Improvement in Screening Radiologists' Performance in an Organized Screening Program

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Background

- Breast Screening Program for Newfoundland and Labrador (BSPNL) began in 1996
- Screens women 50 to 74 with mammography and clinical breast exam
- Screens are biennial, annual with significant risk factors

Background

- Core indicators and targets for the evaluation of performance and quality of Canadian organized screening programs have been developed in 2002
- The radiologist specific indicators include:
  - abnormal call rate (<5% 1st screen, <10% rescn)
  - invasive cancer detection rate (> 5 1st, >3 rescn)
  - positive predictive value (>= 5 1st, >= 6 rescreen)
  - benign to malignant open biopsy ratio
  - benign to malignant core biopsy ratio
  - invasive cancer tumour size
  - node negative rate of invasive cancer

Methods

- In 1998, a Radiology Review process was instituted for all screening radiologists involved with the BSPNL
- All abnormal mammograms were reviewed along with work-up films
- Pathology was reviewed when applicable
- Screen detected cancers and post screen cancers were reviewed in relation to previous examinations if available
- Beginning in 2002, on going confidential feedback was given to each screening radiologist regarding relevant indicators with objectives for improvement if necessary
- Progress was reviewed quarterly

Objective

- To improve the performance of screening radiologists in an organized screening program as measured by screening program indicators
- All radiologists participating in screening were experienced in diagnostic mammography
  - Avg 13 years experience
  - Range 7 – 22 years

Results

- At the time of the intervention, the average abnormal call rate was almost 9%
- Three years after the intervention, the average abnormal call rate was less than 6%
  - $p > 0.0001$
- Sensitivity and specificity rates also increased and interval cancer rates decreased

Radiology Referral Rates (%)

RAD	2000	2001	2002	2003	2004	2005
1	7.69	6.76	5.98	8.66	6.32	6.61
2	6.98	12.31	15.67	8.15	5.65	5.30
3		12.81	9.60	9.12	7.45	6.17
4	7.46	7.12	5.82	5.76	4.93	5.10
5	6.45	10.28	10.21	9.89	8.77	5.81
6					8.37	5.30
7					9.35	8.31
Average	8.03	8.33	8.69	7.76	6.69	5.96

Breast Screening Program for Newfoundland and Labrador

Radiology Indicators (January 31, 1996 - July 31, 2002)

R_RADID	Scrn	CADetect	Complete	Reads	Referrals	CDR/1000	RefRate	PPV	Interval	Missed DblRD	Sensitivity	Specificity
A1001	Initial											
A1001	Subsequent											
[redacted]	Initial											
[redacted]	Subsequent											
A1004	Initial											
A1004	Subsequent											
A1005	Initial											
A1005	Subsequent											
A1007	Initial											
A1007	Subsequent											
A1008	Initial											
A1008	Subsequent											
C1001	Initial											
C1001	Subsequent											
C1002	Initial											
C1002	Subsequent											
	Total											
	Initial											
	Subsequent											

Standards					**CDR**	**RefRate**	**PPV**
Initial					> 5 per 1000	< 10%	>= 5%
Subseqent					> 3 per 1000	< 5%	>= 6%

Core Performance Indicators
How can this be improved?

- Abnormal call rate (<5%, <10%)
  - Feedback!
  - Review abnormal cases
  - More feedback!
  - Review abnormal cases
  - More feedback!
  - Etc!

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Screening Indicators 2003 - 2004

RAD	Ca detected	Reads	CDR/ 1000	Ref Rate	PPV	post screen cancers	Post scrn /1000 reads	specificity
1								
2								
3								
4								
5								
6								
7								
Total/ Avg								

Improving Screening Radiologists' Performance in an Organized Screening Program

- Case review rounds
- Radiology/pathology review rounds
- Regular review of personal and program stats every 6 months
- Cross reference with Cancer Registry to detect missed and interval cancers
- Ongoing CME
- Intradisciplinary consultation