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Endoscopic Radiofrequency Ablation or Cryoablation for Barrett Esophagus

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Related Policies (if applicable)
None

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Coverage

Radiofrequency ablation **may be considered medically necessary** for the treatment of Barrett esophagus (BE) with low-grade or high-grade dysplasia when confirmed by two pathologists prior to ablation.

NOTE 1: Radiofrequency ablation for Barrett esophagus with high-grade dysplasia may be used in combination with endoscopic mucosal resection of nodular/visible lesions.

Radiofrequency ablation **is considered experimental, investigational and/or unproven** for the treatment of Barrett esophagus when the above criteria are not met, including but not limited to Barrett esophagus in the absence of dysplasia.

Cryoablation **is considered experimental, investigational and/or unproven** for the treatment of Barrett esophagus, with or without dysplasia.

Policy Guidelines

Radiofrequency ablation for Barrett esophagus with high-grade dysplasia (HGD) may be used in combination with endoscopic mucosal resection (EMR) of nodular or visible lesions. The diagnosis of HGD should be confirmed by 2 pathologists before initiating radiofrequency ablation. The American Society for Gastrointestinal Endoscopy and the American Gastroenterological Association both recommend that a reading of HGD should be confirmed by an experienced gastrointestinal pathologist [Wani et al., 2018, PMID 29397943; Sharma et al. 2020, PMID 31730766]. Two cohort studies found that reevaluation of HGD after an initial evaluation resulted in 40% to 53% of individuals receiving a lower-grade evaluation on repeat endoscopy, highlighting the need for confirmation by an expert center (Sangle et al., 2015, PMID 25676554; Verbeek et al., 2014; PMID 24388501). Additionally, for HGD, it is important to rule out adenocarcinoma; referral to an expert center that can conduct high-definition white-light endoscopy and other diagnostic techniques has been found to increase the rate of adenocarcinoma detection and proper referral for EMR [Cameron et al., 2014; PMID 24929493].

There is considerable interobserver variability in the diagnosis of low-grade dysplasia (LGD), and the potential exists for overdiagnosis of LGD by nonexpert pathologists (overdiagnosis is due primarily to the difficulty in distinguishing inflammatory changes from LGD). There is evidence in the literature that expert gastrointestinal pathologists will downgrade a substantial portion of biopsies that are initially read as LGD by nonexperts (Curvers et al. [2010], PMID 20461069; Kerkhof et al. [2007], PMID 17543082). As a result, it is ideal that 2 experts in gastrointestinal pathology agree on the diagnosis to confirm LGD; this may result in greater than 75% of initial diagnoses of LGD being downgraded to non-dysplasia (Curvers et al. [2010]). A review by a single expert gastrointestinal pathologist will also result in a large number of LGD diagnoses being downgraded, although probably not as many as achieved using 2 expert pathologists (Kerkhof et al., 2007).

Description

Barrett Esophagus and Risk of Esophageal Carcinoma

The esophagus is normally lined by squamous epithelium. Barrett Esophagus (BE) is a condition in which the normal squamous epithelium is replaced by specialized columnar-type epithelium, known as intestinal metaplasia, in response to irritation and injury caused by gastroesophageal reflux disease. Occurring in the distal esophagus, BE may be of any length; it may be focal or circumferential and can be seen on endoscopy as being a different color than the background squamous mucosa. Confirmation of BE requires a biopsy of the columnar epithelium and microscopic identification of intestinal metaplasia.

Intestinal metaplasia is a precursor to esophageal adenocarcinoma, which is thought to result from a stepwise accumulation of genetic abnormalities in the specialized epithelium, resulting

in the phenotypic expression of histologic features from low grade dysplasia (LGD), to high-grade dysplasia (HGD), to carcinoma. Two large epidemiologic studies published in 2011 reported the risk of progression to cancer in patients with BE. One reported the rate of progression to cancer in more than 8000 patients with a mean duration of follow-up of 7 years (range, 1 to 20 years). (1) The de novo progression to cancer from BE at 1 year was 0.13%. The risk of progression was reported as 1.4% per year in patients with LGD and 0.17% per year in patients without dysplasia. This incidence translates into a risk of 10 to 11 times that of the general population. The other study identified more than 11,000 patients with BE and, after a median follow-up of 5.2 years, it reported that the annual risk of esophageal adenocarcinoma was 0.12%. (2) Detection of LGD on index endoscopy was associated with an incidence rate for adenocarcinoma of 5.1 cases per 1000 person-years, and the incidence rate among patients without dysplasia was 1.0 case per 1000 person-years. Risk estimates for patients with HGD were slightly higher. The reported risk of progression to cancer in BE in older studies was much higher, with an annual incidence of risk of 0.4% to 0.5% per year, with risk estimated at 30 to 40 times that of the general population. Current surveillance recommendations have been based on these higher risk estimates.

There are challenges in diagnostically differentiating between nondysplastic BE and BE with LGD; they are important when considering treatment for LGD. (3, 4) Both sampling bias and interobserver variability have been shown to be problematic. Therefore, analysis of progression to carcinoma in BE with intestinal metaplasia versus LGD is difficult. Initial diagnosis of BE can also be a challenge with respect to histologic grading because inflammation and LGD can share similar histologic characteristics. (5)

One approach to risk-stratify patients with an initial diagnosis of LGD has been to use multiple pathologists, including experts in gastrointestinal histopathology, to confirm the initial diagnosis of LGD. There is a high degree of interobserver variability among the pathology readings of LGD versus inflammatory changes, and the resultant variability in pathology diagnosis may contribute to the variable rates of progression of LGD reported in the literature. Kerkhof et al. (2007) reported that, in patients with an initial pathologic diagnosis of LGD, review by an expert pathologist would result in the initial diagnosis being downgraded to non-dysplasia in up to 50% of cases. (6) Curvers et al. (2010) tested this hypothesis in 147 patients with BE who were given an initial diagnosis of LGD. (7) All pathology slides were read by 2 expert gastrointestinal pathologists with extensive experience in BE; disagreements among experts in the readings were resolved by consensus. Once this process was completed, 85% of initial diagnoses of LGD were downgraded to non-dysplasia, leaving 22 (15%) of 147 patients with a confirmed diagnosis of LGD. All patients were followed for a mean of 5.1 years for progression to HGD or cancer. For patients with confirmed LGD, the rate of progression was 13.4%, compared with 0.5% for patients who had been downgraded to non-dysplasia.

