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[Intervention Review]

# Prophylactic mastectomy for the prevention of breast cancer

Liz Lostumbo<sup>1</sup>, Nora E Carbine<sup>2</sup>, Judi Wallace<sup>3</sup>, Jeanette Ezzo<sup>4</sup>, Kay Dickersin<sup>5</sup>

<sup>1</sup>National Breast Cancer Coalition, Potomac, Maryland, USA. <sup>2</sup>Washington, D.C., USA. <sup>3</sup>National Breast Cancer Coalition, Baltimore, MD, USA. <sup>4</sup>Research, James P. Swyers Enterprises, Baltimore, Maryland, USA. <sup>5</sup>Center for Clinical Trials and US Cochrane Center, Johns Hopkins University, Baltimore, MD, USA

**Contact address:** Liz Lostumbo, National Breast Cancer Coalition, 10615 Great Arbor Dr, Potomac, Maryland, 20854, USA.  
[L\\_Flostumbo@comcast.net](mailto:L_Flostumbo@comcast.net).

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## ABSTRACT

### Background

Recent progress in understanding the genetic basis of breast cancer has increased interest in prophylactic mastectomy as a method of preventing breast cancer.

### Objectives

Primary objective: To determine whether prophylactic mastectomy reduces death from any cause in women who have never had breast cancer and in women who have a history of breast cancer in one breast. Secondary objectives: To examine the effect of prophylactic mastectomy on other endpoints including breast cancer incidence, breast cancer mortality, disease-free survival, physical morbidity, and psychosocial outcomes.

### Search methods

Electronic searches were performed in the Cochrane Central Register of Controlled Trials (CENTRAL), MEDLINE, EMBASE, Cancerlit, and the Science Citation Index. Inclusion criteria were studies in English of any design type.

### Selection criteria

Participants included women at risk for breast cancer in at least one breast. Interventions included all types of mastectomy performed for the purpose of preventing breast cancer.

### Data collection and analysis

Data for each study were summarized descriptively; quantitative meta-analysis was not feasible due to heterogeneity of study designs and insufficient reporting. Data were analyzed separately for bilateral prophylactic mastectomy (BPM) and contralateral prophylactic mastectomy (CPM).

### Main results

All included studies were observational studies with some methodological limitations; no randomized trials were found. All studies reporting on incidence of breast cancer and disease-specific mortality reported reductions after BPM including those with BRCA1 and 2 mutations. Nine studies assessed psychosocial measures; most reported high levels of satisfaction with the decision to have prophylactic mastectomy (PM) but more variable satisfaction with cosmetic results. Worry over breast cancer was significantly reduced after BPM when compared both to baseline worry levels and to the groups who opted for surveillance rather than BPM.

For CPM, studies consistently reported reductions in contralateral incidence of breast cancer but were inconsistent about improvements in disease-specific survival. Only one study attempted to control for multiple differences between intervention groups; this study showed no overall survival advantage for CPM at 15 years. Two case series were exclusively focused on adverse events from prophylactic mastectomy with reconstruction; both reported rates of unanticipated re-operations from 30% to 49%.

### **Authors' conclusions**

While published observational studies demonstrated that BPM was effective in reducing both the incidence of, and death from, breast cancer, more rigorous prospective studies (ideally randomized trials) are needed. BPM should be considered only among those at very high risk of disease. There is insufficient evidence that CPM improves survival.

### **PLAIN LANGUAGE SUMMARY**

#### **Women should be aware of their true risk of developing breast cancer and the limitations of current evidence when considering prophylactic mastectomy**

Surgically removing both breasts to prevent breast cancer (bilateral prophylactic mastectomy or BPM) may reduce the incidence of breast cancer and improve survival in women with high breast cancer risk, but the studies have methodological limitations. After BPM, most are satisfied with their decision, but less satisfied with cosmetic results and body image. Many required additional surgeries. Most experience reduced cancer worry, but because women may overestimate their breast cancer risk, they need to understand their true risk if considering BPM. In women who have had cancer in one breast (and thus are at higher risk of developing a primary cancer in the other) removing the other breast may reduce the incidence of cancer in that other breast, but there is insufficient evidence that this improves survival.