



Clinical Policy Title: Prophylactic mastectomy

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Related policies:

CCP.1204 Breast cancer screening in women
CCP.1048 Breast reduction surgery
CCP.1284 Breast reconstruction following breast cancer surgery

Policy contains:

- Prophylactic mastectomy.
- Prophylactic salpingo-oophorectomy.
- Mammography.

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Coverage policy

AmeriHealth Caritas considers the use of prophylactic mastectomy to be clinically proven and therefore, medically necessary when the following criteria are met (National Comprehensive Cancer Network, 2016a):

- Women diagnosed with breast cancer at 45 years of age or younger; or
- Women who are at increased risk for specific mutation(s) due to ethnic background (for instance: Ashkenazi Jewish descent) and who have one or more relatives with breast cancer or epithelial ovarian cancer at any age; or
- Women who carry a genetic mutation in the TP53 or PTEN genes (Li-Fraumeni syndrome and Cowden and Bannayan-Riley-Ruvalcaba syndromes); or
- Women who possess BRCA1 or BRCA2 mutations confirmed by molecular susceptibility testing for breast and/or epithelial ovarian cancer; or
- Women who received radiation treatment to the chest between ages of 10 and 30 years, such as for Hodgkin disease; or

- Women with a first or second-degree male relative with breast cancer; or
- Women with multiple primary or bilateral breast cancers in a first or second-degree blood relative; or
- Women with multiple primary or bilateral breast cancers; or
- Women with one or more cases of epithelial ovarian cancer AND one or more first or second degree blood relatives on the same side of the family with breast cancer; or
- Women with three or more affected first or second degree blood relatives on the same side of the family, irrespective of age at diagnosis.

Limitations:

All other uses of prophylactic mastectomy are not medically necessary.

Alternative covered services:

None.

Background

For women in the U.S., breast cancer death rates are higher than those for any other cancer besides lung cancer. In 2017, an estimated 252,710 new cases of invasive breast cancer are expected, along with 63,410 new cases of in-situ lesions (Siegel, 2017).

A woman is considered to be at high risk if she has a strong family history of breast, ovarian, or certain other cancers, a deleterious mutation in the BRCA1 gene or the BRCA2 gene, or a high-penetrance mutation in one of several other genes associated with breast cancer risk such as the ATM, BRIP1, CHEK2, and PTEN genes. The availability of improved means to identify high risk individuals intensifies the need to define the benefits and risks of early detection and protective measures for such women.

Women with a personal history of breast cancer and genetic risk for cancer are considered to be at high risk for developing a second breast cancer, which may be in the same or in the contralateral breast. The prevalence of synchronous cancer ranges from one to three percent to 10 percent and, for this reason, a woman may opt for prophylactic surgical removal of one or both breasts. From 2004 to 2012, the use of contralateral prophylactic mastectomy in women diagnosed with early stage unilateral breast cancer has more than doubled years (Nash, 2017).

Bilateral prophylactic mastectomy may involve complete removal of both breasts (total mastectomy), or it may involve removal of as much breast tissue as possible while leaving the nipples intact (subcutaneous or nipple-sparing mastectomy). Subcutaneous mastectomies preserve the nipple and allow for more natural-looking breasts if a woman chooses to have breast reconstruction surgery afterward. Bilateral prophylactic mastectomy has been shown to reduce the risk for breast cancer by at

least 95 percent in women who have a mutation in the BRCA1 gene or the BRCA2 gene, and by up to 90 percent in women who have a strong family history of breast cancer.

Total mastectomy provides the greatest breast cancer risk reduction because more breast tissue is removed; but, even with this procedure, not all breast tissue that may become cancerous in the future can be removed. With that being said, bilateral prophylactic mastectomy is a major and irreversible elective surgery that may result in complications and adverse outcomes — from the surgical removal of both breasts and/or any subsequent reconstructive surgeries, a permanent change in a woman’s outward appearance, and the potential changes in her health-related quality of life. Decision-making requires full understanding of the benefits and risk of each approach. Although this applies to any surgical intervention, it is especially important when considering preference-sensitive care and where there is more than one clinically appropriate treatment option for the condition (Razdan, 2015).

