## RESEARCH NOTES

A

**Development of the Drug Adherence Work-up (DRAW) tool**

**William R. Doucette, Karen B. Farris, Kelly M. Youland, Brand A. Newland, Scott J. Egerton and Jennifer M. Barnes**

## Abstract

***Objective:*** To develop and conduct an initial field test of the Drug Adherence Work-up (DRAW) tool, which was devel- oped to guide pharmacists when addressing nonadherence during medication therapy management (MTM) visits.

***Methods:*** The field test was a prospective cohort study, in which seven trained pharmacists used DRAW to evaluate pa- tients by asking about possible reasons for nonadherence dur- ing an MTM visit. Pharmacists were notified of potentially non- adherent patients identified through drug claims data analyzed by Outcomes Pharmaceutical Health Care. The pharmacists re- ported on use of DRAW in an MTM claim and provided opinions about DRAW via an online survey.

***Results:*** According to the online survey, pharmacists re- ported that DRAW helped them to improve the focus of their MTM services and address more adherence problems than their usual approach. They thought the tool was easy to use and well organized. Some commented that DRAW could be a useful tool for teaching pharmacists. The most common reasons re- ported for nonadherence were the presence of adverse effects (59.1%) or forgetting to take the medication (54.5%). More than three-fourths of patients (77.3%) indicated more than one reason for nonadherence.

***Conclusion:*** A brief, comprehensive tool to evaluate medi- cation nonadherence, such as DRAW, may help pharmacists address various reasons for medication nonadherence. Often nonadherence is multifaceted, which makes an inclusive tool like DRAW a useful approach; however further research is needed.

***Keywords:*** Adherence (medication), medication therapy management, screening tools.

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pproximately 50% of patients report nonadherence with their medications, making it an extremely important and costly public health issue.1 Medication nonadherence, or

the extent to which a person's behavior does not coincide with medical or health advice, can lead to increases in morbidity and mortality and contributes approximately $100 billion in annu- al health care costs.2 Patient nonadherence to medications is receiving greater attention as a health problem, as evidenced by the National Consumer League's campaign, Script Your Future, to inform consumers about medication nonadherence (scriptyourfuture.org).

Medication nonadherence is an issue that should be ad- dressed by all health professionals. Physicians, nurses, and pharmacists can all play a role in supporting adherence with medications. Pharmacists have the unique ability to monitor medication adherence using patient medication refill histories, but such information does not provide any indication of the rea- son for nonadherence. Pharmacists have the potential to ad- dress this issue during dispensing encounters at the pharmacy and during medication therapy management (MTM) visits.

Medication nonadherence occurs for a variety of reasons and can be complex.1,3–6 Therefore, a practical multifaceted method is needed to assess and ascertain reasons for non- adherence. Although measures of adherence exist,7,8 a tool is needed to guide pharmacists when meeting with patients to ad- dress reasons for nonadherence. The Drug Adherence Work- up (DRAW) tool was developed to help pharmacists assess reasons for nonadherence during an MTM visit with a patient. DRAW guides pharmacists through questions that ask about the most common causes of medication nonadherence. This tool also suggests actions for pharmacists to address specific reasons identified during questioning.

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A version of the DRAW tool is available on the Million Hearts website at millionhearts.hhs.gov/Docs/TUPD/DRAW\_ tool.pdf.

## Objective

The objective of this initial work was to develop and conduct a field test of this brief, comprehensive tool in a pharmacy chain setting.

## DRAW development

Based on review of the literature, the DRAW tool was designed to guide pharmacists in assessing multiple reasons for nonad- herence, including too many drugs/doses,9 forgetfulness,10,11 concern about medications,12 –16 beliefs about medication effec- tiveness,9–15 medication costs,16–18 and the presence of adverse effects.19,20 DRAW is organized to address the reasons for non- adherence as found in the literature. Medication nonadherence can be classified as unintentional when a patient wishes to take medications but is forgetful or careless or intentional, when a patient purposely does not take medications as recommended.4 Intentional nonadherence can occur for many reasons, for ex- ample, when patients believe that a medication is not helping or when they think they do not need it.12–15 Several studies have shown that patients with trust in the medication are more likely to be adherent.1,16 If patients believe that their medications are not important or are harmful, their adherence will be lower. Patients also may pick and choose the medications to which they do and do not adhere.

Medication nonadherence also may result when patients believe they are taking too many medications or too many dos- es of medications per day. Research has shown when medica- tions are taken multiple times in a day, the mean rate of adher- ence is lower than when medications are taken once a day.9 Patients may miss doses as a result of forgetfulness, which can occur if the patient does not have a set method for organizing medications or because of an impaired memory. Approximately 12% of nonadherence in adults with chronic diseases results from problems in remembering to take medications, and these memory problems increase with age.10,11

Patients may also experience adverse effects from medica- tions. Almost one-half of patients who do not fill a medication after receiving a prescription (nonfulfillment) do so because they fear adverse effects. Experiencing or fearing adverse ef- fects accounts for 35% of nonadherence.10,19,20 Some patients may be nonadherent because they cannot afford to take costly medications regularly.17,18 Approximately 25% of adults in the United States are nonadherent as a result of medication costs.16 Two-thirds of these patients do not report this fact to their clini- cian. Finally, patients may not have the ability to be adherent because of decreased cognitive function or limitations in their activities of daily living. Solid documentation shows that im- paired cognitive function (determined by lower scores in men- tal status exams) decreases adherence.1,21 –25

DRAW contains questions to be asked by pharmacists when determining reasons for nonadherence. The tool also contains suggested actions to address each reason identified (Figure 1).

