Special Communication | LESS IS MORE

Update on Medical Practices That Should Be Questioned in 2015

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IMPORTANCE Overuse of medical care, consisting primarily of overdiagnosis and overtreatment, is a common clinical problem.

OBJECTIVES To identify and highlight articles published in 2014 that are most likely to influence medical overuse, organized into the categories of overdiagnosis, overtreatment, and methods to avoid overuse, and to review these articles and interpret them for their importance to clinical medicine.

EVIDENCE REVIEW A structured review of English-language articles in PubMed published in 2014 and a review of tables of contents of relevant journals to identify potential articles that related to medical overuse in adults.

FINDINGS We reviewed 910 articles, of which 440 addressed medical overuse. Of these, 104 were deemed most relevant based on the presentation of original data, quality of methods, magnitude of clinical effect, and number of patients potentially affected. The 10 most influential articles were selected by author consensus using the same criteria. Findings included lack of benefit for screening pelvic examinations (positive predictive value <5%), carotid artery screening (no reduction in stroke), and thyroid ultrasonography (15-fold increase in thyroid cancer). The harms of cancer screening included unnecessary surgery and complications. Head computed tomography was an overused diagnostic test (clinically significant findings in 4% [7 of 172] of head computed tomographic scans). Overtreatment included acetaminophen for low back pain, perioperative aspirin use, medications to increase high-density lipoprotein cholesterol level, stenting for renal artery stenosis, and prolonged opioid use after surgery (use >90 days in 3% [1229 of 39 140] of patients).

CONCLUSIONS AND RELEVANCE Many common medical practices should be reconsidered. It is anticipated that our review will promote reflection on these 10 articles and lead to questioning of other non–evidence-based practices.

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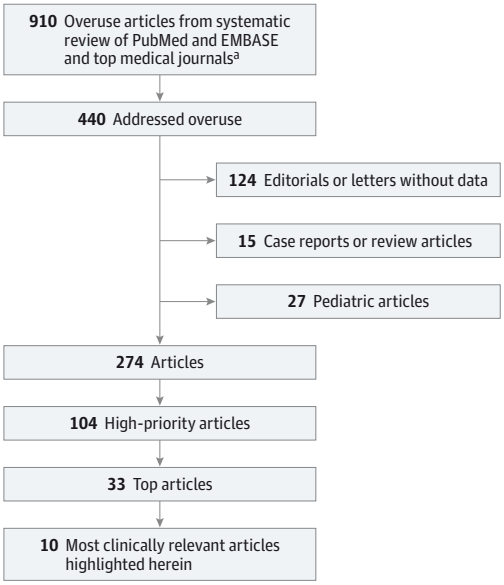
Medical overuse has been defined as health care for which "risk of harm exceeds its potential for benefit"[1(p570)] or when fully informed patients would forego care.[2,3] Overuse encompasses overdiagnosis, which occurs when "individuals are diagnosed with conditions that will never cause symptoms,"[4(pxiv)] and overtreatment, which is treatment targeting overdiagnosed disease or from which there is minimal or no benefit.[5] Given an emphasis on value in health care, the problem of overuse is gaining increased focus, and a growing literature quantifies the benefits and potential harms associated with clinical services. This literature can inform patients and clinicians to optimize medical care by avoiding medical overuse.[6] The present article examines and describes 10 of the most important studies published in 2014 related to clinical services that represent medical overuse.

Literature Search and Article Selection Processes

Articles were selected through a structured review of studies published in 2014 in PubMed with the Medical Subject Headings term *health services misuse* or with any of the following words in the title: *overuse*, *overtreatment*, *overdiagnosis*, *inappropriate*, and *unnecessary*. In EMBASE, a search was performed with the Emtree term *unnecessary procedure* in addition to the search words used for PubMed. Articles with *overuse injury* or *overuse injuries* in the title were excluded. Searches were limited to human studies and the English language. All titles from the search were reviewed by 1 of 3 authors (D.J.M., S.S.D., and D.K.) for relevance to medical overuse. One of the same 3 authors reviewed all 2014 titles from 9 major medical journals (**Figure**) and read abstracts and full journal

