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EB CME

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The series coordinator for *AFP* is Kenneth W. Lin, MD, Department of Family Medicine, Georgetown University School of Medicine, Washington, DC.

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Appropriate Use of Polypharmacy for Older Patients

NATHAN HITZEMAN, MD, and KATHERINE BELSKY, MD, *Sutter Health Family Medicine Residency Program, Sacramento, California*

Clinical Question

Which interventions can help physicians manage polypharmacy in older patients?

Evidence-Based Answer

Multidisciplinary interventions that address polypharmacy decrease inappropriate prescribing and medication-related problems in patients 65 years and older, but it is not clear if they reduce hospital admissions or improve quality of life. Most interventions studied were led by pharmacists or health systems rather than physicians. Only one study used computerized decision-making support. (Strength of Recommendation: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

Practice Pointers

In this review, polypharmacy is defined as current use of four or more medications. Polypharmacy may be appropriate or inappropriate; however, the risk of adverse drug events in patients 65 years and older increases as more medications are prescribed: 13 percent with two medications, 58 percent with five medications, and 82 percent with seven or more. Adverse drug events are responsible for approximately 100,000 hospitalizations among older persons each year.[1]

Clinicians typically have used the Beers criteria to identify potentially harmful medications; an updated list is available through the American Geriatrics Society (http://www.americangeriatrics.org/files/documents/beers/2012AGSBeersCriteriaCitations.pdf). The Medication Appropriateness Index and the McLeod criteria are used more often in research settings.

Ten studies analyzed interventions for managing polypharmacy in older adults, nine of which involved multifaceted pharmaceutical care. Nearly 22,000 patients (mean age = 74 to 75 years) taking an average of eight medications were included. Studies took place in hospital, nursing home, and primary care settings. In a subset of four studies with 424 patients, the mean Medication Appropriateness Index score was nearly 7 percent lower in the intervention group than in the control group (95% confidence interval [CI], –12.34 to –1.22 percent). However, when two studies at high risk of bias were omitted, the difference was closer to 2 percent. Two studies involving 586 patients and using the Beers criteria found that interventions did not lead to statistically significant reductions in the use of these medications, nor did they have a clear impact on hospital admissions or quality of life.

In two studies involving several thousand nursing home patients over a 90-day period, pharmacist interventions were associated with increased alerts for "potential drug therapy problems." Neither study reported adverse drug events, but one saw a trend toward decreased relative risk of hospitalization of 0.84 (95% CI, 0.71 to 1.00).

Only one study directly involved physicians through computerized decision-making support, a common feature of electronic health records.[2] In this study of 12,560 patients, computerized decision-making support modestly reduced the initiation of inappropriate prescriptions by 18 percent as measured by the McLeod criteria, but did not lead to discontinuation of existing inappropriate prescriptions. Another study outside of this review estimated that only one serious adverse drug event is prevented for every 2,700 computer alerts. The authors describe "alert fatigue."[3]

In the end, the most common causes of adverse drug events in older patients may be right under our noses. The Centers for Disease Control and Prevention estimated that in 2004, patients 65 years and older made more than 177,000 emergency department visits because of adverse drug events.[4] Warfarin (Coumadin), insulin, and digoxin accounted for one in three of these visits, whereas drugs on the Beers list accounted for less than

9 percent. We can reduce the rate of adverse drug events by using validated risk calculators for bleeding in patients taking warfarin (http://www.aafp.org/afp/2010/0315/p780.html), setting less stringent goals for A1C levels in older patients with comorbidities,[5] and avoiding high doses of digoxin or use of the drug without proper indications.

Author disclosure: No relevant financial affiliations.

SOURCE: Patterson SM, Hughes C, Kerse N, Cardwell CR, Bradley MC. Interventions to improve the appropriate use of polypharmacy for older people. *Cochrane Database Syst Rev.* 2012;(5):CD008165.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD008165.

REFERENCES

1. Budnitz DS, et al. Emergency hospitalizations for adverse drug events in older Americans. *N Engl J Med.* 2011;365(21):2002-2012.
2. Tamblyn R, et al. The medical office of the 21st century (MOXXI): effectiveness of computerized decision-making support in reducing inappropriate prescribing in primary care. *CMAJ.* 2003;169(6):549-556.
3. Weingart SN, et al. An empirical model to estimate the potential impact of medication safety alerts on patient safety, health care utilization, and cost in ambulatory care. *Arch Intern Med.* 2009;169(16):1465-1473.
4. Budnitz DS, et al. Medication use leading to emergency department visits for adverse drug events in older adults. *Ann Intern Med.* 2007;147(11):755-765.
5. American Diabetes Association. Standards of medical care in diabetes—2013. *Diabetes Care.* 2013;36(suppl 1):S11-S66.

