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Researched Abuse, Diversion and Addiction-Related Surveillance System

Second Quarter 2013 Technical Report

Comparison of Unique Recipients of Dispensed Drugs and Total Number of Prescriptions Filled in the Calculation of Abuse Rates

Key Points

- The RADARS® System purchases information on the number of unique recipients of dispensed drug (URDD) and the number of times a prescription is filled quarterly.

- In examining abuse rates for buprenorphine, oxycodone, hydrocodone, hydromorphone, and morphine using both denominators, the rank of drug exposure rates changes slightly.

Background

In studying rates of prescription drug abuse, the use of different denominators can provide unique and useful information. Population rates are commonly used and provide information on the scope of abuse of different drugs within the community. The use of unique recipients of dispensed drug (URDD), the number of people who filled a prescription, provides estimates of abuse relative to drug availability and can be useful in identifying new drugs with limited availability that have a high abuse potential. Another measure of drug availability is the number of prescriptions filled. The number of prescriptions filled may more accurately reflect the amount of drug available for abuse as a single individual can fill a prescription multiple times and this is not accounted for with URDD. This denominator may provide additional useful information.

Results from a previous RADARS® System Quarterly Technical Report (Bucher-Bartelson B, et al. 2012Q4-2) demonstrate that the number of pills distributed, the number of prescriptions filled, and URDD are highly correlated, suggesting strong agreement within drug class across these denominators. This report examines how use of URDD and number of prescriptions filled affects the ranking of abuse rates among drugs.

This report ranks abuse rates using URDD and total number of prescriptions filled as denominators. Advantages and disadvantages of the two methods are discussed. Abuse of buprenorphine, oxycodone, hydrocodone, hydromorphone, and morphine from RADARS System Poison Center Program from 2011Q1 to 2013Q1 were used in the analysis.

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Methods

RADARS ® System Poison Center Data

The RADARS System Poison Center program is a nonprofit prescription drug abuse and misuse surveillance program administered by the Rocky Mountain Poison and Drug Center, a division of Denver Health & Hospital Authority. Poison Centers receive spontaneous calls from caregivers, patients, and health care providers regarding potentially toxic exposures, including exposures to prescription opioids. Poison center specialists assist in the care of the individual, but also document critical aspects of the case such as exposure reason and the substance the individual was exposed to. These records are then uploaded to a central database in the RADARS System program where case review and quality control is conducted.

SDI

SDI healthcare collects data on prescription drug distribution at approximately half the retail pharmacies in the US. Projections are then made at the 3 digit zip code level to the rest of the US. Two measures of drug availability are available from SDI, URDD and the number of claims (or prescriptions) filled.

Statistical Analysis

Average rates over the past two years were calculated for the 5 drug groups and ranked from highest to lowest using URDD and total number of prescriptions filled.

Results

Table 1 lists the average abuse rates over the past 2 years and their rankings from highest to lowest. Three of the five drugs change rank when rates were calculated using total number of prescriptions filled instead of URDD. Buprenorphine has the highest exposure rate when URDD is used in the calculation, but drops to second when the rate is calculated using total number of prescriptions filled. Similarly, hydromorphone has the highest rate when the number of prescriptions is used to calculate the rate, but is second highest when URDD is used. Morphine, oxycodone, and hydrocodone maintain their ranks for both denominator calculations. The ratio of the URDD rate to the total number of prescriptions filled is approximately equal to the average number of refills for each drug class, see Table 2.

Table 1:

Comparison of Drug Rankings and Average Rates from 2011Q1 to 2013Q1 using URDD and Total Prescriptions Filled

Rank	URDD	Rate per 1,000 URDD	Prescriptions filled	Rate per 1,000 Prescriptions filled
1	Total buprenorphine	0.192	Total hydromorphone	0.060
2	Total hydromorphone	0.096	Total buprenorphine	0.055
3	Total morphine	0.093	Total morphine	0.051
4	Total oxycodone	0.056	Total oxycodone	0.036
5	Total hydrocodone	0.025	Total hydrocodone	0.016

Table 2:

Average Number of Refills per Person by Drug from 2011Q1 to 2013Q1

Drug Name	Number of Refills
Total buprenorphine	3.48
Total morphine	1.82
Total hydromorphone	1.61
Total hydrocodone	1.57
Total oxycodone	1.56

Conclusions

Inferences regarding the abuse potential of drugs may vary depending on use of URDD and total prescriptions filled. The number of prescriptions filled is approximately proportional to the URDD rate multiplied by the average number of refills per person for a drug. This data shows that URDD rates for buprenorphine are about 3.5 times higher than number of prescriptions filled, since buprenorphine is filled on average 3.5 times per person. This suggests that use of the URDD rate alone may underestimate the availability of some products and inflate drug exposure rates. However, URDD rates account for abuse relative to the number of individuals who legitimately receive a prescription for a product. Therefore, URDD rates are essential to consider when understanding abuse rates at a per-person level and number of prescriptions filled can be used to study abuse rates accounting for the total amount of drug available.

A disadvantage of using total number of prescriptions filled is lack of consistency in the number of pills in each prescription. For example, one individual may have a prescription for 10 pills while another may be prescribed 30 pills. This information is not captured in either of these rates. One disadvantage of using URDD arises when calculating rates over combined year quarters. For example, when calculating an annual URDD rate, an individual may be counted in all four year quarters, thus including the individual in the rate four different times. This may cause overestimation of rates if data are accumulative over several year quarters. Although disadvantages and advantages exist for both methods, examining URDD and total number of prescriptions filled together can aid in our understanding of prescription drug abuse.

Suggested citation: Le Lait MC, Severtson G, Bucher Bartelson B (2013). Comparison of Unique Recipients of Dispensed Drugs and Total Number of Prescription Filled in the Calculation of Abuse Rates. RADARS System Technical Report, 2013Q2-1.

References

1. Bucher Bartelson B, Droz D, Severtson G, Le Lait C, Dart R (2012). A comparison of three measures of prescription opioid availability. RADARS System Technical Report, 2012Q4-2.