

BREAST DIAGNOSTICS AT MEDOC HEALTH CENTRE

ABOUT BREAST EXAMINATION IN GENERAL

Breast examination is used to detect and confirm breast lesions. Based on a timely diagnosis, the treatment of the developing breast cancer can be started without delay, which significantly improves the chance of recovery. The therapy must be based on the result of an imaging technique examination.

None of the available breast diagnostic methods are infallible. It is possible, that certain tumours remain undiscovered regardless of the method of examination. Thus, it is recommended to use a combination of different methods of breast examination to improve accuracy. This way sensitivity and effectiveness of the examination can be improved, although 100% security cannot be achieved. This is valid for all types of breast examination, but the more tests are used, the more information is available for the radiology specialist to analyse. Furthermore, time is just as important a factor as the most meticulous examination. Other factors, such as the type of lesion, the structure of the breast, age and genetic susceptibility may also have an impact on the speed of the tumour development. This is why it is advisable to undergo regular breast examinations as recommended by the physician. For average risk, symptom free, 45–64-year-old women the breast mammographic screening examination is funded by the state every other year.

Several breast types and subtypes are existing depending on the ratio of fat, connective and glandular tissue. In some women fatty tissue is overabundant, in others there are higher proportion of connective and glandular tissue. The latter is called a “dense” breast. In Hungary the majority of women below the age of 50 have dense breast tissue. In general, younger women have dense breasts but with ageing, the proportion of fatty tissue will increase. In dense breast tissues the risk of incidence of breast cancer is twice as high, and in extreme dense breast tissue, it is 4–6 times higher than in normal tissue. The X-ray mammography is the gold standard basic examination method for breast diagnostics. However, its accuracy is reduced by the presence of dense breast tissue, because in the X-ray image of such dense, glandular tissue small, impalpable nodules may not be visible. The reason for this is that the X-ray image consists of black and white fields. The image of the dense, connective tissue and glandular substance rich type of breast is white, and the image of the malignant tumour is also white. As a result, the image of the tumour can be hidden by the dense breast tissue. On the other hand, the image of the fattier breast tissue is almost black, so the white tumour can be easily recognised.

BREAST DIAGNOSTIC EXAMINATION AT MEDOC HEALTH CENTRE

Diagnostic imaging examinations:

X-RAY MAMMOGRAPHY

It is the proven most effective method for early detection of breast cancer. It is a basic examination using X-ray to make images of the breast. It is suitable to detect the benign and malignant breast lesions, or their signs.

During the low dose direct radiation examination, the machine first determines the breast tissue type, its density and thickness, and based on these data it determines the lowest radiation dose which is needed to achieve the best image quality. The specific X-ray beam (so called soft beam) has the characteristic that it is mainly absorbed in the breast, so it is unnecessary and frequent use should be avoided.

To create an image, the breast needs to be compressed in a certain degree. This can cause discomfort or pain depending on the person’s sensitivity. An appropriately flattened breast is a prerequisite to have a high quality, evenly sharp and clear X-ray image.

In order to reduce the pain caused by compression and for more accurate evaluation it is recommended to do the mammography examination just after the menstruation, in the first half of the menstrual cycle. There is no need for any advanced preparations, only cosmetics and creams should be removed before the examination.

In the examination room you are asked to undress above the waist and stand in front of the mammography machine. Throughout the examination you are in a standing position. The radiologist technician places your breasts one after the other onto the breast-holder plate of the device, adjusts them in the right position and places a movable paddle onto the breast. Then the breast is gently squeezed (compressed) and secured and afterwards the bilateral X-ray image is taken. With digital technology, the device transforms X-ray images into electronic images which can be viewed on the monitor of a PC and which depict the structure of the breasts. With high resolution, special monitors, the structure of the breast can be better examined (zoomed in and measured) and the images can be immediately archived as well. The archived digital images can be used during future examinations to compare results, which can provide important information to the radiology specialist. It is possible that additional images are needed for a more precise diagnosis.

Warning! If you are pregnant (or possibly pregnant) talk to the examining healthcare professional before the examination. During the first trimester, the X-ray beam may have harmful effects on the developing fetus.

X-ray mammography is recommended as a basic examination for women above the age of 30–35 years (based on the guideline of the Hungarian Radiologists' Professional Consensus)

The expected duration of the examination is: **7-10 minutes.**

At Medoc Health Centre the **mammography is performed only as part of a complex breast diagnostic examination package.** Our device: **GE Senographe Crystal direct digital low-dose mammography device**

BREAST ULTRASOUND EXAMINATION (US)

This diagnostic device takes images utilising the reflective properties of harmless ultrasound waves. The image depicts the structural make-up of the breasts and the armpits, therefore it provides structural information. The ultrasound examination can be performed, at any age, without any side effects or pain.

