

Delays in diagnosis: who receives timely follow-up after an abnormal mammogram?



GroupHealth

Erin J. Aiello¹, Diana S.M. Buist¹, Sebastien Haneuse¹, Joanne G. Elmore²

¹Group Health Center for Health Studies, Seattle, WA; ²School of Medicine, University of Washington, Seattle, WA

Background

Abnormal mammograms occur in:

- 10.6% of women undergoing screening
- 9.2% of women undergoing diagnostic

Positive predictive value of abnormalities is:

- 4.6% for screening
- 30.1% for diagnostic

Prompt follow-up of abnormal mammograms decreases delays in breast cancer diagnoses

- Failure to diagnose breast cancer = #1 reason for medical malpractice lawsuits

Purpose

To see if risk factors are associated with rapid follow-up after an abnormal screening or diagnostic mammogram

- Follow-up in 7 days vs. none in 7 days
- Follow-up in 14 days vs. none in 14 days
- Follow up in 21 days vs. none in 21 days

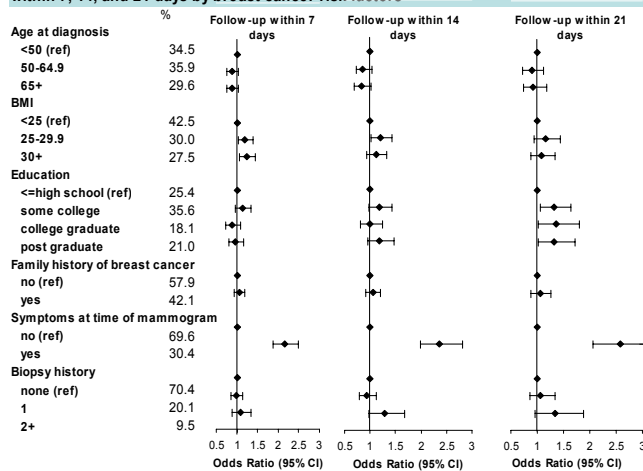
Methods: Subjects

- Women enrolled in Group Health integrated delivery system
 - All had access to regularly covered mammogram screening
- ≥1 Screening (n=28,816) and diagnostic (n=7,341) mammograms between 1996-2003
- Recommended for:
 - Biopsy
 - Fine needle aspiration
 - Surgical evaluation
 - Ultrasound
- Only included women who received any follow-up within 180 days
 - n=27,060 screening mammograms (93.9%)
 - n=6,513 diagnostic mammograms (88.7%)

Methods: Data Collection

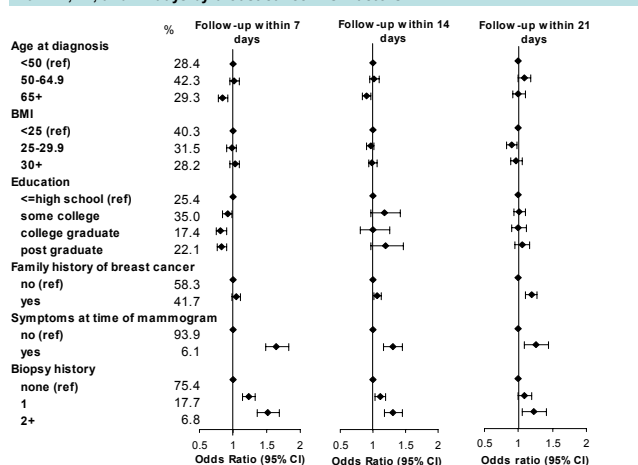
- Self-administered questionnaire filled out at each mammogram
 - Breast cancer risk factors
 - Breast screening and medical history
 - Breast concerns at the time of the mammogram
- Breast procedures and follow-up time captured from automated data
 - Pathology, radiology, utilization, and claims databases

Figure 1. Adjusted odds ratios for follow-up from an abnormal diagnostic mammogram within 7, 14, and 21 days by breast cancer risk factors



*adjusted for year of the mammogram and all other variables in the figure

Figure 2. Adjusted odds ratios for follow-up from an abnormal screening mammogram within 7, 14, and 21 days by breast cancer risk factors



*adjusted for year of the mammogram and all other variables in the figure

Methods: Analysis

- Logistic regression using generalized estimating equations to adjust for woman-level correlation
- Calculated odds of any follow-up within
 - 7 days vs. none in 7 days
 - 14 days vs. none in 14 days
 - 21 days vs. none in 21 days
- Related follow-up to breast cancer risk factors:
 - Age, body mass index (BMI), family history, biopsy history, or breast symptoms
 - Results adjusted for all other risk factors and year of the mammogram

Results

Follow-up Time	Diagnostic Mammograms (n=6,513)	Screening Mammograms (n=27,060)
7 days	72.8%	25.8%
14 days	83.1%	61.3%
21 days	89.8%	82.6%

Characteristics of women who returned for follow-up sooner:

- After diagnostic exams:
 - Younger women in 7 days
 - Higher BMI in 7 days
 - Breast symptoms in 7 days
 - Women with 2+ previous biopsies in 14 days
 - Higher education in 21 days
- After screening exams:
 - Younger women in 7 days
 - Lower education in 7 days
 - Breast symptoms in 7 days
 - Women with 1+ previous biopsies in 7 days
 - Family history of breast cancer in 21 days

Conclusions

- Women with risk factors may have returned for follow-up sooner because:
 - They were personally motivated
 - Screening centers scheduled them
- Results may not be generalizable to women without access to regular screening
- Future studies may focus on whether rapid follow-up results in better outcomes