The strategy of having LGD confirmed by expert pathologists is supported by the results of a randomized controlled trial by Phoa et al. (2014), which required confirmation of LGD by a central expert panel following initial diagnosis by a local pathologist. (8) Of 511 patients with an initial diagnosis of LGD, 264 (52%) were excluded because the central expert panel reassigned

the classification of LGD, most often from LGD to indefinite or non-dysplasia. These findings were further confirmed in a retrospective cohort study by Duits et al. (2015) who reported on 293 BE cases with LGD diagnosed over an 11-year period and submitted for expert panel review. (9) In this sample, 73% of subjects were down staged.

Management of Barrett Esophagus (BE)
The management of BE includes the treatment of gastroesophageal reflux disease and surveillance endoscopy to detect progression to high-grade dysplasia or adenocarcinoma. The finding of high-grade dysplasia or early-stage adenocarcinoma warrants mucosal ablation or resection (either endoscopic mucosal resection [EMR] or esophagectomy).

EMR, either focal or circumferential, provides a histologic specimen for examination and staging (unlike ablative techniques). One 2007 study provided long-term results for EMR in 100 consecutive patients with early Barrett-associated adenocarcinoma (limited to the mucosa). (10) The 5-year overall survival was 98% and, after a mean of 36.7 months, metachronous lesions were observed in 11% of patients. In a review by Pech and Ell (2009), the authors stated that circumferential EMR of the entire segment of BE leads to a stricture rate of 50%, and recurrences occur at a rate of up to 11%. (11)

Ablative Techniques
Available mucosal ablation techniques include several thermal (multipolar electrocoagulation [MPEC], argon plasma coagulation [APC], heater probe, neodymium-doped yttrium aluminum garnet [Nd:YAG] laser, potassium titanyl phosphate [KTP]-YAG laser, diode laser, argon laser, cryoablation) or nonthermal (5-aminolevulinic acid, photodynamic therapy) techniques. In a randomized phase 3 trial reported by Overholt et al. (2005), photodynamic therapy was shown to decrease significantly the risk of adenocarcinoma in BE. (12)

The CryoSpray Ablation system uses a low-pressure spray for applying liquid nitrogen through an upper endoscope. Cryotherapy allows for the treatment of uneven surfaces; however, a disadvantage of the treatment is the uneven application inherent in spraying the cryogen.

The HALO system uses radiofrequency energy and consists of two components: an energy generator and an ablation catheter. The generator provides rapid (i.e., <1 second) delivery of a predetermined amount of radiofrequency energy to the catheter. The HALO90 or the HALO360 is inserted into the esophagus with an endoscope, using standard endoscopic techniques. The HALO90 catheter is plate-based and used for focal ablation of areas of BE up to 3 cm. The HALO360 uses a balloon catheter that is sized to fit the individual's esophagus and is inflated to allow for circumferential ablation.

Radiofrequency ablation affects only the most superficial layer of the esophagus (i.e., the mucosa), leaving the underlying tissues unharmed. Measures of efficacy for the procedure are the eradication of intestinal metaplasia and the post ablation regrowth of the normal squamous epithelium. (Note: The eradication of intestinal metaplasia does not leave behind microscopic foci). Reports of the efficacy of the HALO system in ablating BE have been as high as 70%

(comparable with alternative methods of ablation [e.g., APC, MPEC]), and even higher in some reports. The incidence of leaving behind microscopic foci of intestinal metaplasia has been reported to be between 20% and 44% with APC and 7% with MPEC; studies using the HALO system have reported 0%. (13) Another potential advantage of the HALO system is that it is an automated process that eliminates operator-dependent error, which may be seen with APC or MPEC.

The risk of treating high-grade dysplasia or mucosal cancer solely with ablative techniques is under-treatment for approximately 10% of patients with undetected submucosal cancer, in whom esophagectomy would have been required. (11)

Regulatory Status

In 2005, the HALO360 (now Barrx™ 360 RFA Balloon Catheter; Barrx Medical; acquired by Covidien in 2012 [now Medtronic]) was cleared for marketing by the U.S. Food and Drug Administration (FDA) through the 510(k) process and, in 2006, the HALO90 (now Barrx™ 90 RFA Focal Catheter) received clearance. (14) The FDA-labeled indications are for use in coagulation of bleeding and nonbleeding sites in the gastrointestinal tract and include the treatment of BE. Other focal ablation devices from Barrx include the Barrx™ 60 RFA Focal Catheter, the Barrx™ Ultra Long RFA Focal Catheter, and the Barrx™ Channel RFA Endoscopic Catheter.

FDA product code: GEI.

In 2007, the CryoSpray Ablation™ System (formerly the SprayGenix Cryo Ablation system; CSA Medical) was cleared for marketing by the FDA through the 510(k) process for use as a "cryosurgical tool for destruction of unwanted tissue in the field of general surgery, specifically for endoscopic applications." (15) The CryoBalloon Ablation System has also been cleared by the FDA through the 510(k) process for use as a cryosurgical tool in surgery for endoscopic applications, including ablation of BE with dysplasia. (16) The next-generation C2 CryoBalloon Ablation System was introduced in 2018. (17)

FDA product code: GEH.

In 2002, the Polar Wand® device (Chek-Med Systems), a cryosurgical device that uses compressed carbon dioxide, was cleared for marketing by the FDA through the 510(k) process. Indications for use are "ablation of unwanted tissue in the fields of dermatology, gynecology, general surgery, urology, and gastroenterology." (18)

Rationale

This policy was originally developed in 2009 and has been updated periodically with searches of the PubMed database. The most recent literature update was performed through September 14, 2023.

Medical policies assess the clinical evidence to determine whether the use of technology improves the net health outcome. Broadly defined, health outcomes are the length of life, quality of life, and ability to function-including benefits and harms. Every clinical condition has specific outcomes that are important to patients and managing the course of that condition. Validated outcome measures are necessary to ascertain whether a condition improves or worsens; and whether the magnitude of that change is clinically significant. The net health outcome is a balance of benefits and harms.

