BRIEF REPORTS

What's in a Name? Use of Brand versus Generic Drug Names in United States Outpatient Practice

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BACKGROUND: The use of brand rather than generic names for medications can increase health care costs. However, little is known at a national level about how often physicians refer to drugs using their brand or generic names.

OBJECTIVE: To evaluate how often physicians refer to drugs using brand or generic terminology.

DESIGN AND PARTICIPANTS: We used data from the 2003 National Ambulatory Medical Care Survey (NAMCS), a nationally representative survey of 25,288 community-based outpatient visits in the United States. After each visit, patient medications were recorded on a survey encounter form by the treating physician or transcribed from office notes.

MEASUREMENTS: Our main outcome measure was the frequency with which medications were recorded on the encounter form using their brand or generic names.

RESULTS: For 20 commonly used drugs, the median frequency of brand name use was 98% (interquartile range, 81–100%). Among 12 medications with no generic competition at the time of the survey, the median frequency of brand name use was 100% (range 92–100%). Among 8 medications with generic competition at the time of the survey ("multisource" drugs), the median frequency of brand name use was 79% (range 0–98%; $P<.001$ for difference between drugs with and without generic competition).

CONCLUSIONS: Physicians refer to most medications by their brand names, including drugs with generic formulations. This may lead to higher health care costs by promoting the use of brand-name products when generic alternatives are available.

KEY WORDS: drug labeling; drug industry; prescriptions, drug; drugs, generic; names; prescription fees; ambulatory care.
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INTRODUCTION

Brand name drugs are often dispensed when bioequivalent generic alternatives are available, resulting in an estimated $8.8 billion in excess expenditures per year in the United States.[1] This potentially unnecessary use of brand name drugs may reflect physician and patient beliefs that brand name drugs are superior to their generic counterparts.[2] However, habitual use of brand name terminology may also play an important role in the dispensing of brand-name products, as the name recorded on a prescription can impact whether a drug is dispensed in brand or generic form even when the physician would accept the generic version, and the pharmacy is empowered to provide it.[3,4]

We used data from a large, nationally representative sample of outpatient visits to evaluate how frequently brand and generic name equivalents are used in clinical practice.

METHODS

We used data from the 2003 National Ambulatory Medical Care Survey (NAMCS), a nationally representative survey of 25,288 community-based office visits to 1,342 physicians in the United States.[5] After each sampled visit, forms were completed by the treating physician or by office staff and/or survey field representatives (who abstracted information verbatim from the medical record to the survey form). All medications (up to 8) prescribed or continued at the visit were recorded and subsequently entered into the NAMCS database using separate numeric codes corresponding to the name written on the form and to the drug's nonproprietary name. The route of administration is not specified in NAMCS; therefore, oral, topical, and other forms of the same compound were encoded using a single identifier.

We determined the 20 most frequently mentioned prescription medications in NAMCS, excluding vaccinations, combination products, and medications typically administered in the office setting. To avoid biasing this list toward specialties that prescribed and/or recorded many drugs, in this step we calculated drug frequencies based only on the first medication listed on the study form. Next, for each of the 20 drugs, we assessed the frequency of each name that the physician or assistant had recorded on the form (e.g., for atorvastatin, the frequency of mentions of "atorvastatin" and "Lipitor"). In this step we searched all 8 medication fields.

In all analyses, we adjusted for sampling probability and clustering effects to create nationally representative estimates for each drug present at the clinic visit.[6] Because numerous survey strata contained a single primary sampling unit, we performed our analyses without adjustment for stratification. This preserves the original point estimate while producing slightly wider confidence intervals around that estimate.

Finally, we searched the Food and Drug Administration (FDA) "Electronic Orange Book" (http://www.fda.gov/cder/ob/docs/queryai.htm) and supplemental sources to assess the presence of generic competition for each of the 20 drugs. We considered the date of FDA approval for the first generic formulation (in any dose or route of administration) to be the time at which generic alternatives became available. This research was exempted from review by the institutional review boards of the San Francisco VA Medical Center and the University of California, San Francisco.

