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Drug Diversion

The Diversion of Prescription Drugs by Health Care Workers in Cincinnati, Ohio

JAMES A. INCIARDI,1 HILARY L. SURRATT,1 STEVEN P. KURTZ,1 AND JOHN J. BURKE2

1University of Delaware
2Greater Warren County Drug Task Force

Data are reported from drug diversion cases involving health care workers who were investigated by the Cincinnati Police Division Pharmaceutical Diversion Squad over an 11-year period. This type of information is rarely available because few U.S. police jurisdictions dedicate resources to prescription drug diversion surveillance. Data from 1992 through 2002 show that opioids were the drugs most commonly diverted by health care workers, followed by benzodiazepines. Nurses, nursing assistants, and medical assistants were involved in almost three quarters of all cases. Hospitals were the most common sources of complaint to police, followed by pharmacies. Health care professional associations are advised to promote greater awareness of drug misuse and dependence concerns among their memberships, and health care facilities that stock pharmaceuticals liable for misuse and diversion are advised to increase the security of their supplies.

Keywords OxyContin®, prescription drug abuse;1 drug misuse; prescription drug diversion; hydrocodone; health care workers

Introduction

"Diversion" is best defined as the unlawful channeling of regulated pharmaceuticals from legal sources to the illicit marketplace, and it can occur along all points in the drug delivery process—from the original manufacturing site, to the wholesale distributor, the physician’s office, institutions where pharmaceuticals are dispensed, the retail pharmacy, or the patient. Diversion typically occurs in a number of ways, including (1) the illegal sale of prescriptions by physicians and pharmacists; (2) “doctor shopping” by individuals who visit multiple physicians to obtain prescriptions; (3) theft, forgery, or alteration of prescriptions by patients; (4) robberies and thefts from manufacturers, distributors, and pharmacies; (5) thefts of

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1Editor’s note: The journal’s style uses the category substance abuse as a diagnostic category. Substances are used or misused; living organisms are and can be abused.

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prescription pads and institutional drug supplies; (6) residential burglaries; (7) cross-border smuggling by traffickers and tourists; (8) medicine cabinet thefts by housekeepers, home repair personnel, and family members; and (9) wholesale and retail shipments via the Internet (Inciardi and Surratt, 2005).

Diversion is often associated with the misuse of prescription drugs by health care workers. This phenomenon has been well documented (McAuliffe, 1984; McAuliffe et al., 1987; Hughes et al., 1991; Zacny et al., 2003), with recent research demonstrating a strong relationship between workplace access to prescription drugs and such misuse (Trinkoff et al., 1999, 2000; U.S. General Accounting Office, 2003). Although the overall rates of illicit drug use among health care workers would appear to be comparable to those of the general population, existing studies suggest that the misuse of prescription drugs is higher among members of the health care professions (Trinkoff et al., 1991; Hughes et al., 1992; Hollinger and Dabney, 2002; Weir, 2000). Although there is an extensive literature on the misuse of prescription drugs by health professionals, detailed information on the diversion of prescription drugs by this population is lacking. As such, this article will begin to fill this gap in the literature by providing a longitudinal view of diversion by health care workers in Cincinnati, Ohio.

Methods

Cincinnati, Ohio, historically known as a major “pill town” (Office of National Drug Control Policy, 2004), has had an enduring problem with prescription drug abuse. As a result, through a request made by the Ohio Governor’s Office, in 1990 the Cincinnati Police Division received a 4-year Byrne Memorial Grant to establish a pharmaceutical diversion squad. The Edward Byrne Memorial Law Enforcement Assistance Grant Program was authorized by the U.S. Department of Justice to award grants to states and units of local government to improve the overall functioning of the criminal justice system and to enforce state and local drug control laws. The problems of prescription drug misuse and diversion in Cincinnati fell within the target areas of the Byrne program. At the conclusion of the Byrne funding, support for the diversion squad was provided by the State of Ohio and the City of Cincinnati.

During the 11-year period covered in this report, the squad consisted of six investigators, a supervisor, and clerical support. More than 500 prescription drug investigations were being conducted annually, resulting in an average of 250 felony arrests each year. Particular attention was devoted to drug diversion offenses committed by health care professionals. The result was that more than 20% of the arrests involved health professionals who were allegedly diverting pharmaceuticals and potentially profiting from, and/or endangering, the general public. The data presented here were extracted from Cincinnati police files by a staff member of the Pharmaceutical Diversion Squad and did not include any identifying information on arrestees.

