Clinical Policy Bulletin: Peripheral Nerve Blocks

Number: 0863

Policy

Aetna considers the use of peripheral nerve blocks (continuous or single-injection) medically necessary for the treatment of (i) acute pain, and (ii) for chronic pain only as part of an active component of a comprehensive pain management program. Peripheral nerve blocks as sole treatment for chronic pain is considered experimental and investigational.

Aetna considers femoral nerve blocks medically necessary for acute post-operative pain after knee replacement surgery.

Aetna considers treatment of chronic pain post-herniorrhaphy with a nerve block medically necessary to avoid more aggressive treatments (e.g., surgery).

Aetna considers intercostal nerve blocks experimental and investigational for the sole treatment of chronic intercostal neuritis because there is no clinical evidence to support the use of intercostal nerve blocks in the treatment of chronic intercostal neuritis. Intercostal nerve blocks are considered medically necessary for acute intercostal pain, and for chronic intercostal neuritis as part of a comprehensive pain management program.

Aetna considers suprascapular nerve blocks experimental and investigational in the treatment of chronic upper extremity pain because the clinical evidence is not sufficient to permit conclusions on the health outcome effects of a suprascapular nerve block in the treatment of upper extremity pain.

Aetna considers greater occipital nerve blocks experimental and investigational for the diagnosis and treatment of neck and upper back pain because their effectiveness has not been established.

See also CPB 0722 - Selective Nerve Root Blocks, and CPB 0729 - Diabetic Neuropathy: Selected Treatments.
Background

A nerve block is a form of regional anesthesia. Peripheral nerve blocks (PNBs) entail the injection of corticosteroids, local anesthetics, neurolytic agents and/or sclerosing agents into or near peripheral nerves resulting in the temporary interruption of conduction of impulses in peripheral nerves or nerve trunks (somatic and sympathetic nerves). Peripheral nerve blocks can either be “single-injection” -- refers to one-time injection of local anesthetic to the target nerve for peri-operative analgesia and/or surgical anesthesia, or “continuous” -- refers to the percutaneous insertion of a catheter directly adjacent to the target peripheral nerve (s). The latter approach is to provide prolonged nerve block by continuous infusion of local anesthetic for longer procedures, as well as post-operative analgesia. Continuous PNB (cPNB) is primarily used for inpatient procedures, but can also be used in outpatients (Jeng and Rosenblatt, 2012).

Neuropathic pain is a type of pain that can result from injury to nerves, either in the peripheral or central nervous system. Neuropathic pain can occur in any part of the body and is frequently described as a hot, burning sensation. It can result from diseases that affect nerves (such as diabetes) or from trauma, or, because chemotherapy drugs can affect nerves, it can be a consequence of cancer treatment. Among the many neuropathic pain conditions some that can cause neuropathic pain of the extremities are diabetic neuropathy, reflex sympathetic dystrophy syndrome, phantom limb and post-amputation pain. Chronic pain persists over a longer period of time than acute pain and is resistant to most medical treatments. A peripheral nerve block may be performed to diagnose and/or treat neuropathic pain.

Aguirre et al (2012) stated that the most common use of cPNBs is in the peri- and post-operative period but different indications have been described like the treatment of chronic pain such as cancer-induced pain, complex regional pain syndrome or phantom limb pain. The documented benefits strongly depend on the analgesia quality and include decreasing baseline/dynamic pain, reducing additional analgesic requirements, decrease of post-operative joint inflammation and inflammatory markers, sleep disturbances and opioid-related side effects, increase of patient satisfaction and ambulation/functioning improvement, an accelerated resumption of passive joint range-of-motion, reducing time until discharge readiness, decrease in blood loss/blood transfusions, potential reduction of the incidence of post-surgical chronic pain and reduction of costs. Evidence deriving from randomized controlled trials suggests that in some situations there are also prolonged benefits of regional anesthesia after catheter removal in addition to the immediate post-operative effects. Unfortunately, there are only few data demonstrating benefits after catheter removal and the evidence of medium- or long-term improvements in health-related quality of life (QOL) measures is still lacking.

