

MEDICAL POLICY – 1.01.540

Continuous Passive Motion in the Home Setting

BCBSA Ref. Policy: 1.01.10


Effective Date: June 1, 2023
Last Revised: May 9, 2023
Replaces: N/A

RELATED MEDICAL POLICIES:

- 7.01.48 Autologous Chondrocyte Implantation for Focal Articular Cartilage Lesions
- 7.01.78 Autografts and Allografts in the Treatment of Focal Articular Cartilage Lesions

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Introduction

A continuous passive motion (CPM) device moves or flexes a joint. This movement is done without the individual's help. A continuous passive motion device has been used most often after certain knee surgeries to allow the knee joint to slowly bend. Using CPM was very common; however, newer studies show that it does not improve the outcomes of knee surgery except in some complex knee surgeries, or when people have prolonged bed rest due to some other problem after knee replacement. Continuous passive motion usually starts in the hospital. For those who need it at home after knee surgery it is usually covered for 21 days. There are a number of high quality studies showing that CPM is effective for specific types of knee surgery. There are not enough high quality studies to show how effective CPM is for other joints. This policy describes when CPM is considered medically necessary.

Note: The Introduction section is for your general knowledge and is not to be taken as policy coverage criteria. The rest of the policy uses specific words and concepts familiar to medical professionals. It is intended for providers. A provider can be a person, such as a doctor, nurse, psychologist, or dentist. A provider also can be a place where medical care is given, like a hospital, clinic, or lab. This policy informs them about when a service may be covered.

Policy Coverage Criteria

This policy addresses CPM only in the home setting.

Procedure	Medical Necessity
Total knee arthroplasty (TKA) or TKA repair	<p>The 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:</p> <ul style="list-style-type: none"> The member is not able to ambulate or comply with rehabilitation exercises. Examples include: <ul style="list-style-type: none"> Complex regional pain syndrome (reflex sympathetic dystrophy) Extensive arthrofibrosis or tendon fibrosis Physical, mental, or behavioral inability to participate in active physical therapy Following TKA, CPM in the home setting will be allowable for up to 21 days after surgery while individuals are immobile or unable to bear weight
<p>Articular cartilage repair, such as:</p> <ul style="list-style-type: none"> microfracture osteochondral grafting autologous chondrocyte implantation treatment of osteochondritis dissecans repair of tibial plateau fractures 	<p>The use of CPM may be considered medically necessary as an adjunct to physical therapy in the following situations:</p> <ul style="list-style-type: none"> During the non-weight-bearing rehabilitation period For up to 6 weeks maximum
Other	<p>The use of CPM in the home setting for all other conditions not listed in this medical policy is considered not medically necessary.</p>

Documentation Requirements

The individual's medical records submitted for review for all conditions should document that medical necessity criteria are met. The record should include the following:

- Documentation of the type of knee surgery member had undergone and that member can't bear weight after surgery.



Documentation Requirements

- For total knee replacement or total knee repair, additional documentation of the following:
 - That member is not able to comply with physical therapy because of certain conditions.

Examples include:

- Complex regional pain syndrome (reflex sympathetic dystrophy)
- Extensive arthrofibrosis or tendon fibrosis
- Physical, mental, or behavioral inability to participate in active physical therapy

Coding

Code	Description
HCPCS	
E0935	Continuous passive motion exercise device for use on knee only
E0936	Continuous passive motion exercise device for use other than knee

Note: CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). HCPCS codes, descriptions and materials are copyrighted by Centers for Medicare Services (CMS).

Related Information

N/A

Evidence Review

Description

Continuous passive motion (CPM) devices are used to keep a joint in motion without individual 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 on active exercises to restore strength. While passive motion can be administered by a therapist, CPM devices have also been used. CPM is thought to improve recovery by stimulating the healing of articular tissues and the circulation of synovial fluid; reducing local edema; and preventing adhesions, joint stiffness or contractures, or cartilage degeneration.¹ CPM has been investigated primarily in the knee, particularly after total knee arthroplasty (TKA) or ligamentous or cartilage repair. Acceptance of its use in the knee joint has created interest in CPM for other weight-bearing joints (i.e., hip, ankle, metatarsals) as well as non-weight-bearing joints (i.e., shoulder, elbow, metacarpals, interphalangeal joints). Use of CPM in stroke and burn individuals is also being explored.