Bilateral prophylactic salpingo-oophorectomy, also known as prophylactic oophorectomy, involves the removal of both the fallopian tubes and the ovaries, and may be done alone or along with bilateral prophylactic mastectomy in postmenopausal women who are at high risk of breast cancer (see AmeriHealth Caritas clinical policy on prophylactic salpingo-oophorectomy).

The National Cancer Institute has stated women who carry a mutation in the BRCA1 gene, BRCA2 gene, or certain other genes may consider bilateral prophylactic mastectomy and/or bilateral salpingo-oophorectomy to reduce the risk of developing breast cancer (NCI, 2013).

Searches

AmeriHealth Caritas searched PubMed and the databases of:

- UK National Health Services Centre for Reviews and Dissemination.
- Agency for Healthcare Research and Quality’s National Guideline Clearinghouse and other evidence-based practice centers.
- The Centers for Medicare & Medicaid Services.

Searches were conducted on July 6, 2018 using the terms “prophylactic mastectomy” and “risk-reducing mastectomy.”

Included were:

- **Systematic reviews**, which pool results from multiple studies to achieve larger sample sizes and greater precision of effect estimation than in smaller primary studies. Systematic reviews use predetermined transparent methods to minimize bias, effectively treating the review as a scientific endeavor, and are thus rated highest in evidence-grading hierarchies.
- **Guidelines based on systematic reviews.**

- **Economic analyses**, such as cost-effectiveness, and benefit or utility studies (but not simple cost studies), reporting both costs and outcomes — sometimes referred to as efficiency studies — which also rank near the top of evidence hierarchies.

Findings

There is an increasing amount of research suggesting the value of prophylactic mastectomy as a preventative measure for women at risk of developing breast cancer. Much of the available medical evidence to date has focused on women with one or multiple risk factors for breast cancer. Risk factors include a strong family history of breast and/or ovarian cancer, a breast cancer susceptibility gene (BRCA1, BRCA2, or another less common mutation), or the presence of lobular carcinoma in situ. Moreover, there may be some genetic mutations signaling high risk for breast cancer that have not yet been discovered. The American Society of Clinical Oncology reported that after a woman with BRCA1 or BRCA2 mutation is diagnosed with unilateral breast cancer, the risk of contralateral breast cancer is approximately three percent per year (Metcalfe, 2008). Bilateral mastectomy was shown to offer protection against contralateral breast cancer, and does not vary with age at diagnosis or time since surgery.

According to a meta-analysis of 14 studies, among women who had an elevated familial or genetic risk for breast cancer, while contralateral prophylactic mastectomy was not associated with an improvement in overall survival or breast cancer mortality, there was an association with both lowered relative and absolute risk for metachronous contralateral breast cancer (RR = 0.04, confidence interval (CI) 0.02 - 0.09; risk difference (RD) = -24.0 percent, CI -35.6 - 12.4 percent) (Fayunju, 2014). Overall, women with a unilateral breast cancer who underwent contralateral prophylactic mastectomy had higher rates of overall survival (RR = 1.09 (CI 1.06 - 1.11) and lower rates of mortality specifically due to breast cancer (RR = 0.69, CI 0.56 – 0.85), but no absolute reduction in risk for metachronous contralateral breast cancer. The authors stated that this may be due to selection bias and factors such as earlier stage tumors and adequate health insurance, and concluded that women with unilateral breast cancer but no known familial or genetic risk should not be recommended for contralateral prophylactic mastectomy. More recently, consensus statements released by the American Society of Breast Surgeons (based on a literature review) and a Canadian panel (based on modified Delphi methodology) discourage contralateral prophylactic mastectomy in average-risk women with unilateral breast cancer (Boughey, 2016a; Boughey, 2016b; Wright, 2017).

In a meta-analysis conducted by the Cancer Epidemiology Biomarkers and Prevention Task Force, it was shown that the greatest gains in life expectancy result from conducting prophylactic mastectomy immediately after BRCA1/2 mutation testing, but these gains vary with age at testing (Sigal, 2012). Additionally, by adding annual breast screening, life expectancy can be prolonged by two to 10 years for BRCA1 and 1.5 to 4.5 years for BRCA2. Delaying prophylactic surgery from age 30 years to 40 does not affect life expectancy as much as would a longer delay. More recent studies suggest that BRCA1 mutation carriers benefit more from prophylactic oophorectomy than prophylactic mastectomy, with the reverse finding for BRCA2 carriers.

