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## Medical Policy



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**\*Current Policy Effective Date: 3/1/24**  
(See policy history boxes for previous effective dates)

### **Title: Genicular Nerve Blocks**

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#### **Description/Background**

Chronic osteoarthritis of the knee is one of the most common diseases of advanced age. With up to 20 million adults in the United States suffering from osteoarthritis of the knee, close to 700,000 cases progress to total knee joint replacement. Many individuals with chronic joint pain, however, are not candidates for invasive procedures due to body mass index, age and other comorbidities. Alternative therapies including arthroscopic debridement or injections are associated with less than optimal clinical outcomes. In addition to osteoarthritis, adults can experience knee pain due to a number of other causes, and an estimated 10-34 % of individuals experience long-term pain after a total knee replacement.

When an individual exhibits knee pain, the pain signals can be generated from the peripheral nerves innervating the knee including several branches of the genicular nerve. Diagnostic nerve blocks are used to determine sources of pain. These blocks typically contain an anesthetic with a known duration of relief. Therapeutic nerve blocks are used to treat painful conditions. Such nerve blocks contain local anesthetic that can be used to control acute pain.

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#### **Regulatory Status**

N/A

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#### **Medical Policy Statement**

Genicular nerve blocks for the treatment of chronic knee pain (e.g., degenerative joint disease, osteoarthritis, treatment prior to knee replacement or following knee replacement or instead of

knee replacement) are experimental/investigational. It has not been scientifically demonstrated to improve patient clinical outcomes.

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## Inclusionary and Exclusionary Guidelines

N/A

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**CPT/HCPCS Level II Codes** *(Note: The inclusion of a code in this list is not a guarantee of coverage. Please refer to the medical policy statement to determine the status of a given procedure.)*

### Established codes:

N/A

### Other codes (investigational, not medically necessary, etc.):

64450\*                  64454                  64624                  64640\*                  64999\*

*\*When specified as ablation of genicular nerve(s)*

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## Rationale

Gonzalez et al (2017) evaluated the periarticular distribution of these blocks in a fresh cadaver model and to describe the technique in a preliminary group of patients submitted to total knee arthroplasty (TKA).<sup>1</sup> In the anatomical phase, 4 genicular nerves (superior medial, superior lateral, inferior medial and inferior lateral) were blocked with 4 ml of local anesthetic with iodinated contrast and methylene blue in each (16 ml in total). It was performed on a fresh cadaver and the distribution of the injected medium was evaluated by means of a CT-scan and coronal anatomical sections on both knees. The clinical phase included 12 patients scheduled for TKA. Ultrasound-guided block of the 4 genicular nerves was performed preoperatively and their clinical efficacy evaluated by assessing pain after the spinal block and at 12h after the block. Pain was measured using the numerical scale and the need for rescue analgesia was evaluated.

A wide periarticular distribution of contrast was observed by CT-scan, which was later evaluated in the coronal sections. The distribution followed the joint capsule without entering the joint, both in the femur and in the tibia. The pain after the reversal of the subarachnoid block was  $2 \pm 1$ , requiring rescue analgesia in 42% of the patients. At 12h, the pain according to the numerical scale was  $4 \pm 1$ , 33% required rescue analgesia. The administration of 4 ml of local anesthetic at the level of the 4 genicular nerves of the knee produces a wide periarticular distribution. The preliminary data in a series of 12 patients undergoing TKA seems to be clinically effective. Nevertheless, extensive case series and comparative studies with local infiltration techniques with anesthetics are needed to support these encouraging results.

Recently, some studies suggested that radiofrequency (RF) ablation of the genicular nerves may be a therapeutic option for intractable pain associated with chronic knee osteoarthritis (OA). Diagnostic genicular nerve block (GNB) with local anesthetic has been generally

conducted before making decisions regarding RF ablation. Although GNB has been recently performed together with corticosteroid, the analgesic effects of corticosteroids for treating chronic pain remain controversial. Kim et al (2018) assessed the effects of combining corticosteroids and local anesthesia during ultrasound-guided GNB in patients with chronic knee OA.<sup>2</sup> Forty-eight patients with chronic knee OA were randomly assigned to either the lidocaine alone group (n = 24) or lidocaine plus triamcinolone (TA) group (n = 24) before ultrasound-guided GNB. Visual analog scale (VAS), Oxford Knee Score (OKS), and global perceived effects (7-point scale) were assessed at baseline and at 1, 2, 4, and 8 weeks after the procedure.