The device used for the knee moves the joint (e.g., flexion and extension) without individual assistance, continuously for extended periods of time (i.e., up to 24 hours per day)¹. 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 individual's level of comfort and other factors that are assessed intraoperatively. The ROM is increased by 3° to 5° per day, as tolerated. The speed and ROM 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.

Over time, hospital lengths of stay have progressively shortened, and in some cases surgical repair is done as an outpatient or with a length of stay of one to two days.² As a result, there has been a considerable shift in the rehabilitation regimen, moving range of motion an intensive in-hospital program to a less intensive outpatient program. Some providers may want individuals to continue CPM in the home setting as a means of duplicating the services offered with a longer (7-day) hospital stay.

The focus of the current policy is to examine the literature on the use of CPM in the home setting as it is currently being prescribed postoperatively. The relevant comparisons are treatment outcomes of CPM when used alone or with physical therapy, compared with physical therapy alone.

Summary of Evidence

For individuals who have TKA and receive CPM in the home setting, the evidence includes randomized controlled trials (RCTs), case series, and systematic reviews. The 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 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 with standard physical therapy (PT). There were no studies evaluating CPM in individuals who could not perform standard PT. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have articular cartilage repair of the knee who receive CPM in the home setting, the evidence includes nonrandomized studies, case series, and studies with nonclinical outcomes (e.g., histology), and systematic reviews of these studies. The relevant outcomes are symptoms and functional outcomes. Systematic reviews of CPM for this indication have cited studies reporting better histologic outcomes in individuals following CPM. A few studies have reported clinical outcomes, but inadequacies of these studies do not permit conclusions on efficacy. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.

For individuals who have musculoskeletal conditions other than TKA or knee cartilage repair requiring PT who receive CPM in the home setting, the evidence includes RCTs for some conditions and case series for others. The relevant outcomes are symptoms and functional outcomes. Three small RCTs of CPM after rotator cuff surgery showed some evidence that CPM after this shoulder surgery improved short-term pain and ROM; however, the trials were not high quality, and the small differences in outcomes may not be clinically important. Two trials reported short-term improvements in ROM for individuals 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 treatment comparator for CPM is unclear. Two small RCTs compared CPM with conventional PT for treatment of adhesive capsulitis. One of the trials focused on diabetic individuals 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 musculoskeletal conditions, RCTs do not exist; case series either did not show efficacy of CPM or had important methodologic flaws. The evidence is insufficient to determine that the technology results in an improvement in the net health outcome.



For individuals who have had a stroke requiring PT who receive CPM in the home setting, the evidence includes two small RCTs. The relevant outcomes are symptoms and functional outcomes. These trials reported mixed results; one RCT indicated a non-significant trend toward improvement in 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 that the technology results in an improvement in the net health outcome.

Ongoing and Unpublished Clinical Trials

Some currently unpublished trials that might influence this review are listed in [Table 1](#).

Table 1. Summary of Key Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT05226988	Effect of Hybrid Robot-assisted Training Using End-effector and Exoskeleton Devices in Distal Upper Extremity After Stroke: Motor Control, Motor and Daily Function, Quality of Life	70	Oct 2025
Unpublished			
NCT01420887	Preservation of Joint Function Using Postoperative Continuous Passive Motion (CPM): A Pilot Study	60	May 2020

NCT: national clinical trial

Clinical Input Range of Motion Physician Specialty Societies and Academic Medical Centers

While the various physician specialty societies and academic medical centers may collaborate with and make recommendations during this process, through the provision of appropriate reviewers, input received does not represent an endorsement or position statement by the physician specialty societies or academic medical centers, unless otherwise noted.



2016 Input

In response to requests, input was received range of motion two physician specialty societies and one academic medical center while this policy was under review in 2016. Input considered CPM medically necessary as an adjunct to physical therapy during the non-weight-bearing rehabilitation period following articular cartilage repair procedures of the knee. One reviewer referred to the American Academy of Orthopaedic Surgery (2015) guidelines on the surgical management of osteoarthritis of the knee, which concluded that there was strong evidence that CPM after knee arthroplasty does not improve outcomes.

2010 Input

In response to requests, input was received from two physician specialty societies and five academic medical centers while this policy was under review in 2010. Overall, input supported the use of CPM under conditions of low postoperative mobility or inability to comply with rehabilitation exercises after TKA or TKA revision or during the non-weight-bearing rehabilitation period following articular cartilage repair procedures of the knee. Support was limited for use of CPM in joints other than the knee, or in situations or conditions other than those described in this policy.

