Frame size matters in the public debate on mammography

DAAG

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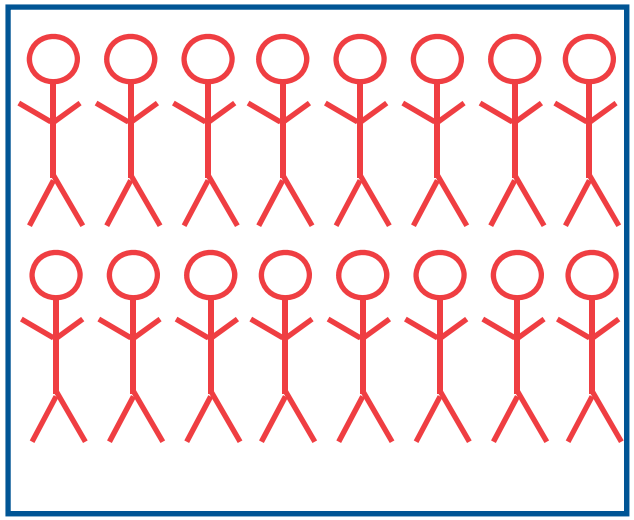
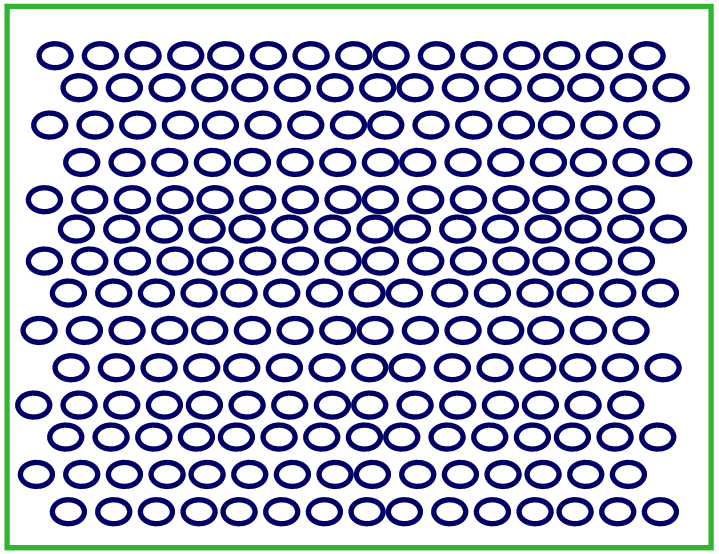
May 19, 2009

- We often consider benefit and risk on behalf of patients
- In an environment in which patients are increasingly being drawn into decision making, we may need to change not only the way we communicate benefit and risk, but the way we frame the problem.

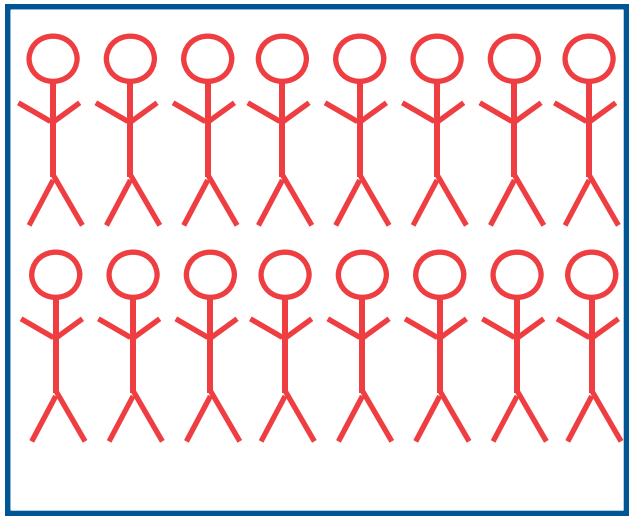
We need data on a lot of people to see the outcomes of interest

