



# CIGNA MEDICAL COVERAGE POLICY

The following Coverage Policy applies to all health benefit plans administered by CIGNA Companies including plans formerly administered by Great-West Healthcare, which is now a part of CIGNA.

**Subject Scoliosis Treatments,  
Idiopathic**

**Effective Date ..... 7/15/2011**  
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 Titanium Rib Implants-Vertical Expandable Prosthetic Titanium Rib (VEPTR)line

## INSTRUCTIONS FOR USE

Coverage Policies are intended to provide guidance in interpreting certain **standard** CIGNA HealthCare benefit plans. Please note, the terms of a customer's particular benefit plan document [Group Service Agreement (GSA), 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 supercedes** 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 ©2011 CIGNA

## Coverage Policy

Coverage for spinal braces and orthoses for the treatment of scoliosis is subject to the terms, conditions and limitations of the External Prosthetic Appliances and Devices (EPA) or Durable Medical Equipment (DME) benefit as described in the applicable plan's schedule of copayments. Some benefit plans may exclude or limit coverage for certain orthotic devices. Please refer to the applicable benefit plan document to determine benefit availability and terms, conditions and limitations of coverage. Under many benefit plans, coverage for EPA or DME is limited to the lowest-cost alternative.

CIGNA covers bracing for the treatment of idiopathic scoliosis as medically necessary when ANY of the following indications are met:

- idiopathic curve greater than 25 degrees and skeletal maturity has not been achieved

- idiopathic curve 20–29 degrees, at least two more years of skeletal growth is expected, and, if female, menarche has not occurred
- idiopathic curve 20–29 degrees that is progressively worsening in an individual who has not achieved skeletal maturity

**When the medical necessity criteria for idiopathic scoliosis bracing are met, CIGNA covers the following brace types as medically necessary:**

- cervico-thoraco-lumbo-sacral orthosis (CTLSSO) brace:
  - Milwaukee brace
- thoracolumbosacral orthosis (TLSO) braces:
  - Boston scoliosis brace
  - Charleston bending brace
  - Wilmington brace

**CIGNA covers open surgical correction for the treatment of idiopathic scoliosis as medically necessary for ANY of the following indications:**

- progression of curve (i.e., > 40 degrees) in a growing child
- severe deformity (i.e., curve > 50 degrees) in a child or adolescent with trunk asymmetry
- back pain with or without neurological compromise, secondary to a significant scoliosis that has proved refractory to conservative management

**CIGNA does not cover the following treatments and devices to correct an idiopathic scoliosis deformity because each is considered experimental, investigational or unproven (this list may not be all-inclusive):**

- physical therapy/exercise programs
- chiropractic/spinal manipulation
- endoscopic spinal surgery
- vertebral body stapling
- electrical stimulation
- vibratory traction chair
- Copes scoliosis brace
- Providence Scoliosis System
- SpineCor Scoliosis System

## General Background

Scoliosis is a musculoskeletal disorder in which there is a lateral curvature of the spine, or backbone (i.e., curvature in the coronal plane). Scoliosis is generally classified as functional or structural. Functional scoliosis is defined as a structurally normal spine that appears curved due to one or more underlying conditions (e.g., difference in leg length, inflammatory condition). This type of scoliosis is generally temporary and is often relieved when the underlying condition is treated. Structural scoliosis involves a fixed lateral curve with rotation, and is associated with many conditions, including but not limited to, neuropathic diseases, congenital causes, traumatic causes, and soft tissue contractures. The most common type of structural scoliosis is idiopathic scoliosis. Although idiopathic scoliosis is thought to have a genetic predisposition, the exact cause remains unknown (American Academy of Orthopedics [AAOS], 2010; National Institute of Arthritis and Musculoskeletal and Skin Diseases [NIAMS], 2008).

Idiopathic scoliosis is divided into three categories: infantile (ages 0–3), juvenile (ages 3–10) and adolescent (ages > 10 but before maturity) (AAOS, 2010; NIAMS, 2008). Idiopathic scoliosis most frequently affects young girls. Adolescent idiopathic scoliosis (AIS) is defined as a 10 degree or greater lateral structural curvature of the spine that presents during the late juvenile or adolescent period in otherwise normal children. The spinal curvature that persists after skeletal maturity is termed adult scoliosis (NIAMS, 2008; Shindle 2006).

Most curves are initially detected on school scoliosis screening exams, or by a child's pediatrician or family doctor. The diagnosis of scoliosis and the determination of the type of scoliosis are then made by a careful orthopedic exam and a roentgenogram of the spine, which currently is the only definitive documentation of curve size and progression (NIAMS, 2008; Freeman, 2003).