2008 Input

In response to requests, input was received from one physician specialty society and two academic medical centers while this policy was under review in 2008. The three reviewers interpreted the existing literature supporting the use of CPM for the knee for at least 7 days postoperatively, whether in the hospital or home, and suggested that longer use of CPM would be warranted for special conditions.

Practice Guidelines and Position Statements

The purpose of the following information is to provide reference material. Inclusion does not imply endorsement or alignment with the policy conclusions.



Guidelines or position statements will be considered for inclusion if they were issued by, or jointly by, a U.S. professional society, an international society with U.S. representation, or National Institute for Health and Care Excellence (NICE). Priority will be given to guidelines that are informed by a systematic review, include strength of evidence ratings, and include a description of management of conflict of interest.

American Physical Therapy Association

In 2020, the American Physical Therapy Association (APTA) published a clinical practice guideline on physical therapists' management of patients undergoing total knee arthroplasty.⁵¹ The APTA identified four high-quality studies, six moderate-quality studies, and two low-quality studies evaluating the effect of continuous passive motion devices on knee flexion and extension range of motion and need for manipulation under anesthesia, with moderate-quality studies indicating benefit with continuous passive motion contradicted by high-quality studies indicating no significant difference. Meta-analyses did not indicate a significant impact of continuous passive motion on function or hospital length of stay. The APTA concluded that "physical therapists should NOT use CPMs [continuous passive motion devices] for patients who have undergone primary, uncomplicated TKA [total knee arthroplasty]."

American Academy of Orthopaedic Surgeons

In 2015, the American Academy of Orthopaedic Surgeons (AAOS) published evidence-based guidelines on the surgical management of osteoarthritis of the knee.⁵² The AAOS identified two high-quality studies and five moderate-quality studies that evaluated the use of CPM. In one high-quality study, CPM was used for about two weeks after discharge. The AAOS concluded that, "the combined results provide strong evidence that the surgical outcomes for those who used continuous passive motion are not better than for those who did not use continuous passive motion." The 2022 update to the AAOS guidelines, which replaces the 2015 version, does not address use of continuous passive motion.⁵³

Medicare National Coverage

In 2005, the Centers for Medicare & Medicaid Services issued a national coverage determination on durable medical equipment reference, which stated:



Continuous passive motion devices are devices covered for patients who have received a total knee replacement. To qualify for coverage, use of the device must commence within 2 days following surgery. In addition, coverage is limited to that portion of the 3-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.⁵⁴

Regulatory Status

CPM devices are considered class I devices by the U.S. Food and Drug Administration (FDA) and are exempt from 510(k) requirements. This classification does not require submission of clinical data on efficacy but only notification of the FDA prior to marketing.

FDA product code: BXB.

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History

Date	Comments
08/11/15	New Policy. Add to Durable Medical Equipment section. In the Policy Guidelines, plan specific language allows using the device for up to 21 days. Literature current through June 3, 2015.
06/01/16	Annual Review, approved May 10, 2016. References 27 and 42 added. Policy statements unchanged.
10/01/16	Interim Update, approved September 13, 2016. Clinical input reviewed; reference 43 added. Policy statements unchanged.
03/24/17	Policy moved into new format; no change to policy statements.
06/01/17	Annual Review, approved May 2, 2017. Policy updated with literature review through January 25, 2017; reference 36 added. Removed HCPCS code E1399. Policy statements unchanged.
07/01/17	Interim Review, approved June 22, 2017. The word "intra-" removed from the second bullet point of the first policy statement and from the text. Policy statements otherwise unchanged; rewritten for improved clarity.
05/01/18	Annual Review, approved April 18, 2018. Policy updated with literature review through January 2018; reference 33 added. Policy statements unchanged.
06/01/19	Annual Review, approved May 7, 2019. Policy updated with literature review through January 2019; no references added. Policy statements unchanged.
04/01/20	Delete policy, approved March 10, 2020. This policy will be deleted effective July 2, 2020, and replaced with InterQual criteria for dates of service on or after July 2, 2020.
07/02/20	Delete policy.
11/01/20	Policy reinstated effective February 5, 2021; approved October 13, 2020. Policy updated with literature review through January, 2020; no references added. Policy statements unchanged.
06/01/21	Annual Review, approved May 4, 2021. Policy updated with literature review through December 13, 2020; no references added.