Figure. Selection of Articles



[a] *Lancet*, *BMJ*, *JAMA*, *JAMA Internal Medicine*, *The New England Journal of Medicine*, *Annals of Internal Medicine*, *Medical Care*, *PLOS Medicine*, and *Journal of General Internal Medicine*.

articles for those of potential relevance. This review adhered to Preferred Reporting Items for Systematic Reviews and Meta-analyses guidelines.[7] The structured review identified 910 articles, 440 of which addressed medical overuse. After excluding 104 editorials, 20 letters without data, 15 case reports or review articles, and 27 pediatric articles, we reviewed 274 articles. Of these, 104 (38%) were ranked as most relevant by at least 1 of the 3 authors based on quality of methods, magnitude of clinical effect, and number of patients potentially affected (Figure). Using the same criteria, all authors rated these 104 articles, 33 of which were highest rated. The 10 most relevant studies were selected and highlighted in this article, organized into the categories of overdiagnosis, overtreatment, and methods to avoid overuse.

Overdiagnosis

There Is No Benefit to Screening for Asymptomatic Carotid Stenosis[8]

Background | Patients with carotid artery stenosis of greater than 70% have a 5-year stroke risk of approximately 5% (among 5441 participants). Many interventions (often carotid angioplasty and stenting or surgical endarterectomy) are subsequently performed for asymptomatic carotid stenosis.

Results | A systematic review and meta-analysis by the US Preventive Services Task Force demonstrated that no studies provided data on whether screening for carotid stenosis reduced stroke. No studies compared carotid angioplasty and stenting for asymptomatic carotid stenosis with medical therapy. In addition, the data comparing medical therapy with surgical endarterectomy are outdated. Carotid endarterectomy does not reduce all-cause mortality, and its benefit compared with optimal medical therapy is not well established. Furthermore, with a specificity of 92%, carotid duplex ultrasonography screening leads to many more false-positive results than true-positive results given the low prevalence of asymptomatic carotid stenosis.

Implications | Screening for asymptomatic carotid artery stenosis leads to false-positive results. There is no evidence that it reduces ipsilateral stroke.

Screening Pelvic Examinations Are Inaccurate in Asymptomatic Women and Are Associated With Harms That Exceed Clinical Benefits[9]

Background | Bimanual pelvic examination is often included in annual preventive visits for women in the absence of a need for cancer screening. The US guidelines vary in their recommendations regarding screening pelvic examinations.

Results | This systematic review found no studies assessing the effect of pelvic examinations on morbidity or mortality from cancers (including ovarian cancer) or benign gynecological conditions. Three studies evaluated the diagnostic accuracy of pelvic examination for ovarian cancer in asymptomatic, average-risk women. One study found no cancers, and the other 2 studies found that pelvic examination had a very low positive predictive value (1.2% and 3.6%). The harms of screening pelvic examinations included discomfort, anxiety, psychological effects, embarrassment, and unnecessary procedures, including surgery (1.4% [29 of 2000] of women in one study).

Implications | Do not perform screening pelvic examinations. Clinicians should educate female patients about the low value of the examination. This review informed a new guideline from the American College of Physicians recommending against routine pelvic examinations for screening asymptomatic women.

Head Computed Tomography Is Often Ordered but Is Rarely Helpful[10]

Background | Computed tomography (CT) uses ionizing radiation and sometimes contrast to aid in patient diagnosis and management. This imaging can also reveal unimportant, incidental findings that lead to overdiagnosis and overtreatment.

Results | A retrospective cohort analysis reviewed 130 patients admitted for any cause at least 7 times during a 1-year period to a tertiary care center. Patients received a mean of almost 7 CT scans, including 3 head CT scans. More than one-third (36%) of head CT scans were ordered to evaluate for altered mental status. Only 4% (7/127) of head CTs had clinically significant findings that resulted in a change in management.

Implications | A second head CT scan rarely affects patient management. Clinicians should be judicious in ordering multiple CT scans in the same patient.

Thyroid Cancer Is Massively Overdiagnosed, Leading to Concrete Harms[11]

Background | Cancer screening programs have been emphasized in South Korea. These include ultrasonographic screening for thyroid cancer.