In a Cochrane systematic review, participants included women at risk for breast cancer in at least one breast, and interventions included all types of mastectomy with the purpose of preventing breast cancer. Only one out of 39 studies attempted to control for multiple differences between intervention groups, and that study showed no overall survival advantage for contralateral prophylactic mastectomy at 15 years (Lostumbo, 2010).

A prospective study confirmed that bilateral risk reducing mastectomy substantially reduces breast cancer occurrence in healthy BRCA1/2 mutation carriers (Heemskerk-Gerritsen, 2013). This was the first prospective observational study suggesting that bilateral risk reducing mastectomy when compared with surveillance is associated with improved survival, although longer follow-up in combination with larger sample sizes are needed to confirm statistical significance. A systematic review and meta-analysis confirmed these findings, showing that among BRCA1/2 mutation carriers, bilateral prophylactic mastectomy was associated with substantially reduced breast cancer incidence and mortality (relative risk (RR) 0.552, 95% confidence interval (CI) 0.448 – 0.682) (Li, 2016).

A systematic review that included 16 studies assessed psychological measures (Lostumbo, 2010). Most women reported high levels of satisfaction with the decision to have prophylactic mastectomy. Worry over breast cancer was significantly reduced after bilateral prophylactic mastectomy when compared both to baseline worry levels and to the groups who opted for surveillance rather than surgery. A more recent systematic review (Ager, 2016) that included 17 studies found that while overall women said they were satisfied with contralateral prophylactic mastectomy, issues including changes to body image and sense of sexuality, poor cosmetic results, complications, emotional problems, and a perceived gap in education regarding alternatives were noted as sources of dissatisfaction. Among those women who considered contralateral prophylactic mastectomy, there was insufficient information to determine what differences exist between those who accept or decline contralateral prophylactic mastectomy. Nass (2017) suggested improvements to a discussion guide to be used by providers to facilitate shared decision-making with patients considering contralateral prophylactic mastectomy.

The National Comprehensive Cancer Network issued updated *Clinical Practice Guidelines in Oncology* for breast cancer for 2017. One set of guidelines updates criteria for assessing further genetic risk evaluation in otherwise healthy and asymptomatic individuals at high risk for breast and ovarian cancer (National Comprehensive Cancer Network, 2016a). These criteria serve as the basis for recommending for whom prophylactic mastectomy might be medically necessary. The National Comprehensive Cancer Network 2017 *Clinical Practice Guidelines in Oncology for Breast Cancer Risk Reduction* states that all options for risk reduction should be discussed with the patient in a shared decision making environment and should include information on the possible strategies, including lifestyle modification, to reduce breast cancer risk (2016b). The National Comprehensive Cancer Network guidelines advocate the use of risk reducing mastectomy for selected populations of women at very high risk of breast cancer who elect to have surgery. The guidelines suggest that women considering bilateral mastectomy should undergo multidisciplinary consultations to learn about all treatment options, the risks and benefits of risk reducing mastectomy, and options for reconstruction.

Policy updates:

In 2017, a review of the literature produced 15 additional references that have been added to this policy, three of which are included in the Summary of Clinical Evidence.

In 2018, we identified 10 peer-reviewed publications and updated two guidelines from the National Comprehensive Cancer Network. Of the new publications, the following two have been added to the Summary of Clinical Evidence. Agarwal’s 2017 review of U.S. population-based data from 1998 to 2002 found that bilateral mastectomy did not result in a significantly lower hazard of breast cancer-specific death when compared with patients with unilateral mastectomy. Carbine (2018) updated a 2010 Cochrane review. Quantitative analyses were not possible due to heterogeneity of study design and inconsistent reporting. All of the included studies were observational; no randomized controlled trials were included. The review showed that published observational studies demonstrated that bilateral risk-reducing mastectomy was effective in reducing both the incidence of and death from breast cancer. Bilateral risk-reducing mastectomy should be considered only among those at high risk of disease, for example, BRCA1/2 carriers. Contralateral risk-reducing mastectomy was shown to reduce the incidence of contralateral breast cancer, but there is insufficient evidence that it improves survival. The better overall survival numbers for contralateral risk-reducing mastectomy may be due to selection bias in because of healthier, younger women being recommended for or choosing contralateral surgery. More rigorous prospective studies that control for multiple confounding variables are recommended. Other options to reduce breast cancer risk, such as bilateral risk-reducing salpingo-oophorectomy and chemoprevention, should be considered in decision-making around risk-reducing mastectomy. No policy changes are warranted at this time.

