



FEP Medical Policy Manual

FEP 7.01.92 Cryoablation of Tumors Located in the Kidney, Lung, Breast, Pancreas, or Bone

Effective Policy Date: October 1, 2023

Original Policy Date: December 2011

Related Policies:

- 7.01.75 - Cryosurgical Ablation of Primary or Metastatic Liver Tumors
- 7.01.91 - Radiofrequency Ablation of Primary or Metastatic Liver Tumors
- 7.01.95 - Radiofrequency Ablation of Miscellaneous Solid Tumors Excluding Liver Tumors

Cryoablation of Tumors Located in the Kidney, Lung, Breast, Pancreas, or Bone

Description

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Cryosurgical ablation (hereafter referred to as cryosurgery or cryoablation) involves freezing of target tissues; this is most often performed by inserting a coolant-carrying probe into the tumor. Cryosurgery may be performed as an open surgical technique or as a closed procedure under laparoscopic or ultrasound guidance.

OBJECTIVE

The objective of this evidence review is to determine whether cryoablation of tumors located in the kidney, lung, breast, pancreas, or bone will improve the net health outcome. This evidence review is limited to treatment in adults (age 18 years and older) and does not address pediatric populations.

POLICY STATEMENT

Cryosurgical ablation may be considered **medically necessary** to treat localized renal cell carcinoma that is no more than 4 cm in size when either of the following criteria is met:

- Preservation of kidney function is necessary (ie, the individual has 1 kidney or renal insufficiency defined by a glomerular filtration rate of <60 mL/min/m²), and standard surgical approach (ie, resection of renal tissue) is likely to worsen kidney function substantially; or
- The individual is not considered a surgical candidate.

Cryosurgical ablation may be considered **medically necessary** to treat lung cancer when either of the following criteria is met:

- The individual has early-stage non-small-cell lung cancer and is a poor surgical candidate; or
- The individual requires palliation for a central airway obstructing lesion.

Cryosurgical ablation is considered **investigational** as a treatment for benign or malignant tumors of the breast, lung (other than defined above), pancreas, or bone and to treat renal cell carcinomas in individuals who are surgical candidates.

POLICY GUIDELINES

This policy does not address pediatric indications.

BENEFIT APPLICATION

Experimental or investigational procedures, treatments, drugs, or devices are not covered (See General Exclusion Section of brochure).

FDA REGULATORY STATUS

Several cryoablation devices have been cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process for use in open, minimally invasive, or endoscopic surgical procedures in the areas of general surgery, urology, gynecology, oncology, neurology, dermatology, proctology, thoracic surgery, and ear, nose, and throat. Examples include:

- Cryocare Surgical System (Endocare);
- CryoGen Cryosurgical System (Cryosurgical);
- CryoHit (Galil Medical) for the treatment of breast fibroadenoma;
- IceSense3™, ProSense™, and MultiSense Systems (IceCure Medical);
- SeedNet™ System (Galil Medical); and
- Visica System (Sanarus Medical).

FDA product code: GEH.

