



**BlueCross BlueShield
of Vermont**

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Interventions for Progressive Scoliosis Corporate Medical Policy

File name: Interventions for Progressive Scoliosis

File code: UM.SPSVC.18

Origination: 06/2018

Last Review: 06/2018

Next Review: 06/2019

Effective Date: 08/01/2018

Description/Summary

Orthotic bracing attempts to slow curve progression and reduce the need for fusion surgery in patients with juvenile or adolescent idiopathic scoliosis who are at high risk of progression. Recently 2 fusionless surgical procedures, vertebral body stapling and vertebral body tethering, have been evaluated as an alternative to bracing to slow or correct curve progression in pediatric patients with scoliosis. This review does not address patients who are not at high risk of progression or conventional fusion surgery for scoliosis in patients with Cobb angles measuring 45° or more.

For individuals who have juvenile or adolescent idiopathic scoliosis at high risk of progression who receive a conventional rigid brace, the evidence includes a high-quality randomized controlled trial (RCT). Relevant outcomes are change in disease status, morbid events, quality of life, and treatment-related morbidity. Bracing has been considered the only option to prevent curve progression in juvenile or adolescent idiopathic scoliosis. The highest quality study on bracing is a 2013 large National Institutes of Health–sponsored trial that, using both randomized and observational arms, compared bracing to watchful waiting. This trial was stopped after interim analysis because of a significant benefit of bracing for the prevention of spinal fusion. Based on evidence of efficacy, lack of alternative treatment options, professional society recommendations, and potential to prevent the need for a more invasive procedure, bracing with a conventional rigid brace is considered an option for the treatment of scoliosis in patients with a high risk of curve progression. Curves have a high risk of progression when they measure 25° or more and spinal growth has not been completed, or when a 20° curve is progressively worsening and at least 2 years of growth remain. The evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

For individuals who have juvenile or adolescent idiopathic scoliosis at high risk of progression who receive a microcomputer-controlled brace, the evidence includes a pilot RCT. Relevant outcomes are change in disease status, morbid events, quality of life, and treatment-related morbidity. A pilot randomized trial using a microcomputer-

controlled brace reported improved outcomes compared to use of a standard rigid brace: however, the small number of included subjects limits the interpretation of these results. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have juvenile or adolescent idiopathic scoliosis at high risk of progression who receive a flexible brace, the evidence includes a randomized and a non-randomized comparative study. Relevant outcomes are change in disease status, morbid events, quality of life, and treatment-related morbidity. One RCT evaluating a flexible brace did not show equivalent outcomes compared to conventional brace designs. Another study has suggested that the flexible brace may improve outcomes compared to no treatment, but this study had design flaws limiting conclusions to be drawn. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have juvenile or adolescent idiopathic scoliosis at high risk of progression who receive vertebral body stapling or vertebral body tethering, the evidence includes a comparative cohort study and case series. Relevant outcomes are change in disease status, morbid events, quality of life, and treatment-related morbidity. There is a small body of published evidence on surgical interventions for preventing curve progression in juvenile and adolescent idiopathic scoliosis. Vertebral body stapling with memory shape staples may control some thoracic curves between 20° and 35°, but is less effective than bracing for larger curves. The evidence is composed primarily from a center that developed the technique, along with a few case series from other institutions. Additional study with longer follow-up is needed to evaluate the safety and efficacy of this procedure. There is limited published evidence on Vertebral Body Tethering. As noted in a 2015 review article, the devices used for VBT are under development and the optimum tension for VBT is currently unknown. Evidence is emerging supporting longer term positive outcomes. For patients with significantly progressive and advanced scoliosis who are skeletally immature the evidence is sufficient to determine that the technology results in a meaningful improvement in the net health outcome.

OBJECTIVE

The objective of this evidence review is to evaluate the efficacy of surgical and nonsurgical interventions for scoliosis in juveniles and adolescents who are at high risk of progression.

Policy

Coding Information

[Click the links below for attachments, coding tables & instructions.](#)

[Attachment I - Code Table & Instructions](#)

There is no specific CPT code for the insertion of vertebral body staples or vertebral body tethering. The procedure would most likely be reported with the unlisted code 22899.

