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Preauthorization	No	Review Dates: 03/13, 05/13, 05/14, 05/15, 05/16, 05/17, 07/17, 05/18, 05/19, 05/20	

Preauthorization is not required.

The following protocol contains medical necessity criteria that apply for this service. The criteria are also applicable to services provided in the local Medicare Advantage operating area for those members, unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. Please note that payment for covered services is subject to eligibility and the limitations noted in the patient's contract at the time the services are rendered.

Populations	Interventions	Comparators	Outcomes
Individuals: <ul style="list-style-type: none"> Who are undergoing thyroid or parathyroid surgery and are at high risk of injury to the recurrent laryngeal nerve 	Interventions of interest are: <ul style="list-style-type: none"> Intraoperative neurophysiologic monitoring 	Comparators of interest are: <ul style="list-style-type: none"> Surgery without neurophysiologic monitoring 	Relevant outcomes include: <ul style="list-style-type: none"> Morbid events Functional outcomes Quality of life
Individuals: <ul style="list-style-type: none"> Who are undergoing anterior cervical spine surgery and are at high risk of injury to the recurrent laryngeal nerve 	Interventions of interest are: <ul style="list-style-type: none"> Intraoperative neurophysiologic monitoring 	Comparators of interest are: <ul style="list-style-type: none"> Surgery without neurophysiologic monitoring 	Relevant outcomes include: <ul style="list-style-type: none"> Morbid events Functional outcomes Quality of life
Individuals: <ul style="list-style-type: none"> Who are undergoing esophageal surgery 	Interventions of interest are: <ul style="list-style-type: none"> Intraoperative neurophysiologic monitoring 	Comparators of interest are: <ul style="list-style-type: none"> Surgery without neurophysiologic monitoring 	Relevant outcomes include: <ul style="list-style-type: none"> Morbid events Functional outcomes Quality of life
Individuals: <ul style="list-style-type: none"> Who are undergoing surgery proximal to a peripheral nerve 	Interventions of interest are: <ul style="list-style-type: none"> Intraoperative neurophysiologic monitoring 	Comparators of interest are: <ul style="list-style-type: none"> Surgery without neurophysiologic monitoring 	Relevant outcomes include: <ul style="list-style-type: none"> Morbid events Functional outcomes Quality of life

DESCRIPTION

Intraoperative neurophysiologic monitoring (IONM) describes a variety of procedures used to monitor the integrity of neural pathways during high-risk neurosurgical, orthopedic, and vascular surgeries. It involves the detection of electrical signals produced by the nervous system in response to sensory or electrical stimuli to provide information about the functional integrity of neuronal structures. This evidence review does not address established neurophysiologic monitoring (i.e., somatosensory-evoked potentials, motor-evoked potentials using transcranial electrical stimulation, brainstem auditory-evoked potentials, electromyography of cranial nerves, electroencephalography, electrocorticography), during spinal, intracranial, or vascular procedures.

SUMMARY OF EVIDENCE

For individuals who are undergoing thyroid or parathyroid surgery and are at high-risk of injury to the recurrent laryngeal nerve (RLN) who receive IONM, the evidence includes a large randomized controlled trial and systematic reviews. The relevant outcomes are morbid events, functional outcomes, and quality of life (QOL). The strongest evidence on neurophysiologic monitoring derives from a randomized controlled trial of 1000 patients undergoing thyroid surgery. This randomized controlled trial found a significant reduction in RLN injury in patients at high-risk for injury. High-risk in this trial was defined as surgery for cancer, thyrotoxicosis, retrosternal or giant goiter, or thyroiditis. The high-risk category may also include patients with prior thyroid or parathyroid surgery or total thyroidectomy. A low volume of surgeries might also contribute to a higher risk for RLN injury. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who are undergoing anterior cervical spine surgery and are at high-risk of injury to the RLN who receive IONM, the evidence includes systematic reviews of case series and cohort studies. The relevant outcomes are morbid events, functional outcomes, and QOL. The evidence on the use of IONM to reduce RLN injury during cervical spinal surgery includes a 2017 systematic review and a meta-analysis. Of the ten studies assessed in the systematic review, two compared the risk of nerve injury with use of IONM vs. no IONM and found no difference. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who are undergoing esophageal surgery who receive IONM, the evidence includes a nonrandomized comparative study. The relevant outcomes are morbid events, functional outcomes, and QOL. One nonrandomized comparative study on surgery for esophageal cancer was identified. Interpretation of this study is confounded because only those patients who had visual identification of the nerve underwent neurophysiologic monitoring. Current evidence is not sufficiently robust to determine whether neurophysiologic monitoring reduces RLN injury in patients undergoing surgery for esophageal cancer. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who are undergoing surgery proximal to a peripheral nerve who receive IONM, the evidence includes case series and a controlled cohort study. The relevant outcomes are morbid events, functional outcomes, and QOL. Surgical guidance with peripheral IONM and the predictive ability of monitoring of peripheral nerves have been reported. No prospective comparative studies were identified that assessed whether outcomes are improved with neurophysiologic monitoring. The evidence is insufficient to determine the effects of the technology on health outcomes.

