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NOTE: This policy has been revised. The revised policy will be effective November 1, 2019. To view the revised policy, click here.

Medical Policy Manual Surgery, Policy No. 215

Hypoglossal Nerve Stimulation

Effective: August 1, 2019

Next Review: June 2020
Last Review: June 2019

IMPORTANT REMINDER

Medical Policies are developed to provide guidance for members and providers regarding coverage in accordance with contract terms. Benefit determinations are based in all cases on the applicable contract language. To the extent there may be any conflict between the Medical Policy and contract language, the contract language takes precedence.

PLEASE NOTE: Contracts exclude from coverage, among other things, services or procedures that are considered investigational or cosmetic. Providers may bill members for services or procedures that are considered investigational or cosmetic. Providers are encouraged to inform members before rendering such services that the members are likely to be financially responsible for the cost of these services.

DESCRIPTION

When patients with obstructive sleep apnea cannot tolerate positive airway pressure, hypoglossal nerve stimulation may be considered.

MEDICAL POLICY CRITERIA

Note: Contract language takes precedent over medical policy. Some member contracts have specific benefit limitations for orthognathic surgery.

I. Hypoglossal nerve stimulation may be considered **medically necessary** in adolescents or young adults with Down syndrome and obstructive sleep apnea when all of the criteria below (A.-E.) are met:

   A. Age 10 to 21 years (Note: Food and Drug Administration approved indication); and

   B. AHI greater than 10 and less than 50 with less than 25% central apneas after prior adenotonsillectomy; and

C. Have either tracheotomy or be ineffectively treated with CPAP due to noncompliance, discomfort, un-desirable side effects, persistent symptoms despite compliance use, or refusal to use the device; and

D. Body mass index less than or equal to 95th percentile for age; and

E. Non-concentric retropalatal obstruction on drug-induced sleep endoscopy. Note: Concentric collapse decreases the success of hypoglossal nerve stimulation and is an exclusion criterion from the Food and Drug Administration.

II. Hypoglossal nerve stimulation may be considered **medically necessary** for the treatment of obstructive sleep apnea (OSA) and upper airway resistance syndrome (UARS) in adult patients (age 18 years and older) when all of the criteria below (A., B., **and** C.) are met:

A. There is documentation of a sleep study performed within the last 3 years; and

B. The patient meets criteria for clinically significant obstructive sleep apnea (OSA) or upper airway resistance syndrome (UARS) as defined by Criteria 1. or 2. below:

1. Clinically significant obstructive sleep apnea (OSA) defined as Criteria a. or b. below:

a. An AHI equal to or greater than 15 per hour; or

b. An AHI equal to or greater than 5 per hour with at least one of the following associated symptoms:

i. Excessive daytime sleepiness that is not better explained by other factors

ii. Documented unexplained hypertension

iii. Ischemic heart disease or congestive heart failure

iv. History of stroke

v. Obesity

vi. Diabetes and glucose intolerance

vii. Two or more of the following that are not better explained by other factors:

a.) Choking or gasping during sleep

b.) Recurrent awakenings during sleep

c.) Unrefreshing sleep with daytime fatigue

d.) Impaired concentration or cognition

e.) Insomnia

2. Upper airway resistance syndrome (UARS) that is clinically significant is defined as greater than 10 alpha EEG arousals per hour.

C. All of the following conservative medical therapies have failed to improve apnea/hypopnea including associated conditions such as excess daytime sleepiness:

1. Adjustment in sleep position; and
2. Avoidance of alcohol and sedative drugs; and
3. An adequate CPAP trial must include documentation of either of the following:
    a. A minimum of 4 hours per night for 3 weeks of CPAP usage, to include as necessary, reasonable attempts to address any medical, mechanical, or psychological problems associated with CPAP (e.g., adjustment of pressure settings, appropriate medication and humidification, refitting of the mask, trial of alternative pressure delivery systems such as auto-adjusting positive airway pressure or bi-level positive airway pressure); or
    b. For patients with severe psychological aversion to CPAP, reasonable attempts have been made to complete a conventional desensitization program. Conventional desensitization programs include progressive steps intended to help the patient adapt first to the mask or nasal pillows, then to the air pressure. There may be more than one group or individual session, and the patient may work through the steps at home. Note: For patients with severe psychological aversion to CPAP, monitoring during desensitization programs (e.g., PAP-NAP) is not necessary.

