

# A comparison of the Indian Health Service counseling technique with traditional, lecture-style counseling

Naomi Lam, Savanna N. Muravez, and Robert W. Boyce

## Abstract

**Objectives:** To compare the immediate postcounseling retention of important information using the traditional method with retention obtained using the Indian Health Service (IHS) interactive technique, and to compare the time required to counsel patients on new prescriptions using the traditional method with the time required using the IHS technique.

**Design:** A prospective, nonrandomized, observational study at four different local community pharmacies in Oregon. Two sites that used the traditional counseling model served as the control sites, while two other sites used the IHS counseling model. Only new prescriptions were included in this study. The pharmacists did not alter their counseling styles for new prescriptions for the purposes of this study. The duration of counseling between the pharmacist and patient was recorded. Immediately upon completion of counseling, patients met with the primary investigator for postcounseling knowledge assessment on indication of therapy, directions on how to take their medication properly, and expected adverse effects.

**Setting:** Four local community pharmacies in Oregon.

**Participants:** Five hundred patients at four local community pharmacies in Oregon.

**Intervention:** Use of the IHS counseling technique.

**Main outcome measures:** Immediate recall of key counseling points and time per counseling session.

**Results:** A total of 500 patients participated in the study. Seventy-one percent of patients counseled using the IHS technique answered all three questions correctly, compared with 33% of patients counseled using the traditional method ( $P < 0.00$ ). For patients who were counseled about adverse effects, 80% counseled using the IHS technique compared with 51.5% counseled using the traditional approach answered all three questions correctly. For indication of therapy, there was no evidence of a difference in the proportion of correct answers between counseling types on the reason for taking their medication ( $P = 0.06$ ). Those who received IHS counseling had four times the odds of correctly answering when to take their medication and four times the odds of correctly answering all adverse effects questions. The duration of counseling methods differed by 53 seconds (128 s for IHS vs. 75 s for traditional).

**Conclusion:** The interactive style of the IHS method of counseling provided significantly improved immediate memory recall compared with the traditional method. The IHS method also took longer than the traditional method.

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**Disclosure:** The authors declare no relevant conflicts of interest or financial relationships.

**Previous presentations:** Portions presented at Western States Residency Conference, May 23–25, 2013, San Diego, CA, and International Social Pharmacy Workshop, August 5–8, 2014, Boston, MA

Received May 13, 2014. Accepted for publication April 9, 2015.

*J Am Pharm Assoc.* 2015;55:503–510  
doi: 10.1331/JAPhA.2015.14093

The late Surgeon General of the United States, C. Everett Koop, once stated, “Drugs don’t work in patients who don’t take them.”<sup>1</sup> The success of a prescriber’s recommended course of treatment often depends on patients understanding the proper use of their medications.<sup>2</sup> While medication adherence is multifactorial, requiring self-motivation and behavior changes, without the first step—patient comprehension of the proper use of medications—adherence rates plummet.<sup>2</sup> The literature demonstrates that patients want information about their medications, including basic directions, potential drug interactions, and potential adverse effects.<sup>3–5</sup> While patients are most interested in information on adverse effects, this is one of the topics least provided by both physicians and pharmacists.<sup>3,6,7</sup>

In 1990, Congress passed the Omnibus Budget Reconciliation Act (OBRA '90), which directed pharmacists to counsel Medicaid patients. OBRA '90 led to state enactment of pharmacy regulations requiring that the pharmacist counsel most patients on medications. Currently, 90% of all states require face-to-face pharmacist counseling on all new prescriptions.<sup>8</sup> While counseling

patients about prescription medications is required by most states, the extent of complying with this requirement varies greatly between pharmacies and pharmacists.<sup>6,9</sup> In addition, there is no clearly defined guide or regulation on pharmacist counseling techniques for new or refill prescriptions.

Two counseling methods for new prescriptions are used most widely by pharmacists in the community setting. The first approach is the traditional method, which uses a lecture format with a one-way, pharmacist-to-patient technique, also known as “reading off the prescription label.” The efficacy of this traditional approach has been shown to be less than effective due to lack of any verification of patient comprehension. The medical literature provides ample evidence of an information gap that exists when patients or caregivers are asked to recall instructions for prescribed medications when using the traditional lecture-based patient education efforts.<sup>10–12</sup> One study found that half of the information was lost when patients were asked to explain what they were told about their medications.<sup>10</sup> Another study that evaluated patients’ instant recall after being discharged from the emergency department found that only 49% were able to recall the correct treatment information.<sup>11</sup> Finally, a study of pediatric caregivers indicated that only 37% accurately recalled directions for taking prescribed medication.<sup>12</sup>

