**Adherence through education: A call to clinicians to educate all patients on medication use**

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**ABSTRACT**

Medication nonadherence contributes to lack of achievement of desired therapeutic outcomes. This article reviews the evidence supporting patient education as a one of the tools to promote medication adherence. Patient education and provision of tools to help patients overcome adherence barriers are effective ways to improve medication adherence.

**KEYWORDS**

Patient education, medication adherence, tools

Adherence can be defined as the extent to which patients' behavior (i.e., taking medications, following a diet, executing lifestyle changes) coincides with medical or health advice. There are many reasons for nonadherence, including cost of medications, lack of noticeable benefit, side effects, or cognitive issues. Clinicians may have tools they frequently use to improve adherence. These may include simplifying a regimen to once daily, using reminders such as medication organizers or phone alarms; taking medications with meals or at key times of the day or having patients monitor their own vital signs to see that the medication is working. Patient education may not be an idea that comes to mind. This activity may be considered too time intensive to able to be completed in a short clinic visit. Providers may feel uncomfortable discussing such topics in depth and may not be aware of the impact this teaching can have. This article will present evidence from three studies demonstrating patient education is a key factor in adherence.

Bogner et al. conducted a randomized controlled trial to test the effectiveness of integrated care in patients with diagnoses of both diabetes and depression (compared to usual care) in a primary care setting. Pre-intervention adherence rates were collected for all participants. Medication Event Monitoring System (MEMS) caps were used to assess adherence. These caps have a microchip that registers every time the medication bottle is opened. This device was chosen due to low failure rate and increased sensitivity. Integrated care included education and an individualized program to improve adherence which, "recognizes the patients' social and cultural context" and addressed patient-level factors (i.e.,...
cognition, function, chronic medical conditions, social support, cost of medications, side effects, past experiences with medications). The intervention was presented as a supplement to existing primary care treatment and carried out through face-to-face and telephone sessions. Total intervention time was two hours (three 30 minute face-to-face sessions, two 15 minute phone calls) over a 3 month period. One hundred eighty patients (88 in usual care, 92 in integrated care) completed the 12 week study. Baseline characteristics, such as age, race, gender, level of education, glycosylated hemoglobin, number of medications, depression (PHQ-9) and functional (SF-36) score, cognitive status and cardiovascular risk factors, were similar between groups.7

This study found the intervention group had statistically higher percentage of patients with >80% adherence to hypoglycemic agents (65% vs 30% in usual care) and >80% adherence to antidepressants (63% vs. 21% in usual care). Statistically more patients achieved HbA1c <7% (67 vs 25 subjects), had greater decrease in HbA1c from baseline (-0.7 vs 0.5), achieved depression remission defined as PHQ-9 <5 (54 vs 27 subjects) and had greater decrease in PHQ-9 score from baseline (-2.42 vs -0.29). There were some limitations to this study. It occurred in 3 specific primary care clinics which may not be generalizable to other sites. The usual care group did not have as face-to-face visits, which cannot control for effects from attention. Authors concluded that these simple, brief interventions were educational and beneficial to patients trying to meet health goals.7

Wu et al. completed a randomized controlled trial looking at medication-taking behavior feedback in heart failure patients. While this study does not examine subjects with mental health disorders, they report very specific ways to educate patients on adherence behaviors. This study uses theory of planned behavior (a framework for explaining health-related behavior and behavior change) on which to base subject interventions. This study also used MEMS caps to provide direct feedback to subjects to correct misconceptions about how they are taking medication. Authors chose 88% or above as the cut off for adherence, and adherence rates of <88% were defined as nonadherent. There was a one month study run-in period to assess baseline adherence rates. Study participants were randomized to one of three groups: theory-based intervention + MEMS, theory-based intervention only, or usual care. Theory-based intervention included individualized teaching and counseling, focused on subject's intention to do the target behavior (i.e., take medications as prescribed). Key determinants of intention include "attitudes (patient's beliefs about outcomes of adhering to prescribed medication), subjective norm (whether patient's significant others and physicians approve or disapprove of medication adherence), and perceived behavioral control (the presence or absence of resources for, and impediments to, performance of adhering prescribed medication)." Interventions were designed to encourage positive behavior beliefs. Caretakers were taught how to support subjects and identified how they can help subjects with medication adherence. Participants were taught the skills needed to feel empowered and increase perceived control over barriers. MEMS reports were downloaded and reviewed with subjects by a research nurse. This information was used to identify ways to overcome barriers to adherence. Interventions occurred every other week for a total of four sessions (two 1 hour face-to-face sessions, two 15-20 minute phone calls).8

