Breast Brachytherapy

Policy # 00201
Original Effective Date: 12/01/2006
Current Effective Date: 12/31/2022

Applies to all products administered or underwritten by Blue Cross and Blue Shield of Louisiana and its subsidiary, HMO Louisiana, Inc. (collectively referred to as the “Company”), unless otherwise provided in the applicable contract. Medical technology is constantly evolving, and we reserve the right to review and update Medical Policy periodically.

When Services May Be Eligible for Coverage
Coverage for eligible medical treatments or procedures, drugs, devices or biological products may be provided only if:
• Benefits are available in the member’s contract/certificate, and
• Medical necessity criteria and guidelines are met.

Intraoperative Radiation Therapy (IORT)
Based on review of available data, the Company may consider breast brachytherapy for breast cancer using intraoperative radiation therapy (IORT) to be eligible for coverage.

Patient Selection Criteria
Coverage eligibility for breast brachytherapy for breast cancer using IORT may be considered when ALL of the following criteria are met:
• Age 50 or greater; AND
• Tumor less than or equal to 3 cm with grossly uninvolved surgical margins; AND
• Lymph nodes are grossly negative and negative on intraoperative frozen section if performed; AND
• Distance between the edge of the applicator and the skin will be at least 6 mm.

Note: Intraoperative radiotherapy (IORT) is given as a single fraction. More than one fraction is not medically necessary.

Note: If intraoperative radiotherapy (IORT) was used at the time of surgery but the final pathologic evaluation reveals indications for whole breast irradiation (WBI), the IORT will be considered the boost portion of the treatment.
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Accelerated Partial Breast Irradiation (APBI)
Based on review of available data, the Company may consider breast brachytherapy for breast cancer using accelerated partial breast irradiation (APBI) to be eligible for coverage.**

Patient Selection Criteria
Coverage eligibility for breast brachytherapy for breast cancer using APBI may be considered when ALL of the following criteria are met:

- Age 45 or greater for invasive disease or greater than 50 for ductal carcinoma in situ (DCIS); AND
- Tumor less than or equal to 3 cm with pathologically negative surgical margins; AND
- Lymph nodes are negative or show only immunohistochemical involvement, N0 or N0(i+); AND
- Distance between the edge of the applicator and the skin is at least 6 mm.

Note: Accelerated partial breast irradiation (APBI) is delivered with up to 10 fractions delivered twice daily. More than 10 fractions are not medically necessary.

When Services Are Considered Not Medically Necessary
The use of breast brachytherapy for breast cancer when patient selection criteria are not met is considered to be not medically necessary.**

Background/Overview
Accelerated Partial Breast Irradiation
Although the randomized clinical trials supporting radiotherapy have relied on WBI, the majority of the benefit came from reducing recurrence in and immediately adjacent to the lumpectomy site. This observation has prompted investigation of whether local radiation, delivered only to the tumor bed and immediately adjacent tissue, could achieve similar results in selected patients. APBI describes the treatment of the tumor bed alone with an accelerated treatment delivery schedule. Treatment can be given with brachytherapy delivered via implanted single or multilumen catheters, with external beam radiotherapy or with intraoperative radiotherapy given at the time of surgery.

A large cohort of patients who received APBI using the MammoSite applicator has been studied, and the 5-year actuarial rate of ipsilateral breast tumor recurrence was 3.8%. More than 90% of
patients in this study reported good to excellent cosmesis. Long term high-quality data for APBI is currently lacking. Results from the prospective, randomized, phase III NSABP B-39/RTOG 0413 trial were recently reported. The study randomized patients to WBI or APBI delivered via brachytherapy or with 3D conformal techniques. The primary outcome was ipsilateral breast-tumor recurrence. With a median follow-up of 10.2 years, ipsilateral breast-tumor recurrence was 3% in the WBI group vs 4% for APBI. Survival and toxicities were similar. Although APBI did not meet the statistical criteria for equivalence to WBI and the overall difference in recurrence rate was 1%, the authors concluded that APBI might be an acceptable alternative for some women. In the RAPID trial comparing WBI with 3D conformal APBI, Canadian investigators found that 17% of WBI patients vs 29% of 3D conformal APBI patients had adverse cosmetic outcomes. In contrast, fewer adverse events were reported from women treated with lower dose and partial breast irradiation compared to whole breast irradiation in a longitudinal analysis of the IMPORT LOW phase III randomized controlled trial.

The results of the APBI-IMRT Florence trial were recently reported. Eligible patients were over 40 and had tumors measuring 2.5 cm or less. A total of 520 patients were randomized to receive 50 Gy whole breast irradiation in 25 fractions or 30 Gy in 5 fractions using IMRT-based APBI. The 10 year ipsilateral breast tumor recurrence rates were 2.5% for WBI versus 3.7% for APB (p=0.4). The overall ten year survival was similar in both arms at 92%. Of note, The APBI treatment was associated with lower acute toxicity and improved cosmesis compared to WBI (p=0.0001).