The VAS scores were significantly lower in the lidocaine plus TA group than in the lidocaine alone group at both 2 (P < 0.001) and 4 (P < 0.001) weeks after GNB. The alleviation of intense pain in the lidocaine plus TA group was sustained up to 2 weeks after the procedure, in accordance with the definition of a minimal clinically important improvement. Although a similar intergroup difference in OKSs was observed at 4 weeks (P < 0.001), the clinical improvement in functional capacity lasted for only one week after the reassessment of OKSs, in accordance with a minimal important change. No patient reported any post-procedural adverse events during the follow-up period. Some limitations include the emotional state of the patients, which might affect the perception of knee pain, was not evaluated. The follow-up period was 2 months; this period might be insufficient to validate the short-term effects of GNB. The authors concluded that ultrasound-guided GNB, when combined with a local anesthetic and corticosteroid, may provide short-term pain relief. However, the clinical benefit of corticosteroid administration was not clear in comparison with local anesthesia alone. Given the potential adverse effects, corticosteroids might not be appropriate as adjuvants during a GNB for chronic knee OA.

McCormick et al (2018) conducted a study evaluating the utility of GNBs to predict the outcome of genicular nerve cooled radiofrequency ablation (cRFA) in patient with OA.<sup>3</sup> This randomized comparative trial included patients with chronic knee pain due to osteoarthritis. Participants were randomized to receive a GNB or no block prior to cRFA. Patients receiving a prognostic block that demonstrated  $\geq 50\%$  pain relief for six hours received cRFA. The primary outcome was the proportion of participants with  $\geq 50\%$  reduction in knee pain at six months.

Twenty-nine participants (36 knees) had cRFA following a prognostic block, and 25 patients (35 knees) had cRFA without a block. Seventeen participants (58.6%) in the prognostic block group and 16 (64.0%) in the no block group had  $\geq 50\%$  pain relief at six months (P = 0.34). A 15-point decrease in the Western Ontario and McMaster Universities Osteoarthritis Index at six months was present in 17 of 29 (55.2%) in the prognostic block group and 15 of 25 (60%) in the no block group (P = 0.36). The authors concluded that the prognostic GNB using local anesthetic and a threshold of  $\geq 50\%$  pain relief for subsequent cRFA eligibility did not improve the rate of cRFA treatment success.

A study by Kim et al (2019) conducted a study comparing the efficacy of ultrasound- vs. fluoroscopy-guided genicular nerve blocks.<sup>7</sup> From July 2015 to September 2017, a randomized controlled study was performed to analyze the difference in the efficacy of ultrasound- vs. fluoroscopy-guided genicular nerve blocks. The Numeric Rating Scale (NRS-11), Western Ontario and McMaster Universities Arthritis Index (WOMAC), Global Perceived Effect Scales (GPES), and complications were evaluated pre-procedure, and 1 and 3 months after genicular nerve block. A total of 80 patients were enrolled and randomly distributed to groups U

(ultrasound-guided, n = 40) and F (fluoroscopy-guided, n = 40). Those who were lost to follow-up or had undergone other interventions were excluded, resulting in 31 and 30 patients in groups U and F, respectively. No differences in NRS-11 or WOMAC were observed between the 2 groups at baseline or during the follow-up period. GPES and complication rates were also similar between both groups. The authors concluded that pain relief, functional improvement, and safety were similar between groups receiving ultrasound- and fluoroscopy-guided genicular nerve blocks.

Rambhia et al (2021) hypothesized that genicular nerve blockade added to an existing block regimen in total knee arthroplasty would result in a reduction in 24 hours opioid consumption.<sup>8</sup> Patients undergoing primary total knee arthroplasty were randomized to receive single-injection nerve blocks of the superolateral, superomedial, and inferomedial genicular nerves with injectate (15 mL 0.25% bupivacaine and 2 mg dexamethasone or 15 mL saline placebo). All subjects received a standard oral analgesic regimen, spinal anesthetic with 12.5 mg isobaric bupivacaine, infiltration between the popliteal artery and capsule of the knee with 0.2% ropivacaine, and postoperative adductor canal perineural infusion with 0.2% ropivacaine. The primary outcome was 24 hours opioid consumption (measured in morphine milliequivalents). Forty (40) subjects were enrolled. Opioid consumption at 24 hours appeared to be lower in the BLOCK group compared with the SHAM group ( $23 \pm 20$  vs  $58 \pm 35$ ,  $p < 0.001$ ), and this difference remained significant at 48 hours ( $50 \pm 40$  vs  $98 \pm 56$ ,  $p = 0.004$ ). Pain scores were reduced in the BLOCK group at time 6 hours ( $2.6 \pm 1.9$  vs  $4.3 \pm 2.2$ ,  $p = 0.012$ ), but were otherwise similar at remaining time points. Patient satisfaction at 24 hours and 20 m walk test times were similar between groups.