To assess whether the evidence is sufficient to draw conclusions about the net health outcome of technology, two domains are examined: the relevance, and quality and credibility. To be relevant, studies must represent one or more intended clinical use of the technology in the intended population and compare an effective and appropriate alternative at a comparable intensity. For some conditions, the alternative will be supportive care or surveillance. The quality and credibility of the evidence depend on study design and conduct, minimizing bias and confounding that can generate incorrect findings. The randomized controlled trial (RCT) is preferred to assess efficacy; however, in some circumstances, nonrandomized studies may be adequate. RCTs are rarely large enough or long enough to capture less common adverse events and long-term effects. Other types of studies can be used for these purposes and to assess generalizability to broader clinical populations and settings of clinical practice.

Radiofrequency Ablation (RFA) for Barrett Esophagus with High-Grade Dysplasia

Clinical Context and Therapy Purpose

In individuals diagnosed with BE with HGD, the risk of progression to cancer is relatively high, and esophageal adenocarcinoma is associated with high morbidity and a 5-year survival rate of up to 13%. (19) Therefore, intervention with esophagectomy or RFA may be strongly indicated.

The purpose of endoscopic RFA in individuals who have BE with HGD is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The following PICO was used to select literature to inform this policy.

Populations

The relevant population of interest are patients with BE with HGD.

Interventions

The therapy being considered is endoscopic RFA.

Comparators

The following therapies and practices are currently being used to treat BE: esophagectomy, endoscopic mucosal resection (EMR), and surveillance.

Outcome

The general outcomes of interest are symptoms (e.g., pain) and functional outcomes (including swallowing).

Beneficial outcomes include reductions in progression to carcinoma and longer-term maintenance of eradication of dysplasia.

Harmful outcomes include damage to the esophagus resulting in difficulty swallowing.

Morbidity from treatment would be assessed within 30 days after the procedure.

Study Selection Criteria

Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Systematic Reviews

Chadwick et al. (2014) reported on a systematic review that compared RFA with complete endoscopic mucosal resection (EMR) for the treatment of BE. (20) Twenty studies (22 articles) were reviewed, including 2 RCTs, 10 cohort studies on EMR, and 8 cohort studies on RFA. The only study that compared RFA with EMR was an RCT by van Vilsteren et al. (2011) (21); the other RCT was by Shaheen et al. (2009, 2011; see below). (22, 23) The studies were heterogeneous in design. A total of 1087 (532 EMR, 555 RFA) patients with HGD or intramucosal carcinoma were included in the studies reviewed. The median number of resections or RFA sessions required for the eradication of BE was 2. Complete EMR and RFA eradicated BE dysplasia in 95% and 92% of patients, respectively. Eradication was maintained in 95% of EMR patients at a median follow-up of 23 months and in 94% of RFA patients at a median follow-up of 21 months. Fewer RFA patients experienced short-term adverse events (2.5%) than those who received complete EMR (12%). Esophageal strictures requiring additional treatment occurred in 4% of RFA patients and 38% of complete endoscopic resection patients.

Randomized Controlled Trials

RFA may be used alongside focal endoscopic resection. In the intention-to-treat analysis of a prospective, interventional study by Phoa et al. (2016) that included 132 subjects with BE and HGD or early cancer treated with endoscopic resection followed by RFA, complete eradication of neoplasia and complete eradication of intestinal metaplasia occurred in 92% and 87% of subjects, respectively. (24) At a median follow-up of 27 months, neoplasia and intestinal metaplasia had recurred in 4% and 8% of subjects, respectively.

van Vilsteren et al. (2011) reported on the results of a multicenter, randomized trial that compared the safety of stepwise radical endoscopic resection (SRER) with focal EMR followed by RFA for complete eradication of BE 5 cm or less with HGD or early cancer. (21) Patients in the

SRER group underwent a piecemeal EMR of 50% of BE followed by serial EMR. Patients in the EMR plus RFA group underwent focal EMR for visible lesions followed by serial RFA. Follow-up endoscopy with biopsies (4-quadrant/2 cm BE) was performed at 6 and 12 months and then annually. The main outcome measures were: stenosis rate, complications, complete histologic response for neoplasia, and complete histologic response for intestinal metaplasia (CR-IM). Complete histologic response for neoplasia was achieved in 25 (100%) of 25 SRER patients and in 21 (96%) of 22 patients receiving EMR plus RFA. CR-IM was achieved in 23 (92%) SRER patients and 21 (96%) patients receiving EMR plus RFA. The stenosis rate was significantly higher with SRER (88%) than with EMR plus RFA (14%; $p<0.001$), resulting in more therapeutic sessions in SRER (6 vs 3; $p<0.001$) due to dilations. After a median follow-up of 24 months, 1 SRER patient had a recurrence of early cancer, requiring endoscopic resection. This trial confirmed that both techniques achieved comparably high rates of CR-IM and complete histologic response for neoplasia but found that SRER was associated with more complications and therapeutic sessions.

The randomized multicenter, sham-controlled trial by Shaheen et al. (2009) compared RFA with surveillance alone in patients with BE and dysplasia. (22) RFA was successful in eradicating HGD, with complete eradication at 12 months achieved in 81% of the ablation group vs 19% in the control group ($p<0.001$). This trial also confirmed a high-risk of progression to cancer in patients with HGD and established that this progression was significantly reduced in patients treated with RFA. Among 63 patients with HGD in the trial, 19% in the control group progressed to cancer vs 2.4% in the RFA group ($p=0.04$). This represented a nearly 90% relative risk reduction for progression to cancer (relative risk, 0.1; 95% confidence interval [CI], 0.01 to 1.0; $p=0.04$), and a number needed to treat of 6.0 to prevent 1 case of cancer over a 1-year period.

Longer-term follow-up at two to three years reported that complete eradication of dysplasia was maintained in most participants with initial HGD. (23) For 54 patients with HGD available for follow-up, all dysplasia was eradicated in 50 (93%) of 54 subjects, and all intestinal metaplasia was eradicated in 48 (89%) of 54. After 3 years, dysplasia was eradicated in 55 (98%) of 56 subjects, and all intestinal metaplasia was eradicated in 51 (91%) of 56 subjects. More than 75% of patients with HGD remained free of intestinal metaplasia with a follow-up of longer than 3 years, with no additional therapy.

