Drug Eluting Sinus Stents and Implants for Postoperative Use Following Endoscopic Sinus Surgery and for Recurrent Sinonasal Polyposis

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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.

Services Are Considered Investigational
Coverage is not available for investigational medical treatments or procedures, drugs, devices or biological products.

Based on review of available data, the Company considers the use of drug-eluting and non drug-eluting implantable sinus stents for postoperative treatment following endoscopic sinus surgery (ESS) to be investigational.*

Based on review of available data, the Company considers the use of drug-eluting sinus implants for the treatment of recurrent sinonasal polyposis to be investigational.*

Background/Overview

ESS is typically performed on patients with chronic rhinosinusitis (CRS) unresponsive to conservative treatment. The surgery is associated with high rates of improvement in up to 90% of more appropriately selected patients. However, there are no high-quality randomized controlled trials (RCTs) comparing functional ESS to continued medical management or alternative treatment approaches. Because of the high success rates and minimally invasive approach, these procedures have rapidly increased in frequency, with an estimated 250,000 procedures performed annually in the United States. They can be done either in the physician's office under local anesthesia or in the hospital setting under general anesthesia.

ESS involves the removal of small pieces of bone, polyps, and débridement of tissue within sinus cavities. There are a number of variations on the specific approach, depending on the disorders being treated and the preferences of the treating surgeon. For all procedures, there is substantial postoperative inflammation and swelling, and postoperative care is therefore a crucial component of ESS.

There are a number of postoperative treatment regimens, and the optimal regimen is uncertain. Options include saline irrigation, nasal packs, topical steroids, systemic steroids, topical decongestants, oral antibiotics, and/or sinus cavity débridement. Several RCTs have evaluated treatment options, but not all strategies have been rigorously evaluated. A systematic review has evaluated the evidence for these therapies. Reviewers concluded that the evidence was not strong for any of these treatments but that some clinical trial evidence supported improvements in outcomes. The strongest evidence supported use of nasal saline irrigation, topical nasal steroid spray, and sinus cavity débridement.

Some form of sinus packing is generally performed postoperatively. Simple dressings moistened with saline can be inserted manually following surgery. Foam dressings are polysaccharide substances that form a gel

when hydrated and can be used as nasal packs for a variety of indications. Middle meatal spacers are splint-like devices that prop open the sinus cavities post-ESS, but are not designed for drug delivery. There is some RCT evidence that middle meatal spacers may reduce the formation of synechiae following ESS, although the available studies have significant heterogeneity in this outcome.

Implantable sinus stents are another option for postoperative management following ESS. These implants are intended to stabilize the sinus openings and the turbinates, reduce edema, and/or prevent obstruction by adhesions. They can also be infused with medication delivered topically over an extended period of time.

Drug eluting sinus implants have also been proposed as an alternative treatment for recurrent sinonasal polyposis following total ethmoidectomy. The medication infused implants are designed to be used in patients who have failed medical therapy and are candidates for revision sinus surgery.

FDA or Other Governmental Regulatory Approval

U.S. Food and Drug Administration (FDA)

In August 2011, the PROPEL™‡ system (Intersect ENT, Palo Alto, CA) was approved by the U.S. FDA through the premarket approval process. This device is a self-expanding, bioabsorbable, steroid-eluting stent intended for use in the ethmoid sinus. It is placed via endoscopic guidance using a plunger included with the device. Steroids (mometasone furoate) are embedded in a polyethylene glycol polymer, which allows sustained release of the drug over an approximate duration of 30 days. The device dissolves over several weeks, and therefore does not require removal. In September 2012, a smaller version of the PROPEL device, the PROPEL mini Sinus Implant, was approved for use in patients older than age 18 years following ethmoid sinus surgery. FDA product code: OWO

In October 2011, the Relieva Stratus™‡ MicroFlow spacer, a balloon-based device, which acts as a spacer and medication delivery system, was cleared for marketing by FDA through the 510(k) process for use postoperatively to maintain an opening to the sinuses for the first 14 days postoperatively. It is placed via a catheter under endoscopic guidance. This device is temporary and requires manual removal after 30 days, with implantation of a new device if needed. It is approved for infusion with saline, but not for use with other medications (e.g., steroids). This device is no longer marketed in the United States.

