A Study on the Characteristics of Prescription Transmittal Processes and the Effect of a Patient Prescription Reminder System on Patient Compliance

William R. Hamilton, Tamara A. Hetler, and Ursula K. Hopkins

ABSTRACT: This study investigates the effect of telephoning patients on the number of prescriptions claimed after having been phoned to the pharmacy by a health care provider. The study also compares the number of unclaimed prescriptions belonging to patients who have their prescriptions telephoned to the dispensing pharmacy versus those patients who present the prescription in person.

The setting for this study was a chain pharmacy serving a middle- to upper-income area in western Omaha, Nebraska. The average prescription volume is 250 prescriptions per day, with approximately 70% of patients using a third-party provider for payment of their prescriptions. Pharmacists provide several clinical services to patients (lipid, hypertension, and diabetes monitoring).

In the first phase of the study, the number of unclaimed prescriptions was measured by how the prescription was presented—by telephone or in person. In the second phase, investigators telephoned patients who had not claimed their telephone prescriptions and reminded them about their prescriptions.

In Phase I, 99.7% of the "walk-in" or written prescriptions were claimed by the patient. Patients with prescriptions telephoned to the pharmacy had a 93.2% claim rate. During Phase II of this study, 82.3% of the prescriptions for patients who were contacted were claimed within seven days, and 96.3% of the prescriptions for patients who were not contacted were claimed.

There is a significant difference in the number of unclaimed prescriptions generated by the two patient populations. However, telephone reminders to patients to pick up their prescriptions were not an effective way to reduce the number of unclaimed prescriptions.

KEY WORDS: Prescription transmittal process, Patient compliance, Reminder systems, Pharmacist intervention, Telephone prescription reminder system, Prescription claim rate, Unclaimed prescriptions

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Pharmacists must constantly balance the demands of professional practice. This study investigates the impact pharmacists have on patient compliance with drug therapies by contacting patients when they fail to claim their prescriptions. In 1989, investigators Craghead and Wartski¹ reported that the introduction of an automated prescription transmittal system and the subsequent removal of the patient from an active involvement in the transmission of their prescription resulted in an increase in the number of unclaimed prescriptions generated within the hospital setting under study. Using unclaimed prescriptions as an indicator of patient noncompliance, Craghead and Wartski concluded that a lack of active patient involvement in the transmission of a prescription was a factor that contributed to noncompliance.

In a 1995 telephone survey of patients who had not picked up their prescriptions,² 18% of the 70 patients contacted responded that they had forgotten about the prescription when they were asked why they had not picked it up. While neither the number of prescriptions that were telephoned to the dispensing pharmacy nor the number of prescriptions that were presented by the patient were measured in this study, we have postulated that the process by which the prescriptions were transmitted to the dispensing pharmacy may have been a factor that contributed to patients not claiming their prescriptions.

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Knowing that promoting compliant behavior with respect to a medication regimen is an integral part of pharmaceutical care, pharmacists have sought means by which they could improve patient compliance. The primary act of compliance is to pick up, or claim, the prescription. Several studies have evaluated the effectiveness of reminder systems as a vehicle for fostering compliant behavior. Results in this area have conflicted. Studies that involved implementing telephone reminder systems when a medical procedure was involved showed overall improvement of patient compliance in the contacted groups.³⁻⁵

However, when reminder systems for medication regimens have been evaluated, improvements in patient compliance following telephone contact have varied. In a 1994 study sponsored by the Inland Counties Hypertension Control Coordinating Council,⁶ a 41% increase in patient compliance was documented after implementation of a patient refill reminder system. Similarly, Garnett et al. (1984)⁷, in a study designed to measure the effects of telephone follow-up on medication compliance, also reported an increase in patient compliance following telephone contact. Conversely, a study conducted by Schectman, Hiatt, and Hartz (1994)⁸ showed no improvement in patient compliance when a reminder system was utilized. The correct use of medications is a complex problem.⁹ These studies have evaluated the utility of patient reminder systems as a means of promoting patient compliance. The benefit derived from a patient reminder system seems to depend on many variables, including the type of procedure or medical regimen being promoted, whether the medication is for a chronic or acute condition, and the characteristics of the patient population under study.

Based on the results of our survey and the findings of Craghead and Wartski, we pose the following question: Does removal of the patient from the prescription transmittal system, through the use of telephone transmission, have an effect on patients who claim their prescriptions in a community pharmacy setting? Furthermore, does the establishment of a telephone prescription reminder system improve the rate at which prescriptions are claimed? This study was designed to:

- ▲ determine if a significant difference exists in the number of unclaimed prescriptions generated by the following patient populations within a community pharmacy setting: 1) those who have had their prescriptions telephoned to the dispensing pharmacy by their health care provider; and 2) those who have presented their written prescriptions to the dispensing pharmacy in person; and

- ▲ determine if telephone contact with those patients who have had their prescriptions telephoned to the dispensing pharmacy by their health care provider significantly decreases the number of unclaimed prescriptions generated by this patient population.

