

Corporate Medical Policy

Continuous Passive Motion in the Home Setting

File Name: continuous_passive_motion_in_the_home_setting
Origination: 9/1993
Last Review: 4/2024

Description of Procedure or Service

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

Physical therapy of joints following surgery focuses on both 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. Continuous passive motion 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 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 used for the knee 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 intra-operatively. The ROM is increased by 3-5 degrees per day, as tolerated. The speed and range of motion can be varied, depending on joint stability. The use of the device may be initiated in the immediate postoperative period, and then continued at home for a variable period of time.

Overtime, hospital lengths of stay have progressively shortened, and in some cases, surgical repair may be done either as an outpatient or with a length of stay of 1 to 2 days. As a result, there has been a considerable shift in the rehabilitation regimen, moving from an intensive in-hospital program to a less intensive outpatient program. Therefore, some providers may want patients to continue CPM in the home as a means of duplicating the services offered with a longer (7-day) hospital stay. The focus of the current review is to examine the literature regarding home use of CPM as it is currently being prescribed postoperatively. The most important comparisons will be treatment outcomes of CPM when used alone or in addition to conventional PT, compared with conventional PT alone.

Note: this policy does not address the use of CPM in the hospital/inpatient setting.

******Note: This Medical Policy is complex and technical. For questions concerning the technical language and/or specific clinical indications for its use, please consult your physician.***

Policy

Continuous Passive Motion in the Home Setting

BCBSNC will provide coverage for Continuous Passive Motion in the Home Setting when it is determined to be medically necessary because the medical criteria and guidelines shown below have been met.

Benefits Application

Please refer to Certificate for availability of benefits. This policy relates only to the services or supplies described herein. Benefits may vary according to benefit design, therefore certificate language should be reviewed before applying the terms of the policy.

The DME supplier must meet eligibility and/or credentialing requirements as defined by the Plan to be eligible for reimbursement.

When Continuous Passive Motion in the Home Setting is covered

Use of CPM in the home setting may be considered medically necessary after knee joint surgery 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 or 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 articular cartilage repair procedures of the knee (e.g., microfracture, osteochondral grafting, autologous chondrocyte implantation, treatment of osteochondritis dissecans, repair of tibial plateau fractures).

When Continuous Passive Motion in the Home Setting is not covered

The use of continuous passive motion devices in the home setting for any joint other than the knee and for any conditions not stated above is considered not medically necessary.

Policy Guidelines

Following total knee arthroplasty, under conditions of low postoperative mobility or inability to comply with rehabilitation exercises, 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 articular cartilage repair procedures of the knee, CPM in the home setting will be allowable for up to 6 weeks during non-weight bearing rehabilitation.

For individuals who have total knee arthroplasty (TKA) who receive CPM in the home, the evidence includes randomized clinical trials (RCTs), case series, and systematic reviews. Relevant outcomes are symptoms and functional outcomes. Early trials generally used CPM in the inpatient setting and are less relevant to today's practice patterns of short hospital stays followed by outpatient rehabilitation. Current postoperative rehabilitation protocols differ considerably from when the largest body of evidence was collected, making it difficult to apply the available evidence to the present situation. For use of CPM after TKA, recent studies have suggested that institutional and home use of CPM has no benefit compared to standard PT. There were no studies evaluating CPM in patients who cannot perform standard PT. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have articular cartilage repair of the knee who receive CPM in the home, the evidence includes nonrandomized studies, case series, and studies with nonclinical outcomes (eg, histology), and systematic reviews of these studies. Relevant outcomes are symptoms and functional outcomes. Systematic reviews of CPM for this indication cite studies reporting better histologic

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outcomes in patients following CPM. A few studies have reported clinical outcomes, but inadequacies of these studies do not permit conclusions of efficacy. The evidence is insufficient to determine the effects of the technology on health outcomes.