III. Hypoglossal nerve stimulation is considered **investigational** for all other indications including but not limited to when policy Criteria I. or II. are not met.

NOTE: A summary of the supporting rationale for the policy criteria is at the end of the policy.

LIST OF INFORMATION NEEDED FOR REVIEW

REQUIRED DOCUMENTATION:

The information below **must** be submitted for review to determine whether policy criteria are met. If any of these items are not submitted, it could impact our review and decision outcome.

- History and Physical/Chart Notes
- Current Symptomology
- Conservative Medical Therapies failed
- CPAP Trial results
- Sleep Study results
- Drug-induced sleep endoscopy (DISE) results

CROSS REFERENCES

1. Prefabricated Oral Appliances for Obstructive Sleep Apnea, Allied Health, Policy No. 36
2. Orthognathic Surgery, Surgery, Policy No. 137
3. Surgeries for Snoring, Obstructive Sleep Apnea Syndrome, and Upper Airway Resistance Syndrome, Surgery, Policy No. 166
4. Absorbable Nasal Implant for Treatment of Nasal Valve Collapse, Surgery, Policy No. 209

BACKGROUND

OBSTRUCTIVE SLEEP APNEA (OSA)

Obstructive sleep apnea (OSA) is characterized by repetitive episodes of upper airway obstruction due to the collapse and obstruction of the upper airway during sleep. The hallmark symptom of OSA is excessive daytime sleepiness, and the typical clinical sign of OSA is snoring, which can abruptly cease and be followed by gasping associated with a brief arousal from sleep. The snoring resumes when the patient falls back to sleep, and the cycle of snoring/apnea/arousal may be repeated as frequently as every minute throughout the night.

Sleep fragmentation associated with the repeated arousal during sleep can impair daytime activity. For example, adults with OSA-associated daytime somnolence are thought to be at higher risk for accidents involving motorized vehicles (i.e., cars, trucks, heavy equipment). OSA in children may result in neurocognitive impairment and behavioral problems. In addition, OSA affects the cardiovascular and pulmonary systems. For example, apnea leads to periods of hypoxia, alveolar hypoventilation, hypercapnia, and acidosis. This, in turn, can cause systemic hypertension, cardiac arrhythmias, and cor pulmonale. Systemic hypertension is common in patients with OSA. Severe OSA is associated with decreased survival, presumably related to severe hypoxemia, hypertension, or an increase in automobile accidents related to overwhelming sleepiness.

A polysomnogram performed in a sleep laboratory is considered the gold standard test used to diagnose OSA. Objective measures of OSA are compiled using polysomnography monitors, which document the number of apneic and hypopneic events per hour and combine them into the apnea-hypopnea index (AHI). The respiratory disturbance index (RDI) may be defined as the number of apneas, hypopneas and RERAs per hour of sleep.

The final diagnosis of OSA rests on a combination of objective and subjective criteria (e.g. AHI or RDI and excessive daytime sleepiness) that seek to identify those levels of obstruction which are clinically significant. When sleep onset and offset are unknown (e.g., in home sleep studies) the AHI or RDI may be calculated based on the number of apneas, hypopneas, and/or RERAs per hour of recording time.

An increase in mortality is associated with an AHI greater than 15. More difficult to evaluate is the clinical significance of patients with mild sleep apnea. Mortality has not been shown to be increased in these patients, and frequently the most significant manifestations reported by the patient are snoring, excessive daytime sleepiness, witnessed breathing interruptions, awakenings due to gasping or choking, nocturia, morning headaches, memory loss, irritability, or hypertension.[1,2] The hallmark clinical symptom of OSA is excessive snoring, although it is important to note that snoring can occur in the absence of OSA. Isolated snoring in the absence of medical complications, while troubling to the patient's bed partner, is not considered a medical problem requiring surgical intervention.