METHODS

On average, 250 prescriptions are ordered by local health care providers and filled daily at the ShopKo® Pharmacy on 144th Street and West Center Road in Omaha, Nebraska. These prescriptions are transmitted to the dispensing pharmacy by one of two possible processes. The first involves the patient receiving the prescription from a health care provider and subsequently presenting it to the dispensing pharmacy. In this case, the patient is directly involved in the transmission of the prescription. In the second process, the patient's prescription is telephoned to the dispensing pharmacy by his or her health care provider. In this case, there is little or no active patient involvement in the transmission of the prescription.

The study was divided into two phases, separated by approximately two months, to better determine the effect of questioning patients on the rate of prescription claiming. Phase I was designed to measure the impact patient involvement in the prescription transmittal process had on the rate at which prescriptions were claimed. In Phase II, the study investigated the effect of telephoning patients who did not claim prescriptions within 24 hours.

Phase I

Phase I of this study was 35 days in length (May 20 to June 17, 1996), the first 28 days of which involved active data collection. All new prescriptions, except nonlegend prescriptions and refill orders, presented or telephoned to the dispensing pharmacy were included in the study population. Data were collected for the previous day's prescriptions in order to account for all prescriptions presented in a 24-hour period. Prescriptions were categorized by method of transmission: telephoned by the health care provider or presented by the patient. Whether the prescription was claimed was tracked in each category. Thus, all prescriptions during the study period were divided into four categories: 1) those telephoned in and picked up; 2) those telephoned in and not picked up; 3) those presented by the patient and picked up; and 4) those presented by the patient and not picked up. The chi-square test (significance $p > 0.05$) was utilized to determine if there was a significant difference in the number of unclaimed prescriptions generated by the two different transmittal processes.

All prescriptions were scanned using point-of-sale system data that are immediately entered into the prescription-processing computer when the prescription is claimed. All prescriptions that had not been claimed within 24 hours of receipt by the dispensing pharmacy were reviewed on the pharmacy's computer seven days later to determine whether they had subsequently been picked up. The review was conducted at seven days because all unclaimed prescriptions are returned to stock after seven days to enable the reversal of the claim. Neither variables in the prescription types nor severity of health concerns was addressed in this study.

Phase II

Phase II of this study also was 35 days in length (September 9 to October 6, 1996), the first 28 days being involved in active data collection. As with Phase I, data were collected for the previous day's prescriptions in order to account for all prescriptions presented in a 24-hour period. However, only new prescriptions telephoned to the dispensing pharmacy were included in this phase of the study. As before, nonlegend prescriptions and refill orders were not included in the study population.

In order to determine whether the holder of a particular prescription was included in the Phase II study population and subsequently to be contacted by telephone, the following criteria were utilized: each prescription included in the Phase II study population must have been: 1) received by the dispensing pharmacy during the 28-day active data collection period; 2) telephoned to the dispensing pharmacy by the patient's health care provider; and 3) unclaimed by the patient within 24 hours of transmission to the dispensing pharmacy. No attempt was made to contact any patients holding prescriptions that did not meet all of the criteria.

Telephone contact was attempted daily for three days. Calls were placed at varying times of day to increase the opportunity for contact. The three-day period was chosen as a reasonable time limit, reflecting constraints of pharmacy practice. In order to maintain patient confidentiality, only the patient or recognized caregiver was asked about any prescription information (i.e., messages were not left on answering machines or with any individual not involved with the direct care of the patient). As a result of this approach, the pharmacy and the university involved received no complaints regarding breaches of confidentiality.

Upon making contact with the patient or caregiver the investigator identified herself, told the patient that he/she had not picked up his/her prescription, and asked whether the patient had any questions about the medication. Seven days after the receipt of a prescription by the dispensing pharmacy, the prescription was reviewed to see if it had been claimed by the patient. In this study, "compliance" does not indicate a measure of success in completing the prescription as directed, only the necessary initial step in that process.

Patients who were not reached during the three-day contact period were categorized as noncontacted. These prescriptions also were looked up on the pharmacy's computer seven days after receipt in order to document whether they had been claimed.

In a process similar to that utilized in Phase I, all telephone prescriptions received during the 28-day collection period were categorized, and the number of prescriptions claimed for each category was quantified. For data analysis purposes the telephone prescriptions were separated into three categories: 1) telephone prescriptions about which the patient was contacted; 2) telephone prescriptions about which the patient was not contacted and that had not been

picked up within 24 hours of receipt by the dispensing pharmacy; and 3) telephone prescriptions that had been picked up within 24 hours. The chi-square test (significance $p < 0.05$) was utilized to determine if there was a significant increase in the number of prescriptions claimed when the respective patient was contacted by telephone.