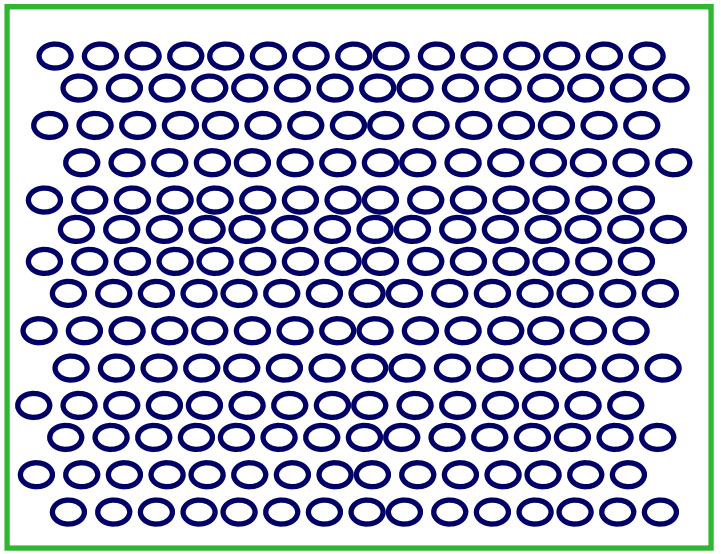


Results are geared toward regulators, policy makers, and payers trying to use the findings on behalf of a larger population

