NATIONAL QUALITY FORUM

Resource Use Measure Evaluation 1.0
January 2011

This form contains the measure information submitted by stewards. Blank fields indicate no information was provided. Attachments also may have been submitted and are provided to reviewers. The subcriteria and most of the footnotes from the evaluation criteria are provided in Word comments within the form and will appear if your cursor is over the highlighted area. Hyperlinks to the evaluation criteria and ratings are provided in each section.

Resource Use Definition:

- Resource use measures are broadly applicable and comparable measures of input counts—(in terms of units or dollars)-- applied to a population or population sample
- Resource use measures count the frequency of specific resources; these resource units may be monetized, as appropriate.
- The approach to monetizing resource use varies and often depends on the perspective of the measurer and those being measured. Monetizing resource use allows for the aggregation across resources.

NQF Staff: NQF staff will complete a preliminary review of the measure to ensure conditions are met and the form has been completed according to the developer's intent. Staff comments have been highlighted in green.

TAP/Workgroup (if utilized)**:** Complete all yellow highlighted areas of the form. Evaluate the extent to which each subcriterion is met. Based on your evaluation, summarize the strengths and weaknesses in each section.

Note: *If there is no TAP or workgroup, the SC also evaluates the subcriteria (yellow highlighted areas).*

Steering Committee: Complete all pink highlighted areas of the form. Review the workgroup/TAP assessment of the subcriteria, noting any areas of disagreement; then evaluate the extent to which each major criterion is met; and finally, indicate your recommendation for the endorsement. Provide the rationale for your ratings.

Evaluation ratings of the extent to which the subcriteria are met (TAP or Steering Committee)
High (H) – based on the information submitted, there is high confidence (or certainty) that the criterion is met
Moderate (M) – based on the information submitted, there is moderate confidence (or certainty) that the criterion is met
Low (L) - based on the information submitted, there is low confidence (or certainty) that the criterion is met
Insufficient (I) – there is insufficient information submitted to evaluate whether the criterion is met, e.g., blank, incomplete, or information is not relevant, responsive, or specific to the particular question (unacceptable)
Not Applicable (NA) - Not applicable (only an option for a few subcriteria as indicated)

Evaluation ratings of whether the measure met the overall criterion (Steering Committee)
Yes (Y)- The overall criteria has been met
No (N)-The overall criterion has NOT been met
High (H) – There is high confidence (or certainty) that the criterion is met
Moderate (M) – There is moderate confidence (or certainty) that the criterion is met
Low (L) - There is low confidence (or certainty) that the criterion is met

Recommendations for endorsement (Steering Committee)
Yes (Y) – The measure should be recommended for endorsement
No (N)-The measure should NOT be recommended for endorsement
Abstain (A)- Abstain from voting to recommend the measure

TAP/Workgroup Reviewer Name:	
Steering Committee Reviewer Name:	
Staff Reviewer Name(s):	
NQF Review #: 1578	**NQF Project:** Endorsing Resource Use Standards- Phase II

BRIEF MEASURE INFORMATION
Measure Title: Episode of care for 60-day period preceding breast biopsy
Measure Steward (IP Owner): American Board of Medical Specialties Research and Eduction Foundation, 222 N. LaSalle St., Suite 1500, Chicago, Illinois, 60601
Brief description of measure: Resource use and costs associated with breast biopsy. Women with a breast biopsy are identified and the resource use and costs associated with the biopsy in the 60 days preceding the biopsy and the seven days following the biopsy are measured.
Resource use service categories: Inpatient services: Inpatient facility services Inpatient services: Evaluation and management Inpatient services: Imaging and diagnostic Inpatient services: Lab services Inpatient services: Admissions/discharges Ambulatory services: Outpatient facility services Ambulatory services: Emergency Department Ambulatory services: Pharmacy Ambulatory services: Evaluation and management Ambulatory services: Procedures and surgeries Ambulatory services: Imaging and diagnostic Ambulatory services: Lab services
Brief description of measure clinical logic: Resource use and costs associated with breast biopsy. Women with a breast biopsy are identified and the resource use and costs associated with the biopsy in the 60 days preceding the biopsy and the seven days following the biopsy are measured.
If included in a composite or paired with another measure, please identify composite or paired measure:
Subject/ Topic Areas: Cancer
Type of resource use measure: Cost/Resource Use
Data Type: Administrative claims Other

CONDITIONS FOR CONSIDERATION BY NQF	
Four conditions must be met before proposed measures may be considered and evaluated for suitability as voluntary consensus standards:	**NQF Staff**
A. Measure Steward Agreement. *The measure is in the public domain or an intellectual property (measure steward agreement) is signed. Public domain only applies to governmental organizations. All non-government organizations must sign a measure steward agreement even if measures are made publicly and freely available.* **A.1.Do you attest that the measure steward holds intellectual property rights to the measure? (If no, do not submit)** Yes **A.2. Please check if either of the following apply:**	**A** **Y☐** **N☐**

A.3. Measure Steward Agreement. Agreement signed and submitted **A.4. Measure Steward Agreement attached:** Signed_NQFMeasureSteward Agreement_020309-634387016852740521.pdf	
B. Maintenance. *The measure owner/steward verifies there is an identified responsible entity and process to maintain and update the measure on a schedule that is commensurate with the rate of clinical innovation, but at least every 3 years. (If no, do not submit)* Yes, information provided in contact section	**B** **Y☐** **N☐**
C. Purpose/ Use *(All the purposes and/or uses for which the measure is specified and tested:* Quality Improvement (Internal to the specific organization)	**C** **Y☐** **N☐**
D. Testing. *The measure is fully specified and tested for reliability and validity (See guidance on measure testing).* Yes, reliability and validity testing completed	**D** **Y☐** **N☐**
E. Harmonization and Competing Measures. *Have NQF-endorsed measures been reviewed to identify if there are related or competing measures? (List the NQF # and title in the section on related and competing measures)* Yes *E.1.***Do you attest that measure harmonization issues with related measure (either the same measure focus or the same target population) have been considered and addresses as appropriate? (List the NQF # and title in the section on related and competing measures)** No related measures *E.2.Do you attest that competing measures (both the same measure focus and the same target population) have been considered and addressed where appropriate?* No competing measures	**E** **Y☐** **N☐**
F. Submission Complete. *The requested measure submission information is complete and responsive to the questions so that all the information needed to evaluate all criteria is provided.*	**F** **Y☐** **N☐**
Have all conditions for consideration been met? **Staff Notes to Steward** (*if submission returned*)**:**	**Y ☐** **N ☐**
Staff Notes to Reviewers (*issues or questions regarding any criteria*)**:**	
File Attachments Related to Measure/Criteria: Attachment: Attachment: S5_Data Dictionary-634350196352207315.pdf Attachment: Attachment: Attachment: Attachment:	

Attachment:
Attachment:
Attachment:

Attachment: SA_Reliability_Validity Testing BC Biopsy.pdf

IMPORTANCE TO MEASURE AND REPORT	
Extent to which the specific measure focus is important to making significant gains in health care quality (safety, timeliness, effectiveness, efficiency, equity, patient-centeredness) and improving health outcomes for a specific high impact aspect of healthcare where there is variation in performance. **Importance to Measure and Report is a threshold criterion that must be met in order to recommend a measure for endorsement. All subcriteria must be met to pass this criterion.**	**Eval Rating**
High Impact **IM1. Demonstrated high impact aspect of healthcare:** Affects large numbers Frequently performed procedure **IM1.1. Summary of evidence of high impact:** The Institute of Medicine and AQA have identified breast cancer as one of 20 conditions that should be considered priority areas in need of quality improvement based on its relevance to a significant volume of patients, its impact on those patients, and the perception of opportunity to significantly improve the quality and efficiency of related care (1). Breast cancer is the most commonly diagnosed cancer in women and the second leading cause of cancer death in women (2). In the United States there were 182,480 new cases of breast cancer in 2008 with 40,480 deaths (22.2% mortality) (3). Breast cancer is the leading cause of premature mortality among women due to death from cancer, and a leading cause of premature mortality from all causes of death (4). Age adjusted breast cancer mortality rates were congruent between African-American and white women until the early 1980s, but thereafter a continued divergence was evident with higher mortality rates for African-American women (29 vs. 22 cancer deaths per 100,000 woman-years) (5). On average, women in the United States have the highest breast cancer rates in the world: among whites the risk is 141/100,000 and among American-Americans it is 121/100,000 (7). The risk of being diagnosed with breast cancer increases as women age. The 10 year risk of breast cancer diagnosis at age 30 is 1 in 225 (0.4%), increasing to 1 in 25 (4.0%) for women age 70 (8). The health care cost of breast cancer treatment is significant. From 1990-2000 actual United States screening patterns and subsequent treatment accrued 947.5 million quality adjusted life years and cost $166 billion of the over the lifetime of the screened women (7). The total cost of breast cancer treatment alone was $103 billion. The per-patient treatment costs ranged from $12,000 to $27,000 (in year 2000 dollars) depending on the stage at detection of breast cancer (9-11). In a recent study, Mariotto et al. used the most recently available cancer incidence, survival, and medical cost of care data in the United States to estimate and project the national costs of cancer care through the year 2020. Female breast was the cancer site with the highest cost in 2010 at $16.50 billion and is projected to cost $20.50 billion (in 2010 dollars) by the year 2020 (12). Campbell et al, systematically summarized and analyzed the published literature on per-patient costs of breast cancer, finding estimates for the treatment costs of breast cancer vary widely in methodology, perspective, patient populations and time horizon. This review included 29 US cost-of-illness studies for breast cancer. The estimates of lifetime per-patient costs of breast cancer varied widely, ranging from $US20 000 to $US100 000. (13) **IM1.2. Citations for evidence of high impact cited in IM1.1.:** 1. Alliance AQ. Candidate list of conditions for cost of care measurement. Available at: http://www.aqaalliance.org/files/CandidateListofConditionsforCostofCare	**1a** **H☐** **M☐** **L☐** **I☐**

MeasurementApproved.pdf. Accessed April 17, 2011.
2. Cancer Facts & Figures 2006. American Cancer Society, 2006. (Accessed February 7, 2007, at http://www.cancer.org/downloads/STT/CAFF2006Wsecured.pdf.)
3. Vetto JT, Luoh SW, Naik A. Breast cancer in premenopausal women. Curr Probl Surg 2009;46:944-1004.
4. Horner M RL, Krapcho M, et al. SEER Cancer Statistics Review, 1975-2006. Bethesda: National Cancer Institute; 2009.
5. Jatoi I, Anderson WF, Rao SR, Devesa SS. Breast cancer trends among black and white women in the United States. J Clin Oncol 2005;23:7836-41.
6. Reis LAG EM, Kosary CL, Hankey BF. SEER Cancer Statistics Review: 1975-2000. Bethesda: National Cancer Institute; 2003.
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8. Stout NK, Rosenberg MA, Trentham-Dietz A, Smith MA, Robinson SM, Fryback DG. Retrospective cost-effectiveness analysis of screening mammography. J Natl Cancer Inst 2006;98:774-82.
9. Brown ML, Fintor L. U.S. screening mammography services with mobile units: results from the National Survey of Mammography Facilities. Radiology 1995;195:529-32.
10. Farria D, Feig SA. An introduction to economic issues in breast imaging. Radiol Clin North Am 2000;38:825-42.
11. Taplin SH, Barlow W, Urban N, et al. Stage, age, comorbidity, and direct costs of colon, prostate, and breast cancer care. J Natl Cancer Inst 1995;87:417-26.
12. Mariotto AB, Yabroff KR, Shao Y et al. Projections of the cost of cancer care in the United States: 2010-2020. J Natl Cancer Inst. 201;103:117-28.
13. Campbell JD, Ramsey SD. The costs of treating breast cancer in the US: a synthesis of published evidence. Pharmacoeconomics. 2009;27(3):199-209.

IM2. Opportunity for Improvement

IM2.1. Briefly explain the benefits envisioned by use of this measure:

The intent is that the measure will be paired with quality measures to examine the overall efficiency of care being provided for patients undergoing a breast biopsy. This will help to identify regions that may be utilizing best care practices through identification of those that provide 'efficient' care by examining both the resource use as well as the quality of care. It will be necessary to put both of these measures together in order to fully realize the potential of resource use measures. However, in the interim this can be used to compare the relative resource use across different regions to examine patterns in breast biopsy-related healthcare costs. This may provide actionable information if for example one region´s costs are always higher than another because of more frequent use of a more expensive screening technology.

IM2.2. Summary of data demonstrating variation across providers or entities:

Implementation of widespread mammographic screening has contributed to a stage shift for newly diagnosed disease, with an average tumor size at presentation of less than 2cm (1). At least two-thirds of patients are eligible for breast conservation surgery, but rates of mastectomy vary both geographically and institutionally (2).

Given all these treatment options, it is not surprising that the initial treatment for breast cancer varies greatly across the United States (3-5). This variation has been attributed to a host of factors: race, age at time of presentation, socioeconomic status, level of education, and surgeon capabilities (6-8). For example, the highest percentage of patients who received breast conservation therapy as initial treatment was seen in the Northeast (69.9%), while the lowest percentage was seen in the South (57.7%)(9). The literature suggests that the variability in treatment selection is linked to a disparity in survival rates as well (10).

Fisher et al. in a study of , the National Surgical Adjuvant Breast and Bowel Project (NSABP) first published in 1989 and re-analyzed in 1995, found no significant differences in overall survival, disease-free survival, or survival free of disease at distant sites between the patients who underwent total mastectomy and those treated by lumpectomy alone or by lumpectomy plus breast irradiation (11).

In a recent study published by Giuliano et al in February 2011, the authors reported that for women who meet certain criteria (about 20 percent of breast cancer patients, or 40,000 women a year in the United States)-- taking out cancerous nodes has no advantage. The authors found that is did not change the treatment plan, improve survival or make the

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cancer less likely to recur and contributed to complications of infection and lymphedema (12).The findings are part of a trend to move away from radical surgery for breast cancer. Rates of mastectomy, removal of the whole breast, began declining in the 1980s after studies found that for many patients, survival rates after lumpectomy and radiation were just as good as those after mastectomy

Studies have shown that women may not be fully informed about surgical treatment options (13). These concerns have led to laws in 20 states that require surgeons to discuss both breast conserving surgery (BCS) with radiation and mastectomy with patients to ensure informed decisions. Knowledge of the risks and benefits of each alternative is necessary for an informed decision, but studies have shown that low knowledge of the surgical alternatives exist even among those who have been through treatment, and that vulnerable populations may be at a particular disadvantage when it comes to making informed surgery decisions (13). In another study (14), site of care, rather than sociodemographic variables, was the only significant predictor of delay in diagnostic resolution among breast cancer patients from six community health centers (CHC) in Boston. This suggests that timely follow-up may be due to system issues within each of the CHCs, rather than differences in the populations. System issues may reflect resource constraints, and variations in providers' prioritization of services to meet community needs (13).

Breast Cancer Screening:
--Breast cancer screening is a topic of much controversy and variations in recommended screening depending upon the source of guidelines. Since 1997, annual screening for all women aged 40 years and older has been recommended by the American Cancer Society (ACS) and the American College of Radiology (15, 16) .43,44 However, the in 2009, the USPSTF issued guidelines advising against any screening for women in their 40s except for those at very high risk—citing small net benefit for screening women ages 40-49 and concern over false positive results.(17)

--Various studies have found MRI screening can be cost-effective for very high-risk women, such as BRCA carriers, and others at 20% or greater lifetime risk. Further studies are needed to determine whether MRI is cost-effective for those at moderately high (15%–20%) lifetime risk (18-20).

--Widespread implementation in the United States of image-guided core biopsy
instead of open surgical biopsy has occurred since 1990 with various studies showing costs of image-guided core biopsy to be 16% to 33% of those for an open excisional biopsy(21-24)..30–37 It has been estimated that more than one million breast biopsies are performed in the United States yearly, but fewer than 25% prove to be malignant (25). In 1999, Burkhardt and Sunshine estimated that use of image-guided core biopsies instead of open surgical biopsies for all lesions would be equivalent to a cost reduction of about $1.6 billion (26).

IM2.3. Citations for data on variation:

1. Benson JR, Jatoi I, Keisch M, Esteva FJ, Makris A, Jordan VC. Early breast cancer. Lancet 2009;373:1463-79.
2. Locker G SR, Cuzick J. Breast surgery in the ATAC trial: women in the United States are more likely to have mastectomy. Breast Cancer Res Treat 2002;76:S35.
3. Albain KS, Green SR, Lichter AS, et al. Influence of patient characteristics, socioeconomic factors, geography, and systemic risk on the use of breast-sparing treatment in women enrolled in adjuvant breast cancer studies: an analysis of two intergroup trials. J Clin Oncol 1996;14:3009-17.
4. Hiotis K, Ye W, Sposto R, Goldberg J, Mukhi V, Skinner K. The importance of location in determining breast conservation rates. Am J Surg 2005;190:18-22.
5. Nattinger AB, Gottlieb MS, Veum J, Yahnke D, Goodwin JS. Geographic variation in the use of breast-conserving treatment for breast cancer. N Engl J Med 1992;326:1102-7.
6. Kotwall CA, Covington DL, Rutledge R, Churchill MP, Meyer AA. Patient, hospital, and surgeon factors associated with breast conservation surgery. A statewide analysis in North Carolina. Ann Surg 1996;224:419-26; discussion 26-9.
7. Stafford D, Szczys R, Becker R, Anderson J, Bushfield S. How breast cancer treatment decisions are made by women in North Dakota. Am J Surg 1998;176:515-9.
8. Stewart AK, Bland KI, McGinnis LS, Jr., Morrow M, Eyre HJ. Clinical highlights from the National Cancer Data Base, 2000. CA Cancer J Clin 2000;50:171-83.
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10. Skinner KA, Helsper JT, Deapen D, Ye W, Sposto R. Breast cancer: do specialists make a difference? Ann Surg Oncol 2003;10:606-15.
11. Fisher B, Anderson S, Redmond CK, et al. Reanalysis and results after 12 years of follow-up in a randomized clinical

trial comapring total mastectomy with lumpectomy with or without irradiation in the treatment of breast cancer. N Engl J Med 1995;333:1456-61.
12. Giuliano AE, Hunt KK, Ballman KV, et al. Axillary dissection vs no axillary dissection in women with invasive breast cancer and sentinel node metastasis: a randomized clinical trial. JAMA. 2011 Feb 9;305(6):569-75.
13. Hawley, S.T., Fagerlin, A., et al., (2008) Racial/ethnic disparities in knowledge about risks and benefits of breast cancer treatment: Does it matter where you go? Health Services Research, 43(4): 1366-73.
14. Battaglia, T.A., Santana, M.C., et al., (2010) Predictors of timely follow-up after abnormal cancer screening among women seeking care at urban community health centers. Cancer, 116(4): 913-921.
15. Smith RA, Saslow D, Sawyer KA, et al. American Cancer Society guidelines for breast cancer screening: update 2003. CA Cancer J Clin 2003;53:141–69.
16. Feig SA, D'Orsi CJ, Hendrick RE, et al. American College of Radiology Guidelines for breast cancer screening. AJR Am J Roentgenol 1998;171:29–33.
17. US Preventive Services Task Force. Screening for breast cancer: US preventive services task force recommendation statement.AnnInternMed2009;151:716–26.
18. Plevritis SK, Kurian AW, Sigal BM, et al. Cost-effectiveness of screening BRCA 1/2 mutation carriers with breast magnetic resonance imaging. JAMA 2006;295: 2374–84.
19. Lee JM, McMahon PM, Kong CY, et al. Cost-effectiveness of breast MRI imaging and screen-film mammography for screening BRCA 1 gene mutation carriers. Radiology 2010;254:793–800.
20. Taneja C, Edelsberg J, Weycker D, et al. Cost effectiveness of breast cancer screening with contrast- enhanced MRI in high-risk women. J Am Coll Radiol 2009;6:171–9.
21. Howisey RL, Acheson MBG, Rowbotham RK, et al. A comparison of Medicare reimbursement and results for various imaging-guided breast biopsy techniques. Am J Surg 1997;173:395–8.
22. Lind DS, Minter R, Steinbach B, et al. Stereotactic core biopsy reduces the reexcision rate and the cost of mammographically detected cancer. J Surg Res 1998;78:23–6.
23. Rubin E, Mennemeyer ST, Desmond RA, et al. Reducing the cost of diagnosis of breast cancer. Cancer 2001;91:324–32.
24. Cross MJ, Evans WP, Peters GN, et al. Stereotactic breast biopsy as an alternative to open excisional biopsy. Ann Surg Oncol 1995;2:195–200.
25. Nields MW. Cost-effectiveness of image-guided core needle biopsy versus surgery in diagnosing breast cancer. Acad Radiol 1996;3(Suppl 1):S138–40.
26. Burkhardt JH, Sunshine JH. Core-needle and surgical breast biopsy: comparison of three methods of assessing cost. Radiology. 1999 Jul;212(1):181-8.

