# On Controversial Screening for Cancer

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*Editor in Chief*

It seems axiomatic that to prevent cancer deaths we should seek to find tumors in their early stages by screening vulnerable populations. The principle is so intuitively logical that mass screening programs have become routine for breast, prostate, and colon cancer, and—in subsets at higher risk—for lung cancer among others. Both non-profit and for-profit entities barrage the public with ads that propel people into screening programs by offering fear and hope in varying combinations, while avoiding any discussion of screening's cost in dollars and morbidity.[1] For though the monetary cost of a PSA blood test for prostate cancer is relatively modest, the cost of digital mammography is considerably greater, and the total cost of colonoscopy is exponentially greater still—involving advance preparation; time lost from work; and special facilities, personnel, and equipment.

In recent years concerns have been raised that the apparent benefits of screening for breast or prostate cancer may not be as great as we had hoped, and—in certain cohorts of patients—harms may actually outweigh benefits. I'm not talking here about the actual procedural risks, though these cannot be entirely dismissed. (Giving a blood sample for a PSA test surely poses virtually no real or even hypothetical risk, but for mammography there are risks from radiation, and for colonoscopy there are dangers mainly of anesthetic complications or colonic perforations.)

Rather, I am talking about the risks associated with the follow up tests, biopsies, and procedures that patients undergo if a screening test is positive, even falsely so, and the harms that would have been avoided if the falsely positive screening test had not been done.

Recent studies have provided data from long-term observational studies that have only increased the complexity of the discussion, not decreased it.[2,3] Evidence is accumulating that harms can outweigh benefits even when screening programs do detect more cancers at an early-stage when they are more easily treated. This perplexing paradox can occur when a screening test is not sufficiently specific and generates too many false positives, and also when it detects early stage tumors that would not have progressed to cause clinical difficulty. It is this dilemma that prompts my editorial, as well as the featured roundtable discussion about PSA screening for prostate cancer in this issue.

But first, regarding mammography as an example of the controversy, recent articles and discussions in the *New England Journal of Medicine* have explored what the authors feel is increasingly persuasive evidence, from long-term studies mainly in Scandinavia and the U.S., that in many cohorts screening for breast cancer is associated with little if any reduction in all-cause long-term mortality.

Bleyer and Welch reviewed three decades of breast cancer screening data in the U.S. and found that the number of early stage breast cancer diagnoses in women over 40 has more than doubled since 1976 (from 112 to 234 cases/100,000 women).[2] If those early diagnoses prevented those cancers from progressing, the number of advanced stage cancers should have fallen concomitantly, but they only decreased by 8% (from 102 to 94 cases/100,000 women).

These numbers suggest that—assuming a constant underlying disease burden—only about 8 of the 122 additional early-stage cancers that were diagnosed could have been expected to progress to advanced disease. In other words, screening detected many tumors that would never have become clinically significant. After excluding the transient excess incidence associated with hormone replacement therapy and adjusting for trends in the incidence of breast cancer among women younger than 40 years of age, the authors estimated that breast cancer was *overdiagnosed* (i.e., tumors were detected on screening that would never have led to clinical symptoms) in 1.3 million U.S. women in the past 30 years, and in the last study year of 2008, breast cancer was *overdiagnosed* in more than 70,000 women, or 31% of all breast cancers diagnosed.

In a subsequent article in the *NY Times* (November 28, 2012) entitled *Ignoring the Science on Mammograms*,

David H. Newman, M.D.* opined that this study had the "potential to change both medical practice and public consciousness about mammograms," but cautioned that in observational studies "there are countless reasons why conclusions from such studies are commonly fraught with error. What if mammography successfully prevented a major increase in advanced cancers, leaving the health statistics unchanged?"

But even while he acknowledged that observational studies have flaws, Newman insists they merely confirm what we already know from (presumably infallible) randomized trials: "mammograms increased diagnoses and surgeries, but didn't save lives." He provocatively asserts that doctors have not stopped doing unnecessary mammograms because "the trial results were unpopular and did not fit with a broadly accepted ideology—early detection—which has . . . failed (ovarian, prostate cancer) as often as it has succeeded (cervical cancer, perhaps colon cancer)." Mounting even higher on his soapbox, he accuses the medical profession of protecting "a mammogram economy, a marketplace sustained by invasive therapies to vanquish microscopic clumps of questionable threat, and by an endless parade of procedures and pictures to investigate the falsely positive results that more than half of women endure. . . . Hundreds of millions of public dollars have been dedicated to ensuring mammogram access, and the test has become a war cry for cancer advocacy. Why? Because experience deludes: radiologists diagnose, surgeons cut, pathologists examine, oncologists treat, and women survive. Medical authorities, physician and patient groups, and 'experts' everywhere ignore science, and instead repeat history. Wishful conviction over scientific rigor; delusion over truth; form over substance."