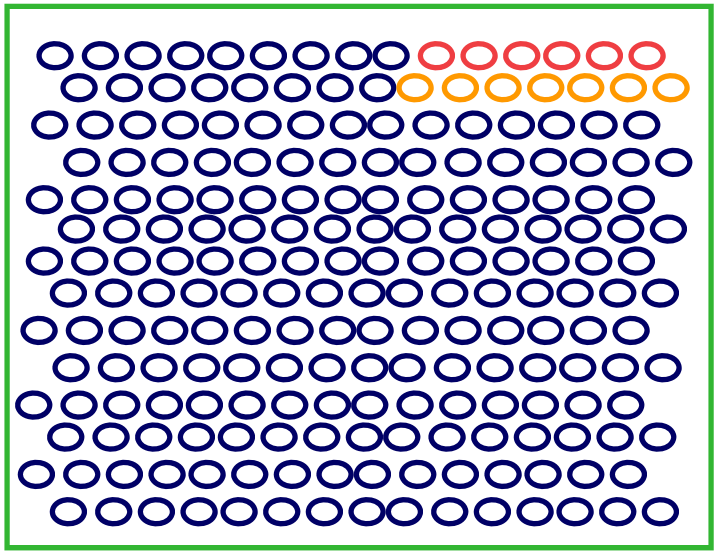


e.g., morbidity, mortality, incidence, prevalence

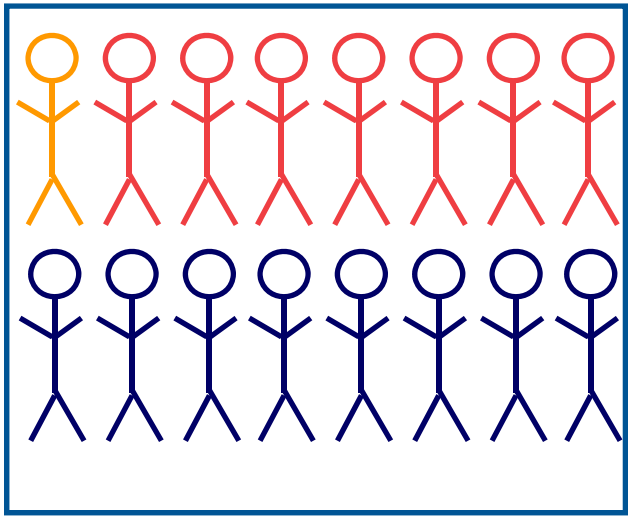


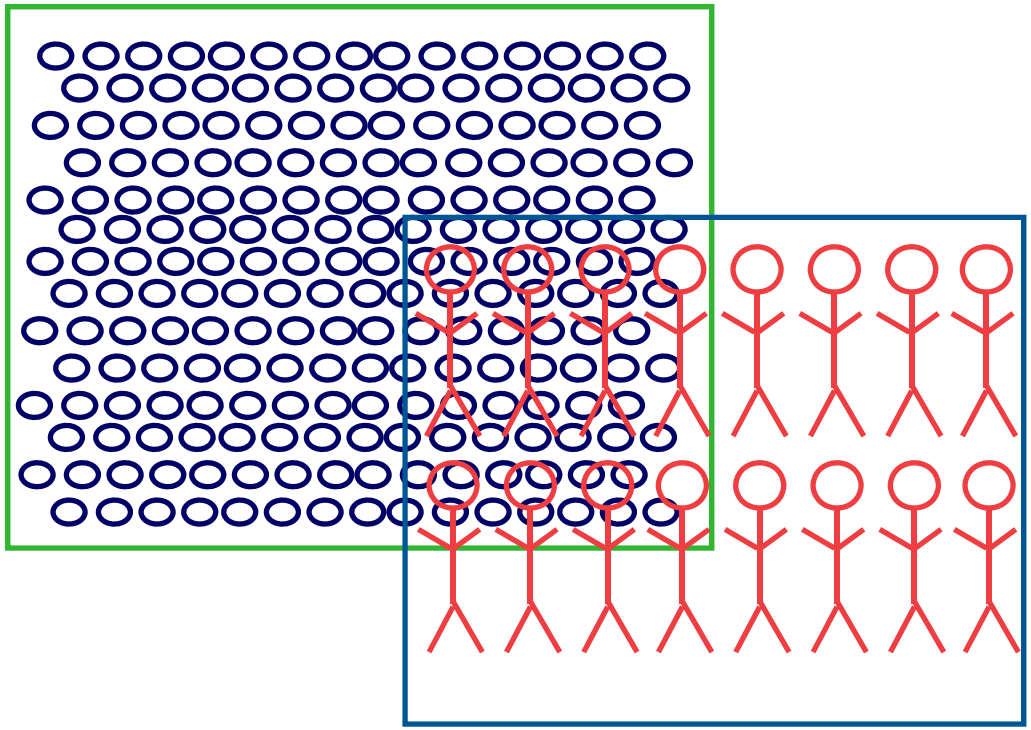


With large enough frames, we can sometimes see smaller differences among subgroups