In the examination room you will be asked to undress above the waist and to lie down on your back onto the examination table. During the ultrasound examination you will be lying on your back or in a lateral position. The radiology specialist applies a gelish, skin friendly, aqueous, non-fatty material on the breasts and armpits. This is required in order to get the optimal image quality, because this gel provides appropriate contact between the skin and the device. The specialist places the probe onto the gel-coated area. The dynamic ultrasound image is displayed on two computer monitors one of which you are able to see. After the examination you can wipe off the contact gel.

Under the age of 30, the breast ultrasound examination can be performed by itself and not part of a larger package of examination and above the age of 30–35 as an additional method.

The expected duration of the examination is: **10 minutes.**

At Medoc Health Centre the **examination can also be performed as a standalone examination.**

Our device: **GE Logiq S7 XD Clear or Zonare Z.One Pro ultrasound device**

ABUS 3 DIMENSION AUTOMATED BREAST ULTRASOUND (ABUS)

During the automated ultrasound examination 3-dimensional images of the breasts are taken. This diagnostic device takes tomographic images utilising the reflective properties of harmless ultrasound waves. The pictures depict the structural make-up of the breast; therefore they provide structural information. This examination has been specifically developed for women who have "dense" type of breast tissue. Using high resolution special monitors, the ABUS's 3-dimensional images of the dense breasts can be displayed differently than the X-ray mammography or the manual ultrasound. The details of the 3-dimensional image can be better evaluated with the aid of a computerised programme, and the breast tissue can be visualised layer-by-layer and across more layers at the same time. An advantage of the automated ultrasound examination is that the 3-dimensional imaging procedure depicting the breast as a whole can be standardised, thus the procedure can be repeated the same way and the results can be compared easily.

The ultrasound examination can be performed at any age without any side effects.

In the examination room you will be asked to undress above the waist and to lie on your back onto the examination table. The examination will be performed in this position. The radiologist technician will apply a creamy substance on your breasts. This is required in order to get the optimal image quality, because the cream provides appropriate contact between the skin and the device. The technician will place a special probe onto the breast in at least three different positions. The breast compression is minimal. Only the ultrasound probe touches the breast. After the examination you can wipe off the remaining cream. Then, as part of the ABUS, the specialist also performs a manual ultrasound examination of the axillary regions.

Under the age of 30, the breast ultrasound examination can be performed by itself and not part of a larger package of examination and above the age of 30–35 as an additional method.

The expected duration of the examination is: **15-25 minutes.**

At Medoc Health Centre the **examination can also be performed as a standalone examination.**

Our device: **GE Invenia ABUS 3D automated breast ultrasound device**

CT LASER MAMMOGRAPHY (CTLM)

During the CTLM breast diagnostic examination – which has been specifically developed for women who have "dense" type of breast tissue – no use of ionising radiation is needed, as with X-ray mammography. X-ray is replaced by a harmless laser beam. There is no breast compression during the examination. During the procedure the breasts are in hanging position and they are depicted in 3-dimensional images without any distortion.

The conventional radiology techniques, such as X-ray mammography, ultrasound (US), CT and MRI provide anatomical, structural information, whereas CTLM provides functional information. This means that it does not depict the foreign lesion directly but, in the vast majority of cases, it visualises the abnormal vasculature supplying an abnormal cell-growth.

CTLM examination is not performed as a single examination, but combined with other breast examination methods.

Taking the above into account, CTLM does not substitute the X-ray mammography, breast ultrasound and ABUS 3D automated breast ultrasound examinations, but compliments them. It provides such additional information which cannot be collected by the conventional standard procedures. Nowadays CTLM is known and used by only a limited number of specialists, that is why the wider community of professionals considers it a method with unclear diagnostic value. In addition, CTLM can provide a more precise diagnosis of benign and malignant lesions, thus increasing the sensitivity and specificity of the complex examination.

The examination does not require any specific preparation. In the examination room you will be asked to undress above the waist and to lie face down onto the CTLM examination table. The radiologist technician helps you to place your breasts one after the other into the table's examination chambers in a position suitable for the examination and comfortable to you.

The technician will ask you to lie still during the examination, he or she will turn off the lights and cover you with a blanket. The appropriate position of the breast in the examination chamber is essential to insure a good quality image. During the examination you will be lying face down. There is no breast compression because there is no direct contact during the examination. The laser beam scans the breast circularly, layer-by-layer from the base of the breast to the nipple. During the procedure, the device makes a soft clacking noise which may seem loud in a quiet room. The detectors make cross sectional images ("virtual slices") of the breast tissue similar to the computer tomography (CT) of the whole body. Based on a complex computerised tomographic analysis the CTLM device takes a 3-dimensional image of the breasts.