Section Summary: RFA for BE with HGD

For patients who have BE with HGD, there is a relatively high-risk of progression to cancer, and interventions to prevent progression are warranted. RFA results in high rates of complete eradication of dysplasia that is durable for at least two years. One RCT demonstrated that, following RFA, the progression from HGD to cancer is reduced by approximately 90%, with rates of esophageal strictures of 6%.

RFA for BE With Low-Grade Dysplasia

Clinical Context and Therapy Purpose

The purpose of endoscopic RFA in individuals who have BE with LGD is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The following PICO was used to select literature to inform this policy.

Populations
The relevant population of interest is individuals with BE with LGD.

Interventions
The therapy being considered is endoscopic RFA.

Comparators
The following practice is currently being used to treat BE with LGD: surveillance by gastroenterologists.

Outcome
The general outcomes of interest are symptoms (e.g., pain) and functional outcomes (including swallowing).

Beneficial outcomes include reductions in progression to HGD or carcinoma and longer-term maintenance of eradication of dysplasia.

Harmful outcomes include damage to the esophagus resulting in difficulty swallowing.

Morbidity would be assessed within 30 days after the procedure. Conversion to HGD would be measured at two to five years.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Systematic Reviews
Wang et al. (2022) performed a meta-analysis of 3 RCTs (N=282) comparing RFA with surveillance in patients with LGD. (25) Nearly 90% of the patients enrolled were male; other demographic information was not reported. The primary outcome was risk of progression to HGD or esophageal adenocarcinoma. Compared with endoscopic surveillance, RFA was associated with lower odds of progression to either HGD or esophageal adenocarcinoma (risk ratio [RR], 0.25; 95% CI, 0.07 to 0.93; p=.04). The findings had moderate heterogeneity (I^2=55%), and the risk of bias was considered low. When analyzed separately, the risk of progression to HGD was significantly reduced with RFA (RR, 0.25; 95% CI, 0.07 to 0.71; p=.01;

I^2=15%); however, the results for progression to esophageal adenocarcinoma were not significant (RR, 0.56; 95% CI, 0.05 to 6.76; p=.65).

Klair et al. (2021) performed a systematic review and meta-analysis of comparative studies of RFA versus endoscopic surveillance in patients with BE with LGD. (26) The primary outcome was risk of progression to HGD or esophageal adenocarcinoma. The meta-analysis included 4 studies (N=543), including 2 retrospective studies and 2 RCTs. Compared with endoscopic surveillance, RFA was associated with lower odds of progression to either HGD or esophageal adenocarcinoma (odds ratio [OR], 0.17; 95% CI, 0.04 to 0.65). Individually, the progression to HGD maintained significance compared with endoscopic surveillance (OR, 0.23; 95% CI, 0.08 to 0.61), while progression to adenocarcinoma was numerically lower (OR, 0.44; 95% CI, 0.17 to 1.16). However, the findings indicated moderate heterogeneity (I^2=0.63) and evidence of publication bias.

In their meta-analysis, Pandey et al. (2018) evaluated both RCTs and observational studies to determine the efficacy of RFA in treating BE with LGD compared with surveillance. (27) The 8 studies in the meta-analysis included 619 patients followed up for a median of 26 months. The overall pooled rate of complete eradication of intestinal metaplasia after RFA was 88.17% (95% CI, 88.13% to 88.20%; p <.001); the rate of complete eradication of dysplasia was 96.69% (95% CI, 96.67% to 96.71%; p <.001). Compared with surveillance, the rates of progression to high-grade dysplasia or cancer were significantly lower with RFA (odds ratio 0.07; 95% CI, 0.02 to 0.22). The pooled recurrence rate of intestinal metaplasia was 5.6% (95% CI, 5.57% to 5.63%; p<.001) and 9.66% (95% CI, 9.61% to 9.71%; p <.001) for dysplasia. Although the analysis was limited by its inclusion of observational cohort studies and the sample sizes of patients receiving RFA were all less than 100 patients, all studies supported the use of RFA for LGD BE. The authors concluded that RFA is safe and effective for eradicating intestinal metaplasia and dysplasia and reducing progression from LDG to HGD or cancer in the short term. Longer-term outcomes, however, warrant further research.

Section Summary: RFA for BE with LGD

The risk of progression from LGD to cancer is not well-defined, with highly variable rates reported in the published literature. Evidence from randomized and nonrandomized studies has established that RFA can achieve complete eradication of dysplasia in patients with LGD that is durable for at least two years. Combined rates of progression to HGD or esophageal adenocarcinoma are lower in patients with LGD treated with RFA compared with surveillance.

RFA for BE Without Dysplasia

Clinical Context and Therapy Purpose

The purpose of endoscopic RFA in individuals who have BE without dysplasia is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The following PICO was used to select literature to inform this policy.

Populations

The relevant population of interest is individuals with BE without dysplasia.

Interventions
The therapy being considered is endoscopic RFA.

Comparators
The following practice is currently being used to treat BE without dysplasia: surveillance by gastroenterologists.

Outcome
The general outcomes of interest are symptoms (e.g., pain) and functional outcomes (including swallowing.

Beneficial outcomes include reductions in progression to dysplasia or carcinoma and longer-term maintenance of eradication of dysplasia.

Harmful outcomes include damage to the esophagus resulting in difficulty swallowing.

Morbidity would be assessed within 30 days after the procedure. Conversion to dysplasia would be measured at two to five years.