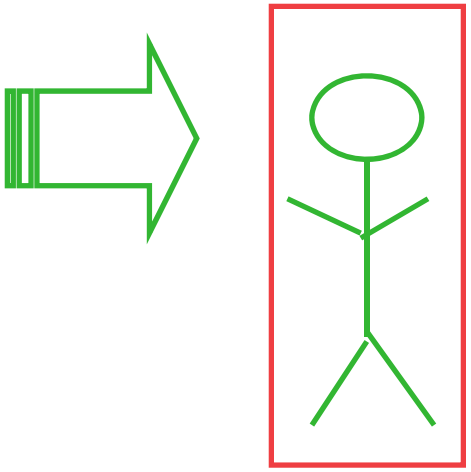


Smaller frames might give us more detail, but less generalizability

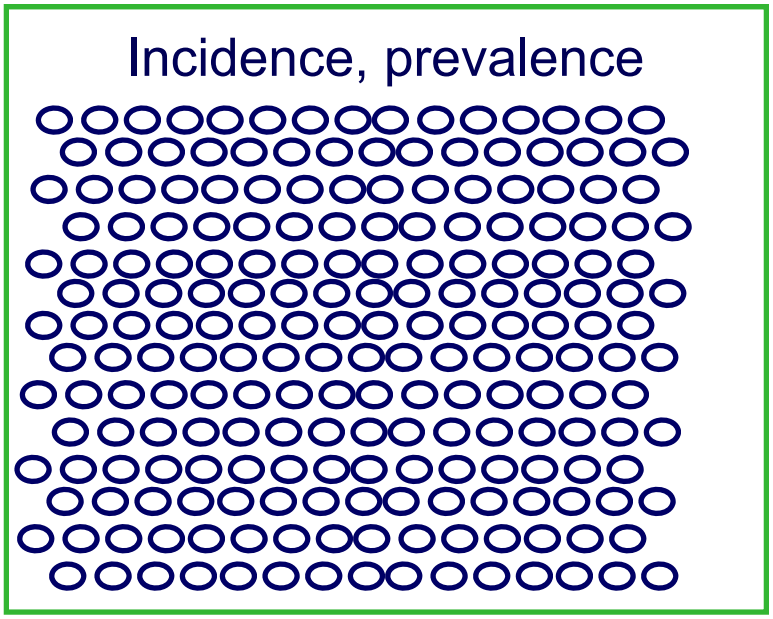


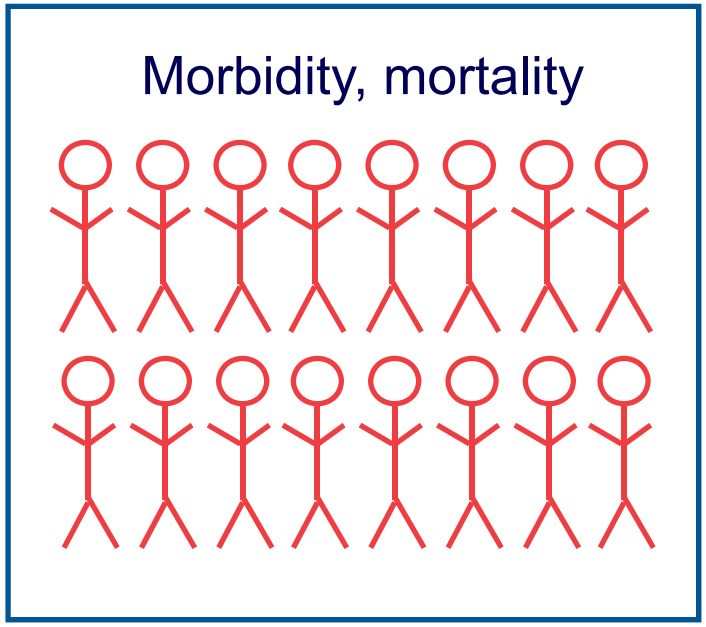


Speak loudly and in simple terms, and the person will understand the implications to herself/himself



Patient experience is often outside the boundaries





And my point is…?

Mammography is an interesting example of why this approach may need to change.

Sir,

Most people could be forgiven for believing that one of the vital weapons in the war against breast cancer is early detection — even before there are any symptoms of breast cancer present.

…However, there are harms associated with early detection of breast cancer by screening that are not widely acknowledged.

- "The likelihood of being overdiagnosed after mammography … is ten times larger than the likehood of avoiding death from breast cancer."

- "We now know that the psychosocial strain of a false alarm can be severe and may continue after women are declared free from cancer. Many women experience anxiety, worry, despondency, sleeping problems, and negative impact on sexuality and behaviour, and changes in their relationships with family, friends, and acquaintances and in existential values."

- "The question of whether the benefits of screening outweigh the harms is a value judgment that needs to be made by invited women." They believe the UK information leaflet is biased and recommend an alternative leaflet they have written and made publicly available. (Gøtzsche et al., *BMJ* 2009)

- Hazel, Thornton, then 57 years old, assymptomatic, but mammogram showed ductal carcinoma in situ (DCIS)."
- Had survived malignant melanoma earlier and had a family history of pancreatic and colorectal cancer.
- Put on tamoxifen. Experienced unpleasant hormonal side-effects; decided to stop taking the drugs after 18 months
- "More than 15 years later, Mrs Thornton, now 74, has yet to have any comeback from her cancer. 'It wasn't until some time later that I realised that it was impossible for me to have made an informed decision about my treatment,'" she said.
- Mrs Thornton became a vocal campaigner for better information for women on all details of mammography — better-informed consent and fuller disclosure of the risks and benefits of breast screening for otherwise healthy women.

- Interviewed Julietta Patnick, the director of cancer screening programs for the British National Health Service, who dismissed the Cochrane figures as inaccurate.
- British studies, she said, show that the ratio of lives saved to lives unnecessarily disrupted is more like one to one. "We know, from statistics, that there are cancers diagnosed through screening that wouldn't otherwise have been diagnosed — because the woman dies of something else first, … or she might live to 90 and it would just sit there, and she wouldn't have died of breast cancer," Ms. Patnick said.
- But "you don't know who that woman is."

- Interviewed Dr. Ned Calonge, chairman of the United States Preventive Services Task Force. An expert panel that reviewed the evidence on annual mammography for the task force in 2002 downgraded the recommendation for annual screens to "recommended" from "strongly recommended" over some of the same concerns around high incidence of false-positive scares and potential overtreatment of ductal carcinoma in situ and other indolent cancers.
- The panel also expressed concern about the potential for harm from exposure to radiation during the scans. Mammography is more effective in older women, but even among women 50 and over, the panel concluded, only one death would be prevented after 14 years of observing more than 800 women who had undergone screening. Dr. Calonge is quoted as saying, "That's a hefty number of women" who must be screened to derive a benefit.
- He was further paraphrased as saying that early detection may not make a difference in survival for many women.

Cochrane Collaboration Pamphlet

- It may be reasonable to attend for breast cancer screening with mammography, but it may also be reasonable not to attend, as screening has both benefits and harms.
- If 2000 women are screened regularly for 10 years, one will benefit from the screening, as she will avoid dying from breast cancer.
- At the same time, 10 healthy women will, as a consequence, become cancer patients and will be treated unnecessarily. These women will have either a part of their breast or the whole breast removed, and they will often receive radiotherapy, and sometimes chemotherapy.
- Furthermore, about 200 healthy women will experience a false alarm. The psychological strain until one knows whether or not it was cancer, and even afterwards, can be severe.
- Many women experience anxiety, worry, despondency, sleeping problems, changes in the relationships with family, friends and acquaintances, and a change in sex drive. This can go on for months, and in the long term some women will feel more vulnerable about disease and will see a doctor more often."