Wu's behavioral feedback study was conducted for 9 months. Study endpoints included cardiac event-free survival, quality of life and medication adherence. Eighty-two patients completed the study. No significant differences were seen among baseline characteristics. Average age of participant was 60 years old. This study found that the cardiac event free survival was significantly longer for the two treatment groups compared to usual care. There was no difference in quality of life scores between all three groups. Medication adherence improved in both treatment groups over the study period. At 9 months, 74% of MEMS + theory group had adherence >88% vs 65% of theory only group vs. 36% of usual care (p=0.015). Study limitations include the application of MEMS to clinical practice, as it may be too expensive and impractical for all patients to use these caps. This study had a small study population and a larger study would validate results. Wu et al. concluded that theory based interventions, educating and empowering patients to overcome barriers does improve medication adherence. They also concluded that adherence needs to be assessed at every visit to reinforce its importance to patients.8

Populations who may benefit from this type of intervention would most likely be more functional patients, able to take their own medications and willing to participate in one-on-one counseling and/or group sessions. This study also factored in the support and opinions of caregivers, as well as provided education to them which may provide an additional level of adherence. Wu's study excluded those who could not read or speak English, as well as those with impaired cognition on the
Mini-Cog Exam (defined as a word recall score of 0 or word recall of ≤2 with abnormal clock test). 8

A systematic review by Al-Jumah et al. looked at pharmacist interventions with patients who received antidepressants. They reviewed all randomized controlled studies between 2000 and 2010. Twelve studies met the two part criteria: pharmacists made an intervention and antidepressant adherence was a main outcome. Study sample sizes ranged from 64 to 533 subjects, for a total of 1904 patients who interacted with 136 pharmacists. Most studies took place in community pharmacies or clinic settings, and one study involved the inpatient setting. Most of the studies had short (up to 7 month) follow-up, two studies continued for 12 months. Adherence was measured by patient self-report, pill counts, prescription claims and electronic pill counter. Seven studies reported improvement in patient adherence, two reported no significant change and three reported no change (the latter had small sample sizes and were underpowered). Pharmacist intervention led to two studies reporting improvement in depressive symptoms, four studies reporting improvement in patient satisfaction with treatment, three studies noting positive change in patient drug knowledge. 2

In this systematic review pharmacists made five types of interventions: 1) education and counseling on importance of adherence, explanation of side effects and reviewing regimens; 2) monitoring drugs and following up on drug reactions; 3) prescribing drug and dose changes to simplify regimens under protocol; 4) following up with patients by phone calls and providing all information to patient inquiries; 5) educating patients by providing a take-home video emphasizing importance of medication adherence. In a number of studies a combination of interventions was used to educate patients. Telephone calls were shown to effectively improve medication adherence (5 of 6 studies reported improvement in adherence). Patient education and monitoring also led to significant improvement in adherence (4 of 5 studies). This systematic review does not come without limitations. Medication adherence does not necessarily result in improvement in depressive symptoms, a number of different methodologies and outcomes were measured which makes it difficult to interpret results, most studies were less than 7 months in duration so no correlation between adherence and rates of relapse can be made due to short duration, and there was no cornerstone measurement for adherence, which makes it difficult to determine that all measurements of adherence are equal. While all interventions may not be generalizable to all settings, authors concluded pharmacist involvement in patient education and treatment monitoring does improve medication adherence in patients with depression. 2

These studies demonstrate that patient education, discussions at every visit and providing tools to help patients overcome adherence barriers are all effective ways to improve medication adherence. While it may not be feasible for all patients to use MEMS caps, it is easy to speak with patients at each visit about their medications and adherence, and remind them of the importance of taking medication as directed. These small actions have demonstrated that they make a difference in patient adherence and health outcomes.

REFERENCES