For individuals who have musculoskeletal conditions other than TKA or knee cartilage repair requiring PT who receive CPM in the home, the evidence includes RCTs for some conditions and only case series for others. Relevant outcomes are symptoms and functional outcomes. Three small RCTs of CPM after rotator cuff surgery showed some evidence that CPM after rotator cuff repair of the shoulder improves short-term pain and range of motion; however, the trials were not of high quality, and the small differences in outcomes may not be clinically important. Two of these trials reported short-term improvements in range of motion for patients undergoing CPM, and one reported a short-term reduction in pain. None reported long-term improvements, and there are no reported benefits in functional status. Therefore, the clinical significance of the short-term improvements reported is uncertain. In addition, there is uncertainty about the optimal PT regimen following shoulder surgery such that the optimal comparison for CPM is unclear. A systematic review and two small RCTs compared CPM with conventional PT for treatment of adhesive capsulitis. The systematic review concluded that CPM maybe effective in the short-term. One of the trials focused on diabetic patients with adhesive capsulitis. Both reported comparable improvements in ROM and functional ability between treatment groups. Although no RCTs of continuous passive motion in the home setting after repair of the anterior cruciate ligament were identified, indirect evidence from RCTs conducted in the inpatient immediate postoperative setting following anterior cruciate ligament repair indicated no additional benefit with continuous passive motion compared to conventional PT. For other conditions, RCTs do not exist; case series did not show efficacy of CPM or had important methodologic flaws. The evidence is insufficient to determine the effects of the technology on health outcomes.

For patients who are unable to tolerate exercise regimens following TKA, CPM remains an alternative treatment modality. However, there is no evidence to support its use in this situation. Clinical input supported the use of CPM under conditions of low postoperative mobility or inability to comply with rehabilitation exercises following a TKA or TKA revision. For CPM after articular cartilage repair of the knee, clinical input supported the use of CPM. Studies of histologic outcomes provide some support for CPM despite the lack of clinical outcome data.

For individuals who have had a stroke requiring PT who receive CPM in the home setting, the evidence includes two small RCTs. Relevant outcomes are symptoms and functional outcomes. These trials reported mixed results; one RCT indicated a non-significant trend toward improved shoulder joint stability, with continuous passive motion and PT relative to PT alone, while the other indicated significant improvement in functional outcomes related to wrist movement and global upper extremity movement symptoms with continuous passive motion plus conventional therapy relative to conventional therapy alone. Both trials were small and treatment lasted only 20 days in the shoulder joint study. The evidence is insufficient to determine the effects of the technology on health outcomes.

Billing/Coding/Physician Documentation Information

This policy may apply to the following codes. Inclusion of a code in this section does not guarantee that it will be reimbursed. For further information on reimbursement guidelines, please see Administrative Policies on the Blue Cross Blue Shield of North Carolina web site at www.bcbsnc.com. They are listed in the Category Search on the Medical Policy search page.

Applicable codes: E0935, E0936

BCBSNC may request medical records for determination of medical necessity. When medical records are requested, letters of support and/or explanation are often useful, but are not sufficient documentation unless all specific information needed to make a medical necessity determination is included.

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Scientific Background and Reference Sources

BCBSA Medical Policy Reference Manual

Consultant Review 2/95

BCBSA's Medical Advisory Panel 9/11/96

Medical Policy Advisory Group review 3/99

Consultant Review 4/21/99

Ring D, Simmons BP. Continuous passive motion following metacarpophalangeal joint surgery. *J Hand Surg Am.* 1998;23(3):505-11.

Specialty Matched Consultant Advisory Panel - 11/1999

Medical Policy Advisory Group 12/2/1999

Specialty Matched Consultant Advisory Panel - 9/00

Medical Policy Advisory Group - 12/2000

Specialty Matched Consultant Advisory Panel - 8/2002

BCBSA Medical Policy Reference Manual - 10/8/2002; 1.01.10

Specialty Matched Consultant Advisory Panel - 5/2003

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 12/17/03

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 4/2005

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/7/06

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 12/11/08

Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database of Systematic Reviews* 2010, Issue 3. Abstract retrieved on May 12, 2010 from <http://mrw.interscience.wiley.com/cochrane/clsysrev/articles/CD004260/frame.html>

Lenzen 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. Retrieved on May 12, 2010 from <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC2386789/?tool=pubmed>

Specialty Matched Consultant Advisory Panel review 7/2010

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 8/12/10

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.

Specialty Matched Consultant Advisory Panel review 7/2011

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/14/11

Specialty Matched Consultant Advisory Panel review 7/2012

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/12/12

Medical Director review 7/2013

Specialty Matched Consultant Advisory Panel review 7/2013

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/11/13

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Harvey LA, Brosseau L, Herbert RD. Continuous passive motion following total knee arthroplasty in people with arthritis. *Cochrane Database Syst Rev* 2014; 2:CD004260.

