



Published in final edited form as:

JAMA Intern Med. 2015 December ; 175(12): 1960–1964. doi:10.1001/jamainternmed.2015.5614.

Update on Medical Practices that should be questioned in 2015

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Abstract

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

Objective—To identify and highlight articles published in 2014 that are most likely to impact overuse, organized into the categories of overdiagnosis, overtreatment, and methods to avoid overuse. These manuscripts were reviewed and interpreted for their importance to clinical medicine.

Evidence Review—A structured review of English-language articles on PubMed published in 2014 and 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 overuse. Of these, 104 were deemed most relevant based on the presentation of original data, quality of methodology, magnitude of clinical impact, and the 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 and thyroid ultrasounds. Harms of cancer screening included unnecessary surgery and complications. Head CT scans were an overused diagnostic test (4% with clinically significant findings) and overtreatment included acetaminophen for low back pain, prolonged opioid use after surgery (3% of patients on >90 days), perioperative aspirin, medications to increase HDL, and stenting for renal artery stenosis.

Conclusions and Relevance—Many common medical practices should be reconsidered. It is hoped that our review promotes reflection on these 10 articles and lead to questioning other non-evidence based practices.

Keywords

Overuse; overdiagnosis; overtreatment; deimplementation

Introduction

Medical overuse has been defined as health care for which “risk of harm exceeds its potential for benefit” or when fully informed patients would forego care.^{1–3} Overuse encompasses overdiagnosis, which occurs when “individuals are diagnosed with conditions that will never cause symptoms”⁴ and overtreatment, which is treatment targeting overdiagnosed disease or from which there is minimal or no benefit.⁵ Given an emphasis on value in healthcare, there has been increasing focus on the problem of overuse, and a growing literature quantifying 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

This paper examines and describes 10 of the most important studies published in 2014 related to clinical services which represent medical overuse.

Methods

Literature Search and Article Selection Processes

Articles were selected through a structured review of articles 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 subjects and the English language. All titles from the search were reviewed by 1 of 3 authors (D.J.M., DK and S.S.D.) for relevance to medical overuse. One of the same 3 authors reviewed all 2014 titles from 9 major medical journals and read abstracts and full journal 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 actually addressed 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 one of three authors (D.J.M., S.D. and D.K.) based on quality of methodology, magnitude of clinical impact, and the number of patients potentially affected (Figure). Using the same criteria, all authors rated these 104 articles; 33 of which were top priority and the 10 most relevant studies were selected and highlighted in this article.

Overdiagnosis

There is No Benefit to Screening for Asymptomatic Carotid Stenosis⁸

Background—Patients with carotid artery stenosis of greater than 70% have a 5-year stroke risk of approximately 5%. 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 United States 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. Additionally, the data comparing medical therapy with surgical endarterectomy is outdated. Carotid endarterectomy does not reduce all-cause mortality, and its benefit compared to optimal medical therapy is not well-established. Further, with a specificity of 92%, carotid duplex ultrasonography screening leads to many more false positives than true positives given the low prevalence of asymptomatic carotid stenosis.

Implications—Screening for asymptomatic carotid artery stenosis leads to false positive results and there is no evidence that it reduces ipsilateral stroke.

Screening Pelvic Examinations are Inaccurate in Asymptomatic Women and are associated with harms which exceed clinical benefits⁹

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

Results—This systematic review found no studies assessing the impact of pelvic exams 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 two found that pelvic exam had a very low positive predictive value (1.2% and 3.6%). Harms of screening pelvic exams included: unnecessary procedures, including surgery (1.5% of women in one study); discomfort; anxiety; psychological harms; and embarrassment.

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

Head CTs are Ordered Often but Rarely Helpful¹⁰

Background—CT scans use ionizing radiation and sometimes contrast to aid in patient diagnosis and management. These scans 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 seven times over a one-year period to a tertiary care center. Patients received an average of nearly seven CT scans, including three head CT scans. Over one-third of head CT scans were ordered to evaluate for altered mental status. Only 4% of head CTs had clinically significant findings that resulted in a change in management.

Implications—Repeat head CT scans rarely impact patient management. Clinicians should be judicious in ordering multiple CT scans in the same patient.

Thyroid Cancer is Massively Overdiagnosed, Leading to Concrete Harms¹¹

Background—Cancer screening programs have been emphasized in South Korea, including 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 over that time 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 with thyroid cancer underwent treatment with radical or subtotal thyroidectomy, leaving most dependent on lifelong thyroid-replacement therapy. Approximately 11% of patients developed hypoparathyroidism and 2% 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. Harms associated with this overtreatment include lifelong thyroid replacement, hypoparathyroidism, and vocal-cord paralysis.

Overtreatment

There is No Benefit to Paracetamol/Acetaminophen for Acute Low Back Pain¹²

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.

Results—In the first large double-blind randomized, controlled trial of paracetamol for back pain in patients without serious spinal pathology, over 1600 patients were randomized to receive paracetamol continuously, paracetamol as needed, or a placebo after presenting with back pain to 235 Australian primary care centers. Median time to recovery was 17 days in both of the paracetamol groups and 16 days in the placebo group. No benefit of paracetamol was observed. There was no difference in adverse events.

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

Post-Operative Opioid Use Continues Past the Postoperative Period¹⁴

Background—Opioid naïve patients are often given opioids for postoperative pain control.

Results—In a retrospective cohort study of 39,140 opioid naïve patients who had major elective surgery in Canada between 2003 and 2010, 49% received an opioid at hospital

discharge. At 90 days, 3% of patients continued to receive opioids. Younger patients and those of lower socioeconomic status were more likely to receive opioid prescriptions.

