I. Description

Prophylactic mastectomy is defined as the removal of the breast in the absence of malignant disease to reduce the risk of breast cancer occurrence.

Prophylactic mastectomies may be considered in women thought to be at high risk of developing breast cancer, either due to a family history, presence of genetic mutations such as BRCA1 or BRCA2, having received radiation therapy to the chest, or the presence of lesions associated with an increased cancer risk. Such lesions include atypical hyperplasia and lobular carcinoma in situ (LCIS). Although LCIS is labeled as a cancer, it is thought not to have invasive potential; however, patients with LCIS are at increased risk of developing an invasive breast cancer elsewhere in either breast. Therefore, bilateral prophylactic mastectomy is performed not to excise the LCIS lesion itself, but to eliminate the risk of cancer arising elsewhere. Prophylactic mastectomies are typically bilateral, but can also describe a unilateral mastectomy in a patient who has previously undergone a mastectomy in the opposite breast for an invasive cancer.

Two types of prophylactic mastectomies can be performed; either total (also referred to as simple) mastectomy, in which the intent is to remove the entire breast and nipple areolar complex, and subcutaneous mastectomy, in which the nipple areolar complex is left intact for a more natural appearance. While breast tissue is certainly left behind in a subcutaneous mastectomy, residual breast tissue in the axillary tail and skin flaps may be identified after a total mastectomy. However, from a purely prophylactic standpoint, a total mastectomy is generally preferred over a subcutaneous mastectomy because there is less residual breast tissue.

The appropriateness of a prophylactic mastectomy is a complicated risk-benefit analysis that requires estimates of a patient’s risk of breast cancer, typically based on the patient’s family history of breast cancer and other factors. Two models are most frequently used, the Claus model and the Gail model. Breast cancer history in first- and second-degree relatives is used to estimate breast
cancer risk in the Claus model. The Gail model uses the following 5 risk factors: age at evaluation, age at menarche, age at first live birth, number of breast biopsies, and number of first-degree relatives with breast cancer.

It is recommended that all candidates for prophylactic mastectomy consider undergoing a risk assessment from a health professional skilled in assessing cancer risk other than the operating surgeon. Cancer risk should be assessed by performing a complete family history, use of the Gail or Claus model to estimate the risk of cancer, and discussion of the various treatment options, including increased surveillance or chemoprevention with tamoxifen or raloxifene.

II. Criteria/Guidelines

A. Prophylactic mastectomy is covered (subject to Administrative Guidelines) in patients at high risk of breast cancer, defined as having one or more of the following:

1. Two or more first-degree relatives* with breast cancer or ovarian cancer.
2. One first-degree relative and two or more second-degree or third-degree relatives with breast cancer.
3. One first-degree relative with breast cancer before the age of 45 years and one other relative with breast cancer.
4. One first-degree relative with breast cancer and one or more relatives with ovarian cancer.
5. Two second-degree or third-degree relatives with breast cancer and one or more with ovarian cancer.
6. One second-degree or third-degree relative with breast cancer and two or more with ovarian cancer.
7. Three or more second-degree or third-degree relatives with breast cancer.
8. One first-degree relative with bilateral breast cancer.
9. Presence of a BRCA1 or BRCA2 mutation in the patient consistent with a BRCA1 or 2 mutation in a family member with breast or ovarian cancer.
10. Presence of a TP53 or PTEN mutation.
11. Received radiation therapy to the chest between the ages of 10 and 30 years.

Note: The above definition of high risk is largely adapted from Hartmann (see Hartmann et al, 1999 in the Rationale section)

B. Prophylactic mastectomy is covered (subject to Administrative Guidelines) in patients not meeting high risk criteria, but are considered at moderately increased risk of breast cancer based on a personal history of breast lesions associated with an increased risk, including, but not limited to, atypical hyperplasia or contralateral breast cancer, accompanied by;
1. any family history of breast or ovarian cancer; OR
2. an increased lifetime risk of breast cancer of 20% or greater as identified by nationally recognized models such as the Gail or Claus model.

C. Prophylactic mastectomy is covered (subject to Administrative Guidelines) in patients with such extensive mammographic abnormalities (i.e., calcifications) that adequate biopsy is impossible.

D. Prophylactic mastectomy is covered (subject to Administrative Guidelines) in patients with LCIS.

* First-degree relatives are defined as parents, full siblings, and offspring. Second-degree relatives are defined as grandparents, grandchildren, aunts, uncles, nephews, nieces, half-siblings. Third-degree relatives are defined as great-grandparents, great-aunts, great-uncles, first cousins.

