Additional Contributions: Andrea Benjamin, RN, provided skillful interviews of the participants.

1. Fried TR, Tinetti ME, Towle V, O'Leary JR, Iannone L. Effects of benefits and harms on older persons' willingness to take medication for primary cardiovascular prevention. *Arch Intern Med*. 2011;171(10):923-928.
2. Leipzig RM, Whitlock EP, Wolff TA, et al; US Preventive Services Task Force Geriatric Workgroup. Reconsidering the approach to prevention recommendations for older adults. *Ann Intern Med*. 2010;153(12):809-814.
3. Preamble to the Constitution of the World Health Organization as adopted by the International Health Conference. New York, NY: 19-22 June, 1946; signed on 22 July 1946 by the representatives of 61 States (Official Records of the World Health Organization, no. 2, p. 100) and entered into force on 7 April 1948.
4. Fried TR, Tinetti M, Agostini J, Iannone L, Towle V. Health outcome prioritization to elicit preferences of older persons with multiple health conditions. *Patient Educ Couns*. 2011;83(2):278-282.
5. Nease RF Jr, Kneeland T, O'Connor GT, et al; Ischemic Heart Disease Patient Outcomes Research Team. Variation in patient utilities for outcomes of the management of chronic stable angina: implications for clinical practice guidelines. *JAMA*. 1995;273(15):1185-1190.
6. Man-Son-Hing M, Gage BF, Montgomery AA, et al. Preference-based antithrombotic therapy in atrial fibrillation: implications for clinical decision making. *Med Decis Making*. 2005;25(5):548-559.
7. Rosenfeld KE, Wenger NS, Kagawa-Singer M. End-of-life decision making: a qualitative study of elderly individuals. *J Gen Intern Med*. 2000;15(9):620-625.
8. Fried TR, Bradley EH, Towle VR, Allore H. Understanding the treatment preferences of seriously ill patients. *N Engl J Med*. 2002;346(14):1061-1066.
9. Ditto PH, Druley JA, Moore KA, Danks JH, Smucker WD. Fates worse than death: the role of valued life activities in health-state evaluations. *Health Psychol*. 1996;15(5):332-343.

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"Top 5" Lists Top $5 Billion

The Good Stewardship Working Group presented the top 5 overused clinical activities across 3 primary care specialties (pediatrics, internal medicine, and family medicine), as chosen by physician panel consensus.[1] All activities were believed to be common in primary care but of little benefit to patients. We examined the frequency and associated costs of these activities using a national sample of ambulatory care visits.

Methods. We performed a cross-sectional analysis using data from the 2009 National Ambulatory Medical Care Survey (NAMCS) and the National Hospital Ambulatory Medical Care Survey (NHAMCS). The NAMCS and NHAMCS survey patient visits to physicians in non–federally funded, non–hospital-based offices and non–federally funded hospital outpatient departments, respectively.[2]

We limited our sample to visits by patients to their primary care physicians. Visits for each "top 5" primary care activity were identified using a combination of the patient-described Reason For Visit (RFV) and the physician's diagnosis as coded by the *International Classification of Diseases, Ninth Revision, Clinical Modification* (**Table**). Nonrecommended care ordered during the visit included that defined by the Good Stewardship Working Group (Table), with some exceptions owing to methodological limitations (unable to identify early referral of otitis media with effusion and appropriate use of corticosteroids based on asthma severity). We excluded from the denominator those visits in which the activity could be considered appropriate.

We calculated each activity as the proportion of eligible visits during which the patient received nonrecommended care. We applied the sampling weights and sample design variables to generate national estimates and 95% confidence intervals using Stata statistical software, version 11.0 (StataCorp, College Station, Texas).

We estimated the costs of procedures using the 2011 Medicare physician fee schedule, and in the case of laboratory tests, the 2011 Medicare Clinical Laboratory Fee Schedule[3] (eTable; http://www.archinternmed.com). We estimated the costs of drugs using common acquisition costs to consumers from drugstore.com[4] or retail pharmacies.[5]

Results. We found a wide range of frequencies (1.4%-56.0%) of nonrecommended activities in primary care, accounting for an approximate annual cost of $6.76 billion (95% CI, $5.0-$9.1 billion) (Table). The ordering of a complete blood cell count for a general medical examination was the most prevalent activity (56.0%, 95% CI, 40.8%-70.2%) and was associated with a cost of $32.7 million (95% CI, $23.9-$40.8 million).