In a review on “Evidence-based interventions for chemotherapy-induced peripheral neuropathy”, Visovsky et al (2007) examined the literature on the prevention or treatment of chemotherapy-induced peripheral neuropathy (CIPN), which included pilot studies, clinical trials, systematic reviews of the literature, and case studies. The Oncology Nursing Society Putting Evidence Into Practice® (PEP) CIPN Team consisted of 2 advanced practice nurses, 2 staff nurses, and a nurse researcher.
The CIPN Team chose not to include animal model-based studies because applicability and generalizability to human populations has not been established. No meta-analyses addressing the prevention or treatment of CIPN were found in the literature. The team searched Medline, the National Library of Medicine’s database. Search terms included chemotherapy-induced peripheral neuropathy, peripheral neuropathy, and neuropathy. Search terms specific to known CIPN interventions also were explored, including human leukemia inhibitory factor, nerve growth factor, neurotrophin-3, exercise and chemotherapy-induced peripheral neuropathy, exercise and neuropathy, diabetes and peripheral neuropathy, vitamin E, tricyclic antidepressants (TCAs), anifostine, calcium/magnesium infusions, carbamazepine, glutathione, alpha lipoic acid, and glutamine. Other search terms were alternative therapy, complementary therapies, herbal therapies, plants-medicinal, herb(s), herbal(s), acupuncture, electric nerve stimulation, high-frequency external muscle stimulation, transelectrical nerve stimulation, spinal cord stimulation, anodyne therapy, pulsed infrared light therapy, social support, psychosocial support, educational interventions, patient education, patient safety, safety, injury, accidents, safety management, protective devices, and capsaicin. The authors concluded that CIPN remains a significant problem for patients receiving chemotherapy for cancer. At present, no interventions for CIPN can be recommended for practice. No rigorously designed studies, meta-analyses, or systematic reviews support any of the interventions discussed, and risk of harm may out-weigh potential benefits.

The American Society of Anesthesiologists Task Force on Chronic Pain Management and the American Society of Regional Anesthesia and Pain Medicine’s practice guidelines on “Chronic pain management” (2010) stated that “Peripheral somatic nerve blocks should not be used for long-term treatment of chronic pain”.

Hartemann et al (2011) stated that the prevalence of painful diabetic neuropathy (PDN) is approximately 20 % in patients with type-2 diabetes and 5 % in those with type-1 diabetes. Patients should be systematically questioned concerning suggestive symptoms, as they are not usually volunteers. As PDN is due to small-fiber injury, the 10 g monofilament pressure test as well as the standard electrophysiological procedures may be normal. Diagnosis is based on clinical findings: type of pain (burning discomfort, electric shock-like sensation, aching coldness in the lower limbs); time of occurrence (mostly at rest and at night); and abnormal sensations (such as tingling or numbness). The DN4 questionnaire is an easy-to-use validated diagnostic tool. Three classes of drugs are of equal value in treating PDN: (i) TCAs; (ii) anticonvulsants; and (iii) selective serotonin-reuptake inhibitors (SSRIs). These compounds may be prescribed as first-line therapy following pain assessment using a visual analog scale (VAS). If the initial drug at its maximum tolerated dose does not lead to a decrease in pain of at least 30 %, another drug class should be prescribed; if the pain is decreased by 30 % but remains greater than 3/10, a drug from a different class may be given in combination.

The American Academy of Neurology (AAN), American Association of Neuromuscular and Electrodiagnostic Medicine, American Academy of Physical Medicine and Rehabilitation (Bril et al, 2011) developed a scientifically sound and clinically relevant evidence-based guideline for the treatment of PDN. The basic
question that was asked was: "What is the efficacy of a given treatment (pharmacological: anticonvulsants, antidepressants, opioids, others; non-pharmacological: electrical stimulation, magnetic field treatment, low-intensity laser treatment, Reiki massage, others) to reduce pain and improve physical function and QOL in patients with PDN"? A systematic review of literature from 1960 to August 2008 was performed, and studies were classified according to the AAN classification of evidence scheme for a therapeutic article. Recommendations were linked to the strength of the evidence. The results indicated that pregabalin is established as effective and should be offered for relief of PDN (Level A). Venlafaxine, duloxetine, amitriptyline, gabapentin, valproate, opioids (morphine sulfate, tramadol, and oxycodone controlled-release), and capsaicin are probably effective and should be considered for treatment of PDN (Level B). Other treatments have less robust evidence, or the evidence is negative. Effective treatments for PDN are available, but many have side effects that limit their usefulness. Few studies have sufficient information on their effects on function and QOL.