Summary of clinical evidence:

Citation	Content, Methods, Recommendations
Carbine (2018) Risk-reducing mastectomy for the prevention of primary breast cancer	Key points: <ul style="list-style-type: none">• This review updates a review last updated in 2010. All of the 61 included studies were observational and had other methodological limitations. The analysis included a total of 15,077 women who had a wide range of risk factors for breast cancer and underwent risk-reducing mastectomy.• Among 21 studies in which women underwent bilateral risk-reducing mastectomy, overall, reductions in observed cancer incidence, or mortality, or both were observed, particularly for those women with BRCA1/2 mutations.• Among 26 studies of women who underwent contralateral risk-reducing mastectomy, the findings consistently showed decreased incidence of contralateral breast cancer but were inconsistent about improvements in disease-specific survival. Seven studies that attempted to control for multiple differences between intervention groups showed no overall survival advantage for contralateral risk-reducing mastectomy. One study showed significantly improved survival following contralateral risk-reducing mastectomy, however, this improvement was not significant after adjusting for bilateral risk-reducing salpingo-oophorectomy.• Among 20 studies that assessed psychosocial measures, most showed high levels of

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	<p>satisfaction with the decision to have risk-reducing mastectomy, but there was a greater variation in women's satisfaction with cosmetic results. Worry over breast cancer was significantly reduced after bilateral risk-reducing mastectomy, compared both to baseline worry and to the groups who chose surveillance rather than surgery, but among the women who chose surgery, there was diminished satisfaction with body image and sexual feelings.</p> <ul style="list-style-type: none"> • Among 17 case series reporting on adverse events from risk-reducing mastectomy with or without reconstruction, rates of unanticipated reoperations rates ranged from 4% in those without reconstruction to 64% among those with reconstruction. • In women with a cancer diagnosis in one breast, removing the other breast may reduce the incidence of cancer in the second breast, but because of the continuing risk of recurrence or metastases from the original cancer, there is insufficient evidence of improved survival. • While published observational studies demonstrated that bilateral risk-reducing mastectomy was effective in reducing both the incidence of and death from, breast cancer, more rigorous prospective studies are suggested. Bilateral risk-reducing mastectomy should be considered only among those at high risk of disease, for example, BRCA1/2 carriers. Contralateral risk-reducing mastectomy was shown to reduce the incidence of contralateral breast cancer, but there is insufficient evidence that contralateral risk-reducing mastectomy improves survival, and studies that control for multiple confounding variables are recommended. It is possible that selection bias in terms of healthier, younger women being recommended for or choosing contralateral risk-reducing mastectomy produces better overall survival numbers for contralateral risk-reducing mastectomy. Given the number of women who may be over-treated with bilateral or contralateral risk-reducing mastectomy, it is critical that women and clinicians understand the true risk for each individual woman before considering surgery. Thought should be given to other options to reduce breast cancer risk, such as bilateral risk-reducing salpingo-oophorectomy and chemoprevention, when considering risk-reducing mastectomy.
<p>Agarwal (2017)</p> <p>A systematic review of women's satisfaction and regret following risk-reducing mastectomy</p>	<p>Key points:</p> <ul style="list-style-type: none"> • This observational study of women diagnosed with unilateral breast cancer examined data from 1998 through 2002 from the Surveillance, Epidemiology, and End Results database. The study design was a 4-to-1 matched cohort of that included 14,075 patients. Mortality of the groups was compared using Cox proportional hazards models for cause-specific death. • A total of 41,510 patients diagnosed with unilateral breast cancer were included. In 93%, unilateral mastectomy was performed and bilateral mastectomy was performed in the remaining 7%. Four to one matching resulted in the inclusion of 11,260 unilateral mastectomy and 2,815 bilateral mastectomy patients. • Bilateral mastectomy did not result in a significantly lower hazard of breast cancer-specific death when compared with patients with unilateral mastectomy (hazard ratio: 0.92 vs 1.00, p = 0.11). • Nor did bilateral mastectomy provide a clinically or statistically significant breast cancer-specific mortality benefit over unilateral mastectomy based on a matched cohort analysis of a nationwide population database. Note that these findings should be interpreted in the context of alternative benefits of bilateral mastectomy and patient preference.
<p>Wright (2017)</p> <p>Indications for contralateral prophylactic mastectomy: a consensus statement using modified Delphi methodology</p>	<p>Key points:</p> <ul style="list-style-type: none"> • This nationally representative expert panel consisted of 19 general surgeons, 2 plastic surgeons, 2 medical oncologists, 2 radiation oncologists, and 1 psychologist. • The following description of their methodology was provided: Thirty-nine statements were created in 5 topic domains: (1) predisposing risk factors, (2) tumor factors, (3) reconstruction/symmetry issues, (4) patient factors, and (5) miscellaneous factors. Panelists rated statements on a 7-point Likert scale, in two anonymous electronic rounds of iterative rating and feedback, followed by an in-person meeting. Consensus was reached when there was at least 80% agreement. • The panel recommended contralateral prophylactic mastectomy for women with a unilateral