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

The Harms of Perioperative Aspirin Outweigh the Benefits in Patients Undergoing Noncardiac Surgery¹⁵

Background—Many patients are treated with perioperative aspirin, although its role in reduction of cardiovascular complications is unclear.

Results—A randomized, blinded trial (POISE-2) compared aspirin (200 mg daily) to placebo during the 30-day perioperative period in 10,010 patients undergoing non-cardiac surgery, one-third of whom had known vascular disease. The primary outcome of death or nonfatal myocardial infarction did not differ between the placebo (7.1%) and aspirin (7.0%) 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% vs. 3.8%, $P=0.04$).

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

Renal Artery Revascularization for Renal Artery Stenosis has No Clinical Benefit¹⁶

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 to medical management.

Results—A meta-analysis found 8 published studies comparing renal artery revascularization plus medical therapy to medical therapy alone in 2223 patients with RAS; the 5 most recent studies used stents. Mean patient ages ranged from 59 to 72 years and mean follow-up duration was 34 months. Renal artery revascularization was associated an average of 0.22 fewer anti-hypertensive medications ($p<0.001$), without overall change in systolic blood pressure ($p=0.85$). Most importantly, 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 HDL Do Not Improve Cardiovascular Outcomes¹⁷

Background—Low HDL levels are associated with increased risk for cardiovascular events. While medication to raise HDL is frequently prescribed, the clinical benefit of such therapy is poorly understood.

Results—A meta-analysis of randomized controlled trials evaluated the impact of niacin, fibrates, and cholesteryl ester transfer protein (CETP) inhibitors on cardiovascular endpoints and mortality; 39 randomized trials with 117,411 participants were included. None of the drug classes improved cardiovascular mortality, all-cause mortality, or stroke compared to control. Niacin (OR, 0.69 [CI, 0.56 to 0.85]) and fibrates (OR, 0.78 [CI, 0.71 to 0.86]) reduced non-fatal myocardial infarction in studies conducted in the pre-statin era, but these medications did not reduce myocardial infarction in trials in which patients were treated with statins.

Implications—In patients with low HDL who are treated with statins, there is no clinical benefit to HDL-targeted therapies.

Methods to Avoid Overuse

Most Diagnoses are Based on History and Physical Exam: Conservative Management is Valuable¹⁸

Background—At least 50% of outpatient visits are for physical symptoms. Physicians have traditionally been taught to consider diagnoses from a disease-based, rather than symptom-based, paradigm.

Results—In findings from a targeted literature review, at least one-third of symptoms do not relate to an identifiable disease. Approximately 73–94% of diagnoses are based on history and physical examination. There is considerable overlap between physical and psychological symptoms, and 75–80% of symptoms improve 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 etiology should be aware of co-occurrence of physical and psychological symptoms, that most symptoms resolve within a few weeks to months, and 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 involved screening practices such as pelvic examinations and ultrasound for asymptomatic carotid artery stenosis and thyroid cancer. Head CT scans were an overused diagnostic test. Treatments for which harms are likely to outweigh benefits included acetaminophen for low back pain, prolonged opioid use after surgery, perioperative aspirin, medications to increase HDL, and stenting for renal artery stenosis.

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.¹⁹ Explicit recognition that practices shown to be ineffective often continue to be carried out 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 de-adopted due to ineffectiveness.¹⁹ Providers are well-suited to improve these practices at multiple steps of providing patient care, as describe by Kroenke.¹⁸

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

Acknowledgments

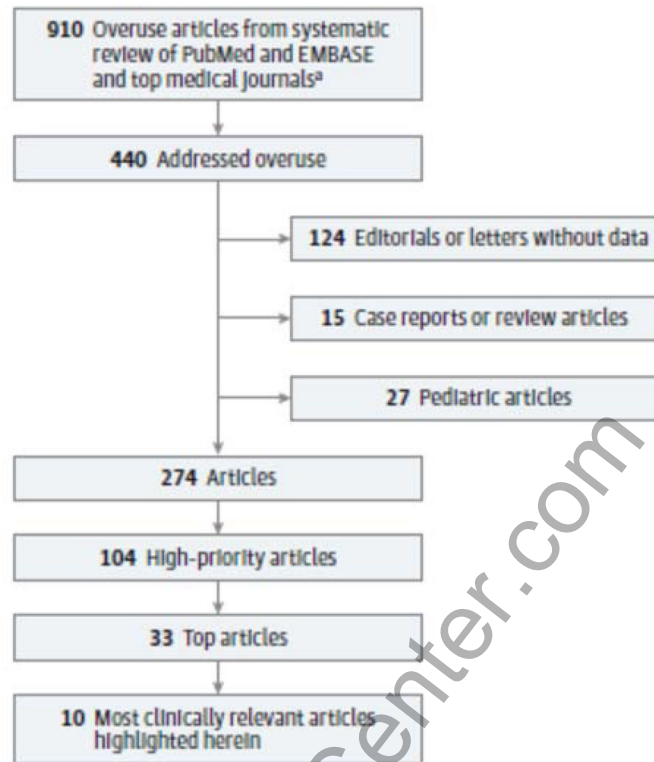
DJM has served as a research consultant for Welch-Allyn, presented a self developed lecture for a 3M series on hospital infections, received travel support for conferences from IDSA, SHEA and ASM.

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**Figure.**

Selection of Articles

^aLancet, 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.