Medical Physicist Mammography
Equipment Evaluation and Annual Survey

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Radiologist Responsibilities

A. Radiologist's Responsibilities

1. Lead Interpreting Physician

900.12(d) Quality assurance—general. (1) Responsible individuals. (i) Individual shall be assigned or shall retain responsibility for quality assurance tasks unless the lead interpreting physician has determined that the individual's qualifications for, and performance of, the assignment are adequate.
Radiologist Responsibilities

A quality assurance committee (QAC) can be useful to provide oversight of the QC program, setting the goals and direction, determining policies, and assessing the effectiveness of QC activities.

A QAC should consist of the following:
- One or more radiologists, including the lead mammography radiologist
- A medical physicist
- A facility manager
- A supervisory mammography technologist
- The quality control technologist
- Other radiology department personnel involved in caring for mammography patients (these may include a nurse, desk attendant, medical secretary, and others)

1. Ensure that technologists have adequate training and continuing education in mammography.

2. Provide an orientation program for technologists based on a carefully established procedures manual.

Radiologist Responsibilities

performed at the site. (The radiologist should provide motivation, oversight, and direction to all aspects of the QC program. One mechanism the radiologist can use to demonstrate commitment to QC is by routinely using the new Optional System QC for Radiologist procedure and form in the Radiologic Technologist’s Section to quickly evaluate the entire mammographic imaging chain from the radiologist workstation.)

performed the prescribed QC tests (in order to ensure consistency in QC test performance) and to oversee tests that have been delegated to other individuals. (It is not desirable, for example, to rotate this assignment among a group of technologists. Such a practice would introduce into the test results variability extraneous to the items being tested. However, properly trained backup QC technologists are essential to provide continuity when the primary QC technologist is unavailable.)
Radiologist Responsibilities

to perform the technologist's QC tests.

to carry out the QC tests and to record and interpret the results. (Most tests take little time; however, the necessary time must be incorporated into the daily schedule.)

to technologists about clinical image quality and QC procedures. (The new Optional Radiologist Image Quality Feedback procedure and form in the Radiologic Technologist's Section was designed to assist radiologists with this responsibility.)

QC program and perform the medical physicist's tests.

Radiologist Responsibilities

frequently if consistency has not yet been achieved. (See Facility QC Review in the Radiologic Technologist's Section.)

frequently when needed.

radiation protection program for employees, patients, and other individuals in the surrounding area.

mammography technique and procedures, infection control procedures, QC, safety, and protection are properly maintained and updated in the mammography QA/QC procedures manual.
D = Kgcs

- Mean Glandular Dose
- Entrance surface air kerma
- glandularity of 50%
- corrects for difference in composition (age dependent)
- X-ray spectrum correction (Target/Filter)

Note: g and c depend on thickness, glandularity, and HVL.

There are 2 important distinctions here:

Artifacts that fail vs. Artifacts that don't fail

• The MP & Tech must fail if artifact evaluation meets the above criteria
• If artifact doesn't fail per above criteria, the MP & Tech should still comment, troubleshoot, and/or recommend for repair.

Just because the artifact does not "Fail" doesn't mean it should be ignored.
Phantom Scoring:
Artifact Evaluation

Phantom image failure will depend on the number of artifacts that appear and where they are located:

--- If only 1 to 3 speck-like artifacts appear in a location that could impact clinical interpretation, the image should not fail.

--- However, the artifacts should be evaluated and eliminated if possible.

--- If speck-like artifacts are more widespread and appear in a location that could impact clinical interpretation, these are probably clinically significant and the image should fail. These artifacts must be eliminated in order for the phantom image to pass.

Artifact Example Series

Artifact do not Fail but troubleshooting and comments are important
Artifacts may not Fail but troubleshooting and comments are important
(2 outer specks may not be in location that could impact clinical interpretation)

Description: Massive amounts of dust & debris, texture or grid can be seen
Pass or Fail for Artifacts?
-- Detector blotchiness & visible texture: Fail
-- White speck-like: Fail

Description: Blotchy background and linear artifacts
Pass or Fail for Artifacts?
-- Detector blotchiness & horizontal lines: Fail
-- White speck-like: Fail
Description: Non-uniformities, white speck like artifacts

Pass or Fail for Artifacts?
-- White speck-like: Fail

Description: White dots

Pass or Fail for Artifacts?
-- White speck-like: Fail

Description: Non-uniformities, white speck like artifacts

Pass or Fail for Artifacts?
-- Linear artifacts: Fail

-- White speck-like: Fail
Description: White speck-like artifacts

Pass or Fail for Artifacts?
Fail

Phantom image failure will depend on the number of artifacts that appear and where they are located:

- If only 1 to 3 speck-like artifacts appear in a location that could impact clinical interpretation, the image should not fail.
- However, the artifacts should be evaluated and eliminated if possible.

- If more artifacts are widespread and appear in a location that could impact clinical interpretation, these should generally be identified as significant, and the image should fail. These artifacts must be eliminated for the phantom image to pass.

Thank you,
And now for questions.