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Drug Diversion

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

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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.

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

OxyContin® is a sustained-release formulation of oxycodeone, a narcotic pain reliever similar to, but more potent than, morphine. OxyContin® is designed to slowly release oxycodeone over time, allowing it to be used only twice daily. 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 overdose.

OxyContin® diversion among nurses, compared with only 1 case each among physicians. Fenanyl diversions were most common among physicians. There were 13 instances of hydromorphone first, followed by oxycodeone for nurses and least often by pharmacists. Hydrocodone ranking first, followed by oxycodeone for nurses and pharmacists and codeine professionals. Opioids were the drugs most often diverted among all three groups, with between nurses, pharmacists, and pharmacists—the three most visible groups in the health professions, followed by nurses, pharmacists and pharmacists.

As illustrated in Table 3, some major differences in the drugs diverted are apparent between drugs, followed by bartenders and stimulants.

The drug's release to the market in 1996.² Benzodiazepines were the second most widely misused and diverted by this drug being diverted by health care workers in Cincinnati only 20 instances of this drug being diverted by health care workers in Cincinnati since 1996. Despite the widespread attention in the media about the followed by oxycodeone (15.6%). Despite the widespread attention in the media about the opioid. Hydrocodone represented the most widely diverted drug (20.0% of all mentions, 423 cases, for example), there was a total of 832 drug "mentions," of which 67.4% were As documented in Table 2, opioids were by far the most widely diverted drugs. In the as the state medical, pharmacy, and nursing boards.

As documented in Table 2, opioids were by far the most widely diverted drugs. In the health care institutions (51.3%), followed by pharmacists (15.8%), with an additional 9.2% through law enforcement agencies. Relatively few cases resulted from complaints lodged by pharmacists (7.6%). However, 9% of the complaints came from regulatory agencies, such as the state medical, pharmacy, and nursing boards.

Types of health care workers	Number (%)
Selected characteristics of 423 cases of prescription drug diversion by health care workers in Cincinnati, Ohio, 1992-2002	
Physicians	37 (8.7)
Dentists	5 (1.2)
Veterinarians	4 (1.0)
Nurses	268 (63.4)
Nursing assistants	21 (5.0)
Medical assistants	27 (6.4)
Pharmacists	25 (6.0)
Physical therapists	20 (4.7)
All others	16 (3.8)
Sources of complaints	217 (51.3)
Hospitals/Other health agencies	67 (15.8)
Pharmacists	39 (9.2)
Police	38 (9.0)
Regulatory agencies	32 (7.6)
Physicians	30 (7.1)
All other	

Table 1

Diversification of Prescription Drugs by Health Care Workers

Table 2
Drugs diverted by health care workers in Cincinnati, Ohio,
1992–2002

	N = 832	100.0%
Opioids	<u>561</u>	67.4
hydrocodone	167	20.0
oxycodone	130	15.6
codeine	57	6.9
morphine	54	6.5
meperidine	52	6.3
other opioids	40	4.8
propoxyphene	38	4.6
fentanyl	23	2.8
Benzodiazepines	<u>121</u>	14.5
alprazolam	31	3.7
diazepam	44	5.3
lorazepam	39	4.7
other benzodiazepines	7	0.8
Barbiturates	<u>26</u>	3.1
Amphetamines and other stimulants	<u>13</u>	1.6
All other drugs	<u>11</u>	13.3

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

Total mentions	Nurses 522	Physicians 64	Pharmacists 61
Opioids	75.20%	67.60%	42.60%
hydrocodone	19.1	23.5	14.8
oxycodone	18.6	14.2	8.1
meperidine	9	1.6	—
morphine	8.4	1.6	—
fentanyl	2.1	12.5	—
codeine	6.3	9.4	14.8
other opioids	11.7	4.8	4.9
Benzodiazepines	<u>10.5</u>	<u>16.4</u>	<u>18.8</u>
All other drugs	<u>14.3</u>	<u>16.0</u>	<u>38.6</u>

Diversions might also be reduced by specialized training for police officers. Most officers are not particularly familiar with prescription drugs, their patterns of misuse, and the laws

that criminalize drug supplies.

Because diversions are typically linked to a health care worker's substance misuse or dependence, it is important that professional associations identify and assist their members who are drug involved, and promote greater awareness through education. At the same time, because the majority of diversions in this study originated in hospitals and other health care agencies, it is imperative that institutions develop mechanisms to better protect their institutions.

Because diversion is typically linked to a health care worker's substance misuse or dependence, it is important that professional associations identify and assist their members

who are drug involved, and promote greater awareness through education. At the same time,

OxyContin® was not in widespread use in Clinical Health Care agencies during much of the period covered by this analysis, and hence, supplies were limited; and (2) because of the media attention given to OxyContin®, special care was taken to protect existing supplies.

