

Profile of Opioid Pain Medications Collected at a Household Drug Take-back Program

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The best place to get rid of medicines

BACKGROUND

3.54 billion prescriptions were dispensed in 2008¹, yet what happened to the medications after they left the pharmacy is unknown.

Medications not taken by the intended user represent potential hazards with regard to accidental poisoning, diversion and environmental damage when they enter waste systems.

Opioid pain medications are at the center of this problem, as they are commonly prescribed, of high abuse-potential and may cause serious and potentially fatal consequences when taken inappropriately.

Many communities are now holding medication take-back programs in an effort to dispose of unwanted medications from households.

OBJECTIVE

Describe and profile opioid pain medications collected at a drug take-back program with regard to prescriber and consumer behaviors

METHODS

- Data collection took place at a one day take-back event in October, 2008, in Madison, WI., with 761 participants.
- Segregation of opioid pain medications was conducted by volunteer pharmacists
- Collected data included: name and strength of drug, directions for use, quantities dispensed and remaining, date dispensed, if refills remained (yes or no), and if brand or generic (yes or no); data were collected by volunteer pharmacy students
- Data were validated after each volunteer completed the first page of entries to make any necessary corrections. Thereafter, data were validated randomly throughout the duration of the data collection.

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ANALYSIS

- Analysis included descriptive statistics and characterization of collected drugs.
- Drug groups were categorized by onset of action and duration of action as follows:
 - Sustained-release: Oxycodone ER, Morphine SR
 - Opioid-analgesic combinations: Hydrocodone/APAP, Oxycodone/APAP, Codeine/APAP, Propoxyphene/APAP, Oxycodone/ASA, Tramadol/APAP
 - Immediate-release: Oxycodone, Morphine, Demerol, Hydromorphone, Opium Tincture
 - Weak opioids: Tramadol, Propoxyphene
 - Migraine: Butalbital/ASA/Caffeine, Butalbital/ASA/Caffeine/Codeine, Butorphanol
 - Cough/Cold: Hydrocodone/Guaifenesin, Codeine/Guaifenesin
- Fentanyl Patches and Methadone were analyzed as individual drugs, as they did not fit into a drug group.
- Analysis was conducted with two foci for quantification: prescription over-supply and consumer possession.

Focus	Measure	Definition
Prescription Over-supply	Number of Prescriptions	each vial collected counted as one prescription
	Percent Remaining	number of pills remaining divided by the number of pills dispensed
	Day Supply	the number of days of the prescription remaining, based on the number of doses remaining for each drug.
Consumer possession	Dosage Units	one pill, tablet or capsule, or 5 ml of a solution, suspension, or tincture. 5 ml of fluid is the typical volume equivalent to one dose of medication
	Time since date dispensed	based on the month the medication was dispensed from the pharmacy and October, 2008, when the data were collected
	Prescription-years	percent remaining times the number of years since the dispense date, summed

RESULTS

28 unique opioid narcotic drugs were identified, including different formulations of the same drug

757 prescriptions were returned. The overall average percent remaining was 63.6%, and the total day supply remaining was 3,407 (Table 1). A large majority (> 85%) of the medications collected were short-acting in nature, and predominantly combined with either acetaminophen or aspirin. However, a small proportion of the returned medications were likely intended to treat dry cough or migraine headache. Over 12,000 doses, nearly 3,500 days' supply, were collected.

The average length of time these medications were in the possession of the patient was 3.2 years. The longest amount of time the patient possessed the medication was 34.8 years, and the shortest amount of time was 1.1 years. The actual number of prescription-years is somewhere between 1,840 and 2,100 prescription years.

Table 1. Prescription Over-supply

Drug Name	Number of Prescriptions (%)	Average Percent Remaining	Days Supply (%)
Overall	757	63.6%	3,407
<i>Long-acting opioids</i>			
Sustained-release formulations	42 (5.5)	49.1%	447 (13.1)
Fentanyl Patch	24 (3.2)	64.4%	417 (12.2)
Methadone	11 (1.5)	21.3%	52 (1.5)
<i>Short-acting opioids</i>			
Opioid-Analgesic Combinations	589 (77.8)	64.6%	1,750 (51.4)
Immediate-release formulations	58 (7.7)	68.0%	342 (10.0)
Weak Opioid Activity	13 (1.7)	56.9%	74 (2.2)
Migraine	15 (2.0)	85.4%	311 (9.1)
Cough/cold Formulations	5 (0.7)	67.1%	14 (0.4)

Table 2. Consumer Possession

Drug Name	Number of Dosage Units	Time Since Date Dispensed (years)	Prescription-years (2% Remaining x # Years dispensed)
Overall	17,301	3.2 (1.1-34.8)	1,840 2,100
<i>Long-acting</i>			
Sustained-release formulations	1,490	2.4	53.3 54.7
Fentanyl Patch	139	1.5	17.2 23.6
Methadone	428	3	5.9 8.1
<i>Short-acting</i>			
Opioid-analgesic Combinations	12,600	3.5	1217.8 1341.3
Immediate-release formulations	1,930	2.1	65.9 99.1
Weak Opioid Activity	266	2.6	12.1 14.0
Migraine	355	4.9	35.3 66.9
Cough/cold Formulations	93	3.1	8.9 10.0

DISCUSSION

This study addresses two main issues:

- the over-supply of opioid narcotics and
- the tendency for patients to keep medications in their homes.

Patient possession

Much attention has been given to the disposal of unwanted medications in recent years. Take-back programs, mail-back programs, and drop boxes address the need to provide households a safe and environmentally friendly option for disposing of their medications. As these programs mature and more patients become aware of these services, the "back-log" of unwanted medications in the home may dwindle, decreasing the prescription-years measure.

Medication over-supply

Little is known about the reasons for over-supply. Aside from prescribing practices that generate over-supply, the nature of the medications themselves may explain why these medications were returned at this take-back event. Short-acting opioids accounted for a large majority of the medications. They are commonly prescribed for acute pain due to injury or surgery, or in combination with a long-acting opioid for the treatment of breakthrough pain. Clinically, they may cause intolerable side effects that cause them to go unconsumed. There may be a stigma attached to these drugs, causing reluctance in the patient to consume them unnecessarily. On the other hand, they are also highly abused medications; unused medications in the home are prime candidates for diversion.

Delayed-release opiate formulations have been the focus of efforts in deterring opioid abuse and for minimizing side effects. Efforts to deter drug abuse using delayed-release mechanisms have sometimes backfired, as drug abusers simply crushed the medications, bypassing the delayed-release coating; the result of crushing was a larger dose of opioid to abuse. The representation of short-acting opioids should be corroborated by further studies and factors for such findings should be investigated.

LIMITATIONS

A limitation to this study is the assumption that the contents of the prescription vials collected at the take-back event are the intended contents. Another limitation is the unknown initial quantity of opioid narcotics prescribed.

Future research should include the number of prescriptions written and dispensed, and should also focus on factors for consumption, and evaluating methods of disposal.

REFERENCES

- National Association of Chain Drug Stores. 2008 Community Pharmacy Results [Powerpoint Slides]. Retrieved from <http://www.nacds.org/user-assets/pdfs/2009/pharmacy>