Table 1. Definitions of Terms for Obstructive Sleep Apnea

Terms	Definition
Apnea	The frequency of apneas and hypopneas is measured from channels assessing oxygen desaturation, respiratory airflow, and respiratory effort. In adults, apnea is defined as a drop in airflow by ≥90% of pre-event baseline for at least 10 seconds. Due to faster respiratory rates in children, pediatric scoring criteria define an apnea as ≥2 missed breaths, regardless of its duration in seconds.
Hypopnea	Hypopnea in adults is scored when the peak airflow drops by at least 30% of pre-event baseline for at least 10 seconds in association with either at least 4% arterial oxygen desaturation or an arousal. Hypopneas in children

Terms	Definition
	are scored by a ≥50% drop in nasal pressure and either a ≥3% decrease in oxygen saturation or an associated arousal.
Apnea/Hypopnea Index (AHI)	The average number of apneas or hypopneas per hour of sleep
Obstructive sleep apnea (OSA)	Repetitive episodes of upper airway obstruction due to the collapse and obstruction of the upper airway during sleep
Mild OSA	In adults: AHI of 5 to <15 In children: AHI ≥1.5 is abnormal
Moderate OSA	AHI of 15 to < 30
Severe OSA	Adults: AHI ≥30 Children: AHI of ≥15
Continuous positive airway pressure (CPAP)	Positive airway pressure may be continuous (CPAP) or auto-adjusting (APAP) or Bi-level (Bi-PAP). CPAP is a more familiar abbreviation and will refer to all types of PAP devices.
CPAP Failure	Usually defined as an AHI greater than 20 events per hour while using CPAP
CPAP Intolerance	CPAP use for less than 4 h per night for 5 nights or more per week, or refusal to use CPAP. CPAP intolerance may be observed in patients with mild, moderate, or severe OSA

IMPLANTABLE HYPOGLOSSAL NERVE STIMULATORS

Hypoglossal nerve stimulation involves the surgical implantation of a subcutaneous generator in the upper chest and an electrode tunneled from the generator to the hypoglossal nerve. The patient uses a hand-held remote to activate the device just prior to sleep and to turn it off upon waking. Some have sensors detect inspiratory efforts and the hypoglossal nerve is stimulated in a synchronized fashion. This stimulation is intended to maintain muscle tone of the tongue base to prevent airway occlusion.

Stimulation systems such as the Inspire II Upper Airway Stimulation System include respiratory sensing leads that permit intermittent stimulation during inspiration. Stimulation parameters are titrated during an in-laboratory polysomnography and can be adjusted by the patient during home use. The device is turned on only during sleep periods.

REGULATORY STATUS

The *Inspire® II Upper Airway Stimulation System* (Inspire Medical Systems) received FDA approval in 2014 (P130008) for a subset of patients with moderate to severe obstructive sleep apnea. The original approval was for patients with an Apnea Hypopnea Index (AHI) of greater or equal to 20 and less than or equal to 65. In 2017, approval was granted to expand the AHI range to 15 to 65 events per hour (S021). Product code: MNQ

In 2014, ImThera™ Medical received FDA approval for an IDE trial with the aura6000® hypoglossal nerve stimulator system.

In 2011, Apnex Medical received FDA approval to conduct a randomized investigational device exemption (IDE) trial for the Hypoglossal Nerve Stimulation (HGNS®) System. The trial was terminated and Apnex Medical has ceased operations.

EVIDENCE SUMMARY

Continuous positive airway pressure (CPAP) is the most widely accepted medical therapy for treatment of obstructive sleep apnea (OSA) and improvement of primary health outcomes such as cardiovascular disease, type 2 diabetes, and overall mortality associated with OSA. Hypoglossal nerve stimulation is being proposed as a second line treatment for patients who have failed CPAP.

SYSTEMATIC REVIEWS

A 2015 systematic review identified six case series with a total of 200 patients treated with hypoglossal nerve stimulation.[3] No controlled trials were identified. Two series were identified on the Inspire II System and included the STAR trial described below. Three series were identified with the HGNS system and included the study of 31 patients described above. One series of 13 patients was identified with the aura6000 System (ImThera Medical). When data were combined for meta-analysis, AHI and Oxygen Desaturation Index (ODI) improved by 50% (eg, AHI from 44 to 20, ODI from 21 to 10), and the ESS improved from 12 to 7. All of the included studies described minor complications such as tongue weakness, tongue soreness, pain/swelling at the neck incision, fever, and lack of tongue response to stimulation. Of the 200 patients, nine (4.5%) had serious device-related adverse events that led to removal of the stimulator.

RANDOMIZED CONTROLLED TRIALS

No RCTs have been identified on HNS.

