

FPIN's Clinical Inquiries

Improving Medication Adherence in Patients with Comorbidities

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Clinical Inquiries provides answers to questions submitted by practicing family physicians to the Family Physicians Inquiries Network (FPIN). Members of the network select questions based on their relevance to family medicine. Answers are drawn from an approved set of evidence-based resources and undergo peer review. The strength of recommendations and the level of evidence for individual studies are rated using criteria developed by the Evidence-Based Medicine Working Group (<http://www.cebm.net/?o=1025>).

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Clinical Question

Which interventions improve medication adherence in patients with multiple medical conditions?

Evidence-Based Answer

Interventions that involve pharmacists to review, simplify, and monitor medication use significantly improve adherence in patients with multiple medical conditions. (Strength of Recommendation: B, based on heterogeneous randomized controlled trials [RCTs].) The effect of these interventions on patient-oriented outcomes is not clear. There are no data on physician- or nurse-based interventions for improving medication adherence.

Evidence Summary

A 2008 systematic review evaluating interventions to improve medication adherence found increased adherence in five of seven trials.¹ The authors could not perform a meta-analysis because of the heterogeneous interventions and outcome measures. The first trial was an RCT of a pharmacist-based intervention in seven European countries with 2,454 patients (mean age = 74 years; mean number of medications per patient = 7).² Patients were presumed to have multiple medical conditions because of their age and the number of medications. Investigators supplied pharmacists in the intervention group with an instruction manual, and provided five training sessions on how to perform medication reviews, simplify regimens, create reminder charts, and educate patients. The pharmacists in the control group were not trained. Investigators measured adherence using a patient self-report questionnaire.

At 18 months, more patients in the intervention group adhered to their prescribed medication regimen than in the control group (15.2 versus 12.2 percent; $P = .03$). There was no effect on quality-of-life scores or total health care costs. Forty-two percent of patients entering the trial were lost to follow-up.

An RCT from the United States evaluated a pharmacist-based intervention involving 200 patients with hypertension and hyperlipidemia (mean age = 78 years; mean number of medications per patient = 9).³ Pharmacists provided patient education, performed follow-up to assess and support medication adherence, and dispensed medication in blister packs. After six months of pharmacist intervention, the remaining patients were randomized to continued intervention ($n = 83$) or usual care ($n = 76$) for another six months. Investigators measured adherence using pill counts, and tracked blood pressure and low-density lipoprotein cholesterol levels. Adherence rates increased from 61.2 percent at baseline to 96.9 percent at six months ($P < .001$); however, at 12 months the intervention group continued to have high adherence, whereas adherence in the usual care group declined almost to baseline (95.5 versus 69.1 percent; $P < .001$). Systolic blood pressure was lower in the intervention group than in the control group at 12 months (124 versus 133 mm Hg; $P = .001$), although the diastolic blood pressure and low-density lipoprotein cholesterol levels were comparable.

An RCT from Hong Kong evaluating patient adherence randomized 442 patients (mean age = 71 years; mean number of

medications per patient = 6) to receive usual care or a pharmacist-based intervention that included medication consultations and reminder telephone calls.⁴ Investigators documented multiple medical conditions among the patients. Pharmacists made 10- to 15-minute reminder calls to patients at the midpoint between scheduled physician visits. At the end of the study, more patients in the intervention group reported adherence than in the usual care group (81 versus 58 percent; $P = .001$). Additionally, mortality rates were lower in the intervention group than in the control group (11 versus 17 percent; relative risk of death = 0.59; 95% confidence interval, 0.35 to 0.97; number needed to treat = 16 after adjustment for potential confounders). However, more patients in the intervention group were taking lipid-lowering and antiplatelet medications, and cardiovascular events were the major cause of death in both groups.

A study from India randomized 90 patients in a 1:2 ratio to receive pharmacist counseling or usual care.⁵ Most patients were between 40 and 60 years of age, and approximately 90 percent had more than one medical condition. Pharmacists at the patients' own clinics provided a single counseling session. One month later, patient adherence (as measured by pill count) was better in the intervention group than in the usual care group (92 versus 85 percent; P value not given).

Two RCTs in the 2008 systematic review found no improvement in treatment adherence with pharmacist intervention.¹ The first was a six-month British study of 362 patients that compared usual care with pharmacist counseling in which pharmacists developed and revised medication plans with patients during follow-up visits. The second was a six-month U.S. study of 180 patients with diabetes mellitus and hyperlipidemia that compared usual care with pharmacist assessment of medication use by telephone.

Recommendations from Others

The Royal College of General Practitioners recommends that physicians involve

patients in decisions about their medications; understand patients' knowledge, beliefs, and concerns about medications; provide medication-specific information; and assess adherence.⁶ To improve treatment adherence in older patients, the University of Iowa Gerontological Nursing Interventions Research Center recommends using memory aids such as pill boxes and automatic dispensers, performing frequent physician review to reduce polypharmacy, and monitoring for changes in functional status that might impact adherence.⁷

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REFERENCES

1. Williams A, Manias E, Walker R. Interventions to improve medication adherence in people with multiple chronic conditions: a systematic review. *J Adv Nurs*. 2008;63(2):132-143.
2. Bernsten C, Björkman I, Caramona M, et al.; Pharmaceutical care of the Elderly in Europe Research (PEER) Group. Improving the well-being of elderly patients via community pharmacy-based provision of pharmaceutical care: a multicentre study of seven European countries. *Drugs Aging*. 2001;18(1):63-77.
3. Lee JK, Grace KA, Taylor AJ. Effect of a pharmacy care program on medication adherence and persistence, blood pressure, and low-density lipoprotein cholesterol: a randomized controlled trial. *JAMA*. 2006;296(21):2563-2571.
4. Wu JY, Leung WY, Chang S, et al. Effectiveness of telephone counselling by a pharmacist in reducing mortality in patients receiving polypharmacy: randomised controlled trial. *BMJ*. 2006;333(7567):522.
5. Ponnusankar S, Surulivelrajan M, Anandamoorthy N, Suresh B. Assessment of impact of medication counseling on patients' medication knowledge and compliance in an outpatient clinic in South India. *Patient Educ Couns*. 2004;54(1):55-60.
6. Nunes V, Neilson J, O'Flynn N, et al. Clinical guidelines and evidence review for medicines adherence: involving patients in decisions about prescribed medicines and supporting adherence. London, United Kingdom: National Collaborating Centre for Primary Care and Royal College of General Practitioners; 2009. <http://www.nice.org.uk/nicemedia/pdf/CG76FullGuideline.pdf>. Accessed December 2, 2010.
7. Bergman-Evans B. Evidence-based guideline. Improving medication management for older adult clients. *J Gerontol Nurs*. 2006;32(7):6-14. ■