Scoliosis treatment varies individually and is based on the patient's age, growth schedule, degree and pattern of curve and type of scoliosis. Treatment options include observation, bracing or surgery (AAOS, 2010; Scoliosis Research Society [SRS]; 2010). Observation is indicated for curves less than 25 degrees with re-examination every 4-6 months while the individual is growing. Although indications for bracing vary, they are generally indicated for individuals with curves that are 20 to 45 degrees who have not reached skeletal maturity. For curves greater than 45 degrees and if the child is still growing, surgical correction is usually recommended. If the patient has reached skeletal maturity, surgery may still be recommended for scoliotic curves that exceed 50° to 55° (AAOS, 2010).

### **Non-surgical Treatment**

Effective treatment of AIS is based on timely detection and appropriate intervention. Brace treatment for AIS is the only nonoperative intervention shown to influence curve progression, however efficacy may be considered debatable. The goals of brace treatment are to prevent progression of deformity and to obviate the need for spinal fusion. The main factors in choosing the type of brace are curve angle, number of curves, and the ability of the patient to comply. While bracing may halt progression of spinal curvature, they generally need to be worn full-time and for two to four years on average. Although originally intended to be worn 23 hours a day, as a result of compliance issues, part-time protocols have been developed and call for approximately 16 hours or less of brace wear each day for some devices (Freeman, 2003).

For many years, the most commonly used brace was the Milwaukee brace or cervico-thoraco-lumbo-sacral orthosis (CTLSO). The brace includes a neck ring which is held in place by vertical bars attached to the body of the brace. It is worn 23 hours a day and can be removed as needed. Despite the effectiveness of the Milwaukee brace, patient compliance may be poor due to the restrictive nature of the bracing, visible neck ring, superstructure of the brace, and duration of treatment, which can be several years (Roach, 1999; Freeman, 2003).

Another type of bracing is called a thoraco-lumbar-sacral-orthosis (TLSO), also known as an underarm brace. The most common TLSO is the Boston brace. This type of brace is less visible and easier to wear, thereby improving compliance. The brace is fitted to the body and custom-molded from plastic. It works by applying three-point pressure to the curvature to prevent its progression. It can be worn under clothing and is usually worn 23 hours a day. It can be removed as needed. Other types of TLSO braces include the Wilmington and Charleston bending braces.

The Wilmington brace is a total-contact orthosis and is fabricated from one of several plastics, with the Orthoplast being the most utilized. The brace is designed as a body jacket, which opens in the front for easy removal and is held closed by adjustable Velcro straps.

The Charleston bending brace, also referred to as a nighttime brace, is only worn while sleeping. It is a low-profile, anterior-opening, lightweight, thermoplastic orthosis that is used mostly for small, single thoracolumbar or single lumbar curves. The orthosis bends the spine toward the convexity of the curve to "overcorrect" the scoliotic curve (Freeman, 2003). Clinical studies indicate that the Charleston brace compares favorably to the traditional Boston and Milwaukee TLSO braces (Howard, et al., 1998; Trivedi, et al., 2001; Gepstein, et al., 2002).

The Copes scoliosis brace is a custom-fitted polypropylene support structure that utilizes air to attain spinal curvature correction. This is achieved through the use of strategically placed pneumatic force vector pads that are adjusted every 4–6 weeks during treatment. The brace is generally used for 12–36 months in conjunction with hydrotherapy, regular muscle strengthening exercises and chiropractic treatments such as osseous manipulation and muscle stimulation therapy. There is no scientific evidence that the Copes scoliosis brace is effective in treating idiopathic scoliosis. There are no published data regarding the comparison to standard treatment methods, the long-term effectiveness of this device, and the rate of recurrence of scoliosis after treatment is discontinued or the number of patients who eventually require surgical intervention.

The Providence Scoliosis System is a computer-fitted device designed to be worn only at night. It includes pressure sensors to ascertain if sufficient pressure is being administered and achieves curve correction through direct application of translational and rotational forces. Use of the device is often associated with considerable tilt of the shoulders and truncal rotation resulting in difficulty with walking and standing while wearing the device (Fayssoux, et al., 2010). Currently there is insufficient scientific evidence to support the effectiveness of the Providence Scoliosis System in treating idiopathic scoliosis, including a lack of direct comparative studies with other bracing systems.

The SpineCor Scoliosis System (SpineCorporation Ltd., Chesterfield, UK) consists of a vest or bolero and a pelvic base with attached elastic bands which apply pressure to the patient's trunk. The SpineCor Assistant software provides guidelines for the choice of bands and snaps; the device is intended to be worn at least 20 hours per day. There is insufficient scientific evidence in the peer-reviewed, published medical literature to support the effectiveness of the SpineCor Scoliosis System in treating idiopathic scoliosis.