Results | From 1993 to 2011, the rates of thyroid cancer in South Korea increased 15-fold, making it their most common cancer. The size of nodules diagnosed as cancer steadily decreased during that period, but there was no change in thyroid cancer mortality. When examined by geographical region, areas with more intensive screening had a steeper increase in diagnosis. Virtually all patients diagnosed as having thyroid cancer underwent treatment with radical or subtotal thyroidectomy, leaving most dependent on lifelong thyroid therapy. Approximately 11% of patients developed hypoparathyroidism after surgery, and 2% developed vocal cord paralysis after surgery.

Implications | South Korea exemplifies the consequences associated with population-based thyroid cancer screening. Overdiagnosis of thyroid cancer is extremely common. The harms associated with this overtreatment include lifelong thyroid replacement, hypoparathyroidism, and vocal cord paralysis.

Overtreatment

There Is No Benefit to Paracetamol or Acetaminophen for Acute Low Back Pain[12]

Background | Low back pain is among the most common reasons to seek medical assistance.[13] Guidelines recommend acetaminophen or paracetamol despite lack of evidence for benefit.[14]

Results | In the first large double-blind, randomized clinical trial of paracetamol for back pain in patients without serious spinal pathology, more than 1600 patients were randomized to receive paracetamol continuously, paracetamol as needed, or a placebo after being seen with back pain at 235 Australian primary care centers. The median times to recovery were 17 days in both of the paracetamol groups and 16 days in the placebo group. No benefit of paracetamol use was observed, with no difference in adverse events.

Implications | There is no benefit to acetaminophen or paracetamol use for acute back pain. Reassurance with advice on likely resolution may be the primary treatment for acute low back pain.

Postoperative Opioid Use Continues Past the Postoperative Period[15]

Background | Opioid-naive patients are often given opioids for postoperative pain control. This retrospective cohort study assessed 39 140 opioid-naive patients who had major elective surgery in Canada between 2003 and 2010.

Results | Overall, 49% (19 256 of 39 140) of patients received an opioid at hospital discharge. At >90 days, 3% (1229 of 39 140) of patients continued to take opioids. Younger patients and those of lower socioeconomic status were more likely to receive opioid prescriptions.

Implications | Clinicians should diligently reassess patients receiving postoperative opioids to ensure that these medications are used safely and appropriately because opioid overuse is associated with obvious psychological and physical harm. Given the millions of patients undergoing surgery each year, it is essential that postoperative opioid use does not become a gateway to long-term opioid use.

The Harms of Perioperative Aspirin Outweigh the Benefits in Patients Undergoing Noncardiac Surgery[16]

Background | Many patients are treated with perioperative aspirin, although its role in reduction of cardiovascular complications is unclear. This randomized, blinded trial (Perioperative Ischemic Evaluation-2 [POISE-2]) compared aspirin (200 mg/d) with a placebo during the 30-day perioperative period in 10 010 patients undergoing noncardiac surgery, one-third (3271 of 10 010) of whom had known vascular disease.

Results | The primary outcome of death or nonfatal myocardial infarction did not differ between the placebo (7.1% [355 of 5012]) and aspirin (7.0% [351 of 4998]) groups. Results were similar in the subgroup of patients who were previously treated with aspirin and in patients undergoing both vascular and nonvascular surgery. Frequency of major bleeding was higher in the aspirin group (4.6% [230 of 4998] vs 3.8% [188 of 5012], $P = .04$).

Implications | Do not treat patients undergoing noncardiac surgery with aspirin during the perioperative period unless they have had stent implantation in the past year because harms may occur and there is no benefit. In patients with an indication for aspirin independent of surgery, restart aspirin use after the perioperative period, although optimal timing is not clear.

Renal Artery Revascularization for Renal Artery Stenosis Has No Clinical Benefit[17]

Background | Atherosclerotic renal artery stenosis (RAS) is common in the elderly and often occurs coincident with peripheral arterial and coronary artery disease. Randomized trials have found that stenting of RAS results in similar blood pressure control and progression of kidney disease compared with medical management.

Results | A meta-analysis found 8 published studies comparing renal artery revascularization plus medical therapy with medical therapy alone in 2223 patients with RAS. The 5 most recent studies used stents. The mean patient ages ranged from 59 to 72 years, and the mean follow-up duration was 34 months. Renal artery revascularization was associated a mean of 0.22 fewer antihypertensive medications ($P < .001$), without overall change in systolic blood pressure ($P = .85$). Most important, there was no difference in mortality, congestive heart failure, stroke, or worsening renal function.