Clinical input obtained in 2014 and professional society guidelines have supported the use of IONM during spinal, intracranial, or vascular procedures. There was general agreement that IONM of visual-evoked potentials and motor-evoked potentials using transcranial magnetic stimulation is investigational. It should be noted there is controversy about the utility of IONM in some surgical procedures. Most of the published literature is from Europe, and, while many articles have reported the sensitivity and specificity of motor-evoked potentials for predicting postsurgical neurologic deficits, few have reported intraoperative interventions undertaken in response to information from monitoring.

Clinical input obtained in 2017 supports that the following indication provides a clinically meaningful improvement in net health outcome and is consistent with generally accepted medical practice:

- Use of IONM of the RLN for individuals undergoing cervical spine surgery with:
 - prior anterior cervical surgery, particularly revision anterior cervical discectomy and fusion, revision surgery through a scarred surgical field, reoperation for pseudarthrosis, or revision for failed fusion;
 - multilevel anterior cervical discectomy and fusion; and
 - preexisting RLN pathology, when there is residual function of the RLN.

Thus, the above indication may be considered medically necessary considering the suggestive evidence and clinical input support.

POLICY

Intraoperative neurophysiologic monitoring, which includes somatosensory-evoked potentials, motor-evoked potentials using transcranial electrical stimulation, brainstem auditory-evoked potentials, electromyography (EMG) of cranial nerves, electroencephalography (EEG), and electrocorticography (ECoG), may be considered **medically necessary** during spinal, intracranial, or vascular procedures.

Intraoperative neurophysiologic monitoring of the recurrent laryngeal nerve may be considered **medically necessary** in patients undergoing:

- high-risk thyroid or parathyroid surgery, including:
 - total thyroidectomy
 - repeat thyroid or parathyroid surgery
 - surgery for cancer
 - thyrotoxicosis
 - retrosternal or giant goiter
 - thyroiditis
- anterior cervical spine surgery associated with any of the following increased risk situations:
 - prior anterior cervical surgery, particularly revision of anterior cervical discectomy and fusion, revision surgery through a scarred surgical field, reoperation for pseudarthrosis or revision for failed fusion
 - multilevel anterior cervical discectomy and fusion
 - preexisting recurrent laryngeal nerve pathology, when there is residual function of the recurrent laryngeal nerve.

Intraoperative neurophysiologic monitoring of the recurrent laryngeal nerve during anterior cervical spine surgery not meeting the criteria above or during esophageal surgeries is considered **investigational**.

Intraoperative monitoring of visual-evoked potentials is considered **investigational**.

Due to the lack of monitors approved by the U.S. Food and Drug Administration intraoperative monitoring of motor-evoked potentials using transcranial magnetic stimulation is considered **investigational**.

Intraoperative EMG and nerve conduction velocity monitoring during surgery on the peripheral nerves is considered **not medically necessary**.

Note: These policy statements refer only to use of these techniques as part of intraoperative monitoring. Other clinical applications of these techniques, such as visual-evoked potentials and EMG, are not considered in this protocol.

POLICY GUIDELINES

Intraoperative neurophysiologic monitoring including somatosensory-evoked potentials and motor-evoked potentials using transcranial electrical stimulation, brainstem auditory-evoked potentials, electromyography of cranial nerves, electroencephalography, and electrocorticography has broad acceptance, particularly for spine

surgery and open abdominal aorta aneurysm repairs. Therefore, this protocol focuses on monitoring of the recurrent laryngeal nerve during neck surgeries and monitoring of peripheral nerves.

