Medication Errors: Not Just a "Few Bad Apples"

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Abstract

- *Objective:* To describe the distribution of medication errors among physicians.
- *Design:* Prospective cohort study.
- *Participants and setting:* 24 physicians from 4 adult primary care practices in Boston, MA.
- *Measurements:* The principal measure was total medication errors per physician. The number of prescriptions written during the study period was also tabulated.
- *Results:* 22 of the 24 physicians made at least 1 error. Although there was 1 outlier, the error rate among this cohort of physicians was evenly distributed.
- *Conclusion:* The wide distribution of errors among this group of physicians undermines the argument that the majority of medication errors are due to a "few bad apples."

Leaders in the patient safety movement have argued that systems, not providers, should be the main target of error reduction approaches. This view holds that all providers make errors and that our efforts should be focused on activities that promote a culture of safety and the use of tools that represent system changes, such as computerized physician order entry (CPOE) [1]. However, many attorneys and others who oppose reform of the current malpractice environment have a different view [2]. They subscribe to the "bad apples" theory [3], which holds that a minority of physicians cause the majority of errors, and these "bad apples" should be pursued through litigation. To our knowledge, no published data are available to support or refute this hypothesis. Using data gathered during a previous study of prescribing errors, we conducted a secondary data analysis concerning the distribution of medication errors among physicians [4].

Methods

The data available for this analysis were limited in scope to errors involving medication prescriptions. The original researchers prospectively gathered data on a cohort of primary care physicians and their patients. The physicians were recruited from 4 different primary care practices in Boston, MA. The researchers solicited participation from all patients who received a prescription from 1 of the participating doctors during a 4-week enrollment period. For each practice, the 4-week enrollment period began on a different date. Patients were excluded if their doctors thought they were too ill to participate or had a hearing impairment that would interfere with participation or if the patients did not speak English or Russian. For each patient who agreed to participate, the researchers attempted to identify all adverse drug events (ADEs) that occurred during the 3 months that followed that patient's enrollment. Potential ADEs were identified by patient survey and chart review. Two physicians reviewed these potential ADEs to determine if the event could be classified as an actual ADE. The researchers then categorized actual ADEs as nonpreventable, preventable, or ameliorable (ie, the duration or severity of the event could have been reduced if alternative actions had been taken). For the purposes of our analysis, we considered all preventable and ameliorable ADEs to be medication errors. Due to the asynchronous commencement of enrollment periods at each practice, the total length of the study was 7 months (September 1999–March 2000).

Results

A total of 24 physicians participated in this study (13 men and 11 women). The mean age of participants was 41 years. On average, the physicians had been practicing for 12 years prior to the study. A total of 1202 patients of these 24 physicians qualified for the study, 661 of whom agreed to participate. For these 661 patients, physicians wrote 2134 prescriptions during the study period. The mean number of prescriptions written by a physician was 89. Of the 24 participants, 22 (92%) made at least 1 prescribing error over the 7-month period that led to a preventable or ameliorable ADE. The ADEs identified ranged in their degree of seriousness from minor events, such as sleep disturbances, to serious events, such as gastrointestinal bleeding.

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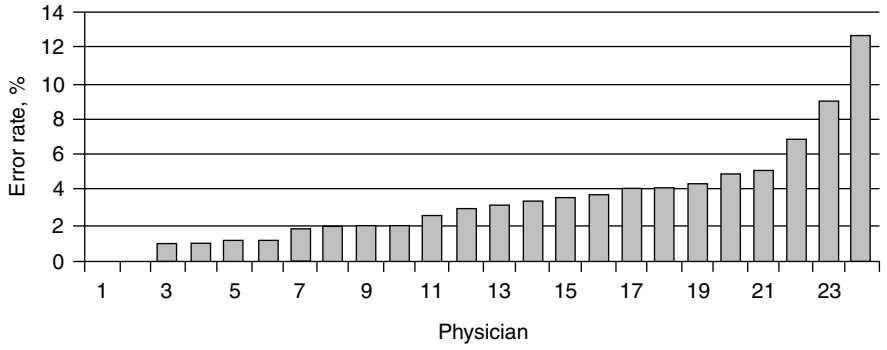

Figure. Rate of error for 24 physicians.

The **Figure** shows the rate of error for each of the 24 physicians. The median percentage of prescriptions written in error was 3.0 (interquartile range, 1.3%–4.2%). The sample had 1 outlier whose error rate was more than 3 standard deviations above the mean. The number of prescriptions written by this outlier was roughly equal to the mean. The 3 physicians with the highest error rates accounted for only 34% of the errors.

Discussion

Our data offer conflicting evidence regarding the "bad apples" hypothesis. On one hand, we found that almost all adult primary care physicians in our sample made medication errors. On the other hand, 3 clinicians accounted for one third of all errors. This latter finding is compatible with the argument that a small proportion of physicians account for a disproportionate share of errors. Our data do not allow for a closer examination of the outliers' characteristics such as the types of patients they treat, their work conditions, or other factors that might explain the results. Nevertheless, two thirds of errors were made by others, so it would not be possible to substantially reduce the total number of errors without introducing systems change that affect all providers. This small sample supports the view of leaders in the patient safety movement [1] that medication errors are widely distributed among physicians and other providers. Although the health care system has an obligation to identify and deal with substandard providers, we believe that solutions that focus solely on weeding out the worst offenders will not have a large impact on the overall safety of health care. Instead, we advocate the adoption of system-wide approaches that foster a safety culture as well as systemic changes (eg, CPOE) that fundamentally alter the way care is delivered.

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