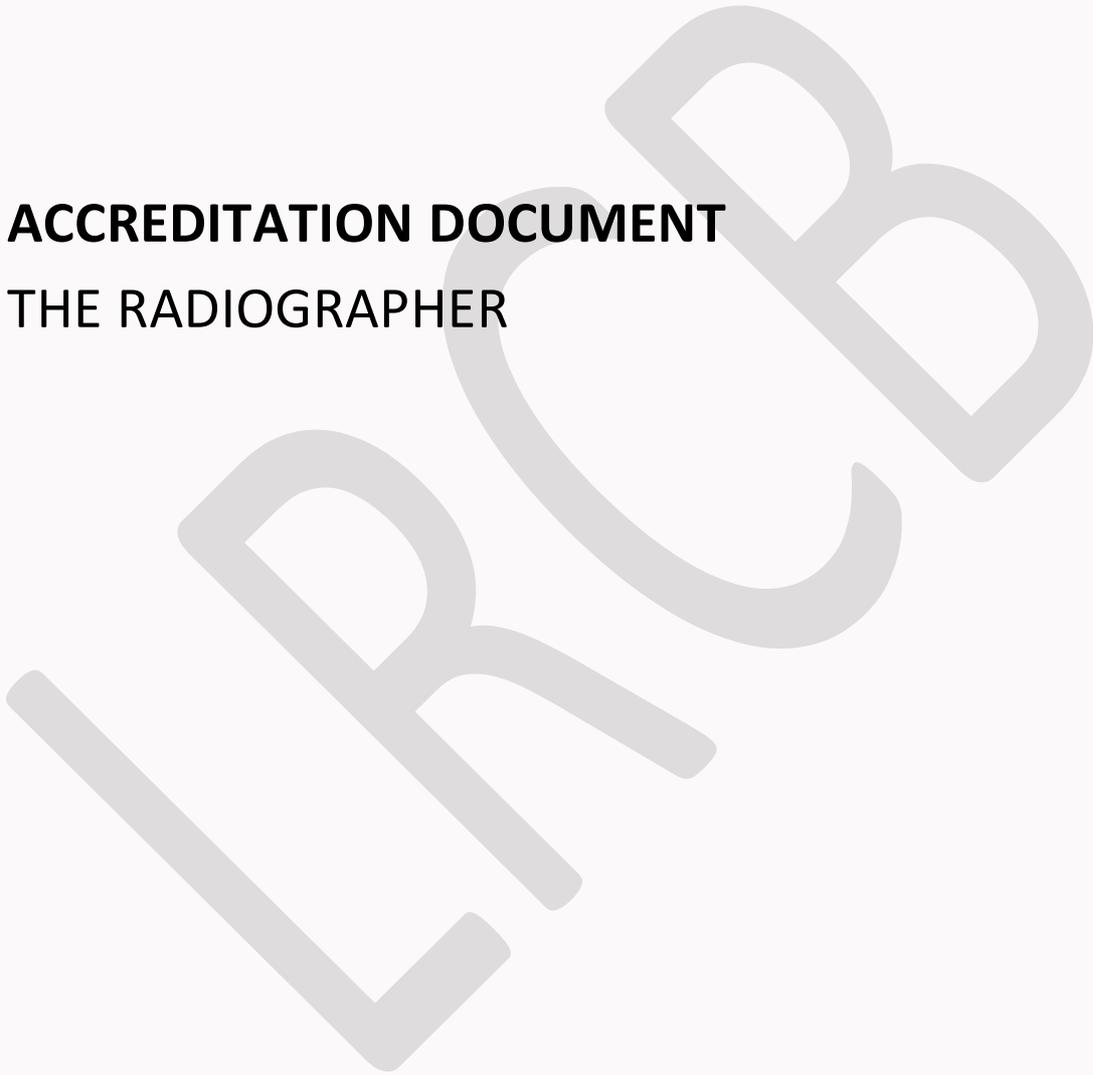


LRCB

dutch reference centre
for screening

ACCREDITATION DOCUMENT
THE RADIOGRAPHER



1. Introduction

An optimal quality of mammography is one of the fundamental requirements for successful breast cancer screening programmes. Screening should enable the detection of subtle abnormalities so that tumours can be detected at an early stage. Each screening mammogram therefore has to comply with the highest quality standards with regards to positioning technique and physico-technical quality. The LRCB has drawn up the quality criteria for these standards.

The screening radiologist is, during the review, completely dependent on the radiographer who is responsible for the production of the mammogram. In screening practice, an exceptional situation with regards to quality occurs: the radiographer works independently and is responsible for evaluating the quality of his/her own work. Additionally, the radiographer fulfils a crucial role regarding the experience, satisfaction and continued screening participation of the woman. A high participation rate is essential for the success of any screening programme, therefore the radiographer should possess the knowledge, attitude and skills required to perform and produce an optimal screening mammogram. At the same time, he/she has to ensure that the complete process is conducted in a manner acceptable to the woman.