Constant communication between surgeon, neurophysiologist, and anesthetist are required for safe and effective intraoperative neurophysiologic monitoring.

Intraoperative monitoring is considered a separate service only when a licensed healthcare practitioner, other than the operating surgeon, interprets the monitoring. The provision/monitoring of the sensory procedure is performed by a healthcare practitioner or technician who is in attendance in the operating room throughout the procedure.

Intraoperative monitoring performed remotely would be provided in conjunction with the healthcare provider who is providing/monitoring the sensory test in the operating room, by the remote physician whose attention is directed solely on one patient. Those providing the intraoperative monitoring services must have the proper training to do so whether providing real-time review and interpretation on-site versus remote.

BACKGROUND

INTRAOPERATIVE NEUROPHYSIOLOGIC MONITORING

The principal goal of IONM is the identification of nervous system impairment on the assumption that prompt intervention will prevent permanent deficits. Correctable factors at surgery include circulatory disturbance, excess compression from retraction, bony structures, hematomas, or mechanical stretching. The technology is continuously evolving with refinements in equipment and analytic techniques, including recording, with several patients monitored under the supervision of a physician who is outside the operating room.

The different methodologies of monitoring are described next.

Sensory-Evoked Potentials

SEP describes the responses of the sensory pathways to sensory or electrical stimuli. Intraoperative monitoring of SEPs is used to assess the functional integrity of central nervous system pathways during surgeries that put the spinal cord or brain at risk for significant ischemia or traumatic injury. The basic principles of SEP monitoring involve identification of a neurologic region at risk, selection and stimulation of a nerve that carries a signal through the at risk region and recording and interpreting the signal at certain standardized points along the pathway. Monitoring of SEPs is commonly used in the following procedures: carotid endarterectomy, brain surgery involving vasculature, surgery with distraction compression or ischemia of the spinal cord and brainstem, and acoustic neuroma surgery. SEPs can be further categorized by type of stimulation used, as follow.

Somatosensory-Evoked Potentials

SSEPs are cortical responses elicited by peripheral nerve stimulations. Peripheral nerves, such as the median, ulnar, or tibial nerves, are typically stimulated, but in some situations, the spinal cord may be stimulated directly. The recording is done either cortically or at the level of the spinal cord above the surgical procedure. Intraoperative monitoring of SSEPs is most commonly used during orthopedic or neurologic surgery to prompt intervention to reduce surgically induced morbidity and/or to monitor the level of anesthesia. One of the most common indications for SSEP monitoring is in patients undergoing corrective surgery for scoliosis. In this setting, SSEP monitors the status of the posterior column pathways and thus does not reflect ischemia in the anterior (motor) pathways. Several different techniques are commonly used, including stimulation of a relevant peripheral nerve with monitoring from the scalp, from interspinous ligament needle electrodes, or from catheter electrodes in the epidural space.

Brainstem Auditory-Evoked Potentials

BAEPs are generated in response to auditory clicks and can define the functional status of the auditory nerve. Surgical resection of a cerebellopontine angle tumor, such as an acoustic neuroma, places the auditory nerves at risk and BAEPs have been extensively used to monitor auditory function during these procedures.

Visual-Evoked Potentials

VEPs with light flashes are used to track visual signals from the retina to the occipital cortex. VEP monitoring has been used for surgery on lesions near the optic chiasm. However, VEPs are very difficult to interpret due to their sensitivity to anesthesia, temperature, and blood pressure.

Motor-Evoked Potentials

MEPs are recorded from muscles following direct or transcranial electrical stimulation of motor cortex or pulsed magnetic stimulation provided using a coil placed over the head. Peripheral motor responses (muscle activity) are recorded by electrodes placed on the skin at prescribed points along the motor pathways. MEPs, especially when induced by magnetic stimulation, can be affected by anesthesia. The Digitimer electrical cortical stimulator received the U.S. Food and Drug Administration (FDA) premarket approval in 2002. Devices for transcranial magnetic stimulation have not been approved by the FDA for this use.

Multimodal IONM, in which more than one technique is used, most commonly with SSEPs and MEPs, has also been described.