The diversion of OxyContin® (ended to be minimal, however, for two reasons: (1)

agencies. The diversion of OxyContin® occurred through nurses affiliated with hospitals and other health care

of the diversions occurring daily, the diversion of opioids was widespread, with most

prescription forgery, and institutional underdistribution—all of which can affect the overall

quality of health care. In this study, the diversion of opioids was widespread, with most

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Discussion

Local uniformed police officers contacted the Pharmaceutical Diversions Squad after stopping a pharmacist who had been driving almost 90 mph in the wrong direction on the interstate, almost causing a deadly accident. Furthermore, in the jurisdiction where officers who focus on diversion, it would appear that less than 10% enforcement, and regulatory agencies in the United States, it would appear that less than 10% have officers who focus on diversion. Furthermore, in the majority of jurisdictions where

prescription drug diversion is targeted, few have squads or units organized specifically to combat the problem (Inciardi and Hernández, 2003). With the investigation of the diversion of drugs in the health care sector as one of the Criminal Police Pharmaceutical Diversions

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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'infirmérie 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 hôpitaux 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 stock de médicaments capables d'être dévier et mal utilisés, sont conseillés à intensifier les mesures de sécurité concernant leurs stocks.

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 benzodiazepanes. Los enfermeros o enfermeras, asistentes de enfermería, y asistentes médicos

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THE AUTHORS

São informados dados de casos de desvio de drogas farmacêuticas envolvidas na elaboração de saude que foram investigados pela Divisão Policial de Crimes contra a saúde. Esse tipo de informação raramente é divulgada ao público em geral devido ao risco de informar detalhes de um período de 11 anos. Essa é a única fonte de informações para a vigilância do tráfico de drogas farmacêuticas. Dados de 1992 a 2002 mostram que os ópiacos formam desvio de drogas farmacêuticas. Dados de 1992 a 2002 mostram que os ópiacos formam cerca de três de cada quatro casos. As fontes mais comuns de recâmbios e a polícia foram os hospitais, seguidos pelas farmácias. As associações de trabalhadores da saúde são outras entidades a promover uma maior conscientização sobre o abuso e dependência das drogas farmacêuticas entre seus associados. As instituições de saúde que formecem drogas far- macêuticas sujeitas ao desvio e abuso são conhecidas a aumentar a segurança dos usu- estouques.

RESUMO

O Desvio de Drogas Farmacêuticas pelos Trabalhadores da Saúde em Cimicimati, Ohio

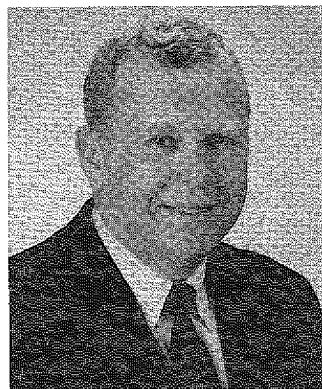
estuvieron involucrados en cerca de tres-cuartos del total de los casos. Los hospitales fueron la fuente más común de la cual se reportaron la mayor cantidad de quejas a la policía, seguidos por las farmacias. Las asociaciones profesionales de ciudadanos de la salud son asociadas a promover una conciencia sobre el mal uso de las drogas y el temor a la dependencia entre sus afiliaciones, y las instalaciones de cuidados de la salud que abastecen farmacos propios al mal uso o a la desviación se les recomienda que aumenten la seguridad de sus proveedores.



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, lovatepam, 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

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Diversions 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 institutions where pharmaceuticals are dispensed, the retail pharmacy, or the patient. The original manufacturer site, to the wholesale distributor, the physician's office, the illicit marketplace, and it can occur along all points in the drug delivery process—from institutions include liver dysfunction and depression of the central nervous system. Adverse reactions related to methadone prescribed to relieve mild to moderate pain. Adverse reactions (Darvocet®, Darvon®) A mild, centrally acting narcotic analgesic structurally similar to morphine. It relieves pain and drug addiction.

Oxycodeone (OxyContin®, Percocet®) A narcotic analgesic used in the treatment of moderate to severe pain. Adverse reactions include drowsiness, dizziness, nausea, constipation, respiratory and circulatory depression, and drug dependence.

Meprobamate (Demerol®, Meprozone®) A narcotic analgesic used to treat moderate to severe pain and as a preoperative medication to relieve pain and reduce anxiety. Adverse reactions include respiratory and circulatory depression, dizziness, nausea, and dependence.

Morphenine (Oramorph SR®, MS Contin®) A narcotic analgesic prescribed to reduce pain in patients who require opioid analgesics for more than a few days. Adverse reactions include increased pressure in the cranium, cardiovascular disturbances, pain in the treatment of mild to moderate pain.

Hydrocodone (Vicodin®, Lortab®) is an opiate agonist, analgesic and antitussive used hypontertension.

Fentanyl may also be prescribed to manage pain in cancer patients. Adverse effects include drug dependence and respiratory depression, circulatory depression, and hypotension.

Codiene A narcotic analgesic used to treat mild to moderate pain. Codeine is also effective as an antitussive.

Opioids are a class of synthetic and semi-synthetic narcotic analgesic medications typically prescribed for the management of pain.

Lorazepam (Ativan®) A tranquilizer prescribed in the treatment of anxiety, nervousness, and insomnia.

Diazepam (Valium®, Diastat®) A sedative and tranquilizer prescribed in the treatment of anxiety, nervous tension, muscle spasms, and convulsions.

Alprazolam (Xanax®) An anti-anxiety agent prescribed to treat anxiety disorders or short-term relief of anxiety symptoms.

Physical dependence may occur. Withdrawal symptoms include drowsiness, inability to control muscular movements, and an increase in aggression and hostility. The most commonly diverted benzodiazepines are alprazolam, diazepam, and lorazepam.

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