NONRANDOMIZED STUDIES

Observational Comparative Studies

Nonrandomized evidence consists of two comparative studies that compared HNS with historical controls treated with UPPP or a variant of UPPP (expansion sphincter pharyngoplasty, see Table 2). AHI success by the Sher criteria ranged from 87% to 100% in the HNS group compared with 40% to 64% in the UPPP group (see Table 3). Posttreatment ESS was below 10 in both groups. It is not clear from these studies whether the patients in the historical control group were similar to the subset of patients in the HNS group, particularly in regard to the pattern of palatal collapse and from patients who did not return for postoperative PSG (see Tables 4 and 5). UPPP may not be the most appropriate comparator for HNS, because UPPP is less effective for patients with obstruction arising primarily from the tongue base (the primary target for HNS).

Table 2. Summary of Observational Comparative Study Characteristics

Study	Study Type	Country	Dates	Participants	HNS	Traditional Surgery	Follow-Up
Shah (2018)[4]	Retrospective series with historical controls	U.S.	HNS 2015-2016 UPPP 2003-2012	40 OSA patients with AHI >20 and <65, BMI ≤32 kg mg/m2, failed CPAP, favorable pattern of palatal collapse[a]	35% had previously had surgery for OSA	UPPP 50% of patients had additional surgical procedures	2-13 mo

Study	Study Type	Country	Dates	Participants	HNS	Traditional Surgery	Follow-Up
Huntley (2018)[5]	Retrospective series with historical controls	U.S.	HNS2014-2016 Modified UPPP 2011-2016	Retrospective review included treated patients who had a postoperative PSG	75 patients age 61.67 y with a favorable pattern of palatal collapse	33 patients age 43.48 y treated by ESP	To post-operative PSG

BMI: body mass index; CPAP: continuous positive airway pressure; ESP: expansion sphincter pharyngoplasty; HNS: hypoglossal nerve stimulation; OSA: obstructive sleep apnea; PSG: polysomnography; UPPP: uvulopalatopharyngoplasty.
[a] A favorable pattern of palatal collapse is not concentric retropalatal obstruction on drug-induced sleep endoscopy.

Table 3. Summary of Key Observational Comparative Study Results

Header Row	Baseline AHI (SD)	Posttreatment AHI (SD)	AHI Success (%) Sher Criteria	Baseline ESS (SD)	Posttreatment ESS (SD)
Shah (2018)[4]					
HNS	38.9 (12.5)	4.5 (4.8)[b]	20 (100%)	13 (4.7)	8 (5.0)[b]
UPPP	40.3 (12.4)	28.8 (25.4)[a]	8 (40%)	11 (4.9)	7 (3.4)[b]
Huntley (2018)[5]					
HNS	36.8 (20.7)	7.3 (11.2)	86.7	11.2 (4.2)	5.4 (3.4)
ESP	26.7 (20.3)	13.5 (19.0)	63.6	10.7 (4.5)	7.0 (6.0)
p	0.003	0.003	0.008	0.565	*NS*

AHI: Apnea/Hypopnea Index; ESP: expansion sphincter pharyngoplasty; HNS: hypoglossal nerve stimulation; NS: not significant; Sher criteria: 50% decrease in AHI and final AHI <20; SD; standard deviation; UPPP: uvulopalatopharyngoplasty.
[a] Baseline vs posttreatment p<0.05.
[b] Baseline vs posttreatment p<0.001.

Table 4. Relevance Gaps

Study	Population[a]	Intervention[b]	Comparator[c]	Outcomes[d]	Follow-Up[e]
Shah (2018)[4]			2. UPPP may not be preferred treatment for patients with primarily lingual obstruction		
Huntley (2018)[5]	4. Study populations not comparable		1. Not clearly defined, few ESP patients had follow-up PSG		
Steffen (2018)[6]			2.No comparator		
STAR trial[7-12]			2.No comparator		

The evidence gaps stated in this table are those notable in the current review; this is not a comprehensive gaps assessment. ESP: expansion sphincter pharyngoplasty; PSG: polysomnography; STAR: Stimulation Therapy for Apnea Reduction; UPPP: uvulopalatopharyngoplasty.
[a] Population key: 1. Intended use population unclear; 2. Clinical context is unclear; 3. Study population is unclear; 4. Study population not representative of intended use.
[b] Intervention key: 1. Not clearly defined; 2. Version used unclear; 3. Delivery not similar intensity as comparator; 4. Not the intervention of interest.
[c] Comparator key: 1. Not clearly defined; 2. Not standard or optimal; 3. Delivery not similar intensity as intervention; 4. Not delivered effectively.