## Methods

In the field test, seven pharmacists reported on their use of DRAW in Kerr Drug Store pharmacies throughout North Caro- lina. The study pharmacists were trained to use the DRAW tool during a conference call using a slide presentation. The trained pharmacists were sent targeted intervention program messag- es by OutcomesMTM (an MTM program administrator) when patients were identified as possibly nonadherent with one med- ication, through analysis of drug claims data. Pharmacists then conducted an adherence MTM visit with each potentially non- adherent patient, either face-to-face or via telephone. Pharma- cists were instructed to ask the patient each question listed in DRAW. Based on patients' answers, pharmacists could address each reason for nonadherence after referencing the suggested actions and guides.

After the nonadherence visits, the pharmacists submitted claims online to OutcomesMTM. Pharmacists also completed an anonymous Web survey asking their opinion of DRAW after using it in practice. They used a four-point Likert-type scale (1, strongly disagree, to 4, strongly agree) to rate characteristics of DRAW, such as fit with usual approach, ease of use, organi- zation, ability to identify adherence problems, and comprehen- siveness. They also were asked to estimate the time needed to complete the DRAW visit and several demographic questions. The University of Iowa institutional review board approved the field test.

## Results

Data were collected and analyzed from 22 deidentified MTM claims and seven pharmacist surveys. The mean (±SD) age of patients was 57.8 ± 13.2 years. Eight of the 22 patients (36.4%) were male. Nineteen (86.4%) of the MTM visits oc- curred via telephone. Approximately 90% of patients answered “yes” to at least one of the questions asked using DRAW, while 17 (77.3%) answered “yes” to at least two reasons for nonad- herence. For the 22 patients, the reasons for nonadherence and their frequencies were adverse effects (59.1%), forgetting to take on routine days (54.5%), cost of medication (31.8%), concern about adverse effects (13.6%), too many medications or doses (9.0%), concern about medication not helping (9.0%), disbelief in needing medication (9.0%), and forgetting on non- routine days (4.5%).

All five pharmacists who reported their credentials stated that they had a PharmD degree and residency training. Partici- pating pharmacists reported performing 8.8 ± 4.2 adherence interventions per month (range 4–15 ). They reported using DRAW 4.4 ± 3.2 times in the previous month and estimated that it took 11.6 ± 6.3 minutes to use . All pharmacists agreed that DRAW fit in with their usual approach, was well organized, and easy to use. Five (71.4%) pharmacists agreed that DRAW helped them focus their MTM service on addressing reasons for nonadherence. Two pharmacists commented that they believed DRAW would be useful as a teaching tool for pharmacists or student pharmacists on rotations.

# Drug Adherence Work-up Tool (DRAW©)

Ask each question and note “YES” response. For each YES, consider the suggested actions and refer to the guide sections on the next page.

# Patient Interview Yes Suggested actions & GUIDES

Verify adherence; Identify any

1. Please tell me how you take your medication every day.
2. Do you feel like you have too many medications or too many doses per day?
3. Do you sometimes forget to take your medication on routine days?
4. Do you forget on non-routine days such as weekends or when traveling?
5. Do you have a concern that your medication is **not** helping you?
6. Do you feel that you **do not** need this medication?
7. Have you had any side effects?
8. Are you concerned about side effects?

N/A















discrepancies; Add to their knowledge

**A, B, E**

Reduce number of meds per day by stopping/changing medications; Simplify regimen

**A, C, D**

Adherence aid, alarm or specialized packaging; Med calendar; Memory aid; Rule out anticholinergic meds **A, E**

Patient education; Guided counseling

**B, C**

Guided counseling; Switch medications; Symptom management; Adjust regimen **B, C**

Switch to less costly medication;

1. Is the cost of this medication too much? 

**Pharmacist:**

cost reduction strategy

**D**

1. At any time during this interview, did you sense an issue about decreased cognitive function?
2. Is there a limitation on instrumental activities of daily living to affect adherence and/or use of adherence aids?
* Rule out anticholinergics; Discuss with other area providers; Referral

to assistance resource; Recommend or support medication assistance

* including aids and/or caregivers

**A, E**

1. **Do you plan to follow up with this patient?**  **Schedule follow-up date**

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**Figure 1** Drug Adherence Work-up Tool


# Drug Adherence Work-up Tool (DRAW©)

**GUIDES**

|  |  |
| --- | --- |
| **A** | **Reminder tools, adherence aids or alarms** range from helping the patient set a cell phone alarm to an automated medication dispensing machine. Aids typically organize, prompt or both. To view a wide range of compliance aids, go to [www. epill.com.](http://www.epill.com/)* Use specialized organizers, such as the day/time pill containers;
* Use of special blister packs if available;
* Institute a medication calendar if patient can and will use it.