Medical Director review 7/2014

Specialty Matched Consultant Advisory Panel review 7/2014

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/10/14

Specialty Matched Consultant Advisory Panel review 6/2015

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/9/15

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/10/16

Specialty Matched Consultant Advisory Panel 6/2016

American Academy of Orthopaedic Surgeons. Surgical management of osteoarthritis of the knee.

Evidence-based clinical practice guideline. 2015;

http://www.aaos.org/uploadedFiles/PreProduction/Quality/Guidelines_and_Reviews/guidelines/SMOAK%20CPG_4.22.2016.pdf. Accessed August 3, 2016.

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 7/14/16

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/9/2017

Specialty Matched Consultant Advisory Panel 6/2017

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 5/8/2017

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/8/2018

Specialty Matched Consultant Advisory Panel 6/2018

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/14/2019

Specialty Matched Consultant Advisory Panel 7/2019

BCBSA Medical Policy Reference Manual [Electronic Version]. 1.01.10, 3/12/2020

Specialty Matched Consultant Advisory Panel 6/2020

O'Driscoll SW, Giori NJ. Continuous passive motion (CPM): theory and principles of clinical application. *J Rehabil Res Dev*. 2000; 37(2): 179-88. PMID 10850824

Gholson JJ, Noiseux NO, Otero JE, et al. Patient Factors Systematically Influence Hospital Length of Stay in Common Orthopaedic Procedures. *Iowa Orthop J*. 2017; 37: 233-237. PMID 28852363

Medical Director review 4/2024

Policy Implementation/Update Information

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| 9/93 | Evaluated: Eligible for coverage in post-operative rehabilitation of the anterior cruciate ligament reconstruction of the knee or total knee arthroplasty. |
| 1/97 | Revised: Combined local and National policies. Added coverage for synovectomy and that CPM as an adjunct to conventional physical therapy is investigational. |
| 2/7/97 | Revised: National Association reviewed and updated days from 7-10 days to 8-17 days immediately post-operative. |

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- 5/99 Revised: Must be started within 48 hours of the surgery. Reviewed by consultant for other joints. Consultant states that at this time, there is no benefit for use with other joints. To MPAG on 3/99. Literature above supports this finding.
- 6/99 Reformatted, Medical Term Definitions added.
- 12/99 Reaffirmed, Medical Policy Advisory Group
- 10/00 System coding changes.
- 11/00 Specialty Matched Consultant Advisory Panel. Added patients who have undergone Autologous Chondrocyte Transplantation and patients who have undergone manipulation of the knee or surgical lysis of adhesions after a total knee replacement.
- 12/00 Medical Policy Advisory Group review. No changes to criteria. Approve.
- 9/02 Specialty Matched Consultant Advisory Panel meeting 8/2002. Revised under when it is covered to include the indication, "For patients who have undergone lysis of adhesions for knee arthrofibrosis." System coding changes.
- 5/03 Specialty Matched Consultant Advisory Panel review. No changes.
- 3/04 Benefits Application and Billing/Coding sections updated for consistency.
- 6/2/2005 Specialty Matched Consultant Advisory Panel review on 5/23/2005. DME0030 added to key words. References added. Title changed from "Continuous Passive Motion for Rehabilitation following Joint Surgery" to "Continuous Passive Motion in the Home Setting". Policy statement changed to indicate that CPM is no longer covered outside of the acute hospital setting. Policy Guidelines section updated to include rationale for noncoverage. There is lacking published literature to support the coverage of CPM of the knee in the home setting or coverage of ACL repair or other joints in either the acute hospital or home setting. Coverage and Noncoverage sections changed to reflect changed policy statement. Reviewed and discussed at MPOC meeting 04/11/ 2005 and 6/13/2005. Notification given 6/2/2005. Policy effective date 10/6/2005.
- 10/8/2005 Policy effective on 10/08/2005 due to slight change in update schedule.
- 2/2/2006 Policy statement clarified to indicate CPM is not covered in the physician office or outpatient setting.
- 2/12/07 Revised the statement in the Covered section to read: "Continuous Passive Motion is covered only in the hospital inpatient setting in the immediate post-operative period following knee surgery." Added the following statement to the Not Covered section: "The use of Continuous Passive Motion devices for any joint other than the knee is considered investigational. BCBSNC does not provide coverage for investigational services or procedures." CPT Code E0936 added to Billing/Coding section.
- 6/18/07 Specialty Matched Consultant Advisory Panel review 5/18/07. No change to policy coverage criteria. (adn)
- 3/30/09 Policy statement changed to read, "BCBSNC will provide coverage for Continuous Passive Motion in the Home Setting when it is determined to be medically necessary because the medical criteria and guidelines shown below have been met." Statement in the When CPM is Covered section changed to read, "Use of CPM in the home setting may be considered medically necessary after knee joint surgery 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 or 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 OR 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