[d] Outcomes key: 1. Key health outcomes not addressed; 2. Physiologic measures, not validated surrogates; 3. No CONSORT reporting of harms; 4. Not establish and validated measurements; 5. Clinical significant difference not prespecified; 6. Clinical significant difference not supported.
[e] Follow-Up key: 1. Not sufficient duration for benefit; 2. Not sufficient duration for harms.

Table 5. Study Design and Conduct Gaps

Study	Allocation[a]	Blinding[b]	Selective Reporting[d]	Data Completeness[d]	Power[d]	Statistical[f]
Shah (2018)[4]	1. Not randomized (retrospective) 4. Inadequate control for selection bias	1.-3. No blinding				4. Comparative treatment effects not calculated
Huntley (2018)[5]	1. Not randomized (retrospective)	1.-3. No blinding				
Steffen (2018)[6]	1. Not randomized	1.-3. No blinding				
STAR trial[7-12]	1. Not randomized	1.-3. No blinding				

The evidence gaps stated in this table are those notable in the current review; this is not a comprehensive gaps assessment.
STAR: Stimulation Therapy for Apnea Reduction.
[a] Allocation key: 1. Participants not randomly allocated; 2. Allocation not concealed; 3. Allocation concealment unclear; 4. Inadequate control for selection bias.
[b] Blinding key: 1. Not blinded to treatment assignment; 2. Not blinded outcome assessment; 3. Outcome assessed by treating physician.
[c] Selective Reporting key: 1. Not registered; 2. Evidence of selective reporting; 3. Evidence of selective publication.
[d] Follow-Up key: 1. High loss to follow-up or missing data; 2. Inadequate handling of missing data; 3. High number of crossovers; 4. Inadequate handling of crossovers; 5. Inappropriate exclusions; 6. Not intent to treat analysis (per protocol for noninferiority trials).
[e] Power key: 1. Power calculations not reported; 2. Power not calculated for primary outcome; 3. Power not based on clinically important difference.
[f] Statistical key: 1. Intervention is not appropriate for outcome type: (a) continuous; (b) binary; (c) time to event; 2. Intervention is not appropriate for multiple observations per patient; 3. Confidence intervals and/or p values not reported; 4.Comparative treatment effects not calculated.

Prospective Single Arm Studies

Results of prospective single-arm studies show success rates in 66% to 68% of patients who had moderate-to-severe sleep apnea and a favorable pattern of palatal collapse (see Tables 6 and 7). Mean AHI was 31 to 32 at baseline, decreasing to 14 to 15 at 12 months. ESS scores decreased to 6.5 to 7.0. All improvements were maintained through 5 years of follow-up. Discomfort due to the electrical stimulation and tongue abrasion were initially common but were decreased when stimulation levels were reduced (see Table 8).

Table 6. Summary of Prospective Single-Arm Study Characteristics

Study	Country	Participants	Treatment Delivery	Follow-Up
STAR trial[7-12]	EU, U.S.	126 patients with AHI >20 and <50, BMI ≤32 kg/m2, failed CPAP, favorable pattern of palatal collapse[a]	Stimulation parameters titrated with full PSG	5 y
Postmarket studies: Heiser (2017)[13]	3 sites in Germany	60 patients with AHI ≥15 and ≤65 on home sleep		12 mo

Study	Country	Participants	Treatment Delivery	Follow-Up
Steffen (2018)[6]		study, BMI ≤35 kg/m2, failed CPAP; favorable pattern of palatal collapse[a]		

AHI: apnea/hypopnea index; BMI: body mass index; CPAP: continuous positive airway pressure; STAR: Stimulation Therapy for Apnea Reduction.

[a] A favorable pattern of palatal collapse is non-concentric retropalatal obstruction on drug-induced sleep endoscopy.

