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(educational)

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The importance of identification of artefacts or technical issues on full-field digital mammography to improve image quality in women participating in a screening programme; an educational overview

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Learning Objectives

Radiographers and radiologists should recognize artefacts and technical issues, avoiding potential misdiagnosis and reduced performance. In our courses we therefore teach:

- Identification of artefacts, which affect image quality and might affect diagnosis
- Identification of lower image quality due to technical issues

Background / Purpose

- Main goal of the Dutch breast cancer screening program: early detection of breast cancer, so high image quality is crucial.
- Screening technology: digital mammography (DM)
- Screening population: women aged 50 to 75.

All radiologists and radiographers in screening are trained by the Dutch Expert Centre for Screening (LRCB), this includes:

- Recognition of artefacts and technical issues on mammograms and phantom images
- It's effect on image quality and potential effects on radiologist's diagnoses

Content Organisation

- A concise overview of relevant artefacts and technical issues are discussed in our courses, some examples are shown in figure 1 and 2.
- In our breast cancer screening, LRCB is able to view the mammograms from all screening units realtime. As a result of their training radiographers recognize artefacts and technical issues, and ask LRCB to look realtime at the images. If necessary corrective actions can be taken quickly and/or radiographers can get realtime feedback on technical aspects of the mammograms. Image quality issues can be solved in an early stage, which potentially increases diagnostic accuracy.
- Radiologists recognize image quality issues when reading, so they can ask for corrective actions.

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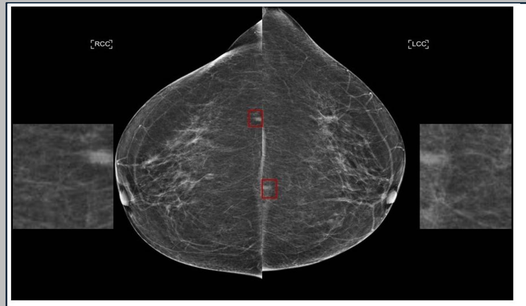


Figure 1

In figure 1, CC views of both breasts are displayed. A white area is visible on chest wall side that could be characterized as suspicious by a radiologist. However, this area is not a lesion, but is dust in the diaphragm which is visible on the mammograms.

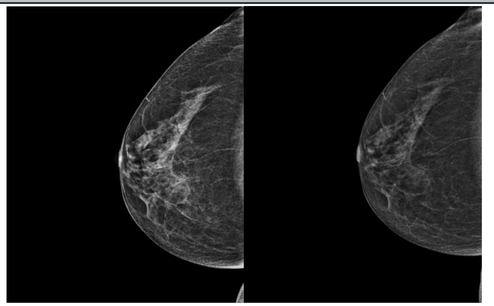


Figure 2

In figure 2 CC views of the right breast are displayed. The left image is from a previous screening round. The right one is the current screening round.
In the current screening round image the incorrect exposure parameters have been used due to technical issues. This led to suboptimal image quality.

Key points, take home message

By training radiologists and radiographers to recognize artefacts, the potential impact of artefacts and technical issues on mammograms can be reduced, and consequently improving the diagnostic accuracy.

References

LRCB

dutch expert centre for screening