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of tibial plateau fractures)." Statements in the When Not Covered section deleted and replaced with the following: "The use of continuous passive motion devices in the home setting for any joint other than the knee and for any conditions not stated above is considered not medically necessary." Added the following to the Policy Guidelines: "Following total knee arthroplasty, 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 6 weeks during non-weight bearing rehabilitation." Also added rationale for coverage. (adn)

- 7/6/09 Statement in the When CPM is Not Covered section revised to read: "The use of continuous passive motion devices in the home setting for any joint other than the knee and for any conditions not stated above is considered investigational." Specialty Matched Consultant Advisory Panel review meeting 5/21/09. No change to policy statement. (adn)
- 2/2/10 Statement in the Policy Guidelines section revised to read, "Following total knee arthroplasty, under conditions of low postoperative mobility or inability to comply with rehabilitation exercises, CPM in the home setting will be allowable for up to 17 days after surgery while patients are immobile or unable to bear weight. (adn)
- 8/17/10 Specialty Matched Consultant Advisory Panel review 7/2010. Removed Medical Policy number. Updated references. (mco)
- 4/26/11 In the "References" section, BCBSA Medical Policy Reference Manual date corrected. (mco)
- 8/16/11 Specialty Matched Consultant Advisory Panel review 7/2011. "Not Covered" section revised to state: "The use of continuous passive motion devices in the home setting for any joint other than the knee and for any conditions not stated above is considered not medically necessary." References updated. (mco)
- 8/7/12 Specialty Matched Consultant Advisory Panel review 7/2012. References updated. No changes to Policy Statements. (mco)
- 8/13/13 Specialty Matched Consultant Advisory Panel review 7/2013. References updated. Medical Director review 7/2013. No changes to Policy Statements. (mco)
- 8/12/14 Specialty Matched Consultant Advisory Panel review 7/2014. References updated. Medical Director review 7/2014 Policy Guidelines updated. No changes to Policy Statements. (mco)
- 10/28/14 Added the following statement to the Benefits Application section: "The DME supplier must meet eligibility and/or credentialing requirements as defined by the Plan to be eligible for reimbursement." (mco)
- 7/28/15 Specialty Matched Consultant Advisory Panel review 6/24/2015. (sk)
- 9/1/15 Reference added. (sk)
- 5/31/16 Reference added. Policy Guidelines updated. (sk)
- 7/26/16 Specialty Matched Consultant Advisory Panel review 6/29/2016. (sk)
- 8/30/16 References added. (sk)
- 5/26/17 Reference added. Policy Guidelines updated. (sk)
- 7/28/17 Specialty Matched Consultant Advisory Panel review 6/28/2017. (sk)

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- 9/15/17 Reference added. The word “intra-” was removed from the second bullet point of the first policy statement and from the text. (sk)
- 4/13/18 Reference added. (sk)
- 7/13/18 Specialty Matched Consultant Advisory Panel review 6/27/2018. (sk)
- 5/14/19 Reference added. (sk)
- 9/10/19 Specialty Matched Consultant Advisory Panel review 7/30/2019. (sk)
- 6/30/20 Reference added. Specialty Matched Consultant Advisory Panel review 7/17/2020. Medical Director review. Archive policy. (sk)
- 5/1/24 Medical Director Review. References added. Policy guidelines updated and returned to active review. Policy noticed 05/01/24 for effective date 07/01/24. (rp)

Medical policy is not an authorization, certification, explanation of benefits or a contract. Benefits and eligibility are determined before medical guidelines and payment guidelines are applied. Benefits are determined by the group contract and subscriber certificate that is in effect at the time services are rendered. This document is solely provided for informational purposes only and is based on research of current medical literature and review of common medical practices in the treatment and diagnosis of disease. Medical practices and knowledge are constantly changing and BCBSNC reserves the right to review and revise its medical policies periodically.