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	<p>breast cancer and previous Mantle field radiation or a BrCa1/2 gene mutation.</p> <ul style="list-style-type: none"> • The panel agreed that contralateral prophylactic mastectomy could be considered on an individual basis for: women with unilateral breast cancer and a genetic mutation in the CHEK2/PTEN/p53/PALB2/CDH1 gene, and for women with likelihood for asymmetry after unilateral mastectomy. • Contralateral prophylactic mastectomy was not recommended for women with unilateral breast cancer and average risk.
<p>Li (2016)</p> <p>Effectiveness of prophylactic surgeries in BRCA1 or BRCA2 mutation carriers: a meta-analysis and systematic review.</p>	<p>Key points:</p> <ul style="list-style-type: none"> • This meta-analysis and systematic review included 15 studies. • Both prophylactic bilateral salpingo-oophorectomy and bilateral prophylactic mastectomy were associated with a lower breast cancer risk in BRCA1/2 mutation carriers (RR = 0.552, 95% CI 0.448 - 0.682; RR = 0.114, 95% CI 0.041 - 0.317). • Similarly findings were observed when outcomes for BRCA1 and BRCA2 mutation carriers were examined separately. • Contralateral prophylactic mastectomy significantly lowered contralateral breast cancer incidence in BRCA1/2 mutation carriers (RR = 0.072, 95% CI 0.035 - 0.148). • All-cause mortality was significantly lower among those with contralateral prophylactic mastectomy compared to those without (hazard ratio (HR) = 0.512, 95% CI 0.368 - 0.714). • Bilateral prophylactic mastectomy was not significantly associated with lower all-cause mortality. • Insufficient data were obtained to perform separate estimates of survival benefit with prophylactic surgery in BRCA1 or BRCA2 mutation carriers.
<p>Razdan (2015)</p> <p>Quality of life among patients after bilateral prophylactic mastectomy: A systematic review of patient reported outcomes</p>	<p>Key points:</p> <ul style="list-style-type: none"> • Systematic review of 1,082 studies, with 22 of them meeting the criteria that post bilateral prophylactic mastectomy patients are satisfied with the outcomes and report high psychosocial well-being and positive body image • 12 ad hoc questionnaires were used to measure psychological well-being and body image after bilateral prophylactic mastectomy , sexual well-being, and somatosensory function • Sexual well-being and somatosensory function were the health-related quality of life domains most negatively affected after bilateral prophylactic mastectomy. • The analysis found that psychological morbidity and anxiety decreased significantly at six and 18 months after bilateral prophylactic mastectomy.
<p>Fayanju (2014)</p> <p>Contralateral prophylactic mastectomy after unilateral breast cancer: A systematic review and meta-analysis</p>	<p>Key points:</p> <ul style="list-style-type: none"> • This meta-analysis included 14 studies. Note that there are methodological concerns, including the following: no randomized controlled trials have been held on contralateral prophylactic mastectomy; only one of the included studies had an a priori sampling strategy; several studies were performed at major academic medical centers which may be different from other settings. • Overall survival was 9% more likely among women who underwent contralateral prophylactic mastectomy compared to those who did not (RR = 1.09, 95% CI 1.06 - 1.11, p < 0.001) and breast cancer-specific mortality was reduced (RR = 0.69, CI 0.56 - 0.85, p < 0.001). To illustrate, seven more women with unilateral breast cancer out of 100 might survive if they had contralateral prophylactic mammography RD = 7.4%, 95% CI 5.6% - 9.3%, p < 0.001). However, there was no absolute decrease in risk for metachronous contralateral breast cancer. • Among women with elevated familial/genetic risk who underwent contralateral prophylactic mastectomy, both absolute and relative risks for metachronous contralateral breast cancer were decreased (RR = 0.04, 95% CI 0.02 - 0.09, p < 0.001; RD = -24.0%, 95% CI = -35.6% - -12.4%, p = 0.013) as were risks for distant metastatic recurrence (RR = 0.71, 95% CI 0.53 - 0.94, p = 0.018; RD = -5.9%, 95% CI -10.7 - -1.0%, p = 0.017). However, there was no improvement in overall survival or breast cancer-specific mortality.