Date	Comments
06/01/22	Annual Review, approved May 9, 2022. Policy updated with literature review through December 20, 2021; no references added. Policy statements unchanged.
06/01/23	Policy renumbered, approved May 9, 2023, from 1.01.10 Continuous Passive Motion in the Home Setting to 1.01.540 Continuous Passive Motion in the Home Setting. Policy updated with literature review through January 10, 2023; references added. Minor editorial refinements to policy statements; intent unchanged. Changed the wording from "patient" to "individual" throughout the policy for standardization.

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Scope: Medical policies are systematically developed guidelines that serve as a resource for Company staff when determining coverage for specific medical procedures, drugs or devices. Coverage for medical services is subject to the limits and conditions of the member benefit plan. Members and their providers should consult the member benefit booklet or contact a customer service representative to determine whether there are any benefit limitations applicable to this service or supply. This medical policy does not apply to Medicare Advantage.



Discrimination is Against the Law

Premera Blue Cross (Premera) complies with applicable Federal and Washington state civil rights laws and does not discriminate on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation. Premera does not exclude people or treat them differently because of race, color, national origin, age, disability, sex, gender identity, or sexual orientation. Premera provides free aids and services to people with disabilities to communicate effectively with us, such as qualified sign language interpreters and written information in other formats (large print, audio, accessible electronic formats, other formats). Premera provides free language services to people whose primary language is not English, such as qualified interpreters and information written in other languages. If you need these services, contact the Civil Rights Coordinator. If you believe that Premera has failed to provide these services or discriminated in another way on the basis of race, color, national origin, age, disability, sex, gender identity, or sexual orientation, you can file a grievance with: Civil Rights Coordinator — Complaints and Appeals, PO Box 91102, Seattle, WA 98111, Toll free: 855-332-4535, Fax: 425-918-5592, TTY: 711, Email AppealsDepartmentInquiries@Premera.com. You can file a grievance in person or by mail, fax, or email. If you need help filing a grievance, the Civil Rights Coordinator is available to help you. You can also file a civil rights complaint with the U.S. Department of Health and Human Services, Office for Civil Rights, electronically through the Office for Civil Rights Complaint Portal, available at <https://ocrportal.hhs.gov/ocr/portal/lobby.jsf>, or by mail or phone at: U.S. Department of Health and Human Services, 200 Independence Ave SW, Room 509F, HHH Building, Washington, D.C. 20201, 1-800-368-1019, 800-537-7697 (TDD). Complaint forms are available at <http://www.hhs.gov/ocr/office/file/index.html>.

Washington residents: You can also file a civil rights complaint with the Washington State Office of the Insurance Commissioner, electronically through the Office of the Insurance Commissioner Complaint Portal available at <https://www.insurance.wa.gov/file-complaint-or-check-your-complaint-status>, or by phone at 800-562-6900, 360-586-0241 (TDD). Complaint forms are available at <https://fortress.wa.gov/oic/online-services/cc/pub/complaintinformation.aspx>.

Alaska residents: Contact the Alaska Division of Insurance via email at insurance@alaska.gov, or by phone at 907-269-7900 or 1-800-INSURAK (in-state, outside Anchorage).

Language Assistance

ATENCIÓN: si habla español, tiene a su disposición servicios gratuitos de asistencia lingüística. Llame al 800-722-1471 (TTY: 711).

PAUNAWA: Kung nagsasalita ka ng Tagalog, maaari kang gumamit ng mga serbisyo ng tulong sa wika nang walang bayad. Tumawag sa 800-722-1471 (TTY: 711).

注意: 如果您使用繁體中文，您可以免費獲得語言援助服務。請致電 800-722-1471 (TTY: 711)。

CHÚ Ý: Nếu bạn nói Tiếng Việt, có các dịch vụ hỗ trợ ngôn ngữ miễn phí dành cho bạn. Gọi số 800-722-1471 (TTY: 711).

주의: 한국어를 사용하시는 경우, 언어 지원 서비스를 무료로 이용하실 수 있습니다. 800-722-1471 (TTY: 711) 번으로 전화해 주십시오.

ВНИМАНИЕ: Если вы говорите на русском языке, то вам доступны бесплатные услуги перевода. Звоните 800-722-1471 (телетайп: 711).

LUS CEEV: Yog tias koj hais lus Hmoob, cov kev pab txog lus, muaj kev pab dawb rau koj. Hu rau 800-722-1471 (TTY: 711).

