

# It Is Overtreatment, Not Overdiagnosis

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“The delivery of good medical care is to do as much nothing as possible” (1).

That sentence is the 13th law of Samuel Shem’s *The House of God*, a satirical novel portraying intern life.

Despite the novel’s satirical nature, there is much truth to the statement. Overdiagnosis, overtreatment, and overutilization are issues in modern-day health care delivery and limiting screening, diagnosis, and treatment to those who truly need them should be goals for the health care system.

However, the way things presently stand, overdiagnosis and overtreatment result in more interventions, unintended morbidity, and increased cost. The most widely accepted definition of “overdiagnosis” is “diagnosing a person without symptoms with a disease that will (ultimately) never cause symptoms or death during the person’s lifetime” (2). It should not be confused with misdiagnosis or false-positive findings, which are completely different entities and outside the scope of this commentary. As the generally accepted definition encapsulates downstream effects (ie, “would otherwise not go on to cause symptoms or death” (3)), the real issue lies with “overtreatment” of these accurate diagnoses rather than overdiagnosis itself.

Nowhere is this distinction played out better than in the setting of cancer screening. Historically, cancer was considered a terminal diagnosis as patients typically presented to a physician with signs and symptoms of the disease. Technology has since advanced to the point where cancer diagnoses can be made before they cause significant symptoms.

As its diagnosis has improved, so has our understanding of cancer. Physicians now recognize that “cancer” represents “cellular abnormalities” which have variable natural progression: “some grow rapidly, others do so more slowly, others stop growing completely, and some even regress” (3). It is

because this variable disease course and our incomplete understanding resulting in the overtreatment of cancer rather than its overdiagnosis.

The ideal cancer screening study would be one that targets a slow-growing progressive cancer with a long latency and presence of a precancerous lesion. The ideal screening study “focuses on detection of disease that will ultimately cause harm, that is more likely to be cured if detected early, and for which curative treatments are more effective in early-stage disease” (4). There is a recognition by many, given the variable course of cancer, that the term “cancer” should be “reserved for describing lesions with a reasonable likelihood of lethal progression if left untreated,” with low-risk or indolent lesions reclassified as “indolent lesions of epithelial origin” (4). With regard to cancer screening, we are able to diagnose indolent tumors, some of which may slowly cause symptoms and others which may never cause symptoms during the patient’s lifetime.

The issue with overdiagnosis is that physicians do not know who is “overdiagnosed” at the time of the diagnosis. This is true with cancer screening programs, but the same can be applied to computed tomography (CT) evaluation for pulmonary emboli (where there is debate as to whether all diagnosed pulmonary emboli necessitate treatment) (5). Because of this imperfect information, the issue of overtreatment arises. Not every diagnosis warrants treatment despite the diagnosis being accurate.

Gur and Sumkin have succinctly characterized treatment outcomes in the setting of a correct diagnosis: “If abnormal findings are diagnosed correctly, there is only optimally managed, suboptimally managed, mismanaged, and possibly overtreated disease” (6). As those authors also suggest, the “most effective and efficacious management path” has to be determined and agreed on by the relevant parties (6). For many imaging findings, the information does not exist to optimally guide treatment by limiting treatment to those who truly warrant it.

With regard to imaging studies, the responsibility lies with radiologists to recognize and report lesions to generate an accurate representation of the study’s findings. That said, radiologists should not become technicians, either. Rather, they must work with their colleagues and their patients to put

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said findings in appropriate clinical context and to develop an appropriate treatment plan while recognizing the patient's wishes and limitations of the imaging study. Although some lesions may never be clinically consequential, radiologists must use the same rigor to recognize these as they would other lesions. Given the imperfect information, it is not the diagnosis of these lesions causing harm but rather the downstream effects of treating inconsequential lesions. Some would argue that this is a "false dichotomy" (7) as one leads to the other. In reality, appreciation of inconsequential lesions rarely occurs. Understanding this would break the inevitability.

As a society, several things must be undertaken to stem the tide of overtreatment. First and foremost, screening and diagnostic evaluation should be offered primarily to those with likelihood of clinically relevant findings. Such is the case with low-dose CT screening for lung cancer, as it is limited to a select group of individuals with pertinent risk factors. CT evaluation for pulmonary emboli should be reserved for those with reasonable pretest probability for the ailment. Second, identifying and focusing screening on high-risk individuals will help. Future advances in genomics may help identify these high-risk individuals for whom screening evaluation would be beneficial without significant risk of overtreatment. Third, raising thresholds for intervention (eg, recalls, biopsies, or anticoagulation) would help mitigate the risk for overtreatment.

In all circumstances, the benefits and risks should be discussed with patients before any diagnostic or screening study.

The public, patients, and physicians many times are unaware of the reality of imperfect information and, therefore, the frequency of overdiagnosis and overtreatment.

Although both overdiagnosis and overtreatment exist in modern medicine, the presence of imperfect information, particularly as it relates to disease progression (or, rather, non-progression), leads to overtreatment. The effects of treating inconsequential lesions, rather than their diagnosis per se, result in increased morbidity and cost without added benefit. Society as a whole should strive to treat individuals who should be treated and not those who would not benefit. The 13th law of Shem, true in 1978, remains true today.

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