Breast Imaging

Adult (18 years and over) | Informed consent: patient information

Queensland Government

A copy of this patient information sheet should be given to the patient or substitute decision-maker to read carefully and allow time to ask any questions about the procedure. The consent form and patient information sheet should be included in the patient's medical record.

In this information sheet, the word 'you' means the patient unless a substitute decision-maker is providing consent on behalf of the patient, in which case the word 'you' means the substitute decision-maker when used in the context of the person providing consent to the procedure.

1. What is breast imaging and how will it help me?

A mammogram (x-ray), ultrasound or Magnetic Resonance Imaging (MRI) are all used for imaging breast tissue. Imaging is used for screening and diagnosis of breast abnormalities.

Mammogram

A mammogram is an x-ray image of breast tissue. The mammogram machine has a large 'C' shape and moves around your body, taking multiple images from different angles.

The mammogram machine uses firm compression on the breasts. You will experience discomfort and possibly some pain from the squeezing, but this usually only lasts about 20 seconds. If there is too much pain, please tell the radiographer.

Image 1: Patient undergoing mammography imaging. ID: 1942278190. www.shutterstock.com

Ultrasound

An ultrasound machine includes a computer, a display screen and a transducer. The transducer is a small hand-held device, that looks like a microphone, and is pressed against the skin.

Ultrasound images are produced by passing soundwaves into the area being scanned. Ultrasound of the breast may be used in people with very dense breast tissue. It can also be used to provide more information if a mammogram finds a part of the breast that needs more investigation.

Image 2: Sonographer performing breast examination for a patient using ultrasound scanner. ID: 1226662726. www.shutterstock.com

MRI

A Magnetic Resonance Imaging (MRI) scan is an advanced imaging method that uses a strong magnetic field, radio waves and a computer to produce images of the body. MRI does not use x-rays. MRI images are very detailed.

MRI contrast is usually used for MRI scans of the breast.

Image 3: MRI scanning machine in a clinic. ID: 1006650829. www.shutterstock.com

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Preparing for the procedure

The Medical Imaging department will give you instructions on how to prepare for your breast imaging.

You will need to remove some clothing for breast imaging and you may need to change into a hospital gown.

Please tell the doctor/clinician:
- if you are breastfeeding or pregnant or suspect you may be pregnant
- if you have breast implants; knowing this information means the staff can ensure the imaging is done safely and accurately.

MRI safety

No one is permitted into the scanning room until they have answered a series of safety questions and taken off all removable metal objects from their body (e.g. jewellery, piercings, glasses and mobile phones).

Your removable metal objects and personal items must be left outside the MRI scan room. You will be allocated a place to store your belongings safely.

During the procedure

Mammogram
For the mammogram, you cannot wear a shirt, singlet or bra. Your breast will be positioned on the mammography machine by a radiographer and then the breast is pressed between two x-ray plates to spread the breast tissue out so clear images can be produced. Usually, two x-ray images are taken of a breast. If you have breast implants, more x-rays might be needed to obtain full views of the breast tissue.

It is possible the clinician will choose to use iodinated contrast to enhance the images produced by your mammogram. This will be administered via an intravenous (I.V.) cannula in a vein in your arm. You may feel a warm sensation as the iodinated contrast enters your vein.

If the radiologist (doctor) thinks it will be useful to give you contrast we will ask you some questions to see if there are any reasons that we shouldn't give you contrast.

The radiographer will not be in the room while each image is being taken, but they will be able to see you through a large glass window, and communicate with you.

If you are having a 3D mammogram, the machine will move while taking the image. As images are being taken, you will hear a whirring or humming noise. You should remain as still as possible, as even small movements can blur the x-ray images.

Ultrasound
The lights in the room will be dimmed so that the images on the screen can be seen more clearly.

A gel will be applied to your skin over the breast and armpit to be scanned. The gel allows the transducer to slide easily over the skin and helps produce clearer images. The sonographer will move the transducer back and forth slowly over the area of interest until the area is completely examined.

If scanning is performed over an area of tenderness, you may feel pressure or minor discomfort from the transducer.

You could be asked to hold your breath or move into different positions during the scan.

Once the scan is complete, you will be able to wipe the gel from your skin.

MRI
Some people find that being inside the light-filled,open-ended tunnel of the MRI machine makes them feel uncomfortable. If you feel this way let staff know as there are many ways they can help you.

You will be positioned lying on your front with your breasts resting in an opening in the table.

Contrast is a colourless liquid that is injected into your blood stream. It is used during MRI medical imaging procedures to allow your internal organs and structures to be seen more clearly. The radiologist (doctor) may need to use MRI contrast to see more detail on the images, to help with diagnosis.