RATIONALE

Summary of Evidence

For individuals with early stage kidney cancer who are surgical candidates treated with cryoablation, the evidence includes comparative observational studies and systematic reviews. Relevant outcomes are overall survival (OS), disease-specific survival, quality of life, and treatment-related morbidity. Multiple comparative observational studies and systematic reviews of these studies have compared cryoablation to partial nephrectomy for early stage renal cancer. These studies have consistently found that partial nephrectomy is associated with better oncological outcomes than cryosurgery, but cryosurgery was associated with better perioperative outcomes, lower incidence of complications, and less decline in kidney function.. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with early stage kidney cancer who are not surgical candidates and who are treated with cryoablation, the evidence includes comparative observational studies of cryoablation compared to partial nephrectomy or other ablative techniques, systematic reviews of these studies, and case series. Relevant outcomes are OS, disease-specific survival, quality of life, and treatment-related morbidity. Although oncological outcomes were better with surgery, in comparative observational studies, cryoablation was associated with less decline in kidney function. Recent case series totaling more than 400 patients showed cryoablation was associated with good oncological outcomes and preservation of renal function. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with non-small cell lung cancer (NSCLC) who are not surgical candidates, the evidence includes uncontrolled observational studies and case series. Relevant outcomes are OS, disease-specific survival, quality of life, and treatment-related morbidity. Medically inoperable patients with early stage primary lung tumors were treated with cryoablation in a consecutive series of 45 patients. Five year survival was 68%; the main complications were hemoptysis in 40% of patients and pneumothorax in 51%. A prospective single arm Phase 2 study of 128 patients reported on cryoablation for treatment of metastases to the lung. Cryoablation for metastatic lung cancer was studied in a single arm trial in 40 patients. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with NSCLC who require palliation for a central airway obstructing lesion who are treated with cryoablation, the evidence includes case series. Relevant outcomes are OS, disease-specific survival, quality of life, and treatment-related morbidity. There are no comparative studies. A series of 521 consecutive patients reported improvement in symptoms in 86% of patients, but multiple study design, conduct, and relevance limitations preclude drawing conclusions about efficacy or safety of cryoablation in this population. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals with solid tumors located in the breast, pancreas, or bone who are treated with cryoablation, the evidence includes uncontrolled observational studies and case series. Relevant outcomes are OS, disease-specific survival, quality of life, and treatment-related morbidity. Due to the lack of prospective controlled trials, it is not possible to conclude that cryoablation improves outcomes for any indication better than alternative treatments. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

SUPPLEMENTAL INFORMATION

Practice Guidelines and Position Statements

Guidelines or position statements will be considered for inclusion in 'Supplemental Information' if they were issued by, or jointly by, a US professional society, an international society with US representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American College of Radiology

The American College of Radiology Appropriateness Criteria (2009, updated 2021) for post-treatment follow-up and active surveillance of renal cell carcinoma [RCC] indicated that "Ablative therapies, such as radiofrequency ablation, microwave ablation, and cryoablation, have been shown to be effective and safe alternatives [to surgical resection] for the treatment of small, localized RCCs."^{43,44} These recommendations are based on a review of the data and expert consensus.

American Urological Association

The American Urological Association (2021) updated its guidelines on the evaluation and management of clinically localized sporadic renal masses suspicious for renal cell carcinoma.⁴⁵ The guideline statements on thermal ablation (radiofrequency ablation, cryoablation) are listed in Table 1.

Table 1. Guidelines on Localized Masses Suspicious for Renal Cell Carcinoma

Recommendations	LOR	LOE
Guideline statement 25		
Clinicians should consider thermal ablation (TA) as an alternate approach for the management of cT1a renal masses <3 cm in size. For patients who elect TA, a percutaneous technique is preferred over a surgical approach whenever feasible to minimize morbidity.	Moderate	C
Guideline statement 26		
Both radiofrequency ablation (RFA) and cryoablation may be offered as options for patients who elect thermal ablation.	Conditional	C
Guideline statement 28		
Counseling about thermal ablation should include information regarding an increased likelihood of tumor persistence or local recurrence after primary thermal ablation relative to surgical excision, which may be addressed with repeat ablation if further intervention is elected	Strong	B

LOE: level of evidence; LOR: level of recommendation.

National Comprehensive Cancer Network

Kidney Cancer

The National Comprehensive Network (NCCN) (v.4.2023) guidelines on kidney cancer state that "thermal ablation (cryosurgery, radiofrequency ablation) is an option for the management of patients with clinical stage T1 renal lesions. Thermal ablation is an option for masses <3 cm, but may also be an option for larger masses in select patients. Ablation in masses >3 cm is associated with higher rates of local recurrence/persistence and complications. Biopsy of small lesions confirms a diagnosis of malignancy for surveillance, cryosurgery, and radiofrequency ablation strategies. Ablative techniques may require multiple treatments to achieve the same local oncologic outcomes as conventional surgery."

