Q&A WITH DAN KOPANS, MD, FACR, FSBI
RE: CANADIAN STUDY (MILLER ET AL) PUBLISHED IN THE BRITISH MEDICAL JOURNAL FEBRUARY 2014

Question: How does this new literature fit into the context of previous research on this topic, in your opinion? And what effect, if any, do you think this latest study should have when it comes to the recommended age for screening mammograms should be changed?

Dr. Kopans: The CNBSS data were long ago shown to be unreliable. Longer follow-up does not improve the results. If this had been a trial of chemotherapy and you were told that they knew who had the large cancers and could place them in the control arm of the trial by simply skipping a line on the allocation sheet, the trial would have been dismissed immediately. On top of that this was supposed to be a test of mammography, but many of the units were old, second hand machines, and there was no training for the radiologists or technologists for this relatively new technique. The fact that only 30% of the cancers were detected by mammography alone is outrageous. It should have been at least double that number. The fact that the cancers in the mammography arm were the same size as those in the control arm shows that they had terrible mammography. If you do not find cancer earlier it should be no surprise your mammography had no effect.

Question: In this study and others, researchers define overdiagnosis as a possibility that a screen-detected cancer might not otherwise become clinically apparent during the lifetime of the woman. Can you please explain the concept of a breast cancer not having any effect on a woman?

Dr. Kopans: The scientific evidence shows that there is no "overdiagnosis" of invasive cancers by mammography. This is a manufactured concern. In the CNBSS it is likely that the unblinded randomization shifted cancers from the control arm to the screening arm. Whatever the number of cancers that were moved, this would make "overdiagnosis" appear to double (subtract 1 from one group and add it to the other and the difference becomes 2).

Question: Given this randomized controlled trial study began in 1980 when breast cancer treatment was different, how do you think the observations reported in the study can be applied to today?

Dr. Kopans: The folks who are arguing that it is treatment that is saving lives do not actually treat women with breast cancer. Responsible oncologists will agree that therapy has improved, but therapy saves the most lives when breast cancers are treated earlier.

Question: What should women do with this information?

Dr. Kopans: They should ignore this information. The trial was poorly designed and executed and the data are corrupted. Analysts need to be honest and stop citing this trial as having any validity.

Question: You mentioned that if appropriate technology were used, more than 32% of cancers should have been detected by mammography alone. Was that true for the technology available in the 1980s, when the screening was performed?
Dr. Kopans: Absolutely. In our screening program in the 1980's virtually none of the cancers detected were palpable even after we knew where to feel for them. We had to guide the surgeons to the lesions because they could not feel them. Approximately 20% became palpable between screens = interval cancers. The median size of our cancers was 1.0 cm.

In the infancy of mammography, in the early 1970's, more than 40% of the cancers were detected by screening alone (Baker LH. Breast Cancer Detection Demonstration Project: Five-Year Summary Report. Ca - A Cancer Journal for Clinicians 1982; 32 No.4:194-225.). The CNBSS 15 years later should have been far better.

Question: Along the same train of thought as above, how different are the sensitivity and specificity of mammography used today compared to the 1980s?

Dr. Kopans: Mammography has improved, but the prior probabilities have changed. The background rate of invasive cancers has been increasing since 1940 by approximately 1% per year (even before mammography) so that it is a moving target. The sensitivity of mammography is approximately 85% for cancers detectable today with approximately 20% interval cancer rate.

The death rate from breast cancer had been unchanged for 50 years. Mammography screening began at a national level in the U.S. in the mid 1980's and, as expected, the death rate began to fall soon after. There are now 30% fewer deaths from breast cancer each year than would have occurred without screening. Opponents of screening do not treat women with breast cancer. Therapy saves lives when cancers are treated earlier.

Question: You state that randomization was not performed correctly. In support of this, you mention that there was a statistically significant excess of women with advanced breast cancers assigned to the screening arm compared to those assigned to the control arm. Can you tell me how you reached that conclusion? Was that mentioned in the study or was this a calculation you performed?

Dr. Kopans: I published this in 1993 (Kopans DB, Feig SA. The Canadian National Breast Screening Study: A Critical Review. AJR 1993; 161:755-760.) based on the CNBSS own published reports. Independently, Tarone at the National Cancer Institute (Tarone RE. The Excess of Patients with Advanced Breast Cancers in Young Women Screened with Mammography in the Canadian National Breast Screening Study. Cancer 1995;75:997-1003.) showed that the excess was "statistically significant". This is likely the tip of the iceberg. There is no way of knowing what other results were influenced by the unblinded randomization. As I wrote earlier - had this been a treatment trial with this unblinded randomization it would have been rejected out of hand.