Study Selection Criteria
Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Nonrandomized Trials
No RCTs were identified that evaluated RFA treatment of BE without dysplasia. The evidence on this issue consists of single-arm trials that have reported outcomes of RFA. There is no high-quality evidence on the comparative efficacy of RFA vs surveillance alone. Progression to cancer in cases of nondysplastic BE is lower than that for LGD or HGD, with rates in the literature ranging from 0.05% to 0.5%. (1, 2)

Fleischer et al. (2008, 2010) reported on the 5-year follow-up of a single-arm study of patients with nondysplastic BE treated with RFA. (28, 29) The original study included 70 patients who underwent circumferential RFA and complete histologic response for intestinal metaplasia (CR-IM), defined as complete eradication of nondysplastic BE. (28) CR-IM was seen in 70% of patients at 1-year follow-up; patients with persistent BE underwent focal RFA. At the 2.5-year follow-up, CR-IM was found in 60 (98%) of 61 patients. (28) At 5-year follow-up, 4-quadrant

biopsies were obtained from every 1 cm of the original extent of BE, and the authors reported the proportion of patients demonstrating CR-IM. (29) If nondysplastic BE was identified at the five-year follow-up, focal RFA was performed one month later, and biopsies were repeated two months afterward to assess histologic response. Primary outcomes were the proportion of patients demonstrating CR-IM at a five-year biopsy or after a single session of focal RFA. For the 5-year follow-up, there were 60 eligible patients, 50 (83%) of whom participated. Forty-six (92%) of 50 patients showed CR-IM at the 5-year biopsy visit. The four patients found to have BE at five years underwent a single session of RFA one month after biopsy; all four patients had CR-IM at subsequent rebiopsy two months after RFA. No strictures were noted. The authors concluded that this first report of five-year CR-IM outcomes supported the safety, efficacy, and reduction in neoplastic progression in treating nondysplastic BE with RFA.

Section Summary: RFA for BE Without Dysplasia

Nondysplastic BE has a relatively low rate of progression to cancer. Although available research has indicated that nondysplastic metaplasia can be eradicated by RFA, the risk-benefit ratio and the net effect on health outcomes is uncertain.

Cryoablation of BE

Clinical Context and Therapy Purpose

The purpose of endoscopic cryoablation in individuals who have BE is to provide a treatment option that is an alternative to or an improvement on existing therapies.

The following PICO was used to select literature to inform this policy.

Populations

The relevant population of interest is individuals with BE with or without dysplasia.

Interventions

The therapy being considered is endoscopic cryoablation.

Comparators

The following therapies and practices are currently being used to treat BE: esophagectomy, endoscopic mucosal resection, and surveillance.

Outcomes

The general outcomes of interest are symptoms (e.g., pain) and functional outcomes (including swallowing).

Beneficial outcomes include reductions in progression to HGD or carcinoma and longer-term maintenance of eradication or dysplasia.

Harmful outcomes include damage to the esophagus resulting in difficulty swallowing.

Morbidity would be assessed within 30 days after the procedure.

Study Selection Criteria

Methodologically credible studies were selected using the following principles:

- To assess efficacy outcomes, comparative controlled prospective trials were sought, with a preference for RCTs.
- In the absence of such trials, comparative observational studies were sought, with a preference for prospective studies.
- To assess long-term outcomes and adverse events, single-arm studies that capture longer periods of follow-up and/or larger populations were sought.
- Studies with duplicative or overlapping populations were excluded.

Systematic Reviews

Several meta-analyses have evaluated the efficacy of cryotherapy in patients with BE (Tables 1, 2, and 3). Tariq et al. (2021) performed a meta-analysis of 14 retrospective and prospective observational studies (N=405) of patients with BE who were treated with cryotherapy. (30) The primary outcome of proportions of patients achieving complete eradication of dysplasia and complete eradication of intestinal metaplasia were 84.8% (95% CI, 72.2% to 94.4%) and 64.2% (95% CI, 52.9% to 74.8%), respectively. Both outcomes had a high degree of heterogeneity (I^2 of 88.3% and 77.9%, respectively). Subgroup analyses of only high-quality studies revealed rates of 91.3% (95% CI, 83.0% to 97.4%; I^2=69.5%) and 71.6% (95% CI, 59.0% to 82.9%; I^2=80.9%), respectively.

In their meta-analysis, Westerveld et al. (2020) evaluated 7 prospective and retrospective cohort studies that reported outcomes of balloon cryoablation across 272 patients with BE; 3 of the included studies were previously reported in abstract form only. (31) The pooled proportion for complete eradication of intestinal metaplasia was 85.8% (95% CI, 77.8% to 92.2%). Among 262 patients with BE with dysplasia, 238 reported complete eradication of dysplasia after cryoablation (pooled proportion, 93.8%; 95% CI, 85.5% to 98.7%). Both outcomes had a high degree of heterogeneity (I^2 of 55% and 74.2%, respectively). However, when 2 low quality studies were excluded from the analysis results were consistent with the primary analysis. Adverse events were reported in 12.5% of patients, representing 34 adverse events. Half of the adverse events (n=16) were post-ablation stricture formation (5.8%).

Hamade et al. (2019) evaluated the use of cryotherapy for BE in patients who were previously treatment naive. (32) Six uncontrolled trials were included in the systematic review, which included 232 patients overall. Complete eradication of intestinal metaplasia was achieved in 69.35% of cases (95% CI, 52.1% to 86.5%; I^2 = 89.3%). Complete eradication of dysplasia was achieved in 90.6% of cases (95% CI, 83.7% to 97.4%; I^2 = 75.7%). Progression to cancer occurred in 4% of cases (9/225). The pooled recurrence rate of intestinal metaplasia was 19.1 per 100 patient years. Post-procedure stricture formation rate was 4.9% and 3.9% of patients reported postprocedural pain.

Table 1. Comparison of Studies Included in Systematic Reviews and Meta-Analyses

Study	Tariq et al. (2020) (30)	Westerveld et al. (2020) (31)	Hamade et al. (2019) (32)
Canto et al. (2019)		•	
Canto et al. (2018)	•	•	•
Canto et al. (2015)	•		•
Chen et al (2013)	•		
Eluri et al. (2017)	•		
Goldberg et al. (2012)	•		
Gosaine et al. (2013)	•		•
Greenwald et al. (2010)	•		
Halsey et al. (2011)	•		
Johnston et al. (2013)	•		
Kunzli et al. (2016)		•	
Ramay et al. (2017)	•		•
Scholvinck et al. (2015)		•	
Sitaraman et al. (2016)		•	
Trindade et al. (2017)	•		•
Thota et al. (2018)	•		•
Van Munster et al. (2018)		•	
Verbeek et al. (2015)	•		
Wang et al. (2015)		•	
Wani et al. (2012)	•		

Table 2. Systematic Review and Meta-Analysis Characteristics

Study	Dates	Trials	Participants	N(Range)	Design	Duration
Tariq et al. (2020) (30)	2006-2016	14	Patients with biopsy-confirmed dysplastic or neoplastic BE who underwent ≥1 session of cryotherapy	405 (20-81)	Retrospective, prospective observational	Range, 3 to 54 months
Westerveld et al. (2020) (31)	2015-2019	7	Patients with BE treated with cryoablation	272 (5-120)	Retrospective, prospective observational	NR

Hamade et al. (2019) (32)	NR	6	Treatment-naive patients with BE treated with cryotherapy	282 (22-81)	Retrospective observational	Range, 24 to 65 months

BE: Barrett's esophagus; NR: not reported.