Results

During the period 1992 through 2002, there were 423 documented cases of prescription drug diversion involving health care professionals in Cincinnati. With a median age of 40 years, the majority of these health professionals were women (73%), and almost all were whites (92.4%). As illustrated in Table 1, the largest single category of diverters was nurses (63.4%), and 74.8% of the cases involved the aggregate of nurses, nursing assistants, and medical assistants. There were only single-digit percentages for all other professional groups. The majority of complaints resulting in police intervention were initiated by hospitals and other
Table 1

<table>
<thead>
<tr>
<th>Types of Health Care Workers</th>
<th>Number</th>
<th>(%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Physicians</td>
<td>37</td>
<td>(8.7)</td>
</tr>
<tr>
<td>Dentists</td>
<td>4</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Veterinary surgeons</td>
<td>4</td>
<td>(1.0)</td>
</tr>
<tr>
<td>Nurses</td>
<td>268</td>
<td>(63.4)</td>
</tr>
<tr>
<td>Medical assistants</td>
<td>27</td>
<td>(6.4)</td>
</tr>
<tr>
<td>Pharmacists</td>
<td>25</td>
<td>(6.0)</td>
</tr>
<tr>
<td>Physical therapists</td>
<td>20</td>
<td>(4.7)</td>
</tr>
<tr>
<td>All others</td>
<td>16</td>
<td>(3.8)</td>
</tr>
<tr>
<td>Sources of complainants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Hospitals/other health agencies</td>
<td>217</td>
<td>(51.3)</td>
</tr>
<tr>
<td>Pharmacies</td>
<td>67</td>
<td>(15.8)</td>
</tr>
<tr>
<td>Police</td>
<td>38</td>
<td>(9.2)</td>
</tr>
<tr>
<td>Regulatory agencies</td>
<td>32</td>
<td>(7.6)</td>
</tr>
<tr>
<td>Physicians</td>
<td>30</td>
<td>(7.1)</td>
</tr>
</tbody>
</table>

Diversion of Prescription Drugs by Health Care Workers

Selected characteristics of 423 cases of prescription drug diversion by health care workers in Cincinnati, Ohio, 1992–2002

As documented in Table 2, opioids were by far the most widely diverted drugs. In the 423 cases, for example, there were a total of 1122 drug diversions, of which 67.4% were opioids. Hydrocodone represented the most widely diverted drug (20.0% of all mentions) followed by oxycodone (15.6%).

The widespread distribution of OxyContin® (Meyer, 2003; Inciardi and Goode, 2005) has been associated with increased misuse and diversion of the drug. Health care workers in Cincinnati since 1996 have diverted OxyContin® for their personal and professional use.

Opioids were the drugs most often diverted among the health care professionals. As illustrated in Table 2, nurses, physicians, and pharmacists—three of the most visible groups in the health care professions—were the most often diverting of the drugs. Only 20% of the instances of diversion were by physicians compared to 60% by pharmacists and 20% by nurses. The most frequent diversions were oxycodone and hydrocodone followed by morphine and fentanyl.

OxyContin® is a sustained-release formulation of oxycodone, a narcotic pain reliever similar to morphine, oxycodone, and fentanyl, allowing it to be used only once a day. However, breaking, chewing, or crushing OxyContin® tablets causes a large amount of the drug to be released all at once, potentially resulting in a dangerous or fatal drug overdose.
Table 2
Drugs diverted by health care workers in Cincinnati, Ohio, 1992–2002

<table>
<thead>
<tr>
<th></th>
<th>N = 832</th>
<th>100.0%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Opioids</td>
<td></td>
<td></td>
</tr>
<tr>
<td>hydrocodone</td>
<td>167</td>
<td>20.0%</td>
</tr>
<tr>
<td>oxycodone</td>
<td>130</td>
<td>15.6%</td>
</tr>
<tr>
<td>codeine</td>
<td>57</td>
<td>6.9%</td>
</tr>
<tr>
<td>morphine</td>
<td>54</td>
<td>6.5%</td>
</tr>
<tr>
<td>meperidine</td>
<td>52</td>
<td>6.3%</td>
</tr>
<tr>
<td>other opioids</td>
<td>40</td>
<td>4.8%</td>
</tr>
<tr>
<td>propoxyphene</td>
<td>38</td>
<td>4.6%</td>
</tr>
<tr>
<td>fentanyl</td>
<td>23</td>
<td>2.8%</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td></td>
<td></td>
</tr>
<tr>
<td>alprazolam</td>
<td>31</td>
<td>3.7%</td>
</tr>
<tr>
<td>diazepam</td>
<td>44</td>
<td>5.3%</td>
</tr>
<tr>
<td>lorazepam</td>
<td>39</td>
<td>4.7%</td>
</tr>
<tr>
<td>other benzodiazepines</td>
<td>7</td>
<td>0.8%</td>
</tr>
<tr>
<td>Barbiturates</td>
<td>26</td>
<td>3.1%</td>
</tr>
<tr>
<td>Amphetamines and</td>
<td></td>
<td></td>
</tr>
<tr>
<td>other stimulants</td>
<td></td>
<td></td>
</tr>
<tr>
<td>All other drugs</td>
<td>11</td>
<td>13.3%</td>
</tr>
</tbody>
</table>

and pharmacists. The remaining 5 OxyContin® diversions were by nursing and medical assistants (data not shown).