Implications | Do not perform renal artery revascularization in patients with clinically relevant RAS. Furthermore, testing for RAS has little benefit. Consistent randomized evidence shows that optimizing medical therapy is the best approach to management of hypertension and chronic kidney disease, with or without RAS.

Medications to Raise High-Density Lipoprotein Cholesterol Level Do Not Improve Cardiovascular Outcomes[18]

Background | Low levels of high-density lipoprotein cholesterol (HDL-C) levels are associated with increased risk for cardiovascular events. While medication to raise HDL-C levels is frequently prescribed, the clinical benefit of such therapy is poorly understood.

Results | A meta-analysis of randomized clinical trials evaluated the effects of niacin, fibrates, and cholesteryl ester transfer protein inhibitors on cardiovascular end points and mortality. In total, 39 randomized trials with 117 411 participants were included. None of the drug classes improved cardiovascular mortality, all-cause mortality, or stroke compared with controls. Niacin (odds ratio [OR], 0.69; 95% CI, 0.56-0.85) and fibrates (OR, 0.78; 95% CI, 0.71-0.86) reduced nonfatal myocardial infarction in studies conducted in the prestatin era, but these medications did not reduce myocardial infarction in trials in which patients were treated with statins.

Implications | In patients with low HDL-C levels who are treated with statins, there is no clinical benefit to HDL-C–targeted therapies. Niacin and fibrates reduced nonfatal myocardial infarction in the prestatin era.

Methods to Avoid Overuse

Most Diagnoses Are Based on History and Physical Examination, and Conservative Management Is Valuable[19]

Background | At least 50% of more than 400 million office visits annually are for physical symptoms. Physicians have traditionally been taught to consider diagnoses from a disease-based rather than a symptom-based paradigm.

Results | In findings from a targeted literature review, at least one-third (range, 31%-37%) of symptoms did not relate to an identifiable disease. Approximately 73% (range, 56%-94%) of diagnoses are based on the history and an additional 4% to 17% on the physical examination. There is considerable overlap between physical and psychological symptoms, and approximately 75% (range, 71%-79%) of symptoms improved in weeks to months.

Implications | Be cautious in using diagnostic tests to identify disease without high pretest probability because most disease can be diagnosed with a thoughtful history and skillful physical examination. Clinicians managing patient symptoms without obvious cause should be aware that physical and psychological symptoms cooccur, should recognize that most symptoms resolve within a few weeks to months, and should consider that serious causes of symptoms rarely emerge during long-term follow-up.

Conclusions

In 2014, articles identified diverse practices from various areas of medicine that appear to represent medical overuse. These findings involved screening practices, such as pelvic examinations and ultrasonography for asymptomatic carotid artery stenosis and thyroid cancer. Head CT was an overused diagnostic test. Treatments for which the harms are likely to outweigh the benefits included acetaminophen for low back pain, prolonged opioid use after surgery, perioperative aspirin use, medications to increase HDL-C levels, and stenting for RAS.

Published literature documenting overuse may benefit patients and populations if it stimulates decisions to avoid overused diagnostics and therapeutics. It is difficult to stop using commonly used tests and treatments.[20] Explicit recognition that practices shown to be ineffective often continue to be performed has resulted in a focus on methods of deadoption or deimplementation. These approaches incorporate strategies from behavioral economics, such as framing patient discussions around what is available and having guarded enthusiasm about new medical care that is at risk for later being deadopted because of ineffectiveness.[20] Health care professionals are well suited to improve these practices at multiple steps when providing patient care, as described by Kroenke.[19]

Clinicians and patients share the consequences and responsibility for medical overuse. With improved awareness, caution around new tests and treatments, and deimplementation of ineffective practices, there should be improvement in patient outcomes, safety, and satisfaction along with reductions in health care spending. With thoughtful questioning, many current practices that seem logical but are without evidence may be reconsidered and incorporated into a less dogmatic and more patient-centered approach to care.

ARTICLE INFORMATION

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Statistical analysis: Morgan.
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