Table 3. Systematic Review and Meta-Analysis Results

Study	Complete eradication of dysplasia	Complete eradication of intestinal metaplasia
Tariq et al. (2020) (30)		
Total N	405	393
Pooled effect (95% CI)	84.8% (72.2-94.4)	64.2% (52.9-74.8)
I^2 (%)	88.3	77.9
Westerveld et al. (2020) (31)		
Total N	262	272
Pooled effect (95% CI)	93.8% (85.8-98.7)	85.8% (77.8-92.2)
I^2 (%)	74.2	55
Hamade et al. (2019) (32)		
Total N	282	282
Pooled effect (95% CI)	90.6% (83.7-97.4)	69.35% (52.1-86.5)
I^2 (%)	75.7	89.3

CI: confidence interval.

Prospective and Retrospective Studies

Several, small, prospective and retrospective, uncontrolled studies of cryoablation have been published (Tables 4 and 5). These studies are heterogenous in the proportion of patients with prior BE treatment, cryoablation techniques used and follow-up duration. Below is a summary of studies that were not included in the above-described systematic reviews and/or have notable characteristics (i.e., focus on subpopulations, have long-term follow-up).

A retrospective, single-center study by Sengupta et al. (2015) evaluated cryoablation among 16 patients who failed RFA. (33) The cohort of 16 patients was derived from an original cohort of 121 patients who underwent RFA for BE with LGD, HGD, or intramucosal carcinoma. After a median of 3 treatments with RFA, 91 subjects had complete eradication of dysplasia. Of 21 patients offered cryotherapy, 16 underwent cryotherapy and had an adequate follow-up. Fourteen of those who did not have complete eradication and two who had a recurrence of dysplasia underwent salvage cryotherapy. Over a median follow-up of 2.5 months, and with a median of 3 cryotherapy treatments, 12 (75%) patients had complete eradication of dysplasia after cryotherapy, and 14 (88%) had some improvement in pathology after cryotherapy.

Shaheen et al. (2010) reported on a multicenter, retrospective cohort study that assessed the safety and efficacy of spray cryotherapy in 98 consecutive patients who had BE with HGD. (34) A total of 333 cryotherapy treatments (mean 3.4 per patient) were performed, all with the

intent to eradicate all BE. Sixty patients completed all planned cryotherapy treatments and were assessed for efficacy at follow-up endoscopy sessions with 4-quadrant biopsies performed every 1 to 2 cm. Fifty-eight (97%) patients had complete eradication of HGD, 52 (87%) had complete eradication of all dysplasia with persistent nondysplastic intestinal metaplasia, and 34 (57%) had complete eradication of all intestinal metaplasia. There were no esophageal perforations, and esophageal stricture occurred in three patients. The authors noted several study limitations: it was nonrandomized and retrospective without a control group, it lacked centralized pathology, it used surrogate outcomes for decreased cancer risk, and it had a short follow-up (10.5 months).

An open-label, single-center, prospective, nonrandomized, cohort study by Dumot et al. (2009) assessed the safety of cryoablation as a treatment option for BE with HGD or intramucosal carcinoma. (35) Thirty patients who were either deemed high-risk surgical candidates or who refused esophagectomy underwent cryoablation. Twenty-seven (90%) patients had their pathology stage downgraded after treatment. After a median follow-up of 12 months, elimination of cancer or downgrading of HGD was 68% for HGD and 80% for intramucosal carcinoma. The authors noted the heterogeneous nature of the patient sample (high-risk, nonsurgical group of patients), which limited generalizability to patients in most BE ablation trials.

Two retrospective cohort studies compared RFA and cryotherapy in patients with BE undergoing endoscopic eradication therapy. Fasullo et al. (2022) compared 100 RFA-treated patients with 62 cryotherapy-treated patients. (36) The majority of patients included in the study were white males, and cryotherapy was performed with liquid nitrogen spray. The rate of complete eradication of dysplasia was similar between groups (81% with RFA vs. 71% with cryotherapy; p=.14), and complete eradication of intestinal metaplasia was also similar between groups (64% with RFA and 66% with cryotherapy; p=.78). However, more sessions were required for complete eradication with cryotherapy, and treatment failure was also more common with cryotherapy (73.3% vs. 53.3%). Agarwal et al. (2022) evaluated a cohort of 311 patients with BE undergoing endoscopic eradication therapy with either cryoballoon ablation (CBA) or RFA. (37) For the primary outcome of complete eradication of intestinal metaplasia, CBA versus RFA had similar outcomes (HR, 1.19; 95% CI, 0.82 to 1.73; p=.36). Patients treated with CBA had more strictures (10.4%) compared with RFA (4.4%; p=.04).

Table 4. Summary of Key Nonrandomized Studies

Study	Study Type	Country	Dates	Participants	Treatment	Follow-up
Agarwal et al. (2022) (37)	Retrospective, observational	US	2014-2020	Patients who underwent RFA or cryotherapy for dysplastic BE	Cryoablation or RFA	Median, 1.5 years in RFA group and 2 years in the cryoablation group
Fasullo et al.	Retrospective, observational	US	2009-2020	Patients who underwent RFA	Cryoablation or RFA	>12 months

(2022) (36)				or cryotherapy for BE with LGD, HGD, or intramucosal adenocarcinoma		
Sengupta et al. (2015) (33)	Retrospective, observational	US	2006-2013	Patients who underwent RFA for BE with LGD, HGD, or intramucosal carcinoma	Cryoablation	Median, 2.5 months
Shaheen et al. (2010) (34)	Retrospective, observational	US	2007-2009	Patients who had BE with HGD	Cryoablation	Mean, 10.5 months
Dumot et al. (2009) (35)	Prospective, observational	US	2005-2008	Patients who had BE with HGD or intramucosal carcinoma	Cryoablation	Median, 12 months

BE: Barrett's esophagus; HGD: high-grade dysplasia; LGD: low-grade dysplasia; RFA: radiofrequency ablation; US: United States.