The diversion of prescription drugs by health professionals comes about in many different ways. In the great majority of cases, the diversions occur as a result of health care workers’ own involvement in prescription drug misuse. For example:

Table 3
Drugs diverted by nurses, physicians, and pharmacists in Cincinnati, Ohio, 1992–2002

<table>
<thead>
<tr>
<th>Total mentions</th>
<th>Nurses</th>
<th>Physicians</th>
<th>Pharmacists</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>522</td>
<td>64</td>
<td>61</td>
</tr>
<tr>
<td>Opioids</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>hydrocodone</td>
<td>19.1</td>
<td>23.5</td>
<td>14.8</td>
</tr>
<tr>
<td>oxycodone</td>
<td>18.6</td>
<td>14.2</td>
<td>8.1</td>
</tr>
<tr>
<td>meperidine</td>
<td>9</td>
<td>1.6</td>
<td>—</td>
</tr>
<tr>
<td>morphine</td>
<td>8.4</td>
<td>1.6</td>
<td>—</td>
</tr>
<tr>
<td>fentanyl</td>
<td>2.1</td>
<td>12.5</td>
<td>—</td>
</tr>
<tr>
<td>codeine</td>
<td>6.3</td>
<td>9.4</td>
<td>14.8</td>
</tr>
<tr>
<td>other opioids</td>
<td>11.7</td>
<td>4.8</td>
<td>4.9</td>
</tr>
<tr>
<td>Benzodiazepines</td>
<td>10.5</td>
<td>16.4</td>
<td>18.8</td>
</tr>
<tr>
<td>All other drugs</td>
<td>14.3</td>
<td>16.0</td>
<td>38.6</td>
</tr>
</tbody>
</table>
are often poorly monitored. When prescription drug misuse and the laws

are not properly monitored, the number of deaths from prescription
overdoses can increase. It is imperative that health care providers report
and monitor prescription drug use and misuse in real-time to help
prevent the spread of drug misuse and the associated health risks.

The purpose of this study was to examine the relationship between
prescription drug use and the risk of hospitalization among veterans
afflicted with post-traumatic stress disorder (PTSD) and depression.

Methods:

The study was a retrospective analysis of electronic health records
from two large veterans' facilities in the United States. The study
population consisted of veterans who were prescribed at least one
prescription medication and had at least one hospitalization event
between 2015 and 2017. The primary outcome was hospitalization for
prescription drug-related illness.

Results:

A total of 10,000 veterans were included in the study. The
prevalence of prescription drug-related illness was 10% of
hospitalizations. The most common medications associated
with hospitalization were opioids and benzodiazepines.

Discussion:

Prescription drug-related hospitalizations are a serious problem
among veterans. The use of opioids and benzodiazepines may
contribute to the high prevalence of hospitalization events.

Implications for Practice:

Health care providers should be aware of the risk of prescription
drug-related hospitalizations and implement strategies to
prevent misuse and abuse. Further research is needed to
better understand the underlying factors contributing to
these hospitalization events.
and regulations that govern them. The best diversion officer is typically an individual with a few years of police experience, plus on-the-job training with diversion cases, combined with seminars offered regionally by such organizations as the National Association of Drug Diversion Investigators and the National Association of State Controlled Substances Authorities.

Important research needs include a better understanding of the magnitude of diversion, the myriad of ways that drugs are being diverted, and the mechanisms through which diverted drugs are ultimately reaching the streets.

Acknowledgments

This research was supported, in part, by a grant from Purdue Pharma, L.P., to the University of Delaware. Dr. Inciardi and Mr. Burke are members of a Purdue Pharma External Advisory Board. The authors thank the Cincinnati Police Division for making available the diversion data presented in this report.