The second method is the Indian Health Service (IHS) technique, which uses three open-ended questions (prime questions) to verify patient understanding of the name and purpose of the medication, directions for use and storage, what to expect if the medication works, what to do if it does not, and what type of potential adverse effects to look out for, as well as what to do if they should occur. Any gaps in understanding are corrected before moving on to the next prime question. After completing the prime questions, patients are asked to verbally confirm their understanding of the information discussed during the three prime questions (Figure 1). When patients verbalize their understanding by answering the three prime questions and during final verification, the information is placed in longer term or gist memory and is retained longer than the information patients hear in the traditional counseling method.<sup>13</sup>

An unpublished pilot study conducted in the 1980s at four IHS facilities showed that patients who received traditional counseling on new prescriptions remembered 55% of the information correctly, while patients counseled in a private consultation room using the IHS technique remembered 100% of the information correctly when interviewed by a student pharmacist shortly after counseling.<sup>14</sup> A study in Sweden using the show-and-tell portion of the IHS technique noted a statistically significant improvement in the percentage of patients using their asthma inhalers correctly 1 year after beginning to use the IHS technique.<sup>15</sup> In 2012, an unpublished

## Key Points

### Background:

- Patient counseling for new prescriptions is an important professional and legal responsibility for pharmacists in both inpatient and outpatient practice.
- Previously, no published studies existed comparing the relative effectiveness of the two major counseling approaches—the traditional lecture style and the interactive IHS technique—on recall of key counseling points (i.e., purpose, directions for proper use, and potential adverse effects).
- No published studies have compared the technique a pharmacist uses to counsel and the total amount of time it takes to counsel.

### Findings:

- A total of 71% of patients counseled using the IHS technique correctly recalled the three key counseling points, compared with only 33% of patients counseled using the traditional lecture-style approach.
- These differences were most evident for directions on proper use and potential adverse effects.
- Differences in immediate recall and long-term memory retention between the two counseling techniques, and if they affect intermediate outcomes, should be further investigated.

## New Prescriptions

### The Three Prime Questions:

What did the doctor tell you the medicine was for?  
(Name and purpose of medication)

How did the doctor tell you to take the medicine?  
(Dose, frequency, duration, storage, techniques for use)

What did the doctor tell you to expect?  
(Expected positive outcomes and what to do if they do not occur)  
(Possible untoward effects and what to do if they occur)

### Final Verification

Just to make sure I did not leave anything out, please tell me how you are going to use your medicine.

## Refill Prescriptions

### Show and Tell

(Show the patient the medicine and have the patient tell you the answers to the three questions)

What do you take this medicine for?  
(Purpose of medication)

How do you take it?  
(Directions for use, including technique)

What kind of problems are you having?  
(Perceived untoward effects)

**Figure 1.** Indian Health Service (IHS) pharmacist counseling technique

pilot study showed a significant difference in immediate recall of the proper use of medication in patients counseled with the IHS interactive method compared with patients counseled with the traditional method, based on an immediate postcounseling interview ( $P < 0.00$ ). Only 28% of those counseled with the traditional method answered all questions correctly, while 77% of those counseled with the IHS technique answered all questions correctly.<sup>16</sup>

### Objectives

The primary purpose of this study was to compare the immediate postcounseling retention of important information using the traditional lecture method with that attained using the IHS interactive technique. The second objective was to compare the time required to counsel patients on new prescriptions using the traditional method with the time required using the interactive IHS technique.

### Methods

A prospective, nonrandomized, observational study took place at four different local community pharma-

cies in Oregon that were chosen based on willingness to participate. The study, which used a convenience sample, received Institutional Review Board approval from Oregon State University prior to data collection. The pharmacists who participated did not alter their usual counseling styles at their respective pharmacies. Two sites that used the traditional counseling model were assigned as the control sites, while two other sites, one of which was a student health center pharmacy, were chosen because they were using the IHS counseling method.

The traditional model of pharmacist-patient counseling provided the patients with verbal information containing the name of the drug, how to take it, and possible adverse effects. Intervention group participants were counseled with the IHS technique, which uses structured, open-ended questions to verify patient understanding of the proper use of the new prescription medication (Figure 1).