**Simplifying regimen** includes: 1) using long acting drugs where possible, 2) reducing number of medications |
| **B** | **Patient education** addresses any identified knowledge deficiencies. Refrain from reiterating that their physician ordered it. Positive reinforcement of the benefits sounds better than being told about the negative outcomes from non-adherence. |
| **C** | **Guided counseling** addresses concerns about the effectiveness or necessity of the medication.* Helping a person resolve their medication issues requires you to listen well and understand their concerns in order to work with the patient.
* Use open-ended questions to divulge their concerns and motivations. Example: Ask, “On a scale of 1 to 10, 10 being the most important, how important is it to you that you take this medication?” If the score is low, a follow-up question could be, “What can I do to help you raise your score to a 9 or 10?” Upper range is used to induce a dialogue with patient.
* Listen for indicators of the patient’s DESIRE, their ABILITY, their REASONS, and their NEED to make changes. Also listen for their COMMITMENT and TAKING STEPS to make changes. When you hear these, they are motivators or actions to encourage.
* For more information, see [www.motivationalinterview.org/clinical/overview.html.](http://www.motivationalinterview.org/clinical/overview.html)

**Symptom management:*** Consider if the symptoms are consistent with side effects of medications the patient is taking.
* Consider if the symptoms need to be treated or if there is a need to make a change in treatment.
* For memory decline, refer to section E.
 |
| **D** | **Cost reduction strategies:*** Reducing number of medications  Generic substitution
* Use of combination drugs when possible  Therapeutic interchange
* Tablet splitting
 |
| **E** | **Cognitive issues:** Patient may require additional assistance from alternative care givers such as competent relative, visiting nurse, assisted living, other community resources that provide assistance for daily activities in order to maintain medication regimen. Action options include 1) referral to a geriatric assessment unit, 2) discussion of available options with other area providers with appropriate referral to a local resource.Maintaining a current list of local and/or best available resources is recommended.**Anticholinergics:** Consider whether or not: 1) anticholinergics could be contributing to cognitive memory decline, 2) any cholinesterase inhibitors are being counteracted by anticholinergics. Consider a substitute for the anticholinergic medication and recommend physician/patient resolution.**Instrumental activities of daily living (IADL):** Consider if the patient is able to prepare their meals, phone for refills, or use an adherence aid without assistance. Consider any visual restrictions, quality of hearing, as well as their dexterity when considering the type of compliance aid. The ability to recognize the correct medication is essential. A caregiver may need to implement one or more aids. Maintaining a current list of local and/or best available resources is recommended. |

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## Discussion

Reasons for nonadherence vary from person to person; there- fore, the assessment of nonadherence during MTM visits needs to be broad and multifaceted in nature.1,8 In this small sample, 17 (77.3%) patients answered “yes” to at least two reasons for nonadherence in DRAW. Given the prevalence of multiple reasons for nonadherence, the use of a tool such as DRAW can help pharmacists obtain a more comprehensive understanding of why patients are nonadherent. The pharmacist then could work with patients and prescribers to prioritize problems and develop solutions that could address each reason for nonad- herence.

Pharmacists also were asked to provide feedback on DRAW. The online survey results showed pharmacists gener- ally were pleased with the content and organization of DRAW. When asked if this tool helped them perform adherence visits faster than their usual approach, the average score was neu- tral. In an ideal situation, using DRAW would lead to faster, more efficient visits, but because the tool is comprehensive it does not shorten visits to address nonadherence. Over time, pharmacists could become more efficient with using DRAW. In- terestingly, all seven pharmacists agreed DRAW helped them address more adherence problems (i.e., reasons for nonad- herence) than their usual approach. After using DRAW, most (85.7%) of the pharmacists agreed they would recommend this tool for MTM services related to nonadherence in the future, so it could be a useful tool in practice. DRAW would be helpful in visits with patients who already have been identified as being nonadherent either by pharmacists or by a drug plan.

A few pharmacists commented they thought DRAW had the potential to be a useful teaching tool for pharmacists and students. DRAW could help students understand why patients may be nonadherent because it addresses the main reasons of nonadherence. After completing training and using this tool in practice a number of times, practitioners may become comfort- able in their new knowledge of nonadherence and may not need to use the tool on a regular basis thereafter. Rather, they could rely on a cognitive schema or mental pathway to lead them through the questions, comprehensively assessing reasons for medication nonadherence.

## Limitations

This developmental work had some limitations. First, the sam- ple was small and limited to a single progressive pharmacy chain and to seven pharmacists. Although the data gave us ini- tial findings about DRAW, larger studies are needed to more fully evaluate its application and validity. In addition, this study did not include an analysis of whether medication adherence improved after using DRAW. Further research is needed to ac- curately describe how the use of DRAW can affect medication adherence.

## Conclusion

This development work provides initial support for the DRAW tool's use by pharmacists as a well-organized and relatively brief yet comprehensive tool for assessing important reasons

for medication nonadherence with patients. DRAW should be studied further to validate its use in pharmacy practice and education, as well as its use in primary care.

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