

Breast Cancer Mortality Reduction in the United States during 1969-2010 was Independent of Screening Mammography in Its Nine Geographically Disperse SEER Regions: More Evidence for Less Benefit of Screening Mammography

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Purpose/Objectives

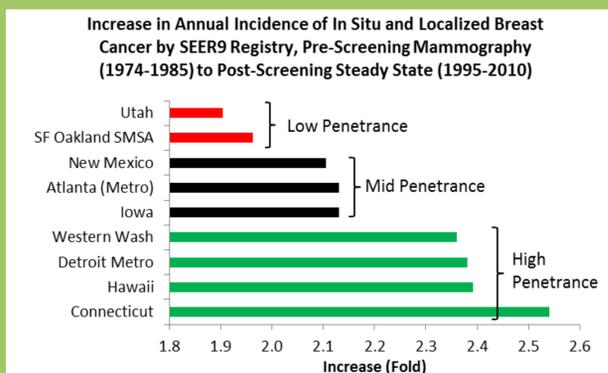
- From the abrupt increase in incidence of early-stage breast cancer, all nine geographical areas represented by the original SEER registries initiated screening mammography between 1982 and 1986.
- By 1990, each of these had a doubling in the rate of early-stage diagnosis.
- However, the subsequent steady-state proportion of the population screened varied by 40%.
- We hypothesize that if screening mammography were effective in reducing breast cancer mortality, a null hypothesis generated from this trend of low-, mid-, and high-screening penetrance is that the reduction in mortality rate was proportional to screening penetrance. The specific aim of this analysis was to further define the impact of screening on mortality reduction.

Material/Methods

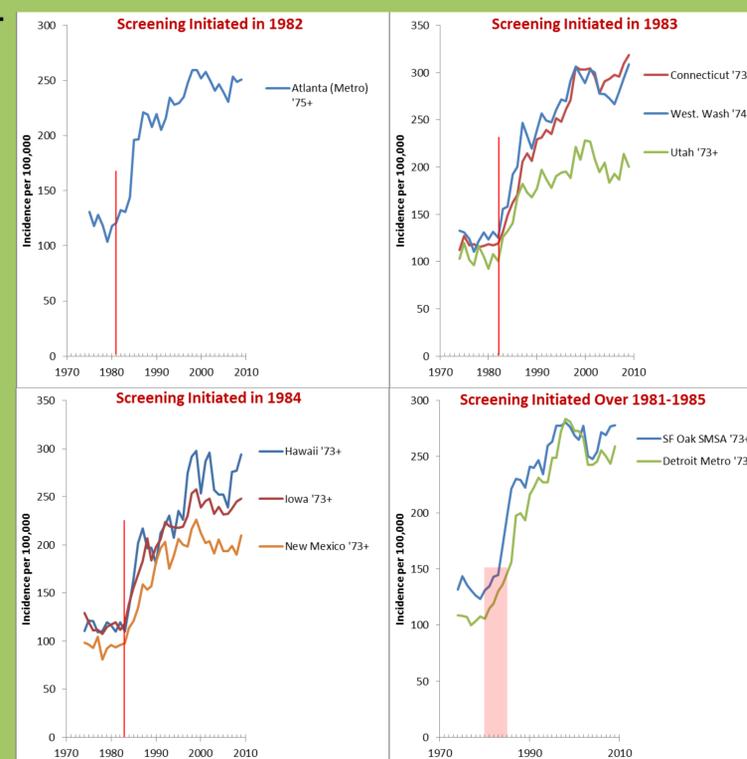
- Annual early-stage (DCIS and localized) breast cancer incidence, and overall breast cancer mortality rates from 1976-2010 in each of the SEER9 regions (Atlanta, Connecticut, Detroit, Hawaii, Iowa, New Mexico, San Francisco/Oakland, Seattle/Puget Sound, and Utah) were obtained via SEERStat (www.seer.cancer.gov) on Sept. 5, 2013.

Results

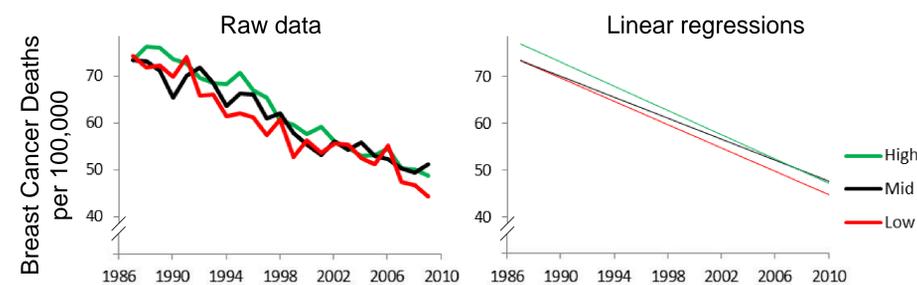
- From the patterns of early-stage incidence acceleration, the registry's regions implemented widespread screening mammography in 1982, 1983, 1984, or more gradually during 1981-1985.
- Two registries (San Francisco/Oakland and Utah) showed low penetrance of screening.
- Three registries (Atlanta, New Mexico, Iowa) had intermediate penetrance.
- Four registries (Connecticut, Hawaii, Detroit, Seattle/Puget Sound) had high penetrance.



- Despite differences among regions, breast cancer mortality rate trends since 1986 were essentially identical in all in all three penetrance regions.
- By 2010, there were reductions of 29%, 25%, and 29% in the low-, mid-, and high-screening penetrance regions, respectively.
- There was also no correlation from region to region between the onset of early-stage breast cancer detection attributable to screening mammography and the onset of the region's breast cancer mortality reduction.



Annual breast cancer mortality rate by screening mammography penetrance, age 40+, 1987-2010



Conclusions

- Three decades of epidemiologic data show that screening mammography affords less benefit in breast cancer mortality than previously recognized.
- Most of the national reduction in breast cancer mortality must have been due to improvement in treatment and breast cancer awareness.