A cervical-thoracic-lumbar-sacral or thoracic-lumbar-sacral orthosis may be considered medically necessary for the treatment of scoliosis in juvenile and adolescent patients at high risk of progression that meets the following criteria:

- Idiopathic spinal curve angle between 25° and 40°; **AND**
- Spinal growth has not been completed (Risser grade 0-3; no more than 1 year after menarche in females)

OR

- Idiopathic spinal curve angle greater than 20°; **AND**
- There is documented increase in the curve angle; **AND**
- At least 2 years of growth remain (Risser grade 0 or 1; premenarche in females)
- Anterior vertebral body tethering may be considered **medically necessary** for the treatment of scoliosis in juvenile and adolescent patients at high risk of progression that meets the following criteria:
 - Idiopathic spinal curve angle > 40°; **AND**
 - Spinal growth has not been completed (Risser grade ≤ 4, no more than 2 years after menarche in females)

When a service is considered investigational

Use of an orthosis for the treatment of scoliosis that does not meet the criteria above is considered **investigational**.

Vertebral body stapling for the treatment of scoliosis is considered **investigational**.

Policy Guidelines

This policy does not address conventional surgery for scoliosis in patients with curve angles measuring 45° or more. Brace treatment for idiopathic scoliosis is usually recommended for juveniles and adolescents with curves measuring between 25° and 40° who have not completed spinal growth, with maturity defined as Risser 4, or 2 years after menarche for girls. Bracing may also be recommended for curves greater than 20° in a patient who has a rapidly progressing curve with more than 2 years of growth remaining.

- A rigid cervical-thoracic-lumbar-sacral orthosis is primarily prescribed for patients with thoracic apices above T7 for control of upper thoracic sagittal deformities and for other spinal deformities not amenable to treatment with lower-profile designs.
- A low profile, rigid thoracic-lumbar-sacral orthosis worn full-time (18-23 hours per day) through skeletal maturity is used for most idiopathic curve patterns with a thoracic curve apex at or below T7 (most idiopathic curves).
- Nighttime bracing systems are more effective in patients with isolated flexible thoracolumbar and lumbar curves than in double curves; they may also be indicated in patients who are noncompliant with a full-time wear program, patients in whom other types of orthotic management have failed, and patients nearing skeletal maturity who may not require full-time wear.

