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Telephone prescription errors in two community pharmacies

While many studies have examined errors associated with written prescriptions, there has been little research focusing on the frequency and types of errors that occur with telephone prescriptions. A Danish study found telephone prescriptions to have a low frequency of errors (8.2%, versus 47.8% of written prescriptions).[1] However, prescription orders given via telephone make up a significant portion of total daily prescriptions. In a study by Spencer and Daugird,[2] telephone prescriptions accounted for over 30% of all prescriptions. Also, physicians made an average of 10.4 calls per day and spent 16.2 minutes daily with telephone encounters.[3] Clarifying missing or incorrect information in prescriptions is time-consuming and expensive for pharmacies. Madejski[4] examined the cost to a pharmacy of calling a physician's office to obtain information missing from a prescription. The study concluded that clarifying prescriptions with missing information resulted in an increased workload for the pharmacist and a financial burden on the pharmacy.

We studied the characteristics of errors in telephone prescriptions. Two chain pharmacies that filled an average of 200–300 prescriptions per day were recruited. The selection was based only on the willingness of the pharmacies to participate and their accessibility to the researchers. The pharmacists at these pharmacies were informed about the purpose of the study and instructed to use an error checklist while receiving all telephone prescriptions during the study (October 1999) to indicate if there was an error. A prescription was considered to be in error if it was faulty in any of the following: patient identity, telephone number, address, or date of birth; medication identity, dosage strength, dosage form, directions, or refill information; or physician identity, telephone number, or Drug Enforcement Agency (DEA) registration number. An attempt to call in a prescription for a Schedule II controlled substance was also considered an error. Once the telephone order was completed, the checklist was attached to the original prescription for collection and analysis.

A total of 813 telephone prescriptions were collected over the 11-day sampling period, with store 1 contributing 392 prescriptions (48.2%) and store 2 421 (51.8%). Of the telephone prescriptions, 12.4% were in error. The prescribing physician telephoned 26.1% of the prescriptions in, while other personnel telephoned in the rest. A lower frequency of errors was reported when the prescription was called in by the prescribing physician (2.2%) than when other personnel called it in (10.2%). A majority of the errors were associated with prescriptions called in between 12:00 p.m. and 4:59 p.m. There was no significant correlation between the number of prescriptions filled and error rates (12.0% and 12.8% for stores 1 and 2, respectively).

The types of errors that occurred were as follows: wrong patient (4.1%), unable to provide patient's telephone number (2.6%), wrong strength (2.0%), wrong directions (1.6%), and wrong medication (1.4%). Each of the following types of errors occurred with a frequency of <1%: wrong quantity; unable to provide patient's address or date of birth; wrong product selection, dosage form, physician, or number of refills; and unable to provide physician's DEA number.

The results cannot be generalized to all chain pharmacies, since the sample consisted of only two pharmacies. We are not aware of any valid instrument for checking telephone prescription errors that could have been used in the study; therefore, we designed our own. Some errors may not have been recognized; detection was entirely dependent on the pharmacists documenting the prescriptions. The data may have been skewed if pharmacists did not request the patient's telephone number, address, and date of birth, but rather only one of these. The possible influence of the day of the week or the month was not considered. A longer sampling period may have produced different results. The study determined whether the physician or some other person called in the prescription, but the identity of nonphysician telephoners (e.g., office secretary, registered nurse, nurse practitioner, veterinary assistant) was not determined. The time of day recorded for prescription calls may not be accurate, because the time recorded was the time the prescription was typed into the computer or, possibly, the time it was corrected if an error occurred and it was caught after the prescription was filled. Also, the clocks of the pharmacy computers were not checked for accuracy.

We hope that this study will increase the awareness of errors occurring in telephone prescriptions and stimulate further investigation.

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Managing antimicrobial costs in a community hospital

We at St. Luke's Hospital, a 390-bed private, not-for-profit community hospital in southeastern Massachusetts, have been looking for ways to promote cost-effective use of antimicrobials. Our goal has been to put attainable and successful programs into practice with little impact on staffing demands, thus realizing maximal return on investment. Because we had successfully utilized a number of formulary restrictions, therapeutic interchanges, and automatic dosage adjustments in the past for nonantiinfective medications (e.g., proton-pump inhibitors and histamine H_2-receptor antagonists), we implemented similar programs for antimicrobial agents.

Strategies implemented in 2002 through the auspices of the pharmacy and therapeutics committee included therapeutic interchange of cefepime for ceftazidime and of gatifloxacin for i.v. ciprofloxacin. Pharmacists made appropriate automatic renal-dosage adjustments for both medications during order entry. Physicians, nurses, and pharmacists were all included in the educational efforts associated with the interchange program. The emphasis was on appropriate use of fluoroquinolones and parenteral-to-enteral antimicrobial conversions. Newsletters, "dear doctor" mailings, and presentations were used to disseminate the information. Each of these programs required no additional staffing and fell within the purview of positions already in existence.

Expenditures for antimicrobials decreased from $1.147 million in 2001 to $1.136 million in 2002. This 1% drop contrasted with the average 14% yearly increase in the preceding three years. Antimicrobial costs per patient discharge also declined from a high of $53.90 in 2001 to $52.31 in 2002. Our programs resulted in a projected annual cost avoidance of $171,620 and incurred no additional costs. Although assessment is ongoing, a limited review has not demonstrated a negative impact on length of stay or patterns of bacterial susceptibility.

Antimicrobial formulary restrictions have sometimes been reported to result in cost shifting to other antimicrobials.[1] An obvious consequence may be an increase in antimicrobial expenditures if the alternative antiinfectives are more expensive. This did not happen in our situation.

The impact of our educational efforts is more difficult to discern. Pharmacy education in concert with a computer program designed to improve antimicrobial utilization has resulted in substantial cost savings,[2] and physician and nurse education has resulted in earlier initiation of these agents and increased procurement of sputum cultures from patients with community-acquired pneumonia.[3] We did not assess the impact of our programs individually; rather, a cumulative analysis seemed more appropriate, given the initiatives' complementary nature. What remains to be fully elucidated is the impact of our programs on patient outcomes and antimicrobial resistance.

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