Various other nonsurgical methods have been used to treat adolescent idiopathic scoliosis over the years, including physical therapy, chiropractic/spinal manipulation and electrical stimulation; however, there is no scientific evidence supporting their effectiveness as compared to the standard forms of treatment (Schiller, et al., 2010; NIAMS, 2008; American Academy of Orthopedic Surgeons [AAOS], 2007; Freeman, 2003; Mehlman, 2004). While these modalities may be recommended for conservative treatment of associated symptoms, such as pain, these treatments do not correct the deformity. Furthermore, although studies have shown that exercise alone will not stop progressive curves, patients may wish to exercise for the effects on their general health and well-being (NIAMS, 2008). Furthermore, while devices such as vibratory traction chairs (e.g., whole body vibration) have been purported to reduce and correct scoliosis curvature, there is insufficient evidence in the peer-reviewed scientific literature to support safety and efficacy of these devices.

**U.S Food and Drug Administration (FDA):** Some of the braces used for treatment of scoliosis are considered Class I devices by the FDA. Examples include the Copes scoliosis brace, the Boston scoliosis brace, and the SpineCor Scoliosis System.

**Literature Review for Nonsurgical Treatment:** Evidence in the published peer reviewed scientific literature evaluating the use of nonsurgical treatment for idiopathic scoliosis consists of few prospective clinical trials, systematic reviews and meta-analysis. The published studies evaluating braces generally involve small populations evaluating short-term outcomes, such as curvature progression and/or subsequent need for surgery. The published data do support the efficacy of bracing for the treatment of AIS using braces such as the Milwaukee and Charleston braces (Rowe, et al., 1997; Price, et al., 1990). When compared to observation and electrical stimulation, bracing has been shown to be more effective in some studies (Nachemson, et al., 1995) although others reported no statistical differences between bracing, observation and electrical stimulation despite a trend for decreased curvature with the use of a brace (Lenssinck, et al., 2005). Although some data support the effectiveness of the SpineCor brace for the treatment of AIS with positive outcomes (Coillard, et al., 2007; Coillard, et al., 2003) Wong and colleagues reported that the failure rate of the SpineCor brace was significantly higher than that of a rigid orthosis in a prospective comparative trial. Authors have also reported on the effectiveness of the Providence orthosis compared to a TLSO; the TLSO prevented curve progression and the need for surgery in a higher percentage of subjects compared to the Providence brace (75-80% and 45-60% respectively). D'Amato et al. (2001) conducted a prospective study evaluating the Providence Scoliosis System (n=102). The authors noted that although 74% of patients (n=75) did not progress more than five degrees. In private practice, these authors acknowledged they supplement the use of the Providence brace with a daytime wear TLSO when curves are greater than 35 degrees, there is a major curve apex at T8 or higher, or in patients with progression. Lenssinck et al. (2005) reported they found no evidence electrical stimulation was effective.

### **Surgical Treatment**

Surgery should be considered for growing children with a curve greater than 40 degrees or a curve that is progressing despite bracing. The more mature patient is a surgical candidate if he or she has a thoracic or double major curve greater than 50 degrees, a thoracolumbar curve greater than 40 degrees, or significant imbalance. Surgery may also be indicated in individuals with scoliosis-related pain, with or without neurological compromise, which is refractory to conservative treatments. Goals for surgical treatment include improvement in spinal alignment and prevention of future curve progression (American Academy of Orthopedic Surgeons

[AAOS], 2000; Freeman, 2003; Shindle, 2006). Progressive deterioration of the scoliotic curve may result in diminished lung capacity and the development of restrictive lung disease (AAOS, 2010).

Choosing an anterior and/or posterior approach depends on curve angle, clinical presentation and risk of developing complications. Posterior spinal fusion is indicated for actively growing adolescents with curves greater than 45 degrees and for mature adolescents with curves greater than 50–60 degrees. Anterior fusion should accompany posterior fusion in those individuals with curves greater than 70–80 degrees and those curves that lack correction to below 40–50 degrees on side-bending films. Anterior fusion on its own is used in patients at risk for crankshaft phenomena (children less than 10 years of age, patients with Risser sign 0, and those patients with open triradiate cartilage). Spinal fusion is also indicated for spinal stenosis with degenerative scoliosis that is associated with spinal instability, when there is persistent pain and disability unrelieved by conservative measures.

Types of spinal instrumentation include: Harrington hook-rod system, Luque wire rod construct, Wisconsin-Drummond instrumentation, and the Cotrel and Dubousset spinal instrumentation system.