Several practice activities occurred less commonly, such as ordering of bone density testing in women younger than 65 years (1.4%; 95% CI, 0.9%-2.2%) and Papanicolaou tests for patients younger than 21 years (2.9%; 95% CI, 1.7%-5.0%). We were unable to report the performance of dual-energy x-ray absorptiometry scans in men younger than 70 years and imaging for children with head injuries in ambulatory settings owing to their low frequency (visits <30).

Cost of unnecessary services was a function of both the frequency and the reimbursement rates for each service. The practice activity associated with the highest cost was the prescribing of brand instead of generic statins, resulting in excess expenditures of $5.8 billion per year (95% CI, $4.3-$7.3 billion). Bone density testing in women younger than 65 years was the least prevalent activity but accounted for $527 million (95% CI, $474-$1054 million) in costs.

Comment. Our analysis of outpatient visits demonstrates that there is considerable variability in the frequency of inappropriate care and that many of the activities identified in the Good Stewardship "Top 5" lists[1] have marginal impact on health care costs. Approximately 86% of the costs associated with the "Top 5" lists were from the use of brand name instead of generic statins. Although generic drug substitutions may appear to be a "low hanging fruit" for drug savings, numerous efforts have already been made by the US states (generic substitution laws), payers (tiered formularies), and health care providers (generic drug detailing) to achieve this goal. In this light, our data suggest that considerably more work is needed to reduce the costs associated with brand name statin use. Our results also demonstrate that highly prevalent activities with small individual costs can result in large overall costs to the health care system and thus warrant further attention.

Our analysis is limited by the available data of the NAMCS/NHAMCS data set and by our ability to accurately estimate visits with inappropriate care. We were conservative in our assessment of inappropriate care and were careful to exclude visits where care could be potentially appropriate, likely lowering our cost estimates.

The recent debate surrounding escalating health care costs and the sustainability of Medicare have focused attention on the delivery of high-quality, efficient care. The discussion certainly needs the participation of physicians who are willing to examine their own practices, such as the Good Stewardship Working Group. However, most primary care activities identified by the working group

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Table. Prevalence of Good Stewardship Working Group "Top 5" Activities in US Ambulatory Care, 2009

Primary Care Activity	Inappropriate Activity Definition	Eligible Visit Definition	Exclusions	Eligible Visits, No. Weighted	Eligible Visits With Inappropriate Activity, % (95% CI)[a]	Direct Costs, $ (95% CI)
Routine laboratory studies	CBC ordered or performed	Visits by adults older than 18 y who present for GME	None	4 186 261	56.0 (40.8-70.2)	32 679 628 (23 926 156-40 849 535)
Antibiotics for children with pharyngitis	Antibiotics prescribed	Visits by children younger than 18 y who present with pharyngitis	Strep pharyngitis, fever	10 907 680	40.9 (33.4-48.9)	116 365 312 (93 659 885-139 070 739)
Expensive brand-name statins on initiating lipid-lowering therapy	Atorvastatin or rosuvastatin prescribed	Visits by adults who are prescribed a statin as a new medication	None	13 462 214	34.6 (26.2-44.1)	5 817 251 527 (4 321 386 849-7 313 116 205)
Annual ECGs	ECG ordered or performed	Visits by adults older than 18 y who present for GME	None	4 186 261	19.1 (7.0-42.9)	16 639 550 (6 130 361-37 657 929)
Routine laboratory studies	Urinalysis ordered or performed	Visits by adults older than 18 y who present for GME	None	4 186 261	17.9 (9.4-31.6)	3 353 195 (1 676 598-5 961 236)
Imaging for back pain	Imaging (CT, MRI, radiography) ordered	Visits by adults aged 18-55 y who present with acute low back pain	Malignancy, weight loss, fever, cachexia, neurological signs	4 970 245	16.7 (11.1-24.2)	175 403 922 (82 677 541-437 169 828)
Routine laboratory studies	Basic metabolic panel ordered or performed[b]	Visits by adults older than 18 y who present for GME	None	4 246 308	16.0 (6.9-32.9)	10 129 992 (4 431 872-20 893 109)
Cough medicines for children	Visits by children <18 y, who present with URI and are prescribed cough/cold medications	Visits by children <18 y, who present with URI	None	21 472 734	11.8 (0.8-16.9)	10 306 912 (858 909-14 601 459)
Pap tests for patients younger than 21 years	Pap test ordered or performed	Visits by girls aged 10-21 y	None	22 570 460	2.9 (1.7-5.0)	47 763 607 (31 842 405-79 606 012)
DEXA scans for younger patients	Bone density scan ordered	Visits by women aged 40-64 y	Fractures, exposure to corticosteroids, anorexia, vitamin D deficiency, tobacco use	734 894 486	1.4 (0.9-2.2)	527 433 773 (474 690 395-1 054 867 545)
DEXA scans for younger patients	Bone density scan ordered	Visits by men aged 40-70 y	Fractures, exposure to corticosteroids, anorexia, vitamin D deficiency, tobacco use	151 651 500	NA[c]	NA[c]
Head injury imaging in children	Imaging ordered	Visits by children aged 2-18 y, who present with head injury	Hemotympanum, loss of consciousness, dizziness	NA[c]	NA[c]	NA[c]
Total cost						6 757 327 419 (5 041 280 970-9 143 793 597)

