Limitations include use of a measure of EHR work that considers only when clinicians are actively working (thus likely underestimating total time spent on the EHR), a focus on ambulatory practices, an inability to describe the breakdown of after-hours activity, and lack of accounting for time spent by scribes on documentation.

The interspecialty differences we have identified are important given the known associations between administrative burden and clinician burnout. Further investigation should seek to characterize the reasons underlying these differences and identify interventions that reduce the EHR burden.

## Global Media Coverage of the Benefits and Harms of Early Detection Tests

Innovations in technologies for early detection of diseases, such as breast cancer, dementia, and atrial fibrillation, are gaining increasing attention. The media is a key avenue through which tests are promoted to asymptomatic individuals, and it could have an important role in encouraging realistic expectations of the benefits and harms of early detection, including unnecessary diagnoses. Evidence suggests that medical media coverage tends to overplay benefits, downplay harms, and ignore conflicts of interest, but there are few data on coverage of early detection tests.

## Methods

We performed a cross-sectional study to examine global media coverage of the benefits and harms of early detection tests for asymptomatic individuals. We also examined conflicts of interest among commentators in stories, as well as media disclosure of conflicts. We studied 5 early detection tests: (1) blood-based liquid biopsy tests for cancer(s), (2) 3-dimensional mammography for breast cancer, (3) Apple Watch Series 4 electrocardiogram for atrial fibrillation, (4) blood biomarker tests for dementia, and (5) artificial intelligence technology for dementia. Our published protocol provides detailed information regarding selection of these tests. The University of Sydney Human Research Ethics Committee reviewed the application and stated that it was exempt from review because it was applied to publicly available information in the media.

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**Figure 2. Distribution by Specialty of Time on Electronic Health Record (EHR) Activities and Message Volume by Source for 351 Health Systems**

**A** Time on EHR activities

- Orders
- Notes
- In-basket messages
- Clinical review

**B** Message volume by source

- Other
- Team
- System
- Results
- Prescription
- Patient

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**Invited Commentary**

pages 867 and 868
We searched for all English-language stories from 2016 to 2019 in LexisNexis, ProQuest, and Google News. We included all nonfictional story types from newspapers, blogs, magazines, broadcast and podcast transcripts, and wire feeds/services if they mentioned or implied a test benefit or harm. Pairs of independent reviewers screened stories for inclusion and coded stories for coverage of health benefits (eg, early treatment, saves lives) and/or harms (eg, false positives, overdiagnosis) and inclusion of commentator views with or without disclosure of conflicts of interest. Analyses were performed using Stata, version 16.0 (StataCorp LLC).

Results | We included 1173 stories: liquid biopsy (n = 124), 3-dimensional mammography (n = 579), Apple Watch (n = 273), blood biomarker tests (n = 128), and artificial intelligence (n = 69). Overall, 97% (95% CI, 96%-98%) reported on the benefits, 37% (95% CI, 34%-40%) reported any harms, and only 34% (95% CI, 31%-36%) reported on both benefits and harms; 63% (95% CI, 60%-66%) of stories reported on benefits only, while only 3% (95% CI, 2%-4%) reported on harms only (Figure 1). There was variation between tests in the percentage reporting any harms (from 10 of 69 [14%] for artificial intelligence to 157 of 273 [58%] for Apple Watch and 72 of 124 [58%] for liquid biopsy) and both benefit and harm (from 10 of 69 [14%] for artificial intelligence to 67 of 124 [54%] for liquid biopsy). Harms were mentioned but deemphasized in just more than one-quarter (317 of 1173 [27%]) of stories.

Overdiagnosis was only mentioned in 57 of 432 (13%) of stories that mentioned any harms—5% of stories overall. Overall, 445 of 1173 (38%) of stories quantified a benefit. However, only 62 (14%) of these used absolute numbers. Overall, 127 of 432 (29%) of stories quantified a harm. Almost half (58 of 127 [46%]) of these provided absolute numbers. More than half (55% [95% CI, 52%-57%]) of all stories included the views of commentators with conflicts of interest, but these conflicts were only disclosed in 12% (95% CI, 10%-14%) of these stories (Figure 2).

Figure 1. Percentage of Stories Reporting Potential Benefits, Harms, and Deemphasizing Harms for 5 Tests, 2016-2019

![Graph showing the percentage of stories reporting benefits, harms, and deemphasizing harms for 5 tests, 2016-2019.]

*No artificial intelligence story mentioned harms only or appeared to deemphasize harms.