IM2.4. Summary of data on disparities by population group:

There is a pronounced racial/ethnic and socioeconomic gradient in the continuum of breast cancer care and outcomes, including mammography screening, incidence, stage at diagnosis, survival and mortality.

Investigators have found that disparities in breast cancer related outcomes have narrowed since 1987 (1), but that socially advantaged groups improved at a faster rate. For example, mortality rates declined 10% for African American women from 1992 to 2004, compared with a 22% decrease among white women (1). A large body of literature highlights multiple factors associated with poorer survival among African American and other minority women, including lower rates of mammography screening (2), lack of health insurance (3), later stage at diagnosis (4), disparities in the receipt of stage-appropriate treatment (5), provider variability (6), and a variety of social and cultural factors.

Screening Mammography

Screening mammography is essential for the early detection of breast cancer, and is associated with reduced morbidity and increased survival. The use of mammography is below national guidelines, and there are reports of recent declines in screening rates (7). The Behavioral Risk Factor Surveillance System (BRFSS) interview was used by investigators (2) to examine disparities in screening mammography. They found that during the period of 2000-2005, women in their 40s and those with lower relative incomes were less likely to have been screened. The disparity based on relative income was greater than that based on education or race (2). Other investigators (7) used National Cancer Institute Surveillance,

Epidemiology and End Results (SEER) data to examine screening patterns among women over the age of 64, and Medicare-eligible women from 11 states. They found site-specific contextualizing factors such as community acculturation, and community elderly impoverishment to have significant direct impacts on mammography use. This pattern varied across states, and the authors emphasize that when planning interventions at the community level, a "one size fits all" approach to increasing screening is not appropriate. Local community characteristics need to be taken into consideration for interventions to be effective (7).

In addition, the preventive potential of cancer screening rests on timely diagnostic follow-up once an abnormality has been detected, (8). The time it takes to complete diagnostic evaluation varies widely, with the uninsured or underinsured and racial/ethnic minorities often having the longest delays (8). Other investigators (9) found in a retrospective cohort of 6722 women, that after an abnormal mammogram, African American and Hispanic women had longer times to diagnostic follow-up compared to non-Hispanic white women. It has been suggested that economic, social, and cultural factors may influence delays at each stage of the cancer care continuum (9). In a review of literature, authors (10) categorized barriers to follow-up care after an abnormal screening as patient, provider, and system-related. Patient barriers have been the most extensively examined. Less attention has been paid to provider and system-level impediments (10). Mammography rates also are very low among Asian women. Investigators (11) used data from the 2001 California Health Interview Survey to identify breast cancer screening patterns in Asian women. They found two subgroups that were not compliant with screening guidelines: 1) among women who never had a pap exam, 68% had no mammography, and 2) among women who had pap exam, but had no women's health issues, 62% had no mammogram (11). Language and culturally appropriate outreach to Asian women is needed to increase screening rates. Other researchers (12) found among a sample of Chinese Americans in Washington, D.C., women with a "more Chinese/Eastern cultural view" were significantly less likely to have had regular mammograms, compared to those with a Western cultural view. English language ability was associated with mammogram adherence. More preventive health outreach is needed among immigrant populations.

Lack of Insurance

The slower adoption of screening mammography among lower-income groups may result from a lack of health insurance and a usual source of care (1). Indeed, a "health insurance theory has been advanced to explain social and racial cancer survival gradients," (13, pp.121). A team of Canadian researchers (13), using Ontario and California cancer registries, examined the differential effect of socioeconomic status on the survival of women with breast cancer. They followed stage adjusted cohorts (1998-2000) until 2006, and found SES-breast cancer survival gradients in the U.S., but not in Canada. Canada's more inclusive single payer health care system, which guarantees access to medically necessary care, is the most reasonable explanation for the Canadian advantage in breast cancer survival rates. In a follow-up study (3), Gorey and colleagues (2010) compared extremely poor and affluent neighborhoods in California and Ontario on breast cancer care. They found that "poverty was associated with non-localized disease, surgical and radiation therapy (RT) waits, non-receipt of breast conserving surgery, RT and hormonal therapy, and shorter survival in California, but not Ontario. Extremely poor Ontario women were consistently advantaged on care indices over their California counterparts," (3, pp.157). These findings underscore the need for a more inclusive health care system in the United States.

Later Stage at Diagnosis

Other investigators (4) using National Cancer Institute SEER data from 1995-2004 found that age-adjusted incidence of invasive breast cancer was significantly higher in African American women age <40 than white women. In addition, the investigators (4) found that age-adjusted mortality rates for African American women age < 40 were twice that for white women. In the same study, African American women were significantly more likely to be diagnosed with regional or distant disease, have a lower relative five-year survival rate, and have a higher likelihood of being diagnosed with tumors associated with poorer outcomes. Lastly, African American women were less likely to receive breast cancer surgery (4). Other researchers (14) have shown that African American and Hispanic women are at great risk for regional and distant stage at diagnosis, but the disparity declines with age. Women in high poverty areas are at substantially greater risk for late stage diagnosis. The effects of poverty do not differ by age or across racial/ethnic groups (14).

Other studies also have shown that African American women are more likely to present with tumor characteristics associated with poorer outcomes (1). Tumors that are ER negative, those with poor differentiation, and greater lymph node involvement are more likely in African American women (1). The increased use of tamoxifen from the mid-1980s, which is very effective in treating ER+ tumors, but less so for ER- tumors, may also contribute to slower mortality declines for African American women (1). Another factor affecting breast cancer differences between African American

and white women may be attributed to decreased use of postmenopausal hormone replacement therapy, which declined after the results of the Women's Health Initiative Trial in 2002 implicating estrogen as a tumor promoter. "Given that rates of hormone replacement therapy are lower among African American than white women, larger declines in breast cancer incidence among white women would be expected," (1, pp.128).
Disparities in the Receipt of Stage-Appropriate Treatment

Because cancer care requires a series of treatments, the "failure to transition from one step to the next can result in suboptimal care. Women from underserved populations are less likely to receive radiation therapy, chemotherapy and hormonal therapy than white women"(5). Using a national Medicare database, other investigators (15) found that there were substantial racial disparities in the receipt of radiotherapy (RT) after breast-conserving surgery (BCS) for invasive breast cancer among > 65 year old beneficiaries. Whites were found to be significantly more likely to receive RT than African Americans. The northeast and southern U.S. regions had the lowest rates of RT use among African Americans (15).

IM2.5. Citations for data on disparities cited in IM2.4:

1) Harper, S., Lynch, J., et al., (2009) Trends in area-socioeconomic and race-ethnic disparities in breast cancer incidence, stage at diagnosis, screening, mortality, and survival among women ages 50 years and over (1987-2005). Cancer Epidemiology and Biomarkers Preview, 18(1):121-130.
2) Kim, J. & Jang, S.N. (2008) Socioeconomic disparities in breast cancer screening among US women: Trends from 2000-2005. Journal of Preventive Medicine and Public Health, 41(3):186-94.
3) Gorey, K.M., Luginaah, I.N., et al., (2010) Breast cancer care in Canada and the United States: Ecological comparisons of extremely impoverished and affluent neighborhoods. Health Place, 16(1): 156-163.
4) Baquet, C.R., Mishra, S.I., et al., (2008) Breast cancer epidemiology in blacks and whites: disparities in incidence, mortality, survival rates and histology. Journal of the National Medical Association, 100(5): 480-8.
5) Freedman, R.A., & Winer, E.P. (2008) Reducing disparities in breast cancer care – a daunting but essential responsibility. Journal of the National Cancer Institute, 11(23): 1661-63.
6) Hawley, S.T., Fagerlin, A., et al., (2008) Racial/ethnic disparities in knowledge about risks and benefits of breast cancer treatment: Does it matter where you go? Health Services Research, 43(4): 1366-73.
7) Mobley, L.R., Tzy-Mey, K., et al., (2008) Heterogeneity in mammography use across the nation: Separating evidence of disparities from the disproportionate effects of geography. International Journal of Health Geographics, 7(32):1-18.
8) Battaglia, T.A., Santana, M.C., et al., (2010) Predictors of timely follow-up after abnormal cancer screening among women seeking care at urban community health centers. Cancer, 116(4): 913-921.
9) Press, R., Carrasquillo, O., et al., (2008) Racial/ethnic disparities in time to follow-up after an abnormal mammogram. Journal of Women's Health, 17(6): 923-930.
10) Wujcik, D. & Fair, A.M. (2008) Barriers to diagnostic resolution after abnormal mammography: A review of the literature. Cancer Nursing, 31(5): E16-30.
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12) Liang, W., Wang, J., et al., (2009) Cultural views, language ability, and mammography use in Chinese American women. Health Education and Behavior, 36(6): 1012-25.
13) Gorey, K.M., Luginaah, I.N., et al., (2009) Breast cancer survival in Ontario and California, 1998-2006: Socioeconomic inequity remains much greater in the United States. Annals of Epidemiology, 19(2): 121-124.
14) Campbell, R.T., Xue, L, et al., (2009) Economic, racial and ethnic disparities in breast cancer in the U.S.: Toward a more comprehensive model. Health Place, 15(3): 855-864.
15) Smith, G.L., Shih, Y.C., et al., (2010) Racial disparities in the use of radiotherapy after breast-conserving surgery: A national Medicare study. Cancer, 116(3): 734-41.

IM3. Measure Intent

IM3.1. Describe intent of the measure and its components/ Rationale (including any citations) for analyzing variation in resource use in this way

1c

The intent of the measure is to be able to identify differential resource use among those women undergoing a breast biopsy and identify reasons for these differences. This measure can help to identify differential resource use that can lead to actions intended to reduce the variability in costs.

H☐ M☐ L☐ I☐

IM4. Resource use service categories are consistent with measure construct — **1d**

Refer to IM3.1. & all S9 items to evaluate this criteria.	H☐ M☐ L☐ I☐
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Importance to Measure and Report?*	
Steering Committee: Was the threshold criterion, *Importance to Measure and Report*, **met?** **Rationale:**	Y☐ N☐

SCIENTIFIC ACCEPTABILITY OF MEASURE PROPERTIES

Extent to which the measure, as specified, produces consistent (reliable) and credible (valid) results about the quality of care when implemented.

MEASURE SPECIFICATIONS

S1. Measure Web Page:
Do you have a web page where current detailed measure specifications can be obtained?

Yes
http://www.healthqualityalliance.org/hvhc-project/cost-care-measurement-development

Eval Rating 2a1/2b1

S2. General Approach
If applicable, summarize the general approach or methodology to the measure specification. This is most relevant to measures that are part of or rely on the execution of a measure system or applies to multiple measures.

The ABMS REF episode-based resource use measures were created in an open and transparent manner with input from a wide range of clinical experts, methodologists, health care economists and other stakeholders. The measure development process involved a series of deliberate steps where participating clinicians took into account the natural progression of a condition and existing best practices before carefully considering how to best use administrative claims data to construct the episode. They aimed to identify clinically homogenous populations so that the measures would be sensitive to provider decisions and existing practice protocols for like patients. Workgroup members were then asked to conceptualize the measure specifications based on their combined knowledge of guidelines, evidence, and clinical experience. The workgroups helped to define the denominator, duration, clinically relevant services and attribution of each episode as related to the clinical progression and treatment of the condition. Project staff then worked to translate the concepts into detailed written measure specifications and test the measures on a commercial database. The workgroups subsequently re-convened via a series of conference calls to review data analyses, share expert opinions, consider additional evidence-based literature, revise and finalize the measure specifications. Each measure was developed independently and, as such, they are not summative.

Attachment:

S3. Type of resource use measure:

Per episode

S4. Target Population:

S4.1. Subject/Topic Areas:

Cancer

S4.2. Cross Cutting Areas *(HHS or NPP National health goal/priority)*

Care Coordination
Population Health

S5. Data dictionary or code table
Please provide a web page URL or attachment if exceeds 2 pages. NQF strongly prefers URLs. Attach documents only if they are not available on a web page and keep attached file to 5MB or less.

Data Dictionary:

URL:
Please supply the username and password:
Attachment: S5_Data Dictionary-634350196352207315.pdf

Code Table:

URL:
Please supply the username and password:
Attachment:

S6.Data Protocol (Resource Use Measure Module 1)
The measure developer must determine which of the following data protocol steps: data preparation, data inclusion criteria, data exclusion criteria, and missing data, are submitted as measure specifications or as guidelines. Specifications limit user options and flexibility and must be strictly adhered to; whereas guidelines are well thought out guidance to users while allowing for user flexibility. If the measure developer determines that the requested specification approach is better suited as guidelines, please select and submit guidelines, otherwise specifications must be provided.

Data Protocol Supplemental Attachment or URL:
If needed, attach document that supplements information provided for data protocol for analysis, data inclusion criteria, data exclusion criteria, and missing data (Save file as: S6_Data Protocol). All fields of the submission form that are supplemented within the attachment must include a summary of important information included in the attachment and its intended purpose, including any references to page numbers, tables, text, etc.

URL: http://www.healthqualityalliance.org/hvhc-project/cost-care-measurement-development
Please supply the username and password:
Attachment:

S6.1. Data preparation for analysis
Detail (specify) the data preparation steps and provide rationale for this methodology.

Guidelines : Approach to Data Cleaning:
If a standardized cleaning methodology or logic for the claims data exists, users are encouraged to apply the existing methodology, or conversely, encouraged not to remove data cleaning steps already implemented. If however, organizations impute missing data, we recommend using only non-imputed data.

Rationale: Each organization will be more familiar with the nature of their data therefore any standard cleaning procedures are likely to be appropriate. Imputation can produce unpredictable biases in the results.

S6.2.Data inclusion criteria
Detail initial data inclusion criteria and rationale(related to claim-line or other data quality, data validation, e.g. truncation or removal of low or high dollar claim)

Guidelines : Paid claims with non-missing enrollee identification numbers, primary procedure and diagnosis codes should be included in the measure.
Note: The ABMS REF resource use measures are constructed based on date of service, not date of payment. Therefore, we recommend applying the measures to finalized or "closed" datasets so that complete claims histories during the

measurement period are captured in the data.
Including enrollees with at least 24 months of continuous medical and pharmacy benefit enrollment during the identification year and the measurement year is recommended. However, the measure has been tested on enrollees with at least 320 total days of coverage during each year. If precise information regarding persons' total days of coverage is not available, it is recommended that measure implementers estimate this information to the best of their ability using available data elements (e.g., monthly enrollment indicators). This approach is based on the similar eligibility requirements used by NCQA for HEDIS measure denominators.

S6.3. Data exclusion criteria
Detail initial data exclusion criteria and rationale (related to claim-line or other data quality, data validation, e.g. truncation or removal of low or high dollar claim)

Guidelines : Beyond the standard data cleaning steps, we recommend that claim lines with missing or zero quantity values be set to a quantity of one and claim lines missing enrollee identification variables, primary diagnosis and procedure codes, and service date be eliminated. We also recommend eliminating all rejected or unpaid claims. Because a single provider id could have multiple specialties, we also recommend generating a uniform specialty for all providers by assigning each provider the specialty which is most frequently observed from all their Evaluation and Management visits.

Rationale: Converting missing or zero quantities to a minimum value of 1 allows for the pricing of these services.
Claim lines missing enrollee identifiers, or primary procedure and diagnosis codes cannot be attributed to an individual, and without procedure and diagnosis codes, services cannot be properly identified and categorized. The resource use measures are intended to track costs to the payer, not general or societal costs, so rejected or unpaid claims should be eliminated.
Standardizing the specialty of all providers eliminates the possibility that providers are classified as one specialty for one enrollee and another specialty for others.

S6.4. Missing Data
Detail steps associated with missing data and rationale(e.g., any statistical techniques used)

Guidelines : Users are encouraged to eliminate claim lines missing enrollee identification variables or primary procedure and diagnosis codes. We do not recommend using any imputation methods to replace missing data.

Rationale: Claim lines missing enrollee identifiers cannot be attributed to an individual, and without procedure and diagnosis codes, services cannot be properly identified and categorized. Imputation of missing information could introduce bias into the measure, so we do not recommend the use of imputed data.

S7. Data Type: Administrative claims
Other

S7.1. Data Source or Collection Instrument
Identify the specific data source/data collection instrument (e.g. name of database, clinical registry, collection instrument, etc.)

Sources for administrative claims: commercial databases
Standardized price tables: Users can download tables from the NCQA website (see url below) or use the guidelines in the technical appendix of the written measure specification to create their own standardized prices.

S7.2. Data Source or Collection Instrument Reference
(Please provide a web page URL or attachment). NQF strongly prefers URLs. Attach documents only if they are not available on a web page and keep attached file to 5MB or less)

URL: http://www.ncqa.org/tabid/1092/Default.aspx
Please supply the username and password:
Attachment:

S8.Measure Clinical Logic (Resource Use Measure Module 2)
The measure's clinical logic includes the steps that identify the condition or event of interest and any clustering of diagnoses or procedures. For example, the diagnoses and procedures that qualifies for a cardiac heart failure episode, including any disease interaction, comorbid conditions, or hierarchical structure to the clinical logic of the model. (Some of the steps listed separately below may be embedded in the risk adjustment description, if so, please indicate NA and in the rationale space list 'see risk adjustment details.')

Clinical Logic Supplemental Attachment or URL:
If needed, provide a URL or document that supplements information provided for the clinical framework, co-morbid interactions, clinical hierarchies, clinical severity levels, and concurrency of clinical events

URL: http://www.healthqualityalliance.org/hvhc-project/cost-care-measurement-development
Please supply the username and password:
Attachment:

S8.1. Brief Description of Clinical Framework
Briefly describe your clinical logic approach including clinical topic area, whether or not you account for comorbid and interactions, clinical hierarchies, clinical severity levels and concurrency of clinical events.

Resource use and costs associated with breast biopsy. Women with a breast biopsy are identified and the resource use and costs associated with the biopsy in the 60 days preceding the biopsy and the seven days following the biopsy are measured.

S8.2. Clinical framework
Detail any clustering and the assignment of codes, including the grouping methodology, the assignment algorithm, and relevant codes and rationale for these methodologies.

