

Protocol

Continuous Passive Motion (CPM) in the Home Setting

(10110)

Medical Benefit	Effective Date: 01/01/12	Next Review Date: 09/14
Preauthorization	Yes	Review Dates: 04/07, 01/08, 11/08, 03/09, 03/10, 09/10, 09/11, 09/12, 09/13

*The following Protocol contains medical necessity criteria that apply for this service. It is applicable to Medicare Advantage products unless separate Medicare Advantage criteria are indicated. If the criteria are not met, reimbursement will be denied and the patient cannot be billed. **Preauthorization is required.** 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.*

Description

Continuous passive motion (CPM) devices are utilized to keep a joint in motion without patient assistance. CPM is being evaluated for treatment and postsurgical rehabilitation of the upper and lower limb joints and for a variety of musculoskeletal conditions.

Background

Physical therapy of joints following surgery focuses both on passive motion to restore mobility and active exercises to restore strength. While passive motion can be administered by a therapist, continuous passive motion (CPM) devices have also been used. CPM is thought to improve recovery by stimulating the healing of articular tissues and circulation of synovial fluid; reducing local edema; and preventing adhesions, joint stiffness or contractures, or cartilage degeneration. CPM has been most thoroughly investigated in the knee, particularly after total knee arthroplasty (TKA) or ligamentous or cartilage repair, but its acceptance in the knee joint has created interest in extrapolating this experience to other weight-bearing joints (i.e., hip, ankle, metatarsals) and non-weight-bearing joints (i.e., shoulder, elbow, metacarpals, and interphalangeal joints). Use of CPM in stroke and burn patients is also being explored.

The device moves the joint (e.g., flexion/extension), without patient assistance, continuously for extended periods of time, i.e., up to 24 hours/day. An electrical power unit is used to set the variable range of motion (ROM) and speed. The initial settings for ROM are based on a patient's level of comfort and other factors that are assessed intraoperatively. The ROM is increased by three to five degrees per day, as tolerated. The speed and ROM can be varied, depending on joint stability. The use of the devices may be initiated in the immediate postoperative period and then continued at home for a variable period of time.

Related Protocols:

Autologous Chondrocyte Implantation for Focal Articular Cartilage Lesions

Autografts and Allografts in the Treatment of Focal Articular Cartilage Lesions

Corporate Medical Guideline

Use of continuous passive motion (CPM) in the home setting may be considered **medically necessary** as an adjunct to physical therapy in the following situations:

- Under conditions of low postoperative mobility or inability to comply with rehabilitation exercises following a total knee arthroplasty (TKA) or TKA revision. This may include patients with complex regional pain

syndrome (reflex sympathetic dystrophy); extensive arthrofibrosis or tendon fibrosis; or physical, mental or behavioral inability to participate in active physical therapy.

- During the non-weight bearing rehabilitation period following intra-articular cartilage repair procedures of the knee (e.g., microfracture, osteochondral grafting, autologous chondrocyte implantation, treatment of osteochondritis dissecans, repair of tibial plateau fractures).

Use of CPM in the home setting for all other indications is considered **not medically necessary**.

Policy Guideline

Following total knee arthroplasty (TKA), continuous passive motion (CPM) in the home setting will be allowable for up to 17 days after surgery while patients are immobile or unable to bear weight.

Following intra-articular cartilage repair procedures of the knee, CPM in the home setting will be allowable for up to six weeks during non-weight bearing rehabilitation.

Medicare Advantage

CPM devices are devices **medically necessary** for patients who have received a total knee replacement. To qualify for coverage, use of the device must commence within two days following surgery. In addition, coverage is limited to that portion of the three-week period following surgery during which the device is used in the patient's home. There is insufficient evidence to justify coverage of these devices for longer periods of time or for other applications.