In December 2017, Sinuva™‡ was approved by the U.S. FDA. While this product was approved as a medication, it functions as a drug-eluting implantable stent in a similar manner to Propel. The implant is bioabsorbable and is designed to deliver 1350 micrograms of mometasone furoate over 90 days. It was developed specifically for in-office use, and is placed via endoscopic guidance using a plunger included with the device. It is approved for patients 18-years-of-age and older and is indicated for recurrent polyposis only after a total ethmoidectomy has been previously performed.

Centers for Medicare and Medicaid Services (CMS)

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

Rationale/Source

RCTs are important in the evaluation of sinus implants as an adjunct to ESS to adequately compare implantable stents with alternative treatment regimens and to minimize the effects of confounders on outcomes. Case series and trials without control groups offer little in the way of relevant evidence, because improvement in symptoms is expected after ESS and because there are multiple clinical and treatment variables that may confound outcomes.

The most relevant comparison for sinus stents is unclear because there is no standardized optimal postoperative treatment regimen. Ideally, the "standard care" comparison group should include some form of packing, intranasal steroids, and irrigation. An important consideration in evaluating controlled trials is that the control arm may not be treated with optimal intensity, thereby leading to a bias in favor of the device. For example, a study design that compares a steroid-eluting stent with a non-steroid-eluting stent will primarily evaluate the efficacy of steroids when delivered by the device, but will not evaluate the efficacy of a stent itself. If the control group does not receive topical or oral steroids postoperatively, then this might constitute undertreatment in the control group and result in a bias favoring the treatment group. Another concern is comparison of the efficacy of a drug with the efficacy of a drug delivery system. For example, if a steroid-eluting spacer is compared with a control of saline irrigation alone, it will be difficult to separate the efficacy of the drug itself (steroids) from the drug delivery system (stent).

The literature consists of a few, small randomized trials, single-arm case series, and systematic reviews of these studies. The following is a summary of the key findings to date.

STEROID-ELUTING STENTS AS AN ADJUNCT TO ESS

Systematic Reviews

A 2015 Cochrane review addressed steroid-eluting sinus stents for improving CRS symptoms in individuals undergoing ESS. Study eligibility criteria were RCTs that compared the effects of steroid-eluting sinus stents with non-steroid-eluting sinus stents, nasal packing, or no treatment in adults with CRS who underwent ESS. After an initial search, 21 RCTs were identified, including the RCTs reported by Murr (2011) and Marple (2012) and colleagues (described above). None of the trials met authors' inclusion criteria. Reviewers concluded that there is no evidence from high-quality RCTs to demonstrate the benefits of steroid-eluting stents.

A systematic review of early postoperative care following ESS was published in 2011. Reviewers evaluated a number of postoperative regimens, including stents. Reviewers included 1 RCT by Cote et al (2010) and 2 nonrandomized studies. Some devices included in these studies are considered middle meatal spacers and are outside the scope of this evidence review. The overall level of evidence was judged as B (RCT with limitations). Reviewers concluded that topical steroids delivered by the "nonstandard" route required further study and that the results of current studies could not be extrapolated to larger populations. Based on this evidence, reviewers did not recommend use of stents, but considered them an option for postoperative care.

Han et al (2012) performed a meta-analysis of the 2 published RCTs assessing the PROPEL implant, both of which compared a steroid-eluting stent with a non-steroid-eluting stent. Trial results were combined at the patient level, with reanalysis of the endoscopy videos by a panel of 3 independent ear, nose, and throat experts. The combined results were that the steroid-eluting device reduced postoperative interventions by 35% ($p<0.001$), reduced lysis of adhesions by 51% ($p<0.001$), and reduced the need for oral steroids by 46% ($p<0.001$).