In order to ensure that the quality of the breast cancer screening programme is optimised and assured, the LRCB has been commissioned by the RIVM¹ to conduct the following tasks:

- quality control of medical knowledge and physico-technical quality;
- management & maintenance of an (inter)national knowledge base;
- scientific research;
- registration and accreditation of all professionals involved in the national breast cancer screening programme.

This means that, after having successfully completed the required training for this role, the LRCB will evaluate whether the radiographer has the relevant qualifications. These qualifications, in the form of learning objectives, can be found in Chapter 2. Should the radiographer fulfil the conditions of these learning outcomes, then he/she will be accredited for the screening programme and included in the register.

In addition, each screening unit will be audited every three years. During these audits, the medical-content quality of the screening is assessed. In this case, the audit committee evaluate the results of the screening output of the complete screening unit, rather than the individual practitioners themselves. The quality requirements for the work of the radiographers collectively can be found in Chapter 3.

Once approved, these guidelines will replace the current document titled 'Taken, verantwoordelijkheden en bevoegdheden (Tasks, responsibilities and competences)' that has been used in practice for a long time. The guidelines describe the quality requirements for a radiographer to participate in the screening programme and the evaluation criteria on which they are assessed. These requirements and criteria are assessed against the 2012 Policy Framework for Population Screening for Cancer. Only those guidelines set by the government, are included in this document. This document will be reviewed and changed should new or different decisions be made

¹ National Institute for Public Health and the Environment

by policy-makers.



LRCB

2. Course programme

In order to assure the quality of screening, radiographers are required to have successfully completed a specifically designed course programme. The radiographer has to prove that he/she actually has the required qualifications before being employed in screening programmes. The LRCB, under commission from the RIVM, evaluates the radiographers' knowledge and skills at the end of the course.

The aim of the evaluation is to determine whether the radiographer, having completed the course, is fully compliant with the learning objectives, and therefore able to work in the screening programme. Should the radiographer comply with all the requirements, then he/she is awarded a certificate from the LRCB and is thereby accredited to work as radiographer in the screening programme. A register is kept of all accredited radiographers.

The competences of the radiographer with regard to the following learning objectives are assessed:

1. Mammography positioning technique and medical imaging

The radiographer is able to independently perform a breast examination with an optimal mammographic quality according to the LRCB guidelines (see appendix).

This means that the radiographer is able to:

- correctly instruct the client for a craniocaudal (CC) view;
- correctly position the client for a craniocaudal (CC) view, taking the client's condition and ability into account;
- correctly instruct the client for a mediolateral oblique (MLO) view;
- correctly position the client for a mediolateral oblique (MLO) taking the client's condition and ability into account;
- position their own body correctly (ergonomically correct) and describe the value of doing so;
- describe the anatomy of the breast;
- describe the pathology of the breast;
- describe the anatomy of the breast on a mammogram;
- list the criteria which have to be met for a good CC image;
- list the criteria which have to be met for a good MLO image;
- evaluate whether the images comply with the required quality criteria;
- decide whether to (re)take one or more images if these do not meet the required quality criteria;
- in the case when an image does not meet the required quality criteria, describe how this image can be improved;
- describe when which additional views have to be made;
- evaluate whether making additional views adds value;
- take the decision to make additional views;

- instruct the client regarding an additional image (see appendix : additional views);
- position the client for an additional view, taking into account the client's condition and ability;
- inspect the client's breast and note relevant physical characteristics and/or abnormalities (for example breast lumps, ((bloody) nipple discharge, nipple eczema, and inversion);
- describe the reasons for when, during the screening, the client should be advised to visit their GP;
- recognize common benign and malignant breast conditions.

2. Client focus

The radiographer is able to conduct a breast examination in a manner acceptable manner to the client.

This means that the radiographer is able to:

- conduct an intake with the client, wherein at least the process of the examination and the importance of compression are discussed;
- respect the client's privacy;
- respect the client's ethnicity;
- react appropriately to verbal and non-verbal emotional reactions;
- instruct the client regarding a craniocaudal (CC) image;
- position the client for a craniocaudal (CC), taking the client's condition and ability into account;
- instruct the client regarding a mediolateral oblique (MLO) image;
- position the client for a mediolateral oblique (MLO) image, taking the client's condition and ability into account;
- finish off the examination and discuss the following steps in the process with the client;
- take necessary measures to ensure personal body hygiene;
- ensure the examination room is in a clean, tidy and working state following the examination.

3. Ensuring physico-technical quality

The radiographer is able to recognize problems of a physico-technical nature and act accordingly, and apply the weekly quality control procedure.

This means that the radiographer is able to:

- name and describe the components, function and operation of a mammography unit;
- describe the characteristics and workings of X-rays, filtering and anti-scatter grid;
- describe the workings of the automatic exposure control;
- describe the image processing and display process;
- master the exposure technique;
- describe how contrast, resolution, noise and artefacts affect image quality;
- recognize artefacts and act accordingly;
- calibrate the detector and explain why this is necessary;
- explain the influence of radiation on the human body;
- explain the ALARA principle and apply it in practice;
- produce a phantom image as part of the weekly quality control procedure;
- send the required data to the LRCB using a data-communication program.