National Health Service Pamphlet

- Most breast cancers are found at an early stage when there is a good chance of a successful recovery.
- Around half the cancers that are found at screening are still small enough to be removed from the breast. This means that the whole breast does not have to be removed.
- Breast screening saves an estimated 1,400 lives each year in this country. Breast screening reduces the risk of the women who attend dying from breast cancer
- We will call back some women for more investigations if we are not sure about their mammogram. After more tests, we will find that many of these women will not have cancer. If you are called back it can cause worry.
- Screening may miss some breast cancers. Not all breast cancers that are found at screening can be cured.
- Many women find mammography uncomfortable or painful, but normally just for a brief period of time.

- The Cochrane Review: 61-page document written by Gøtzsche with the aim of aiding decision making by doctors, patients, policy makers and others, comparing 7 randomized clinical trials in women without previously diagnosed breast cancer.
- Outcomes of interest were mortality from breast cancer, mortality from any cancer, all-cause mortality, use of surgical interventions, use of adjuvant therapy, and harms of mammography

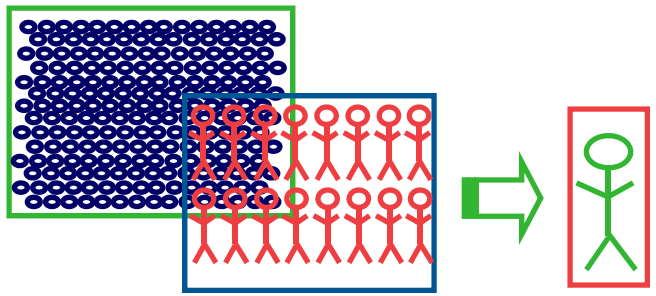
- The BMJ article referenced one author's PhD thesis plus related article reviewing 23 studies and validating a new research instrument on psychosocial consequences of false positives.
- "Current conclusions about the psychosocial long-term consequences of false positives must remain tentative." Two weeks after abnormal screening mammography the negative consequences decrease. However, they are still of measurable significance.
- One to six months after a false-positive screening mammography, women felt more or less relaxed and calm and were either more or less confident/anxious about having breast cancer, which were regarded as harm caused by screening.

- WHO Handbook provides extensive information and explanation at a technical level. Defines precancerous and possibly precancerous conditions, abnormal findings on mammography and their positive predictive value for malignancy. Also explains some of the difficulties in comparing findings across studies, in part due to differences in classification and inconsistent nomenclature.
- Currently available evidence supports the efficacy of screening 50-69-year-old women by mammography for reducing mortality from breast cancer more so than for other age groups
- Limited evidence for the efficacy of screening 40-49-year-old women by mammography
- There is some benefit to screening, but leaves open the question of how to characterize the risk and how to weigh one against the other

- “Breast cancer mortality is an unreliable outcome measure in screening trials (and therefore also in cohort studies of the effectiveness of national programs) that exaggerates the benefit.”
- Recommends independent researchers perform individual patient data meta-analysis, where exclusions of randomised women are not allowed
- Also gather data on all-cancer mortality for all trials since misclassification of cause of death can include deaths from other cancers
- Additional research to identify means of separating cancers likely to result in death from the many benign cancers identified by screening that do not need treatment

- Need to answer fundamentally important questions about the natural history of different types of cancer
- Suggests that the characterization of the findings requires skill, and reviews of study findings would be better served if characterization could be done in more consistent ways

- If we were trying to create a decision tree, Markov model, or other analysis weighing benefits and risks, especially including the patient's perspective, the most scientifically valid statistics would be difficult to find and use. References have to be traced back.
- There would be missing variables, e.g., to compare probabilities of unnecessary surgery versus possible malignancy in the future. More information is needed on the natural history or histology of mammography findings, as well as what the surgery entails. Do most women have lumpectomies or mastectomies, and under what circumstances? What happens if chemotherapy or radiation is recommended? How long do side effects generally last? What is the risk of cardiovascular harm from radiation?



…so the information needs to be as broad as possible

- Data presented without context adds more confusion than clarity.
- Research stated without its purpose and audience leaves interpretation to non-researchers, who may or may not have the tools available to track down the sources of information and interpret their meaning.
- There is discussion in the press and in medical journals of the increasing role of patients in medical decision making (Veatch, 2009; Painter, 2009). Whether or not medical researchers saw patients as a direct audience in the past, they are likely to be an important audience in our future.


Thank you

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