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Once again a paper gets published that is missing important information and claims are made and conclusions are drawn that are not supported by the study, with the probability that it will be used to, inappropriately, challenge mammography screening.

1. The "Journal of the National Cancer Institute" is not the National Cancer Institute's journal. It was sold to Oxford University Press in 1996. The fine print at the bottom of the website states what most do not know - "JNCI is published twice monthly by Oxford University Press and is not affiliated with the United States National Cancer Institute". It is not surprising that a journal that has been misleading the media and the public for almost 20 years will not have the best peer review.

2. The only legitimate conclusion that can be drawn from this paper is that more Medicare money was spent in caring for the cohort of women in the 2008-2009 cohort compared to the 2001-2002 cohort.

Beyond that there is so much missing information that few legitimate conclusions can be made. This is a common problem when analyses are based on registry summary numbers (in this case the SEER database) without using direct patient information.

3. The authors premise is that the adoption of digital mammography has not increased the detection of small cancers, but is the reason that Medicare costs from mammography rose between 2001-2002 (the first cohort that they studied) and 2008-2009. They have used this to criticize the adoption of new technology without proof of efficacy. It is unclear why supposed experts would not be aware of, or would fail to report, fundamental facts that impact directly on and negate most of their conclusions. The first cohort they examined came from a period of time (2001) when reimbursement for screening was set by Congress and was below the actual cost of doing the studies (see "Is Mammography Being Squeezed Out" http://nurse-practitioners-and-physician-assistants.advanceweb.com/Article/Is-Mammography-Being-Squeezed-Out.aspx)

Many of radiologists were performing screening as a public service and were operating in the red. There was, in fact, a crisis due to the low reimbursement rates as radiologists were dropping out. The authors were either not thorough in understanding the economics, or were not interested in alerting the reader to this important fact. By 2008 Congress was no longer setting the rate, and it was raised to account for the actual costs of screening. This is fundamental to their analysis of the increasing payments for mammography, but they failed to even mention it. It is not simply the shift to digital mammography that is the reason for the findings in this paper.

4. This analysis says nothing and should not be used to assess the effectiveness and benefits from screening these women. There is no information on the death rate in the two cohorts. All we know is that the death rate has continued to decline in the U.S. from breast cancer as more and more women participate in screening, and the data show that this is mostly due to screening (men have had the same access to therapy with no concomitant decline in deaths).
5. The authors did not adjust (could not adjust) for previous screening. The incidence of breast cancer has been increasing steadily since 1940. They do not know what the distribution of cancers would have been in the absence of screening. It is entirely possible that the rate of advanced cancers declined in the later cohort.

There are no data on what percent of the screening in the two cohorts were prevalence cases (more cancers are found that have been building up in the population when a screening test is applied for the first time), and which cancers were from incidence screening. It is entirely possible that the women in the earlier cohort had a higher percentage of prevalence screening while the second cohort was more incidence screening. If this is the case, having the same “cancer detection rate” per 1000 women would indicate an actual improvement in cancer detection for the second cohort.

6. It is likely that the two cohorts differed in the prior probability of invasive breast cancer. There are no data provided on the screening history of the women in the two cohorts prior to the periods of study. It is possible that the removal of Ductal Carcinoma in Situ or high risk lesions like atypical hyperplasias in the later cohort in the years prior to the study period reduced the number of invasive cancers in the later period, so that even if digital mammography was more sensitive, and even if invasive cancers were smaller, and more breast cancer deaths likely averted, this cannot be determined from this study. This may not be coded.

7. It is unclear why the authors only looked at "stage" of breast cancer. Stage is a fairly crude measure. Deaths are avoided by reducing the size of cancers within stage (Chu KC, Smart CR, Tarone RE. Analysis of Breast Cancer Mortality and Stage Distribution by Age for the Health Insurance Plan Clinical Trial. JNCI 1988;80:1125-1132). They should have published the data on the actual size of the cancers which is supposedly "on line". This is important information that should be within the paper.

8. There is no adjustment for inflation in the general economy and in health care over the same time period. It would not be surprising if the increase in the payments for breast evaluation is within the overall background inflation and certainly in the overall increase in the cost of health care from 2001-2009. It is always misleading when findings are provided with no context and a frame of reference is not provided within which to view findings such as these.

9. The fundamental premise is simply obsolete. Digital mammography was not expected to markedly increase the detection rate of breast cancer. Just as digital imaging has replaced film in photography, digital imaging has replaced film for imaging all parts of the body. Digital chest x-rays have replaced film/screen x-rays. Digital bone x-rays have replaced film/screen bone studies. Film is an obsolete technology and support for film/screen systems is like support for the rotary phone. Digital mammography was not adopted because it was so much better than film/screen. This is why it took many years for most mammography to change. Radiologists were not going to replace aging film/screen systems with obsolete film/screen systems.

   Just as with digital photography, digital x-ray in general and digital mammography in particular have major logistical advantages.

   a. The images can be reviewed almost immediately so that a technologist does not need to wait for a processor to "develop" films making the whole process more efficient.
   b. No more lost films. File management is much more reliable.
   c. There is no more sifting through film jackets to find the images needed for review
   d. There is no more possibility of returning the images to the wrong file folder
   e. The images can be viewed, simultaneously, anywhere by multiple caregivers
There are certainly legitimate reasons to discuss the costs of breast evaluation and determine if reimbursement levels are appropriate, but there is so much information lacking in this analysis that it cannot be used to, legitimately, draw any other conclusions.

Footnote: Although somewhat clarified in the discussion, the comments by the authors about MRI, Ultrasound, and Nuclear Medicine ("Molecular Imaging ") initially suggest these are being used for screening. I doubt that this is the case. They are almost certainly being used for patient management and there is no way that the authors could gauge the value of those studies so their inclusion is gratuitous.