

Bloodstream Infection Outbreaks Related to Opioid-Diverting Health Care Workers: A Cost-Benefit Analysis of Prevention and Detection Programs

See also page 878

In this issue of *Mayo Clinic Proceedings*, Schaefer and Perz,¹ representing the Centers for Disease Control and Prevention's (CDC's) Division of Healthcare Quality Promotion, provide a unique and frightening look at the harm that can be inflicted by a drug-diverting health care worker (HCW). With access to heretofore-unpublished data gleaned from multiple CDC investigations, these authors use the data to define the risks to patients, health care institutions, and insurers created by the criminal actions of those willing to tamper with patients' drugs to obtain controlled substances by diversion. They identified 6 US outbreaks of drug diversion—related bloodstream infections that occurred from 2003 through 2013. In every circumstance, the drugs stolen were injectable opioids, and the manner in which they were diverted (stolen) resulted in bloodstream infections in innocent patients for whom the drugs were intended. In 2 outbreaks, the exposure resulted in gram-negative bacteremia and sepsis in 34 patients. In 4 other outbreaks, the diversions involved 4 different hepatitis C virus (HCV)—positive HCWs who infected 84 patients with the identical strain of the virus each HCW carried. Several of the aforementioned patients have died as a consequence of the bacterial or viral infections, and all have been subjected to unnecessary illness, expense, and debility.

What may be less appreciated is the collateral damage caused by the criminal actions of these HCWs. Schaefer and Perz state that the 4 HCV-infected HCWs described in their report potentially exposed nearly 30,000 patients to HCV during the patients' health care experiences, and each potential exposure required notifying these patients that they should undergo testing for bloodborne pathogens. Certainly, such notification of the need for testing brings with it heightened patient anxiety, at least until test results prove negative. As well, lawsuits

resulting from the infliction of physical and psychological trauma on the infected or potentially infected people have been filed, and some of these suits have already been settled for undisclosed amounts.² In the case of the most recent outbreak in Exeter, New Hampshire, the involved hospital is in turn suing individuals and organizations that they allege failed to intervene earlier when faced with evidence of opioid diversion by that HCW. This inaction allegedly allowed the offending HCWs to subsequently gain employment in positions that allowed them to divert additional drugs and infect additional people.³

Aside from the aforementioned personal harm to people that these outbreaks represent, it is useful to explore the potential financial implications for present and future health care facilities and insurers affected by an infection outbreak associated with inadequate infection prevention practices and improper intravenous drug administration practices. A jury in Nevada recently awarded \$524 million in combined compensatory and punitive damages to 2 patients (one of whose husbands also collected a portion of these damages for loss of consortium). These patients contracted HCV as a result of the improper handling and administration of an intravenous sedative or hypnotic drug (ie, dosing multiple patients out of a vial intended for use in a single patient) by licensed HCWs within an accredited health care environment.⁴ A plaintiff's attorney, commenting on culpability in the aforementioned case, not only alleged responsibility on the part of the HCWs to whom the infections were attributed but also accused the health care services company and health insurance plan with whom those HCWs were affiliated of "blatant disregard for patients' health and safety."⁵ Although neither of these 2 patients was infected as a consequence of drug diversion, the Nevada example highlights the public's intolerance for

preventable patient harm related to allegations of improper actions by HCWs and alleged inadequate oversight by the health care organizations and insurers. Because drug-diverting personnel have repeatedly been identified as a source of hospital-associated transmission of hepatitis, when taken in aggregate these experiences hint at the magnitude of potential hazards that disease transmission by drug diverters within a health care facility creates for not only the patients but also the financial survival of the health care facility at which the infection occurred. If one assumes that a financial award associated with the harming of a single patient (as a result of downstream effects of drug diversion) is potentially a large number and a single health care institution, employer, or referral service may lie at the crossroads of a massive outbreak involving many patients, then the sum of awards against a given entity can potentially be an immense sum of money. Further, when we consider that every health care facility that handles divertible drugs is at risk for an unscrupulous HCW not only diverting drugs but doing so in a manner that could harm patients and others,⁶ then the question becomes not “How can we afford a program to prevent and detect drug diversion by HCWs?” but instead “How can we afford to not have such a program?”

Schaefer and Perz nicely review and provide references on how health care institutions can develop comprehensive programs to prevent and identify drug diversion and how they should respond when an episode of potential drug diversion is suspected or proven.^{6,7} (Their recommendations reinforce some of our own writings,^{1,6} published previously in the *Proceedings*.) As well, they emphasize the importance of early engagement of outside resources (eg, state departments of health and the CDC) to assist in an investigation if there is concern that drug tampering or patient harm has occurred. Just as important, they emphasize the critical urgency of involving law enforcement to assist in these investigations. Available resources may include local law enforcement, the US Drug Enforcement Agency, and the US Food and Drug Administration’s Office of Criminal Investigations (whose officers are specifically tasked with investigating drug tampering).

In our real-life experiences with investigating similar cases, we have repeatedly

discovered that combining the resources of the health care team with law enforcement resources (eg, search warrants) has proven critical to the successful resolution of those cases.⁶ Any time tampering is suspected, such cooperation among groups and agencies is critical.