The study participants—who were at least 18 years or older, English speaking, and not pregnant—brought a new prescription to the pharmacy and waited to have it filled. Children (<18 years), pregnant patients, and pa-

tients with refill prescriptions were excluded. Patients were identified by the site pharmacy staff when they dropped off a new prescription or a prescription with changes to existing medications (strength, direction, frequency, etc.). The pharmacy staff, using a script, asked if patients were interested in participating in a study. If they responded positively, they were referred to the investigator, who obtained informed consent. Patients were told that the study involved comparing counseling approaches and timing the duration of the counseling session with the pharmacist, with the goal of improving patient counseling. Patients had the right to withdraw during any part of the study and were not obligated by the initial agreement to participate.

Next, the patient returned to the pharmacy counter to complete the transaction for the prescription. The transaction consisted of two major parts. First, the pharmacy technicians handled payment and documentation of patient receipt. Once the transaction was completed, the pharmacist counseled the patient and handed the patient the filled prescription. The investigator observed the pharmacist–patient consultation and used a stopwatch to time the duration of the counseling session. The investigator could clearly hear the counseling session and accurately time when the counseling started and stopped. In each of the pharmacies, counseling on new prescriptions occurred in a designated area of the pharmacy to protect patient confidentiality.

Pharmacists at each test site are licensed by the state of Oregon and are required to counsel patients with new prescriptions. The pharmacists were aware of the investigators’ presence but did not know which patients had agreed to participate in the study or the questions they

were asked after pharmacist counseling. When counseling was finished, participants visited the principal investigator for an exit interview. Using a standardized data collection form, the investigator asked questions about indication of therapy, directions on how to take the medication properly, and expected adverse effects. The investigator also obtained demographic information. Exit interviews were conducted in a separate area of the pharmacy and were completed immediately after the participant’s counseling session with the pharmacist.

Because of the limited content of the traditional approach compared with the IHS method, only immediate recall of key elements—purpose of the medication, directions for use, and potential common and/or severe adverse effects—were measured for both groups. Responses to all three questions were either 100% correct or marked as incorrect. Criteria for what should be covered during the counseling encounter were the minimal criteria used by the pharmacists at the student health center site. For example, for angiotensin-converting enzyme inhibitor prescriptions, cough and facial swelling were the criteria for adverse effects. Finally, pharmacists at the two sites using the IHS method were experienced in using the technique.

Descriptive statistics were used to analyze collected data (Table 1). A Fisher exact test was used to analyze participants’ recall accuracy of pharmacist counseling because the response (correctness) and observational factor (counseling model) are binary factors. This test was used to determine if the odds ratio of getting an answer correct under one model is different from the odds ratio of getting an answer correct under the other model.

**Table 1.** Demographics of patients who received counseling

Characteristic	Indian Health Service method (n = 246)	Traditional method (n = 254)	P
Average age, years (mean ± SD)	33.16 ± 15.38	42.85 ± 14.62	<0.01 <sup>ab</sup>
Gender			
Male	95 (39%)	84 (33%)	0.23 <sup>c</sup>
Female	151 (61%)	170 (67%)	
Length of time using pharmacy			
<1 year	99 (40%)	68 (27%)	<0.01 <sup>bc</sup>
>1 year	147 (60%)	186 (73%)	
Type of counseled prescription			
Antimicrobials	81 (33%)	85 (33%)	0.75 <sup>c</sup>
Cardiovascular	6 (2%)	15 (6%)	<0.05 <sup>bc</sup>
Respiratory	29 (12%)	19 (7%)	0.14 <sup>c</sup>
Women’s health	15 (6%)	8 (3%)	0.14 <sup>c</sup>
Mental illness	28 (11%)	27 (11%)	0.89 <sup>c</sup>
Pain	48 (20%)	49 (19%)	0.92 <sup>c</sup>
Dermatology	14 (6%)	12 (5%)	0.84 <sup>c</sup>
Other	25 (10%)	39 (15%)	0.08 <sup>b</sup>

<sup>a</sup>Two-tailed *t* test.  
<sup>b</sup>Statistically significant.  
<sup>c</sup>Chi-square test.

A two-sample *t* test was used to analyze the duration of the counseling sessions and to examine the difference in duration, assuming equal variance between the groups. The *t* tests, chi-square test, and a chi-square test with Yates' correction were used to analyze demographic differences between the two groups.

## Results

A total of 500 participants were included in the study from mid-December 2012 through April 2013. Table 1 shows the baseline characteristics of the participants in the two arms: IHS technique and traditional method.