Table 5. Summary of Key Nonrandomized Study Results.

Study	Complete eradication of dysplasia	Complete eradication of intestinal metaplasia	Downgrading of pathology stage	Elimination of cancer or downgrading of HGD
Agarwal et al. (2022) (37)	N=311; n=226 RFA and 85 cryoablation			
Cryotherapy, %	85.7	69.8	NR	NR
RFA, %	78.3	57.3	NR	NR
Fasullo et al. (2022) (36)	N=162; n=100 RFA and 62 cryoablation			
Cryotherapy, %	44 (71)	41 (66.1)	NR	NR
RFA, n %	81 (81)	64 (64)	NR	NR
Sengupta et al. (2015) (33)	N=121			
Cryotherapy, n (%)	91 (75)	NR	NR	NR

Shaheen et al. (2010) (34)	N=60	N=60		
Cryotherapy, n (%)	58 (97)	34 (57)	NR	NR
Dumot et al. (2009) (35)			N=30	N=30
Cryotherapy, n (%)	NR	NR	27 (90)	Patients with HGD: 20 (68) Patients with intramucosal carcinoma: 24 (80)

HGD: high-grade dysplasia; NR: not reported; RFA: radiofrequency ablation.

Section Summary: Cryoablation of BE

No controlled trials have evaluated cryoablation for the treatment of BE. The evidence from uncontrolled studies has reported high rates of success in eradicating dysplasia, with low rates of complications. In observational studies comparing RFA with cryoablation for patients with BE, similar outcomes have been noted; however, RCTs are lacking. These data are not sufficient to determine the comparative efficacy of cryoablation and RFA.

Summary of Evidence

For individuals who have Barrett esophagus (BE) with high-grade dysplasia (HGD) who receive endoscopic radiofrequency ablation (RFA), the evidence includes a randomized controlled trial (RCT) comparing radical endoscopic resection with focal endoscopic resection followed by RFA, one RCT comparing RFA with surveillance alone, and a systematic review evaluating RCTs and a number of observational studies, some of which compared RFA with other endoscopic treatment modalities. Relevant outcomes are change in disease status, morbid events, and treatment-related morbidity and mortality. The available evidence has shown that using RFA to treat BE with HGD is at least as effective in eradicating HGD as other ablative techniques, with a lower progression rate to cancer, and may be considered an alternative to esophagectomy. Evidence from at least one RCT has demonstrated higher rates of eradication than surveillance alone. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have BE with low grade dysplasia (LGD) who receive endoscopic RFA, the evidence includes at least three RCTs comparing RFA with surveillance alone, a number of observational studies, and systematic reviews of these studies. Relevant outcomes are change in disease status, morbid events, and treatment-related morbidity and mortality. For patients with confirmed LGD, evidence from an RCT has suggested that RFA reduces progression to HGD and adenocarcinoma. The evidence is sufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have BE without dysplasia who receive endoscopic RFA, the evidence includes single-arm studies reporting outcomes after RFA. Relevant outcomes are change in disease status, morbid events, and treatment-related morbidity and mortality. The available studies have suggested that nondysplastic metaplasia can be eradicated by RFA. However, the risk-benefit ratio and the net effect of RFA on health outcomes are unknown. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have BE with or without dysplasia who receive endoscopic cryoablation, the evidence includes noncomparative studies and systematic reviews of those studies reporting outcomes after cryoablation. Relevant outcomes include change in disease status, morbid events, and treatment-related morbidity and mortality. These studies have generally demonstrated high rates of eradication of dysplasia. Recent observational studies comparing RFA with cryoablation show similar outcomes. However, there are no RCTs comparing cryoablation with surgical care or RFA. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

Practice Guidelines and Position Statements

American College of Gastroenterology

In 2022, the American College of Gastroenterology (ACG) updated guidelines on the diagnosis and management of BE, which made statements about ablation techniques (38) The ACG recommends ablation of remaining BE tissue when endoscopic eradication therapy is chosen for patients with LGD, HGD, or intramucosal carcinoma. Both RFA and cryoablation are discussed in the ACG guideline without a specific recommendation; however, the guideline notes the lack of RCTs for cryoablation methods and the more established evidence for RFA. The ACG does recommend cryotherapy as an alternative in patients unresponsive to RFA.

American Gastroenterological Association

In 2020, the American Gastroenterological Association published a best practice clinical update on the role of endoscopic therapy in patients with BE with dysplasia and/or early cancer. (39) This best practice document was not based on a formal systematic review; thus, no ratings for strength of recommendation and quality of evidence were not provided.

For BE with LGD, best practice advice included the following:

- “The reading of LGD in BE should be confirmed by an experienced gastrointestinal pathologist."
- “In BE patients with confirmed LGD, a repeat examination within 3–6 months with HD-WLE [high-definition white-light endoscopy] and preferably optical chromoendoscopy should be performed to rule out the presence of a visible lesion, which should prompt endoscopic resection (see section on HGD)."
- “Both BET [Barrett's endoscopic therapy] and continued surveillance are reasonable options for the management of BE patients with confirmed and persistent LGD."

For BE with HGD, best practice advice included the following:

- “The reading of HGD in BE should be confirmed by an experienced gastrointestinal pathologist."
- “The diagnosis of flat HGD should prompt a repeat HD-WLE (6–8 weeks) to evaluate for the presence of a visible lesion; these visible lesions should be removed by EMR [endoscopic mucosal resection]."
- “BET is the preferred treatment, over esophagectomy, for BE patients with HGD."

American Society for Gastrointestinal Endoscopy

In 2018, the American Society for Gastrointestinal Endoscopy issued guidelines on the role of endoscopy in BE-associated dysplasia and intramucosal cancer. (40) These guidelines made the following recommendations on endoscopic eradication therapy, consisting of endoscopic mucosal resection of visible lesions and ablative techniques that include RFA and cryotherapy (see Table 6).