The measure is focused on women undergoing a breast biopsy during the measurement period. Patients are included in the measure if they have a procedure code for breast biopsy during the measurement period. The first occurring breast biopsy is used as the triggering event for inclusion in the cohort.

The following steps are used to create the clinical framework for the measure.

Identify the measure population

Step 1: Identify patients that meet episode inclusion criteria. Patients will be included in the measure if they have a procedure code for breast biopsy during the measurement period (see also Table BB-A of written measure specification). The first occurring breast biopsy is used as the triggering event for inclusion in the cohort. These CPT codes, present in any field, will be used to identify Breast Biopsy patients during the identification period and group to the episode during the measurement period, regardless of corresponding ICD-9 codes: Fine needle aspiration; without imaging guidance: CPT: 10021; Fine needle aspiration; with imaging guidance: CPT: 10022; Biopsy breast; percutaneous, needle core, not using imaging guidance: CPT: 19100; Biopsy breast; open, incisional: CPT: 19101; Biopsy breast; percutaneous, needle core, using imaging guidance: CPT: 19102; Biopsy breast; percutaneous, automated vacuum-assisted/ rotating biopsy device, using imaging guidance: CPT: 19103; Nipple exploration: CPT: 19110; Excise cyst, fibroadenoma, other benign/malignant tumor aberrant breast tissue, duct lesion nipple/areolar lesion open, male/female, one/more lesions: CPT: 19120; Excise breast lesion identified by preoperative place radiological marker, open; single lesion: CPT: 19125.

Step 2: Identify patients that meet eligibility and continuous enrollment criteria
1. Eligibility
a. Identify benefits during both the measurement year and the identification year
b. To be included persons must have both of the following benefits in both years
i. Medical benefit
ii. Pharmacy benefit
(Do not include persons whose pharmacy benefits are dropped partway through the identification or measurement

period)

2. Continuous enrollment
a. Determine enrollment during both the identification and measurement years
Identify total days of coverage in each year (If precise information regarding persons' total days of coverage is not available, it is recommended that measure implementers estimate this information to the best of their ability using available data elements (e.g., monthly enrollment indicators).
b. To be eligible, persons must have at least 320 total days of coverage during each year

Step 3: Identify patients with exclusion criteria
1. Identify patients that meet one or more exclusion criteria:
a. Males
b. A subsequent biopsy that occurs during the measurement period. Only the first biopsy occurrence is included in the measure.

Step 4: Combine prior steps to identify measure population
1. Identify breast biopsy eligible population
2. Exclude those patients not meeting general inclusion criteria (e.g., continuous eligibility)
3. Exclude those patients meeting one or more measure exclusion criteria
4. The resulting collection of patients is the measure population

Eval Rating 2a1

H☐ M☐ L☐ I☐

Eligible event identification

Resources associated with breast biopsy are identified in the 60 days preceding the biopsy and the seven days following the date of the biopsy.

The same set of codes used to identify inclusion in the breast biopsy measure are also used to identify breast biopsy related resources during the measurement period. These CPT codes, present in any field, will be used to identify breast biopsy related resources during the measurement period regardless of corresponding ICD-9 codes.

Eval Rating 2b1

H☐ M☐ L☐ I☐

For each individual in the measure population, identify the claims for services rendered during the measurement year. Claims / encounters will be identified based on the presence of breast biopsy-related diagnosis codes or procedure codes. These events will be used to determine the breast biopsy-related resource use.

Inpatient hospitalization events

Identify all inpatient hospitalization events with a breast biopsy-related diagnosis codes appearing in the primary diagnosis field (see also Table BB-B in the written measure specification): Nonspecific abnormal findings on radiologic and other examination of body structure, breast: ICD9: 793.8; Diffuse cystic mastopathy: ICD9: 610.1; Mastodynia (breast pain): ICD9: 611.71; Lump or mass in breast:ICD9: 611.72; Signs and symptoms in breast, Other: ICD9: 611.79; Dermatitis: ICD9: 692.9, 691.8; Routine gynecologic exam: ICD9: V72.31; Routine medical exam: ICD9: V70.0; Special screening of the breast: ICD9: V76.1x.

Or

Hospitalizations with an eligible breast biopsy code (see also Table BB-A in the written measure specification): Fine needle aspiration; without imaging guidance: CPT: 10021; Fine needle aspiration; with imaging guidance: CPT: 10022; Biopsy breast; percutaneous, needle core, not using imaging guidance: CPT: 19100; Biopsy breast; open, incisional: CPT: 19101; Biopsy breast; percutaneous, needle core, using imaging guidance: CPT: 19102; Biopsy breast; percutaneous, automated vacuum-assisted/ rotating biopsy device, using imaging guidance: CPT: 19103; Nipple exploration: CPT: 19110; Excise cyst, fibroadenoma, other benign/malignant tumor aberrant breast tissue, duct lesion nipple/areolar lesion open, male/female, one/more lesions: CPT: 19120; Excise breast lesion identified by preoperative place radiological marker, open; single lesion: CPT: 19125.

Outpatient events

Identify all outpatient claims / encounters with a breast biopsy-related diagnostic code appearing in any position (see also Table BB-B in written measure specification): Nonspecific abnormal findings on radiologic and other examination

of body structure, breast: ICD9: 793.8; Diffuse cystic mastopathy: ICD9: 610.1; Mastodynia (breast pain): ICD9: 611.71; Lump or mass in breast:ICD9: 611.72; Signs and symptoms in breast, Other: ICD9: 611.79; Dermatitis: ICD9: 692.9, 691.8; Routine gynecologic exam: ICD9: V72.31; Routine medical exam: ICD9: V70.0; Special screening of the breast: ICD9: V76.1x.

Procedures and laboratory

Identify all claims / encounters with a breast biopsy-related CPT, HCPCs, or ICD-9 procedure code (see also Table BB-C in written measure specification): The CPT codes will be used to identify Breast Biopsy-related services during the measurement period, regardless of corresponding ICD-9 codes: Image guided placement, metallic localization clip, percutaneous, during breast biopsy/aspiration: CPT: 19295; Screening mammography, bilateral [Deleted 2007]: CPT: 76092; Stereotactic localization guidance for breast biopsy or needle placement [Deleted 2007]: CPT: 76095; Ultrasonic guidance for needle placement, imaging supervision and interpretation: CPT: 76942; Stereotactic localization guidance for breast biopsy or needle placement (eg, for wire localization or for injection), each lesion, radiological supervision and interpretation: CPT: 77032; Computer-aided detection (computer algorithm analysis of digital image data for lesion detection) with further physician review for interpretation, with or without digitization of film radiographic images; diagnostic mammography (List separately in addition to code for primary procedure): CPT: 77051; Computer-aided detection (computer algorithm analysis of digital image data for lesion detection) with further physician review for interpretation, with or without digitization of film radiographic images; screening mammography (List separately in addition to code for primary procedure): CPT: 77052; Mammary ductogram or galactogram, single duct, radiological supervision and interpretation: CPT: 77053; Mammary ductogram or galactogram, multiple ducts, radiological supervision and interpretation: CPT: 77054; Mammography; unilateral: CPT: 77055; Mammography; bilateral: CPT: 77056; Screening mammography, bilateral (2-view film study of each breast): CPT: 77057; Magnetic resonance imaging, breast, without and/or with contrast material(s); unilateral: CPT: 77058; Magnetic resonance imaging, breast, without and/or with contrast material(s); bilateral: CPT: 77059; Manual application of stress performed by physician for joint radiography, including contralateral joint if indicated: CPT: 77071; Digital mammography: CPT: G0202, G0204, G0206;

The following codes group to the episode only if present on the day of a biopsy (see also Table BB-D in written measure specification): Anesthesia for procedures on integumentary system on the extremities, anterior trunk and perineum, NOS: CPT: 00400; Anesthesia for procedures on the integumentary system on the extremities, anterior trunk and perineum; reconstructive procedures on breast (eg, reduction or augmentation mammoplasty, muscle flaps): CPT: 00402; Anesthesia for procedures on the integumentary system on the extremities, anterior trunk and perineum; radical or modified radical procedures on breast: CPT: 00404; Anesthesia for procedures on the integumentary system on the extremities, anterior trunk and perineum; radical or modified radical procedures on breast with internal mammary node dissection: CPT: 00406; Code deleted for 2006. To report, see 99143...99145 Sedation with or without analgesia (conscious sedation); intravenous, intramuscular or inhalation: CPT: 99141; Code deleted for 2006. To report, see 99143...99145
Sedation with or without analgesia (conscious sedation); oral, rectal and/or intranasal: CPT: 99142; Moderate sedation services (other than those services described by codes 00100-01999) provided by the same physician performing the diagnostic or therapeutic service that the sedation supports, requiring the presence of an independent trained observer to assist in the monitoring of the patient´s level of consciousness and physiological status; younger than 5 years of age, first 30 minutes intra-service time: CPT: 99143; Moderate sedation services (other than those services described by codes 00100-01999) provided by the same physician performing the diagnostic or therapeutic service that the sedation supports, requiring the presence of an independent trained observer to assist in the monitoring of the patient´s level of consciousness and physiological status; age 5 years or older, first 30 minutes intra-service time: CPT: 99144; Moderate sedation services (other than those services described by codes 00100-01999) provided by the same physician performing the diagnostic or therapeutic service that the sedation supports, requiring the presence of an independent trained observer to assist in the monitoring of the patient´s level of consciousness and physiological status; each additional 15 minutes intra-service time (List separately in addition to code for primary service): CPT: 99145; Moderate sedation services (other than those services described by codes 00100-01999), provided by a physician other than the health care professional performing the diagnostic or therapeutic service that the sedation supports; younger than 5 years of age, first 30 minutes intra-service time: CPT: 99148; Moderate sedation services (other than those services described by codes 00100-01999), provided by a physician other than the health care professional performing the diagnostic or therapeutic service that the sedation supports; age 5 years or older, first 30 minutes intra-service time: CPT: 99149; Moderate sedation services (other than those services described by codes 00100-01999), provided by a physician other than the health care professional performing the diagnostic or therapeutic service that the sedation supports; each additional 15 minutes intra-service time (List separately in addition to code for primary service): CPT: 99150

Prescription drugs

Identify breast biopsy-related medications during the measurement period (see also Table BB-E in written measure specification): Benzodiazepines: alprazolam, bromazepam, chlordiazepoxide, clonazepam, clorazepate, diazepam, lorazepam, medazepam, nordazepam, oxazepam, prazepam: THERCLS or HCPCs: 64; Antibiotics: Include antibiotics within +/- 7 days of biopsy date. Antibiotics are excluded if there is an E&M claim with a diagnosis of an acute respiratory infection during that period (ICD-9 460.x – 466.x): THERCLS or HCPCs: 4, 6, 7, 9, 10, 11, 12, 16, 17, J0200, J0278, J0290, J0295, J0456, J0530, J0540, J0550, J0560, J0570, J0580, J0690, J0692, J0694, J0696, J0697, J0698, J0710, J0713, J0715, J0720, J0744, J1335, J1364, J1580, J1590, J1840, J1850, J1890, J1956, J2020, J2280, J2460, J2510, J2540, J2543, J2700, J2770, J3243, J3260, J3370, S0021, S0032, S0034, S0039, S0040, S0073, S0074, S0077, S0081; Pain medications: THERCLS or HCPCs: 57, 58, 59, 60, 61, 62.

Rationale:
This measure observes variation in resource use during the 60 days prior to breast biopsy with the expectation that much of the variation will be associated with frequency of imaging and other diagnostic studies performed during this period. The measure also looks forward 7 days beyond the date of the breast biopsy to ensure all costs incident to the biopsy are captured (considering issues of claims lag).

The measure is predicated on identifying women undergoing a breast biopsy. While the workgroup considered a measure focused on breast cancer screening it was felt that many of the mechanisms by which women proceed through the pathway of breast cancer screening may be beyond the control of physicians. That is, breast cancer screening programs may be impacted by local public health programs and practices. Additionally, there will be very different levels of resource use and cost depending on the result of the breast cancer screening and because those results are unavailable it makes it difficult to compare all women undergoing breast cancer screening across providers or regions. For these reasons, the workgroup focused on the cohort of women that end up undergoing a breast biopsy and attempted to capture the resource use that led up to the biopsy event.

The key codes for inclusion in the cohort are the presence of procedure codes indicative of a breast biopsy procedure. These codes identify related resources for the entirety of the measurement period. The diagnostic codes that are used to identify related resources are either signs or symptoms of potential breast cancer that may have led to the biopsy, diagnostic codes that could have resulted from other screening activities or routine medical encounters that could have led to the breast biopsy. This last category includes both routine gynecologic and medical exams as both of these were found to be frequent codes that preceded the biopsy event in the measurement development. The workgroup indicated these may represent the visits at which providers recommended further workup depending on screening results.

The imaging related codes are used to identify the screening modalities that led to the breast biopsy. These include various types of screening mammography and were considered to be the source of the largest variation in overall costs associated with breast biopsy. In addition, anesthesia related services on the day of the biopsy are included to capture variation in practice patterns associated with the biopsy.

The final set of included codes are for medications related to the biopsy. Benzodiazepines dispensed during the measurement period are included as these may have been prescribed to treat anxiety associated with the procedure. Both antibiotics and pain medications can be commonly used around the biopsy and were included as part of the measure. Importantly, the antibiotics that are included are time limited and not included if there is a diagnostic code for a respiratory infection during the same time period. Antibiotics used to treat or prevent local infections resulting from the biopsy would likely only occur during the specified time period. If patients have a respiratory infection, the choice was to exclude antibiotics as these treatments were more likely to be associated with the respiratory infection rather than the biopsy event.

S8.3. Comorbid and interactions
Detail the treatment of co-morbidities & disease interactions and provide rationale for this methodology.

We do not provide specifications for co-morbidies and disease interactions.
This is a population level measure associated with screening and diagnosis of patients at risk for breast cancer. The workgroup felt it was unnecessary to risk adjust the measure as co-existing conditions would not impact the work-up. Since the findings were going to be applied at the regional level, there would not be important differences in case mix.

S8.4. Clinical hierarchies
Detail the hierarchy for codes or condition groups used and provide rationale for this methodology.

We do not provide specifications for clinical hierarchies.
The only clinical hierarchies involved in the measure are the stratifications used for reporting. Results are stratified by the age of the patient (<30 yrs, 30+ yrs) as the intensity of the work-up may vary by patient age. Similarly, the work up around the biopsy may be different for patients with a previous history of breast cancer and therefore breast cancer history is used as another stratifying criteria.

S8.5. Clinical severity levels
Detail the method used for assigning severity level and provide rationale for this methodology.

We do not provide specifications for clinical severity levels.
This measure captures resource use before the diagnosis of breast cancer is made and as such clinical severity is not relevant for the measure.

S8.6. Concurrency of clinical events (that may lead to a distinct measure)
Detail the method used for identifying concurrent clinical events, how to manage them, and provide the rationale for this methodology.

We do not provide specifications for concurrency of clinical events.
Each of the measures developed as part of the ABMS measure set was intended as a standalone measure. The measures were not designed to be combined into a single composite measure of resource use for providers. Because the focus during the development of these measures was there eventual pairing with quality measures, each of the measures is considered as a unique measure. Therefore, the concurrency of events and the fact that events may be counted in more than one measure is not an issue. We were not trying to account for the overall resource use of a population but rather focused on resource use within specific cohorts of patients. The relative resource information produced is intended to result in actionable information which is not possible when all of the episodes are combined into a single composite measure.

S9. Measure Construction Logic (Resource Use Measure Module 3)
The measure's construction logic includes steps used to cluster, group or assign claims beyond those associated with the measure's clinical logic. For example, any temporal or spatial (i.e., setting of care) parameters used to determine if a particular diagnosis or event qualifies for the measure of interest.

Construction Logic Supplemental Attachment or URL:
If needed, attach supplemental documentation (Save file as: S9_Construction Logic). All fields of the submission form that are supplemented within the attachment must include a summary of important information included in the attachment and its intended purpose, including any references to page numbers, tables, text, etc.)

URL: http://www.healthqualityalliance.org/hvhc-project/cost-care-measurement-development
Please supply the username and password:
Attachment:

S9.1. Brief Description of Construction Logic
Briefly describe the measure's construction logic.

The following sequence is used to construct the measures:
1. Eligible population identification
2. Identification of related resources
3. Assignment of standardized prices
4. Creation of episode specific strata (if applicable)

S9.2. Construction Logic
Detail logic steps used to cluster, group or assign claims beyond those associated with the measure's clinical logic.

The date of the first occurring breast biopsy during the measurement period is the key date in the identification of related resources. Qualifying resources in the 60 days before the event, on the day of the event and in the 7 days following the event are included. The 60 days preceding the event is intended to capture the work-up leading to the breast biopsy and costs associated with any care that might be related to the symptoms or screening that led to the biopsy. The seven days after the event is used to capture claims associated with the event to avoid missing claims that show up after the event date due to claims lag.

The following steps are used to complete the construction sequence (for specific codes, see Section S8.2 clinical framework of this submission form as well as the written measure specification/technical appendix accessed via URL).

ELIGIBLE POPULATION IDENTIFICATION

The process of identifying patients to be included in the measure is divided into three separate steps, each with multiple sub-steps. The following steps are used for identifying the included population:

Step 1: Identify patients that meet episode inclusion criteria

1. Patients will be included in the measure if they have a procedure code for breast biopsy during the measurement period (see Table BB-A). The first occurring breast biopsy is used as the triggering event for inclusion in the cohort.

Step 2: Identify patients that meet age, eligibility and continuous enrollment criteria

There are no age restrictions associated with this measure

1. Eligibility
a. Identify benefits during both the identification year and the measurement year. To be included persons must have both of the following benefits in both years
i. Medical benefit
ii. Pharmacy benefit

2. Continuous enrollment
a. Determine enrollment during both the identification and measurement years. (To be eligible, persons must have both medical and pharmacy coverage for the measurement period and prior period (do not include persons whose pharmacy benefits are dropped partway through the identification or measurement period).
b. Identify (or estimate) total days of coverage in each year. (If precise information regarding persons' total days of coverage is not available, it is recommended that measure implementers estimate this information to the best of their ability using available data elements (e.g., monthly enrollment indicators).
c. To be eligible, persons must have at least 320 total days of coverage during each year

Step 3: Identify patients with exclusion criteria
1. Identify patients that meet one or more exclusion criteria:
a. Males
b. A subsequent biopsy that occurs during the measurement period. Only the first biopsy occurrence is included in the measure.

Step 4: Combine prior steps to identify measure population
1. Identify breast biopsy eligible population
2. Exclude those patients not meeting general inclusion criteria (e.g., continuous eligibility)
3. Exclude those patients meeting one or more measure exclusion criteria
4. The resulting collection of patients is the measure population

ELIGIBLE EVENT IDENTIFICATION

For each individual in the measure population, identify the claims for services rendered during the measurement year. Claims / encounters will be identified based on the presence of breast biopsy-related diagnosis codes or procedure codes. These events will be used to determine the breast biopsy-related resource use.

Inpatient hospitalization events

Referring to the codes identified in Section S8.2 above, identify all inpatient hospitalization events with a breast biopsy-related diagnosis codes appearing in the primary diagnosis field (see Table BB-B) or hospitalizations with an eligible breast biopsy code (see Table BB-A).

Outpatient events

Referring to the codes identified in Section S8.2 above, identify all outpatient claims / encounters with a breast biopsy-related diagnostic code appearing in any position (see Table BB-B).