MO LOU SILAFIA: Afai e te tautala Gagana fa'a Sāmoa, o loo iai auunaga fesoasoan, e fai fua e leai se totagi, mo oe, Telefoni mai: 800-722-1471 (TTY: 711).

ໂປດອຸລາ: ຖ້າວ່າ ທ່ານເວົ້າພາສາ ລາວ, ການບໍລິການຊ່ວຍເຫຼືອດ້ານພາສາ, ໂດຍບໍ່ຄ່າສ່ຽງຄ່າ, ຄມມຸນມິພ້ອມໃຫ້ທ່ານ. ໂທ 800-722-1471 (TTY: 711).

注意事項: 日本語を話される場合、無料の言語支援をご利用いただけます。800-722-1471 (TTY:711) まで、お電話にてご連絡ください。

PAKDAAR: Nu saritaem ti Ilocano, ti serbisyo para ti baddang ti lengguahe nga awanan bayadna, ket sidadaan para kenyan. Awagan ti 800-722-1471 (TTY: 711).

УВАГА! Якщо ви розмовляєте українською мовою, ви можете звернутися до безкоштовної служби мовної підтримки. Телефонуйте за номером 800-722-1471 (телетайп: 711).

ប្រយ័ត្ន: បើសិនជាអ្នកនិយាយ ភាសាខ្មែរ, សេវាជំនួយផ្នែកភាសា ដោយមិនគិតលុយ គឺអាចមានសំរាប់អ្នក។ ចូរ ទូរស័ព្ទ 800-722-1471 (TTY: 711)។

ማስታወሻ: የሚናገሩት ቋንቋ አማርኛ ከሆነ የትርጉም አርዳታ ድርጅቶች: በነጻ ሊያግኙዎት ተዘጋጅተዋል: ወደ ሚከተለው ቁጥር ይደውሉ 800-722-1471 (መስማት ለተሳናቸው: 711).

XIYYEEFFANNAA: Afaan dubbattu Oroomiffa, tajaajjila gargaarsa afaanii, kanfaltiidhaan ala, ni argama. Bilbilaa 800-722-1471 (TTY: 711).

ملحوظة: إذا كنت تتحدث اذكر اللغة، فإن خدمات المساعدة اللغوية تتوافر لك بالمجان. اتصل برقم 800-722-1471 (رقم هاتف الصم والبكم: 711).

ਧਿਆਨ ਦਿਓ: ਜੇ ਤੁਸੀਂ ਪੰਜਾਬੀ ਬੋਲਦੇ ਹੋ, ਤਾਂ ਭਾਸ਼ਾ ਵਿੱਚ ਸਹਾਇਤਾ ਸੇਵਾ ਤੁਹਾਡੇ ਲਈ ਮੁਫਤ ਉਪਲਬਧ ਹੈ। 800-722-1471 (TTY: 711) 'ਤੇ ਕਾਲ ਕਰੋ।

ထိပ်စီး: ถ้าคุณพูดภาษาไทยคุณสามารถใช้บริการช่วยเหลือทางภาษาได้ฟรี โทร 800-722-1471 (TTY: 711).

ACHTUNG: Wenn Sie Deutsch sprechen, stehen Ihnen kostenlos sprachliche Hilfsdienstleistungen zur Verfügung. Rufnummer: 800-722-1471 (TTY: 711).

UWAGA: Jeżeli mówisz po polsku, możesz skorzystać z bezpłatnej pomocy językowej. Zadzwoń pod numer 800-722-1471 (TTY: 711).

ATANSYON: Si w pale Kreyòl Ayisyen, gen sèvis èd pou lang ki disponib gratis pou ou. Rele 800-722-1471 (TTY: 711).

ATTENTION: Si vous parlez français, des services d'aide linguistique vous sont proposés gratuitement. Appelez le 800-722-1471 (ATS: 711).

ATENÇÃO: Se fala português, encontram-se disponíveis serviços linguísticos, grátis. Ligue para 800-722-1471 (TTY: 711).

ATTENZIONE: In caso la lingua parlata sia l'italiano, sono disponibili servizi di assistenza linguistica gratuiti. Chiamare il numero 800-722-1471 (TTY: 711).

توجه: اگر بہ زبان فارسی گفتگو می کنید، تسهیلات زبانی بصورت رایگان برای شما فراهم می باشد. با 800-722-1471 (TTY: 711) تماس بگیرید.