Ghai, et al (2022) compared ultrasound-guided pulsed radiofrequency (PRF) of the genicular nerve with the genicular nerve block using local anesthetic and steroid for management of osteoarthritis (OA) knee pain.<sup>9</sup> Thirty patients with OA knee were randomly allocated to receive either ultrasound-guided PRF of the genicular nerve (PRF group) or nerve block with bupivacaine and methylprednisolone acetate (local anesthetic steroid [LAS] group). Verbal numeric rating scale (VNRS) and Western Ontario McMaster Universities Osteoarthritis Index (WOMAC) scores were measured at pre-procedure and 1-, 4-, and 12-weeks post-procedure. VNRS scores decreased significantly ( $P < 0.001$ ) in both the groups at 12 weeks and other follow up times compared to baseline. Seventy-three percent of patients in the PRF group and 66% in the LAS group achieved effective pain relief ( $\geq 50\%$  pain reduction) at 12 weeks ( $P > 0.999$ ). There was also a statistically significant ( $P < 0.001$ ) improvement in WOMAC scores in both groups at all follow up times. However, there was no intergroup difference in VNRS ( $P = 0.893$ ) and WOMAC scores ( $P = 0.983$ ). No complications were reported.

## **SUMMARY OF EVIDENCE**

At this time there is a lack of literature with head-to-head comparisons to other standard treatments. Clinical trials are underway. Other published studies either lack control groups or have serious methodologic problems that prevent the drawing of treatment-guiding conclusions from their results. GNB for chronic knee pain (e.g., degenerative joint disease; osteoarthritis of the knee; as a treatment prior to knee replacement or following knee replacement or as a treatment for individuals who are not candidates for knee replacement surgery) have not demonstrated improved clinical outcomes for patients with chronic knee pain.

## SUPPLEMENTAL INFORMATION

### PRACTICE GUIDELINES AND POSITION STATEMENTS

#### National Institute for Health and Clinical Excellence (NICE)<sup>4</sup>

The 2014 NICE guidelines on Osteoarthritis: Care and Management do not address genicular nerve blocks for chronic knee pain.

#### American College of Rheumatology (ACR)<sup>5</sup>

The 2012 Recommendations for the use of Nonpharmacologic and Pharmacologic Therapies in Osteoarthritis of the Hand, Hip, and Knee do not address genicular nerve blocks for chronic knee pain.

#### American Academy of Orthopedic Surgeons (AAOS)<sup>6</sup>

The 2013 AAOS guidelines on the Treatment of Osteoarthritis of the Knee (2<sup>nd</sup> edition) does not address genicular nerve blocks for chronic knee pain.

#### 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
<b>Ongoing</b>			
NCT05561881	Genicular nerve block versus IPACK block for knee arthroscopic surgery	50	Feb 2025
NCT05156476	GENIFEM trial: postoperative pain after total knee arthroplasty (TKA)	36	May 2024
NCT02548104	Analgesic efficacy of anterior femoral, genicular and adductor canal nerve block	144	Oct 2024
NCT05720949	Genicular Nerve Blocks for Anterior Cruciate Ligament Knee Surgery	192	Jan 2025
<b>Unpublished</b>			
NCT04419701	Comparison of ultrasound guided genicular nerve block and periarticular infiltration in knee arthroplasty	88	Jan 2021
NCT04656743	Comparison of genicular nerve block and intrarticular injection for postoperative pain in knee arthroscopy	66	June 2021
NCT03781843	Effects of genicular nerve block in knee osteoarthritis	90	Mar 2019 (unknown)
NCT03601533	Ultrasound-guided genicular nerve block with phenol for the treatment of chronic pain due to knee osteoarthritis	15	Nov 2018 (unknown)

NCT: national clinical trial

### Government Regulations

#### National:

There is no NCD related to genicular nerve blocks for chronic knee pain.

**Local:**

There is no LCD related to genicular nerve blocks for chronic knee pain.