Procedures and laboratory

Referring to the codes identified in Section S8.2 above, identify all claims / encounters with a breast biopsy-related CPT, HCPCs, or ICD-9 procedure code (see Tables BB-C, BB-D).

Prescription drugs

Referring to the codes identified in Section S8.2 above, identify breast biopsy-related medications during the measurement period (see Table BB-E).

ASSIGNMENT OF STANDARDIZED PRICES

Standardized prices are calculated for all of the components of care used to treat or manage the patient's condition to ensure that comparisons can be made solely on the basis of differential practice patterns and resource use. Three separate methodologies are used to derive these standardized prices: for inpatient facility charges, for ambulatory pharmacy charges (i.e., prescriptions dispensed outside the inpatient hospital setting), and for all other charges. These standardized prices are then applied to the claims identified as breast biopsy-related. For further details, see section S10.3 below.

CREATION OF EPISODE-SPECIFIC STRATA
Group patients according to the following two strata: 1) age < 30 yrs and = 30 yrs; and 2) presence of breast cancer diagnosis in year preceding measurement year.

S9.3. Measure Trigger and End mechanisms
Detail the measure's trigger and end mechanisms and provide rationale for this methodology.

The first occurring breast biopsy during the measurement period is used as the triggering event for inclusion in the cohort. Resources for that patient are identified during the 60 days preceding the event and the seven days following the event.

Rationale:
The 60 days preceding the event is intended to capture the work-up leading to the breast biopsy and costs associated with any care that might be related to the symptoms or screening that led to the biopsy. The seven days after the event is used to capture claims associated with the event to avoid missing claims that show up after the event date due to claims lag. The events that are captured as part of this episode are time limited and proximal to the biopsy. The measure only includes the first qualifying event during the measurement period to avoid differences in the resource use for individuals that may have more than one biopsy during the measurement period.

S9.4.Measure redundancy or overlap
Detail how redundancy and overlap of measures can be addressed and provide rationale for this methodology.

We do not provide specifications for measure redundancy or overlap.
The measures developed by ABMS REF were developed as standalone measures to address all relevant services associated with a particular health care condition. Collectively, the measures do not sum-up to a single total and there is the potential for overlap and redundancy to occur when multiple measures are applied simultaneously.

S9.5.Complementary services
Detail how complementary services have been linked to the measure and provide rationale for this methodology.

We do not provide specifications for linking complementary services.
All services included in the measure are included based on the presence of diagnosis codes, procedure codes, or medications.
Services are identified based on presence of qualifying codes. There is no effort to link complementary services to the episode. The strategy for all of our measures was to rely on the presence of codes to qualify for inclusion in the episode rather than to make assumptions about temporal or other associations between events.

S9.6.Resource Use Service Categories

Inpatient services: Inpatient facility services
Inpatient services: Evaluation and management
Inpatient services: Imaging and diagnostic
Inpatient services: Lab services
Inpatient services: Admissions/discharges
Ambulatory services: Outpatient facility services
Ambulatory services: Emergency Department
Ambulatory services: Pharmacy
Ambulatory services: Evaluation and management
Ambulatory services: Procedures and surgeries
Ambulatory services: Imaging and diagnostic
Ambulatory services: Lab services

S9.7.Identification of Resource Use Service Categories
For each of the resource use service categories selected above, provide the rationale for their selection and detail the method or algorithms to identify resource units, including codes, logic and definitions.

At the claim line level, the user should identify all relevant codes specified in the clinical framework Section 8.2 above (see also written measure specification). For inpatient services, these include all relevant ICD9, DRG v24, DRGv25, CPT codes; for ambulatory services, these in clued all relevant ICD9, and CPT codes; for procedures and laboratory these include all relevant ICD9 procedure codes, HCPCs, and CPT codes, and for prescription drugs, these include relevant HCPCs and NDCs.

The above categories were selected because they represent the vast majority of resource use for the episode and the measure developers examined the distribution of costs between categories to evaluate the face validity of the measure. Developers also reasoned that resource use variation between providers by category would be informative. Please refer to Section S8.2 Clinical Framework for the algorithms used to identify/assign some services.

Measure developers also applied the Berenson-Eggers Types of Service (BETOS) system which categorizes all HCPCS codes into resource use areas (e.g. Evaluation and Management, Procedures, Imaging, etc). In addition to the BETOS category there is an additional category included for medications related resource use that is determined using pharmacy data and HCPCs.

Rationale: The BETOS classification system is a widely used, publically available system for classifying healthcare services. These categories can be used to examine cost patterns across providers to identify differences across the different categories of service. This system provides a sufficient number of categories to make meaningful comparisons across patterns of resource use and yet is not too broad so as not to be able to draw conclusions based on differences. Furthermore, identification of important differences allows users to drill down within those categories to identify cost drivers within BETOS categories that may ultimately provide actionable information for providers.

If needed, provide specifications URL (preferred) or as an attachment:

URL:
Please supply the username and password:
Attachment:

S9.8. Care Setting; *provides information on which care settings the measure encompasses.*

Ambulatory Care : Ambulatory Surgery Center (ASC)
Ambulatory Care : Clinic/Urgent Care
Ambulatory Care : Clinician Office
Hospital/Acute Care Facility
Imaging Facility
Laboratory
Pharmacy

S10.Adjustments for Comparability (Resource Use Measure Module 4)
External factors can mingle and affect or confound a measure's result. Confounding occurs if an extraneous factor causes or influences the outcome (e.g., higher resource use) and is associated with the exposure of interest (e.g., episode of diabetes with multiple co-morbidities). Measure developers often include steps to adjust the measure to increase comparability of results among providers, employers, and health plans.

S10.1. Risk adjustment method
Define risk adjustment variables and describe the conceptual, statistical, or other relevant aspects of the model and provide rationale for this methodology.

This measure is not risk adjusted.
This is a population level measure associated with screening and diagnosis of patients at risk for breast cancer. The workgroup felt it was unnecessary to risk adjust the measure as co-existing conditions would not impact the work-up. Since the findings were going to be applied at the regional level, there would not be important differences in case mix.

If needed, provide supplemental information via a web URL (preferred) or attachment with the risk adjustment specifications.

URL:
Please supply the username and password:
Attachment:

S10.2. Stratification Method
Detail the stratification method including all variables, codes, logic or definitions required to stratify the measure and rationale for this methodology

Patients are stratified on two criteria: 1) age < 30 yrs and = 30 yrs; and 2) presence of breast cancer diagnosis in year preceding measurement year

Rationale:

Both of the stratification criteria group women based on the likely intensity of the screening and work-up that will occur during the measurement period. Screening and diagnostic practices may be quite different for young women for which routine screening mammographies are not recommended. Therefore the measure is stratified based on those less than 30 years old and those 30 years and older. Additionally, women that had a prior breast cancer diagnosis also would likely have different resource use patterns than women that have never been diagnosed with breast cancer previously. Therefore these women are included in a separate strata. This is again done to avoid grouping women that will likely have substantially different resource use patterns.

S10.3. Costing Method

Detail the costing method including the source of cost information, steps to capture, apply or estimate cost information, and provide rationale for this methodology.

Standardized prices are calculated for all of the components of care used to treat or manage the patient's condition to ensure that comparisons can be made solely on the basis of differential practice patterns and resource use. Three separate methodologies are used to derive these standardized prices: for inpatient facility charges, for ambulatory pharmacy charges (i.e., prescriptions dispensed outside the inpatient hospital setting), and for all other charges. These standardized prices are then applied to the claims identified as related.

Standard Cost Calculation

Step 1 Identify all claims paid for services rendered during the measurement period and with positive non-zero paid amounts for all patients, regardless as to whether they have been included in the measure population (rejected or unadjudicated claims should be dropped). Categorize these claims as follows (in accordance with the BETOS classification process):

- Inpatient Facility (services provided by a facility during an acute inpatient hospital stay, standard price includes room and board and ancillary services)
- Ambulatory Pharmacy (ambulatory prescriptions included in a member's pharmacy benefit)
- All other (E&M, procedures, imaging, tests, DME, other, and exceptions/unclassified)

Step 2 For each category identified, compute standardized prices. Refer to each service category's instructions (i.e., Calculating Standard Units of Service and Total Standard Cost) below.

Step 3 Combine standardized prices with eligible events (e.g., through a file merge as specified in each service category's instructions).

Step 4 For each individual claim, multiply the standardized price by the number of service units identified on the claim to determine the full cost of the service, hospitalization, or prescription.

Calculating Standard Units of Service and Total Standard Cost: Inpatient Facility

For inpatient facility costs, standardized prices are developed at the diagnosis-related group (DRG) level and – for those hospitalizations where DRG-level information is unavailable – at the ADSC level. Each is adjusted for length-of-stay (LOS) so as to more closely mirror the payment systems typically applied among commercial health plans. Both approaches use RRU HEDIS standardized daily price tables developed by NCQA. All inpatient facility costs are considered "acute" for this analysis.

Step 1 Identify all inpatient stays that occurred during the measurement period. Include stays that may have started before the measurement period or ended after the close of the measurement period. Define a single, unique record describing the member's inpatient stay.

Step 2. Identify the primary discharge DRG. Also identify the DRG version (e.g., CMS-DRG vs. MS-DRG). Care must be taken in using the standardized price tables (specified below) to insure the data and the tables use the same DRG version.

Step 3 Compute the stay's total LOS in days, using paid or expected-to-be-paid days only. Include all paid days in the LOS calculation, whether or not they fall outside the measurement period. Also identify the stay's LOS group based on the stay's LOS and the information below.

LOS (Days)	LOS GRP
1	A
2	B
3-4	C
5-6	D
7-8	E
9-15	F
16 or more	G

Step 4 Compute the LOS per diem multiplier. If the inpatient stay falls completely within the measurement period, use the total number of paid days as the per diem multiplier. If the inpatient stay does not fall completely inside the measurement period, count only the days within the measurement period (including the last day of the period) to compute the per diem multiplier.

Step 5 Download the HEDIS RRU standardized daily price tables from the NCQA website (http://www.ncqa.org/tabid/1092/Default.aspx) for the corresponding measurement periods. Note that there is a one period lag in the file and data periods (i.e. files designated 2007 are based on 2006 data). Some periods may have two sets of tables if there is a significant change in DRG versions. Note: The project staff worked in collaboration with NCQA in development of this methodology for purposes of testing the initial set of measures. Users of the measures may wish to implement their own methodology that does not rely on a price list from NCQA.

Step 6 Calculate the DRG-specific per-diem payment rate by adjusting the standard daily prices for inflation to a reference period using the medical care component of the Consumer Price Index (CPI).

Step 7 Combine DRG-specific per-diem payment rates with the dataset containing eligible inpatient hospital events for the measure. For each event, multiply the per-diem payment rate by the event's LOS per diem multiplier to determine the event's total standard cost.

Total standard costs will not be computed using this approach for stays that have not been assigned a DRG, and for DRGs that are not assigned a standard price by HEDIS. These stays will be assigned a standard price using the ADSC method described below. (Note: Figures presented in this example are arbitrary and do not reflect any particular dataset or patient. Additionally, the DRG XXX is intended to be used as an illustrative example for calculating inpatient costs. Only DRGs related to the episode should be included in this calculation).

Example:

Assume the calculated DRG-specific per-diem payment rate for DRG XXX for FY 2007 is $900.17. An eligible member had an inpatient stay with the following characteristics:
- A principal diagnosis with an eligible ICD-9 code
- A DRG of XXX (DRG associated with an eligible inpatient stay for the episode)
- Date of admission of February 2, 2007 and date of discharge of February 9, 2007 (fiscal period 2007)
- A LOS of 8 days, and therefore a LOS per diem multiplier of 8 days

This event has a calculated total standard cost of $900.17 x 8 = $7,201.36.

Example:

Again assume the calculated DRG-specific per-diem payment rate for DRG XXX for FY 2007 is $900.17. An eligible member had an inpatient stay with the following characteristics:
- A principal diagnosis with an eligible ICD-9 code
- A DRG of XXX (DRG associated with an eligible inpatient stay for the episode)
- Date of admission of December 28, 2006 and date of discharge of January 2, 2007 (fiscal period 2007)
- A LOS of 6 days, and a LOS per diem multiplier of 2 days (January 1-2).

This event has a calculated total standard cost of $900.17 x 2 = $1,800.34.

Step 8 If DRG information is not available for a given inpatient hospitalization a method must be used that assigns prices to those hospitalizations. The methodology used in testing the initial development of the measures was to assign an Aggregate Diagnostic Service Category (ADSC) for the stay using the principal discharge diagnosis. To assign ADSC, download the ADSC Table (Table SPT-INP-ADSC) from the NCQA Web site (http://www.ncqa.org/tabid/1092/Default.aspx) and match the principal ICD-9-CM Diagnosis code from the discharge claim to an ADSC. If the claim does not contain a DRG and the primary ICD-9-CM Diagnosis code is invalid or missing, map the inpatient stay to the ADSC Table's MISA category. An alternative would be to create average prices from the dataset the measures are being implemented for each of the ADSC categories and discharge ICD-9-CM codes and assign those prices to missing hospitalizations.

Step 9 Determine if the member underwent major surgery during the inpatient stay. If this information is not available within the dataset, this may be determined using the list of codes included in a table from the NCQA Web site (Maj-

Surg Table). Flag eligible members if one procedure code in the Maj-Surg-Table is present from any provider during the time period defined by the admission and discharge dates.

Step 10 Match each ADSC, LOS per diem multiplier, and major surgery flag assignment for the stay to a value in the Table SPT-INP-ADSC to obtain the assigned standard price. For each event, multiply the per-diem payment rate by the event's LOS per diem multiplier to determine the event's total standard cost. As with the DRG method, the ADSC standard prices must be adjusted for inflation to a reference period using the CPI. Between this ADSC methodology and the previously described DRG-based methodology, each inpatient hospital stay should now have an associated standardized price.

Example:

An eligible member had an inpatient stay with the following characteristics:
- A principal diagnosis for an eligible event assigned to ADSC category Respiratory-C (RESC)
- No available valid DRG information
- Date of admission of February 2, 2007 and date of discharge of February 9, 2007
- A LOS of 8 days, and therefore LOS group E
- A major surgery event during the stay

Using Sample Table SPT-INP-ADSC, we determine this event has a standard per-diem payment rate of $1,474.00. Therefore this event has a calculated total standard cost of $1,474 x 8 = $11,792.

Calculating Standard Units of Service and Total Standard Cost: Ambulatory Pharmacy

For ambulatory pharmacy-related costs, standardized prices are developed at the NDC level, adjusted for days supply.

Step 1 Identify all pharmacy services that occurred during the measurement period. The following pharmacy services should also be included:
- Prescriptions that may have been dispensed before the measurement period and had days supply that extended into the measurement period (e.g., a prescription with a dispensed date of December 15, 2007 and 30 days supply would extend 13 days into the measurement period beginning January 1, 2008)
- Prescriptions that may have been dispensed during the measurement period and had days supply that extended into the following period (e.g., a prescription with a dispensed date of December 20, 2008).

Define a single, unique record describing the pharmacy service.

Step 2 Identify the NDC code and the days supply for each prescription, whether or not some days fall outside the measurement period.
If the days supply is not available for a given pharmacy claim, set the claim's standard cost to be equal to its listed payment amount.

Step 3 Compute the days supply per diem multiplier. If the prescription's days supply fall completely within the measurement period, use the claim's listed days supply as the per diem multiplier. If the prescription's days supply do not fall completely inside the measurement period, count only the days within the measurement period (including the last day of the period) to compute the per diem multiplier.

Step 4 For each NDC, calculate the total NDC-specific payments and the total days supply across all pharmacy claims within that NDC during the measurement period. Using these totals, calculate NDC-specific per-day-supply payment rates by dividing total NDC-specific payments by total days supply for each NDC.

Step 5 Combine NDC-specific per-day-supply payment rates with the dataset containing eligible pharmacy events for the measure. For each event, multiply the per-day-supply payment rate by the event's days supply per diem multiplier to determine the event's total standard cost.

Calculating Standard Units of Service and Total Standard Cost: All Other

For all non-inpatient hospital, non-pharmacy costs, standardized prices are developed at the procedure code and modifier level.

Step 1 Identify all non-inpatient hospital, non-pharmacy services that occurred during the measurement period.

Step 2 Identify the primary procedure code (CPT, HCPCs, ICD-9, etc.) and the first modifier code for each service.

Step 3 For each procedure-modifier combination, calculate the total procedure/modifier-specific payments across all non-inpatient-hospital, non-pharmacy claims with that procedure-modifier combination as well as the frequency of the procedure-modifier combination during the measurement period. Calculate procedure/modifier-specific payment rates by dividing total procedure/modifier-specific payments by the frequency for each procedure-modifier combination.

Example:
Assume that there are 3 non-inpatient-hospital, non-pharmacy claims during the measurement period with the following characteristics:
Patient: 1111, Procedure (CPT-4): 71010, Modifier: Date: 2/1/2007, Payment: $21
Patient: 1111, Procedure (CPT-4): 72240, Modifier: TC, Date: 2/18/2007, Payment: $90
Patient: 2222, Procedure (CPT-4): 71010, Modifier: Date: 1/5/2007, Payment: $25

For the procedure/modifier combination: 71010
The total payment is $21 + $25 = $46
The total frequency is 2
Therefore the procedure/modifier-specific payment rate is $46/2 = $23
For the procedure/modifier combination: 72240/TC
The total payment is $90
The total frequency is 1
Therefore the procedure/modifier-specific payment rate is $90/1 = $90

Step 4 Combine procedure/modifier-specific payment rates with the dataset containing eligible non-inpatient-hospital, non-pharmacy events for the measure so that each procedure-modifier combination is paired with its corresponding payment rate. This payment rate is the event's total standard cost.

Calculation of total individual episode costs

The resource use identified as diabetes-related– and to which standardized prices have been applied (i.e., the collection of eligible events) – is used to calculate individual level episode costs. The following steps are used in the calculation of total individual level costs.

Step 1: For each individual included in the episode, sum all of the total standard costs linked to diabetes-related events occurring during the measurement period at the BETOS service category level. This will provide an estimate of the costs of each category of service over the measurement period.

Step 2: For each individual in the episode, sum ALL total standard costs linked to diabetes-related events to calculate TOTAL episode costs.

Step 3: Exclude individuals that do not have positive, non-zero costs (e.g. outpatient visit, hospitalization, medication use) during the measurement period.

Rationale for costing method

We used standardized prices to estimate the costs for all components of care in the claims data that a patient received data during the measurement period. Because costs in claims data reflect both the quantity and mix of services delivered as well as the prices paid for those services, some of the cost variation is due to price differences across providers (Thomas et al., 2005). Variations in cost data among organizations and over time can obscure real cost differences (Ritzwoller, et al., 2004) and impede comparisons across providers. To ensure that comparisons are made on the basis of differences in practice patterns and resource use, we developed standardized prices, such that a given service would have the same price across all providers (Thomas et al., 2005). We used separate methods to estimate standardized price that were used to calculate for inpatient facility costs, pharmacy costs, and cost for all other care.
For the inpatient facility use, we developed standardized prices using diagnosis-related group (DRG) information. For hospitalizations without DRG-level information, we used aggregate diagnostic service category (ADSC) level information. In each case, we adjusted for length-of-stay (LOS) during the measurement period so as to more closely

mirror the payment systems typically applied among commercial health plans. Both approaches use relative resource use (RRU) HEDIS standardized daily price tables developed by NCQA. We worked in collaboration with NCQA in development of this methodology; however, users of the measure may need to implement their own methodology that does not rely on a price list from NCQA.
For pharmacy use, we determined the days supply for each medication that was dispensed during the measurement period identified by a unique national drug code (NDC). We calculated a standardized price per diem for each NDC in our data by dividing the total payments in the claims data by the total days supply in the claims data for that NDC. We then estimated patient's pharmacy costs by multiplying the standardized price per diem for each NDC by the patient's days supply during the measurement period for that NDC. Standardized prices for pharmacy was estimated using this approach rather than an average whole price (AWP) because the AWP is not defined by law or regulation and does not reflect discounts obtained by most purchasers. As a result, the ultimate price paid by purchasers is often significantly lower than the AWP (Pereira, 2005).
For all other use, we identify the primary procedure code (CPT, HCPCs, ICD-9, etc.) and the first modifier code for each service. We calculated a standardized price for each procedure/modifier by dividing the total procedure/modifier-specific payments by the frequency for each procedure/modifier combination in the claims data. We then applied this standardized price to each patient's procedure/modifier combination that occurred during the measurement period. This approach allowed for a consistent methodology to be applied to each procedure/modifier combination in the claims data to achieve the same price for a service across all providers.

