Underuse of Medications and Lifestyle Counseling to Prevent Cardiovascular Disease in Patients With Diabetes

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Cardiovascular disease (CVD) accounts for ≥75% of hospitalizations and >50% of all deaths among patients with diabetes (1,2). Guideline-directed therapies for patients with diabetes aged 50 years and older with an additional cardiovascular risk factor such as hypertension include cardioprotective medications (antiplatelet therapy, statins, and antihypertensives shown to reduce cardiovascular events) and lifestyle counseling for healthy behaviors (weight loss/diet, exercise, and smoking cessation) (1,3). However, data are limited on trends in usage of pharmacotherapies and lifestyle counseling for patients with diabetes at increased CVD risk. Therefore, we used nationally representative data to investigate trends in medication use and lifestyle counseling among U.S. outpatients aged 50 years and over with diabetes and hypertension.

All visits to office-based physicians and hospital-based clinics by adults (aged 50 years and older with hypertension; $N = 14{,}096$ visits) from 2006 to 2015 in the National Ambulatory Medical Care Survey (NAMCS) and National Hospital Ambulatory Medical Care Survey (NHAMCS) were included. Data include patient symptoms, comorbidities, and demographics; physician diagnoses; medications ordered or provided; and medical services provided. Diabetes and hypertension were identified using ICD-9-Clinical Modification diagnosis codes. Physician decision making and treatment were evaluated using *1*) Multum Lexicon drug codes/categories and generic codes for antiplatelet agents (aspirin and clopidogrel), statins, ACE inhibitors (ACEi) or angiotensin receptor blockers (ARBs), and smoking cessation medications (nicotine replacement therapy, varenicline, or bupropion) and *2*) physician reports of their provision of behavioral therapy (diet, weight loss, or exercise counseling) and smoking cessation therapy among smokers during the visit. Simple logistic regression was used to examine time trends in medical and behavioral therapy. Multivariable logistic regression models adjusted for patient clinical risk factors and demographic characteristics, insurance status, geographical region, setting (rural or urban), and care site. All analyses accounted for the complex sampling design of NAMCS and NHAMCS and were performed using Stata, version 14 (StataCorp, College Station, Texas).

Overall, 19.0% of primary care visits made by adults over age 50 years reported a diagnosis of diabetes and hypertension, and of these visits, 17.9% reported prevalent CVD (coronary artery disease, stroke, or peripheral artery disease). The estimated number of annual visits for diabetes and hypertension more than doubled, from 26.8 million (95% CI 22.4–31.2) in 2006 to 54.4 million (95% CI 36.9–71.8) in 2015. Female patients comprised the majority (53.8%) of visits. Antiplatelet therapy, statin use, or ACEi/ARB use was reported in 31.0%, 46.6%, and 49.3% of all visits, respectively. Over time, the proportion of visits reporting antiplatelet therapy increased significantly ($P < 0.001$), with no significant change in reported statin or ACEi/ARB use (Fig. 1*A*). Counseling for weight loss/diet, exercise, or smoking cessation (or medication) was reported in 32.6%, 20.3%, and 27.2% of all visits, respectively. The proportion of visits reporting weight loss/diet counseling decreased significantly ($P = 0.024$), along with numerical decreases in exercise or smoking cessation counseling (Fig. 1*B*). In multivariate analyses of medication and lifestyle factors over time, only antiplatelet therapy use increased (odds ratio [OR] 1.05, 95% CI 1.02–1.08, $P < 0.01$), with decreases in counseling for weight loss/diet (OR 0.93, 95% CI 0.89–0.97) and smoking cessation (OR 0.91, 95% CI 0.84–0.99). Female patients with diabetes were significantly less likely than male patients to receive ACEi/ARBs (OR 0.76, 95% CI 0.67–0.86) and trended toward