### **Endoscopic Spinal Surgery**

Endoscopic surgery for the treatment of scoliosis is an evolving surgical technique which uses a scope to perform minimally-invasive surgery on the spine (Norton, et al., 2007). The potential benefits of this type of surgery include less postoperative pain, improved rehabilitation, recovery and cosmetic results; however, there are no randomized, controlled clinical trials comparing the technique to standard surgical procedures. Patient selection criteria and the long-term impact on outcomes are unknown. Although the technology is emerging, the goal is to develop thoracoscopic anterior discectomy, fusion and instrumentation that is comparable to that for open thoracotomy (Freeman, et al., 2003).

Thoracoscopic anterior spinal instrumentation may be indicated for the following criteria (Lonner et al., 2007):

- structural thoracic adolescent idiopathic scoliosis
- structural thoracic idiopathic scoliosis in an adult with normal bone density
- a thoracic spine with  $\leq 40$  degrees of kyphosis
- a curve between 40–70 degrees
- curve flexibility to  $\leq 30$  degrees
- eight or fewer vertebrae to be fused
- the need for a fusion that falls between T4 and L1
- normal pulmonary function

The proposed advantages include a less invasive approach while removing the need for a thoracotomy. The disadvantages are its learning curve, risk of screw pull out and pseudoarthritis (Shindle, 2006).

**U.S. Food and Drug Administration (FDA):** The Horizon<sup>®</sup> Eclipse<sup>®</sup> Spinal System (Medtronic, Inc., Beverly, MA) is an endoscopic instrumentation system specifically developed for minimally-invasive endoscopic surgery. According to the FDA the system is approved for treatment of one or more of the following: 1) degenerative spondylolisthesis with objective evidence of neurological impairment; 2) fracture; 3) dislocation; 4) scoliosis; 5) kyphosis; 6) spinal tumor; and/or 7) failed previous fusion (pseudoarthrosis).

**Literature Review for Endoscopic Spinal Surgery:** Few clinical studies have been published evaluating endoscopic spinal surgery for treatment of idiopathic scoliosis and consist mainly of retrospective case series involving small populations (Bombeck, et al., 2007; Norton, et al., 2007; Lonner, et al., 2006; Liu and Kit, 2005; Picetti, et al., 2002). Some studies compare clinical outcomes to those of open thoracotomy and fusion (Bombeck, et al., 2007; Lonner, et al., 2006). Clinical outcomes frequently reported in the literature include the degree of curve correction, operative blood loss, operative time, length of hospitalization and complications. Although some results lend support to improved clinical outcomes when compared to conventional surgery, due to the poor quality of available studies (e.g., retrospective design, lack of randomization, small populations) further studies are required to define the role of endoscopic spinal surgery for the treatment of idiopathic scoliosis.

Izatt et al. (2010) prospectively evaluated the relationship between deformity correction and clinical outcomes following thoracoscopic anterior scoliosis surgery (n=100). Subjects were evaluated prior to surgery and up to 24

months after using the SRS-24 and SRS-30 questionnaires. At two years post surgery, SRS scores were not influenced by radiographic outcomes or rib hump. However, when comparing the scores for those with best correction to worst correction, the outcomes indicate that postoperative major Cobb angle is a significant predictor of patient satisfaction.

Lonner et al. (2009a) compared Scoliosis Research Society Outcomes measures and radiographs from a cohort of subjects with idiopathic scoliosis who were treated with either posterior spinal fusion (n=26) or VATS fusion (n=26). Evaluations of self image, mental health and total scores (although not activity, pain or satisfaction) were higher in the VATS group compared to the posterior fusion group at two years, however there were no differences in curve correction between the matched groups. Lonner et al., (2009b) also conducted a matched pair analysis of subjects undergoing either VATS or posterior spinal fusion with pedicle screws for the treatment of scoliosis. VATS was associated with increased operative time and slightly less improvement in pulmonary function. In comparison with VATS, posterior spinal fusion was associated with better curve correction (63.8% versus 57.3% respectively); increased blood loss, and significantly improved peak flow measurements.

Hay et al. (2009) reported the results of a prospective clinical trial involving 106 patients who underwent endoscopic anterior scoliosis correction, evaluating radiograph parameters and rib hump two years post-surgery, in order to assess behavior of the deformity correction after the procedure. Radiograph parameters, including major, instrumented, minor Cobb, and T5 to T12 kyphosis, and rib hump were measured at 2, 6, 12 and 24 months post-surgery. The mean loss of major curve correction after surgery was 4°, mean loss of rib hump correction was 1.4°, and mean sagittal kyphosis increased from 27° at two months to 30.6° at 24 months. Rod fractures and screw-related complications resulted in several degrees less correction than patients without complications. The authors noted small changes in deformity two years following surgical correction were statistically significant but not clinically significant. In the authors opinion endoscopic anterior correction is a safe and viable surgical option.