III. Administrative Guidelines

A. Precertification is required. Complete HMSA's Precertification Request and mail or fax the form as indicated.

B. Applicable Codes:

<table>
<thead>
<tr>
<th>CPT Code</th>
<th>Description</th>
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<tbody>
<tr>
<td>19303</td>
<td>Mastectomy, simple, complete</td>
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<tr>
<td>19304</td>
<td>Mastectomy, subcutaneous</td>
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IV. Rationale

This policy is based on a 1995 Blue Cross Blue Shield Association (BCBSA) Technology Evaluation Committee (TEC) Assessment that concluded that prophylactic mastectomy met the TEC criteria for patients with a family history of breast cancer. (1) However, patients with a family history represent a broad spectrum, ranging from those at high risk due to a family history consistent with hereditary breast cancer to those at more moderate risk, i.e., with a single affected relative.

The TEC Assessment focused on one 1999 study, a retrospective cohort analysis of 639 women with a family history of breast cancer who underwent bilateral prophylactic mastectomy between 1960 and 1993 at the Mayo Clinic. (2) A total of 90% of the mastectomies were subcutaneous. The patients were subdivided into 2 groups: high-risk patients had a family history suggestive of hereditary breast cancer (n=214), while the remaining 425 patients were arbitrarily considered to have a moderately increased risk. However, it should be emphasized that all women had some sort of family history of breast cancer. For each group, the reduction in the incidence of mortality due to breast cancer was estimated by comparison to a control group (sisters of high-risk patients) or predicted outcomes (using the Gail model for moderate-risk patients).
For patients at moderate risk of breast cancer, 37.4 cancers were predicted by the Gail model, and 4 were observed for an incidence reduction of 89.5%. Approximately 13 women would have to have prophylactic mastectomy to prevent one cancer. For those at high risk of breast cancer, reduction in breast cancer incidence ranged from 90%–94%. Four to eight women would need to undergo prophylactic mastectomy to prevent one occurrence of breast cancer.

While all patients in the Hartmann study had a family history of breast cancer, it should not conclude that all patients with a family history of breast cancer are candidates for a prophylactic mastectomy. Essentially the decision is a complicated patient-driven risk-benefit analysis of the individual cancer risk. While the cancer risk is greatest for those considered at high risk, whether or not the cancer risk associated with moderate-risk patients warrants a prophylactic mastectomy is a difficult question. While high risk is more objectively defined either by a family history alone or the presence of a BRCA1 or BRCA2 mutation, moderate risk may be conferred by a wide range of family histories in association with different breast pathologies.

The critical Hartmann study evaluated by the TEC Assessment was a retrospective cohort study that arbitrarily assigned all women not at high risk to be at moderate risk. It is not known what kind of risk assessment was performed, if any, prior to the mastectomy procedure. In the study, of the 425 women in the moderate risk category, 268 had at least one affected first-degree relative, 46 had two aunts, cousins, or both with breast cancer, and fewer second-degree or third-degree relatives. This group includes a wide variety of patients, with the spectrum potentially ranging from a patient with a first-degree relative with bilateral premenopausal breast cancer to a patient whose elderly mother is diagnosed with breast cancer. While these facts underline the importance of adequate counseling, it also underlines the arbitrary nature of defining a risk level above which prophylactic mastectomy would be considered medically necessary.

The Gail model has been used as patient selection criteria to identify women at increased risk of breast cancer who would be candidates for chemoprevention with tamoxifen. The Breast Cancer Chemoprevention Trial accepted patients between the ages of 35 and 59 years with a 5-year predicted risk of breast cancer of 1.66%, according to the Gail model. (3) Presumably, at the very least, the predicted cancer risk for candidates for prophylactic mastectomy should exceed that of candidates for chemoprevention.

Additional factors associated with a high rate of cancer including the TP53 (Li-Fraumeni syndrome) and PTEN (Cowden and Bannayan-Riley-Ruvalcaba syndromes) genetic mutations. Patients who received prior radiation therapy to the chest between the ages of 10 and 30 years of age which can reach 30% by age 55. (4).

