Screening Mammography: Interpretation and Reporting Efficiencies - *by Richard Ellis, M.D.*

Screening mammography remains the single most important examination in the early detection of breast cancer. However, reimbursement for screening mammography remains very low while the workload and associated liability remains very high. In order to maximize early detection and at the same time reduce the radiologist's workload and liability from screening, strategies need to be implemented to assist the radiologist.

Historically (and perhaps still the practice for many radiologists), the radiologist was expected to hang films, collimate lighting, provide interpretation, generate a report, take down films, and later review and sign the transcribed report in order to complete the screening mammogram study. Inherently, this resulted in a very inefficient use of the radiologist's time especially if required to read a large number of studies. In addition, the interpretation of screening mammograms was frequently conducted along with interpretation of other radiology examinations. This reading environment brought additional distractions to the radiologist who was expected to have focused attention in the early detection of breast cancer.

> "Automated dictation, tracking and audit systems like PenRad have added significant efficiencies, ..."
> - Dr. Richard Ellis

So what can be done to improve the radiologist's efficiency while at the same time improving early detection of breast cancer?

1) Reading Environment
The reading environment is very important as this is the location the radiologist will spend a large portion of their day. It is interesting that radiologists will belabor the time and discussion about what "bells and whistles" should be a part of their CT or MRI unit but spend so little time analyzing what is essential in creating the most efficient working environment. Constant noise, interruptions, and distractions all reduce the efficiency of the radiologist. Dr. G.W. Eklund reminds radiologists that the only distractions or interruptions the radiologist should have while interpreting screening mammograms is an emergency – like a death in the family and it better be you (radiologist).

The following are items that need to be addressed when designing a dedicated screening room:
♦ Room size
♦ Lighting (external, internal, and from the reading board)
♦ Acoustics (ceiling, wall, and flooring)
♦ Equipment positioning (reduce unnecessary repetitive movements)

In addition to the physical environment, the radiologist should also be prepared mentally for reading screening mammograms. Focus needs to be devoted to detecting early mammographic signs of cancer while removing thoughts that may interfere with the radiologist's concentration. As one radiologist described, you need to find the "Zen Zone" where your eyes and mind are focused for screening mammography. On occasion, I will find my mind drifting to other important matters and will simply repeat the following mantra to focus my attention: Calcifications, Masses, Architectural Distortion.

2) Automated Rolloscope
Automated needs to be defined as any and every task that can be accomplished for the radiologist in order to increase his or her efficiency. This includes pre-hung examinations with the appropriate prior comparatives studies by an office assistant and automated pre-set collimation for each exam in addition to allowing rapid advancement to the next study for interpretation. At our institution, we use the Elema-Schonander Rolloscope M (Broadwest Corporation, New York, NY), which has increased our reading efficiency compared to a unit without pre-set collimation for each study (a similar unit for consideration would include SmartLight, Fair Lawn, NJ). Regularly scheduled maintenance should also be implemented to reduce rolloscope downtime due to equipment failure along with rolloscope quality control (cleaning and luminescence).

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3) Automated Dictation, Tracking, and Audit

Manual dictation for screening mammography, in my opinion, is an antiquated and inefficient means of generating a screening mammogram report. Either the examination is without evidence of cancer (BIRADS 1 or 2) or the patient needs additional evaluation based on a screening finding (BIRADS 0). SCREENING mammography is not meant to be DIAGNOSTIC. Assigning a BIRADS score of 3, 4, 5 should generally be reserved for the complementary diagnostic studies (clinical breast examination, diagnostic mammogram, and/or ultrasound) to resolve a screening BIRADS 0 score. Given this understanding, the majority of screening reports will therefore fit into two basic structured reports. Automated dictation, tracking and audit systems like PenRad have added significant efficiencies, provided radiologists are willing to learn the system and fully implement its timesaving features. While working to improve efficiency features of their system, PenRad has implemented a "quick-negative" option for normal reports. This option preselects the prior tissue density, no change (if applicable) and only displays the patient history if there are any indicated breast problems, artifacts, or other issues the technologist wishes to bring to the attention of the radiologist. The "quick negative" report can be generated by either scanning the bar code twice or tapping the enter key. For a radiologist reading 10,000 normal screening examinations per year, 20,000 key stokes a year could be saved ([10,000 x 4] – [10,000 x 2] = 20,000). Although recall examination reports take a little more effort to generate, it is still very time-efficient compared to manual dictation.

In addition, the PenRad system is capable of providing an option that will only provide the patient letters appropriate for the BIRADS impression selected during the detailing of the report. For example, if in a report "spiculated mass with the chosen impression of suspicious;" or "pleomorphic, ductally-oriented microcalcifications with the chosen impression of highly suggestive" the system will only have letters available that are related to a BIRADS 4 or 5. If the exam is Negative or Benign, there will only be letters that are applicable to a BIRADS 1 or 2, with the same functionality for a BIRADS 3 and 0.

What can be expected when maximizing efficiencies for screening mammograms? Below are two examples of the time required to interpret and complete reports by a dedicated, clinical breast radiologist:

Sample A: 76 case/60 minutes
- ♦ 34 minutes: read only
- ♦ 26 minutes: complete and sign dictations (i.e., additional comparison with older films, reading prior reports, etc.)

Sample B: 82 cases/76 minutes
- ♦ 30 minutes: read only
- ♦ 46 minutes: complete and sign dictations (i.e., additional comparison with older films, reading prior reports, etc.)

Note: All examinations are initially read and areas of concern are marked with a wax pencil. After the initial reading, the examinations are again reviewed with additional time given to review the cases needing more attention (potential recall exams) and generation of final reports. (Dr. Ellis reads approximately 10,000 screening mammograms/year with a recall rate of 4-5%.)

Conclusion

Given the advances in our understanding of breast pathophysiology and advances in technology, radiologists should be able to increase their performance (reduction in average tumor size detected on screening mammography) and efficiency in interpretation and reporting of screening mammograms along with reducing their liability. Appropriate implementation and use of automated rolloscopes and automated dictation systems in an optimized working environment will increase efficiency for radiologists.

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