Newton et al. (2008) reported the five year results of surgical outcomes for patients who underwent anterior thoroscopic spinal instrumentation for treatment of scoliosis (n=41). Twenty-five patients of the original 41 had five-year data and were included in the analysis. Between a two-year and five-year follow-up, there were no significant changes in average percent correction of the major Cobb angle, average total lung capacity, and the average total Scoliosis Research Society Outcomes instrument (SRS-24). At five years, radiograph evaluation demonstrated evidence of fusion with remodeling in 151 of the 155 instrumented motion segments. Results for thoroscopic anterior spinal instrumentation at five years were comparable with those reported previously for anterior and posterior techniques.

Reddi et al. (2008) conducted a systematic review of the literature comparing results of thoroscopic surgery with those of open anterior and posterior spine instrumentation for patients with idiopathic scoliosis. The authors reviewed eight studies that consisted of retrospective and prospective case series; the data was inappropriate for meta-analysis, there were no randomized controlled trials. Two studies compared instrumented video-assisted thoroscopic surgery (IVATS) with posterior instrumentation and two studies compared IVATS to anterior open instrumentation. Based on the authors' conclusion anterior thoroscopic instrumentation was comparable in terms of curve correction to anterior or posterior procedures. IVATS was associated with an increased operative time, intensive care unit time and complication rate; the results were statistically significant. Curve correction rates were similar in all groups. The authors noted the technology is technically demanding, time consuming and involves a steep learning curve. The overall benefits have not been clearly demonstrated and the complications seemed unacceptably high. Further studies are needed to determine the benefit and applicability of the procedure.

### **Vertebral Body Stapling**

Vertebral body stapling of the anterior vertebral spinal growth plates is being investigated as an alternative to bracing in patients who are skeletally immature (Risser 2 or less), who have curves between 20 and 45 degrees, or who have five degrees of documented progression for curves less than 25 degrees. It is proposed that vertebral body stapling can correct or stop progression of the curve without the compliance issues of bracing and without the mobility issues associated with spinal fusion surgery. The Nitinol Staple (Medtronic Sofamor Danek, Memphis, TN), made of Nitinol, a memory alloy, was developed specifically to accommodate the motion of the spine. The prongs of the staple when cooled are straight but clamp down into a "C" shape when the staple returns to body temperature, providing secure fixation (Betz, et al., 2010; Betz et al., 2003). Relative

contraindications include curves above T2 or below L4, very small vertebral body size, thoracic kyphosis greater than 40 degrees, and coronal curves above 45 degrees (Guille et al., 2007).

**Literature Review for Vertebral Body Stapling:** Evidence in the peer-reviewed scientific literature evaluating safety and efficacy of vertebral stapling in patients with AIS consists of animal studies, a feasibility study (Betz, et al., 2003) preliminary retrospective trials (Betz, et al., 2010; Betz, et al, 2005) reporting short-term outcomes and published reviews (Guille, et al., 2007). In a recent retrospective clinical study (Betz, et al., 2010) the authors noted results at average 3.2 year follow-up did support curve correction with a success rate of 87% in all lumbar curves and 79% in all thoracic curves < 35°. Thoracic curves >35° were not successful and require alternative treatments. Published data demonstrating long term clinical outcomes is lacking; additional clinical trials are necessary to support long-term safety and effectiveness before vertebral body stapling can be widely accepted.

### **Professional Societies/Organizations**

A formal position statement regarding the treatment of AIS from the Scoliosis Research Society (SRS), American Academy of Orthopedic Surgeons (AAOS) or National Institute of Arthritis and Musculoskeletal and Skin Disease (NIAMS) could not be found. However, these organizations provide information regarding the following treatment recommendations for scoliosis:

**Scoliosis Research Society:** The Scoliosis Research Society (SRS) (2010) included the following in their treatment options for scoliosis:

- Observation: for patients who are skeletally immature and have curves less than 25 degrees or skeletally mature with curves less than 50 degrees. Re-evaluation is recommended every 4–6 months.
- Bracing: used for curves between 25–40 degrees in skeletally immature patients.
- Surgery: recommended for skeletally immature patients with curves  $\geq$  45 degrees or > 50 degrees in skeletally mature patients.

The SRS also reports that alternative treatments to prevent curve progression or prevent further curve progression, such as chiropractic medicine, physical therapy, yoga, etc. have not demonstrated any scientific value in the treatment of scoliosis (SRS, 2010).