Randomized Controlled Trials
As noted, there are 2 RCTs of the PROPEL sinus implant. Both trials have similar designs and both were sponsored by the device manufacturer (Intersect ENT). Both compared an implant that is steroid-eluting and an identical implant that is not steroid-eluting. Thus these trials tested the value of drug delivery via a stent, but did not test the value of a stent itself versus treatment without a stent.

The first RCT was published in 2011 by Murr et al. Thirty-eight patients with refractory CRS were included in the efficacy evaluation, and an additional 5 patients were enrolled for a safety evaluation. An intrapatient control design was used, meaning that each patient received a drug-eluting stent on 1 side and a non-drug-eluting stent on the other via random assignment. Patients were not permitted to use topical or oral steroids for 30 days following the procedure. A 14-day course of antibiotics was given to all patients. The primary end point was the degree of inflammation recorded on follow-up endoscopy at day 21 postprocedure, as scored by a 100-mm visual analog scale (VAS). Semiquantitative grading was also performed for polypoid changes, middle turbinate position, and adhesions/synechiae. The clinicians recording the outcomes were the same physicians who treated the patients. One patient withdrew prior to study completion.

The difference in inflammation scores at 21 days significantly favored the steroid-eluting group. The estimated difference in scores from graphical representation was approximately 18 units on the 0 to 100 VAS. The percentage of patients having polypoid changes was 18.4% in the steroid-eluting group and 36.8% in the non-steroid-eluting group ($p=0.039$). Adhesions were also significantly less common in the steroid-eluting group (5.3% vs 21.1%, $p=0.03$). There were no significant differences in the appearance or position of the middle turbinate.

In 2012, Marple et al published results of the ADVANCE II trial, an RCT of the PROPEL sinus implant for 105 patients with CRS refractory to medical management. This trial also used an intrapatient control design, with each patient receiving a drug-eluting stent on 1 side and a non-drug-eluting stent on the other via random assignment. Patients were not permitted to use topical or oral steroids for 30 days following the procedure. A 14-day course of antibiotics was given to all patients. The primary efficacy outcome was reduction in the need for postoperative interventions at day 30 postprocedure. A panel of 3 independent experts, blinded to treatment assignment and clinical information, viewed the endoscopy results and determined whether an intervention was indicated. The primary safety end point was the absence of clinically significant increased ocular pressure through day 90.

Three (2.9%) patients were lost to follow-up, and 9 (8.6%) patients could not be evaluated because the video of the endoscopy could not be graded. Two patients had the device removed within 30 days of placement. Of the remaining patients, need for postoperative intervention by expert judgment was found in 33.3% of patients in the steroid-eluting arm and in 46.9% in the non-steroid-eluting arm (p=0.028). According to the judgments of the clinical investigators treating the patients, intervention was required in 21.9% of the steroid-eluting group and 31.4% of the non-steroid-eluting group (p=0.068). The reduction in interventions was primarily driven by a 52% reduction in lysis of adhesions (p=0.005). The primary safety hypothesis was met, because there were no cases of clinically significant increases in ocular pressure recorded over the 90-day period postprocedure.

There are also 2 RCTs of Propel®‡ Mini. Both trials have similar designs, and both were industry sponsored. Both used patients as their own controls to compare frontal sinus surgery outcomes with and without the placement of a Propel Mini implant across the frontal sinus opening.

Patients received bilateral frontal sinus surgery. The implant was placed on one side, and nothing was placed on the other side. With this design, it cannot be determined whether any improvement is due to the stent or to the medication.