3. Audit

Every reading unit (Radiologists and radiographers) is audited structurally every three years. During audits, the medical-content quality of the screening is evaluated. The audit does not review individual professional performance, but evaluates the overall quality of the reading unit in question. In this way, the collective work of the radiographer's team is reviewed. The accreditation is based on the following quality standards:

*1. Positioning**

- At least 90% of the images fulfil the quality criteria drawn up by the LRCB with regards to mammographic positioning (see appendix 1);
- In a minimum of 97% of the cases whereby an additional view is required, the additional image was produced;
- Less than 3% of the images have to be retaken.

*Additional training on this point may be necessary.

2. Experience and additional training

- 100% of the radiographers have been awarded the LRCB certificate;
- 100% of the radiographers have taken a minimum of 6,400 images* annually or 19,200 images in 3 years;
- 100% of the radiographers have attended an image-analysis meeting with a screening radiologist, at least 4 times annually or 12 times in 3 years;
- 100% of the radiographers have attended at least 1 hour per year or 3 hours per 3 years of additional training in the field of physics / radiation protection;
- 100% of the radiographers have attended at least 4 hours per year or 12 hours per 3 years of additional training in the field of mammography, of which at least 1/3 focuses on practical positioning skills.

The audit results in a report. In the report, it is noted that the radiographers forming part of the reading unit have participated in the audit.

*Based on standard CC-images. This signal-value was introduced in 2013 and is derived from the European standard based on screening numbers achieved in two days of screening. The value of this signal-value in Dutch screening practice will be evaluated after 18 months.

Appendix 1: Quality criteria mammographic positioning

General quality criteria

The following general quality criteria apply to the standard views as well as the additional views used for mammograms:

- Each mammogram should demonstrate the soft tissue over the chest wall; this can be accomplished by following a standardised positioning procedure
- Preferably, no skin folds should be visible on the mammograms
- Only the breast tissue and part of the musculus pectoralis major should be visible on the images and not the shoulder, chin or hair
- The mammae need to be compressed during the examination in order to spread out the breast tissue and increase image sharpness, complying the applicable standard*
- Avoid patient movement during exposure to prevent occurrence of blurring or unsharp images
- The physico-technical aspects of the images should comply with the applicable standard*
- The relevant identifying marks should be included on each image

* www.lrcb.nl

Standard views

Craniocaudal view (CC)

Criteria:

- The images of both mammae should be symmetrical
- The image should include the entire medial side and as much of the lateral side as possible
- The fibroglandular tissue is entirely visible and evenly spread out
- The image should include a part of the musculus pectoralis major
- The nipple should be visible in profile in the middle of the image

Mediolateral oblique view (MLO)

Criteria:

- The images of both mammae should be symmetrical
- The image should show the musculus pectoralis major sufficiently wide
- The image should show the musculus pectoralis major up to the nipple level
- The image should include the entire fibroglandular tissue spread out evenly and distributed as much as possible
- The image should include the inframammary fold
- The nipple should be imaged in profile

Additional views

Lateromedial view (LM) en mediolateral view (ML)

Criteria:

- The image of the musculus pectoralis major should be narrow and steep
- The entire fibroglandular tissue should be visible and should be evenly spread out
- The inframammary angle should be visible
- The nipple should be in profile

An LM or ML view should be considered for the following reasons:

- To determine the exact location of a lesion for mamma localisation or for a biopsy
- To obtain a better image of a lesion in the medial breast region
- To obtain a better image of a lesion in the inframammary angle
- If a lesion is visible in only one of the standard views
- To demonstrate or exclude the possibility of superposition

Cleopatra view (XCCL)

(exaggerated craniocaudal view)

Criteria:

- The axillary tail should be completely visible
- A narrow and steep image of the musculus pectoralis major should be visible in the lateral part
- The nipple should be in profile

The Cleopatra view should be considered in either of the following two cases:

- If it is not possible to obtain an adequate image of the lateral portion of the mamma using only the standard CC view
- If in the MLO view a lesion is visible only in the lateral part of the fibroglandular tissue

Cleavage view (CV)

Criteria:

- The medial portion of both mammae should be sufficiently visible

The Cleavage view should be considered in either of the following two cases:

- The medial side is insufficiently visible on the standard views
- A lesion is suspected in the medial portion of the mamma or between the mammae

Rolled lateral view (RL) en rolled medial view (RM)

Criteria:

- The image should include the entire medial side and as much of the lateral side as possible

- The image should include the entire fibroglandular tissue, distributed and evenly spread out as much as possible
- The image should include a part of the musculus pectoralis major
- The nipple should be visible in profile in the middle of the image

A rolled view is performed for the following reasons:

- Making a lesion more visible that is located in dense tissue on a CC view or, much less frequently, on a MLO view
- Demonstrating or excluding the presence of a superimposed object