RESULTS

At least one medication was recorded in 66% of visits. The majority (89%) of these visits occurred in private solo or group practice settings, with the most common specialties being general or family physicians (25%), primary care internists (16%), pediatricians (10%), and obstetrician–gynecologists (9%). Survey forms were completed by physicians in 16% of visits, by office staff in 34%, by census field representatives in 29%, by multiple personnel in 18%, and by other or unrecorded sources in 3%.

The 20 most commonly recorded medications are listed in Table 1. Overall, the median frequency of brand name use was 98% (interquartile range, 81–100%), and ranged from 0–100% of drug mentions. Among the 12 medications with no generic competition at the time of the survey, the median frequency of brand name use was 100% (range 92–100%). Among the 8 medications with generic competition at the time of the survey, the median frequency of brand name use was 79% (range 0–98%). This difference was statistically significant ($P<.001$).

Because office staff and census field workers completed the majority of forms, we performed additional analyses to evaluate if the proportion of brand versus generic names recorded by physicians differed from the proportion recorded by nonphysicians. For 18 of 20 medications, there were no significant differences between physicians and nonphysicians in the use of brand versus generic names ($P>=.10$ for each). The two exceptions were azithromycin (brand name used by 92% of physicians vs 98% of nonphysicians, $P=.09$) and prednisone (brand name used by 4% of physicians vs 0% of nonphysicians, $P=.002$).

DISCUSSION

In this nationally representative survey, physicians referred to medications by their brand names much more frequently than by their generic names. Brand names were used almost exclusively for drugs without generic competition at the time of the survey. Brand name use was also common for drugs with generic competition, although at lower rates and with greater variability between drugs. While to our knowledge no previous studies have evaluated the use of drug terminology on a national scale, our results are consistent with previous reports which have found that prescriptions are predominantly written using brand names.[3,4]

Table 1. Use of Brand Versus Generic Names for Commonly Prescribed Medications

Generic Name (Brand names*)	Mentions Per 1,000 Visits	Mentions by Brand Name (%)	Status in 2003†	Number of Years of Generic Competition Before 2003
Atorvastatin (Lipitor)	34.3	98%	Brand	–
Azithromycin (Z-pack, Zithromax)	17.0	98%	Brand	–
Rofecoxib (Vioxx)	15.6	100%	Brand	–
Amlodipine (Norvasc)	15.6	99%	Brand	–
Fluticasone (Flonase, Flovent, Cutivate)	14.5	100%	Brand	–
Cetirizine (Zyrtec)	13.8	100%	Brand	–
Celecoxib (Celebrex)	13.5	100%	Brand	–
Sertraline (Zoloft)	12.8	100%	Brand	–
Fexofenadine (Allegra)	12.2	100%	Brand	–
Escitalopram (Lexapro)	9.7	100%	Brand	–
Ciprofloxacin (Cipro, Cipro XR, Ciloxan)	7.7	92%	Brand	–
Clarithromycin (Biaxin, Biaxin XL)	6.9	100%	Brand	–
Metoprolol (Lopressor, Toprol XL)	20.0	78%	Brand + Generic‡	10‡
Amoxicillin (Amoxil, Sumox)	23.7	35%	Generic	>20
Levothyroxine (Unithroid, Levothyroid, Synthroid, Levoxyl, Levothyroid)	23.8	98%	Generic	>20§
Albuterol (Proventil, Ventolin, Volmax)	21.7	13%	Generic	14
Prednisone (Sterapred DS, Deltasone)	14.3	0%	Generic	>20
Triamcinolone (Azmacort, Aristocort Kenalog, Triam, Triamolone 40, Nasacort)	10.9	81%	Generic	>20
Fluoxetine (Prozac, Sarafem)	10.4	80%	Generic	2
Cephalexin (Keflex)	8.6	90%	Generic	16