The first trial, by Smith et al. in 2016, examined outcomes of 80 patients 30-days and 90-days after bilateral frontal sinus exploration. Frontal sinus ostial patency was assessed endoscopically at 30-days post-operatively by both the surgeon and by a blinded independent reviewer. Additionally, the investigators recorded whether or not patients required additional interventions beyond standard post-operative care, such as oral steroids or revision surgery, at both 30-days and 90-days post-surgery. An intrapatient control design was used, meaning that each patient received an implant on one side and nothing on the other side. Patients otherwise received the same post-operative care. Overall, the side that received the implant had less inflammation, greater frontal sinus ostial patency, and required fewer interventions than the side that received no implant. All differences reached statistical significance. The authors conclude that the steroid-releasing implant can improve outcomes in frontal sinus surgery. No comparison was made to a non-drug eluting stent, and no comparisons are available beyond 90-days. The second trial, by Luong el al. in 2017, was nearly identical to the trial by Smith in 2016. It also involved 80 patients and produced similar results with the sides receiving the drug-eluting implant having less inflammation, improved ostial patency, and requiring fewer revision procedures compared to the side that received nothing at 30-days and 90-days. Similarly, this trial did not include a non-drug eluting stent comparison, and no results are available beyond 90 days. Additionally, while the results of the studies did reach statistical significance, their clinical significance is not as clear. Post-operative interventions in the non-stent group most often included minor debridements in the office or brief courses of oral steroids without adverse sequelae. Additionally, while the stent group did have a higher frontal sinus ostial patency (5.9 vs 4.4 mm p<0.0001 in Smith 2016 and 6.3 vs 4.5 mm in Luong 2017), the side without the stent still maintained a functional average patency.

Nonrandomized Comparative Studies

The largest nonrandomized study identified was reported by Xu et al in 2016. It evaluated post-ESS

synechiae formation among 146 patients (252 nasal cavities) treated with a steroid-eluting absorbable spacer and 128 patients (233 nasal cavities) treated with a nonabsorbable spacer. Eligible patients included those who underwent ESS (at minimum, maxillary antrostomy and anterior ethmoidectomy) for CRS with or without nasal polyps and were treated with a sinus spacer. Synechiae-related outcomes were unavailable for 10 (6.8%) subjects in the absorbable spacer group and 9 (7.0%) subjects in the nonabsorbable spacer group due to lack of 1-month follow-up. Rates of synechiae formation at 1 month postoperatively did not differ significantly between groups (5 [2.0%] nasal cavities in the absorbable stent group vs 13 [5.6%] nasal cavities in the nonabsorbable spacer group).

Noncomparative Studies
In 2015 Janisiewicz and Lee reported on 2 patients who each presented with recurrent unilateral frontal sinusitis after multiple prior ESS procedures. Both patients refused revision surgery in the operating room and underwent revision frontal sinusotomy with placement of a Propel Mini in the office. Both patients experienced resolution of symptoms, with the two patients having continued improvement and frontal sinus ostial patency at 3 months (patient 1) and 11 months (patient 2).

In 2014, Matheny et al reported results from a single-arm case series that evaluated use of office-based placement of a mometasone-eluting absorbable stent (PROPEL device) within 7 days of ESS including bilateral ethmoidectomy. Eligible patients had CRS with or without nasal polyps and were treated by 1 of 3 surgeons. The surgical procedure was ESS with complete ethmoidectomy, followed by packing with a chitosan-polyethylene glycol absorbable dressing. At outpatient follow-up scheduled 5 to 7 days postsurgery, patients underwent débridement of the ethmoid cavity with placement of the steroid-eluting stent. Twenty patients who underwent 40 stent placements were included. Complications included acute sinusitis in 2 patients between 2 and 4 weeks postsurgery. Sinuses were evaluated using video endoscopy by an independent reviewer using a 100-mm VAS and a standardized case report form described by Murr et al (2011). Ethmoid sinus inflammation was reduced from 25.6 at baseline to 18.9 at week 4 (p=0.034). The mean total Sino-Nasal Outcome Test–20 (SNOT-20) score was reduced (improved) from 42.8 at baseline to 18.4 at week 2 and 8.9 at week 4. The procedure was generally well tolerated.

