The Impact of 20 Years of Screening Mammography on the Incidence of Early- versus Late- Stage Breast Cancer in Eastern North Carolina (#787817)

Helen M. Johnson MD, William Irish PhD, Nasreen A. Vohra MD, Suzanne Lea PhD, Louise Henderson PhD, Bruce Schroeder MD, Ericka Griffin MD, Mahvish Muzaffar MD, Jan H. Wong MD

East Carolina University Brody School of Medicine, Greenville, NC; jwong@ecu.edu

BACKGROUND

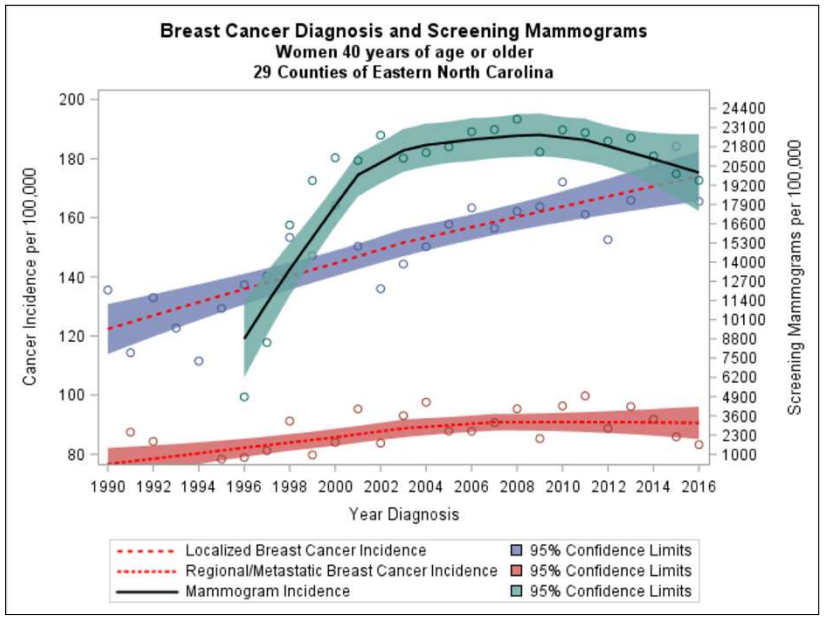
- Eastern North Carolina (ENC), a largely rural and medically underserved geographic region, experiences disparate breast cancer outcomes. One strategy to address this regional disparity is the promotion of screening mammography utilization.
- However, an analysis of SEER data failed to demonstrate an association between increased screening and a reduction in late stage breast cancer at diagnosis, instead attributing much of the observed increase incidence to "overdiagnosis".
- We sought to examine temporal trends in screening mammography and incidence of early versus late-stage breast cancer in ENC.

METHODS

- Screening rates were estimated from the annual number of screening mammograms performed between 1996-2016 in the region and US census data figures for women aged 40+ residing in ENC.
- Breast cancer incidence data in this population between 1990-2016 were obtained from the North Carolina Central Cancer Registry.
- Rates were modeled using a negative binomial with population size included as an offset that assumed a stable underlying risk of breast cancer.

RESULTS

- Between 1996 and 2016, the screening rate increased from 4,878 to 19,532 mammograms per 100,000 women (Figure).
- Concurrently, the overall cancer incidence increased from 230 to 255 cases per 100,000 women (137-166 per 100,000 localized disease, 79-83 per 100,000 regional/metastatic disease).
- Modeling showed that mammographic screening rates significantly increased by 15.5% per year (95% CI 4.4-25.6%, p=0.0008) until 2004, and then plateaued (Figure).
- Modeled breast cancer incidence increased by 1.0% per year (95% CI 0.8-1.3%, p<0.0001).
  - Although this increase was the result of a rise in the diagnosis of both early and late stage disease, it was driven to a greater extent by an increase in incidence of localized disease (1.3% per year, 95% CI 1.0-1.7%, p<0.0001) than regional/metastatic disease (0.6% per year, 95% CI 0.3-1.0%, p=0.0002).



CONCLUSIONS

- Increased screening mammography rates are temporally associated with a higher incidence of breast cancer in ENC, with a decrease in the proportion of late stage disease over time.
- Assuming a stable underlying risk of breast cancer over time, mammographic screening in ENC appears to facilitate earlier cancer detection.
- Results suggest that the magnitude of the increased incidence of localized disease cannot be attributed primarily to overdiagnosis in this population.

REFERENCES

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