

Magnitude of overdiagnosis in cancer indicates need for strategies to address the problem

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Many cancers detected by screening tests are not destined to cause symptoms or death and therefore represent a phenomenon known as overdiagnosis. And because overdiagnosis leads to unnecessary treatment and other harms, it is important to develop clinical and research strategies to quantify, recognize, and manage it, according to a review published online April 22 in the *Journal of the National Cancer Institute*.

H. Gilbert Welch, M.D. and William Black, M.D., of the Dept. of Veterans Affairs Medical Center, White River Junction, Vt. and the Dartmouth-Hitchcock Medical Center used data from large randomized screening trials to estimate the extent of overdiagnosis. They found that about 25% of breast cancers detected on mammograms and about 60% of prostate cancers detected with prostate-specific antigen (PSA) tests could represent overdiagnosis. In a [lung cancer screening](#) trial of chest x-rays and sputum tests, they estimate that 50% of the cancers detected represented overdiagnosis. They argue that this estimate will only increase with spiral CT scanning, which, in one observational study, found almost as many lung cancers in non-smokers as smokers.

The authors also point to cancer incidence and mortality statistics as evidence of overdiagnosis in some cancers. For five cancers—thyroid, prostate, kidney and breast cancer, and melanoma—data from the past 30 years show an increasing number of new cases but not an increase in deaths. In each of these cancers, an increase in screening or imaging tests

has been associated with an increasing rate of new diagnoses.

In addition to screening, other procedures, such as diagnostic imaging, may contribute to overdiagnosis. CT colonography ([virtual colonoscopy](#)) for instance, often detects abnormalities outside the colon that can lead to more tests and possibly overdiagnosis.

The authors suggest several strategies to address the problem. One is to educate patients about the risks and benefits involved with early detection.

"Whereas early detection may well help some, it undoubtedly hurts others," they write. "Often the decision about whether or not to pursue early cancer detection involves a delicate balance between benefits and harms...different individuals, even in the same situation, might reasonably make different choices."

Another strategy to reduce overdiagnosis is to raise the threshold at which a screening test result is labeled 'abnormal', or at which further steps are taken. For instance, investigators could test whether it was better to ignore small abnormalities detected on imaging tests, as is now the practice with lung nodules detected by CTscans.

"It is possible that new insights from genomics will ultimately allow us to more accurately predict tumor behavior at the individual level," the authors write. "However the field has not advanced to that point yet. We must explore other clinical strategies."

In an accompanying editorial, Laura Esserman, M.D., University of California, San Francisco and Ian Thompson, University of Texas Health Science Center at San Antonio, stress the critical importance of addressing the problem of overdiagnosis.

"What we need now in the field of cancer is the coming together of physicians and scientists of all disciplines to reduce the burden of cancer death AND cancer diagnosis," they write. "We must advocate for and demand innovation in diagnosis and management, fueled by science, harnessing modeling, molecular, and immunology tools to address this problem."

Provided by Journal of the National Cancer Institute

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