Services that are the subject of a clinical trial do not meet our Technology Assessment Protocol criteria and are considered investigational. *For explanation of experimental and investigational, please refer to the Technology Assessment 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. Blue Cross and Blue Shield Association Technology Evaluation Center (TEC). Continuous Passive Motion as an Adjunct to Physical Therapy for Joint Rehabilitation. TEC Assessments 1997; Volume 12(Tab 20).
2. McInnes J, Larson MG, Daltroy LH et al. A controlled evaluation of continuous passive motion in patients undergoing total knee arthroplasty. JAMA 1992; 268(11):1423-8.
3. Milne S, Brosseau L, Robinson V et al. Continuous passive motion following total knee arthroplasty. Cochrane Database Syst Rev 2003; (2):CD004260.
4. Brosseau L, Milne S, Wells G et al. Efficacy of continuous passive motion following total knee arthroplasty: a metaanalysis. J Rheumatol 2004; 31(11):2251-64.

5. Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database Syst Rev* 2010; (3):CD004260.
6. Yashar AA, Venn-Watson E, Welsh T et al. Continuous passive motion with accelerated flexion after total knee arthroplasty. *Clin Orthop Relat Res* 1997; (345):38-43.
7. MacDonald SJ, Bourne RB, Rorabeck CH et al. Prospective randomized clinical trial of continuous passive motion after total knee arthroplasty. *Clin Orthop Relat Res* 2000; (380):30-5.
8. Pope RO, Corcoran S, McCaul K et al. Continuous passive motion after primary total knee arthroplasty. Does it offer any benefits? *J Bone Joint Surg Br* 1997; 79(6):914-7.
9. Kumar PJ, McPherson EJ, Dorr LD et al. Rehabilitation after total knee arthroplasty: a comparison of 2 rehabilitation techniques. *Clin Orthop Relat Res* 1996; (331):93-101.
10. Bruun-Olsen V, Heiberg KE, Mengshoel AM. Continuous passive motion as an adjunct to active exercises in early rehabilitation following total knee arthroplasty - a randomized controlled trial. *Disabil Rehabil* 2009; 31(4):277-83.
11. Denis M, Moffet H, Caron F et al. Effectiveness of continuous passive motion and conventional physical therapy after total knee arthroplasty: a randomized clinical trial. *Phys Ther* 2006; 86(2):174-85.
12. Leach W, Reid J, Murphy F. Continuous passive motion following total knee replacement: a prospective randomized trial with follow-up to 1 year. *Knee Surg Sports Traumatol Arthrosc* 2006; 14(10):922-6.
13. Chen B, Zimmerman JR, Soulen L et al. Continuous passive motion after total knee arthroplasty: a prospective study. *Am J Phys Med Rehabil* 2000; 79(5):421-6.
14. Herbold JA, Bonistall K, Blackburn M. Effectiveness of continuous passive motion in an inpatient rehabilitation hospital after total knee replacement: a matched cohort study. *PM R* 2012; 4(10):719-25.
15. Worland RL, Arredondo J, Angles F et al. Home continuous passive motion machine versus professional physical therapy following total knee replacement. *J Arthroplasty* 1998; 13(7):784-7.
16. Lenssen TA, van Steyn MJ, Crijns YH et al. Effectiveness of prolonged use of continuous passive motion (CPM), as an adjunct to physiotherapy, after total knee arthroplasty. *BMC Musculoskelet Disord* 2008; 9:60.
17. Wright RW, Preston E, Fleming BC et al. A systematic review of anterior cruciate ligament reconstruction rehabilitation: part I: continuous passive motion, early weight bearing, postoperative bracing, and home-based rehabilitation. *J Knee Surg* 2008; 21(3):217-24.
18. Browne JE, Anderson AF, Arciero R et al. Clinical outcome of autologous chondrocyte implantation at 5 years in US subjects. *Clin Orthop Relat Res* 2005; (436):237-45.
19. Farr J. Autologous chondrocyte implantation improves patellofemoral cartilage treatment outcomes. *Clin Orthop Relat Res* 2007; 463:187-94.
20. Rosenberger RE, Gomoll AH, Bryant T et al. Repair of large chondral defects of the knee with autologous chondrocyte implantation in patients 45 years or older. *Am J Sports Med* 2008; 36(12):2336-44.
21. Nugent-Derfus GE, Takara T, O'Neill J K et al. Continuous passive motion applied to whole joints stimulates chondrocyte biosynthesis of PRG4. *Osteoarthritis Cartilage* 2007; 15(5):566-74.
22. Salter RB. The biologic concept of continuous passive motion of synovial joints. The first 18 years of basic research and its clinical application. *Clin Orthop Relat Res* 1989; (242):12-25.
23. Fazalare JA, Griesser MJ, Siston RA et al. The use of continuous passive motion following knee cartilage defect surgery: a systematic review. *Orthopedics* 2010; 33(12):878.

