

MEDICAL POLICY – 7.01.564

Pulsed Radiofrequency for the Treatment of Chronic Pain


Effective Date: Sep. 1, 2025
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Replaces: N/A

RELATED MEDICAL POLICIES:

7.01.147 Minimally Invasive Ablation Procedures for Morton and Other Peripheral Neuromas
7.01.555 Facet Joint Denervation
7.01.563 Ablative Treatments for Occipital Neuralgia, Chronic Headaches, and Atypical Facial Pain
7.01.565 Ablation of Peripheral Nerves to Treat Pain

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[EVIDENCE REVIEW](#) | [REFERENCES](#) | [HISTORY](#)

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Introduction

Radiofrequency ablation is a way of destroying part of nerves to treat pain. An electrical current is produced by radio waves. The current is applied to a small area of nerve tissue, thus destroying (ablating) part of the nerve and interrupting pain signals. Pulsed radiofrequency is similar to radiofrequency ablation in that it is still being studied. Instead of a constant current being applied, pulsed radiofrequency calls for short bursts of energy. These intermittent bursts of energy allow more electrical current to be applied while keeping temperatures below the range that would ablate the nerve. Pulsed radiofrequency is investigational (unproven) to treat pain. More, larger, and longer studies are needed to see if this technique is safe and effective.

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

Procedure	Investigational
Pulsed radiofrequency	<p>Pulsed radiofrequency for the treatment of various chronic pain syndromes is considered investigational including, but not limited to, the following:</p> <ul style="list-style-type: none"> • Anterior cutaneous nerve entrapment syndrome (abdominal pain) • Auriculotemporal neuralgia • Carpal tunnel syndrome • Chronic facial and head pain (persistent idiopathic facial pain (PIFP)/spheno-palatine ganglion) • Coccydynia • Complex regional pain syndrome (reflex sympathetic dystrophy) • Diabetic peripheral neuropathy • Discogenic pain • Facet joint pain (cervical, lumbar, thoracic, sacro-iliac)/zygapophyseal joint pain • Frozen shoulder (adhesive capsulitis) • Genitofemoral neuralgia (scrotal or groin pain post-herniorrhaphy) • Headaches (e.g., cervicogenic, migraines, cluster, tension) • Inguinal neuralgia • Intercostal neuralgia (post-surgical thoracic pain) • Low back pain • Lumbo-sacral radicular pain (e.g., dorsal root ganglion) • Meralgia paresthetica (burning pain in the outer thigh related to lateral femoral cutaneous nerve entrapment) • Metacarpal or metatarsal joint pain of the hands and feet • Morton's neuroma • Myofascial pain syndrome (gastrocnemius/trapezius muscle) • Neck pain (cervical radicular pain) • Occipital neuralgia • Ophthalmic neuralgia • Orchialgia (testicular pain/spermatic cord) • Osteoarthritis pain of the knee (genicular nerve, saphenous nerve, intra-articular) or hip

Procedure	Investigational
	<ul style="list-style-type: none"> • Pelvic pain (e.g., superior hypogastric plexus treatment for interstitial cystitis) • Peripheral neuromas • Piriformis syndrome (buttock pain and/or pain in the back of the lower extremity related to sciatic nerve irritation) • Plantar fasciitis (medial calcaneal nerve) • Post herpetic neuralgia (ophthalmic neuralgia) • Postoperative abdominal wall pain (for incisional pain outside of anterior cutaneous nerve entrapment) • Pudendal neuralgia • Sacro-iliac joint pain • Shoulder pain (suprascapular nerve) (hemiplegic shoulder pain after stroke) • Tarsal tunnel syndrome (compression neuropathy from entrapment of the posterior tibial nerve) • Trigeminal neuralgia (Gasserian ganglion) • Vulvodynia

Coding

Code	Description
CPT	
64999	Unlisted procedure, nervous system

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

Description

Pulsed radiofrequency (PRF) is a non- or minimally neurodestructive technique, where short bursts of radiofrequency energy are applied to nervous tissue to treat various chronic pain syndromes. It is seen as an alternative to continuous (non-pulsed) radiofrequency ablation, as it is theorized to have significantly less complications or side effects. Its exact mechanism of action is unclear.

Background

Pulsed radiofrequency was first used in 1996 as a less destructive alternative to continuous (non-pulsed) radiofrequency. Pulsed radiofrequency is delivered in short bursts, twice per second, followed by a quiet phase in which no current is applied. This allows for cooling of the electrode keeping it below the neurodestructive threshold of 42° C. Pulsing the radiofrequency current allows the power output of the generator to be increased, allowing for far stronger electrical fields than in continuous radiofrequency. For example, the voltage output is usually 15-25 volts for the continuous mode radiofrequency. The pulsed radiofrequency output is 45 volts. As a result, higher voltages can be applied in pulsed radiofrequency. Because the average temperature near the pulsed radiofrequency electrode does not reach the neurodestructive range, the risk of destroying nearby tissue is reduced.