ELECTROMYOGRAM MONITORING AND NERVE CONDUCTION VELOCITY MEASUREMENTS

EMG monitoring and nerve conduction velocity measurements can be performed in the operating room and may be used to assess the status of the cranial or peripheral nerves (e.g., to identify the extent of nerve damage before nerve grafting or during resection of tumors). For procedures with a risk of vocal cord paralysis due to damage to the recurrent laryngeal nerve (i.e., during carotid artery, thyroid, parathyroid, goiter, or anterior cervical spine procedures), monitoring of the vocal cords or vocal cord muscles has been performed. These techniques may also be used during procedures proximal to the nerve roots and peripheral nerves to assess the presence of excessive traction or other impairment. Surgery in the region of cranial nerves can be monitored by electrically stimulating the proximal (brain) end of the nerve and recording via EMG activity in the facial or neck muscles. Thus, monitoring is done in the direction opposite that of SEPs but the purpose is similar, to verify that the neural pathway is intact.

ELECTROENCEPHALOGRAM MONITORING

Spontaneous EEG monitoring can also be used during surgery and can be subdivided as follows:

- EEG monitoring has been widely used to monitor cerebral ischemia secondary to carotid cross-clamping during a carotid endarterectomy. EEG monitoring may identify those patients who would benefit from the use of a vascular shunt during the procedure to restore adequate cerebral perfusion. Conversely, shunts, which have an associated risk of iatrogenic complications, may be avoided in those patients with a normal EEG activity. Carotid endarterectomy may be done with the patient under local anesthesia so that monitoring of cortical function can be directly assessed.
- Electrocorticography (ECoG) is the recording of EEG activity directly from a surgically exposed cerebral cortex. ECoG is typically used to define the sensory cortex and map the critical limits of a surgical resection. ECoG recordings have been most frequently used to identify epileptogenic regions for resection. In these applications, ECoG does not constitute monitoring, per se.

IONM, including SSEPs and MEPs using transcranial electrical stimulation, BAEPs, EMG of cranial nerves, EEG, and ECoG, has broad acceptance, particularly for spine surgery and open abdominal aorta aneurysm repairs. These indications have long been considered the standard of care, as evidenced by numerous society guidelines,

including those from the American Academy of Neurology, American Clinical Neurophysiology Society, American Association of Neurological Surgeons, Congress of Neurologic Surgeons, and American Association of Neuromuscular & Electrodiagnostic Medicine.¹⁻⁷ Therefore, this evidence review focuses on monitoring of the recurrent laryngeal nerve during neck and esophageal surgeries and monitoring of peripheral nerves.

REGULATORY STATUS

A number of EEG and EMG monitors have been cleared for marketing by the FDA through the 510(k) process. FDA product code: GWQ.

IONM of MEPs using transcranial magnetic stimulation does not have the FDA approval.

RELATED PROTOCOL

Vestibular Function Testing

Services that are the subject of a clinical trial do not meet our Technology Assessment and Medically Necessary Services Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment and Medically Necessary Services Protocol.*

It is expected that only appropriate and medically necessary services will be rendered. We reserve the right to conduct prepayment and postpayment reviews to assess the medical appropriateness of the above-referenced procedures. **Some of this protocol may not pertain to the patients you provide care to, as it may relate to products that are not available in your geographic area.**

REFERENCES

We are not responsible for the continuing viability of web site addresses that may be listed in any references below.

1. American Academy of Neurology. Assessment: intraoperative neurophysiology. Report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology. *Neurology*. Nov 1990; 40(11):1644-1646. PMID 2234418.
2. Nuwer MR, Emerson RG, Galloway G, et al. Evidence-based guideline update: intraoperative spinal monitoring with somatosensory and transcranial electrical motor evoked potentials: report of the Therapeutics and Technology Assessment Subcommittee of the American Academy of Neurology and the American Clinical Neurophysiology Society. *Neurology*. Feb 21 2012;78(8):585-589. PMID 22351796.
3. Skinner SA, Cohen BA, Morledge DE, et al. Practice guidelines for the supervising professional: intraoperative neurophysiological monitoring. *J Clin Monit Comput*. Apr 2014;28(2):103-111. PMID 24022172.
4. American Clinical Neurophysiology Society. ACNS Guidelines and Consensus Statements. 2009; <http://www.acns.org/practice/guidelines>. Accessed March 23, 2018.
5. American Association of Neurological Surgeons (AANS)/Congress of Neurological Surgeons (CNS). AANS/CNS Joint Section on disorders of the spine and peripheral Nerves. Updated Position Statement: Intraoperative electrophysiological monitoring. 2014; <http://www.spinesection.org/files/pdfs/IOM%20Position%20Statement%2004.24.2014.pdf>. Accessed March 23, 2018.

