prospectively defined the scope of the research effort and corresponding budget. Dr Lerner is the Chief Medical Officer for TYRX Inc, and in that role, has been paid a salary and granted stock options by TYRX Inc.

1. Sohail MR, Henrikson CA, Braid-Forbes MJ, Forbes KF, Lerner DJ. Mortality and cost associated with cardiovascular implantable electronic device infections. *Arch Intern Med.* 2011;171(20):1821-1828.
2. Goldberger Z, Lampert R. Implantable cardioverter-defibrillators: expanding indications and technologies. *JAMA.* 2006;295(7):809-818.
3. Epstein AE, Dimarco JP, Ellenbogen KA, et al; American College of Cardiology; American Heart Association Task Force on Practice Guidelines; American Association for Thoracic Surgery; Society of Thoracic Surgeons. ACC/AHA/HRS 2008 Guidelines for device-based therapy of cardiac rhythm abnormalities. *Heart Rhythm.* 2008;5(6):e1-e62.
4. Sohail MR, Uslan DZ, Khan AH, et al. Management and outcome of permanent pacemaker and implantable cardioverter-defibrillator infections. *J Am Coll Cardiol.* 2007;49(18):1851-1859.

Alternative Estimates for the Likelihood That a Woman With Screen-Detected Breast Cancer Has Had Her "Life Saved" by That Screening

We welcome the method by Welch and Frankel[1] of estimating the probability (P) that a woman with a screen-detected cancer had her life saved by the screening program [P(life saved|screen-detected cancer diagnosis)]. When using this model, the estimated probability ranges from 2.5% to 24.0%; for women aged 50 years, the estimated probability is 13%. We were intrigued by this number, since this probability previously has been estimated to be 4.8%.[2] In his model, Keen[2] used 2 parameters: (1) an estimate of the absolute risk reduction of breast cancer mortality with mammography screening and (2) the cumulative incidence of screen-detected cancers.

We have applied Keen's model to Danish data. During 1997 through 2006, 3 Danish municipalities had organized mammography screening (Copenhagen, Funen, and Frederiksberg). We were able to obtain data referring to the Copenhagen municipality. The number of screen-detected cancers from the first to seventh round (April 4, 1991, to December 31, 2005) has been published.[3] We have obtained the number of screen-detected cancers over 5 rounds of screening (a 10-year period, from April 26, 1993–May 31, 2003). From the municipality population registry[4] we obtained the mid-period number of women aged 50 to 69 years living in the Copenhagen municipality from January 1, 1993, through December 31, 2002. Using these 2 numbers, we estimated the incidence of screen-detected cancers over a 10-year period to be 20 per 1000 women aged 50 to 69 years. Assuming an absolute risk reduction of 1 breast cancer death per 2000 screened women,[5] we have reached a P(life saved|screen-detected cancer diagnosis) of 2.5%.

We acknowledge that Welch and Frankel[1] have been more cautious in their assumptions than we have. In doing so, they have avoided underestimation of any mammography effect, which only strengthens their main argument: for a breast cancer survivor, the probability that her life was saved by screening is, at most, 24%. Beyond the issue of the assumptions, we believe that the main explanation for the difference between estimates of P(life saved|screen-detected cancer diagnosis) lies in the choice of measure used to quantify risk. In Keen's model (that we replicated using Danish data), a 10-year cumulative incidence is used. In the model by Welch and Frankel, a 20-year probability is used. For similar populations, these 2 risk measures provide numbers that are very different in terms of magnitude. This magnitude difference can leave clinicians and patients confused. We would like to invite Welch and Frankel to comment on the advantages of using probabilities conditioned on age when communicating with patients.

Bruno M. Heleno, MD
Laura Lindberg, MSc
John Brodersen, MD, GP, PhD

Author Affiliations: Research Unit and Section for General Practice, University of Copenhagen, Copenhagen, Denmark.
Correspondence: Dr Heleno, Research Unit and Section for General Practice, University of Copenhagen, Øster Farimagsgade 5, Entrance Q, First Floor, PO Box 2099, Copenhagen K 1014, Denmark (bruno.heleno@sund.ku.dk).

Financial Disclosure: None reported.

1. Welch HG, Frankel BA. Likelihood that a woman with screen-detected breast cancer has had her "life saved" by that screening. *Arch Intern Med.* 2011;171(22):2043-2046.
2. Keen JD. Promoting screening mammography: insight or uptake? *J Am Board Fam Med.* 2010;23(6):775-782.
3. Utzon-Frank N, Vejborg I, von Euler-Chelpin M, Lynge E. Balancing sensitivity and specificity: sixteen year's of experience from the mammography screening programme in Copenhagen, Denmark. *Cancer Epidemiol.* 2011;35(5):393-398.
4. Københavns Kommune. Personbiler: Statistikbanken. http://sb.kk.dk. Accessed December 19, 2011.
5. Gøtzsche PC, Nielsen M. Screening for breast cancer with mammography. *Cochrane Database Syst Rev.* 2011;(1):CD001877.