Pulsed radiofrequency has been used in the treatment of peripheral neuropathies, arthrogenic pain, painful trigger points, radiculopathy, and many other chronic pain syndromes. Unlike the known side effects of continuous radiofrequency such as neuritis-like reactions, motor deficits, and the risk of deafferentation pain syndrome, pulsed radiofrequency has few side effects and is seen as relatively safe. However, even though there is much anecdotal evidence which favors the use of pulsed radiofrequency for the use of pain relief without nervous tissue damage, especially in the treatment of neuropathic pain, there is a lack of randomized controlled trials (RCTs) substantiating its efficacy.

Summary of Evidence

For individuals with various chronic pain syndromes, especially neuropathic pain who received pulsed radiofrequency, the evidence includes a small number of RCTs, non-randomized controlled trials, prospective uncontrolled trials, retrospective studies, case series, and case reports. The majority of the uncontrolled and observational studies reported clinical efficacy of pulsed radiofrequency, however many of these studies had limitations. The controlled clinical data is limited and with inconsistent findings. Further research in the clinical and biological effects of pulsed radiofrequency is needed including well-designed, randomized controlled clinical trials with a large sample size and long-term follow-up to determine the therapeutic effect and safety of this treatment modality. There is also a lack of data comparing pulsed radiofrequency with conventional treatments. As such, it is unknown if pulsed radiofrequency offers any treatment advantage over other conventional treatments. The evidence is insufficient to determine the effects of the technology on health outcomes.

Pulsed radiofrequency (PRF) offers a non-neurodestructive approach to pain relief by modulating nerve activity, however the evidence is not robust enough to support its use. For instance, in anterior cutaneous nerve entrapment syndrome (ACNES), PRF demonstrated modest short-term relief but was inferior to neurectomy in long-term outcomes (Maatman et al., 2019). Similarly, PRF has been explored in rare syndromes like auriculotemporal neuralgia, ophthalmic neuralgia, and genitofemoral neuralgia only in isolated case reports without controlled trials (Tereshko et al., 2024; Tereshko et al., 2024; Bhatjiwale et al., 2016). In carpal tunnel syndrome and occipital neuralgia, small trials suggest potential benefit, but comparative effectiveness and durability remain unclear (Chen et al., 2015; Chua et al., 2012).

Conditions such as trigeminal neuralgia and coccydynia have seen exploratory use of pulsed radiofrequency (PRF) targeting the Gasserian ganglion and ganglion impar (nerve center at the tailbone that relays pelvic pain signals), respectively, though available evidence remains observational and retrospective (Sargin et al., 2022). PRF has also been assessed for pain originating from the facet and sacroiliac joints as a potentially safer alternative to conventional radiofrequency ablation, but mixed outcomes and limited long-term follow-up limit its widespread utilization (Van Zundert et al., 2025). For diabetic peripheral neuropathy, frozen shoulder, pelvic pain syndromes such as interstitial cystitis, and complex regional pain syndrome (CRPS), current studies are preliminary and lack sufficient data to support routine clinical use. In osteoarthritis-related knee pain, PRF targeting the genicular nerves has demonstrated short-term benefit in small retrospective cohorts, yet the absence of randomized controlled trials and long-term comparative data underscores its investigational status (Erdem, 2019). Overall, the clinical utility of PRF across these diverse pain syndromes as yet has not been validated through rigorous trials.



Ongoing and Unpublished Clinical Trials

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

Table 1. Summary of Key Clinical Trials

NCT No.	Trial Name	Planned Enrollment	Completion Date
Ongoing			
NCT06787677	The Efficacy and Safety of Sphenopalatine Ganglion Pulsed Radiofrequency Treatment for Chronic Cluster Headache	108	Dec 2030
NCT06204874	Evaluation of Pulsed Radiofrequency Ablation of the Superior Hypogastric Plexus for Treatment of Bladder Pain Syndrome: A Randomized, Placebo-Controlled Pilot Study	38	May 2026
NCT06857409	The Effect of Suprascapular Nerve Pulsed Radiofrequency Treatment on Central Sensitization and Neuropathic Pain	60	Feb 2026
NCT02915120	Ultrasound-Guided Pulsed Radiofrequency Of The Genicular Nerves In The Treatment Of Patients With Osteoarthritis Knee Pain: Randomized, Double-Blind, Placebo Controlled Trial	142	Dec 2024 (recruiting)
Unpublished			
NCT03567590	The Efficacy and Safety of Sphenopalatine Ganglion Pulsed Radiofrequency Treatment for Cluster Headache	80	Jan 2021 Completed
NCT04238598	Intra-articular Pulsed Radiofrequency Neuromodulation Versus Intra-articular Steroids for Painful Knee Osteoarthritis	30	Sept 2021 Completed

NCT: national clinical trial

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 US professional society, an international society with US 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 Society of Pain and Neuroscience (ASPN) Best Practice Guidelines

The ASPN's 2021 LEARN guideline, published in *The Journal of Pain Research*, offers evidence-based recommendations for radiofrequency neurotomy—including continuous, cooled, and pulsed techniques—across spinal and peripheral joints. Pulsed radiofrequency (PRF) is seen as less destructive and possibly safer near motor nerves, but ASPN refrains from endorsing it due to limited high-quality evidence, particularly for spinal use.