References:
Pereira BJG. Medicare Prescription Drug, Improvement and Modernization Act: Average Wholesale Price (AWP) Medscape Nephrology.2005;2(1)

Ritzwoller DP, Goodman MJ, Maciosek MV, Lafata JE, Meenan R, Hornbrook MC, Fishman PA. Creating Standard Cost Measures Across Integrated Health Care Delivery Systems. J Natl Cancer Inst Monogr 2005;35:80 – 87

Thomas JW, Grazier KL, Ward K. Economic Profiling of Primary Care Physicians: Consistency among Risk-Adjusted Measures. Health Services Research. 2004;39(4):985- 1004

S11. Measure Reporting (Resource Use Measure Module 5)
The measure developer must determine which of the following Measure Reporting functions: attribution approach, peer group, outliers and thresholds, sample size, and benchmarking and comparative estimates, are submitted as measure specifications or as guidelines. Specifications limit user options and flexibility and must be strictly adhered to; whereas guidelines are well thought out guidance to users while allowing for user flexibility. If the measure developer determines that the requested specification approach is better suited as guidelines, please select and submit guidelines, otherwise specifications must be provided.

S11.1. Detail attribution approach
Detail the attribution rule(s) used for attributing costs to providers and rationale for this methodology (e.g., a proportion of total measure cost or frequency of visits during the measure's measurement period) and provide rationale for this methodology.

Measurement and attribution will take place at the regional level.

Through administrative data we are unable to identify cancer stage at diagnosis, one of the key determinants of what are considered appropriate treatment patterns. Also, it cannot be assumed that two individually attributed physicians would have comparable distributions of cancer stage within a given measurement period (such that two physicians could be justifiably compared on the basis of the measure). Moreover, the supply of breast cancer screening patients is largely public-health driven and the care provided in this context is typically at the community level. For this reason, and until cancer staging information is more readily available this measure's attribution is at the region level rather than the individual physician level.

S11.2.Identify and define peer group
Identify the peer group and detail how peer group is identified and provide rationale for this methodology

Guidelines : For this measure, peer groups are other geographic regions in the United States.

Rationale:
This measure is summarized at the regional level and as such resource use can be compared across regions

S11.3. Level of Analysis:

Population : National
Population : Regional

S11.4.Detail measure outliers or thresholds
Detail any threshold or outlier rules and decisions based on measure resource use and provide rationale for this methodology

Guidelines : Total observed episode costs are winsorized at the 2nd and 98th percentile, but claim line outliers are not removed and the use of risk adjusted results are intended to correct for any extreme outliers. The only exception is inpatient admissions. Extremely high admissions costs are winsorized at the 99th percentile (i.e. any value higher than the 99th percentile are set to the 99th percentile cost).

Rationale: Winsorizing and risk adjustment limits the influence of outliers. Episodes with extremely high admission costs skews mean costs for the entire episode. Winsorizing admissions at the 99th percentile reduces this effect without eliminating information on the distribution of total episode costs.

S11.5.Detail sample size requirements
Detail the sample size requirement including rules associated with the type of measure

We do not provide specifications or guidelines for sample size requirements : The ABMS REF episode-based resource use measures do not randomly sample enrollees nor do we recommend that implementers construct measures from a random sample. Regarding the issue of sample size determination. It is well known that the nature of resource use measurement at the level of individual providers will often lead to unstable estimations. There have been a number of efforts to derive a single number for which such measures might be stable enough for comparison of providers or individual providers over time. Yet to date there is no commonly accepted minimum. At this time we have not attempted to derive a minimal sample size for measure use.

S11.6.Define benchmarking or comparative estimates
Detail steps to produce benchmarking and comparative estimates and provide rationale for this methodology

Guidelines : The resource use identified as breast biopsy-related– and to which standardized prices have been applied (i.e., the collection of eligible events) – is used to calculate individual level episode costs. The following steps are used in the calculation of total individual level costs.

Step 1: For each individual included in the episode, sum all of the total standard costs linked to breast biopsy-related events occurring during the measurement period at the BETOS level. This will provide an estimate of the costs of each category of service over the measurement period.

Step 2: For each individual in the episode, sum ALL total standard costs linked to breast biopsy-related events to calculate TOTAL episode costs.

Step 3: Identify all individuals included in the episode within a region.

Step 4: Calculate the summary statistics for total episode costs at the regional level (eg. average episode costs, median episode costs)

S12.Type of Score:

Continuous variable

If available, please provide a sample report:

S12.1. Interpretation of Score.
(Classifies interpretation of score (s) according to whether higher or lower resource use amounts is associated with a higher or lower score, a score falling within a defined interval, or a passing score, etc)

The ´score´ calculated for the measure is the average cost of an episode within a region. These can then be compared across regions. This is a continuous variable that can be compared with parametric tests. Higher scores are indicative of higher costs per episode.

Rationale:
The score is simply interpreted as the average episode cost for a breast biopsy within a region. Because the focus of this measure is on resource use and the level of measurement is at the regional level, costs are simply summarized at that level.

S12.2. Detail Score Estimation
Detail steps to estimate measure score.

The resource use identified as breast biopsy-related– and to which standardized prices have been applied (i.e., the collection of eligible events) – is used to calculate individual level episode costs. The following steps are used in the calculation of total individual level costs.

Step 1: For each individual included in the episode, sum all of the total standard costs linked to breast biopsy-related events occurring during the measurement period at the BETOS level. This will provide an estimate of the costs of each category of service over the measurement period.

Step 2: For each individual in the episode, sum ALL total standard costs linked to breast biopsy-related events to calculate TOTAL episode costs.

Step 3: Identify all individuals included in the episode within a region.

Step 4: Calculate the summary statistics for total episode costs at the regional level (eg. average episode costs, median episode costs)

S12.3. Describe discriminating results approach
Detail methods for discriminating differences (reporting with descriptive statistics--e.g., distribution, confidence intervals)

Results are intended to be reporting regionally with appropriate statistics for a continuous variable. Reported results should include measures that describe the distribution of costs. These should include the number of episodes and summary statistics for the costs of the episode which include average, standard deviation, minimum, maximum, median, 5th percentile, 25th percentile, 75th percentile and the 95% percentile.

TESTING/ANALYSIS	
Measure testing must demonstrate adequate reliability and validity in order to be recommended for endorsement. Testing may be conducted for data elements and/or the computed measure score. See guidance on measure testing.	**Eval Rating**
TESTING ATTACHMENT (5MB or less) or URL: *If needed, attach supplemental documentation (Save file as: SA_Reliability_Validity Testing) All fields of the submission form that are supplemented within the attachment must include a summary*	

of important information included in the attachment and its intended purpose, including any references to page numbers, tables, text, etc.

URL:
Please supply the username and password:
Attachment: SA_Reliability_Validity Testing BC Biopsy.pdf

SA1. Reliability Testing
For each module tested or for the overall measure score:

SA1.1. Data/sample
(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)

Thomson Reuter´s Marketscan Dataset was used in the testing of the ABMS REF episode-based resource use measures.

The MarketScan Commercial Database provides a rich, comprehensive source of longitudinal administrative claims data, offering the largest convenience sample available in proprietary databases with over 30 million covered lives in each of the three most current years of data. The MarketScan Commercial Claims and Encounters (Commercial) Database is constructed from data contributed from over 100 medium and large size employers and health plans, representing over 130 unique carriers. The MarketScan Databases' large sample size constitutes a nationally representative data sample of the U.S. population under the age of 65 with employer-sponsored health insurance.

The stability of MarketScan data sources provides superior continuity of patients over multiple years, generally longer than other claims databases because the majority of the MarketScan data are sourced from large employers. As long as individuals remain with the same employer, they can be tracked across health plans.

Features of the MarketScan Research Databases include:
- Fully paid and adjudicated claims including inpatient, outpatient, and prescription drug claims
- Complete payment/charge information, including amount of patient responsibility
- Validated diagnosis, procedure, and other standard codes on claims where applicable (CPT, ICD-9, DRG, NDC, etc)
- Demographic information on enrollees including age, gender, and geographic information (three-digit zip codes and MSA)
- Plan-type identifiers in the database include major medical, comprehensive, PPO, EPO, HMO, consumer-driven health plan, capitated or part-capitated POS and non capitated POS
- Standardized data elements and definitions, ensuring accurate comparisons
- Clinical data enhancements, such as Therapeutic Class and Generic Product Identifiers on drug records, and Major Diagnostic Categories and Diagnosis Related Groups on inpatient and outpatient records
- Case records linking all of the hospital, physician, and ancillary services provided during an inpatient stay, allowing for comparisons based on such statistics as average length of stay, cost per admission, etc.

These data reflect the real world of treatment patterns and costs by tracking millions of patients as they travel through the healthcare system, offering detailed information about all aspects of care. Data from individual patients are integrated from all providers of care, maintaining all healthcare utilization and cost record connections at the patient level.

2a2

SA1.2. Analytic Methods
(Describe method of reliability testing and rationale)

The iterative development process that was employed in defining the episode of care resulted in episode measures being examined and modified several different times. As the workgroup would suggest changes to the specifications, modifications would be made in the programming language to reflect these changes. This would allow us to examine the reliability of our implementation of the episode measures as we would not anticipate large changes in the observed costs with only small changes in the logic of the episode measure. For example, if we added a new diagnosis code to our episode that only had a small number of associated claims in our Level 1 analysis we would not expect large changes in the overall cost of the episode. Conversely, if large changes were made in the logic of the episode we would

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expect similar changes in the overall resource use and cost. In addition, our focus on defining condition specific episodes that are not intended for combining into a single composite measure could result in improved reliability relative combining condition episodes into a single profile for a provider where reliability of physician profiling was wide ranging (Adams et al. NEJM 2010)

Citation: Adams JL, Mehrota A, Thomas JW, McGlynn EA. Physician cost profiling – reliability and risk of misclassification. N Engl J Med 2010;362:1014-1021.

SA1.3.Testing Results
(reliability statistics, assessment of adequacy in the context of norms for the test conducted)

The iterative modification of measure specifications resulted in several runs of the episode programming. Comparisons between results showed expected changes in overall resource use. The addition of a new diagnosis code that was previously included as unrelated but only had a minimal number of claims associated with it did not change the overall results associated with the episode.

SA1.4.Finding statement(s)—*(i.e., is the measure deemed reliable, limitations identified)*

We were able to produce consistent results within the episode.

SA2.Validity Testing
For each module tested or for the overall measure score:

SA2.1. Data/Sample
(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)

See section SA1.1 for description of Thomson Reuters Marketscan dataset.

SA2.2.Analytic Method
(Describe method of validity testing and rationale; if face validity, describe systematic assessment)

The iterative process of developing the specification with the clinical workgroup represented as assessment of the face validity of the results. Summary findings from the specifications would be presented to the workgroup to determine if results met their expectations or if there were modifications that were necessary. Specifically, the workgroup would assess whether the type of care being included in the measure would make sense in terms of the clinical condition. Moreover, the most frequently and highest cost services that were not related to the episode but were appearing in the data would also be examined. If there were services in this grouping that belonged in the related list modifications would be made. This was facilitated by the Level 1 and Level 2 testing that was done as part of the measure evaluation process.

Validity testing focused primarily on face validity. Initial testing included:
Level 1 analyses
- Examined impact of inclusion/exclusion criteria on episode denominator
- Examined total episode spending by type of service
- Identified top 20 "condition-related" and "non-condition-related" E&M, procedures, imaging, tests, inpatient admissions (by ICD-9 and DRG) and drugs, by service counts and dollar volume
- Tested proposed attribution logic, examined variability in per-episode resource use at individual provider level (as relevant) and by provider specialty.

Level 2 analyses
- Incorporated risk adjustment
- Produced sample physician-level reports in which observed-to-expected ratios are computed and the distribution of each physician's episodes is compared to the peer group's distribution.
- Examined specific drivers of resource use variation
- Examined variability in per-episode resource use across regions, states and the specialties of attributed providers.

2b2

H☐ M☐ L☐ I☐

Throughout the process of empirically testing the measures, summary analyses were presented to the workgroups for review and discussion. The workgroups reviewed denominator attrition diagrams to assess how the measure's inclusion and exclusion criteria affected the episode's denominator. They also reviewed summaries of costs by type of service (inpatient hospital care, outpatient care, procedures, imaging, tests, and prescription drugs) and were asked to assess whether the distributions matched the clinical expectations for the condition's treatment. The clinicians were also presented with analyses of diagnosis and procedure level details in order to ensure that appropriate services were being captured and grouped to the episodes. At each step in the process, the measure specifications were revised based on workgroup feedback.
In addition to workgroup feedback results of the preliminary testing were also shared with a Technical Advisory Committee and the QASC Episodes Work Group and the measures revised according to feedback.

SA2.3.Testing Results
(statistical results, assessment of adequacy in the context of norms for the test conducted; if face validity, describe results of systematic assessment)

In the Marketscan data there were 77,792 episodes that qualified for inclusion in the breast biopsy episode. The average cost for the episode was $1207. The median cost was $989 and the interquartile range was $1148 from $450 to $1598. Nearly all of the costs occurred in three service categories. Those categories were procedures (42%), outpatient facility (25%) and imaging (22%). Each of these has good face validity given the construction of the episode and what is included in the measure. The next largest service category was for evaluation and management claims which likely represent the physician visits included as part of the episode.
An area of variability that was evaluated was the differences in resource use by the triggering biopsy. There was substantial variability in the cost of an episode based on the triggering biopsy. The most frequently performed triggering event was CPT 19103 which is a breast biopsy with percutaneous, automated vacuum-assisted/rotating biopsy device, using imaging guidance. This was responsible for 31% of the events included in the measure. The next most common was a fine needle aspiration with imaging guidance that was responsible for 19.6% of the qualifying events. Across all of the biopsies, the average cost ranged from a low of $447 to a high of $2668. Interestingly, there was substantial variation in the type of biopsy performed by state (slide 25). Using the second most common triggering biopsy, this was responsible for 19.6% of all events. Across the 10 states with the highest number of qualifying events, the proportion of triggering events due to this biopsy code ranged from 16.5% of episodes in California to 25.9% of all episodes in New York. Nearly the opposite pattern was seen in these two states for the most common triggering biopsy. in California this biopsy was responsible for 30.8% of the episodes and in New York it was 28.6% of episodes. Importantly the difference in average costs for these episodes is $618 for the second most common triggering code and $1980 for the most common triggering code. A shift in the use of these two types of biopsies can have substantial impact on the average costs seen in a region and is an important source of investigation.

SA2.4. Finding statement(s)—(*i.e., is the measure deemed reliable, limitations identified)*

The analyses conducted indicate that our measure has strong face validity for the measurement of breast biopsy-related costs.

SA3.Testing for Measure Exclusions **2b3**

SA3.1. Describe how the impact of exclusions (if specified) is transparent as required in the criteria

In the attached data summary, we have detailed how the exclusions impacted the resulting size of the cohort (see attached data summary Slide 4).

SA3.2. Data/sample for analysis of exclusions
(Description of the data or sample including number of measured entities; number of patients; dates of data; if a sample, characteristics of the entities included)

See section SA1.1 for description of Thomson Reuters Marketscan datasets.

SA3.3. Analytic Method
(Describe type of analysis and rationale for examining exclusions, including exclusion related to

H☐

patient preference) We examined the impact of several types of exclusions. In order to ensure that data are available for assessing the episode of care, we excluded individuals without continuous insurance coverage including medical and pharmacy benefits. There were also exclusion criteria that were specified for this condition by the clinical workgroup: males and history of previous biopsy. We examined the impact of these on the resulting cohort size. **SA3.4. Results** *(statistical results for analysis of exclusions, e.g., frequency, variability, sensitivity analyses)* The identification period used to examine the breast biopsy measure in the Marketscan data was from July 1, 2006 through December 17, 2007. Only the first occurring event during this time period was eligible for inclusion in the measure. During this identification period there were 213,820 individuals that had a code for a breast biopsy. There were 52%% of the potentially eligible patients that were excluded as a result of discontinuous medical coverage between 2006-2007 or lack of prescription medication coverage over this time period. This resulted in a potentially eligible sample of 111,810. Several of these potentially eligible events were excluded due to the following reasons: males (7.0%), history of previous biopsies in prior 60 days (19.3%), or history of previous breast biopsy at any point in measurement window (24.4%). This results in a total of 77,792 biopsies in the final cohort that were included in our measure testing. **SA3.5. Finding statement(s)--** *(i.e., is the measure deemed reliable, limitations identified)* Based on the findings from our cohort attrition analysis described above and feedback from the clinical workgroup, the measure is identifying the appropriate group for inclusion. The exclusions due to continuous enrollment are a function of the data that is available and necessary criteria to fully implement the measure. **SA4. Testing Population** *Which populations were included in the testing data? (Check all that apply)* Commercial	**M☐** **L☐** **I☐**
SA5. Risk adjustment strategy *Refer to items S10.1 and S10.2 to rate this criterion.*	**2b4** **H☐** **M☐** **L☐** **I☐**
SA6. Data analysis and scoring methods *Refer to items S12-S12.3 to rate this criterion.*	**2b5** **H☐** **M☐** **L☐** **I☐**
SA7. Multiple data sources *Refer to S7 & all SA1 items to evaluate this criterion.*	**2b6** **H☐** **M☐** **L☐** **I☐** **NA☐**
SA6. Stratification of Disparities (if applicable) *Refer to item S10.2 to rate this criterion.*	**2c** **H☐** **M☐** **L☐** **I☐**

TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Scientific Acceptability of Measure Properties?*	
Steering Committee: Overall, was the criterion, *Scientific Acceptability of Measure Properties*, **met?** **Rationale:**	**Y☐** **N☐**
USABILITY	
Extent to which intended audiences (e.g., consumers, purchasers, providers, policy makers) can understand the results of the measure and are likely to find them useful for decision making.	**Eval Rating**
Meaningful, Understandable, and Useful Information **U1. Current Use:** Public reporting (disclosure to performance results to the public at large) Quality improvement with external benchmarking **U1.1. Use in Public Reporting Initiative Use in Public Reporting.** *Disclosure of performance results to the public at large (If used in a public reporting program, provide name of program(s), locations, Web page URL(s). If not publicly reported in a national or community program, state the plans to achieve public reporting, potential reporting programs or commitments, and timeline, e.g., within 3 years of endorsement)* The ABMS REF has only recently completed the development and testing of its Episode-based Resource Use Measures. The Robert Wood Johnson Foundation (RWJF) has provided follow-up funding in the form of technical assistance to Aligning Forces for Quality communities for continued testing of the measures—a 15-month award to Brookings Institute with a subcontract to ABMS REF for continued field testing of select measures in up to four Aligning Forces for Quality (AF4Q) communities toward the goal of public reporting and quality improvement benchmarking. **U1.2. Use in QI** *(If used in improvement programs, provide name of program(s), locations, Web page URL(s)).* See Section U1.1 **U1.3. Use for other Accountability Functions (payment, certification, accreditation)** *(If used in a public accountability program, provide name of program(s), locations, Web page URL(s).* See Section U1.1	**3a** **H☐** **M☐** **L☐** **I☐**
U2. Testing of Interpretability *(Provide a rationale for why the measure performance results are meaningful, understandable, and useful to the intended audience(s) for both public reporting and quality improvement).* **U2.1. If understanding or usefulness was demonstrated** *(e.g., through systematic feedback from users, focus group, cognitive testing, analysis of quality improvement initiatives) describe the data, methods, and results.* The ABMS REF measures have not yet been tested for usefulness or interpretability. They are currently undergoing continued testing in up to four RWJF AF4Q communities.	**3b** **H☐** **M☐** **L☐** **NA☐**

U2.2. Resource use data and result can be decomposed for transparency and understanding. *Refer to items S11 -S12.3.*	**3c** **H☐** **M☐** **L☐** **I☐**
U3. If there are similar or related measures (either same measure focus or target population) measures (both the same measure focus and same target population), list the NQF # and title of all related and/or similar measures. **U3.1. If this measure has EITHER the same measure focus OR the same target population as NQF-endorsed measure(s): Are the measure specifications completely harmonized?** **U3.2. If the measure specifications are not completely harmonized identify the differences, rationale, and impact on interpretability and data collection burden.** *Describe why this measure is superior to competing measures (e.g., a more valid or efficient way to measure quality); OR provide a rationale for the additive value of endorsing an additional measure. (Provide analyses when possible.)*	**3d** **H☐** **M☐** **L☐** **I☐** **NA☐**
TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Usability?*	
Steering Committee: Overall, to what extent was the criterion, *Usability***, met?** **Rationale:**	**H☐** **M☐** **L☐**
FEASIBILITY	
Extent to which the required data are readily available, retrievable without undue burden, and can be implemented for performance measurement.	Eval Rating
F1. Data Elements Generated as Byproduct of Care Processes *How are the data elements needed to compute measure scores generated? Data used in the measure are:* Coded by someone other than person obtaining original information (e.g., DRG, ICD-9 codes on claims)	**4a** **H☐** **M☐** **L☐** **I☐**
F2. Electronic Sources *Are the data elements needed for the measure as specified available electronically? (Elements that are needed to compute measure scores are in defined, computer-readable fields)* ALL data elements in electronic claims **F2.1. If ALL data elements are not from electronic sources, specify a credible, near-term path to electronic capture, OR provide a rationale for using other than electronic sources.**	**4b** **H☐** **M☐** **L☐** **I☐**

F3. Susceptibility to Inaccuracies, Errors, or Unintended Consequences
Identify susceptibility to inaccuracies, errors, or unintended consequences of the measurement identified during testing and/or operational use and strategies to minimize or prevent. If audited, provide results.

- The majority of measures developed for this project are of 12 months duration or less with identification of the population in one year and measurement in the following. This resulted in eligibility criteria requiring a minimum of 24 months of continuous data (full medical and pharmacy benefit enrollment). Often, clinical workgroup members expressed a desire to extend the duration of a measure to encompass more longitudinal clinical outcomes (e.g. cardiac complications for diabetes) however this was not practical due to the typical enrollment patterns in the commercial population.
- Sample size may be of concern for implementers seeking to measure resource use at the level of the individual provider. Many of the measures, when tested on commercial datasets, resulted in small sample sizes that may prohibit meaningful attribution. Discontinuous medical coverage and missing pharmacy coverage were responsible for significant (often greater than 50%) decreases in eligible populations, emphasizing the trade-offs between ensuring adequate sample size and achieving specificity/homogeneity in the measure denominator. If users are unable to achieve adequate sample size at the level of the individual provider, the measures specifications may still provide valuable information at the level of group, system or region.
- Administrative claims lack the detail necessary to fully understand appropriateness of resource use in relation to severity of disease (e.g. bundled hospital payments, absence of cancer staging information, absence of cardiac severity indicators, Type 1 v. Type 2 diabetes). Future efforts should consider the integration of administrative claims with other sources of clinical information such as registries and electronic health records.
- Resource use is only one component of efficiency measurement. The measures created in this project are not intended to be used in isolation to evaluate physician performance; rather they are intended to complement quality measures as an important component of performance evaluation.
- The measures developed in this project represent a small subset of clinical conditions, and do not address the full range of patient and provider experience. Each measure was developed independently and, as such, they are not summative. Efforts to sum multiple measures will result in double counting of services.
- The standardized pricing algorithms used for testing the measures were developed for use in the Marketscan dataset. The technical appendices accompanying the measures provide a guide to assist users in developing their own set of standardized prices unique to their datasets. Until a national list of standardized prices is made available to the general public, the methods employed in the testing phase of this project do not allow for national benchmarking.

4c

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F4. Data Collection Strategy
Describe what you have learned/modified as a result of testing regarding barriers to operational use of the measure (e.g., availability of data, missing data, timing and frequency of data collection, sampling, patient confidentiality, time and cost of data collection, cost of proprietary measures).

Administrative claims lack the detail necessary to fully understand appropriateness of resource use in relation to severity of disease (e.g. bundled hospital payments, absence of cancer staging information, absence of cardiac severity indicators, Type 1 v. Type 2 diabetes). Future efforts should consider the integration of administrative claims with other sources of clinical information such as registries and electronic health records.

There were several lessons learned throughout the development and testing of the ABMS REF episode-based resource use measures. First, was the importance of garnering a diverse range of clinical input in a transparent manner to foster face validity and acceptance in the clinical community. Second was the importance of adequate resources for data acquisition, preparation and analyses (time and personnel). Not all datasets are formatted the same which can lead to significant amounts of programmer time for re-formatting code or datasets. It is also important to allow 2-6 months lead time to negotiate data use agreements as use of health care data–even de-identified data--often involves complex contract negotiations.

4d

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TAP/Workgroup: What are the strengths and weaknesses in relation to the subcriteria for *Feasibility*?

Steering Committee: Overall, to what extent was the criterion, *Feasibility*, met?
Rationale:

H☐ M☐ L☐

RECOMMENDATION	
Steering Committee: Do you recommend for endorsement? **Comments:**	**Y☐** **N☐** **A☐**

CONTACT INFORMATION

Co.1 Measure Steward (Intellectual Property Owner)

Co.1 Organization

American Board of Medical Specialties Research and Eduction Foundation, 222 N. LaSalle St., Suite 1500, Chicago, Illinois, 60601

Co.2 Point of Contact

Kevin, Weiss, MD, kweiss@abms.org, 312-436-2600-

Measure Developer If different from Measure Steward

Co.3 Organization

American Board of Medical Specialties Research and Eduction Foundation, 222 N. LaSalle St., Suite 1500, Chicago, Illinois, 60601

Co.4 Point of Contact

Kevin, Weiss, MD, kweiss@abms.org, 312-436-2600-

Co.5 Submitter If different from Measure Steward POC

Robin, Wagner, rwagner@abms.org, 312-436-2605-, American Board of Medical Specilaties Research and Education Foundation

Co.6 Additional organizations that sponsored/participated in measure development

Development of the ABMS REF Episode-based Resource Use Measures was supported by the Robert Wood Johnson Foundation under the High Value Healthcare Project: Characterizing Episodes and Costs of Care. Grant number 63609.

ADDITIONAL INFORMATION

Workgroup/Expert Panel involved in measure development

Ad.1 Provide a list of sponsoring organizations and workgroup/panel members' names and organizations. Describe the members' role in measure development.

Breast Cancer Workgroup Members
E. Dale Collins, MD, American College of Plastic Surgeons
Melissa Craft, RN, American Nurses Association
Scott Endsley, MD, System Design
Scott Kurtzman, MD, Society of surgical Oncology
Geraldine McGinty, MD, American College of Radiology
Michael Neuss, MD, American Society of Clinical Oncology
Erica Swegler, MD, American Academy of Family Physicians
Paul Wallner, DO, American Society for Therapeutic Radiology and Oncology
Carol Wilhoit, MD, Blue Cross Blue Shield of Illinois
Shawna Willey, MD, American Society of Breast Surgeons

Workgroups consisting of a panel of experts were assembled for each condition. In collaboration with the AMA PCPI, a formal call for nominations was issued to the PCPI membership. This process was supplemented with direct outreach to relevant organizations in an effort to achieve representation from a wide range of clinical expertise (medical, nursing, pharmacy, other allied health professionals). Workgroup members were selected based on their clinical knowledge and administrative experience—many also had significant experience in developing quality measures. Where possible, groups also included technical expertise from the health plan perspective.
The measure development process involved a series of deliberate steps where participating clinicians took into account the natural progression of a condition and existing best practices before carefully considering how to best use administrative claims data to construct the episode.

Each clinical workgroup initially convened for a two-day in-person meeting that began with an introduction to the concepts of episodes of care and resource use measurement-- including a review of the NQF framework for evaluating efficiency across episodes of care. The groups were then asked to conceptualize one or more episodes based on the phases of the NQF model. They aimed to identify clinically homogenous populations so that the measures would be sensitive to provider decisions and existing practice protocols for like patients. Workgroup members were then asked to conceptualize the measure specifications based on their combined knowledge of guidelines, evidence, and clinical experience. The workgroups helped to define the denominator, duration, clinically relevant services and attribution of each episode as related to the clinical progression and treatment of the condition.

Throughout the months following the in-person meeting, project staff then worked to translate the concepts into detailed written measure specifications. The workgroups subsequently re-convened via a series of conference calls to review data analyses, share expert opinions, consider additional evidence-based literature, revise and finalize the measure specifications.

Measure Developer/Steward Updates and Ongoing Maintenance

Ad.2 Year the measure was first released:

2010

Ad.3 Month and Year of most recent revision:

12, 2010

Ad.4 What is your frequency for review/update of this measure?

every 3 years

Ad.5 When is the next scheduled review/update for this measure?

12, 2013

Ad.6 Copyright statement/disclaimers:

Limited proprietary coding is contained in the Measure specifications for convenience. Users of the proprietary code sets should obtain all necessary licenses from the owners of these code sets. The ABMS REF disclaims all liability for use or accuracy of coding contained in the specifications.

Ad. 7 Date of Submission (*MM/DD/YY*)**:**

04/18/2011

Variable Name	Variable Description	Required Data Sources*
admdate	Date of Admission	A
age	Age	E
billtyp	Facility Bill Type Code	C
days	Length of Stay	A
daysupp	Day's Supply	D
disdate	Date of Discharge	A
drg	Diagnosis related group	A,B
dstatus	Discharge status	A
egeoloc	Geographic Location	E
enrolid	Enrollee ID	All
fachdid	Facility Header Record ID	C
facprof	Professional/Facility Indicator	C
gennme	Generic Drug Name	D
mastfrm	Master Form Code	D
memdays	Member Days	E
ndcnum	National Drug Code (ndc_code in Redbook)	D
pay	Payment	A,B,C,D
pdx,dx1,dx2,…,dxn	Diagnosis Codes	A,B,C
physid	Physician ID	A,B
pproc, pproc1,…, pprocn	Procedure/Service Codes	A,B,C
procmod	Procedure Code Modifier	A,C
proctyp	Procedure Code Type	B,C
prodnme	Product Name	D
provid	Provider ID	A
qty	Quantity of Services	A,B,C,D
region	Region	E
revcode	Revenue Code	C
rx	Cohort Drug Indicator	D
sex	Gender	E
stdplac	Place of Service	C
stdprov	Provider Type	C
svcdate	Service Date	A,B,C,D
thercls	Therapeutic Class	D
tsvcdat	Date Service Ending	C

Data Sources*

A. Administrative claims data – inpatient (facility)
B. Administrative claims data – inpatient (professional)
C. Administrative claims data – outpatient/ambulatory (professional and facility)
D. Administrative claims data – pharmacy
E. Enrollment/coverage data (2 or more years)

Measure Component	**Required Variables**
Standardized Prices*	enrolid, ndcnum, pay, qty, drg, pproc,…,pprocn.
Exclusions and standard coverage definition	enrolid, pdx,dx1,…,dxn, age, svcdate, pproc, pproc1,…, pprocn, pay, qty, revcode, memdays, rx, stdplac, proctyp.
Cohort Definition	enrolid, svcdate, pdx, pdx1,…,pdxn, pproc1,…, pprocn, pay, qty, sex, age, thercls, dstatus, stdplac, billtyp, fachdid, revcode.
Related Resource Use	enrolid, facprof, pay, qty, pproc1,…, pprocn, svcdate, admdate, disdate, pdx, dx1,…, dxn, drg, ndcnum, thercls, gennme, prodnme, daysupp, procmod, mastfrm.
Output and Attribution	enrolid, svcdate, standardized price variables*, BETOS**, pproc1,…,pprocn, pdx, dx1,…,dxn, egeoloc, region, provid, stdprov, age, sex, physid.

* For internal testing and validation purposes, drug prices were calculated by taking the average of 2006 and 2007 Marketscan prices, inpatient facility prices were computed by calculating average daily price by DRG from 2007, and outpatient and service prices were constructed by calculating the mean price by procedure code within the Marketscan dataset.
** Berenson-Eggers Type of Service – Categorizes Health Care Procedure Coding System (HCPCS) procedure codes in order to analyze health care expenditures. See link for full description.
http://www.cms.hhs.gov/hcpcsreleasecodesets/20_betos.asp

Condition (Workgroup)	***Measure Name***	***Abbreviation***
Acute Myocardial Infarction (AMI)	Episode-of-Care for 30 days Following Onset	AMI1
Acute Myocardial Infarction (AMI)	Episode-of-Care for Post-Acute Period (Days 31-365 Days Post-Event)	AMI2
Asthma	Episode-of-Care for Patients with Asthma over a 1-year Period	ASTH
Breast Cancer	Episode-of-Care for 60-Day Period Preceding Breast Biopsy	BB
Breast Cancer	Episode-of-Care for Treatment in Newly Diagnosed Cases of Breast Cancer over a 15-month Period	BCT
Chronic Obstructive Pulmonary Disease (COPD)	Episode-of-Care for Patients with Stable COPD over a 1-year Period	COPD1
Chronic Obstructive Pulmonary Disease (COPD)	Episode-of-Care for Patients with Unstable COPD over a 1-year Period	COPD2
Colon Cancer	Episode-of-Care for 21-Day Period Around Colonoscopy	COL
Colon Cancer	Episode-of-Care for Treatment of Localized Colon Cancer	CCT
Congestive Heart Failure (CHF)	Episode-of-Care for Management of CHF Over 1-Year Period	CHF1
Congestive Heart Failure (CHF)	Episode-of-Care for Post Hospitalization Management of CHF over 4-Month Period	CHF2
Coronary Artery Disease (CAD)	Episode-of-Care for Management of Chronic CAD Over 1-Year Period	CAD1
Coronary Artery Disease (CAD)	Episode-of-Care for Management of CAD Post Revascularization Over 1-Year Period	CAD2
Diabetes	Episode-of-Care for Diabetes Over 1-Year Period	DIAB
Low Back Pain	Episode-of-Care for Simple Non-Specific Lower Back Pain (Acute and Sub-Acute)	LBP1
Low Back Pain	Episode-of-Care for Acute/Sub-Acute Lumbar Radiculopathy With or Without Lower Back Pain	LBP2
Pneumonia	Episode-of-Care for Community-Acquired Pneumonia Hospitalization	PN1
Pneumonia	Episode-of-Care for Ambulatory Pneumonia Episode	PN2

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Analytic Findings: Breast Cancer Biopsy Episode of Care

NQF Submission

Overview of Analyses Presented for Biopsy Episode*

- Denominator Attrition
- Related and Non-related Services
- Resource Use, Attribution and
- Risk Adjustment

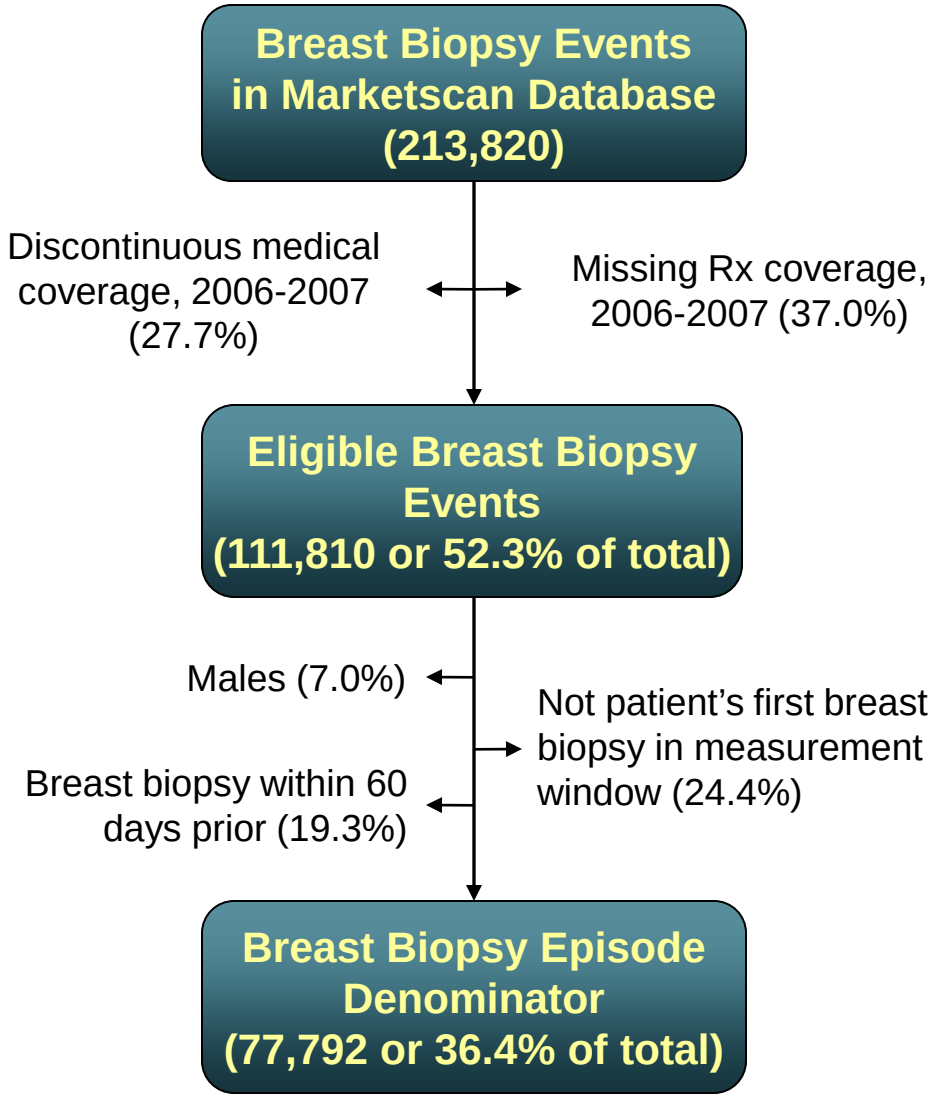
** The following results are based on the measure specification at different points in time, so the numbers are not always consistent, but they are not substantively different.*

Denominator Attrition

- Summarizes the initial denominator based on the workgroup's specifications
- Describes the percentage of enrollees removed from the analysis due to NCQA exclusions or other criteria.