ADVANCE (2011) was a prospective, multicenter, single-arm trial of placement of a mometasone-eluting absorbable stent in 50 patients who were scheduled to undergo ESS. As reported by Forwith et al (2011), the end points evaluated on follow-up endoscopies were the degree of inflammation scored on a 100-mm VAS and semiquantitative grading for polypoid changes, middle turbinate position, and adhesions. By day 7 postprocedure, the inflammation scores were in the “minimal” range and remained there for the rest of the time points. At 1 month, polypoid lesions were present in 10% of patients, adhesions in 1.1%, and middle turbinate lateralization in 4.4%. Scores on the SNOT-22 and the Rhinosinusitis Disability Index improved significantly in the first month postprocedure.

A 2001 case series reported on 23 patients with refractory rhinosinusitis who underwent ESS and were treated postoperatively with the Relieva Stratus MicroFlow Spacer Device infused with triamcinolone. Over 6 months, there were significant improvements on multiple sinus-related outcome measures such as the

SNOT-20 and the Lund-MacKay CT (computed tomography) scan scores. No significant intraoperative or postoperative complications were reported.

Section Summary: Steroid-Eluting Stents as an Adjunct to ESS
The most direct evidence relating to use of steroid-eluting nasal stents as an adjunct to ESS comes from 2 RCTs comparing steroid-eluting stents with a non-steroid-eluting stent. One trial used blinded assessors to evaluate postimplantation sinus changes, an important strength, but the trials had potentials for bias. In addition, to most accurately evaluate the benefit from the PROPEL device, ensuring that the comparison group is not undertreated (i.e., receives some form of packing, intranasal steroids, and irrigation) is important. There are two studies evaluating the use of PROPEL Mini after frontal sinus surgery. Neither makes a comparison to a plain stent, and neither provides adequate long term data. While there is some statistically significant improvement seen, the clinical significance of the data is less impactful.

STEROID-ELUTING STENTS FOR RECURRENT POLYPOSIS
A relatively small body of literature has addressed outcomes after placement of steroid-eluting absorbable sinus stents in the office setting as a planned procedure post-ESS or due to recurrent or persistent nasal polyposis after ESS.

Randomized Controlled Trials
There are 2 randomized, blinded, sham controlled trials investigating Sinuva. Both trials have similar designs and patient selection criteria, and both were industry sponsored. Eligible patients of both trials had CRS, had undergone prior bilateral total ethmoidectomy more than 3 months earlier, had endoscopically confirmed recurrent bilateral ethmoid sinus obstruction due to polyposis that was refractory to medical therapy, and were considered candidates for repeat surgery based on the judgment of the surgeon and patient. Patients and those who administered symptom questionnaires at follow-up visits were blinded to treatment group. Both trials were randomized to patients who either received bilateral Sinuva implants or a sham procedure wherein the surgeon placed the plunger and implant into the ethmoid region, but the implant was not deployed. This design structure makes it impossible to determine whether any improvement seen is due to the medication or to the steroid. There was no control arm with a non-medication eluting implant. All patients were blindfolded and wore ear muffs during the endoscopies. The key outcome measures were patient's subjective assessment of nasal congestion, polyp grade and percent ethmoid obstruction at 30 and 90 days, persistent indication for ESS, and patients who either received revision ESS or required oral steroids. All patients in both trials received similar treatments, but importantly, patients were not allowed to use steroid irrigations during the study periods.

The two studies are RESOLVE I and RESOLVE II. RESOLVE I provided 30 day and 90 day data in 2 separate studies looking at the same 100 patients (Han et al. 2014, Forwith et al. 2016). The patients were randomized to either the implant or a sham procedure. Resolve II (Kern et al. 2018) provided 6 month data of a separate cohort of 300 patients, 201 of whom received the implant and 99 of whom received the sham procedure. The key similarities and differences between the studies are as follows:

- RESOLVE I qualified patients if there was at least grade 2 polyp disease on either side.
- RESOLVE II required patients to have at least grade 2 polyp disease on both sides.
- Both studies excluded grade 4 polyp disease (the most severe classification)
- Both studies also removed the implant at day 60. However, based on product labelling, it is meant to dissolve over 90 days in order for the full 1350 micrograms or mometasone furoate to be dispensed.
- Neither study used the validated NOSE or SNOT-22 scoring systems to assess patient reported outcomes
- Han et al. 2014 only reported endoscopic results from non-blinded surgeons
- Forwith et al. 2016 reported endoscopic results from a blinded panel of reviewers
- Kern et al. also reported endoscopic results from a blinded panel of reviewers as well as from the non-blinded investigators. He also used a polyp grading scale with more subdivisions than was used in RESOLVE I.