The NCCN guidelines also note that "ablative techniques such as cryotherapy or radiofrequency ablation are alternative strategies for selected patients, particularly the elderly and those with competing health risks." Additionally, the guidelines note that "randomized phase III comparison of ablative techniques with surgical resection (ie, radical or partial nephrectomy by open or laparoscopic techniques) has not been performed."⁴⁶

Non-Small Cell Lung Cancer

The NCCN (v.3.2023) guidelines for NSCLC made the following relevant recommendations:⁴⁷

- Resection is the preferred local treatment modality for medically operable disease.
- Image-guided thermal ablation (IGTA) techniques include radiofrequency ablation, microwave ablation, and cryoablation.
- IGTA may be an option for select patients not receiving stereotactic ablative radiotherapy or definitive radiotherapy.
- IGTA may be considered for those patients who are deemed "high risk"- those with tumors that are for the most part surgically resectable but rendered medically inoperable due to comorbidities. In cases where IGTA is considered for high-risk or borderline operable patients, a multidisciplinary evaluation is recommended.
- IGTA is an option for the management of NSCLC lesions <3 cm. Ablation for NSCLC lesions >3 cm may be associated with higher rates of local recurrence and complications.
- The guidelines do not separate out recommendations by ablation technique and note that "each energy modality has advantages and disadvantages. Determination of energy modality to be used for ablation should take into consideration the size and location of the target tumor, risk of complication, as well as local expertise and/or operator familiarity."

Cancer Pain

The NCCN Guidelines on Adult Cancer Pain (v.1.2023) do not address cryoablation specifically for pain due to bone metastases, but note that "ablation techniques may...be helpful for pain management in patients who receive inadequate relief from pharmacological therapy."⁴⁸

U.S. Preventive Services Task Force Recommendations

Not applicable.

Medicare National Coverage

There is no national coverage determination. In the absence of a national coverage determination, coverage decisions are left to the discretion of local Medicare carriers.

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POLICY HISTORY - THIS POLICY WAS APPROVED BY THE FEP® PHARMACY AND MEDICAL POLICY COMMITTEE ACCORDING TO THE HISTORY BELOW:

Date	Action	Description
December 2011	New policy	
September 2012	Replace policy	Policy updated with literature review; lung cancer added to investigational policy statement. References 8, 15-16, 23-25 and 38 added.
September 2013	Replace policy	Policy updated with literature review; metastases added to not medically necessary statement; other policy statements unchanged. References 3,17 and 36 added; 40 updated.
September 2014	Replace policy	Policy updated with literature review. References 18, 20, 24-25, and 29 added. Policy statements unchanged.
September 2015	Replace policy	Policy updated with literature review; reference 24 added. Policy statements unchanged.
March 2018	Replace policy	Policy updated with additional references to October 30, 2017. Medically necessary policy statements for lung cancer and the statement related to cryosurgical ablation to treat breast, lung tumors qualified with "other than defined above, or other solid tumors...", corrected from "not medically necessary, to "investigational, due to FDA 510(k) approval status; references 21-23, 29 and 41 were added, and reference list updated
September 2018	Replace policy	Policy updated with literature review through May 7, 2018; references 52-53 updated. Policy statements unchanged.
September 2019	Replace policy	Policy updated with literature review through May 13, 2019; references added and updated. Policy statements unchanged.
September 2020	Replace policy	Policy updated with literature review through May 30, 2020; references added. Policy statements unchanged.
September 2021	Replace policy	Policy updated with literature review through June 1, 2021. Rationale section substantially revised to separate out indications by tumor location. Title changed to "Cryoablation of Tumors Located in the Kidney, Lung, Breast, Pancreas, or Bone." Policy statement revised to align with separation of indications by tumor location - intent unchanged.
September 2022	Replace policy	Policy updated with literature review through June 12, 2022; no references added. Terminology in policy statements changed from "patients" to "individuals" for standardization; intent unchanged.
September 2023	Replace policy	Policy updated with literature review through June 6, 2023; references added. Policy statements unchanged.

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