



# Prevalence of Adverse Drug Effects and Adverse Drug Reactions in the 200 Most Commonly Prescribed Drugs Corrected for Prescription Volume

Mary J. Roswarski, Pharm.D. Candidate, Kristin R. Villa, Pharm.D. Candidate, Mary Kiersma, Pharm.D., M.S., Aleda Hess, Pharm.D., M.S., Brian M. Shepler, Pharm.D., Matthew Murawski, Ph.D., R.Ph.

Purdue University, School of Pharmacy and Pharmaceutical Sciences,  
West Lafayette, IN



## BACKGROUND

Adverse drug reactions (ADRs) and adverse drug experiences (ADEs) are common experiences with medication usage which can impact medication safety substantially. ADR/ADEs are known effects of medications, however these effects are unintended and undesired when using medications. ADR/ADEs are more easily detected in institutional settings where patients are closely and routinely monitored by healthcare professionals. In the United States, more than 100,000 deaths are attributed annually to serious adverse drug reactions. Approximately three to seven percent of all hospital admissions in the United States are for treatment of ADR/ADEs. There is a definite need to further understand the incidence and prevalence of ADR/ADEs in the ambulatory population.

## OBJECTIVE

To determine the 30 most common adverse drug reactions likely to occur in the top 200 medications of the *Drug Topics* Top 200 Drugs based on prescription volume.

## METHODS

The 2009 version of the *Drug Topics* Top 200 Drugs list was used to identify the drugs most commonly used within the ambulatory population during 2008. The list was analyzed to identify which ADR/ADEs occur for the prescribed medications in the Top 200 list. Each drug in the top 200 was categorized according to pharmacological class, as classified in the most recent version of *Drug Facts and Comparisons*. The ADR/ADEs for the medications in each class were obtained from the literature, along with estimates of frequency.

Once the ADR/ADE matrix was identified for each medication, cross-tabulation between the classes permitted the identification of overlap and development of a master list of ADR/ADEs. The resulting ADR/ADE matrix for a specific pharmacologic class was sorted to include those ADR/ADEs common to all medications of the class and ADR/ADEs specific to individual compounds. When an ADR/ADE matrix for all identified pharmacologic classes was identified, the matrixes were compared to identify ADR/ADEs and symptom overlap as well as the most common ADR/ADEs across all drugs and classes.

The ADR/ADE matrix for the top 200 drugs was sorted to tabulate the number of times each potential ADR/ADE was reported in the prescribing information. Clinical judgment was used to consolidate the list of ADR/ADEs by combining terms that represented the same type of reaction, such as shortness of breath and dyspnea. This information was then weighted by the prescription volume for each drug as reported in the 2009 *Drug Topics* Top 200 drug list. A ranking of this data revealed which ADR/ADEs have the greatest potential to occur within the ambulatory population based on current prescribing patterns.

## 30 MOST PREVALENT ADVERSE DRUG REACTIONS/ ADVERSE DRUG EVENTS BASED ON RX VOLUME

Rank	Adverse Drug Reaction/ Adverse Drug Event	ADR/ADE Counts Adjusted for Prescription Volume	Description
1	Dizziness	2,108,875	Dizziness
2	Nausea	2,054,528	Nausea
3	Headache	2,021,164	Headache
4	Vomiting	1,979,012	Vomiting
5	Diarrhea	1,818,874	Diarrhea
6	Rash	1,777,214	Simple, non-specific rashes
7	Constipation	1,591,435	Constipation
8	Fatigue	1,542,127	Weariness
9	Insomnia	1,519,356	Inability to fall asleep or stay asleep
10	Pruritis	1,429,196	Itching
11	Thrombocytopenia	1,335,946	Reduction in platelets
12	Abdominal Pain	1,303,696	Pain in the abdomen
13	Somnolence	1,257,813	Drowsiness
14	Allergic Reaction	1,230,697	Combination of immune mediated symptoms such as hives, rash, itching
15	Dyspepsia	1,205,640	Indigestion
16	Urticaria	1,199,495	Hives
17	Dyspnea	1,191,321	Shortness of breath
18	Hypotension	1,188,113	Blood pressure reduced below normal values
19	Depression	1,155,288	Depression
20	Paresthesia	1,123,983	Sensation of numbness or tingling
21	Anxiety	1,097,203	Anxiety
22	Palpitation	1,096,849	Abnormal heartbeat not including arrhythmias
23	Tremor	1,038,064	Involuntary shaking movement
24	Arthralgia	1,030,442	Joint pain

Rank	Adverse Drug Reaction/ Adverse Drug Event	ADR/ADE Counts Adjusted for Prescription Volume	Description
25	Anorexia	1,029,064	Disorder of eating due to loss of appetite
26	Nervousness	1,014,990	Nervousness
27	Anaphylaxis	995,966	Life threatening allergic reaction (including allergic reactions with respiratory arrest)
28	Xerostomia	961,191	Dry mouth
29	Fever	955,102	Body temperature elevated above normal levels
30	Taste Disturbance	950,733	Taste disturbance including dysgeusia

## DATA

Evaluation of reported ADR/ADEs associated with each of the 2009 *Drug Topics* Top 200 Drugs list resulted in 9829 individual potential ADR/ADEs. Each of these potential ADR/ADEs were multiplied by the prescription volume reported on the Top 200 Drugs list, and the results were summed into 758 unique ADE/ADR groupings.

## DISCUSSION

Knowledge of ADR/ADEs is important for pharmacists in all settings. Remembering all possible ADR/ADEs for each medication can be daunting or seem impossible. Consolidating the ADR/ADEs for each medication, each drug class, and all medications may enable pharmacists to recall the most common side effects and aid in earlier identification of ADR/ADEs, especially in the community setting. This may positively impact patient safety across settings, since adverse drug reactions (ADRs) and adverse drug experiences (ADEs) are common experiences with medication usage.

## RESEARCH SUPPORT

This work was supported in part by a grant from the Lilly Endowment, Inc. to the School of Pharmacy and Pharmaceutical Sciences.