6. Resnick DK, Choudhri TF, Dailey AT, et al. Guidelines for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 15: electrophysiological monitoring and lumbar fusion. *J Neurosurg Spine*. Jun 2005;2(6):725-732. PMID 16028743.
7. American Association of Neuromuscular & Electrodiagnostic Medicine. Position Statement: Recommended Policy for Electrodiagnostic Medicine. 2014; <http://www.aanem.org/getmedia/884f5b94-a0be-447e-bdae-20d52aaf8299/Recommended-Policy-for-Electrodiagnostic-Medicine.pdf>. Accessed March 23, 2018.
8. Henry BM, Graves MJ, Vikse J, et al. The current state of intermittent intraoperative neural monitoring for prevention of recurrent laryngeal nerve injury during thyroidectomy: a PRISMA-compliant systematic review of overlapping meta-analyses. *Langenbecks Arch Surg*. Jun 2017;402(4):663-673. PMID 28378238.
9. Pisanu A, Porceddu G, Podda M, et al. Systematic review with meta-analysis of studies comparing intraoperative neuromonitoring of recurrent laryngeal nerves versus visualization alone during thyroidectomy. *J Surg Res*. May 1 2014;188(1):152-161. PMID 24433869.
10. Sun W, Liu J, Zhang H, et al. A meta-analysis of intraoperative neuromonitoring of recurrent laryngeal nerve palsy during thyroid reoperations. *Clin Endocrinol (Oxf)*. Nov 2017;87(5):572-580. PMID 28585717.
11. Pardal-Refoyo JL, Ochoa-Sangrador C. Bilateral recurrent laryngeal nerve injury in total thyroidectomy with or without intraoperative neuromonitoring. Systematic review and meta-analysis. *Acta Otorrinolaringol Esp*. Mar-Apr 2016;67(2):66-74. PMID 26025358.
12. Barczynski M, Konturek A, Cichon S. Randomized clinical trial of visualization versus neuromonitoring of recurrent laryngeal nerves during thyroidectomy. *Br J Surg*. Mar 2009;96(3):240-246. PMID 19177420.
13. Vasileiadis I, Karatzas T, Charitoudis G, et al. Association of intraoperative neuromonitoring with reduced recurrent laryngeal nerve injury in patients undergoing total thyroidectomy. *JAMA Otolaryngol Head Neck Surg*. Oct 1 2016;142(10):994-1001. PMID 27490310.
14. Ajiboye RM, Zoller SD, Sharma A, et al. Intraoperative neuromonitoring for anterior cervical spine surgery: What is the evidence? *Spine (Phila Pa 1976)*. Mar 15 2017;42(6):385-393. PMID 27390917.
15. Erwood MS, Hadley MN, Gordon AS, et al. Recurrent laryngeal nerve injury following reoperative anterior cervical discectomy and fusion: a meta-analysis. *J Neurosurg Spine*. Aug 2016;25(2):198-204. PMID 27015129.
16. Daniel JW, Botelho RV, Milano JB, et al. Intraoperative Neurophysiological Monitoring in Spine Surgery: A Systematic Review and Meta-Analysis. *Spine (Phila Pa 1976)*. 2018 Aug;43(16):1154-1160. PMID: 30063222.
17. Zhong D, Zhou Y, Li Y, et al. Intraoperative recurrent laryngeal nerve monitoring: a useful method for patients with esophageal cancer. *Dis Esophagus*. Jul 2014;27(5):444-451. PMID 23020300.
18. Kneist W, Kauff DW, Juhre V, et al. Is intraoperative neuromonitoring associated with better functional outcome in patients undergoing open TME? Results of a case-control study. *Eur J Surg Oncol*. Sep 2013;39(9):994-999. PMID 23810330.
19. Kneist W, Kauff DW, Rubenwolf P, et al. Intraoperative monitoring of bladder and internal anal sphincter innervation: a predictor of erectile function following low anterior rectal resection for rectal cancer? Results of a prospective clinical study. *Dig Surg*. Feb 2013;30(4-6):459-465. PMID 24481247.
20. Clarkson JH, Ozyurekolu T, Mujadzic M, et al. An evaluation of the information gained from the use of intraoperative nerve recording in the management of suspected brachial plexus root avulsion. *Plast Reconstr Surg*. Mar 2011;127(3):1237-1243. PMID 21364425.
21. Zhang W, Chen M, Zhang W, et al. Use of electrophysiological monitoring in selective rhizotomy treating glossopharyngeal neuralgia. *J Craniomaxillofac Surg*. Jul 2014;42(5):e182-185. PMID 24095216.
22. Ochs BC, Herzka A, Yaylali I. Intraoperative neurophysiological monitoring of somatosensory evoked potentials during hip arthroscopy surgery. *Neurodiagn J*. Dec 2012;52(4):312-319. PMID 23301281.
23. Jahangiri FR. Multimodality neurophysiological monitoring during tibial/fibular osteotomies for preventing peripheral nerve injuries. *Neurodiagn J*. Jun 2013;53(2):153-168. PMID 23833842.
24. Nagda SH, Rogers KJ, Sestokas AK, et al. Neer Award 2005: Peripheral nerve function during shoulder Arthroplasty using intraoperative nerve monitoring. *J Shoulder Elbow Surg*. May-Jun 2007;16(3 Suppl):S2-8. PMID 17493556.