Whew! Sorry, but I beg to differ. While there may be some psychological tendency to keep doing what we have always done because it is comfortable to do so, I cannot swallow that tirade whole. Nor can most experts. The online *NEJM* recently presented a discussion of mammography that offered three different thoughtful and well documented perspectives on how to advise patients about mammography:[3] Option 1: Recommend Screening Mammography Starting at the Age of 40; Option 2: Recommend Screening Mammography Starting at the Age of 50; and Option 3: Do Not Recommend Screening Mammography. One may with probity adhere to any of those three alternatives.

In previous issues of the *Journal*, Drs. Alan Peterson and Nitin Tanna explored various aspects of screening programs for breast cancer;[4,5,6] Dr. Bruce Pokorney discussed colonoscopy to screen for colon cancer;[7] and Dr. Paul Sieber discussed chemoprevention of prostate cancer in the context of conventional screening's imprecision.[8] The discussions were quite sanguine about the benefits of screening for breast and colon cancer, but current testing for prostate cancer remains problematic. The controversy about PSA was heightened recently when the United States Preventive Services Task Force (USPSTF) made a clear recommendation against prostate cancer screening with PSA that has created great controversy. This influential group assigned a grade D to the evidence, noting that "there is moderate or high certainty that this service has no net benefit or that the harms outweigh the benefit."

In this issue, we address the PSA dilemma with a new approach: the edited transcript of a recorded roundtable discussion chaired by Dr. Randy Oyer, Medical Oncologist and Director of the Cancer Program at Lancaster General. The discussants are Dr. Paul Sieber of the Lancaster Urological Group, and Dr. Kenneth Lin, a graduate of our own Family Practice Residency Program who was a participant in the work of the USPSTF and co-authored their report.

I hope this thorough and many-faceted discussion provides guidance to practicing physicians about an important controversy. I plan to organize a similar discussion about mammography for a future issue of the *Journal*.

## OTHER CONTENTS OF THIS ISSUE

This issue also includes an informative discussion by Scott Paist, MD about the use of buprenorphine in the management of opiate addiction. The Recovery Care Medicine Clinic at the Lancaster General Hospital has been open for the past 2 years at 554 North Duke Street and cares for about 50 opiate addicts (its current capacity) on an outpatient basis.

## NOTE

* Dr. Newman is described as an "Emergency Room Physician in New York," from which I infer that he does not have responsibility for discussing the pros and cons of screening tests for cancer with patients, nor of providing ongoing care to patients who were never screened but had metastatic cancer when first seen.

Opiate addiction is a major global and domestic problem, and it is a common misconception that it only affects undesirable elements of society. Veterans have a high prevalence of addiction to heroin and prescription opiates. According to the VA office of Research and Development, more than 43,000 VA patients were diagnosed with opioid dependence in FY10. The Handbook on Uniform Mental Health Services now requires access to opioid agonist therapy (principally with buprenorphine), but estimates that only about 27% of Veteran patients diagnosed with opioid dependence receive ongoing OAT. The VA is working to enhance access to these programs.

Next in this issue is a timely discussion of our highly successful program of therapeutic hypothermia to protect the brain after cardiac arrest. The principle author, Tom Shuman, is the son of our regular contributor of Imaging Insights, Dr. Leigh Shuman. This discussion complements an earlier article in the *Journal* (Larson and McElwee, Fall 2011 - Vol.6, No.3) on the use of hypothermia for neuroprotection in the newborn.

The next article reports the results of a collaborative effort among Lancaster General Hospital, Franklin and Marshall College, and South East Lancaster Health Services, with the assistance of other local stakeholders to address the health care needs of the nearly 5,000 refugees who have arrived recently in our community.

Finally, Dr. Alan Peterson provides his usual broad update on several timely medical issues; in this case continuing his discussion of the Choose Wisely initiative from the American College of Physicians. He concludes with a discussion of several foods that impact well-being, including the problem of Arsenic in rice.

## A CALL FOR PARTICIPANTS

Another innovation in this issue is a Call for Participants in a study of Renal Denervation Therapy For Refractory Hypertension, coordinated by Rupal P. Dumasia, M.D., who is Section Chief, Interventional Cardiology, The Heart Group of Lancaster General Health. Please see that article for details, and information on how to refer a patient.

In the future we expect to publish other such announcements of clinical trials that are open to referrals of new patients.

## REFERENCES


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