Correct responses were defined as 100% accurate recall of the information requested by all three questions. Seventy-one percent of patients counseled using the IHS method answered all three questions accurately, compared with 33% of the patients counseled using the traditional method (Fisher exact test,  $P < 0.01$ ). Fisher exact test analysis also revealed that Question 1 did not have a significant *P* value (0.06), indicating a lack of evidence of a difference in the proportion of correct answers between counseling types for the medication indication. Questions 2 and 3 did have statistically significant results ( $P < 0.01$ ), indicating an association between the counseling type and the answers to how to take the medication and those discussing potential adverse effects. Patients who received the IHS counseling had four times the odds of correctly answering when to take the medication (95% confidence interval [CI], 2.41–10.11) and four times the odds of correctly answering all adverse effects questions (95% CI, 2.98–6.41).

Further data analysis of the accuracy of responses to Question 3 revealed that a significant number of pharmacists failed to discuss adverse effects. According to patients at sites using the IHS method, 11.4% of pharmacists failed to discuss adverse effects, compared with 35.5% at sites using the traditional approach. Fisher exact test analysis revealed a significant difference between the two methods ( $P < 0.01$ ), favoring the sites using the IHS method. Because the significant numbers of pharmacists who did not talk about adverse effects could potentially affect the accuracy of recall results, the accuracy data were reanalyzed using only patients who had received counseling on all three questions. Eighty percent of patients counseled using the IHS technique answered all three questions accurately, compared with 51.5% of patients counseled using the traditional approach. Fisher exact test analysis still showed a significant difference favoring the IHS approach ( $P < 0.01$ ).

Similar results favoring the IHS approach were found when the data on accuracy of answers to Question 3 were recalculated using only patients who were counseled on all three questions ( $P < 0.01$ ). The results for patients who received the IHS counseling dropped from four to three times the odds of correctly answering Question 3 (95% CI, 1.84–4.94). In the traditional meth-

od group, 56.7% of patients who were counseled about adverse effects did not identify the adverse effects correctly, compared with 15.1% in the IHS method arm. In addition, using a structured counseling technique such as the IHS approach increased the likelihood of patients receiving counseling about adverse effects, compared with the traditional method (88.6% vs. 64.5%).

The IHS counseling method required an average of 128.1 seconds (SD  $\pm$  46.0 s) to complete the pharmacist-patient counseling session, compared with 75.3 seconds (SD  $\pm$  48.44 s) for the traditional approach. The methods differed by 52.9 seconds on average (95% CI, 44.6–61.2 seconds). The observed difference is statistically significant ( $P < 0.01$ ). Reanalysis of counseling times using only patients who had been counseled on Question 3 showed 79.9 seconds in the traditional group compared with 129.1 seconds in the IHS group, a duration similar to that for all patients.

The patient population from both arms of this study was similar except for age-related issues (Table 1). The *t* test analysis revealed a significant difference in age between the two groups ( $P > 0.01$ ). The average age on the IHS arm was 33.2 years (SD = 15.38), compared with 42.9 years in the traditional group (SD = 14.61).

## Discussion

The results of this study were similar to those of previous pilot studies that used a similar approach. The current study showed that 71% of patients receiving the IHS counseling technique accurately recalled information for all three prime questions, compared with only 33% of patients receiving traditional counseling. These results are close to the previous pilot study results showing 77% accuracy of recall with the IHS technique and 28% with the traditional technique.<sup>16</sup> These differed from the original pilot conducted in four IHS facilities, which showed nearly 100% recall accuracy using the IHS technique and 55% accuracy using the traditional approach.<sup>14</sup>

In addition to the difference in numbers of patients, the reasons for the differences between the results from the original IHS study and the current study with its pilot are significant. First, the IHS study was conducted in a cross-cultural care setting where pharmacists were mandated to counsel every patient about every prescription, new or refill. Periodic surveys indicated that almost 100% of IHS pharmacies met this mandate, a major emphasis in IHS pharmacy practice.<sup>17</sup> Second, the IHS study was designed to test the impact of two variables, both the methods of consultation and different degrees of privacy. Two of the facilities had no private consultation rooms, while two others used 80- to 100-square-foot private consultation rooms attached to the pharmacy. In each group, one facility used the traditional method, while one used the IHS technique. Both facilities using the IHS technique showed significant improvement in



recall accuracy compared with facilities using the traditional technique. Private consultation rooms added about 10% to the recall accuracy regardless of counseling technique used,<sup>14</sup> yet none of the four sites involved in this study had private consultation rooms.

