Cigna Medical Coverage Policy

Effective Date **12/15/2013**
Next Review Date **12/15/2014**
Coverage Policy Number **0272**

Subject **Coma Stimulation**

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Hyperlink to Related Coverage Policies

Cognitive Rehabilitation

INSTRUCTIONS FOR USE

*The following Coverage Policy applies to health benefit plans administered by Cigna companies. Coverage Policies are intended to provide guidance in interpreting certain **standard** Cigna benefit plans. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement, Evidence of Coverage, Certificate of Coverage, Summary Plan Description (SPD) or similar plan document] may differ significantly from the standard benefit plans upon which these Coverage Policies are based. For example, a customer's benefit plan document may contain a specific exclusion related to a topic addressed in a Coverage Policy. In the event of a conflict, a customer's benefit plan document **always supersedes** the information in the Coverage Policies. In the absence of a controlling federal or state coverage mandate, benefits are ultimately determined by the terms of the applicable benefit plan document. Coverage determinations in each specific instance require consideration of 1) the terms of the applicable benefit plan document in effect on the date of service; 2) any applicable laws/regulations; 3) any relevant collateral source materials including Coverage Policies and; 4) the specific facts of the particular situation. Coverage Policies relate exclusively to the administration of health benefit plans. Coverage Policies are not recommendations for treatment and should never be used as treatment guidelines. In certain markets, delegated vendor guidelines may be used to support medical necessity and other coverage determinations. Proprietary information of Cigna. Copyright ©2013 Cigna*

Coverage Policy

Cigna does not cover coma stimulation for any indication, including coma or persistent vegetative state, because it is considered experimental, investigational or unproven.

General Background

Coma is defined as a profound or deep state of unconsciousness. An individual in a state of coma is alive but unable to move or respond to his or her environment. Coma may occur as a complication of an underlying illness, or as a result of injuries, such as head trauma. A persistent vegetative state sometimes follows coma. Individuals in a vegetative state have lost their thinking and reasoning abilities (i.e., cognitive neurological function) and awareness of their surroundings but retain noncognitive function and normal sleep patterns. Even though those in a persistent vegetative state lose their higher brain functions, other key functions such as breathing and circulation remain relatively intact. Spontaneous movements may occur, and the eyes may open in response to external stimuli. Patients may even occasionally grimace, cry, or laugh. Although individuals in a persistent vegetative state may appear to demonstrate awareness of surroundings, such as tracking objects presented in the visual field, they do not speak, are unable to respond to commands, and have no objective evidence of higher cognitive function.

Persistent vegetative state must be differentiated from locked-in syndrome, a rare neurological disorder characterized by complete paralysis of all voluntary muscles except for those that control eye movement. It may result from traumatic brain injury, diseases of the circulatory system, diseases that destroy the myelin sheath, or medication overdose. Patients with locked-in syndrome are mute and paralyzed, but communication may be possible with blinking eye movements.

Sensory stimulation, also referred to as coma stimulation, coma arousal therapy, multisensory stimulation and coma care, is intended to promote awakening and enhance the rehabilitative potential of coma patients. It has been proposed that with intense and repeated stimulation and precise protocols, a patient could be awakened earlier from coma and returned to a higher level of functioning. Coma stimulation programs act by increasing environmental stimulation to the part of the brain that controls levels of consciousness, attention and concentration. Protocols may involve stimulation of any or all of the following senses: visual, auditory, olfactory, gustatory, cutaneous, and kinesthetic. Various stimuli may be used for each sense.

The intensity of coma stimulation programs varies. Programs can range from one or two cycles of stimulation daily (approximately one hour each) to hourly stimulation cycles, lasting approximately 15–20 minutes, for 12–14 hours per day, six days a week. Professionals who perform the protocols include nurses, occupational therapists, physical therapists and speech-language therapists. Treatment may be delivered in the hospital, the patient's home, or a skilled nursing facility. Due to the intensity of the program, the patient's family may be trained in the techniques and given the primary responsibility for providing the therapy to ensure program continuation.