The results of all three studies (and a case series by Lavigne et al. from 2014) are summarized in Table 1. The key findings are that, while multiple treatment and control comparisons reached statistical significance, the clinical significance is low. First, the standard deviations are very high with variable results in all cohorts. Second, while more patients in the control group met the authors' criteria for revision sinus surgery, very few patients in either cohort actually elected to proceed with surgery. Additionally, oral steroid dependence did not vary between the treatment and control cohorts. Lastly, there was not consistent improvement in all cohorts in all studies. In Forwith et al., polyp grade improvement was not different between the treatment and control arms when assessed by a blinded independent panel, and 6-months patient reported outcomes were also not different between the treatment and control arms. Lastly, in Kern et al., surgeon reported outcomes are consistently better than those reported by the independent panel.

Noncomparative Studies
Also in 2014, Lavigne et al reported results from a case series of 12 patients who underwent placement of Sinuva for treatment of recurrent nasal polyposis after ESS. There is a summary of the study's results in Table 1. Eligible patients had CRS and had undergone bilateral ethmoidectomy more than 90 days before enrollment, but had refractory polyposis on at least 1 side that was at least grade 2 on a 0- to 4-point scale. All implants were placed in the office setting. Average SNOT-22 scores (reported as a normalized value with a total possible score that could range from 0-5) changed from 2.19 at baseline to 1.48 at day 7 ($p<0.027$), and continued to demonstrate improvements by the 6-month follow-up. Mean bilateral polyp grade (clinician-assessed) improved from 4.5 at baseline to 2.8 at day 7 ($p<0.003$), with continued improvements through 6-month follow-up. No significant adverse events were reported.

Ow et al (2014) performed a safety study of Sinuva in 2014. The study reported plasma mometasone and cortisol concentrations for 5 patients with recurrent polyposis after bilateral total ethmoidectomy who underwent placement of the same investigational device described by Lavigne et al. Plasma mometasone

concentrations were in the undetectable range in 26 of 32 samples at 3, 7, 14, 21, and 30 days postimplant and undetectable in all samples at 21 and 30 days postimplant.

Section Summary: Steroid-Eluting Stents for Recurrent Polyposis
Two RCTs and one case series evaluated the use of steroid-eluting sinus implants for recurrent or persistent nasal polyposis after ESS, which demonstrated improvements in polyp grade and ethmoid obstruction. Strengths of these trials included use of a sham control and blinding of reviewers. The studies were also adequately powered. However, the trials had a high risk of bias due to unblinded outcome assessment in one paper, and inconsistent outcomes of questionable clinical significance in the other two papers. Although avoidance of repeat ESS and oral steroids may be relevant outcomes for this indication, it would be more important if decisions about repeat ESS or other treatments were standardized and, in the trial setting, if decisions were prespecified or made by a clinician blinded to treatment group. Sinus implants may prove to have a role in nasal polyposis; however, additional positive results from well-designed RCTs are needed to confirm the results of the available studies.

SUMMARY OF EVIDENCE
For individuals who have CRS who have undergone ESS who receive implantable steroid-eluting sinus stents, the evidence includes 2 RCTs, a number of observational studies, and systematic reviews of these studies. Relevant outcomes are symptoms, change in disease status, morbid events, and treatment-related morbidity. The most direct evidence comes from 2 RCTs comparing steroid-eluting sinus stents with non-steroid-eluting stents, both of which showed some benefit with steroid-eluting stents. However, these trials had some limitations, including risk of bias. In addition, because of the comparison groups used in both, these trials primarily evaluated the efficacy of topical steroids when delivered by an implanted device, and not the efficacy of the device versus standard care. The evidence is insufficient to determine the effects of the technology on health outcomes.