Abbreviations: CBC, complete blood cell count; CT, computed tomography; DEXA, dual-energy x-ray absorptiometry; ECG, electrocardiography; GME, graduate medical examination; MRI, magnetic resonance imaging; NA, not applicable; Pap, Papanicolaou; Strep, streptococcal; URI, upper respiratory tract infection.

[a] Survey weighted percentages, which represent national estimates based on the population that was sampled.

[b] Based on National Ambulatory Medical Care Survey/National Hospital Ambulatory Medical Care Survey 2008 because of changes in survey design.

[c] Estimates were suppressed for reporting owing to very small sample size (n<30).

are not major contributors to health care costs. Expanding the methods of physician consensus to identify "high-value" targets to specialties outside of primary care could bring us closer to achieving the goal of affordable and high-quality health care.

Minal S. Kale, MD
Tara F. Bishop, MD, MPH
Alex D. Federman, MD, MPH
Salomeh Keyhani, MD, MPH

Published Online: October 1, 2011. doi:10.1001/archinternmed.2011.501

Author Affiliations: Division of General Internal Medicine, Department of Medicine, Mount Sinai School of Medicine, New York, New York (Drs Kale and Federman); Division of Outcomes and Effectiveness, Departments of Public Health and Medicine, Weill Cornell Medical College, New York (Dr Bishop); and Division of General Internal Medicine, Department of Medicine, University of California, San Francisco, and San Francisco Veterans Affairs Hospital, San Francisco (Dr Keyhani).

Correspondence: Dr Kale, Division of General Internal Medicine, Mount Sinai School of Medicine, One Gustave

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Levy Place, PO Box 1087, New York, NY 10029 (minal .kale@mountsinai.org).

Author Contributions: *Study concept and design:* Kale, Bishop, Federman, and Keyhani. *Analysis and interpretation of data:* Kale, Bishop, and Keyhani. *Drafting of the manuscript:* Kale. *Critical revision of the manuscript for important intellectual content:* Bishop, Federman, and Keyhani. *Statistical analysis:* Kale. *Administrative, technical, and material support:* Keyhani. *Study supervision:* Bishop, Federman, and Keyhani.

Financial Disclosure: None reported.

Funding/Support: This project was not supported by external funds. Dr Kale is a fellow who is supported by a National Research Service Award grant. Dr Keyhani is funded by a Department of Veterans Affairs Health Services Research and Development Service Career Development Award.

Online-Only Material: The eTable is available at http://www.archinternmed.com.

1. The Good Stewardship Working Group. The "top 5" lists in primary care: meeting the responsibility of professionalism. *Arch Intern Med.* 2011;171(15):1385-1390.
2. Centers for Disease Control and Prevention. NAMCS scope and design. http://www.cdc.gov/nchs/ahcd/ahcd_scope.htm#namcs_scope. Accessed July 29, 2011.
3. Centers for Medicare and Medicaid Services. CMS files for download for Medicare. http://www.cms.gov/ClinicalLabFeeSched/02_clinlab.asp#TopOfPage. Accessed on July 27, 2011.
4. Choudhry NK, Avorn J, Antman EM, Schneeweiss S, Shrank WH. Should patients receive secondary prevention medications for free after a myocardial infarction? an economic analysis. *Health Aff (Millwood).* 2007;26(1):186-194.
5. Lazar LD, Pletcher MJ, Coxson PG, Bibbins-Domingo K, Goldman L. Cost-effectiveness of statin therapy for primary prevention in a low-cost statin era. *Circulation.* 2011;124(2):146-153.