Literature Review

Karma and Rawat (2006) conducted a randomized controlled trial to determine the efficacy and benefits of early stimulation therapy in pediatric patients who were in a coma due to non-traumatic causes, including pyogenic and tubercular meningitis, malaria, and fulminating hepatic failure (n=60). Patients were randomized to the study group, who received stimulation to each of the six senses five times a day for two weeks (n=30) or to the control group, who received no stimulation (n=30). The level of consciousness was measured using the Glasgow Coma Scale (GCS) and AVPU scale (A = the child is awake and alert, or V = responds to voice, or P = responds to pain, or U = unconscious) prior to and after stimulation therapy. The authors reported statistically significant improvement in coma in the treatment group compared to the control group, as measured by GCS and AVPU. The authors reported that when the stimulation started less than 15 days from onset of coma, the results were better than when the stimulation was initiated after 15 days from onset. The authors concluded that stimulation therapy can reduce the duration for children in non-traumatic coma, but acknowledged the small sample size and short duration of follow-up as limitations of the study.

A Cochrane systematic review (Lombardi, et al., 2002) was conducted to assess the effectiveness of sensory stimulation programs in patients in a coma or vegetative state. The Cochrane review evaluated randomized controlled trials and nonrandomized controlled clinical trials comparing any type of stimulation programs to standard rehabilitation in patients in a coma or vegetative state. Three reviewers independently identified relevant studies, extracted data and assessed study quality. Three studies (one randomized controlled trial [Johnson, 1993] and two nonrandomized controlled trials [Kater, 1989; Mitchell, 1990]) with 68 traumatic brain-injured patients in total, met the inclusion criteria. The overall methodological quality was poor, and the studies differed widely in terms of study design and conduct. Also, due to the diversity in reporting of outcome measures, a quantitative meta-analysis was not possible.

None of the three studies in the Cochrane review provided useful and valid results on outcomes of clinical relevance for coma patients. The study by Johnson did not report information on the main outcome measure, Glasgow Coma Scale; instead, it presented data of questionable clinical relevance. While the Kater study reported a significant difference in outcomes in favor of the actively treated group, these results must be interpreted with caution, since the study included flawed statistical analysis in favor of the actively treated group. The Mitchell study reported a significant difference in the mean length of coma in favor of the experimental group, but the clinical relevance of this measure apart from any other functional indicators is questionable. The Cochrane researchers concluded that there is no reliable evidence to support or rule out the effectiveness of multisensory programs in patients in a coma or vegetative state. The researchers further stated that the need to improve knowledge in this field and the lack of effective treatments indicates that treatment interventions based on sensory stimulation should be provided only in the context of well-designed, adequately sized, randomized controlled trials.

Professional Societies/Organizations

The American Academy of Neurology in a 1995 summary statement (reaffirmed 2006), "Practice Parameters: Assessment and Management of Patients in the Persistent Vegetative State," makes no reference to sensory stimulation as a treatment modality.

Use Outside the U.S.
No relevant information found.

Summary
Effective treatment interventions for patients in a coma or persistent vegetative state are lacking. Sensory stimulation has been proposed as a method to promote emergence from coma and return to a higher level of functioning. There is insufficient evidence in the published medical literature, however, to demonstrate that sensory stimulation improves the clinical outcome of patients in a coma or persistent vegetative state.

Coding/Billing Information

Note: 1) This list of codes may not be all-inclusive.
2) Deleted codes and codes which are not effective at the time the service is rendered may not be eligible for reimbursement

Covered when medically necessary:

HCPCS Codes	Description
S9056	Coma stimulation, per diem

Experimental/Investigational/Unproven/Not Covered when used to report coma stimulation:

DRG	Description
945	Rehabilitation with complications and comorbidities/ major complications and comorbidities

ICD-9-CM Procedure Codes	
93.89	Rehabilitation, not elsewhere classified

References

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8. National Institute of Neurological Disorders and Stroke (NINDS). Disorders. Coma and Persistent Vegetative State Information Page. Updated Feb 2013. Accessed Nov 18, 2013. Available at URL address: http://www.ninds.nih.gov/disorders/coma/coma.htm

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