Using a modified USPSTF grading system, PRF applications generally receive low or insufficient evidence ratings (Grade C or I). The guideline emphasizes transparency, discloses author conflicts, and details its consensus process (Deer et al., 2021).

American Society of Interventional Pain Physicians

The American Society of Interventional Pain Physicians (ASIPP) published an updated 2021 guideline on interventional techniques in the management of chronic spinal pain:

- Strong evidence (Level I) supports caudal, lumbar interlaminar, lumbar transforaminal, and cervical interlaminar epidural injections for disc herniation and radiculitis.
- Moderate evidence (Level II) supports percutaneous adhesiolysis for disc herniation and spinal stenosis.
- Limited evidence (Level III–IV) for thoracic epidural injections and pulsed radiofrequency (PRF) techniques.
- PRF is mentioned but not endorsed, due to insufficient high-quality evidence and lack of consensus on long-term outcomes

Guidelines emphasize systematic review methodology, strength-of-evidence ratings, and conflict-of-interest management, including $\geq 80\%$ consensus among non-conflicted panelists (Manchikanti et al, 2021).

Medicare National Coverage

There is no national coverage determination.

Regulatory Status

A number of radiofrequency generators and probes have been cleared for marketing through the US Food and Drug Administration (FDA) 510(k) process. The generators that support PRF include:

- Abbott IonicRF Generator
- ACI GFX Nerve Ablation System
- Avanos Coolief Radiofrequency Generator (CRG) System ((CRG-BASIC CRG-BASIC-R CRG-ADVANCED CRG-ADVANCED-R)
- Baylis Pain Management Generator Models PMG-115, PMG-115-TD, PMG-230-TD
- Cosman RF Lesion Generator Model RFG-1A, RFG-4
- Diros Owl Radiofrequency System Models URF-2AP, URF-3AP
- Epimed International Racz Neurostat RF Generator
- Neurotherm NT-2000
- Radionics Model RFG-3CPlus Radiofrequency Lesion Generator
- Stockert Neuro N50 Model 12267
- Stryker MultiGen2 RF Generator System
- Stryker RF Multi-Lesion Generator Model 0406-900-000, 2RF
- Stryker Intradiscal RF Generator

Product Code: GXD



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History

Date	Comments
09/01/18	New policy, approved August 14, 2018, effective December 6, 2018. Add to Surgery section. Policy created with a literature review through July 2018. Pulsed radiofrequency for the treatment of various chronic pain syndromes is considered investigational.
10/01/19	Annual Review, approved September 5, 2019. Policy updated with literature review. References added. Policy statement unchanged.
08/01/20	Update Related Policies. 7.01.565 is now 7.01.154.
10/01/20	Annual Review, approved September 1, 2020. Policy updated with literature review. References added. Policy statement unchanged.
06/01/21	Annual Review, approved May 4, 2021. Policy updated with literature review. References added. Policy statements unchanged.
09/01/22	Annual Review, approved August 8, 2022. Policy updated with literature review. References added. Policy statements unchanged.
05/01/23	Annual Review, approved April 24, 2023. Added clarifying language to some policy statements for ease of identification only, policy intent unchanged. References added.
03/01/24	Update to Related Policies. 7.01.154 is now 7.01.565.
10/01/24	Annual Review, approved September 23, 2024. Policy reviewed. References added and deleted. Added anterior cutaneous nerve entrapment syndrome (abdominal pain),



Date	Comments
	carpal tunnel syndrome, and frozen shoulder (adhesive capsulitis) to the list of chronic pain syndromes for which pulsed radiofrequency is considered investigational.
09/01/25	Annual Review, approved August 12, 2025. Policy reviewed. References added and deleted. Added auriculotemporal neuralgia, genitofemoral neuralgia (scrotal or groin pain post-herniorrhaphy), and postoperative abdominal wall pain (for incisional pain outside of anterior cutaneous nerve entrapment) to the list of chronic pain syndromes for which pulsed radiofrequency is considered investigational. Title changed from Pulsed Radiofrequency to Pulsed Radiofrequency for the Treatment of Chronic Pain.

Disclaimer: This medical policy is a guide in evaluating the medical necessity of a particular service or treatment. The Company adopts policies after careful review of published peer-reviewed scientific literature, national guidelines and local standards of practice. Since medical technology is constantly changing, the Company reserves the right to review and update policies as appropriate. Member contracts differ in their benefits. Always consult the member benefit booklet or contact a member service representative to determine coverage for a specific medical service or supply. CPT codes, descriptions and materials are copyrighted by the American Medical Association (AMA). ©2025 Premera All Rights Reserved.

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