

Medical Policy

Autologous Chondrocyte Implantation in the Knee

Policy Number: 07

	Commercial and Qualified Health Plans	Mass General Brigham ACO	Medicare Advantage	OneCare	Senior Care Options (SCO)
Authorization required	X	X	X	X	X
Notification within 24 hours of service or next business day					

Overview

The purpose of this document is to describe the guidelines Mass General Brigham Health Plan utilizes to determine the medical appropriateness for autologous chondrocyte implantation (ACI) for repairing cartilage defects of the knee. Mass General Brigham Health Plan will consider FDA-approved matrix-induced chondrocyte implantation (MACI) under the conditions listed in the coverage guidelines below. The treating specialist must request prior authorization for this procedure.

Coverage Guidelines

Mass General Brigham Health Plan medical necessity criteria for autologous chondrocyte implantation in the knee is determined through a custom subset accessible through InterQual®. To access the criteria, log into Mass General Brigham Health Plan's provider website at MassGeneralBrighamHealthPlan.org and click the InterQual® Criteria Lookup link under the Resources Menu, or see below:

- Member is 15–55 years of age (if an adolescent member is evaluated, the member should be 15 years of age or older on the date of service and skeletally mature with documented closure of growth plates); and
- A BMI of less than 35kg/m²; and
- When symptoms of knee pain interfere with activities of daily living and have persisted for at least six months; and
- Single or multiple full-thickness cartilage defects each measuring greater than or equal to 2.0 cm²; and
- Cartilage defect involves the weight bearing areas of the femoral condyle (medial, lateral, or trochlear) or the patella based on documentation from prior arthroscopic procedures; and
- Femoral condyle defects are the result of acute or repetitive trauma; and
- Prior conservative treatment including physical therapy, nonsteroidal medications, and steroid injections have failed to offer relief; and
- Member must be willing to comply with a vigorous rehabilitation program post ACI procedure.

Instability of the knee may adversely affect the success of the procedure and should be corrected. The anterior and posterior cruciate ligaments should be free of laxity as well as stable and intact. It is recommended that cruciate deficiencies be corrected. Abnormal weight-distribution within the joint may adversely affect the success of the procedure and should be corrected. The tibial/femoral joint should be properly aligned.

Exclusions

Mass General Brigham Health Plan does not provide coverage for:

1. Joints other than the knee
2. Active infection of the knee
3. Presence of osteoarthritis

Medicare Variation

Mass General Brigham Health Plan uses guidance from the Centers for Medicare and Medicaid Services (CMS) for medical necessity determinations for its Medicare Advantage plan members. National Coverage Determinations (NCDs), Local Coverage Determinations (LCDs), Local Coverage Articles (LCAs), and documentation included in the Medicare manuals are the basis for medical necessity determinations. When there is no guidance from CMS for the requested service, Mass General Brigham Health Plan's medical policies are used for medical necessity determinations. **At the time of Mass General Brigham Health Plan's most recent policy review, Medicare had no NCD or LCD for autologous chondrocyte implantation in the knee.**

MassHealth Variation

Mass General Brigham Health Plan uses guidance from MassHealth for medical necessity determinations for its Mass General Brigham ACO members. When there is no guidance from MassHealth for the requested service, Mass General Brigham Health Plan's medical policies are used for coverage determinations. **At the time of Mass General Brigham Health Plan's most recent policy review, MassHealth did not have medical necessity guidelines for autologous chondrocyte implantation in the knee.**

OneCare and SCO Variation

Mass General Brigham Health Plan uses guidance from CMS for medical necessity determinations for its OneCare and SCO plan members. NCDs, LCDs, LCAs, and documentation included in the Medicare manuals are the basis for medical necessity determinations. When there is no guidance from CMS for the requested service, Mass General Brigham Health Plan uses medical necessity guidelines from MassHealth. When there is no guidance from CMS or from MassHealth, Mass General Brigham Health Plan's medical policies are used for medical necessity determinations.

Definitions

Autologous chondrocyte implantation: a two-step procedure in which new cartilage cells are grown and then implanted in the cartilage defect. Healthy cartilage tissue is first removed from a non-weight bearing area of the bone and sent to a laboratory. The cells are cultured and increase in number over a 3- to 5-week period and are then transplanted back via a second procedure.

Full thickness chondral defects are those that extend through to the subchondral bone.

Matrix-induced Autologous Chondrocyte Implantation (MACI): MACI is autologous cultured chondrocytes on porcine collagen membrane. It is an autologous cellularized scaffold product that is indicated for the repair of single or multiple symptomatic, full-thickness cartilage defects of the adult knee, with or without bone involvement.

Codes

The following codes are included below for informational purposes only; inclusion of a code does not constitute or imply coverage.

Authorized CPT/HCPCS Codes	Code Description
27412	Autologous chondrocyte implantation, knee



27416	Osteochondral autograft(s), knee, open (e.g., mosaicplasty) (includes harvesting of autograft[s])
29866	Arthroscopy, knee, surgical; osteochondral autograft(s) (e.g., mosaicplasty) (includes harvesting of the autograft[s])
J7330	Autologous cultured chondrocytes, implant

Summary of Evidence

Randomized by Brittberg et al. (2018), Knutsen et al. (2016), and others demonstrate generally favorable long-term outcomes for ACI compared with standard care, with follow-up periods ranging from 2 to 15 years. Multiple systematic reviews, including that by Grossman et al. (2022), show improvement that ACI improves patient-reported outcomes in patients with large ($\geq 2\text{cm}^2$), full-thickness cartilage defects in the knee. A systematic review by Dhillon et al. (2022) suggests that third-generation ACI techniques are superior to microfracture for focal chondral defects. Another systematic review of RCTs by Gou et al. (2020) finds that scores on standardized measures of knee symptoms were no better for ACI than for microfracture at 1-5 years of follow-up, though ACI may offer improved pain relief and quality of life. Niethammer et al. (2021) shows that the improvement in patient-reported outcomes was larger for ACI treatment of femoral cartilage defects than for ACI treatment of patellar cartilage defects. Dibartola et al. (2016) and Hoburg et al. (2019) demonstrate safety and efficacy in adolescents and young adults.

The literature collectively supports ACI as an effective treatment option for large, full-thickness knee cartilage defects. Mass General Brigham Health Plan criteria reflect the inclusion/exclusion criteria of trials mentioned above. Evidence of safety and efficacy in other populations is still lacking.

Effective

January 2025: Ad hoc update. Updated prior authorization table and added variation for OneCare and SCO members.

August 2025: Annual update. Fixed wording in MassHealth variation. Fixed typos. Updated code disclaimer.

March 2025: Ad hoc update. Summary of evidence added.

November 2024: Ad hoc update. Medicare Variation language clarified. Added language to coverage guidelines pointing to custom subset in InterQual™. MassHealth Variation language added. Codes updated.

August 2024: Annual update. Added BMI restriction.

August 2023: Annual update. Medicare Advantage added to table. Minor editorial refinement to coverage guidelines; intent unchanged. Medicare Variation language added.

August 2022: Annual update. References updated.

August 2021: Annual update. Revised language under Coverage Guidelines to state “Single or multiple full-thickness cartilage each measuring greater than or equal to 2.0 cm^2 ”. References updated.

August 2020: Annual update. References updated.

July 2019: Annual update. Revised language under Overview section to reflect policy only allows for MACI. Removed Carticel. Revised Coverage guidelines. Allow for up to age 55. Removed requirement that member have inadequate response to prior surgical treatment. Under Exclusion section; removed defects of the patella. Updated Code and References.

June 2018: Annual update.

December 2017: Effective date. Codes added.

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