Effect of Cocoa on Blood Pressure

COREY D. FOGLEMAN, MD, *Lancaster General Hospital Residency, Lancaster, Pennsylvania*

Clinical Question

Is increasing cocoa consumption an effective adjunctive therapy for adults with hypertension?

Evidence-Based Answer

Consuming 50 g of cocoa daily will lower blood pressure 2 to 3 mm Hg on average in adults with hypertension. Evidence of improved patient-oriented outcomes does not exist. (Strength of Recommendation: C, based on consensus, disease-oriented evidence, usual practice, expert opinion, or case series.)

Practice Pointers

In 1944, researchers studying the Kuna Indians of the San Blas Islands of Panama found that islanders who drank three to four cups of cocoa daily had lower blood pressure than those who migrated to the mainland and no longer drank cocoa daily.[1] Cocoa has high levels of flavonols (e.g., epicatechin, catechin), which can cause antioxidant activity in the endothelium, vasodilation via increased nitrous oxide production, and inhibition of angiotensin-converting enzyme, all of which may lower blood pressure. Hypertension is implicated in 50 percent of cardiovascular disease cases, and clinical practice guidelines suggest lifestyle and dietary interventions in addition to medication to lower blood pressure.

This Cochrane review combined data from 20 trials involving 856 patients. Patients using medications or other interventions to treat hypertension were included. Cocoa was consumed in several forms, including dark and milk chocolate, and cocoa powder. Overall, cocoa had a statistically significant effect of lowering systolic blood pressure by 2.8 mm Hg and diastolic blood pressure by 2.2 mm Hg. Results were more significant in shorter trials, which tended to use flavonol-free control products, and were not dose dependent. In the eight trials in which the control group used a low-flavonol product, blood pressure reduction was similar between the treatment and control groups. However, in the 12 trials in which the control group used a flavonol-free product, those in the treatment group had reductions in systolic blood pressure of 3.7 mm Hg and diastolic blood pressure of 2.7 mm Hg compared with the control group. None of the studies measured health outcomes (e.g., cardiovascular events, mortality).

Treated participants received a mean of 545.5 mg of flavonols or about 50 g of cocoa per day (range = 3.6 to 105 g of cocoa per day). One serving of typical cocoa powder for drinking contains 5 to 10 g of cocoa. The blood pressure–lowering effect was greater in persons younger than 45 years, in those who consumed less than 10 g of sugar per serving of cocoa product, and in those with an initial systolic blood pressure of 140 mm Hg or higher. Five percent of treated patients had adverse effects; the most common were gastrointestinal irritation and laxative effects.

Another Cochrane review found that lowering dietary sodium intake by 2 g per day could lower systolic blood pressure by 5 mm Hg and diastolic blood pressure by 2.7 mm Hg in persons with hypertension,[2] yet a third review concluded that advice to lower sodium intake has no impact on cardiovascular outcomes, including mortality.[3] Because it is not known if cocoa's effects on blood pressure improve patient-oriented outcomes, and because many cocoa products are high in sugar and saturated fat, family physicians should refrain from recommending cocoa to lower blood pressure in patients with hypertension.

Author disclosure: No relevant financial affiliations.

SOURCE: Ried K, Sullivan TR, Fakler P, Frank OR, Stocks NP. Effect of cocoa on blood pressure. *Cochrane Database Syst Rev.* 2012;8:CD008893.

The practice recommendations in this activity are available at http://summaries.cochrane.org/CD008893.

REFERENCES

1. Kean BH. The blood pressure of the Kuna Indians. *Am J Trop Med Hyg.* 1944;s1-24(6):341-343.
2. He FJ, et al. Effect of longer-term modest salt reduction on blood pressure. *Cochrane Database Syst Rev.* 2004;(3):CD004937.
3. Hooper L, et al. Advice to reduce dietary salt for prevention of cardiovascular disease. *Cochrane Database Syst Rev.* 2004;(1):CD003656. ■