An updated Cochrane review was published by Lostumbo and colleagues in 2010. (5) The 39 included studies were observational studies with some methodologic limitations. There were no randomized trials. The studies presented data on 7,384 women with a wide range of risk factors for breast cancer who underwent PM. Bilateral prophylactic mastectomy (BPM) studies on the incidence of breast cancer and/or disease-specific mortality reported reductions after BPM, particularly for those with BRCA1/2 mutations. For contralateral prophylactic mastectomy (CPM),
Prophylactic Mastectomy

studies consistently reported reductions in incidence of contralateral breast cancer but were inconsistent about improvements in disease-specific survival. Sixteen studies assessed psychosocial measures; most of these reported high levels of satisfaction with the decision to have PM but more variable satisfaction with cosmetic results. Worry over breast cancer was significantly reduced after BPM when compared to baseline worry levels. Case series reporting on adverse events from PM with or without reconstruction reported rates of unanticipated re-operations from 4% in those without reconstruction to 49% in patients with reconstruction. The authors’ summary and conclusions are as follows: “Sixteen observational studies have been published since the last version of the review, without altering our conclusions. While published observational studies demonstrated that bilateral prophylactic mastectomy (BPM) was effective in reducing 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 contralateral prophylactic mastectomy (CPM) improves survival and studies that control for multiple confounding variables are needed.

Many published studies identified in literature review updates reported on factors that influenced decisions about PM. Studies also discussed both patient satisfaction and quality of life after the procedure. Additionally, studies on comparative/cost effectiveness supporting PM versus surveillance have been identified. (6, 7)

Ongoing Clinical Trials
A search of online site ClinicalTrials.gov in January 2012 found one registry study of prophylactic mastectomy for breast cancer risk reduction. This registry will examine patient quality of life, cancer occurrence, adverse events, and survival annually for 10 years (NCT00555503).

Summary

Prophylactic mastectomy is defined as the removal of the breast in the absence of malignant disease to reduce the risk of breast cancer occurrence. The literature on prophylactic mastectomy primarily consists of observational studies and retrospective reviews; however, evidence demonstrates that prophylactic mastectomy reduces breast cancer incidence and increases survival in moderate- to high-risk patients. Based on the scientific data consisting of large numbers of patients treated with follow-up, prophylactic mastectomy for breast cancer risk reduction may be considered medically necessary in patients at high risk or moderately increased risk of breast cancer.

Practice Guidelines and Position Statements

This updated policy is in general agreement with the current National Comprehensive Cancer Network (NCCN) guidelines on breast cancer risk reduction. (8) The NCCN guidelines for contralateral prophylactic mastectomy (CPM) are included as part of the breast cancer guidelines. (9) These guidelines strongly discourage CPM in women treated with mastectomy for a known unilateral breast cancer and very strongly discourage CPM in women treated with breast-conserving surgery for a known unilateral breast cancer. CPM is recommended in only very limited, specific clinical situations. The NCCN breast cancer guidelines also indicate bilateral PM may be considered for risk reduction in women age 35 or younger or premenopausal with a known BRCA 1 or 2 mutation and refer to the breast cancer risk reduction guidelines.
The Society of Surgical Oncology (SSO) developed a position statement on prophylactic mastectomy in 1993. (10) The position statement was updated in 2007 and indicates bilateral prophylactic mastectomy is potentially indicated in patients with:

- known BRCA 1 or 2 mutations or other genes that strongly predispose susceptibility to breast cancer,
- a history of multiple first-degree relatives with breast cancer history or multiple successive generations of breast and/or ovarian cancer, or
- biopsy-confirmed, high-risk histology such as atypical ductal or lobular hyperplasia or lobular carcinoma in situ [LCIS].

The SSO also indicates contralateral prophylactic mastectomy may be potentially indicated in patients:

- with high risk (as defined above) of contralateral breast cancer,
- in whom surveillance would be difficult such as with dense breast tissue or diffuse indeterminate microcalcifications, or
- to improve symmetry.

V. Important Reminder

The purpose of this Medical Policy is to provide a guide to coverage. This Medical Policy is not intended to dictate to providers how to practice medicine. Nothing in this Medical Policy is intended to discourage or prohibit providing other medical advice or treatment deemed appropriate by the treating physician.

Benefit determinations are subject to applicable member contract language. To the extent there are any conflicts between these guidelines and the contract language, the contract language will control.

This Medical Policy has been developed through consideration of the medical necessity criteria under Hawaii's Patients' Bill of Rights and Responsibilities Act (Hawaii Revised Statutes § 432E-1.4), generally accepted standards of medical practice, and review of medical literature and government approval status. HMSA has determined that services not covered under this Medical Policy will not be medically necessary under Hawaii law in most cases. If a treating physician disagrees with HMSA’s determination as to medical necessity in a given case, the physician may request that HMSA consider the application of this Medical Policy to the case at issue.

VI. References