Reference Resources

1. Richards BS, Bernstein RM, D'Amato CR, et al. Standardization of criteria for adolescent idiopathic scoliosis brace studies: SRS Committee on Bracing and Nonoperative Management. *Spine (Phila Pa 1976)*. Sep 15 2005;30(18):2068-2075; discussion 2076-2067. PMID 16166897
2. Janicki JA, Poe-Kochert C, Armstrong DG, et al. A comparison of the thoracolumbosacral orthoses and providence orthosis in the treatment of adolescent idiopathic scoliosis: results using the new SRS inclusion and assessment criteria for bracing studies. *J Pediatr Orthop*. Jun 2007;27(4):369-374. PMID 17513954
3. Fayssoux RS, Cho RH, Herman MJ. A history of bracing for idiopathic scoliosis in North America. *Clin Orthop Relat Res*. Mar 2010;468(3):654-664. PMID 19462214
4. Schiller JR, Thakur NA, Ebersson CP. Brace management in adolescent idiopathic scoliosis. *Clin Orthop Relat Res*. Mar 2010;468(3):670-678. PMID 19484317
5. Weinstein SL, Dolan LA, Wright JG, et al. Effects of bracing in adolescents with idiopathic scoliosis. *N Engl J Med*. Oct 17 2013;369(16):1512-1521. PMID 24047455
6. Lou E, Hill D, Raso J, et al. Smart brace versus standard rigid brace for the treatment of scoliosis: a pilot study. *Stud Health Technol Inform*. 2012;176:338-341. PMID 22744524
7. Wong MS, Cheng JC, Lam TP, et al. The effect of rigid versus flexible spinal orthosis on the clinical efficacy and acceptance of the patients with adolescent idiopathic scoliosis. *Spine (Phila Pa 1976)*. May 20 2008;33(12):1360-1365. PMID 18496349
8. Guo J, Lam TP, Wong MS, et al. A prospective randomized controlled study on the treatment outcome of SpineCor brace versus rigid brace for adolescent idiopathic scoliosis with follow-up according to the SRS standardized criteria. *Eur Spine J*. Dec 2014;23(12):2650-2657. PMID 24378629
9. Plewka B, Sibinski M, Synder M, et al. Clinical assessment of the efficacy of SpineCor brace in the correction of postural deformities in the course of idiopathic scoliosis. *Pol Orthop Traumatol*. 2013;78:85-89. PMID 23535882
10. Plewka B, Sibinski M, Synder M, et al. Radiological evaluation of treatment with SpineCor brace in children with idiopathic spinal scoliosis. *Ortop Traumatol Rehabil*. Jun 28 2013;15(3):227-234. PMID 23897999
11. Betz RR, Kim J, D'Andrea LP, et al. An innovative technique of vertebral body stapling for the treatment of patients with adolescent idiopathic scoliosis: a feasibility, safety, and utility study. *Spine (Phila Pa 1976)*. Oct 15 2003;28(20):S255-265. PMID 14560201
12. Betz RR, Ranade A, Samdani AF, et al. Vertebral body stapling: a fusionless treatment option for a growing child with moderate idiopathic scoliosis. *Spine*. Jan 15 2010;35(2):169-176. PMID 20081512
13. Betz RR, D'Andrea LP, Mulcahey MJ, et al. Vertebral body stapling procedure for the treatment of scoliosis in the growing child. *Clin Orthop Relat Res*. May 2005(434):55-60. PMID 15864032
14. Lavelle WF, Samdani AF, Cahill PJ, et al. Clinical outcomes of nitinol staples for preventing curve progression in idiopathic scoliosis. *J Pediatr Orthop*. Jan-Feb 2011;31(1 Suppl):S107-113. PMID 21173612
15. Trobisch PD, Samdani A, Cahill P, et al. Vertebral body stapling as an alternative in the treatment of idiopathic scoliosis. *Oper Orthop Traumatol*. Jul 2011;23(3):227-231. PMID 21674182