Breast Biopsy Measure Denominator

- Procedure code for breast biopsy during identification period
  - Image-guided: 10021, 10022, 19100, 19101, 19102, 19103, 19110
  - Surgical: 19120, 19125
- Identification period: Jul. 1, 2006 – Dec. 17, 2007
- Results stratified by age (30 yrs) and by prior breast cancer diagnosis (up to 12 mos.)
- Note: exclusions are not additive (double-counting occurs often); figures do not exclude episodes with $0 in related resource use



Related and Non-Related Services

- Examines most frequent related and non-related resource use by BETOS category
  - Evaluation and Management Visits, Procedures, Imaging, Tests, Admissions and Medications.
- Results are presented to the workgroup to examine the face validity of episodes.

Resource Use by Type of Service: All Biopsy Episodes, 7-day Follow-up

Description	Mean	% of Total	5th %	25th %	50th %	75th %	95th %
Inpatient Facility Costs	$1	0%	$0	$0	$0	$0	$0
OP Facility Costs	$298	25%	$0	$0	$0	$87	$1,843
Evaluation and Management	$76	6%	$0	$0	$0	$147	$262
Procedures	$508	42%	$151	$156	$470	$662	$1,188
Imaging	$269	22%	$0	$0	$180	$360	$945
Tests	$36	3%	$0	$0	$0	$0	$186
Durable Medical Equipment	$0	0%	$0	$0	$0	$0	$0
Other Services	$0	0%	$0	$0	$0	$0	$0
Unclassified	$1	0%	$0	$0	$0	$0	$0
Drug Costs	$18	1%	$0	$0	$0	$8	$85
Total Costs	**$1,207**	**100%**	**$156**	**$450**	**$989**	**$1,598**	**$3,181**

Top 20 Related Procedures

CPT	Svcs	Cost	% Svcs	% Cost	Description
19103	26,911	$ 14,097,893	21%	36%	Biopsy of breast; percutaneous, automated vacuum assisted or rotating biop
00400	13,027	$ 5,190,772	10%	13%	Anesthesia for procedures on the integumentary system on the extremities, a
19102	16,595	$ 4,236,639	13%	11%	Biopsy of breast; percutaneous, needle core, using imaging guidance
19120	6,368	$ 3,498,668	5%	9%	Excision of cyst, fibroadenoma, or other benign or malignant tumor, aberran
19295	23,730	$ 3,295,039	19%	8%	Image guided placement, metallic localization clip, percutaneous, during bre
10022	17,777	$ 2,805,803	14%	7%	Fine needle aspiration; with imaging guidance
19125	4,559	$ 2,715,788	4%	7%	Excision of breast lesion identified by preoperative placement of radiological
10021	6,307	$ 966,580	5%	2%	Fine needle aspiration; without imaging guidance
19290	5,343	$ 745,009	4%	2%	Preoperative placement of needle localization wire, breast;
19101	866	$ 378,744	1%	1%	Biopsy of breast; open, incisional
19100	1,696	$ 304,167	1%	1%	Biopsy of breast; percutaneous, needle core, not using imaging guidance (s
19110	414	$ 203,325	0%	1%	Nipple exploration, with or without excision of a solitary lactiferous duct or a
19000	1,226	$ 130,632	1%	0%	Puncture aspiration of cyst of breast;
00404	93	$ 79,815	0%	0%	Anesthesia for procedures on the integumentary system on the extremities, a
19126	286	$ 73,036	0%	0%	Excision of breast lesion identified by preoperative placement of radiological
19499	72	$ 67,503	0%	0%	Unlisted procedure, breast
19030	340	$ 54,029	0%	0%	Injection procedure only for mammary ductogram or galactogram
01610	49	$ 39,021	0%	0%	Anesthesia for all procedures on nerves, muscles, tendons, fascia, and burs
00402	43	$ 35,152	0%	0%	Anesthesia for procedures on the integumentary system on the extremities, a
19291	388	$ 29,909	0%	0%	Preoperative placement of needle localization wire, breast; each additional le

Common Non-related Procedures

CPT	Svcs	Cost	% Svcs	% Cost	Description
19120	3815	2039671	4%	9%	Excision of cyst, fibroadenoma, or other benign or malignant tumor, abe
19125	2507	1476519	3%	7%	Excision of breast lesion identified by preoperative placement of radiolog
00400	3239	1259620	3%	6%	Anesthesia for procedures on the integumentary system on the extremiti
19295	4660	651896.2	5%	3%	Image guided placement, metallic localization clip, percutaneous, during
97110	8891	501066.1	9%	2%	Therapeutic procedure, one or more areas, each 15 minutes; therapeutic
45378	1015	435924	1%	2%	Colonoscopy, flexible, proximal to splenic flexure; diagnostic, with or with
00810	697	310732.1	1%	1%	Anesthesia for lower intestinal endoscopic procedures, endoscope introc
00404	278	296996.1	0%	1%	Anesthesia for procedures on the integumentary system on the extremiti
97140	7229	288797.3	7%	1%	Manual therapy techniques (eg, mobilization/ manipulation, manual lymp
00840	341	268563.9	0%	1%	Anesthesia for intraperitoneal procedures in lower abdomen including la
45380	533	255209.2	1%	1%	Colonoscopy, flexible, proximal to splenic flexure; with biopsy, single or r
96413	1023	225936.4	1%	1%	Chemotherapy administration, intravenous infusion technique; up to 1 ho
45385	355	205841.6	0%	1%	Colonoscopy, flexible, proximal to splenic flexure; with removal of tumor(
43239	666	205171.1	1%	1%	Upper gastrointestinal endoscopy including esophagus, stomach, and ei
00402	208	194552	0%	1%	Anesthesia for procedures on the integumentary system on the extremiti
58150	170	186362.2	0%	1%	Total abdominal hysterectomy (corpus and cervix), with or without remov
59400	78	183701.2	0%	1%	Routine obstetric care including antepartum care, vaginal delivery (with c
00790	237	183063.9	0%	1%	Anesthesia for intraperitoneal procedures in upper abdomen including la
01610	229	174629.3	0%	1%	Anesthesia for all procedures on nerves, muscles, tendons, fascia, and b
19318	110	167016.1	0%	1%	Reduction mammaplasty

Top 20 Related Outpatient Facility Charges

CPT	Services	Cost	% of Svcs	% of Cost	Description
19103	6,310	$ 5,143,726	9%	22%	Biopsy of breast; percutaneous, automated vacuum assisted or rotating bio
19102	4,272	$ 2,827,763	6%	12%	Biopsy of breast; percutaneous, needle core, using imaging guidance
77031	2,294	$ 1,433,994	3%	6%	Stereotactic localization guidance for breast biopsy or needle placement (e
76645	7,478	$ 1,381,866	10%	6%	Ultrasound, breast(s) (unilateral or bilateral), real time with image documer
19120	1,110	$ 1,361,787	2%	6%	Excision of cyst, fibroadenoma, or other benign or malignant tumor, aberra
10022	2,312	$ 1,216,060	3%	5%	Fine needle aspiration; with imaging guidance
19295	2,450	$ 947,201	3%	4%	Image guided placement, metallic localization clip, percutaneous, during br
19125	585	$ 785,165	1%	3%	Excision of breast lesion identified by preoperative placement of radiologica
88305	4,247	$ 740,535	6%	3%	Level IV - Surgical pathology, gross and microscopic examination Abortion
76942	1,878	$ 610,671	3%	3%	Ultrasonic guidance for needle placement (eg, biopsy, aspiration, injection,
19101	593	$ 590,010	1%	3%	Biopsy of breast; open, incisional
77059	272	$ 423,517	0%	2%	Magnetic resonance imaging, breast, without and/or with contrast material(
77055	3,915	$ 404,795	5%	2%	Mammography; unilateral
76095	542	$ 347,372	1%	2%	
G0206	2,359	$ 329,116	3%	1%	Diagnostic mammography, producing direct digital image, unilateral, all vie
77056	2,125	$ 296,491	3%	1%	Mammography; bilateral
19290	563	$ 272,709	1%	1%	Preoperative placement of needle localization wire, breast;
G0204	1,433	$ 253,545	2%	1%	Diagnostic mammography, producing direct digital image, bilateral, all view
G0202	1,635	$ 244,331	2%	1%	Screening mammography, producing direct digital image, bilateral, all views

Common Non-Related Outpatient Facility Charges

CPT	Svcs	Cost	% Svcs	% Cost	Description
19120	2995	3621418	3%	12%	Excision of cyst, fibroadenoma, or other benign or malignant tumor, aber
19125	1968	2347603	2%	8%	Excision of breast lesion identified by preoperative placement of radiolog
76942	3930	1494192	3%	5%	Ultrasonic guidance for needle placement (eg, biopsy, aspiration, injectio
88305	6752	1166854	6%	4%	Level IV - Surgical pathology, gross and microscopic examination Abortio
19295	2906	1159520	3%	4%	Image guided placement, metallic localization clip, percutaneous, during
19290	1404	730982.3	1%	2%	Preoperative placement of needle localization wire, breast;
76536	2048	493196	2%	2%	Ultrasound, soft tissues of head and neck (eg, thyroid, parathyroid, parot
76095	682	448314.9	1%	1%	
76645	2215	419841.6	2%	1%	Ultrasound, breast(s) (unilateral or bilateral), real time with image docum
88173	2472	382268.6	2%	1%	Cytopathology, evaluation of fine needle aspirate; interpretation and repo
88342	1003	310727.2	1%	1%	Immunohistochemistry (including tissue immunoperoxidase), each antibo
72193	342	293067.4	0%	1%	Computed tomography, pelvis; with contrast material(s)
45378	392	292985.9	0%	1%	Colonoscopy, flexible, proximal to splenic flexure; diagnostic, with or with
71260	344	284604.2	0%	1%	Computed tomography, thorax; with contrast material(s)
60100	542	253487.8	0%	1%	Biopsy thyroid, percutaneous core needle
74160	305	241425.9	0%	1%	Computed tomography, abdomen; with contrast material(s)
88307	1110	240096.4	1%	1%	Level V - Surgical pathology, gross and microscopic examination Adrena
80053	2029	216633	2%	1%	Comprehensive metabolic panel This panel must include the following: A
J9355	146	210472.6	0%	1%	Trastuzumab, 10 mg
78815	74	193883.9	0%	1%	Positron emission tomography (PET) with concurrently acquired comput

Top 20 Related Imaging

CPT	Svcs	Cost	% Svcs	% Cost	Description
77031	11,808	$ 2,890,255	6%	14%	Stereotactic localization guidance for breast biopsy or needle placement (
76645	38,504	$ 2,795,041	19%	13%	Ultrasound, breast(s) (unilateral or bilateral), real time with image docum
76942	22,041	$ 2,633,999	11%	13%	Ultrasonic guidance for needle placement (eg, biopsy, aspiration, injectio
76095	5,333	$ 2,304,198	3%	11%	
77059	2,060	$ 1,547,096	1%	7%	Magnetic resonance imaging, breast, without and/or with contrast materia
77055	15,593	$ 1,075,255	8%	5%	Mammography; unilateral
G0206	10,145	$ 887,861	5%	4%	Diagnostic mammography, producing direct digital image, unilateral, all v
76090	9,267	$ 800,144	5%	4%	
77057	10,232	$ 758,096	5%	4%	Screening mammography, bilateral (2-view film study of each breast)
77056	8,273	$ 735,876	4%	4%	Mammography; bilateral
G0202	7,378	$ 728,616	4%	4%	Screening mammography, producing direct digital image, bilateral, all vie
G0204	5,927	$ 649,369	3%	3%	Diagnostic mammography, producing direct digital image, bilateral, all vie
76091	5,349	$ 559,553	3%	3%	
76094	470	$ 488,328	0%	2%	
76098	16,747	$ 364,166	8%	2%	Radiological examination, surgical specimen
77032	2,895	$ 186,973	1%	1%	Mammographic guidance for needle placement, breast (eg, for wire locali
76096	1,504	$ 152,683	1%	1%	
77052	10,521	$ 151,836	5%	1%	Computer-aided detection (computer algorithm analysis of digital image d
77058	245	$ 142,752	0%	1%	Magnetic resonance imaging, breast, without and/or with contrast materia
77051	9,967	$ 140,333	5%	1%	Computer-aided detection (computer algorithm analysis of digital image d

Common Non-Related Imaging

CPT	Svcs	Cost	% Svcs	% Cost	Description
76942	18186	2260894	14%	13%	Ultrasonic guidance for needle placement (eg, biopsy, aspiration, injection, loc
76536	11549	1002094	9%	6%	Ultrasound, soft tissues of head and neck (eg, thyroid, parathyroid, parotid), re
78815	618	838251.2	0%	5%	Positron emission tomography (PET) with concurrently acquired computed tor
76092	8366	831741.4	6%	5%	
76645	8470	621113.3	6%	4%	Ultrasound, breast(s) (unilateral or bilateral), real time with image documentati
70553	762	495524.4	1%	3%	Magnetic resonance (eg, proton) imaging, brain (including brain stem); withou
76094	490	484551.5	0%	3%	
76095	1045	434520.2	1%	3%	
71260	1888	407034.5	1%	2%	Computed tomography, thorax; with contrast material(s)
78465	820	378074.6	1%	2%	Myocardial perfusion imaging; tomographic (SPECT), multiple studies (includi
74160	1702	355979.4	1%	2%	Computed tomography, abdomen; with contrast material(s)
72193	1831	333142.8	1%	2%	Computed tomography, pelvis; with contrast material(s)
93307	1601	310451.6	1%	2%	Echocardiography, transthoracic, real-time with image documentation (2D) wit
76830	2666	295720.2	2%	2%	Ultrasound, transvaginal
76075	1671	284190.8	1%	2%	
77080	2507	261281.6	2%	2%	Dual-energy X-ray absorptiometry (DXA), bone density study, 1 or more sites;
70491	1090	250645.3	1%	1%	Computed tomography, soft tissue neck; with contrast material(s)
71020	7875	247741.7	6%	1%	Radiologic examination, chest, two views, frontal and lateral;
72141	491	205204.2	0%	1%	Magnetic resonance (eg, proton) imaging, spinal canal and contents, cervical;
76856	2005	204309.6	1%	1%	Ultrasound, pelvic (nonobstetric), real time with image documentation; comple

Top 20 Related E&M

CPT	Svcs	Cost	% Svcs	% Cost	Description
99244	7,736	$ 1,572,784	15%	27%	Office consultation for a new or established patient, which requires these 3 k
99243	8,933	$ 1,309,838	18%	22%	Office consultation for a new or established patient, which requires these 3 k
99213	11,512	$ 746,485	23%	13%	Office or other outpatient visit for the evaluation and management of an estal
99214	4,810	$ 465,347	10%	8%	Office or other outpatient visit for the evaluation and management of an estal
99242	3,235	$ 367,178	6%	6%	Office consultation for a new or established patient, which requires these 3 k
99245	1,313	$ 342,387	3%	6%	Office consultation for a new or established patient, which requires these 3 k
99203	2,188	$ 234,577	4%	4%	Office or other outpatient visit for the evaluation and management of a new p
99204	1,490	$ 225,594	3%	4%	Office or other outpatient visit for the evaluation and management of a new p
99212	4,796	$ 214,526	9%	4%	Office or other outpatient visit for the evaluation and management of an estal
99215	863	$ 119,021	2%	2%	Office or other outpatient visit for the evaluation and management of an estal
99202	946	$ 71,089	2%	1%	Office or other outpatient visit for the evaluation and management of a new p
99241	976	$ 65,624	2%	1%	Office consultation for a new or established patient, which requires these 3 k
99205	301	$ 57,654	1%	1%	Office or other outpatient visit for the evaluation and management of a new p
99201	505	$ 22,902	1%	0%	Office or other outpatient visit for the evaluation and management of a new p
99396	91	$ 11,279	0%	0%	Periodic comprehensive preventive medicine reevaluation and management (
99211	326	$ 8,274	1%	0%	Office or other outpatient visit for the evaluation and management of an estal
99395	54	$ 6,087	0%	0%	Periodic comprehensive preventive medicine reevaluation and management (
99386	38	$ 5,867	0%	0%	Initial comprehensive preventive medicine evaluation and management of an
99232	53	$ 5,839	0%	0%	Subsequent hospital care, per day, for the evaluation and management of a
99283	43	$ 5,047	0%	0%	Emergency department visit for the evaluation and management of a patient,

Common Non-Related E&M

CPT	Svcs	Cost	% Svcs	% Cost	Description
99213	48853	3170405	26%	17%	Office or other outpatient visit for the evaluation and management of an established patient, wl
99214	28329	2732560	15%	15%	Office or other outpatient visit for the evaluation and management of an established patient, wl
99244	8499	1729949	5%	9%	Office consultation for a new or established patient, which requires these 3 key components: A
99396	11577	1441346	6%	8%	Periodic comprehensive preventive medicine reevaluation and management of an individual in
99243	7284	1066970	4%	6%	Office consultation for a new or established patient, which requires these 3 key components: A
99245	3876	1019147	2%	5%	Office consultation for a new or established patient, which requires these 3 key components: A
99215	5202	717926.5	3%	4%	Office or other outpatient visit for the evaluation and management of an established patient, wl
90806	6930	605195.6	4%	3%	Individual psychotherapy, insight oriented, behavior modifying and/or supportive, in an office o
99212	10646	476378.1	6%	3%	Office or other outpatient visit for the evaluation and management of an established patient, wl
99203	4427	473729.1	2%	3%	Office or other outpatient visit for the evaluation and management of a new patient, which requ
99204	2927	443156.9	2%	2%	Office or other outpatient visit for the evaluation and management of a new patient, which requ
99232	4499	353623.3	2%	2%	Subsequent hospital care, per day, for the evaluation and management of a patient, which req
99285	1198	345625	1%	2%	Emergency department visit for the evaluation and management of a patient, which requires th
99242	2391	271419.9	1%	1%	Office consultation for a new or established patient, which requires these 3 key components: A
99395	2360	264688.3	1%	1%	Periodic comprehensive preventive medicine reevaluation and management of an individual in
99233	2242	251156.4	1%	1%	Subsequent hospital care, per day, for the evaluation and management of a patient, which req
99386	1567	242023.4	1%	1%	Initial comprehensive preventive medicine evaluation and management of an individual includi
99205	1208	231613.4	1%	1%	Office or other outpatient visit for the evaluation and management of a new patient, which requ
99284	1214	230642.8	1%	1%	Emergency department visit for the evaluation and management of a patient, which requires th
95165	761	166976.6	0%	1%	Professional services for the supervision of preparation and provision of antigens for allergen i