The radiology technician controls the uninterrupted progress of the procedure by a ceiling camera in the CTLM room. NO photos, audio or video recording is taken of the procedure.

The computerised reconstruction of the layered images will be evaluated by a highly trained specialist. These images are not given to the patient, because the analysis of the digital imaging of the electronic data used for the depiction of the breasts can only be done at the display of the CTLM device owned by Medoc Health Centre. The 3-dimensional image of the breasts depicted on the display provides information that can only be analysed by well trained and experienced professionals.

If due to the incorrect position or the movement of the breasts during the examination, the image is of poor quality, then it should be repeated.

When the CTLM examination cannot be performed?

- If there is an open wound, inflammation or a burn on the breast
- Within 60 days following a biopsy or a breast surgery intervention
- Following breast surgery, if the shape of the breast is deformed
- If there is a tattoo on the breast
- If the patient is sensitive to light (eg. suffers from Porphyria) or is currently taking a medicine which causes light sensitivity
- If the size of the breasts prevents correct functioning of the device or its effectiveness

The radiology specialist reads your documentation and conducts an interview with you to get your medical history. The specialist reviews all images and findings of the previous examinations and he or she compares it to all the breast diagnostic images of that day. In the end, the specialist will inform you of the result of the examination, gives you the examination report and answers your questions.

The expected duration of the examination is: **15-20 minutes.**

At Medoc Health Centre the **examination is only taken as part of other complex breast diagnostic examination packages.**

Used device: **IDS I CTLM**

PHYSICAL EXAMINATION

During the physical examination the specialist feels the breasts and the axillary areas. This is a basic procedure during all types of breast diagnostic examinations.

THE X-RAY FINDING

At the end of the examination you are given a detailed written evaluation of the results and verbal information by our radiology specialist. In the written evaluation there is a description of the depicted normal structure and the shape, size and exact position of any detected lesion(s) and an assessment, whether the lesion is malignant or not. If an abnormal lesion is suspected, you may be recommended an additional X-ray or other diagnostic examinations and possibly a biopsy with histopathology analysis. If you are sent to another healthcare service provider for additional examination, please come back to our office with the evaluation to consult your doctor.

MEDICAL REFUSAL

You can freely choose from the recommended breast diagnostic methods. Also, the specialist performing the examination can decide, based on your MEDICAL HISTORY FORM, not to recommend certain procedures or refuse to do them for professional reasons. It is important that you understand the exact cause for such a refusal, and you can choose another diagnostic procedure based on medical advice.

In case of any lesions found our healthcare centre will provide possibility for, possibly with the assistance of a partner healthcare provider, further diagnostic or therapeutic procedures, including biopsies, MRI examination, as well as surgical and oncological advice and if necessary, assistance with the arrangement of surgical interventions.

If after reading this information sheet you have any further questions, please do not hesitate to ask the physician performing the procedure.

CONSENT: According to the provisions of the Hungarian Health Law you have to consent to all diagnostic procedures to be performed. Without your signing the consent form, the examination(s) cannot be performed.

Thank you for choosing our healthcare centre!

APPLICATION AND CONSENT FORM

Please read this form carefully!

I, the undersigned, declare by signing this form, that I have read and understood the above information form named "Breast diagnostics at Medoc Health Centre" and I have been informed without any obligation, threat or deception about the sensitivity, specificity, procedure and purpose of the examination(s). I hereby declare that I am using the healthcare service exercising my right to free self-determination and I consent to the examinations required for the fulfilment of the service. I understand that at Medoc Health Centre (Medoc Egészségközpont), the specialist performing the examination has the right to refuse the performance of a procedure on a professional basis.

I request the following examination(s):

*Please place an X next to the chosen examination(s)!
Before you check the box, please ask for help from our professionals!*

- 1. **X-ray mammography** (can be requested only as part of a complex examination)
- 2. **Breast ultrasound examination**
- 3. **ABUS 3D automated breast ultrasound examination**
- 4. **CT laser mammography** (can be requested only as part of a complex examination)

I declare that my data on the Medical History Form, required for the performance of the examination - are accurate and I filled out the questionnaire according to my best knowledge and ability. I also declare that my mandate is only valid for the performance of the above checked examinations.

Budapest,

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Signature

Filled out by the specialist performing the examination:

It is only valid by checking the applicable part!

- Since the patient has read the required information and filled out the Medical History Form, the performance of the diagnostic examination has no medical contraindication to my knowledge.
- Based on the "Application and Consent Form" and "Medical History Form" filled out by the patient and based on the verbal medical history interview with the patient, I refuse the performance of the breast diagnostic examinations requested by the patient, and

I recommend the following examination(s):

I do not recommend the following examination(s):

Budapest,

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Physician's Signature