In addition to improving recall accuracy of important information, the IHS method offers several other advantages. Inappropriate responses to the first prime question can immediately help identify problems in patient cognition, language fluency, and hearing, allowing the pharmacist to quickly adapt the counseling to specific patient situations. The technique has also demonstrated a benefit in detecting prescription errors prior to dispensing.<sup>18</sup>

The difference in age between the two counseling methods was likely due to the fact that one of the sites using the IHS technique was a student health center pharmacy; therefore, the population served was mostly college age. The inclusion of a student health center as one of the IHS sites may have also affected other parameters. Fisher exact test analysis revealed a significant difference between the groups in length of time patients had used a particular pharmacy. The number of patients who had used the pharmacy for less than 1 year was higher in the group receiving the IHS counseling method than the number of patients using the same pharmacy for more than 1 year in the traditional arm. The fact that one-half of the patients receiving the IHS method were college-age students, with potentially more refined recall abilities than patients at the other three sites, could have had an impact on accuracy of the recall data.

Another potential explanation for this observation is that the student health center pharmacy director was a codeveloper of the IHS technique while working in the IHS. This may have influenced the thoroughness of the consultation and the skills of the pharmacists at that site, which achieved a higher level of accuracy of recall compared with the other sites. The types of medications were also similar across both arms, except for oral contraceptives and cardiovascular medications, both likely related to the difference in age distribution resulting from inclusion of the student health center pharmacy. As would be expected, the number of oral contraceptive prescriptions was slightly higher in the IHS arm, and the number of cardiovascular medications was slightly higher in the traditional group. Finally, because the medical staff and pharmacy are located in the same building, accuracy of recall may have been affected by the shorter wait times between the physician visit and pharmacist counseling.

Another outcome of the study was a measurement of how much time it took for pharmacists to counsel patients on their prescription medications. The IHS technique required 128 seconds, compared with 75 seconds for the traditional method. In addition, patient reports showing that pharmacists at sites using the traditional

approach failed to talk with 35.5% of the patients about adverse effects, compared with 11.4% in the IHS group, affected the overall differences in the duration of counseling. This is disappointing, considering that most patients want to know about potential adverse effects. The large standard deviations in the timing (up to 50 s) likely reflect multiple differences among the medications, the four sites, and the pharmacists, including length of counseling required for specific drugs, pharmacist attitudes about counseling, pharmacist perceptions of importance of the medication, workload at the time of counseling, and level of supervisory commitment to patient counseling, among others.

The 128 seconds per new prescription is generally consistent with IHS experience if consultations requiring 10 to 20 minutes are included, such as initial prescriptions for oral contraceptives. Previous internal IHS time and motion studies, conducted to determine staffing levels, found it took an average of 75 seconds per outpatient visit to counsel all patients on all prescriptions using the IHS interactive method. The average number of prescriptions per IHS facility outpatient visit at the time was 1.15 prescriptions. In addition, only 80% of outpatient visits resulted in a trip to the pharmacy. Unfortunately, the IHS study included counseling for refill prescriptions, which typically requires only 15 to 20 seconds per prescription using the IHS show-and-tell technique (Figure 1). At the time of the IHS study, the number of refill and/or renewal prescriptions was less than one-third of total prescription volume.

Four additional issues may have contributed to the difference in duration of counseling. First, in the traditional groups many pharmacists failed to discuss adverse effects. Second, the third prime question in the IHS technique actually has two parts with two outcomes each. The first part consists of (1) what should happen if the medication is working and (2) if it is not working, what patients should do about it. The second part consists of (3) what the potential common negative effects are and (4) what to do about them if they occur. Because the traditional approach was most likely to primarily cover the third outcome (mentioning potentially common or serious adverse effects), this outcome was chosen as the criteria for measuring accuracy of the third prime question. Much of the additional time seen using the IHS technique can be attributed to the additional time spent talking about all four outcomes, which requires spending more time on Question 3 than just listing adverse effects using the traditional approach. In addition to enhancing retention of important counseling points, this extra time seems more than worthwhile, since it is primarily spent more fully covering the material patients indicate they are most interested in receiving.

Third, the difference in the number of first-visit oral contraceptive prescriptions between the groups, which require at least 10 minutes of counseling, were slightly

more frequent at the IHS sites than at the traditional sites (13 vs. 3). However, given the small absolute difference relative to the overall number of patients, this probably had little actual impact.