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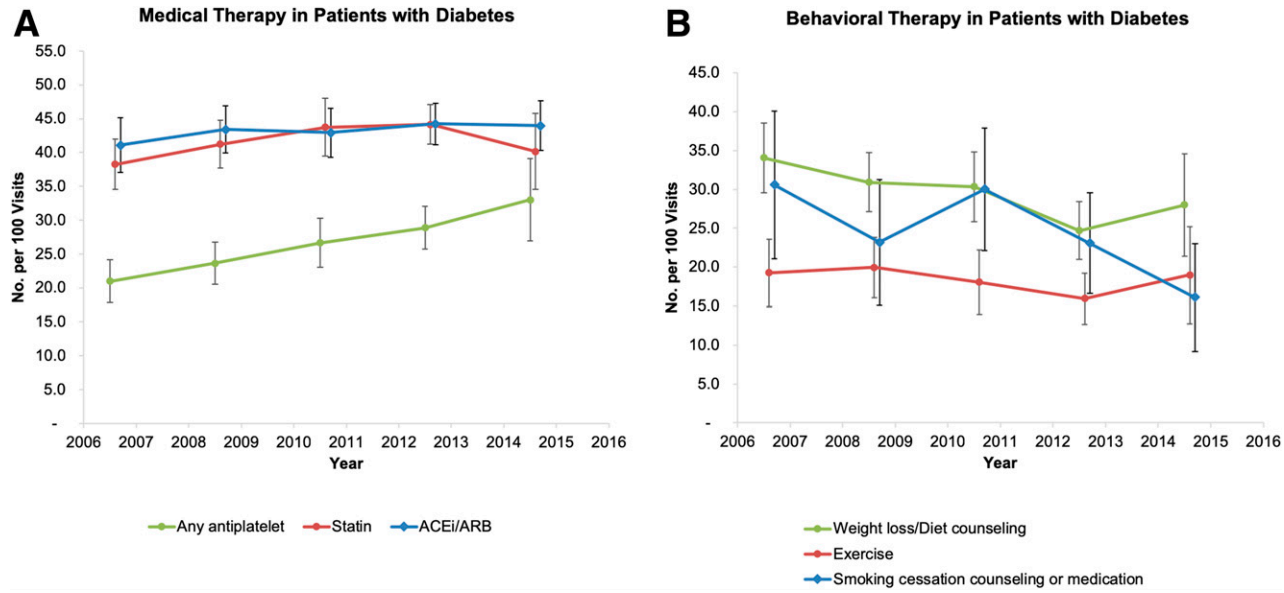

Figure 1—Time trends for reported medication use (*A*) and lifestyle counseling (*B*) in patients with diabetes and hypertension, 2006–2015

lower reported use of statins, antiplatelet agents, and lifestyle counseling. Reported lifestyle counseling was lower ($P < 0.03$ for all) among outpatients aged 65 years or older versus younger patients. Additional differences in lifestyle counseling were not consistently observed across other patient characteristics.

In a nationally representative survey of over 40 million weighted annual visits, more than half of U.S. outpatients over age 50 years with diabetes and hypertension did not receive an antiplatelet agent, statin, or ACEi/ARB. Visits for female outpatients with diabetes and hypertension reported significantly less ACEi/ARB use, and reported lifestyle counseling of outpatients aged ≥65 years decreased over time. Prior guidelines preferentially recommend ACEi/ARBs for all hypertensive patients with diabetes (4). At present, the American Diabetes Association recommends ACEi/ARBs for all hypertensive patients with diabetes with albuminuria; for those without albuminuria, hypertension treatment should include drug classes demonstrated to reduce cardiovascular events in patients with diabetes (3). A prior analysis demonstrated differences in processes of care for diabetes across sociodemographic characteristics but did not report use of lifestyle counseling (5). Undertreatment with guideline-directed medical therapy and lifestyle counseling among women with diabetes is concerning given the continued excess burden of CVD in women with diabetes (2). Attempts to increase physician and patient awareness of guideline-directed medical therapy and lifestyle counseling to ameliorate the burden of adverse cardiovascular outcomes among patients with diabetes and hypertension are warranted. These findings highlight a substantial ongoing need to improve the use of medical therapy and lifestyle counseling for patients with diabetes at elevated risk of CVD.

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