**American Academy of Orthopaedic Surgeons:** The American Academy of Orthopaedic Surgeons (AAOS) (2010) listed treatment options for children and adolescents with scoliosis. They included:

- Observation: This option is appropriate when the curve is mild (less than 20 degrees) or if the child is near skeletal maturity. The patient should return every three to six months for re-examination.
- Bracing: Can be effective in a skeletally immature child with a curve between 25–45 degrees.
- Surgery: Recommended when the curve reaches 45 degrees in a skeletally immature child and when the curve exceeds 50–55 degrees in the skeletally mature patient.

The AAOS also stated that electrical stimulation, exercise, and manipulation have not been found to be effective treatment options for patients with scoliosis (AAOS, 2007).

**National Institute of Arthritis and Musculoskeletal and Skin Diseases:** The National Institute of Arthritis and Musculoskeletal and Skin Diseases (NIAMS), in 2001, provided treatment options for patients with scoliosis. These treatment options have since been reviewed, updated and published in 2008 with no changes, and include the following:

:

- Observation: Recommended when the patient is skeletally immature and has an idiopathic curve of less than 25 degrees. It is also recommended that re-evaluation occur every 4–6 months.
- Bracing: Recommended when the patient is skeletally immature and has an idiopathic curve more than 25–30 degrees; has at least two years of growth remaining and has an idiopathic curve between 20–29 degrees, and, if female, has not had her first menstrual period; or is skeletally immature with a curve between 20–29 degrees that is worsening.
- Surgery: recommended for curves greater than 45 degrees that are getting worse.

NIAMS also stated that studies of the following treatments have not demonstrated prevention of curve progression or worsening:

- chiropractic manipulation
- electrical stimulation
- nutritional supplementation
- exercise

### Summary

Established treatments for scoliosis include bracing and open surgical correction. In general, bracing is attempted before proceeding to surgery. There remains a lack of evidence in the current scientific literature regarding the efficacy of the Copes scoliosis brace, Providence Scoliosis System, SpineCor Scoliosis System, electrical stimulation, physical /exercise therapy programs, and chiropractic/spinal manipulation in the treatment of scoliosis. There also remains a lack of scientific evidence supporting the safety and efficacy of endoscopic surgery and vertebral body stapling for the treatment of scoliosis.

### Coding/Billing Information

**Note:** This list of codes may not be all-inclusive.

**Covered when medically necessary:**

<b>CPT<sup>®</sup>* Codes</b>	<b>Description</b>
22800	Arthrodesis, posterior, for spinal deformity, with or without cast, up to 6 vertebral segments
22802	7 to 12 vertebral segments
22804	13 or more vertebral segments
22808	Arthrodesis, anterior, for spinal deformity, with or without cast, 2 to 3 vertebral segments
22810	4 to 7 vertebral segments
22812	8 or more vertebral segments
22840	Posterior non-segmental instrumentation (e.g., Harrington rod technique, pedicle fixation across one interspace, atlantoaxial transarticular screw fixation, sublaminar wiring at C1, facet screw fixation)
22841	Internal spinal fixation by wiring of spinous processes
22842	Posterior segmental instrumentation (e.g., pedicle fixation, dual rods with multiple hooks and sublaminar wires) 3 to 6 vertebral segments
22843	7 to 12 vertebral segments
22844	13 or more vertebral segments
22845	Anterior instrumentation; 2 to 3 vertebral segments
22846	4 to 7 vertebral segments
22847	8 or more vertebral segments

<b>HCPCS Codes</b>	<b>Description</b>
L0450	TLSO, flexible, provides trunk support, upper thoracic region, produces intracavitary pressure to reduce load on the intervertebral disks with rigid stays or panel(s), includes shoulder straps and closures, prefabricated, includes fitting and adjustment
L0452	TLSO, flexible, provides trunk support, upper thoracic region, produces intracavitary pressure to reduce load on the intervertebral disks with rigid stays or panel(s), includes shoulder straps and closures, custom fabricated
L0454	TLSO flexible, provides trunk support, extends from sacrococcygeal junction to above T-9 vertebra, restricts gross trunk motion in the sagittal plane, produces intracavitary pressure to reduce load on the intervertebral disks with rigid stays or panel(s), includes shoulder straps and closures, prefabricated, includes fitting and adjustment