Similarly, there are only two studies evaluating the use of drug-eluting stents in frontal sinus surgery. The studies do not offer a comparison to stenting alone and do not show any clinically significant differences in outcomes of those with stents and those without. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have recurrent sinonasal polyposis who receive implantable steroid-eluting sinus implants, the evidence includes 2 RCTs and 1 single-arm study. Relevant outcomes are symptoms, change in disease status, morbid events, and treatment-related morbidity. The most direct evidence comes from the available RCTs, which compared steroid-eluting stents plus topical steroids to topical steroids alone for individuals with recurrent polyposis after ESS. These trials had a high risk of bias due to unblinded outcome assessment and/or did not show consistent positive outcomes across all cohorts. Although avoidance of repeat ESS and oral steroids may be a relevant outcome for this indication, it would be important for decisions about repeat ESS or other treatments to be standardized and prespecified or be made by a clinician blinded to treatment group. The evidence is insufficient to determine the effects of the technology on health outcomes.

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10/19/2016	Medical Policy Implementation Committee approval. Treatment of recurrent sinonasal polyposis added to existing investigational statement. Updated rationale, references and title.
01/01/2017	Coding update: Removing ICD-9 Diagnosis Codes
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10/18/2017	Medical Policy Implementation Committee approval. Coverage eligibility unchanged.
06/29/2018	Coding update
11/08/2018	Medical Policy Committee review
11/21/2018	Medical Policy Implementation Committee approval. Changed title from "Implantable Sinus Stents for Postoperative Use Following Endoscopic Sinus Surgery and for Recurrent Sinus Disease" to "Drug Eluting Sinus Stents and Implants for Postoperative Use Following Endoscopic Sinus Surgery and for Recurrent Sinonasal Polyposis". Changed investigational statements from one to two as follows: "…the use of both drug-eluting and non drug-eluting implantable sinus stents for postoperative treatment following endoscopic sinus surgery (ESS)" and "…the use of drug-eluting sinus implants for the treatment of recurrent sinonasal polyposis" are both considered to be investigational. Literature, and rationale to include frontal sinus stents and in-office use of drug eluting implants.
Next Scheduled Review Date:	11/2019

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 2017 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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Drug Eluting Sinus Stents and Implants for Postoperative Use Following Endoscopic Sinus Surgery and for Recurrent Sinonasal Polyposis

Policy # 00485
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Procedural Terminology which contains the complete and most current listing of CPT codes and descriptive terms. Applicable FARS/DFARS apply.

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:

Code Type	Code
CPT	0406T, 0407T, 31299
HCPCS	C1874, C2625, J3490, S1090
ICD-10 Diagnosis	All related diagnoses

*****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 the Blue Cross and Blue Shield Association technology assessment program (TEC) or other nonaffiliated 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.

‡ Indicated trademarks are the registered trademarks of their respective owners.

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.

***See the next page for Table 1. Collated Results

Drug Eluting Sinus Stents and Implants for Postoperative Use Following Endoscopic Sinus Surgery and for Recurrent Sinonasal Polyposis