Citation	Content, Methods, Recommendations
<p>Heemskerk-Gerritsen (2013)</p> <p>Substantial breast cancer risk reduction and potential survival benefit after bilateral mastectomy when compared with surveillance in healthy BRCA1 and BRCA2 mutation carriers: a prospective analysis</p>	<p>Key points:</p> <ul style="list-style-type: none"> • A meta-analysis of 570 healthy female mutation carriers (405 BRCA1, 165 BRCA2) were selected from the institutional Family Cancer Clinic Database. 156 BRCA1 and 56 BRCA2 mutation carriers underwent risk-reducing mastectomy • Breast cancer was detected more often in BRCA1 than in BRCA2 mutation carriers (20% versus 7%; $p < 0.01$), but the median age at breast cancer diagnosis was not different (43 versus 44 years) • The prospective cohort study in healthy BRCA1/2 mutation carriers showed that after bilateral risk-reducing mastectomy the breast cancer incidence rare was substantially reduced, compared with regular surveillance • After bilateral risk-reducing mastectomy, no incident breast cancer cases were observed during 1,379 person-years of observation while, during 2,037 person-years of observation, 57 women in the surveillance group were diagnosed with breast cancer.
<p>Sigal (2012)</p> <p>A simulation model to predict the impact of prophylactic surgery and screening on the life expectancy of BRCA1 and BRCA2 mutation carriers</p>	<p>Key points:</p> <ul style="list-style-type: none"> • To determine age-specific breast cancer incidence in the absence of prophylactic oophorectomy. • Life expectancy is greatest in gains when a prophylactic mastectomy and prophylactic oophorectomy is conducted immediately after BRCA1/2 mutation testing. These gains vary with age at testing, from 6.8 to 10.3 years for BRCA1 and 3.4 to 4.4 years for BRCA2 mutation carriers and depends on the timing of prophylactic surgery • Adding annual breast screening provides gains of 2.0 to 9.9 years for BRCA1 and 1.5 to 4.3 years for BRCA2 • More recent studies suggest that BRCA1 mutation carriers benefit more from prophylactic oophorectomy than prophylactic mastectomy, with the reverse finding for BRCA2 carriers • It is assumed that an asymptomatic patient is detected with a malignant breast tumor at the time of prophylactic mastectomy if the tumor diameter is greater than 2 mm; if the tumor diameter is less than 2 mm, it is assumed that the patient has a 95% probability of being cured, with only a 5% chance of disease progression
<p>Lostumbo (2010)</p> <p>Prophylactic mastectomy for the prevention of breast cancer</p>	<p>Key points:</p> <ul style="list-style-type: none"> • 7,384 women with a wide range of risk factors for breast cancer who underwent prophylactic mastectomy were included in 39 observational studies • Sixteen of these studies assessed psychological measures, while most reported high levels of satisfaction with the decision to have prophylactic mastectomy • Published observations studies demonstrated that bilateral prophylactic mastectomy was effective in reducing both the incidence of, and death from, breast cancer, but more randomized trials are needed • There is insufficient literature that contralateral prophylactic mastectomy improves survival and studies that control for multiple confounding variables are needed • After bilateral prophylactic mastectomy, most women are satisfied with their decision, but are less satisfied with cosmetic results and body image
<p>Domchek (2010)</p> <p>Association of risk-reducing surgery in BRCA1 or BRCA2 mutation carriers with cancer risk and mortality</p>	<p>Key points:</p> <ul style="list-style-type: none"> • A systematic review of 2,482 women with BRCA1 or BRCA2 mutations ascertained between 1974 and 2008. The study conducted 22 clinical and research genetics centers in Europe and North America to assess the relationship between risk-reducing mastectomy or salpingo-oophorectomy with cancer outcomes. The women were followed until the end of 2009. • No breast cancers were diagnosed in the 247 women with risk-reducing mastectomy compared with 98 women of 1,372 diagnosed with breast cancer who did not have risk-reducing mastectomy. • Among a cohort of women with BRCA1 and BRCA2 mutations, the use of risk-reducing