IORT is a form of APBI in which the entire partial breast treatment is delivered at the time of lumpectomy. Several systems have been approved to deliver treatment with either electrons or 50 kV x-rays. Two large randomized trials of this approach have been published. The ELIOT trial compared electron-based IORT to WBI in women 48 years or older and tumors less than 2.5 cm. For all patients, the ipsilateral breast tumor recurrence rate was 4.4% for the IORT patients vs. 0.4% for the WBI patients (p<0.0001). A subsequent subset analysis looking only at patients who qualify as “suitable” for APBI using the American Society for Therapeutic Radiation and Oncology (ASTRO) criteria revealed more favorable recurrence rates of 1.5% with electron IORT. Results of the TARGIT-A trial were recently updated and with a shorter median follow-up of 29 months they reported a local recurrence rate of 3.3% for IORT vs. 1.3% for WBI. When only the patients treated at the time of lumpectomy are considered, the local recurrence rates were 2.1% for IORT vs. 1.1% for WBI. In these patients, if high-risk features such as positive margins, extensive intraductal component, lobular histology, high grade histology, lymphovascular invasion or positive nodes were
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present on the final pathology, WBI was often added to the treatment. Survival was similar in both arms.

It is recommended that individuals considering APBI as an alternative to WBI be counseled that WBI is the more well-established treatment with documented long-term effectiveness and safety and that treatment with APBI may be associated with an increased risk of local recurrence and need for mastectomy. Society recommendations regarding patient suitability have been published, but are not all in agreement.

Regarding electronic brachytherapy, the American Brachytherapy Society states that “it is not recommended that electronic brachytherapy be utilized for accelerated partial breast irradiation, non-melanomatous skin cancers, or vaginal cuff brachytherapy outside prospective clinical trials at this time.”

**FDA or Other Governmental Regulatory Approval**

**U.S. Food and Drug Administration (FDA)**

In 2002, the MammoSite® Radiation Therapy System (Proxima Therapeutics), the first device specifically designed for breast brachytherapy, was cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process. Its intended use is “to provide brachytherapy when the physician chooses to deliver intracavitary radiation to the surgical margins following lumpectomy for breast cancer.”

Since 2002, several other devices for breast brachytherapy have been cleared for marketing by the FDA through the 510(k) process. The FDA determined that several devices (eg, Axxent® Electronic Brachytherapy System [Xoft], Strut-Adjusted Volume Implant [SAVI™] Applicator Kit [Biolucent (now Cianna Medical)], Contura® Multi-Lumen Balloon Source Applicator for Brachytherapy [SenoRx], ClearPath™ Adjustable Multi-Cather Source Applicator [North American Scientific], Intrabeam® System [Carl Zeiss Surgical]) were substantially equivalent to predicate devices. Each includes an FDA-required warning that the safety and effectiveness of the device "as a replacement for whole-breast irradiation in the treatment of breast cancer has not been established."

Although the Intrabeam® System (discussed in the Intraoperative Radiotherapy subsection) is subject to the FDA regulation, it does not fall under the regulatory purview of the U.S. Nuclear
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Regulatory Commission. In some states, the participation of radiation oncologists in delivering radiation is not required.

Rationale/Source
This medical policy was developed through consideration of peer-reviewed medical literature generally recognized by the relevant medical community, U.S. Food and Drug Administration approval status, nationally accepted standards of medical practice and accepted standards of medical practice in this community, technology evaluation centers, reference to federal regulations, other plan medical policies, and accredited national guidelines.

Supplemental Information
Society Recommendations for APBI

The National Comprehensive Cancer Network® (NCCN, 2020) - Guideline indicates that preliminary studies have shown that APBI may result in similar rates of local control in early breast cancer compared to WBI. They also note that cosmesis may be inferior and follow-up is limited. NCCN recommends treatment with APBI to be provided in a prospective clinical trial when possible. If APBI is provided off trial, then brachytherapy is recommended for those with a low risk of recurrence. They cite the ASTRO criteria for suitable candidates for APBI.

ASTRO - An update to the Evidence-Based Consensus statement was published in 2017. There were several changes in the criteria for who are “suitable” candidates for APBI. The age for the suitable group was lowered to 50 or older. The criteria were also broadened to include ductal carcinoma in situ (DCIS). The criteria are summarized below:

- Age > 50 years
- Surgical margins > 2 mm for invasive ductal cancer and > 3 mm for DCIS
- Size < 2 cm for invasive ductal cancer and < 2.5 cm for DCIS
- DCIS must be low to intermediate grade and non-palpable
- No lymphovascular invasion
- ER positive
- No invasive lobular cancer

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American College of Breast Surgeons - The American Society of Breast Surgeons recommends the following selection criteria when considering patients for treatment with APBI, as a sole form of radiation therapy in lieu of whole breast irradiation:

- Age 45 years old or older for invasive cancer and age 50 years or older for DCIS
- Invasive carcinoma or ductal carcinoma in situ
- Total tumor size (invasive and DCIS) less than or equal to 3 cm in size
- Negative microscopic surgical margins of excision
- Sentinel lymph node negative