L0456	TLSO, flexible, provides trunk support, thoracic region, rigid posterior panel and soft anterior apron, extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, restricts gross trunk motion in the sagittal plane, produces intracavitary pressure to reduce load on the intervertebral disks, includes straps and closures, prefabricated, includes fitting and adjustment
L0458	TLSO, triplanar control, modular segmented spinal system, two rigid plastic shells, posterior extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, anterior extends from the symphysis pubis to the xiphoid, soft liner, restricts gross trunk motion in the sagittal, coronal, and transverse planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L0460	TLSO, triplanar control, modular segmented spinal system, two rigid plastic shells, posterior extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, anterior extends from the symphysis pubis to the sternal notch, soft liner, restricts gross trunk motion in the sagittal, coronal, and transverse planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L0462	TLSO, triplanar control, modular segmented spinal system, three rigid plastic shells, posterior extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, anterior extends from the symphysis pubis to the sternal notch, soft liner, restricts gross trunk motion in the sagittal, coronal, and transverse planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L0464	TLSO, triplanar control, modular segmented spinal system, four rigid plastic shells, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to the sternal notch, soft liner, restricts gross trunk motion in sagittal, coronal, and transverse planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L0466	TLSO, sagittal control, rigid posterior frame and flexible soft anterior apron with straps, closures and padding, restricts gross trunk motion in sagittal plane, produces intracavitary pressure to reduce load on intervertebral disks, includes fitting and shaping the frame, prefabricated, includes fitting and adjustment
L0468	TLSO, sagittal-coronal control, rigid posterior frame and flexible soft anterior apron with straps, closures and padding, extends from sacrococcygeal junction over scapulae, lateral strength provided by pelvic, thoracic, and lateral frame pieces, restricts gross trunk motion in sagittal, and coronal planes, produces intracavitary pressure to reduce load on intervertebral disks, includes fitting and shaping the frame, prefabricated, includes fitting and adjustment
L0470	TLSO, triplanar control, rigid posterior frame and flexible soft anterior apron with straps, closures and padding, extends from sacrococcygeal junction to scapula, lateral strength provided by pelvic, thoracic, and lateral frame pieces, rotational strength provided by subclavicular extensions, restricts gross trunk motion in sagittal, coronal, and transverse planes, produces intracavitary pressure to reduce load on the intervertebral disks, includes fitting and shaping the frame, prefabricated, includes fitting and adjustment
L0472	TLSO, triplanar control, hyperextension, rigid anterior and lateral frame extends from symphysis pubis to sternal notch with two anterior components (one pubic and one sternal), posterior and lateral pads with straps and closures, limits spinal flexion, restricts gross trunk motion in sagittal, coronal, and transverse planes, includes fitting and shaping the frame, prefabricated, includes fitting and adjustment
L0480	TLSO, triplanar control, one piece rigid plastic shell without interface liner, with

	multiple straps and closures, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to sternal notch, anterior or posterior opening, restricts gross trunk motion in sagittal, coronal, and transverse planes, includes a carved plaster or CAD-CAM model, custom fabricated
L0482	TLSO, triplanar control, one piece rigid plastic shell with interface liner, multiple straps and closures, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to sternal notch, anterior or posterior opening, restricts gross trunk motion in sagittal, coronal, and transverse planes, includes a carved plaster or CAD-CAM model, custom fabricated
L0484	TLSO, triplanar control, two piece rigid plastic shell without interface liner, with multiple straps and closures, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to sternal notch, lateral strength is enhanced by overlapping plastic, restricts gross trunk motion in the sagittal, coronal, and transverse planes, includes a carved plaster or CAD-CAM model, custom fabricated
L0486	TLSO, triplanar control, two piece rigid plastic shell with interface liner, multiple straps and closures, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to sternal notch, lateral strength is enhanced by overlapping plastic, restricts gross trunk motion in the sagittal, coronal, and transverse planes, includes a carved plaster or CAD-CAM model, custom fabricated
L0488	TLSO, triplanar control, one piece rigid plastic shell with interface liner, multiple straps and closures, posterior extends from sacrococcygeal junction and terminates just inferior to scapular spine, anterior extends from symphysis pubis to sternal notch, anterior or posterior opening, restricts gross trunk motion in sagittal, coronal, and transverse planes, prefabricated, includes fitting and adjustment
L0490	TLSO, sagittal-coronal control, one piece rigid plastic shell, with overlapping reinforced anterior, with multiple straps and closures, posterior extends from sacrococcygeal junction and terminates at or before the T-9 vertebra, anterior extends from symphysis pubis to xiphoid, anterior opening, restricts gross trunk motion in sagittal and coronal planes, prefabricated, includes fitting and adjustment
L0491	TLSO, sagittal-coronal control, modular segmented spinal system, two rigid plastic shells, posterior extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, anterior extends from the symphysis pubis to the xiphoid, soft liner, restricts gross trunk motion in the sagittal and coronal planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L0492	TLSO, sagittal-coronal control, modular segmented spinal system, three rigid plastic shells, posterior extends from the sacrococcygeal junction and terminates just inferior to the scapular spine, anterior extends from the symphysis pubis to the xiphoid, soft liner, restricts gross trunk motion in the sagittal and coronal planes, lateral strength is provided by overlapping plastic and stabilizing closures, includes straps and closures, prefabricated, includes fitting and adjustment
L1000	Cervical-thoracic-lumbar-sacral orthosis (CTLSO) (Milwaukee), inclusive of furnishing initial orthosis, including model
L1001	Cervical thoracic lumbar sacral orthosis, immobilizer, infant size, prefabricated, includes fitting and adjustment
L1005	Tension based scoliosis orthosis and accessory pads, includes fitting and adjustment
L1010	Additions to cervical-thoracic-lumbar-sacral orthosis (CTLSO) or scoliosis orthosis; axilla sling