16. Theologis AA, Cahill P, Auriemma M, et al. Vertebral body stapling in children younger than 10 years with idiopathic scoliosis with curve magnitude of 30 degrees to 39 degrees. *Spine (Phila Pa 1976)*. Dec 1 2013;38(25):E1583-1588. PMID 23963018
17. Cuddihy L, Danielsson AJ, Cahill PJ, et al. Vertebral body stapling versus bracing for patients with high-risk moderate idiopathic scoliosis. *Biomed Res Int*. 2015;2015:438452. PMID 26618169
18. Bumpass DB, Fuhrhop SK, Schootman M, et al. Vertebral body stapling for moderate juvenile and early adolescent idiopathic scoliosis: cautions and patient selection criteria. *Spine (Phila Pa 1976)*. Dec 2015;40(24):E1305-1314. PMID 26655807
19. Laituri CA, Schwend RM, Holcomb GW, 3rd. Thoracoscopic vertebral body stapling for treatment of scoliosis in young children. *J Laparoendosc Adv Surg Tech A*. Oct 2012;22(8):830-833. PMID 23039706
20. O'Leary P T, Sturm PF, Hammerberg KW, et al. Convex hemiepiphysiodesis: the limits of vertebral stapling. *Spine (Phila Pa 1976)*. Sep 1 2011;36(19):1579-1583. PMID 21681138
21. Samdani AF, Ames RJ, Kimball JS, et al. Anterior vertebral body tethering for immature adolescent idiopathic scoliosis: one-year results on the first 32 patients. *Eur Spine J*. Jul 2015;24(7):1533-1539. PMID 25510515
22. Samdani AF, Ames RJ, Kimball JS, et al. Anterior vertebral body tethering for idiopathic scoliosis: two-year results. *Spine (Phila Pa 1976)*. Sep 15 2014;39(20):1688-1693. PMID 24921854
23. Courvoisier A, Eid A, Bourgeois E, et al. Growth tethering devices for idiopathic scoliosis. *Expert Rev Med Devices*. Jul 2015;12(4):449-456. PMID 26027921
24. Negrini S, Hresko TM, O'Brien JP, et al. Recommendations for research studies on treatment of idiopathic scoliosis: Consensus 2014 between SOSORT and SRS non-operative management committee. *Scoliosis*. 2015;10:8. PMID 25780381
25. Negrini S, Aulisa AG, Aulisa L, et al. 2011 SOSORT guidelines: Orthopaedic and Rehabilitation treatment of idiopathic scoliosis during growth. *Scoliosis*. Jan 20 2012;7(1):3. PMID 22264320
26. Scoliosis Research Society (SRS). Adolescent Idiopathic Scoliosis <http://www.srs.org/professionals/online-education-and-resources/conditions-and-treatments/adolescent-idiopathic-scoliosis>. Accessed October 19, 2016.
27. American Academy of Orthopaedic Surgeons (AAOS). Idiopathic Scoliosis in Children and Adolescents. *OrthoInfo* 2015 March; <http://orthoinfo.aaos.org/topic.cfm?topic=A00353>. Accessed October 19, 2016.
28. National Institute of Arthritis and Musculoskeletal and Skin Diseases. Questions and Answers about Scoliosis in Children and Adolescents. 2015 December; http://www.niams.nih.gov/Health_Info/Scoliosis/default.asp. Accessed October 19, 2016.
29. U.S. Preventive Services Task Force. Screening for idiopathic scoliosis in adolescents 2004; <http://www.uspreventiveservicestaskforce.org/3rduspstf/scoliosis/scoliors.htm>. Accessed October 19, 2016.
30. U.S. Preventive Services Task Force (USPSTF). Final Research Plan for Adolescent Idiopathic Scoliosis: Screening. <https://www.uspreventiveservicestaskforce.org/Page/Document/final-research-plan/adolescent-idiopathic-scoliosis-screening1>. Accessed October 19, 2016.

31. Crawford & Lenke, Growth Modulation by Means of Anterior Tethering Resulting in Progressive Correction of Juvenile Idiopathic Scoliosis: A Case Report, *Journal of Bone & Joint Surgery* 2010;92(1):202-9
32. Braun, Comparison of Two Fusionless Scoliosis Surgery Methods in the Treatment of Progressive Adolescent Idiopathic Scoliosis: A Preliminary Study, *Dartmouth Orthopedic Journal*, 2014, Volume 1.

Document Precedence

Blue Cross and Blue Shield of Vermont (BCBSVT) Medical Policies are developed to provide clinical guidance and are based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. The applicable group/individual contract and member certificate language, or employer's benefit plan if an ASO group, determines benefits that are in effect at the time of service. Since medical practices and knowledge are constantly evolving, BCBSVT reserves the right to review and revise its medical policies periodically. To the extent that there may be any conflict between medical policy and contract/employer benefit plan language, the member's contract/employer benefit plan language takes precedence.

Audit Information

BCBSVT reserves the right to conduct audits on any provider and/or facility to ensure compliance with the guidelines stated in the medical policy. If an audit identifies instances of non-compliance with this medical policy, BCBSVT reserves the right to recoup all non-compliant payments.

Administrative and Contractual Guidance

Benefit Determination Guidance

Prior approval is required and benefits are subject to all terms, limitations and conditions of the subscriber contract.

Incomplete authorization requests may result in a delay of decision pending submission of missing information. To be considered complete, see policy guidelines above.

An approved referral authorization for members of the New England Health Plan (NEHP) is required. A prior approval for Access Blue New England (ABNE) members is required. NEHP/ABNE members may have different benefits for services listed in this policy. To confirm benefits, please contact the customer service department at the member's health plan.

Federal Employee Program (FEP): Members may have different benefits that apply. For further information please contact FEP customer service or refer to the FEP Service Benefit Plan Brochure. It is important to verify the member's benefits prior to providing the service to determine if benefits are available or if there is a specific exclusion in the member's benefit.