References

Policy History
Original Effective Date: 12/01/2006
Current Effective Date: 12/31/2022
08/02/2006 Medical Director review
08/09/2006 Medical Policy Committee approval
07/18/2007 Medical Policy Committee approval. Brachytherapy in patients with stage I or II disease as the sole form of radiotherapy after surgical excision is now considered to be eligible for coverage with criteria. Rationale replaced.
05/07/2008 Medical Director review
05/21/2008 Medical Policy Committee approval. No change to coverage eligibility.
05/07/2009 Medical Director review
05/20/2009 Medical Policy Committee approval. No change to coverage eligibility.
06/03/2010 Medical Policy Committee review
06/16/2010 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
05/05/2011 Medical Policy Committee review
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05/18/2011 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
05/03/2012 Medical Policy Committee review
05/16/2012 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
05/02/2013 Medical Policy Committee review
05/22/2013 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
05/01/2014 Medical Policy Committee review
05/21/2014 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
01/01/2015 Coding Update
05/07/2015 Medical Policy Committee review
05/20/2015 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
08/03/2015 Coding update: ICD10 Diagnosis code section added; ICD9 Procedure code section removed.
01/01/2016 Coding update
05/05/2016 Medical Policy Committee review
05/18/2016 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
01/01/2017 Coding update: Removing ICD-9 Diagnosis Codes
03/02/2017 Medical Policy Committee review
03/15/2017 Medical Policy Implementation Committee approval. Investigational statement on accelerated partial breast irradiation using an electronic radiotherapy device removed and investigational statement added on Accuboost. Rationale, background, FDA section and references updated.
09/07/2017 Medical Policy Committee review
09/20/2017 Medical Policy Implementation Committee approval. Coverage changed to follow AIM Guidelines.
11/15/2017 Coding update
09/06/2018 Medical Policy Committee review
09/19/2018 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
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09/05/2019 Medical Policy Committee review
09/03/2020 Medical Policy Committee review
09/02/2021 Medical Policy Committee review
09/08/2021 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
09/01/2022 Medical Policy Committee review
09/14/2022 Medical Policy Implementation Committee approval. Coverage eligibility unchanged.

Next Scheduled Review Date: 09/2023

Coding
The five character codes included in the Blue Cross Blue Shield of Louisiana Medical Policy Coverage Guidelines are obtained from Current Procedural Terminology (CPT®), copyright 2021 by the American Medical Association (AMA). CPT is developed by the AMA as a listing of descriptive terms and five character identifying codes and modifiers for reporting medical services and procedures performed by physician.

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CPT is a registered trademark of the American Medical Association.

Codes used to identify services associated with this policy may include (but may not be limited to) the following:

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<td>ICD-10 Diagnosis</td>
<td>C50.011-C50.929, C79.81</td>
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*Investigational – A medical treatment, procedure, drug, device, or biological product is Investigational if the effectiveness has not been clearly tested and it has not been incorporated into standard medical practice. Any determination we make that a medical treatment, procedure, drug, device, or biological product is Investigational will be based on a consideration of the following:

A. Whether the medical treatment, procedure, drug, device, or biological product can be lawfully marketed without approval of the U.S. Food and Drug Administration (FDA) and whether such approval has been granted at the time the medical treatment, procedure, drug, device, or biological product is sought to be furnished; or

B. Whether the medical treatment, procedure, drug, device, or biological product requires further studies or clinical trials to determine its maximum tolerated dose, toxicity, safety, effectiveness, or effectiveness as compared with the standard means of treatment or diagnosis, must improve health outcomes, according to the consensus of opinion among experts as shown by reliable evidence, including:

1. Consultation with technology evaluation center(s);
2. Credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community; or
3. Reference to federal regulations.

**Medically Necessary (or “Medical Necessity”) - Health care services, treatment, procedures, equipment, drugs, devices, items or supplies that a Provider, exercising prudent clinical judgment, would provide to a patient for the purpose of preventing, evaluating, diagnosing or treating an illness, injury, disease or its symptoms, and that are:

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A. In accordance with nationally accepted standards of medical practice;
B. Clinically appropriate, in terms of type, frequency, extent, level of care, site and duration, and considered effective for the patient's illness, injury or disease; and
C. Not primarily for the personal comfort or convenience of the patient, physician or other health care provider, and not more costly than an alternative service or sequence of services at least as likely to produce equivalent therapeutic or diagnostic results as to the diagnosis or treatment of that patient's illness, injury or disease.

For these purposes, “nationally accepted standards of medical practice” means standards that are based on credible scientific evidence published in peer-reviewed medical literature generally recognized by the relevant medical community, Physician Specialty Society recommendations and the views of Physicians practicing in relevant clinical areas and any other relevant factors.

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NOTICE: If the Patient’s health insurance contract contains language that differs from the BCBSLA Medical Policy definition noted above, the definition in the health insurance contract will be relied upon for specific coverage determinations.

NOTICE: Medical Policies are scientific based opinions, provided solely for coverage and informational purposes. Medical Policies should not be construed to suggest that the Company recommends, advocates, requires, encourages, or discourages any particular treatment, procedure, or service, or any particular course of treatment, procedure, or service.