L1020	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; kyphosis pad
L1025	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; kyphosis pad, floating
L1030	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; lumbar bolster pad
L1040	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; lumbar or lumbar rib pad
L1050	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; sternal pad
L1060	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; thoracic pad
L1070	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; trapezius sling
L1080	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; outrigger
L1085	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; outrigger, bilateral with vertical extensions
L1090	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; lumbar sling
L1100	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; ring flange, plastic or leather
L1110	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; ring flange, plastic or leather, molded to patient model
L1120	Additions to cervical-thoracic-lumbar-sacral orthosis (CTL SO) or scoliosis orthosis; covers for upright, each
L1200	Thoracic-lumbar-sacral-orthosis (TLSO), inclusive of furnishing initial orthosis only
L1210	Addition to TLSO, (low profile); lateral thoracic extension
L1220	Addition to TLSO, (low profile); anterior thoracic extension
L1230	Addition to TLSO, (low profile); Milwaukee type superstructure
L1240	Addition to TLSO, (low profile); lumbar derotation pad
L1250	Addition to TLSO, (low profile); anterior axis pad
L1260	Addition to TLSO, (low profile); anterior thoracic derotation pad
L1270	Addition to TLSO, (low profile); abdominal pad
L1280	Addition to TLSO, (low profile); rib gusset (elastic), each
L1290	Addition to TLSO, (low profile); lateral trochanteric pad
L1300	Other scoliosis procedure; body jacket molded to patient model
L1310	Other scoliosis procedure; post-operative body jacket

ICD-9-CM Diagnosis Codes	Description
737.30	Scoliosis (and kyphoscoliosis), idiopathic
737.31	Resolving infantile idiopathic scoliosis
737.32	Progressive infantile idiopathic scoliosis
737.9	Curvature of spine (acquired) (idiopathic) NOS

**Experimental/investigational/unproven/not covered when used to report management of idiopathic scoliosis deformity:**

CPT <sup>®</sup> Codes	Description
97032	Application of a modality to 1 or more areas; electrical stimulation (manual), each 15 minutes
97110	Therapeutic procedure, 1 or more areas, each 15 minutes; therapeutic exercises

	to develop strength and endurance, range of motion and flexibility
98940	Chiropractic manipulative treatment (CMT); spinal, 1-2 regions
98941	Chiropractic manipulative treatment (CMT); spinal, 3-4 regions
98942	Chiropractic manipulative treatment (CMT); spinal, 5 regions
98943	Chiropractic manipulative treatment (CMT); extraspinal, 1 or more regions

ICD-9-CM Diagnosis Codes	Description
737.30-737.39	Kyphoscoliosis and scoliosis
737.40-737.49	Curvature of spine associated with other conditions
737.9	Curvature of spine (acquired) (idiopathic) NOS

**Experimental/investigational/unproven/not covered when used to report vertebral body stapling or endoscopic spinal surgery:**

CPT <sup>®*</sup> Codes	Description
22899	Unlisted procedure, spine

ICD-9-CM Diagnosis Codes	Description
737.30-737.39	Kyphoscoliosis and scoliosis
737.40-737.49	Curvature of spine associated with other conditions
737.9	Curvature of spine (acquired) (idiopathic) NOS

**Experimental, investigational or unproven and not covered when used to report any scoliosis treatment device (e.g., vibratory traction chair, electric stimulation device, brace) listed as not covered in this policy:**

HCPCS Codes	Description
E0744	Neuromuscular stimulator for scoliosis
E1399	Durable medical equipment, miscellaneous
L1499	Spinal orthosis, not otherwise specified

ICD-9-CM Diagnosis Codes	Description
737.30-737.39	Kyphoscoliosis and scoliosis
737.40-737.49	Curvature of spine associated with other conditions
737.9	Curvature of spine (acquired) (idiopathic) NOS

**\*Current Procedural Terminology (CPT<sup>®</sup>) © 2010 American Medical Association: Chicago, IL.**

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## Policy History

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<u>Pre-Merger Organizations</u>	<u>Last Review Date</u>	<u>Policy Number</u>	<u>Title</u>
CIGNA HealthCare	8/15/2008	0113	Scoliosis Treatments, Idiopathic

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