Top 20 Related Tests

CPT	Svcs	Cost	% Svcs	% Cost	Description
88305	12,506	$ 1,410,592	51%	51%	Level IV - Surgical pathology, gross and microscopic examination Abor
88173	2,380	$ 314,239	10%	11%	Cytopathology, evaluation of fine needle aspirate; interpretation and rep
88307	1,412	$ 269,673	6%	10%	Level V - Surgical pathology, gross and microscopic examination Adrer
88342	1,097	$ 221,843	4%	8%	Immunohistochemistry (including tissue immunoperoxidase), each antib
88360	540	$ 159,157	2%	6%	Morphometric analysis, tumor immunohistochemistry (eg, Her-2/neu, es
88361	189	$ 74,448	1%	3%	Morphometric analysis, tumor immunohistochemistry (eg, Her-2/neu, es
88368	149	$ 43,469	1%	2%	Morphometric analysis, in situ hybridization (quantitative or semi-quanti
88172	309	$ 21,652	1%	1%	Cytopathology, evaluation of fine needle aspirate; immediate cytohistolo
88112	194	$ 21,555	1%	1%	Cytopathology, selective cellular enhancement technique with interpreta
88331	168	$ 21,368	1%	1%	Pathology consultation during surgery; first tissue block, with frozen sec
88329	170	$ 12,431	1%	0%	Pathology consultation during surgery;
88365	79	$ 12,410	0%	0%	In situ hybridization (eg, FISH), each probe
85025	873	$ 9,958	4%	0%	Blood count; complete (CBC), automated (Hgb, Hct, RBC, WBC and pl
88108	152	$ 9,852	1%	0%	Cytopathology, concentration technique, smears and interpretation (eg,
88367	21	$ 8,675	0%	0%	Morphometric analysis, in situ hybridization (quantitative or semi-quanti
88160	160	$ 7,990	1%	0%	Cytopathology, smears, any other source; screening and interpretation
93010	449	$ 7,602	2%	0%	Electrocardiogram, routine ECG with at least 12 leads; interpretation ar
88104	111	$ 7,473	0%	0%	Cytopathology, fluids, washings or brushings, except cervical or vagina
93000	177	$ 6,345	1%	0%	Electrocardiogram, routine ECG with at least 12 leads; with interpretatio
80053	389	$ 6,218	2%	0%	Comprehensive metabolic panel This panel must include the following:

Common Non-Related Test

CPT	Svcs	Cost	% Svcs	% Cost	Description
88305	46697	5474614	13%	25%	Level IV - Surgical pathology, gross and microscopic examination Abortion - sp
88173	18269	2670529	5%	12%	Cytopathology, evaluation of fine needle aspirate; interpretation and report
88342	6287	1308847	2%	6%	Immunohistochemistry (including tissue immunoperoxidase), each antibody
88307	6176	1273970	2%	6%	Level V - Surgical pathology, gross and microscopic examination Adrenal, rese
88361	2921	1252423	1%	6%	Morphometric analysis, tumor immunohistochemistry (eg, Her-2/neu, estrogen
88360	3719	1017326	1%	5%	Morphometric analysis, tumor immunohistochemistry (eg, Her-2/neu, estrogen
88185	229	637851.7	0%	3%	Flow cytometry, cell surface, cytoplasmic, or nuclear marker, technical compor
88368	1373	503433	0%	2%	Morphometric analysis, in situ hybridization (quantitative or semi-quantitative) e
88172	4713	414499.9	1%	2%	Cytopathology, evaluation of fine needle aspirate; immediate cytohistologic stu
84443	11352	306898.7	3%	1%	Thyroid stimulating hormone (TSH)
80061	12508	250892.9	4%	1%	Lipid panel This panel must include the following: Cholesterol, serum, total (82
88142	7776	230366	2%	1%	Cytopathology, cervical or vaginal (any reporting system), collected in preserva
80050	5276	218310.7	1%	1%	General health panel This panel must include the following: Comprehensive m
88175	5877	210791.6	2%	1%	Cytopathology, cervical or vaginal (any reporting system), collected in preserva
88331	1313	187385.4	0%	1%	Pathology consultation during surgery; first tissue block, with frozen section(s),
88367	371	173851.9	0%	1%	Morphometric analysis, in situ hybridization (quantitative or semi-quantitative) e
88112	1337	172940.1	0%	1%	Cytopathology, selective cellular enhancement technique with interpretation (eg
93000	4780	170899.5	1%	1%	Electrocardiogram, routine ECG with at least 12 leads; with interpretation and r
80053	10051	164579.9	3%	1%	Comprehensive metabolic panel This panel must include the following: Albumi
85025	13778	164037.6	4%	1%	Blood count; complete (CBC), automated (Hgb, Hct, RBC, WBC and platelet c

Top 20 Related Unclassified

CPT	Svcs	Cost	% Svcs	% Cost	Description
A4550	750	$ 36,082	57%	47%	Surgical trays
99070	449	$ 20,273	34%	27%	Supplies and materials (except spectacles), provided by the physician over a
C1175	12	$ 4,176	1%	5%	
99358	13	$ 3,453	1%	5%	Prolonged evaluation and management service before and/or after direct (fa
S3820	1	$ 2,834	0%	4%	Complete brca1 and brca2 gene sequence analysis for susceptibility to breas
S0040	2	$ 2,193	0%	3%	Injection, ticarcillin disodium and clavulanate potassium, 3.1 grams
99199	17	$ 1,889	1%	2%	Unlisted special service, procedure or report
S0077	1	$ 957	0%	1%	Injection, clindamycin phosphate, 300 mg
99371	21	$ 892	2%	1%	
99499	7	$ 834	1%	1%	Unlisted evaluation and management service
C1176	1	$ 432	0%	1%	
S9083	3	$ 326	0%	0%	Global fee urgent care centers
G0154	1	$ 290	0%	0%	Services of skilled nurse in home health setting, each 15 minutes
S5001	1	$ 231	0%	0%	Prescription drug, brand name
99051	10	$ 213	1%	0%	Service(s) provided in the office during regularly scheduled evening, weeken
S0020	13	$ 147	1%	0%	Injection, bupivicaine hydrochloride, 30 ml
99360	1	$ 107	0%	0%	Physician standby service, requiring prolonged physician attendance, each 3
99053	3	$ 104	0%	0%	Service(s) provided between 10:00 PM and 8:00 AM at 24-hour facility, in ad
99373	1	$ 98	0%	0%	
S0612	1	$ 91	0%	0%	Annual gynecological examination, established patient

Common Non-Related Unclassified

CPT	Svcs	Cost	% Svcs	% Cost	Description
S3820	130	367667.1	3%	36%	Complete brca1 and brca2 gene sequence analysis for susceptibility to br
S0612	989	89571.33	22%	9%	Annual gynecological examination, established patient
S9347	9	47529.46	0%	5%	Home infusion therapy, uninterrupted, long-term, controlled rate intravenc
S9501	56	39548.7	1%	4%	Home infusion therapy, antibiotic, antiviral, or antifungal therapy; once e..
S9500	78	35644.67	2%	4%	Home infusion therapy, antibiotic, antiviral, or antifungal therapy; once e..
S9123	135	30391.42	3%	3%	Nursing care, in the home; by registered nurse, per hour (use for general
A4550	568	26988.61	13%	3%	Surgical trays
S9502	52	25218	1%	2%	Home infusion therapy, antibiotic, antiviral, or antifungal therapy; once e..
G0154	100	23878.77	2%	2%	Services of skilled nurse in home health setting, each 15 minutes
99070	449	20357.84	10%	2%	Supplies and materials (except spectacles), provided by the physician ove
S0155	6	18710.6	0%	2%	Sterile dilutant for epoprostenol, 50ml
S9131	152	17136.39	3%	2%	Physical therapy; in the home, per diem
S0610	145	16587.59	3%	2%	Annual gynecological examination, new patient
Q4083	94	13872.11	2%	1%	
99199	126	13298.39	3%	1%	Unlisted special service, procedure or report
S3854	4	12767.81	0%	1%	Gene expression profiling panel for use in the management of breast can
S9366	4	12021.11	0%	1%	Home infusion therapy, total parenteral nutrition (tpn); more than one lite.
S5498	24	9251.188	1%	1%	Home infusion therapy, catheter care / maintenance, simple (single lumer
S9494	20	8571.25	0%	1%	Home infusion therapy, antibiotic, antiviral, or antifungal therapy; admini..
Q4084	35	8281.512	1%	1%	

Top 20 Related Other

CPT	Svcs	Cost	% Svcs	% Cost	Description
J2020	9	$ 7,910	2%	22%	Injection, linezolid, 200mg
J3370	43	$ 6,504	8%	18%	Injection, vancomycin hcl, 500 mg
J3490	29	$ 6,034	5%	17%	Unclassified drugs
J2543	9	$ 3,335	2%	9%	Injection, piperacillin sodium/tazobactam sodium, 1 gram/0.125 grams (1.125...
J0696	69	$ 2,822	13%	8%	Injection, ceftriaxone sodium, per 250 mg
J1335	4	$ 828	1%	2%	Injection, ertapenem sodium, 500 mg
90471	44	$ 738	8%	2%	Immunization administration (includes percutaneous, intradermal, subcutaneous, or in
J2001	124	$ 556	23%	2%	Injection, lidocaine hcl for intravenous infusion, 10 mg
J3243	1	$ 527	0%	1%	Injection, tigecycline, 1 mg
J1956	5	$ 498	1%	1%	Injection, levofloxacin, 250 mg
J0744	3	$ 495	1%	1%	Injection, ciprofloxacin for intravenous infusion, 200 mg
J2700	1	$ 393	0%	1%	Injection, oxacillin sodium, up to 250 mg
90658	23	$ 359	4%	1%	Influenza virus vaccine, split virus, when administered to individuals 3 years of age and
J2540	1	$ 302	0%	1%	Injection, penicillin g potassium, up to 600,000 units
J0692	1	$ 302	0%	1%	Injection, cefepime hydrochloride, 500 mg
J1055	5	$ 289	1%	1%	Injection, medroxyprogesterone acetate for contraceptive use, 150 mg
J8499	4	$ 281	1%	1%	Prescription drug, oral, non chemotherapeutic, nos
J1610	3	$ 265	1%	1%	Injection, glucagon hydrochloride, per 1 mg
J0670	37	$ 264	7%	1%	Injection, mepivacaine hydrochloride, per 10 ml
J0690	7	$ 199	1%	1%	Injection, cefazolin sodium, 500 mg

Common Non-Related Other

CPT	Svcs	Cost	% Svcs	% Cost	Description
J9355	473	1030314	1%	20%	Trastuzumab, 10 mg
J2505	146	432318.7	0%	8%	Injection, pegfilgrastim, 6 mg
98941	7466	290534.6	22%	6%	Chiropractic manipulative treatment (CMT); spinal, three to four regions
J9170	76	277495.2	0%	5%	Docetaxel, 20 mg
J1745	76	231449.9	0%	4%	Injection infliximab, 10 mg
J0881	147	180899.6	0%	3%	Injection, darbepoetin alfa, 1 microgram (non-esrd use)
J9310	40	167980.6	0%	3%	Rituximab, 100 mg
A0427	293	159714.9	1%	3%	Ambulance service, advanced life support, emergency transport, level 1 (a
J0885	166	128157.8	0%	2%	Injection, epoetin alfa, (for non-esrd use), 1000 units
J2469	203	114147.8	1%	2%	Injection, palonosetron hcl, 25 mcg
98940	3531	109984.8	11%	2%	Chiropractic manipulative treatment (CMT); spinal, one to two regions
J3487	105	102728.7	0%	2%	Injection, zoledronic acid, 1 mg
J9263	30	102317.4	0%	2%	Injection, oxaliplatin, 0.5 mg
J9265	113	100401	0%	2%	Paclitaxel, 30 mg
J9035	23	91302.97	0%	2%	Injection, bevacizumab, 10 mg
J1567	27	89432.26	0%	2%	Injection, immune globulin, intravenous, non-lyophilized (e.g. liquid), 500.
J3490	355	82990.22	1%	2%	Unclassified drugs
A0425	469	75051.56	1%	1%	Ground mileage, per statute mile
J1566	20	73250.73	0%	1%	Injection, immune globulin, intravenous, lyophilized (e.g. powder), 500 mg
J7187	2	62641.27	0%	1%	Injection, von willebrand factor complex, human, ristocetin cofactor, per i.

Top 20 Related DME

CPT	Svcs	Cost	% Svcs	% Cost	Description
A4649	274	$ 17,359	42%	57%	Surgical supply; miscellaneous
C1879	15	$ 4,866	2%	16%	Tissue marker (implantable)
A4215	157	$ 2,319	24%	8%	Needle, sterile, any size, each
E1399	6	$ 1,227	1%	4%	Durable medical equipment, miscellaneous
A6257	25	$ 1,205	4%	4%	Transparent film, 16 sq. in. or less, each dressing
A7000	17	$ 966	3%	3%	Canister, disposable, used with suction pump, each
L8000	13	$ 479	2%	2%	Breast prosthesis, mastectomy bra
A6455	16	$ 216	2%	1%	Self-adherent bandage, elastic, non-knitted/non-woven, width greater than o...
A6201	10	$ 216	2%	1%	Composite dressing, pad size more than 16 sq. in. but less than or equal to...
A4212	16	$ 184	2%	1%	Non-coring needle or stylet with or without catheter
A6260	16	$ 172	2%	1%	Wound cleansers, any type, any size
A6258	1	$ 148	0%	0%	Transparent film, more than 16 sq. in. but less than or equal to 48 sq. in....
A6449	26	$ 146	4%	0%	Light compression bandage, elastic, knitted/woven, width greater than or eq...
L3660	2	$ 119	0%	0%	Shoulder orthosis, figure of eight design abduction restrainer, canvas and ...
A4556	2	$ 115	0%	0%	Electrodes, (e.g., apnea monitor), per pair
A4216	4	$ 111	1%	0%	Sterile water, saline and/or dextrose, diluent/flush, 10 ml
A4510	1	$ 99	0%	0%	Surgical stockings full length, each
A6402	9	$ 90	1%	0%	Gauze, non-impregnated, sterile, pad size 16 sq. in. or less, without adhes...
L3670	1	$ 79	0%	0%	Shoulder orthosis, acromio/clavicular (canvas and webbing type), prefabrica...
A4206	3	$ 66	0%	0%	Syringe with needle, sterile 1cc, each

Common Non-Related DME

CPT	Svcs	Cost	% Svcs	% Cost	Description
E1390	482	92842.1	5%	8%	Oxygen concentrator, single delivery port, capable of delivering 85 percent...
E0601	635	91162.31	7%	8%	Continuous airway pressure (cpap) device
E2402	18	55142.28	0%	5%	Negative pressure wound therapy electrical pump, stationary or portable
A4253	428	51302.48	5%	4%	Blood glucose test or reagent strips for home blood glucose monitor, per 50...
E0784	11	47762.15	0%	4%	External ambulatory infusion pump, insulin
A4230	92	36105.99	1%	3%	Infusion set for external insulin pump, non needle cannula type
E0935	46	30758.59	1%	3%	Continuous passive motion exercise device for use on knee only
E0562	241	28140.51	3%	2%	Humidifier, heated, used with positive airway pressure device
E0748	7	23204.41	0%	2%	Osteogenesis stimulator, electrical, non-invasive, spinal applications
A7034	234	22253.91	3%	2%	Nasal interface (mask or cannula type) used with positive airway pressure d...
E0470	76	21388.9	1%	2%	Respiratory assist device, bi-level pressure capability, without backup rat...
L3000	86	21297.74	1%	2%	Foot, insert, removable, molded to patient model, 'ucb' type, berkeley shel...
L3020	94	19022.54	1%	2%	Foot, insert, removable, molded to patient model, longitudinal/ metatarsal ...
E1399	63	17720.87	1%	2%	Durable medical equipment, miscellaneous
A6550	14	17498.74	0%	2%	Wound care set, for negative pressure wound therapy electrical pump, includ...
E0730	84	15330.52	1%	1%	Transcutaneous electrical nerve stimulation (tens) device, four or more lea...
A4556	192	12455.85	2%	1%	Electrodes, (e.g., apnea monitor), per pair
E0652	7	11918.55	0%	1%	Pneumatic compressor, segmental home model with calibrated gradient pressur...
E0747	4	10801.46	0%	1%	Osteogenesis stimulator, electrical, non-invasive, other than spinal applic...
L4360	53	10249.27	1%	1%	Walking boot, pneumatic, with or without joints, with or without interface ...

Breast Cancer Biopsy Provider Attribution

- Since the measure is claims-based and does not include clinical indicators of cancer stage, the work group thought physician attribution would be difficult and unrealistic.
- Breast Cancer is instead measured at the regional level.

Identifying Variability in Biopsy-specific Resource Use

- Analyses intended to identify trends in the observed variability in resource use for episodes of breast cancer biopsy management
- Variability measured at the following levels
  - State
  - Triggering Service code

Variability in Biopsy Triggers by State*

	Biopsy Code									
State	10021	10022	19100	19101	19102	19103	19110	19120	19125	Total
TX percent	6.2%	21.6%	1.5%	0.8%	21.9%	29.3%	0.5%	11.2%	6.8%	100.0%
CA percent	11.8%	16.5%	2.3%	1.0%	22.7%	30.8%	0.4%	9.2%	5.3%	100.0%
GA percent	6.7%	18.2%	2.0%	0.8%	16.6%	34.4%	0.4%	11.4%	9.3%	100.0%
MI percent	7.3%	21.0%	2.4%	1.1%	12.7%	29.6%	0.4%	13.6%	11.8%	100.0%
FL percent	4.7%	19.4%	0.9%	1.0%	16.2%	39.9%	0.4%	10.0%	7.5%	100.0%
TN percent	7.1%	21.0%	2.3%	1.3%	16.5%	35.1%	0.4%	11.1%	5.3%	100.0%
OH percent	9.3%	19.8%	2.0%	1.0%	12.6%	32.1%	0.5%	12.8%	9.9%	100.0%
IL percent	6.6%	21.2%	2.5%	1.7%	20.0%	29.2%	0.3%	10.5%	8.0%	100.0%
SC percent	8.4%	18.0%	2.5%	0.9%	24.6%	27.3%	0.3%	12.7%	5.2%	100.0%
NY percent	10.7%	25.9%	2.9%	0.8%	16.6%	28.6%	0.5%	8.1%	5.9%	100.0%
Grand Total	6,214	15,818	1,617	768	15,109	25,013	382	9,373	6,428	80,722
	7.7%	19.6%	2.0%	1.0%	18.7%	31.0%	0.5%	11.6%	8.0%	100.0%

* Analysis for Top 10 states

Breast Biopsy Measure Denominator, Triggering CPT Codes

- The CPT codes in this table currently serve as "triggers" for the breast biopsy episode.

CPT	Description	% of Episodes
10021	Fine needle aspiration; without imaging guidance	7.70%
10022	Fine needle aspiration; with imaging guidance	19.60%
19100	Biopsy breast; percutaneous, needle core, not using imaging guidance	2.00%
19101	Biopsy breast; open, incisional	0.95%
19102	Biopsy breast; percutaneous, needle core, using imaging guidance	18.72%
19103	Biopsy breast; percutaneous, automated vacuum-assisted/ rotating biopsy device, using imaging guidance	30.99%
19110	Nipple exploration	0.47%
19120	Excise cyst, fibroadenoma, other benign/malignant tumor aberrant breast tissue, duct lesion nipple/areolar lesion open, male/female, one/more lesions	11.61%
19125	Excise breast lesion identified by preoperative place radiological marker, open; single lesion	7.96%

Breast Biopsy Measure Denominator, Triggering CPT Codes

Summary statistics for the breast biopsy episode based on the "triggering" CPT code for the episode

CPT Code	10021	10022	19100	19101	19102	19103	19110	19120	19125		All
N	6,214	15,818	1,617	768	15,109	25,013	382	9,373	6,428		80,722
Avg Cost	$447	$618	$858	$1,688	$1,415	$1,980	$2,328	$2,047	$2,668		$1,528
Median Cost	$288	$433	$621	$1,224	$1,079	$1,617	$1,832	$1,641	$2,130		$1,233