*(The above Medicare information is current as of the review date for this policy. However, the coverage issues and policies maintained by the Centers for Medicare & Medicare Services [CMS, formerly HCFA] are updated and/or revised periodically. Therefore, the most current CMS information may not be contained in this document. For the most current information, the reader should contact an official Medicare source.)*

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**Related Policies**

- Cryoablation of Peripheral Nerves
- Radiofrequency Ablation of Peripheral Nerves to Treat Pain Including Coolief Cooled RF

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## References

1. Gonzales SV, Macule F, Minguell J, et al. Ultrasound-guided genicular nerve block for pain control after total knee replacement: preliminary case series and technical note. *Rev Esp Anesthesiol Reanim*. Dec 2017;64(10):568-576.
2. Kim DH, Choi SS, Yoon SH, et al. Ultrasound-guided genicular nerve block for knee osteoarthritis: a double-blind, randomized controlled trial of local anesthetic alone or in combination with corticosteroid. *Pain Physician*. Jan 2018;21(1):41-52.
3. McCormick ZL, Reddy R, Korn M, et al. A prospective randomized trial of prognostic genicular nerve blocks to determine the predictive value for the outcome of cooled radiofrequency ablation for chronic knee pain due to osteoarthritis. *Pain Med*. Aug 2018;19(8):1628-1638.
4. National Institute for Clinical Excellence. Genicular artery embolization for pain from knee osteoarthritis. NICE. October 2021. <https://nice.org.uk/guidance/iptg708>. Accessed November 2023.
5. Hochberg MC, Altman RD, April KT, et al. American college of rheumatology 2012 recommendations for the use of nonpharmacologic and pharmacologic therapies in osteoarthritis of the hand, hip and knee. *Arthritis Care & Research*. April 2012;64(4):465-474.
6. American Academy of Orthopaedic Surgeons. Treatment of osteoarthritis of the knee.
7. Kim DH, Lee MS, Lee S, et al. A prospective randomized comparison of the efficacy of ultrasound- vs. fluoroscopy-guided genicular nerve block for chronic knee osteoarthritis. *Pain Physician*. 2019 Mar;22(2):139-146
8. Rambhia M, Chen A, Kumar A, et al. Ultrasound-guided genicular nerve blocks following total knee arthroplasty: a randomized, double-blind, placebo-controlled trial. *Reg Anesth Pain Med*. Oct 2021;46(10):862-866.
9. Ghai B, Kumar M, Makkar JK, Goni V. Comparison of ultrasound guided pulsed radiofrequency of genicular nerve with local anesthetic and steroid block for management of osteoarthritis knee pain. *The Korean journal of pain*. 2022;35(2):183-190.

*The articles reviewed in this research include those obtained in an Internet based literature search for relevant medical references through November 2023, the date the research was completed.*

### Joint BCBSM/BCN Medical Policy History

Policy Effective Date	BCBSM Signature Date	BCN Signature Date	Comments
3/1/19	12/11/18		Joint policy established
3/1/20	12/17/19		Rationale updated, reference #7 added. Added codes 64454 & 64624 as E/I effective 1/1/20. No change in policy status.
3/1/2021	12/15/20		Routine maintenance
3/1/22	12/14/21		Routine policy maintenance, no change in policy status.
3/1/23	12/20/22		Routine policy maintenance, added reference #8, no change in policy status.
3/1/24	12/19/23		Routine policy maintenance, updated rationale added reference 9. No change in policy status. Vendor managed: BCN managed all codes except for 64640—Turning point, they have no specific policy.(ds)

Next Review Date: 4<sup>th</sup> Qtr., 2024

### Pre-Consolidation Medical Policy History

Original Policy Date	Comments
BCN:	Revised:
BCBSM:	Revised:



**BLUE CARE NETWORK BENEFIT COVERAGE  
POLICY: GENICULAR NERVE BLOCKS**

**I. Coverage Determination:**

<b>Commercial HMO (includes Self-Funded groups unless otherwise specified)</b>	No coverage
<b>BCNA (Medicare Advantage)</b>	See government section
<b>BCN65 (Medicare Complementary)</b>	Coinsurance covered if primary Medicare covers the service.

**II. Administrative Guidelines:**

- The member's contract must be active at the time the service is rendered.
- Coverage is based on each member's certificate and is not guaranteed. Please consult the individual member's certificate for details. Additional information regarding coverage or benefits may also be obtained through customer or provider inquiry services at BCN.
- The service must be authorized by the member's PCP except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Services must be performed by a BCN-contracted provider, if available, except for Self-Referral Option (SRO) members seeking Tier 2 coverage.
- Payment is based on BCN payment rules, individual certificate and certificate riders.
- Appropriate copayments will apply. Refer to certificate and applicable riders for detailed information.
- CPT - HCPCS codes are used for descriptive purposes only and are not a guarantee of coverage.