



## **Breast imaging in Sweden**

**An interview with Prof. Dr. Edward Azavedo, Director of Breast Imaging Services, Karolinska University Hospital, Stockholm, Sweden.**

**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?*

**Edward Azavedo:** Mammography has proven to be the method of choice for examining large populations and thereby reducing breast cancer mortality. Ultrasound came in as the best complement to mammography and it has shown to have higher sensitivity than mammography in dense breasts. Ultrasound is widely used in current daily routines. Magnetic resonance imaging (MRI) is today considered to be the method with the highest sensitivity for breast cancer detection and the specificity is improving. Today, the availability, costs and examination time with MR are the factors of main concern. Tomosynthesis is an additional method that recently has shown to increase sensitivity of regular mammography and is a promising feature in breast diagnostics. Some other developments, such as contrast enhanced mammography or ultrasound and some more methods, are used in experimental studies and have shown that they can also be used in diagnostics. Their role in routine procedures is yet to be evaluated.

**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?*

**EA:** Sweden is one of the countries that revolutionised breast cancer care by demonstrating that early detection through mammography screening reduces breast cancer mortality. In Sweden we have a nationwide screening programme that includes all women 40–74 years of age. The advantages are that the programme is cost-efficient and has shown the desired results. A possible disadvantage is the slightly lower sensitivity in dense breasts, although this can be dealt with using other measures.

**ESR:** *Do you know how many women take part (percentage) in screening programmes in Sweden? Do patients have to pay for this?*

**EA:** The nationwide screening programme has been in place since 1989 and the compliance is around 75% in large cities and more than 82% in rural areas. The Swedish Parliament decided to offer free screening to all women.

**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?*

**EA:** In Sweden we always use additional views with mammography plus ultrasound to evaluate a possible malignancy. Recently we have also introduced MRI and tomosynthesis but their use is still limited due to lack of availability.

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

**EA:** Yes, of course. Modern breast cancer therapy includes quite a lot of neoadjuvant chemotherapy prior to surgery and the effects of these therapies are evaluated with our imaging methods according to certain study protocols.

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

**EA:** Patient anxiety is often but not always there and this is with varying types and levels of worry. Experienced staff help our women to relieve or reduce any worries or discomfort that they might experience.

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

**EA:** All screening examinations are double read and in case of a difference of opinion there is always a consensus discussion between the readers or with additional colleagues, depending on the availability of such resources.

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

**EA:** The patient is almost always informed of a malignant diagnosis by the referring doctor. In certain cases during an ultrasound examination, a patient might be anxious and eager to know what is seen on the screen and why we perform interventions etc. In such cases, sometimes the performing radiologist has to start preparing the patient for the fact that we have discovered something that e.g. could be a possible malignancy.

**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?*

**EA:** Radiation has always been an issue, but with modern mammography the doses are so low that they are almost negligible and the benefits outweigh the possible theoretical hazards. In Sweden we do not use CT as a breast cancer detection method.

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

**EA:** Extremely few patients ask about radiation aspects. These aspects are already widely debated both in scientific literature and daily mass media.

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

**EA:** We always have interaction with all patients undergoing ultrasound that is performed by radiologists. In case of screening mammography there is no interaction with the radiologists. A woman comes to a screening unit, has her mammogram performed by a radiographer and then she is informed that her result will be posted to her within 14 days, but in practice they usually get it during the same week. A referred patient gets an interaction with a radiologist, especially while undergoing an ultrasound examination, and in cases where there are no findings then they get their results on the spot. If any interventional procedures are undertaken then they are informed that they will be informed of the final results by the referring physician.

**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?*

**EA:** There are a lot of ongoing studies both for technical radiological development as well as for therapies and we involve the Breast Cancer Survivor Organisation when discussing major changes in patient flow, disease management and other factors associated with breast cancer care.



**Dr. Edward Azavedo, MD, PhD** was trained at the Karolinska Institute in Stockholm and is now the Director of the Breast Imaging Section at the Karolinska University Hospital in Stockholm. He started training in pathology, obtained board certification as a specialist in pathology, and then acquired specialisation in radiology, where he focused on breast imaging, the field in which he has now been working for almost three decades. He is the Past President of the Swedish Breast Imaging Society as well as both a founder member and Past President of the European Society of Breast Imaging (EUSOBI). He has authored a great number of scientific papers and is also involved in teaching and research at the Karolinska University Hospital. He has been an invited lecturer at various worldwide scientific meetings and also holds visiting professorships at a couple of universities abroad. He is also a member of various regulatory and scientific committees in Sweden.