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	<p>mastectomy was associated with a lower risk of breast cancer, and risk reducing salpingo-oophorectomy was associated with a lower risk of ovarian cancer.</p> <ul style="list-style-type: none"> • No breast cancer events were seen in women who underwent risk-reducing mastectomy over a similar follow-up period were diagnosed with breast cancer • Women who have inherited mutations in the BRCA1 and BRCA2 genes have substantially elevated risks of breast cancer and ovarian cancer, with a lifetime risk of breast cancer of 56% to 84%
<p>Metcalfe (2008)</p> <p>Predictors of contralateral prophylactic mastectomy in women with BRCA1 or BRCA2 mutation: The Hereditary Breast Cancer Clinical Study Group</p>	<p>Key points:</p> <ul style="list-style-type: none"> • The study included 1,022 women from 8 different countries (Austria, Canada, France, Israel, Italy, Norway, Poland, and the United States). It was conducted to evaluate the rate of prophylactic contralateral mastectomy in an international cohort of women with hereditary breast cancer and to evaluate the predictors of uptake of preventative surgery • Women with a BRCA1 or BRCA2 mutation who had been diagnosed with unilateral breast cancer, were between 25 and 80 years old, and were known to be a BRCA1/2 mutation carrier, and had no reported diagnosis of unilateral invasive breast cancer were eligible and were followed for a minimum of 1.5 years • A subgroup of nine hundred twenty-seven women was included in the study to evaluate predictors of contralateral mastectomy and was followed for at least 1.5 years; of these, 253 women (27.3%) underwent a contralateral prophylactic mastectomy after the initial diagnosis of breast cancer. • Participants were eligible for this study if they were known to be a BRCA1 or BRCA2 mutation carrier, were between 25 and 80 years old, reported a diagnosis of unilateral invasive breast cancer and had no previous history of another cancer. • All of the women included in the study had been diagnosed with the initial breast cancer before genetic testing for BRCA1 or BRCA2

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Centers for Medicare and Medicaid Services (CMS) National Coverage Determination

National Coverage Determination for breast reconstruction (NCD) following mastectomy (140.2). Effective date January 1, 2017. <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=64&ncdver=1&DocID=140.2&bc=gAAAABAAAA&>. Accessed July 12, 2018.

Local Coverage Determinations

None.

InterQual

InterQual 2017. CP: Procedures. Mastectomy, Modified Radical (MRM)

InterQual 2017. CP: Procedures. Mastectomy, Partial, +/- Axillary Dissection

InterQual 2017. CP: Procedures. Mastectomy, Prophylactic, Total or Simple

Commonly submitted codes

Below are the most commonly submitted codes for the service(s)/item(s) subject to this policy. This is not an exhaustive list of codes. Providers are expected to consult the appropriate coding manuals and bill in accordance with those manuals.

CPT Code	Description	Comment
19303	Mastectomy, simple, complete	
19304	Mastectomy, subcutaneous	

ICD-10 Code	Description	Comment
Z15.01	Genetic susceptibility, malignant neoplasm, breast	
Z40.01	Encounter for prophylactic removal of breast	
Z80.3	Family history of breast cancer	
Z85.3	Personal history of breast cancer	
Z92.3	Personal history of therapeutic radiation therapy	

HCPCS Level II Code	Description	Comment
N/A		