If contrast needs to be given for the scan, an I.V. cannula will be inserted into a vein in your arm prior to your scan.

To assist in reducing the risk of thermal injuries, it is important you try and remain in the position the MRI staff placed you in at the start of the scan. MRI staff will make sure you are positioned to avoid skin-to-skin contact (e.g. you cannot have your arms or legs crossed) and they may place padding around you so you don't touch the walls of the scanner.

The MRI scan itself should not cause you any pain. You may feel some vibrations and warming during your MRI scan. The MRI scanner is usually very noisy. You may hear thumping and knocking sounds. You will be given headphones or earplugs to protect your hearing from the noise.

MRI staff will not be in the room during the scan, but they will be able to see you and talk to you between images. Before the scan starts, you will be given a call button which you can press if there is an urgent concern.

During the MRI scan we will take lots of images. This means you will need to keep still for a long time so that the images are not blurry. The scan and all the images take between 30 and 60 minutes.

When your scan is finished, you will be taken out of the MRI scan room. If you had an I.V. cannula inserted and it is no longer needed, it will be removed.

For more information on MRI please read the information sheet *Magnetic Resonance Imaging (MRI) Scan*. If you do not have one of these information sheets please ask for one.

2. What are the risks?

In recommending the procedure, the doctor/clinician believes that the benefits to you from having the procedure exceed the risks involved. There are risks and possible complications associated with the procedure which can occur with all patients – these are set out below. There may also be additional risks and possible complications specific to your condition and circumstances which the doctor/clinician will discuss with you. If you have any further concerns, please ensure that you raise them with the doctor/clinician.

Common risks and complications

- *(contrast only)* minor pain, bruising and/or infection from the I.V. cannula. This may require treatment
- *(contrast only)* gadolinium is the key component of the contrast material most often used in MRI scans. Small amounts of gadolinium may remain in tissues of the body, including the liver, bone and brain. These small amounts of gadolinium found in tissues of the body are called gadolinium retention. The effects of gadolinium retention are an area of ongoing research.

Uncommon risks and complications

- a false positive result (when the breast imaging suggests cancer, but later follow-up tests show that you do not have cancer)
- a false negative result (when the breast imaging does not find cancer but there is cancer in the breast[s])
- *(contrast only)* contrast injected into a blood vessel may leak outside the blood vessel, under the skin and into the tissue. This may require treatment. In very rare cases, surgery may be required if the skin breaks down
- the scan may not be possible due to medical and/or technical reasons.

Rare risks and complications

- if you have breast implants, there is a very small chance that the pressure from the mammogram or ultrasound might cause the implant to rupture, which may require further treatment
- *(contrast only)* allergic reactions rarely occur, but when they do, they usually occur within the first hour, with most happening in the first five minutes. Late reactions have been known to occur up to 1 week after the injection, but these delayed reactions are mild. The reactions vary from:
  - mild: headache, brief nausea, dizziness, hives, sneezing, coughing, sweating, rash and itching
  - moderate: widespread hives, headaches, facial swelling, vomiting, shortness of breath
  - severe: severe reactions are rare but include life-threatening heart palpitations, very low blood pressure, throat swelling, seizures and/or cardiac arrest

- *(MRI contrast only)* Nephrogenic Systemic Fibrosis (NSF) can occur to those who have severe renal impairment and are given MRI contrast. Please refer to the section on precautions for kidney function to learn more about NSF
- sometimes the contents of an already damaged implant are spread further inside the breast when the breast is compressed during a mammogram or ultrasound
- death because of any kind of breast imaging is extremely rare.

Contrast precautions

If the radiologist (doctor) thinks it would be useful to give you contrast for your scan, we will ask you some questions to see if there are any reasons that we shouldn't give you contrast.

If it is not safe for you to have contrast, the radiologist might decide to do the scan without contrast or they might decide to get the images another way.

Contrast is removed from the blood by the kidneys through the urine. It is easily removed from the body of people who have normal kidney function.

We may need to do a blood test to find out the level of your kidney function before we consider giving you contrast.

Kidney function *(MRI contrast only)*

Nephrogenic Systemic Fibrosis (NSF) is an extremely rare condition that results in scarring or thickening of the skin and tissues throughout the body. It can occur days to years following exposure to gadolinium. It is severely disabling and often fatal. As NSF has almost only been seen in people with poor kidney function and those on dialysis, every effort is made to avoid giving gadolinium to patients with kidney disease or those on dialysis.

However, sometimes there is no good alternative and contrast is required to help rapidly and effectively diagnose serious organ and life-threatening diseases so effective treatment can be started.

It is safe and reasonable for almost all patients with kidney disease and those on dialysis to receive contrast in these circumstances.