Table 6. Guidelines on Use of Endoscopy for BE and Intramucosal Cancer (IMC)

Recommendation	SOR	QOE[a]
In BE patients with LGD and HGD being considered for EET, we suggest confirmation of diagnosis by at least 1 GI pathologist or manel of pathologists compared with review by a single pathologist.	Conditional	Low
In BE patients with LGD, we suggest EET compared with surveillance; however, patients who place a high value on avoiding adverse events related to EET may choose surveillance as the preferred option.	Conditional	Moderate
In BE patients with HGD, we recommend EET compared with surveillance.	Strong	Moderate
In BE patients with HGD/IMC, we recommend against surgery compared with EET.	Strong	Very low quality
In BE patients referred for EET, we recommend endoscopic resection of all visible lesions compared with no endoscopic resection of visible lesions.	Strong	Moderate
In BE patients with visible lesions who undergo endoscopic resection, we suggest ablation of the remaining Barrett’s segment compared with no ablation.	Conditional	Low
In BE patients with dysplasia and IMC referred for EET, we recommend against routine complete endoscopic resection of entire Barrett’s segment compared with endoscopic resection of visible lesion followed by ablation of remaining Barrett’s segment.	Strong	Very low
In BE patients with dysplasia and IMC who have achieved CE-IM after EET, we suggest surveillance endoscopy versus no surveillance.	Conditional	Very low

BE: Barrett esophagus; CE-IM: complete eradication of intestinal metaplasia; EET: endoscopic eradication therapy; HGD: high-grade dysplasia; LGD: low-grade dysplasia; IMC: intramucosal cancer;

QOE: quality of evidence; SOR: strength of recommendation.
[a] Quality assessed using GRADE system.

National Comprehensive Cancer Network

National Comprehensive Cancer Network Guidelines (v.3.2023) Esophageal and Esophagogastric Cancers make recommendations about BE and early-stage esophageal adenocarcinomas. (41) For primary treatment; "The goal of endoscopic therapy [by endoscopic mucosal resection (EMR), endoscopic submucosal dissection (ESD), and/or ablation] is the complete removal or eradication of early-stage disease [pTis, pT1a, and selected superficial pT1b without LVI] and pre-neoplastic tissue (Barrett esophagus)."

Ongoing and Unpublished Clinical Trials

Some currently ongoing and unpublished trials that might influence this policy are listed in Table 7.

Table 7. Summary of Key Trials

NCT Number	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT02514525[a]	Multi-center Clinical Study to Evaluate the C2 CryoBalloon Focal Ablation System for the Treatment of Patients with Previously Untreated Dysplastic Barrett's Epithelium	150	Jun 2023
Unpublished			
NCT01961778	Prospective Randomized Trial Comparing Radiofrequency Ablation (Barrx™) and Cryotherapy (truFreeze™) for the Treatment of Barrett's Esophagus With High-Grade Dysplasia and/or Early Adenocarcinoma	50	Feb 2020 (Last update posted Jan 2022)
NCT02558504	Clinical and Medico-economic Evaluation of Radiofrequency Ablation Versus Oesophagectomy in the Treatment of High Grade Dysplasia in Barrett's Esophagus	87	Jan 2021 (Last update posted Apr 2022)

NCT: national clinical trial.
[a]Denotes industry sponsored or co-sponsored trial.

Coding

Procedure codes on Medical Policy documents are included **only** as a general reference tool for each policy. **They may not be all-inclusive.**

The presence or absence of procedure, service, supply, or device codes in a Medical Policy document has no relevance for determination of benefit coverage for members or reimbursement for providers. **Only the written coverage position in a Medical Policy should be used for such determinations.**

Benefit coverage determinations based on written Medical Policy coverage positions must include review of the member's benefit contract or Summary Plan Description (SPD) for defined coverage vs. non-coverage, benefit exclusions, and benefit limitations such as dollar or duration caps.

CPT Codes	43229, 43270, 43499
HCPCS Codes	None

*Current Procedural Terminology (CPT®) ©2022 American Medical Association: Chicago, IL.

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Centers for Medicare and Medicaid Services (CMS)

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A national coverage position for Medicare may have been developed since this medical policy document was written. See Medicare's National Coverage at <http://www.cms.hhs.gov>.

Policy History/Revision

Date	Description of Change
02/01/2024	Document updated with literature review. Coverage unchanged. No new references added.
01/15/2023	Document updated with literature review. Coverage unchanged. References 8, 25, 26, 30, 36 and 37 added; others updated and some deleted.
02/01/2022	Reviewed. No changes.
11/01/2021	Document updated with literature review. Coverage unchanged. Added references 6, 8, 28, 31, 32, and 40.
01/15/2021	Reviewed. No changes.
06/15/2020	Document updated with literature review. Coverage unchanged. Added/updated the following references 24, 34, and 37 added; other references removed.
04/01/2019	Reviewed. No changes.
05/15/2018	Document updated with literature review. Coverage unchanged. References 23, 31, 42 added.
04/15/2017	Reviewed. No changes.
07/15/2016	Document updated with literature review. The following change was made to Coverage: The experimental, investigational and/unproven statement for radiofrequency ablation was modified to include “for treatment of Barrett’s esophagus when the above criteria are not met, including but not limited to Barrett’s esophagus in the absence of dysplasia.”
02/15/2015	Document updated with literature review. Coverage unchanged.

12/01/2011	Document updated with literature review. The following was added: Radiofrequency ablation may be considered medically necessary for Barrett's esophagus with low-grade dysplasia when confirmed by two pathologists prior to ablation.
05/01/2010	Medical document updated with literature review and title change to include cryoablation. Coverage position changed from experimental, investigational, and unproven to conditionally allow. Radiofrequency ablation may be considered medically necessary for Barrett's esophagus with high-grade dysplasia when confirmed by two pathologists prior to ablation. Radiofrequency ablation is considered experimental, investigational and unproven for Barrett's esophagus without dysplasia or with low-grade dysplasia. Cryoablation is considered experimental, investigational and unproven for Barrett's esophagus, with or without dysplasia.
07/15/2009	New medical document