RESUMÉ

Les données concernant les travailleurs du domaine de la santé qui pratiquent le vol de drogues ont subi une investigation par le Département de la Division pharmaceutique de la Police de Cincinnati, pendant 11 ans. Ce genre d’information est rarement disponible car peu de départements de la Police Américaine investissent des moyens visant le contrôle du vol de drogues. Les données des années 1992 à 2002 montrent que les drogues dérivées de l’opium ont été les plus fréquemment déviées par les travailleurs de la santé, suivis par les benzodiazépines. Des infirmiers, des assistants d’infirmerie et des assistants des médecins étaient les auteurs de trois quarts des vols. La majorité des plaintes ont été portées à la police par les hopitaux et en second lieu par les pharmacies. Les associations de professionnels de la santé sont conseillés à promouvoir une meilleure conscientisation de la mauvaise utilisation et de la dépendance de drogues parmi ses utilisateurs. Toutes les institutions de la santé qui gardent un stok de médicaments capables d’être déviers et mal utilisés, sont conseillés à intensifier les mesures de sécurité concernant leurs stoks.

La Desviación de Medicamentos Prescritos Por Empleados de Cuidados de la Salud en Cincinnati, Ohio

RESUMEN

Se reportan los datos de casos sobre empleados de cuidados de la salud implicados en la desviación de drogas que fueron investigados por la División Policial de Cincinnati, Brigada de Desviaciones Farmacéuticas durante un periodo de once años. Este tipo de información es raramente disponible debido a que pocas de las jurisdicciones policiales de los Estados Unidos dedican recursos a la vigilancia de desviaciones de medicamentos recetados. Datos del año 1992 hasta el 2002, demuestran que los opiáceos fueron los medicamentos más comúnmente desviados por los trabajadores de cuidados de la salud, seguidos por los benzodiazepánicos. Los enfermeros o enfermeras, asistentes de enfermería, y asistentes médicos
THE AUTHORS

JAMES A. HENRY, PhD, is Director of the Center for Dividing the World's Diseases at the University of Cincinnati. Dr. Henry holds a joint appointment as Associate Professor in the Department of Sociology and Criminal Justice, as well as a joint appointment in the Department of Preventive Medicine and Public Health at the University of Cincinnati. Dr. Henry is a former member of the National Drug Control Policy, The Department of Preventive Medicine Board, and the National Advisory Committee on Heroin and Other Drug Use. He has also served as an investigator at the National Institute of Mental Health and as a consultant to the Office of National Drug Control Policy. He has been a key figure in the development of the National Drug Control Policy, and his work has been recognized by the American Psychological Association and the American Psychological Society.

RESUMO

Cincinatti, Ohio

O Deserto de Drogas Farmacêuticas e os Trabalhadores da Saúde em...
Hilary L. Surratt, Ph.D., is an Associate Scientist with the Center for Drug and Alcohol Studies at the University of Delaware; a Guest Professor in the Department of Psychiatry at the Federal University of Rio Grande do Sul in Porto Alegre, Brazil; the Principal Investigator of an HIV/AIDS prevention initiative in the United States Virgin Islands; and the Co-Principal Investigator and Project Director of “Women Protecting Women”—an HIV, hepatitis, and violence prevention program for street sex workers in Miami, Florida. She has published widely in both English and foreign language journals and other media in the areas of AIDS, substance abuse, and drug policy.

Steven P. Kurtz, Ph.D., is a Scientist with the Center for Drug and Alcohol Studies at the University of Delaware. Dr. Kurtz has a broad background in qualitative and quantitative research among diverse populations in South Florida, Latin America, and the Caribbean, primarily focused on women sex workers and men who have sex with men. His publications include articles on HIV risk behaviors and drug abuse, including the misuse and diversion of prescription medications.

John J. Burke, A.S., a law enforcement officer for 37 years, is currently the Commander of the Greater Warren County Drug Task Force in southwest Ohio. Formerly with the Cincinnati Police Division, Commander Burke established his department’s Pharmaceutical Diversion Squad, which he commanded until his retirement in 1999. Commander Burke has provided education and lectured across the United States to law enforcement and health professionals on the topic of prescription drug abuse; he has published numerous articles on the topic and is the author of a monthly column in Pharmacy Times on the topic pharmaceutical diversion. In addition, he is the vice president of the National Association of Drug Diversion Investigators.

Glossary

Benzodiazepines Benzodiazepines are a group of psychotropic agents including the tranquilizers chlordiazepoxide, diazepam, oxazepam, lorazepam, temazepam, and chlorazepate, which are prescribed to alleviate anxiety, and the hypnotics flurazepam and nitrazepam, which are prescribed to treat insomnia. Some of these drugs may also be used in the treatment of seizures and muscle spasms. With prolonged high dosage, tolerance and
References

Inhalers where medications are dispersed, the deep penetration of the patient's lungs, involving the alveolar regions where the medications are deposited, can cause local and systemic effects, including respiratory irritation and allergic reactions.


**Division of Presetnation**

Drugs by Health Care Workers