25. Sharan A, Groff MW, Dailey AT, et al. Guideline update for the performance of fusion procedures for degenerative disease of the lumbar spine. Part 15: electrophysiological monitoring and lumbar fusion. *J Neurosurg Spine*. Jul 2014;21(1):102-105. PMID 24980592.
26. American Clinical Neurophysiology Society. Guideline 11A: Recommended Standards for Neurophysiologic Intraoperative Monitoring - Principles. 2009; <https://www.acns.org/pdf/guidelines/Guideline-11A.pdf>. Accessed March 23, 2018.
27. American Academy of Neurology. Model Coverage Policy: Principles of Coding for Intraoperative Neurophysiologic Monitoring (IOM) and Testing. 2012; https://www.aan.com/siteassets/home-page/tools-and-resources/practicing-neurologist--administrators/billing-and-coding/model-coverage-policies/16iommodelpolicy_tr.pdf. Accessed March 23, 2018.
28. Gertsch JH, Moreira JJ, Lee GR, et al. Practice guidelines for the supervising professional: intraoperative neurophysiological monitoring. *J Clin Monit Comput*. 2018 Oct 30. PMID: 30063222.
29. Macdonald DB, Skinner S, Shils J, et al. Intraoperative motor evoked potential monitoring - A position statement by the American Society of Neurophysiological Monitoring. *Clin Neurophysiol*. Dec 2013;124(12):2291-2316. PMID 24055297.
30. National Institute for Health and Care Excellence (NICE). Intraoperative nerve monitoring during thyroid surgery [IPG255]. 2008; <https://www.nice.org.uk/guidance/ipg255/chapter/1-guidance>. Accessed March 23, 2018.
31. Centers for Medicare & Medicaid Services. National Coverage Determination (NCD) for Electroencephalographic Monitoring During Surgical Procedures Involving the Cerebral Vasculature (160.8). 2006; <https://www.cms.gov/medicare-coverage-database/details/ncd-details.aspx?NCDId=77&ncdver=2&CoverageSelection=National&Keyword=monitoring&KeywordLookup=Title & KeywordLookup= Title&KeywordLookup=Title&KeywordSearchType=And&KeywordSearchType=And&KeywordSearchType=And&bc=gAAAACAAAAA&>. Accessed March 23, 2018.
32. Centers for Medicare & Medicaid Services. Billing Medicare for Remote Intraoperative Neurophysiology Monitoring in CY 2013. 2012; <https://www.cms.gov/Medicare/Medicare-Fee-for-Service-Payment/PhysicianFeeSched/Downloads/FAQ-Remote-IONM.pdf>. Accessed March 23, 2018.
33. National Government Services, Inc. (Primary Geographic Jurisdiction 06 & K - Illinois, Minnesota, Wisconsin, Connecticut, New York - Entire State, Maine, Massachusetts, New Hampshire, Rhode Island, Vermont) Local Coverage Determination (LCD): Transesophageal Echocardiography (TEE) (L33579), Revision Effective Date For services performed on or after 10/01/2019.