Psychological Distress as a Risk Factor for Dementia Death

Current estimates suggest that neuropsychiatric disorders account for 28% of the global burden of disease.[1] While depression and anxiety (commonly referred to as psychological distress) have been shown to be a consequence of dementia, the converse is less clear. The possibility that psychological distress might be a risk factor for dementia has major public health implications. However longitudinal studies—which are best placed to examine this relationship—have, with some exceptions,[2,3] been small in scale (affecting study precision), excluded individuals younger than 65 years (limiting insights into the pre–older age origins of dementia), or have used clinical samples (reducing generalizability). Accordingly, we examined the role of psychological distress as a risk factor for and dementia death by pooling 10 large community-based cohort studies.

Methods. Participants were recruited from the Health Survey for England,[4] an annual general population-based cross-sectional study (with a longitudinal component) representative of household-dwelling individuals in England. Results from 1994 through 2004 were pooled. Participants gave informed consent; ethical approval was obtained from the London Research Ethics Council.

Psychological distress was measured during a household visit using the 12-item General Health Questionnaire (GHQ-12), a widely used measure of psychological distress in population studies comprising items rating anxiety, depression, social dysfunction, and loss of confidence. Higher scores indicate greater distress. We used a cut off score of 4 or greater to denote psychological distress as validated against standardized psychiatric interviews.[5] Dementia was identified from death certification and coded according to the *International Classification of Diseases, Ninth Revision* (*ICD-9*) codes 290.0 through 290.4 and 294.9 and *International Statistical Classification of Diseases, 10th Revision (ICD-10)* codes F01, F03, F09, and G30. Follow-up was until date of death or February 15, 2008, whichever came first.

We used Cox proportional hazards models to compute hazard ratios with accompanying 95% confidence intervals for GHQ-12 score in relation to dementia-related deaths. Study members scoring zero (no apparent distress) denoted the reference group. Models were adjusted for age, sex, occupational social class (OSC),[6] parental OSC, age at leaving full-time education, current smoking (yes/no), alcohol consumption (units per week), and existing cardiovascular disease (CVD) (yes/no), and diabetes (yes/no). Statistical analyses were conducted using PASW statistics, version 18.0 (SPSS, Chicago, Illinois), and R for Max OS X, version R-2.13.0.

Results. The initial sample included 85 261 adults (in 1996 the GHQ-12 was not used). After removing individuals who declined linkage to mortality records (n=9325) and those with missing GHQ-12 data (n=2865), the analytic sample comprised 73 071 individuals (54.8% women) with a mean (SD) age of 55.9 (14.3) years (range, 35-102 years). Data were missing for 1 or more variables in 21% (n=15 355) of the sample. Individuals with missing data were more likely to be older, be female, belong to a manual OSC, leave school later, be a nonsmoker, drink alcohol moderately, and have CVD and diabetes.

Of the 10 170 deaths during follow-up, 455 had dementia coding. A higher GHQ-12 score was associated with increased risk of dementia death in an age-adjusted model (GHQ-12 score of 1-3: HR, 1.44 [95% CI, 1.17-1.78]; GHQ-12 score of 4-12: HR, 1.74 [95% CI, 1.36-2.22]; *P* value for trend, <.001). Adding all remaining covariates (sex, OSC, parental OSC, age at leaving full-time education, current smoking, alcohol consumption, and existing CVD and diabetes) led to some attenuation of effect but statistical significance at conventional levels was retained (GHQ-12 score of 1-3: HR, 1.27 [95% CI, 1.00-1.61]; GHQ-12 score of 4-12: HR, 1.56 [95% CI, 1.17-2.07]; *P* value for trend, .005). In the **Figure** we relate 7 categories of GHQ score to dementia death to provide more detailed insight into the shape of the relationship. There was evidence of a dose-response effect (*P* value for trend, .001). Excluding individuals with any missing data (sample n=57 716; 361 dementia deaths) or dementia deaths within 5 years (sample n=72 926; 310 dementia deaths)—the latter to explore reverse causality—did not affect our results.

Comment. We found an association between elevated psychological distress and an increased risk of dementia death in a large general population sample of apparently dementia-free adults, which remained after adjustment for age, sex, OSC, education, alcohol use, smoking, and existing CVD and diabetes. Cardiovascular risk factors have been linked

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