Coverage varies according to the member’s group or individual contract. Not all groups are required to follow the Vermont legislative mandates. Member Contract language takes precedence over medical policy when there is a conflict.

If the member receives benefits through an Administrative Services Only (ASO) group, benefits may vary or not apply. To verify benefit information, please refer to the member’s employer benefit plan documents or contact the customer service department. Language in the employer benefit plan documents takes precedence over medical policy when there is a conflict.

Policy Implementation/Update information

06/2018	New Policy adopted BCBSA MPRM 2.01.83. External feedback received. Corporate Policy Updated with additional references 31-32. Policy statement updated to include medical necessity criteria for Vertebral Body Tethering.
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Eligible providers

Qualified healthcare professionals practicing within the scope of their license(s).

Approved by BCBSVT Medical Directors Date Approved

Gabrielle Bercy-Roberson, MD, MPH
Senior Medical Director
Chair, Health Policy Committee

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Chief Medical Officer

Attachment I
Code Table & Instructions

Code Type	Number	Description	Policy Instructions
The following codes are considered medically necessary when applicable criteria have been met.			
HCPCS	L1000	Cervical-thoracic-lumbar-sacral orthosis (CTLSO) (Milwaukee), inclusive of furnishing initial orthosis, including model	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1001	Cervical thoracic lumbar sacral orthosis, immobilizer, infant size, prefabricated, includes fitting and adjustment	Prior Approval is Required if purchase price is greater than \$500.00

HCPCS	L1005	Tension based scoliosis orthosis and accessory pads, includes fitting and adjustment	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1010	Addition to cervical-thoracic-lumbar-sacral orthosis (CTLSO) or scoliosis orthosis, axilla sling	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1020	Addition to CTLSO or scoliosis orthosis, kyphosis pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1025	Addition to CTLSO or scoliosis orthosis, kyphosis pad, floating	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1030	Addition to CTLSO or scoliosis orthosis, lumbar bolster pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1040	Addition to CTLSO or scoliosis orthosis, lumbar or lumbar rib pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1050	Addition to CTLSO or scoliosis orthosis, sternal pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1060	Addition to CTLSO or scoliosis orthosis, thoracic pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1070	Addition to CTLSO or scoliosis orthosis, trapezius sling	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1080	Addition to CTLSO or scoliosis orthosis, outrigger	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1085	Addition to CTLSO or scoliosis orthosis, outrigger, bilateral with vertical extensions	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1090	Addition to CTLSO or scoliosis orthosis, lumbar sling	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1100	Addition to CTLSO or scoliosis orthosis, ring flange, plastic or leather	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1110	Addition to CTLSO or scoliosis orthosis, ring flange, plastic or leather, molded to patient model	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1120	Addition to CTLSO, scoliosis orthosis, cover for upright, each	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1200	Thoracic-lumbar-sacral-orthosis (TLSO), inclusive of furnishing initial orthosis only	Prior Approval is Required if purchase price is greater than \$500.00

HCPCS	L1210	Addition to TLSO, (low profile), lateral thoracic extension	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1220	Addition to TLSO, (low profile), anterior thoracic extension	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1230	Addition to TLSO, (low profile), Milwaukee type superstructure	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1240	Addition to TLSO, (low profile), lumbar derotation pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1250	Addition to TLSO, (low profile), anterior ASIS pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1260	Addition to TLSO, (low profile), anterior thoracic derotation pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1270	Addition to TLSO, (low profile), abdominal pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1280	Addition to TLSO, (low profile), rib gusset (elastic), each	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1290	Addition to TLSO, (low profile), lateral trochanteric pad	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1300	Other scoliosis procedure, body jacket molded to patient model	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1310	Other scoliosis procedure, postoperative body jacket	Prior Approval is Required if purchase price is greater than \$500.00
HCPCS	L1499	Spinal orthosis, not otherwise specified	Prior Approval is Required
CPT®	22899	Unlisted procedure, spine There is no specific code for the insertion of vertebral staples or vertebral tethering	Will suspend for Medical Review