Table 7. Summary of Prospective Single-Arm Study Results

Study		N	Percent of Patients with AHI Success (Sher criteria)	Mean AHI Score (SD)	Mean ODI Score (SD)	FOSQ Score (SD)	ESS Score (SD)
STAR trial[7-12]							
Baseline		126		32.0 (11.8)	28.9 (12.0)	14.3 (3.2)	11.6 (5.0)
12 months		124	66%	15.3 (16.1)[d]	13.9 (15.7)[d]	17.3 (2.9)[d]	7.0 (4.2)[d]
3 years		116[a]	65%	14.2 (15.9)	9.1 (11.7)	17.4 (3.5)[b]	7.0 (5.0)[b]
5 years		97[c]	63%	12.4 (16.3)	9.9 (14.5)	18.0 (2.2)	6.9 (4.7)
Postmarket studies: Heiser (2017)[13] Steffen (2018)[6]							
Baseline		60		31.2 (13.2)	27.6 (16.4)	13.7 (3.6)	12.8 (5.3)
12 months		56[f]	68%	13.8 (14.8)[e]	13.7 (14.9)[e]	17.5 (3)[e]	6.5 (4.5)[e]

AHI: Apnea/Hypopnea Index; ESS: Epworth Sleepiness Scale; FOSQ: Functional Outcomes of Sleep Questionnaire; ODI: Oxygen Desaturation Index; PSG: polysomnography; SD: standard deviation; STAR: Stimulation Therapy for Apnea Reduction.

[a] Ninety-eight participants agreed to undergo PSG at 36 months, of the 17 participants who did not undergo PSG at 36 months, 54% were nonresponders and their PSG results at 12 or 18 months were carried forward.

[b] The change from baseline was significant at p<0.001.

[c] Seventy-one participants agreed to a PSG.

[f] Four patients lost to follow-up were analyzed as treatment failures.

[d] p<0.001.

[e] p< 0.05.

Table 8. Device-Related Adverse Events from Prospective Single-Arm Studies

Header Row	N	Discomfort due to Electrical Stimulation[a]	Tongue Abrasion	Dry Mouth	Mechanical Pain from Device	Internal Device Usability	External Device Usability
STAR trial[12]							
0 to 12 months	126	81	28	10	7	12	11
12 to 24 months	124	23	12	5	2	8	11
24 to 36 months	116	26	4	2	3	1	8
36 to 48 months	97	7	3	0	1	3	9
> 48 months		5	3	3	1	1	6

Header Row	N	Discomfort due to Electrical Stimulation[a]	Tongue Abrasion	Dry Mouth	Mechanical Pain from Device	Internal Device Usability	External Device Usability
Participants with event, n of 126 (%)		76 (60.3)	34 (27.0)	19 (15.1)	14 (11.1)	21 (16.7)	33 (26.2)

STAR: Stimulation Therapy for Apnea Reduction.
[a] Stimulation levels were adjusted to reduce discomfort

PRACTICE GUIDELINE SUMMARY

AMERICAN ACADEMY OF OTOLARYNGOLOGY - HEAD AND NECK SURGERY

In a position statement, American Academy of Otolaryngology - Head and Neck Surgery (2016) supported hypoglossal nerve stimulation as an effective second-line treatment of moderate-to-severe OSA in patients who are intolerant or unable to achieve benefit with CPAP.[14] AAO-HNS noted that not all patients are candidates for upper airway stimulation therapy and require a number of assessments to ensure proper patient selection.

SUMMARY

Evidence for hypoglossal nerve stimulation (HNS) as a treatment of obstructive sleep apnea (OSA) is limited. However, HNS has become generally accepted in medical practice, and is recommended as an effective second-line treatment in a consensus statement by the American Academy of Otolaryngology - Head and Neck Surgery. Therefore, hypoglossal nerve stimulation may be considered medically necessary for some patients when policy criteria are met.

There is not enough research to know if or how well hypoglossal nerve stimulation (HNS) works to treat people with indications other than those listed in policy criteria. This does not mean that it does not work, but more research is needed to know. No clinical guidelines based on research address HNS for people other than for those listed in the policy criteria. Therefore, hypoglossal nerve stimulation is considered investigational for all other indications not listed in policy criteria.

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CODES

Codes	Number	Description
CPT	64568	Incision for implantation of cranial nerve (eg, vagus nerve) neurostimulator electrode array and pulse generator

Codes	Number	Description
	0466T	Insertion of chest wall respiratory sensor electrode or electrode array, including connection to pulse generator (List separately in addition to code for primary procedure)
	0467T	Revision or replacement of chest wall respiratory sensor electrode or electrode array, including connection to existing pulse generator
	0468T	Removal of chest wall respiratory sensor electrode or electrode array
HCPCS	None	

Date of Origin: *June 2019*