Realistic Appraisal of the Benefits of Mammography

The excellent article by Welch and Frankel[1] helps put the benefits of mammography into perspective. I agree with their conclusion that the likelihood that a woman with a screen-detected breast cancer has had her life saved by that screening is small. The authors' methods, however, were indirect. They used Surveillance Epidemiology and End Results (SEER) data regarding breast cancer incidence and mortality and then made a number of assumptions regarding the proportion of breast cancers detected by screening, the benefit that has already been achieved from screening, and the time course during which the mortality reduction from mammography should be seen. I would like to point out that this question can also be addressed directly by analyzing data from the randomized mammography trials.

The mortality reduction due to mammography screening in the 8 randomized trials that have been performed ranges from 0% to 32%.[2] The most favorable trial was the Swedish Two-County Trial,[3] and data from the group randomized to screening in that trial are given in the **Table**.

Even in the trial showing the most benefit for mammography, the data support the conclusion of Welch and

©2012 American Medical Association. All rights reserved.

Downloaded From: http://archinte.jamanetwork.com/ on 01/16/2017

Table. Characteristics of the Group Invited to Screening in the Swedish Two-County Trial[a]

Characteristic	Value
Cancers detected, No.	
During screen	928
Interval or nonattendee	498
Total	**1426**
Cancer deaths, No.[b]	319
Cancer deaths prevented, No.[c]	140
Deaths prevented per cancer in screening group, No./Total (%)	140/1426 (9.8)
Deaths prevented per screening-detected cancer, No./Total (%)	140/928 (15.1)

[a] Total of 77 080 women, ages 40 to 74 years.
[b] Follow-up of 13 to 20 years.
[c] Calculated by directly comparing the rate per person-year follow-up in the control group (relative risk, 0.69).

Frankel[1] that the probability that a patient with a screen-detected cancer actually had her life saved by the screening is small.

We clearly need to change the messages we give to patients. In the past, I have tried to comfort a newly diagnosed patient by saying:

It is just lucky that you had the mammogram and caught this cancer when it was small and, as a result, you will have an excellent cure rate.

What I should say is:

The fact that this cancer is small and was detected incidentally indicates that it has favorable biologic features and will have an excellent cure rate. It is also good that you had the mammogram as this increased your cure rate by about 10%. You should also realize that, despite the mammogram, there is still a 20% chance that you may die from the cancer, and there is also a 20% chance that the cancer represents "overdiagnosis" and would never have bothered you in your lifetime.[4]

Donald R. Lannin, MD

Author Affiliation: Department of Surgery, Yale University School of Medicine, New Haven, Connecticut.
Correspondence: Dr Lannin, Department of Surgery, Yale University School of Medicine, PO Box 208062, New Haven, CT 06520 (donald.lannin@yale.edu).
Financial Disclosure: None reported.

1. Welch HG, Frankel BA. Likelihood that a woman with screen-detected breast cancer has had her "life saved" by that screening. *Arch Intern Med.* 2011;171(22):2043-2046.
2. Nelson HD, Tyne K, Naik A, Bougatsos C, Chan BK, Humphrey L; US Preventive Services Task Force. Screening for breast cancer: an update for the US Preventive Services Task Force. *Ann Intern Med.* 2009;151(10):727-737, W237-W242.
3. Tabár L, Vitak B, Chen HH, et al. The Swedish Two-County Trial twenty years later: updated mortality results and new insights from long-term follow-up. *Radiol Clin North Am.* 2000;38(4):625-651.
4. Welch HG, Black WC. Overdiagnosis in cancer. *J Natl Cancer Inst.* 2010;102(9):605-613.

Correction

Data Reporting Error in "Comment" Section. A percentage was incorrectly reported in the second sentence of the "Comment" section in the article titled "Effect of MRI on Treatment Results or Decision Making in Patients With Lumbosacral Radiculopathy Referred for Epidural Steroid Injections" by Cohen et al, published online on December 12, 2011, and published in print in the January 23, 2012, issue of the *Archives* (2012; 172[2]:134-142). The sentence should read as follows: "In group 1 patients, the independent physician privy to both MRI and clinical findings decided on a different treatment than did the treating physician who was blinded to imaging results 34% of the time."

©2012 American Medical Association. All rights reserved.

Downloaded From: http://archinte.jamanetwork.com/ on 01/16/2017