RESULTS

Phase I

The pharmacy collected 3,036 new prescriptions during Phase I of this study. Of these, 36.8% were telephoned to the dispensing pharmacy, while 63.2% were presented by the patient. The distribution of these prescriptions and the quantities claimed within seven days of their reception by the dispensing pharmacy are summarized in Figure 1. Of the 1,116 telephone prescriptions collected during Phase I of this study, 93.2% were claimed within seven days. Of the written prescriptions presented to the pharmacy by the patient, 99.7% were claimed within seven days. Using the chi-square test (significance $p < 0.05$), the difference between these two patient populations was statistically significant ($p < 0.001$).

Figure 1. Distribution of Prescriptions Collected in Phase I

Phase II

Figure 2 summarizes the distribution of the telephone prescriptions collected in Phase II of this study. The pharmacy collected 890 telephone prescriptions during Phase II. Of these prescriptions, 94.5% (841) were picked up within seven days. The investigators were able to contact 113 prescription holders meeting the criteria for telephone intervention. Of those, 82.3% (93) claimed their prescription within seven days. Of the 777 prescription holders who were not contacted, 96.3% (748) claimed their prescriptions within seven days.

A comparison of the total telephone prescriptions not picked up in Phase I and the total telephoned prescriptions not picked up in Phase II indicates the groups were similar. Chi-square analysis of these numbers did not reach statistical significance ($p>0.6$).

Analysis of the evidence indicating a relationship between prescription pickup and telephone follow-up between the two phase groups also was statistically insignificant ($p>0.2$). In fact, telephoning patients appeared to negatively influence their behavior regarding the procurement of their prescriptions ($p<0.001$).

Figure 2. Distribution of Telephone Prescriptions Collected in Phase II

DISCUSSION

In Phase I of this study, 3,036 telephone and walk-in prescriptions were collected. Of these prescriptions, 1,920 were presented to the pharmacy by the patient, while 1,116 were telephoned to the dispensing pharmacy. Analysis of the data shows a significant difference in the percentage of unclaimed prescriptions generated by these two distinct prescription transmission systems (0.3% walk-in and 6.8% telephone). Although this study was not designed to evaluate the effects of implementation of a telephone prescription transmission system on patient compliance, our results reinforce the findings of Craghead and Wartski. Furthermore, Phase I findings of this study suggest a relationship between the method used to convey the prescription to the pharmacy and the number of prescriptions claimed.

In Phase I, 93.2% of the telephone prescriptions were claimed within seven days, while in Phase II, 94.5% of the 890 telephone prescriptions collected were ultimately picked up. Comparison of the number of claimed prescriptions generated by these two groups showed that telephoning prescription holders did not have a significant overall effect on the number of prescriptions claimed. In fact, when the telephone contact group (Phase II) was compared to the noncontact group from Phase II, the percentage of claimed prescriptions generated by the contact group was significantly lower than the number of claimed prescriptions generated by the noncontact group (82.3% and 96.3%, respectively). Value is placed on a pharmacist's time whether in a managed care, capitated, or retail setting that provides prescription benefits through contracts with pharmacy benefit managers. Regardless of the reasons patients have for not claiming a prescription, these data indicate that the time involved in contacting patients to encourage them to claim their prescriptions is not time well spent.

The size of our telephone contact group may have affected the findings. The telephone contact group was small (113) compared to the total number of prescriptions collected in Phase II (890); however, it is important to emphasize that the size of the group was statistically significant ($uu>25$). While the size of the contact group could have been increased by allowing the investigators to leave a message on a patient's answering machine or with an individual not involved in the direct care of the patient, this practice could have jeopardized patient confidentiality. Additionally, this approach would have added preventable confounding variables to our study design and would have made analysis of the effects of telephone contact more difficult.

Evidence from this study indicates a high rate of prescription claims by patients. Emphasis on systems to enhance compliance that are implemented after the initial act of obtaining a prescription may have a higher probability of positive outcome. Although the financial waste of processing a

prescription and then returning it to stock after it is unclaimed is important, less than 7% of prescriptions are involved. The ability to change this percentage may not be within the pharmacist's influence.

CONCLUSION

Many factors contribute to patient compliance. As health care professionals, pharmacists can play a vital role in helping patients achieve the most optimal outcome from their pharmaceutical therapy. Throughout the years, various strategies to help improve patient compliance have been suggested. Treatment interventions, reminder systems, and patient education have all been used by pharmacists and other health care providers in an attempt to improve patient compliance. While contacting patients to remind them to claim a prescription is a quick and easy process, the results of this study suggest that telephone contact does not increase the number of prescriptions claimed.

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