Finally, the visible presence of the investigator during the counseling session may have induced a Hawthorne effect for both patients and pharmacists at all four sites.<sup>19</sup> This effect may have caused the pharmacists to alter and/or speed up their normal processes at the traditional sites, shortening the duration of the counseling. Since the IHS technique is interactive—a dialogue between the patient and the pharmacist—it is less likely to be significantly affected by a Hawthorne effect. However, because of this effect, pharmacists at the IHS sites might have taken more time to be more thorough in their counseling.

The results also show a significant difference in instant recall ability between the IHS and traditional methods. In addition, the results suggest that those who received the IHS counseling were roughly four times as likely to correctly identify both when to take their medication and the potential adverse effects than those who received traditional counseling. Not surprisingly, there was no significant difference in responses on the medication indication between the two methods of counseling, as most patients receive medication for the symptoms or illness that caused them to seek medical care. Of the three questions, patients were most likely to answer the indication of therapy question correctly. Most incorrect responses generated from both arms were on adverse effects.

Switching from the traditional approach to the IHS method of counseling has several implications for practitioners. Based on the experience of one of the authors and an IHS colleague, gained in assisting hundreds of pharmacy sites transition to the IHS approach over the last three decades, a distinctive pattern consisting of three separate phases was observed.

In the first phase, the pharmacists' skills and confidence in using the technique grow slowly; pharmacists tend to be very awkward and unsure of themselves and the technique when they first use it. Patients immediately notice that the counseling is different from that received before, and this can potentially create patient anxiety. This anxiety is readily observed in the patient's body language by the novice practitioner of the technique, creating additional pharmacist discomfort. Several authors have described experiencing such issues during the first phase.<sup>20-22</sup> However, persistence and continued use of the technique increase the pharmacist's skill and confidence. The time required for counseling decreases, and patients begin to see it as the normal process, rather than something new and different. Just about the time everything seems to be working well, a second phase can occur that temporarily limits the efficiency of the process.

During the second phase, patients begin to see the pharmacist as more accessible and willing to answer questions. Therefore, they become more comfortable asking questions and begin to more frequently inquire about current and other medications, a factor that increases the pharmacist's counseling time. This is much less pronounced in pharmacies that have always made themselves accessible for questions and much more pronounced in those pharmacies that historically have not seemed interested in talking with patients.

Finally, the third phase arrives, at which point a confident pharmacist, with improved skills, talks with patients who expect a dialogue about their prescription. One author described the third phase as a goal for more optimal counseling; in other words, inter-role congruence between the patient and the pharmacist is high.<sup>23,24</sup> Counseling mostly goes smoothly, and time spent counseling drops even further. The pharmacists at the IHS sites were both highly experienced in this third and final phase of implementation.

The first phase can be shortened through several approaches. First, more actual pre-implementation practice using case-based role-playing, with feedback, helps to improve skills and confidence more rapidly. Second, standardizing essential counseling points for commonly used medications also can improve practitioners' comfort with this new approach to counseling. Finally, since many pharmacists are uncomfortable in emotional situations in which loss of control is possible, teaching the use of reflective responses and "I" messages through case-based role-playing, with feedback, enhances pharmacists' confidence in dealing with even the most difficult situations.

### Limitations

The present study had several limitations. First, it measured immediate recall, not recall at a later time (e.g., 24 h later), which may have yielded a different result. Second, it did not look at measurable intermediate outcomes such as changes in blood pressure or subsequent medication adherence to see if the method of counseling led to differences in outcomes or adherence. The unexpected high frequency of pharmacists not counseling about adverse effects was also a limitation. However, data re-analysis involving only those counseled about adverse effects showed similar results for accuracy and duration of counseling. Failure to counsel about adverse effects did shorten counseling duration in the traditional group.

In addition, data were not collected on the number of patients who refused to participate in the study. Patients who consented to participate may have been more highly engaged than those who did not consent, a factor that may have affected the duration and accuracy of counseling.

Finally, the differences in the sites may have had an impact on the results. Since the counseling method was

not randomized and applied to individual pharmacists, the conclusions were observational, and causal inference could not be made with any degree of certainty. Furthermore, the scope of inference needs to be limited only to the four pharmacies on the days the study was conducted. However, with 500 participants, this study was sufficiently powered to examine the patterns in the sampled population in Oregon.

## Conclusion

The results showed that the interactive style of counseling using the IHS method provided significantly greater immediate recall of key information about prescription medication compared with the traditional method. In addition, patients were more likely to receive counseling about adverse effects with the structured IHS approach than with the traditional approach. The IHS method also took longer than the traditional method. Further research is needed to control for the range and consistency of key counseling points included in both arms of the study.

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