Figure 2. Percentage of Stories With Conflicts of Interest Present and the Media’s Disclosure of Conflicts for 5 Tests, 2016-2019

![Graph showing the percentage of stories with conflicts of interest present and the media’s disclosure of conflicts for 5 tests, 2016-2019.]

Letters
Discussion | In this study, we examined how innovative early detection tests are covered in the media. The findings are important because of the potential of such tests to harm healthy people, in contrast to tests promoted for investigation of symptoms. Yet coverage emphasized benefits far more than harms, and the risk of overdiagnosis received little coverage. Our findings align with other medical media coverage studies.2,4,5 Coding benefits and harms involves subjective judgments, although we piloted an explicit coding scheme and had pairs of independent coders to minimize bias. We did not examine social media coverage. Higher-quality reporting by journalists could encourage more healthy skepticism toward health options and curb overdiagnosis.2 Strategies to improve media reporting so that professionals, patients, and the public receive more balanced information about early detection tests are urgently needed.

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Invited Commentary
Advertising or Evidence?—Why We Need System Changes in Academia to Improve Media Reporting
“Whatever a patron desires to get published is advertising; whatever he wants to keep out of the paper is news.”1

In their Research Letter in this issue of JAMA Internal Medicine, O’Keeffe and colleagues2 have done us a great service. They analyzed media coverage of 5 tests promoted for use in early detection of disease. They found almost 1200 stories from 2016 to 2019 covering new techniques or devices, such as 3-dimensional mammography, blood biomarker tests for dementia, and the Apple Watch Series 4, which includes electrocardiogram monitoring. Almost always, the potential benefits of early detection were reported, yet the potential harms—for example, overdiagnosis—were reported only a third of the time. We are skewed, therefore, to receive unbalanced information. And when press stories quantified a benefit, the absolute numbers—which help to frame information contextually—were expressed only 14% of the time.2 These are the ingredients for overselling interventions.

Medical care is slowly being turned from a paternalistic power toward an acceptance that evidence is often nuanced, and decisions are best shared. There are many incidences where watchful waiting or minimal intervention will give comparable or better results (eg, antibiotics for sore throats, monitoring prostate-specific antigen level, shaving and enemas in preparation for childbirth). There are also many examples of where intervention does active harm (eg, high-dose oxygen for premature infants, avoidance of peanuts to prevent allergies in children, class IC antiarrhythmic drugs in myocardial infarction). Because choices are attached to...
values, and values are in the gift of the individual, we need to know what the evidence tells us about where we are most likely to reconcile them. We already know that patients and physicians tend to overestimate benefits and underestimate harms of interventions.\(^3\)\(^4\) Our systems are stacked with optimism when they should be realistic and cautious. If we promise the world, we will hit the ground hard, damaging trust and credibility in the process.

The news media should not be a fertile field into which public relations marketing can be generously seeded. The role of the media should include the scrutiny, questioning, and critique of claims made by marketers and manufacturers. It is tempting to simply blame journalists for not doing their job. Clearly, it should be the job of the media to stop bad science from filtering through into unquestioning reportage. But neither should it be the job of researchers to add to the chaff. One common route of health stories is via news releases released by academic institutions. These are designed to attract attention. But attention, if merited, should be drawn to all relevant points so that the public is informed, not advertised to. It is already known that exaggeration in health-related science news is strongly associated with exaggeration in academic press releases.\(^5\) Academics are ultimately responsible for sign-offs from their institutions—not press officers.\(^5\) Examination of our own intellectual biases may be uncomfortable but is necessary. The EQUATOR (Enhancing the Quality and Transparency of Health Research) Network has produced excellent guidance on reporting trials accurately and transparently;\(^6\) perhaps we need EQUATOR to go further, extend their reach, and create explicit guidelines for responsible press releases—including the need for absolute numbers, caveats, and declarations of interest—and for funders to hold institutions to account.

Many media stories will not have originated with an academic press release, however. O’Keeffe and colleagues\(^7\)\(^8\) deserve special credit for examining what is happening off stage. With meticulous searching, they found that more than half the commenters whose views were cited had conflicts of interest, but conflicts were disclosed only 12% of the time. Many of these commenting were academics and health care professionals. There are now many variations of Sunshine Acts in place internationally. Disclosure UK,\(^7\) a database held by the Association of the British Pharmaceutical Industry, publishes the payments made to UK health professionals by their members, on a voluntary basis. But the reader should not have to do the work of considering the need to find them—if they even exist for the commentator in question. Unless declarations are immediately available to readers as part of the media report, the potential usefulness of interpreting them in the context of the claims being made is, surely, immediately lost. Medical journals should lead by example and not expect the reader to search for every disclosure, which may be hard to find online. Professional commentators should have a duty to proactively disclose their conflicts of interest to journalists. It should be routine and not embarrassing for journalists to ask about commentators’ conflicts and to clearly state them. Media organizations could play a part in teaching, training, and expecting and encouraging this. It may result in less dramatic headlines or more space given over to caveats—and that is likely to be a good thing.