Kidney function *(iodinated contrast only)*

Modern iodinated contrast used in scanning is minimally, if at all, harmful to the kidneys. Scans with iodinated contrast can be safely performed in patients with kidney disease as clinical studies have not proven increased risk of worsened kidney function or increased need for dialysis[1].

When significant worsening of kidney function is seen, there is often more than one factor causing stress to the kidneys such as certain medicines, infection, dehydration or low blood pressure.

To minimise stress to your kidneys your doctor/clinician may recommend you have extra fluid to ensure good hydration, stop some medicines temporarily or have extra blood tests to monitor your kidney function around the time of your scan.

MRI and contrast while pregnant or breastfeeding

There are no proven risks to pregnant people or unborn babies from MRI scans without contrast. However, if you are currently in your first trimester, your doctor/clinician may delay your scan to later in your pregnancy (if safe to do so).

Generally, MRI scans that use contrast are not done during pregnancy due to the increased risk to your baby. Your doctor/clinician will discuss this with you if you require contrast.

If you are given MRI contrast and are currently breastfeeding, there is no need to stop breastfeeding for any period of time.

Risks of radiation *(mammogram only)*

The risks of radiation exposure from this procedure need to be compared to the risks of your condition not being treated. Exposure to radiation may cause a slight increase in the risk of cancer to you over your lifetime. However, the potential risk is small compared to the expected benefit of this procedure[2].

What are the risks of not having breast imaging?

There may be adverse consequences for your health if you choose not to have the proposed procedure. Please discuss these with the referring doctor/clinician.

3. Are there alternatives?

Making the decision to have a procedure requires you to understand the options available. Please discuss any alternative procedure options with your doctor/clinician.

Sometimes we need to use more than one type of imaging for your breast tissue. Factors such as your age, breast density and past surgeries may influence which type of imaging is best for you.

4. What should I expect after the procedure?

You will be able to continue with your daily activities as normal. Some people may need more follow-up tests.

Your healthcare team will talk to you about what to expect after your procedure.

The radiologist (doctor) will review the final images after the procedure and send the report to your treating team.

You will receive the results of the examination from your treating team at your next follow-up appointment. Please make an appointment if you do not already have one.

5. Who will be performing the procedure?

Radiographers, doctors, nuclear medicine technologists, sonographers, nurses, and medical imaging assistants make up the medical imaging team. All or some of these professionals may be involved in your procedure.

A doctor/clinician other than the consultant/specialist may assist with/conduct the clinically appropriate procedure. This could include a doctor/clinician undergoing further training, however all trainees are supervised according to relevant professional guidelines.

If you have any concerns about which doctor/clinician will be performing the procedure, please discuss this with the doctor/clinician.

For the purpose of undertaking professional training in this teaching hospital, a clinical student(s) may observe medical examination(s) or procedure(s) and may also, subject to your consent, assist with/conduct an examination or procedure on a patient.

You are under no obligation to consent to an examination(s) or a procedure(s) being undertaken by a clinical student(s) for training purposes. If you choose not to consent, it will not adversely affect your access, outcome or rights to medical treatment in any way.

For more information on student care, please visit www.health.qld.gov.au/consent/students.

6. Where can I find support or more information?

Hospital care: before, during and after is available on the Queensland Health website www.qld.gov.au/health/services/hospital-care/before-after where you can read about your healthcare rights.

Further information about informed consent can be found on the Informed Consent website www.health.qld.gov.au/consent. Additional statewide consent forms and patient information sheets are also available here.

Staff are available to support patients' cultural and spiritual needs. If you would like cultural or spiritual support, please discuss this with your doctor/clinician.

Queensland Health recognises that Aboriginal and Torres Strait Islander patients will experience the best clinical care when their culture is included during shared decision-making.

7. Questions

Please ask the doctor/clinician if you do not understand any aspect of this patient information sheet or if you have any questions about your proposed procedure.

If you have further questions prior to your appointment, please contact the Medical Imaging department via the main switchboard of the facility where your procedure is booked.

8. Contact us

In an emergency, call Triple Zero (000).

If it is not an emergency, but you have concerns, contact 13 HEALTH (13 43 25 84), 24 hours a day, 7 days a week.

References:
1. Davenport MS, Perazella MA, Yee J, et al. Use of Intravenous Iodinated Contrast Media in Patients with Kidney Disease: Consensus Statements from the American College of Radiology and the National Kidney Foundation. Radiology 2020;294:660–668.
2. Australian Radiation Protection and Nuclear Safety Agency (ARPANSA). Ionising radiation in our everyday environment, 2021. Available from www.arpansa.gov.au