Brand names cited by surveyed office practices

†*Generic competition available in 2003 versus only brand-name formulations available*

‡*Metoprolol tartate (Lopressor, a short-acting form) had generic competition before 2003, but metoprolol succinate (Toprol XL, a longer-acting form) remained under exclusivity protection at the time of the study. In comparative analyses, we classified metoprolol as a generically available drug. Alternative classifications produced similar results.*

§*Although formulations of levothyroxine received FDA approval starting in 2000, in practice many formulations have been on the market for decades.*

Physicians may prefer brand names for a variety of reasons. Brand names are often more memorable or evocative than generic names and easier to pronounce (in our sample, brand names had on average 1.5 fewer syllables than their generic counterparts).[7] Many physicians may be familiar only with the brand name of certain drugs or unaware of the correspondence between generic and brand names.[8–10] In addition, in certain cases physicians may believe that generic formulations are not as effective as the brand name product.[11] Although the interchangeability of certain drugs remains a matter of debate,[12] many physicians may not be aware of the strict controls imposed by FDA to prove bioequivalence before a generic formulation can be approved.[13]

The use of brand names has substantial economic consequences.[14,15] Pharmacist substitution of generic equivalents is generally allowed and is encouraged by third party payers, and several programs have been developed to encourage generic substitution.[1,16] However, generic substitution is not mandated in most states, can be overridden by the prescribing physician and does not universally occur even when allowed by the physician.[3,4] Overall, 39% of drugs available as generics were filled with the brand formulation in a recent national study.[1] As brand name drugs usually retain a substantial price premium even after generic equivalents are introduced,[17] persistent use of brand name products has resulted in billions of dollars of excess spending.[1]

The use of brand names also has consequences for communication between physicians. Confusion over drug terminology can result in adverse drug events. For example, a patient may inadvertently be given a second formulation of a drug because the prescribing physician failed to recognize that the patient was already taking the medication under a different name.[18,19] In addition, use of brand names in communication between physicians can undermine efforts to minimize commercial influence on medical practice.

The use of brand names may reflect habitual use of a lexicon learned in training or shortly after introduction of new drugs.[11] Therefore, efforts to increase the use of nonproprietary names should focus on these periods of early exposure. Medical students and residents should be educated about these issues, and physician supervisors should be encouraged to promote use of generic terminology in their day-to-day interactions with trainees. Standards in continuing medical education programs could also be strengthened: while the Accreditation Council for Continuing Medical Education (ACCME) encourages the use of generic names in educational presentations, parts of their guideline place greater emphasis on balancing the use of brand names across different companies than on minimizing the use of proprietary terminology.[20] Electronic prescribing systems could also be engineered to convert brand to generic names. One place to start would be the official Medicare Prescription Drug Plan Finder website (http://plancompare.medicare.gov/drugselect.asp), which recognizes only brand names for drugs that are currently under patent and exclusivity protection.

Our study has several limitations. First, data were collected from research forms. We cannot determine whether physicians used the same terminology in their daily speech or when writing prescriptions. Similarly, we do not know to what extent use of brand name terminology reflected preference for specific brand formulations (e.g., for a specific brand of levothyroxine). Second, the majority of data forms were completed by office staff and survey field personnel. However, subsidiary analyses showed a similar distribution of brand and generic name use whether a physician or nonphysician completed the form. Third, our method for determining when generic competition first became available does not fully capture the complex approval histories for different formulations of the same drug. Finally, our list of drugs was dominated by agents that had no generic competition, limiting our ability to delineate terminology patterns among drugs with generic competition.

Physicians' preference for brand names may result in higher health care costs and use of branded products where bioequivalent alternatives are available. The use of nonproprietary terminology in medicine should be encouraged to save costs, limit commercial influence, and reduce the potential for prescribing errors.

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