Schaefer and Perz point out that the incidence of drug diversion-related infection outbreaks is increasing. In the 20 years preceding the decade of their study, only 3 such outbreaks were documented, a figure that increased to 6 in the study decade (ie, a 4-fold increase). As well, recent data from the Minnesota Department of Health, using mandatory reports to the Drug Enforcement Agency of thefts or loss of controlled substances from health care facilities, revealed an increase from 1.3 reports per month in 2006 to 4.3 reports per month in 2010.⁸ Supporting the concept that drug diversion is a common occurrence, the hospital manager of controlled substance surveillance at the University of Tennessee Medical Center in Knoxville was recently quoted as saying, “I was catching at least one health care provider every month stealing medication.”⁹ Our experience at Mayo Clinic, an organization of more than 55,000 employees, supports the need for unceasing vigilance in identifying and dealing with drug diverters because we continue to identify drug-diverting HCWs despite our ongoing education and prevention efforts.⁶

During the study decade analyzed in the report by Schaefer and Perz, it also appears that a more robust criminal prosecution of diversion-related drug tampering has evolved. The earlier (2006) gram-negative bacteremia outbreak reported by Schaefer and Perz resulted in no criminal prosecution or licensing board action (eg, revocation of a HCW’s license or privileges), whereas the latter (2011) outbreak resulted in a 2-year prison sentence for the perpetrator. The earliest HCV outbreak of the study decade (2004) resulted in a 41-month prison sentence for the HCW, the second (2008) and third (2009) in 30-year sentences, and the most recent (2012) in a 39-year sentence.¹ This trend is apparently being driven by increasing recognition of the severity of patient danger that can be created by drug diversion.

Schaefer and Perz are to be congratulated for bringing their message to publication, in part because their reporting elucidates the multiple dangers that drug diversion creates within health care systems. The vast numbers of potential exposures (n=30,000) created by 4 drug-diverting HCWs serve notice that all health care facilities that house controlled substances or other drugs of abuse must have effective systems in place that deter drug diversion. Further, those facilities must be able to quickly and effectively investigate when a drug diversion is suspected in an effort to limit the number of patients potentially exposed to harm. Although effective systematic improvements in pharmacy handling and distribution of controlled substances have inherent costs (eg, labor expenses, costs of camera surveillance, automated delivery machines, and toxicology testing of waste), the increasing incidence of drug diversion makes it mandatory that drug control be improved. Unfortunately, the plague of drug diversions cannot be fully exterminated because highly intelligent, desperate, and motivated addicts (eg, addicted nurses and physicians training in or working in drug-rich environments) will continue to seek ways to obtain the highly desirable and abusable drugs housed within health care settings.^{10,11} Thus, it is mandatory that health care facilities have effective control and surveillance programs in place in an effort to prevent drug theft and that they have a plan for enlisting the aid of and cooperating with law enforcement and appropriate state and federal investigatory authorities when confronted with a suspected drug tampering.

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REFERENCES

- Schaefer MK, Perz JF. Outbreaks of infections associated with drug diversion by US health care personnel. *Mayo Clin Proc.* 2014;89(7):878-887.
- Sanborn A. Exeter Hospital Settles 6 Hepatitis C Lawsuits. <http://www.seacoastonline.com/articles/20130802-NEWS-308020338>. Accessed April 8, 2014.
- Sanborn A. Exeter Hospital Spreads Blame for Hepatitis Outbreak. <http://www.seacoastonline.com/articles/20131126-NEWS-311260341>. Accessed April 8, 2014.
- Miller V, Feeley J. UnitedHealth Units Ordered to Pay \$500M Over Hepatitis Cases. <http://www.startribune.com/business/202236131.html>. Accessed April 8, 2014.
- Ritter K. Jury: HMO Liable for \$24M in Vegas Hep C Outbreak. <http://bigstory.ap.org/article/jury-hmo-liable-24m-vegas-hep-c-outbreak>. Accessed April 16, 2014.
- Berge KH, Dillon KR, Sikkink KM, Taylor TK, Lanier WL. Diversion of drugs within health care facilities, a multiple-victim crime: patterns of diversion, scope, consequences, detection, and prevention. *Mayo Clin Proc.* 2012;87(7):674-682.
- Minnesota Department of Health. Drug Diversion. <http://www.health.state.mn.us/patientsafety/drugdiversion/>. Accessed April 8, 2014.
- Minnesota Controlled Substance Diversion Prevention Coalition. Final Report. <http://www.health.state.mn.us/patientsafety/drugdiversion/divreport041812.pdf>. Accessed April 8, 2014.
- Eisler P. Doctors, Medical Staff on Drugs Puts Patients at Risk. <http://www.usatoday.com/story/news/nation/2014/04/15/doctors-addicted-drugs-health-care-diversion/7588401/>. Accessed April 16, 2014.
- Wamer DO, Berge K, Sun H, Harman A, Hanson A, Schroeder DR. Substance use disorder among anesthesiology residents, 1975-2009. *JAMA.* 2013;310(21):2289-2296.
- Berge KH, Seppala MD, Schipper AM. Chemical dependency and the physician. *Mayo Clin Proc.* 2009;84:625-631.