Letter to the Editor

Natural frequencies and the representation of risk

To the Editor: The findings reported by Olsen and Gotzsche in a recent paper in The Lancet re-sparked a heated controversy concerning the merits (or lack thereof) of mammography screening [1]. The dispute is not confined to the medical realm, but has political, economical, and ethical ramifications as well. Furthermore, the report stirred much discussion in the popular press, resulting in high feelings of uncertainty among women—thousands called their doctors and cancer-related agencies. And in an almost unprecedented step, a number of US medical associations and groups—including the American Cancer Society and the American Medical Association—placed a full-page advertisement in The New York Times, voicing their support for mammography screening.

Given the number of women screened yearly, the results of this study have the potential to affect millions of women in the future. The relative advantages and hazards of mammography screening are among the key factors influencing a woman’s decision to attend (or not) the screening process, and it is therefore vital for women to be fully aware of the ramifications involved. Of equal importance is the physician’s ability to communicate this information effectively, as physicians are the primary source of information for most patients. Providing accurate and understandable information is the first, and necessary, step in obtaining an informed consent. The current conflicting findings and messages powerfully demonstrate the necessity of an informed consent mechanism.

One problem women face, in light of the current debate, is whether they should undergo mammography screening at all. What information should doctors provide patients, and what is the best way to present this information? It has been shown that patients and physicians deem false positive rates, false negative rates, and base rates as the most essential information in their decision-making process [2]. Paradoxically, however, others have found that both doctors and laymen routinely fail in their ability to compute accurately the information they deem most important [3]. For example, when doctors were given information in probability format, 95% gave an incorrect answer regarding the chances of a woman who tests positive actually having breast cancer [4]. If doctors make incorrect inferences, can we realistically expect patients to perform better?

What remedy can be offered? Recent findings in psychology indicate that both physicians and laymen can improve their inferences dramatically if the same information (probabilities) is presented instead in a frequency format [5]. Adopting the frequency format methodology can prove to be beneficial for physicians and patients alike. Doctors will be better able to compute probabilities, and will thus present better information to their patients. Patients will be better able to grasp the information presented and will therefore give better informed decisions. While this technique will not solve the dilemma women face today, it does provide one means that can help doctors dissolve some of the uncertainties regarding mammography screening and allow women to give better informed consent. This technique—presenting information in a frequency format—has a broader implication, for its application is not confined to mammography screening but can be employed in a wide spectrum of medical decision making.

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References