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Media Representation of the Benefits and Harms of Early Testing: Implications for Public Health

When it comes to health, people are hungry for good news. It does not serve them well, however, to provide it exclusively. Unfortunately, in some areas, the media seems to focus far more on the benefits than the harms.

This is especially true with screening tests. We have become conditioned to the notion that earlier detection is always better, no matter what. In this issue of JAMA Internal Medicine, O’Keeffe and colleagues\(^9\) examined media stories on the benefits, harms, and conflicts of interest related to early detection tests. They focused on stories on 5 technologies: liquid biopsy for cancers, 3-dimensional mammography for breast cancer, the Apple Watch Series 4 electrocardiogram for atrial fibrillation, blood biomarker tests for dementia, and artificial intelligence for dementia. They included stories from many outlets, including newspapers, blogs, magazines, broadcast media, podcasts, and web news.

Of the more than 1100 stories examined, 63% of them focused exclusively on benefits, with no discussion of harms.\(^1\)
Only 3% mentioned just the harms, and only 1 in 3 stories presented both. While pretty much every story presented at least some benefits, of the 37% of stories that mentioned harms at all, more than a quarter of them downplayed their seriousness. Overdiagnosis, a major harm of early detection testing, was mentioned in only 5% of the stories.

Evidence has long suggested that screening for disease in adults with no symptoms is associated with reduced mortality rates far more rarely than many assume. Because of this, the US Preventive Services Task Force (USPSTF) recommends against many screenings. Routine mammography serves as a good example: The USPSTF does not recommend routine mammography for women between the ages of 40 and 49 years because evidence suggests that the risks outweigh the benefits. The harms include false-positive results, unnecessary biopsies, and overdiagnosis and treatment of breast cancer that would not have become a health threat if left undetected. Mammography Saves Lives, a coalition of medical associations representing breast cancer care experts, is a rather misleading slogan, given that mammograms have not been proved to reduce mortality. A 2012 analysis reported that screening has not lowered the rate of advanced cancer, concluding that the risk of becoming a patient with breast cancer can be reduced by one-third simply by avoiding screening mammography.

None of this is to say that mammograms are not important in the detection of breast cancer. They absolutely are. But they have downsides as well as upsides, and we do not serve patients and the public well by focusing only on the latter or overstating the former.

False-positive results, a predictable consequence of the indiscriminate ordering of tests, cause real harm. It is often difficult for patients and physicians to ignore an abnormal result, so the more likely path is more testing, which costs more money, causes more psychological stress, and may even cause physical harm via related, unnecessary procedures.

Owing in part to the biased news they hear about screening tests, patients often overestimate how much risk reduction is associated with them and generally opt to receive them. This high-benefit, low-harm perception is often the opposite of reality. O’Keeffe and colleagues’ study provides evidence of how news stories contribute to this problem. This is significant because, as the authors point out, stories about health and medicine are a substantial portion of the news.

Such biases are not confined to stories about screening, unfortunately. This unrealistic coverage of risks and benefits is in line with previous research on media representation and can have serious downstream effects. Biases can be influenced by financial interests. This study also showed that more than half of the examined news stories cited commenters with a conflict of interest. Only about a tenth of those explicitly noted those conflicts so that readers might be aware of them. It would be better to avoid them altogether.

The media can be an excellent public health tool. We know that news coverage can influence anything from individual health behaviors to health care practice and policy, and we know that the associations can be positive. An open discussion with journalists on the data behind early screening tests, specifically on the need to focus on a risk-to-benefit ratio, may assist in disseminating a more informed message on the use of such interventions and more. Encouraging disclosure or avoidance of conflicts of interest may help to increase public trust in the reliability of news stories on public health.

To optimally aid medical decision-making and maximize public health benefit, we should work to make patient expectations realistic rather than overly optimistic. Few interventions are without harm; informing the public of that fact in general would go a long way to tempering enthusiasm for questionable medical treatment. Including clear information about harms and helping people to understand how to weigh benefits and harms in making individual medical decisions would be of immense value to public health.