



Breast imaging in United States

An interview with Prof. Elizabeth Morris, Chief of the Breast Imaging Service at Memorial Sloan Kettering Cancer Center (MSKCC) in New York, US, and President of the Society of Breast Imaging.

European Society of Radiology: *Breast imaging is widely known for its role in the detection of breast cancer. Could you please briefly outline the advantages and disadvantages of the various modalities used in this regard?*

Elizabeth Morris: Breast imaging is rapidly evolving. Our ability to detect breast cancer has improved markedly over the past three decades. We have many new tests that cannot only detect anatomic abnormalities but can also detect functional abnormalities. Traditional mammography is being rapidly replaced by 3D mammography, which improves cancer detection and decreases the chance that the mammogram is called abnormal. Ultrasound screening is performed for women with dense breasts. MRI screening is performed in women with a high risk of breast cancer.

ESR: *Early detection of breast cancer is the most important issue for reducing mortality, which is one reason for large-scale screening programmes. What kind of programmes are in place in your country and where do you see the advantages and possible disadvantages?*

Elizabeth Morris: In the United States, there is no national screening programme, which is different than many European countries. Therefore, it is up to the woman to remember to have her mammogram as she does not receive a reminder letter in the mail. It is estimated that approximately 60–70% of American women undergo screening mammography. Screening guidelines are recommended by many societies. The Society of Breast Imaging recommends that women be screened every year starting at the age of 40 to obtain the maximal benefit of screening mammography. It is recommended that the patient continues screening as long as she has at least a ten-year life expectancy.

ESR: *The most common method for breast examination is mammography. When detecting a possible malignancy, which steps are taken next? Are other modalities used for confirmation?*

Elizabeth Morris: In the United States, for every 1,000 women screened approximately 100 are asked to come back for additional imaging, which would be specialised mammographic views and possible ultrasound. Of these, approximately 80 will be called negative at that point. The other 20 will be recommended for a needle biopsy either using ultrasound or mammography (stereotactic biopsy). Five of these women will turn out to have breast cancer. Rarely, an MRI will be used for further workup.

ESR: *Diagnosing disease might be the best-known use of imaging, but how can imaging be employed in other stages of breast disease management?*

Elizabeth Morris: Using imaging can be very helpful when the patient is diagnosed with breast cancer. Imaging is relied upon to detect the entire extent of disease within the breast and axilla, and to exclude the possibility that the cancer has moved to other parts of the body.

ESR: *What should patients keep in mind before undergoing an imaging exam? Do patients undergoing radiological exams generally experience any discomfort?*

Elizabeth Morris: Breast cancer screening with mammography involves compression. Compression can be painful for some patients. For those who have breast pain around their menstrual cycle, it

would be important to schedule mammography after the menstrual cycle. For ultrasound, gel is used and therefore it is not painful. MRI does not involve compression; however, there is an injection of contrast media in the vein.

ESR: *How do radiologists' interpretations help in reaching a diagnosis? What kind of safeguards help to avoid mistakes in image interpretation and ensure consistency?*

Elizabeth Morris: It has been shown that double reading increases cancer detection rates and decreases recall rates. Double reading means that each woman's mammogram is read by two radiologists who specialise in breast imaging. Many practices use this approach.

ESR: *When detecting a malignancy, how is the patient usually informed and by whom?*

Elizabeth Morris: This depends on the practice. In most practices in the United States, the radiologist informs the patient of their diagnosis as they are the physician that performs the biopsy and has developed a relationship with the patient as the breast imaging expert. They are also able to determine whether the finding on the imaging test was appropriately biopsied (this is called radiologic pathologic concordance assessment).

ESR: *Some imaging technology, such as x-ray and CT, uses ionising radiation. How do the risks associated with radiation exposure compare with the benefits? How can patient safety be ensured when using these modalities?*

Elizabeth Morris: Ultrasound and MRI do not use radiation at all. Mammography, including 3D mammography, uses ionising radiation and therefore there is exposure to the patient's breasts. However, this exposure is small and the benefit of undergoing mammography far exceeds the risk of radiation exposure. Molecular imaging techniques have the highest radiation exposure to the patient as radioactive material is injected in the vein and therefore the entire body is exposed to radiation, whereas with mammography it is just the breasts.

ESR: *How aware are patients of the risks of radiation exposure? How do you address the issue with them?*

Elizabeth Morris: We will not perform mammography on a patient who may be pregnant, in order to protect the foetus. Most patients are aware of radiation exposure. If there are any concerns, we are happy to discuss with them the relative degree of radiation. For example, in the United States the radiation from a mammogram would be akin to taking an airline trip from New York to San Francisco.

ESR: *How much interaction do you usually have with your patients? Could this be improved and, if yes, how?*

Elizabeth Morris: The greatest joy in my job is having interactions with patients. In our practice we have a lot of interaction with patients and enjoy this enormously. We discuss abnormal findings with all of our patients and inform them of results from any needle biopsies. We have many patients who return year after year for continued care. We would like to start a clinic to take care of patients who have questions about breast density and about their risk of developing breast cancer.

ESR: *How do you think breast imaging will evolve over the next decade and how will this change patient care? How involved are radiologists in these developments and what other physicians are involved in the process?*

Elizabeth Morris: Over the next few years, the breast imagers will take on a more central role in the care of breast patients. As cancers are diagnosed at an earlier stage, traditional surgery, chemotherapy and radiation therapy may not be necessary. Percutaneous treatment is likely possible in the near future, changing breast cancer from a surgical disease to a nonsurgical disease.

Elizabeth Morris, MD, FACR, is a radiologist who has dedicated her career to advancing early breast cancer detection through improvements in breast imaging. She developed the Breast Magnetic Resonance Imaging (MRI) service at Memorial Sloan Kettering Cancer Center (MSKCC) where she is currently Chief of the Breast Imaging Service. Dr. Morris was educated at University of California San Francisco medical school, completed her radiology residency at Cornell Medical College and is a Fellow of the Society of Breast Imaging and Fellow of the American College of Radiology. Dr. Morris currently serves as President of the Society of Breast Imaging. She is Chair of the 2nd Edition of the Breast MRI section of the Breast and Imaging Reporting Data System (BI-RADS®). She has been principle investigator of several IRB protocols including: 'Breast MRI Positioning, Localization and Biopsy Device,' 'Breast MRI using a Bilateral Sequence,' 'Breast MR Spectroscopy' and 'Breast MRI High Risk Screening.' A grant from the Susan B. Komen Foundation was instrumental in allowing her to pioneer the work on breast MRI screening and breast MRI biopsy. Along with others, Dr. Morris has found that breast MRI is exquisitely sensitive in the detection of breast cancer and allows better characterisation of known cancers along with better detection of early cancer in high risk groups of women. Dr. Morris is considered one of the leaders in the field of breast imaging both nationally and internationally and has been an invited speaker at more than 300 meetings throughout the world and has authored or co-authored more than 100 papers. Her bestselling book on breast MRI has become the standard in the field. Dr. Morris hopes that one day breast cancer can be detected early enough to be treated without radical therapies. Her future research will be in this direction.