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Table 1. Collated Results

		Polyp Grade (0-6 for Lavigne; 0-4 for all others)		Ethmoid Obstruction (VAS)		NOSE Score		Nasal Blockage Score		Patients still FESS candidates		Patients choosing to under go FESS		Patients requiring oral steroids	
		Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control	Treatment	Control
Lavigne 2014															
N: 11															
	Start	4.5 ± 1.65	N/A	66.37% ± 29.41%	N/A	2.10 ± 1.03	N/A	3.45 ± ??	N/A		N/A		N/A	-	-
	30 days	2.3 ± ?? (large)	N/A	-	N/A	0.90 ± ?? (large)	N/A	1.64 ± ??	N/A		N/A		N/A	-	-
	60 days	2.1 ± ?? (large)	N/A	-	N/A	0.83 ± ?? (large)	N/A	1.20 ± ??	N/A		N/A		N/A	-	-
	90 days	2.00 ± ?? (large)	N/A	-	N/A	0.74 ± ?? (large)	N/A	1.00 ± ??	N/A		N/A		N/A	-	-
	6 months	2.33 ± ?? (large)	N/A	27.84% ± 32.81%	N/A	1.03 ± ?? (large)	N/A	1.89 ± ??	N/A	4/11	N/A	1/11	N/A	-	-
		p ≤ 0.0078		p < 0.0007		p ≤ 0.0017		p ≤ 0.0076							
RESOLVE: Han 2014															
N: 100, 90 DAYS															
	3 months	60% -1 grade	33% -1 grade	-21.5	1.3	-	-	-1.33 ±1.5	-0.67 ± 1.5	47%	77%	2	1	11%	25%
		42% -2 grades	9% -2 grades			-	-	p=0.137 (not significant)		No comment on statistical significance (S.S.)		during months 0-3		No comment on S.S.	
		p=0.016		p<0.01		-	-	-1.4 ± 1.5	-0.52 ± 1.4						
						-	-	p=0.025 (Grade 2 polyp subgroup)							
RESOLVE: Forwith 2016															
N: 100, 6 months															
Surgeon		-0.71 ± 1.53	-0.02 ± 1.16	-16.5 ± 27.80	-4.96 ± 21.96	-25.6 ± 28.2	-12.2 ± 23.9	-1.06 ± 1.4	-0.44 ± 1.4	69% (36/52)	89% (41/46)	0	1	-	-
		p= 0.018		p<0.001		p= 0.021		p= 0.124				during months 4-6		-	-
		50% -1 grade	28% -1 grade									**2 from each group had undergone revision surgery at 6 months**		-	-
		27% -2 grade	7% -2 grade											-	-
Independent reviewer		-0.76 ± 0.88	-0.38 ± 1.00	-17.1 ± 19.4	-5.6 ± 18.3	-	-	-	-	-	-	-	-	-	-
		p= 0.099		p= 0.01		-	-	-	-	-	-	-	-	-	-
		-0.80 ± 0.81	-0.38 ± 1.05	-19.9 ± 19.3	-8.6 ± 20.3	-	-	-	-	-	-	-	-	-	-
		p= 0.049 (Grade 2 polyp subgroup)		p= 0.011 (Grade 2 polyp subgroup)		-	-	-	-	-	-	-	-	-	-
RESOLVE II: Kern 2018															
N: 300 (201 Treatment/ 99 Control)															
30 days		62% -0.5 grade	50.5% -0.5 grade	-	-	-	-	-0.8 ± 0.73	-0.56 ± 0.62	-	-	-	-	-	-
Independent reviewer		p= 0.0440		-	-	-	-	p= 0.0074		-	-	-	-	-	-
		44.2% -1 grade	25.8% -1 grade			-	-	-0.93 ± 0.80	-0.69 ± 0.79	39% (78/200)	63.3% (62/98)	0	3	13.9%	18.2%
		p= 0.0022				-	-	p= 0.0248		p= 0.0004				p= 0.4080	
90 days		-0.56 ± 1.06	-0.15 ± 0.62	-11.3 ± 18.1	-1.9 ± 14.4										
Independent reviewer		p= 0.0073		p= 0.0007											
90 days		72.0% -0.5 grade	36.7% -0.5 grade												
Surgeons		p< 0.0001													
		47.5% -1 grade	16.3% -1 grade												
		p< 0.0001													

Grading of nasal polyps (Based on Hadley's clinical scoring system of nasal polyposis):

Grade 1 : smallest size polyps within the middle meatus not reaching the inferior edge of the middle turbinate.
Grade 2 : polyps within the middle meatus reaching the inferior border of the middle turbinate.
Grade 3: polyps extending into the nasal cavity below the edge of the middle turbinate but not below the inferior edge of the inferior turbinate.
Grade 4: polyps filling up the nasal cavity