl causes critical illness requiring extensive medical intervention.[4-8] Changes in the illicit opioid supply can result in unexpected increases in the incidence of overdoses, which can overwhelm emergency departments (EDs), as is documented in medical publications[4-8] and the lay press.[9-14]

In settings in which fentanyl has widely contaminated this supply, as evidenced by public health reports and toxicology testing on previous patients with overdose, emergency physicians might regard opioid overdose as presumed fentanyl overdose. However, ED management of presumed fentanyl overdose is rarely described. A retrospective case series of 43 patients[6] appears to be the largest clinical experience[8] and reported profound toxicity requiring large doses of the antidote naloxone. However, if patients with opioid overdose are given naloxone in the out-of-hospital setting early in the course of the overdose, they may arrive in the ED with clear mentation and normal vital signs. This subset of opioid overdose may not require prolonged monitoring or critical intervention.[15] Given this range of presentations, it is important to have strategies for safe triage, observation, and disposition.

Because opioid overdose is prevalent at our institution, we previously developed a protocol for monitoring and safe

Editor's Capsule Summary

What is already known on this topic

Fentanyl overdoses are increasing throughout North America. Few data are available to guide emergency department (ED) management.

What question this study addressed

This study examined the safety of an empiric protocol for management of patients with presumed fentanyl intoxication in a Canadian ED.

What this study adds to our knowledge

Admission, mortality, and postdischarge complications were low in this 1,009-patient cohort.

How this is relevant to clinical practice

Most uncomplicated fentanyl overdose patients can be discharged after brief observation. The protocol can serve as a useful guide to development of local guidelines for management of patients with presumed fentanyl overdose.

discharge of stable patients with suspected heroin overdose.[15] Our hypothesis was that a minor modification of this protocol would be safe for patients with presumed fentanyl overdose, that such patients would rarely deteriorate, and that most could be discharged after brief observation.

MATERIALS AND METHODS

Study Design and Setting

This retrospective cohort study was performed between September 1 and December 31, 2016, at an inner-city teaching hospital in Vancouver, British Columbia, with 85,000 annual encounters. In 2012, the province recorded 300 deaths caused by all illicit drugs, and 4% involved fentanyl; in 2016, there were 990 deaths caused by all illicit drugs, and 68% involved fentanyl.[16] During the first 6 months of 2017, Vancouver provisionally recorded 195 fentanyl-related deaths, mainly caused by injection exposures.[17] Just before data collection for this study, local public health officials determined that 86% of alleged heroin samples available in the community tested positive for fentanyl.[18] Similar statistics were reported after data collection,[19] indicating that this level of contamination was likely consistent throughout the study period. This was a substudy of an investigation into long-term outcomes of ED patients with opioid overdose and approved by the Providence Health Care research ethics board.

Our ED protocol was based on a previous study involving presumed heroin overdose[15] and applicable to all adult ED patients (>17 years) with presumed fentanyl overdose. At our site, the majority of opioid overdoses involve injection, whereas some involve insufflation or inhalation.[16] Patients with complex overdose (defined below) were identified in the out-of-hospital setting or early in the ED stay and had their issues comanaged. Patients endorsing nonfentanyl overdose, oral or transdermal fentanyl exposures, or body packing or stuffing were managed at the physician's discretion because of different absorption kinetics and effects (Figure 1).

Most opioid overdose patients arrive by British Columbia Ambulance Service, which has a defined protocol for suspected opioid overdose. For Glasgow Coma Scale (GCS) scores of 15 and respiratory rates greater than 10 breaths/min, no intervention is offered. If patients have lower GCS scores or respiratory rates, supplemental oxygen is given and an oral airway placed if required; if this fails, naloxone 0.4 mg intravenously or 0.8 mg intramuscularly is given, up to 3 doses. All patients are offered transportation to the nearest ED (in our setting, >90% are transported to St Paul's Hospital, Vancouver, British Columbia), but they may decline.

Patients with abnormal vital signs (oxygen saturation <95% or GCS score <14) were placed into a nurse-staffed stretcher with formal cardiopulmonary monitoring in the main ED (Figure 1). In the waiting room of our ED, we created a defined area consisting of several parallel stretchers and a bank of comfortable chairs supervised by a dedicated nurse. Patients with saturations of at least 95% were placed into a stretcher if they had a GCS score of 14 or into a chair if they had a GCS score of 15. If a patient deteriorated clinically or demonstrated sustained improvement, he or she was moved to a more appropriate location.

Physicians had a 30-minute target time to assess and identify complex overdose and patients without injected, insufflated, or inhaled presumed fentanyl overdose. These patients were managed at the physician's discretion exclusive of the protocol. During the study period, there was no rapid serum or urine test for fentanyl.

All patients received continuous pulse oximetry. Opioid-related deterioration was treated in sequential fashion with verbal communication, vigorous tactile stimulation, and supplemental oxygen; naloxone with a starting dose of 0.4 mg intramuscularly every 2 to 3 minutes as needed until adequate clinical response was observed; and, finally, naloxone infusion.

Patients were given food and juice and were engaged by a social worker in regard to housing, detoxification, and other needs. Because fentanyl appears to have a longer