

Collaborative Study of Breast Reconstruction following Mastectomy in the State of Maine

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Introduction

The Treatment Workgroup is a collaboration of the Maine Cancer Registry (MCR), hospital cancer registrars, the Maine Chair of the Cancer Liaison Physicians and other surgeons. Data from the MCR database is used to evaluate staging and treatment for various cancers including breast cancer. Results are compared with national standards. Strategies to improve care throughout the state are developed; dissemination of results is emphasized. In 2010 a concern was voiced that women in Maine seemed less likely to have breast reconstruction following mastectomy than elsewhere.

The purpose of the study was to determine the rate of breast reconstruction in Maine and to investigate possible contributing factors. Maine has a small population (1.3 million, 2004) in a relatively large size rural state. The population is the 'oldest' in the US. Age and geography were hypothesized to play a role.

Methods

The study design is a simple retrospective using diagnosis years 2004 through 2006. The analysis is based on breast cancer cases coded as having had any mastectomy with or without reconstruction. Data were analyzed by age, stage, and residential location (county and public health district). Of note during the study, it was identified that some women had later reconstruction and were incorrectly coded in the central database.

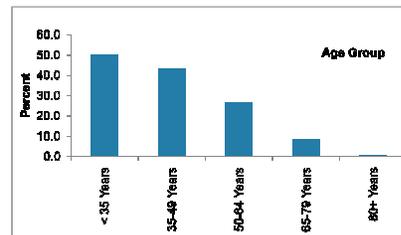
Registrars at a sample of hospitals with small, medium and large case loads in various geographic areas were asked to conduct follow-back on mastectomy cases. The hospital registrars at the selected hospitals performed chart reviews to document subsequent reconstruction. This data was collected centrally for repeat/additional analysis. When the review suggested a measurable change (increase) in the rate of reconstruction, additional hospitals were recruited to complete chart review. Hospitals with 3 year mastectomy totals <10 were excluded. The central database was then updated.

Frequency and percent of mastectomy and reconstruction were calculated. Reconstruction was defined as having one of the following surgery codes; 30, 43-49, 53-59, 63-69, 73-75.

Note re Figure 2: Map color gradients were selected based on underlying percent using the state rate as a median. The map was created using Arc GIS. Stars mark the 5 locations where breast reconstruction was available.

Results

Figure 1. Breast reconstruction by age group, Maine 2004-06



Between 2004 and 2006, 1273 Maine women had mastectomies (in 36 hospitals). Initial analysis of the MCR database showed 200 reconstructions (15%). Following chart review and central database update, there were 286 reconstructions. The final reconstruction rate was 22.5%. We have not found a comparable national rate.

Differences in reconstruction rates were observed by age group. Younger women had higher rates of reconstruction following mastectomy than older women.. The reduction declined steadily from 50% (age <35) to 1% (80+). (See Figure 1.)

Table 1. Breast reconstruction by stage, Maine 2004-06

Stage	Frequency	Percent
Localized	162	56.6
Regional, lymph nodes (LN)	91	31.8
Regional, direct ext. +/- LN	30	10.5
NA/Unknown	3	1.0
Total	286	100.0

Note: Based on derived summary stage 2000

Over half (56.6%) of those receiving breast reconstruction have localized cancer. Over one-third (39.5%) had regional lymph node involvement.

Figure 2. Breast reconstruction by Public Health District, Maine 2004-06



The breast reconstruction rates varied across the state's eight Public Health Districts (PHD) from 8% to 35%. The PHD with the lowest reconstruction rate (8%), **Downeast**, also has the lowest rate of mammography. In the next tier, **Aroostook** (13% reconstruction) has the highest percent of population 65 yrs and over (17.4%) and the lowest population density (10.9 per million). **Penquis** District (13% reconstruction) has the highest breast cancer mortality rate. These 3 PHDs have the lowest median household income (all under \$35,000) when compared to all PHD. (Data source: 2008 Maine State Profile of Selected Public Health Indicators, Maine CDC/DHHS.)

Conclusions/Implications

The major objective of this study was to estimate the rate of breast cancer reconstruction in Maine and identify disparities. As we expected, we found an association between age at diagnosis and reconstruction after mastectomy (older women less likely to have reconstruction). We also anticipated geographic differences but were surprised by the magnitude of the differences between the northern/eastern and southern/western counties/PHDs. Not so surprising perhaps when one considers that the 5 locations where breast reconstruction is performed are all in the southern half of the state.

It is difficult to dissect all of the factors related to geography that may contribute to this disparity. The three PHDs with the lowest reconstruction rates are the most rural, have the most elderly population percentage and the lowest income. As an additional indicator of access to care, these PHDs also have the most Health Professional Shortage Areas. We have not done the statistical analyses to measure the separate contributions of age, rurality, income, education etc

The information from this study has been disseminated to surgeons and oncologists along with a message from the ACOS surgical liaison chair that every woman with breast cancer who is facing mastectomy should be given information about reconstructive surgery and have the opportunity for a plastic surgery consult prior to mastectomy, no matter where she lives and no matter her age.

As resources for hospital and central cancer registries diminish, and work demands increase, there may be less opportunity to do treatment studies like this one, which involved the collaboration of individuals throughout the state. The value of cooperation from hospital registrars to do follow-back in studies like this can't be overemphasized.

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