24. Simkin PA, de Lateur BJ, Alquist AD et al. Continuous passive motion for osteoarthritis of the hip: a pilot study. *J Rheumatol* 1999; 26(9):1987-91.
25. Du Plessis M, Eksteen E, Jenneker A et al. The effectiveness of continuous passive motion on range of motion, pain and muscle strength following rotator cuff repair: a systematic review. *Clin Rehabil* 2011; 25(4):291-302.
26. Lastayo PC, Wright T, Jaffe R et al. Continuous passive motion after repair of the rotator cuff. A prospective outcome study. *J Bone Joint Surg Am* 1998; 80(7):1002-11.
27. Raab MG, Rzeszutko D, O'Connor W et al. Early results of continuous passive motion after rotator cuff repair: a prospective, randomized, blinded, controlled study. *Am J Orthop (Belle Mead NJ)* 1996; 25(3):214-20.
28. Garofalo R, Conti M, Notarnicola A et al. Effects of one-month continuous passive motion after arthroscopic rotator cuff repair: results at 1-year follow-up of a prospective randomized study. *Musculoskelet Surg* 2010; 94 Suppl 1:S79-83.
29. Dundar U, Toktas H, Cakir T et al. Continuous passive motion provides good pain control in patients with adhesive capsulitis. *Int J Rehabil Res* 2009; 32(3):193-8.
30. Lynch D, Ferraro M, Krol J et al. Continuous passive motion improves shoulder joint integrity following stroke. *Clin Rehabil* 2005; 19(6):594-9.
31. Lindenhovius AL, van de Luitgaarden K, Ring D et al. Open elbow contracture release: postoperative management with and without continuous passive motion. *J Hand Surg Am* 2009; 34(5):858-65.
32. Gelberman RH, Nunley JA, 2nd, Osterman AL et al. Influences of the protected passive mobilization interval on flexor tendon healing. A prospective randomized clinical study. *Clin Orthop Relat Res* 1991; (264):189-96.
33. Ring D, Simmons BP, Hayes M. Continuous passive motion following metacarpophalangeal joint arthroplasty. *J Hand Surg Am* 1998; 23(3):505-11.
34. Schwartz DA, Chafetz R. Continuous passive motion after tenolysis in hand therapy patients: a retrospective study. *J Hand Ther* 2008; 21(3):261-6; quiz 67.
35. Zeifang F, Carstens C, Schneider S et al. Continuous passive motion versus immobilisation in a cast after surgical treatment of idiopathic club foot in infants: a prospective, blinded, randomised, clinical study. *J Bone Joint Surg Br* 2005; 87(12):1663-5.
36. Kasten P, Geiger F, Zeifang F et al. Compliance with continuous passive movement is low after surgical treatment of idiopathic club foot in infants: a prospective, double-blinded clinical study. *J Bone Joint Surg Br* 2007; 89(3):375-7.
37. Postel JM, Thoumie P, Missaoui B et al. Continuous passive motion compared with intermittent mobilization after total knee arthroplasty. Elaboration of French clinical practice guidelines. *Ann Readapt Med Phys* 2007; 50(4):244-57.
38. Center for Medicare and Medicaid. NCD for Durable Medical Equipment Reference List (280.1). 5/5/2005. Available online at:
http://www.cms.hhs.gov/mcd/viewncd.asp?ncd_id=280.1&ncd_version=2&basket=ncd%3A280%2E1%3A2%3ADurable+Medical+Equipment+Reference+List. Last accessed June, 2011.