The South African Expert Panel's clinical practice guidelines for management of neuropathic pain (Chetty et al, 2012) stated that neuropathic pain (NeuP) is challenging to diagnose and manage, despite ongoing improved understanding of the underlying mechanisms. Many patients do not respond satisfactorily to existing treatments. There are no published guidelines for diagnosis or management of NeuP in South Africa. A multi-disciplinary expert panel critically reviewed available evidence to provide consensus recommendations for diagnosis and management of NeuP in South Africa. Following accurate diagnosis of NeuP, pregabalin, gabapentin, low-dose TCAs (e.g., amitriptyline) and SSRIs (e.g., duloxetine and venlafaxine) are all recommended as first-line options for the treatment of peripheral NeuP. If the response is insufficient after 2 to 4 weeks, the recommended next step is to switch to a different class, or combine different classes of agent. Opioids should be reserved for use later in the treatment pathway, if switching drugs and combination therapy fails. For central NeuP, pregabalin or amitriptyline are recommended as first-line agents. Companion treatments (e.g., cognitive behavioral therapy and physical therapy) should be administered as part of a multi-disciplinary approach. Dorsal root entry zone rhizotomy (DREZ) is not recommended to treat NeuP.

In an evidence-based guideline on "Neuropathic pain interventional treatments", Mailis and Taenzer (2012) states that "Based on limited evidence that selective transforaminal nerve root blocks (extraforaminal root injections, periradicular steroid injections, intransforaminal oxygen-ozone injections and epidural perineural autologous conditioned serum injections can provide up to 8 to 12 weeks of relief from lumbar radicular pain, the task force cannot justify a general recommendation, but suggests that these interventions be used with caution depending on the circumstances, with full disclosure to the patient of the limited evidence and potential risks. Evidence quality: Fair; Certainty: Moderate; Strength of recommendation: Grade C (May recommend depending on circumstances. At least moderate certainty with small net benefit)."

Furthermore, UpToDate reviews on "Treatment of diabetic neuropathy" (Feldman and McCulloch, 2012), "Overview of lower extremity peripheral nerve syndromes" (Rutkove, 2012), and "Epidemiology, clinical manifestations,
diagnosis, and treatment of HIV-associated peripheral neuropathy” (Nardin and Freeman, 2012) do not mention the use of PNBs.

Ashkenazi et al (2010) stated that interventional procedures such as PNBs and trigger point injections (TPIs) have long been used in the treatment of various headache disorders. There are, however, little data on their effectiveness for the treatment of specific headache syndromes. Moreover, there is no widely accepted agreement among headache specialists as to the optimal technique of injection, type, and doses of the local anesthetics used, and injection regimens. The role of corticosteroids in this setting is also being debated. These investigators performed a PubMed search of the literature to find studies on PNBs and TPIs for the treatment of headaches. They classified the abstracted studies based on the procedure performed and the treated condition. These researchers found few controlled studies on the effectiveness of PNBs for headaches, and virtually none on the use of TPIs for this indication. The most widely examined procedure in this setting was greater occipital nerve block, with the majority of studies being small and non-controlled. The techniques, as well as the type and doses of local anesthetics used for PNBs, varied greatly among studies. The specific conditions treated also varied, and included both primary (e.g., migraine, cluster headache) and secondary (e.g., cervicogenic, post-traumatic) headache disorders. Trigeminal (e.g., supraorbital) nerve blocks were used in few studies. Results were generally positive, but should be taken with reservation given the methodological limitations of the available studies. The procedures were generally well-tolerated. The authors concluded that there is a need to perform more rigorous clinical trials to clarify the role of PNBs and TPIs in the management of various headache disorders, and to aim at standardizing the techniques used for the various procedures in this setting.

In summary, there is currently insufficient evidence to support the use of peripheral nerve blocks in the treatment of peripheral neuropathy or other indications.

The Work Loss Data Institute’s guideline on “Neck and upper back (acute & chronic)” (2013) listed greater occipital nerve block (diagnostic and therapeutic) as one of the interventions/procedures that are under study and are not specifically recommended.

In a Cochrane review, Chan et al (2014) evaluated the benefits and risks of femoral nerve block (FNB) used as a post-operative analgesic technique relative to other analgesic techniques among adults undergoing total knee replacement (TKR). These investigators searched the Cochrane Central Register of Controlled Trials (CENTRAL) 2013, Issue 1, MEDLINE, EMBASE, CINAHL, Web of Science, dissertation abstracts and reference lists of included studies. The date of the last search was January 31, 2013. These researchers included randomized controlled trials (RCTs) comparing FNB with no FNB (intravenous patient-controlled analgesia (PCA) opioid, epidural analgesia, local infiltration analgesia, and oral analgesia) in adults after TKR. They also included RCTs that compared continuous versus single-shot FNB. Two review authors independently performed study selection and data extraction. They undertook meta-analysis (random-effects model) and used relative risk ratios (RRs) for dichotomous outcomes and mean differences (MDs) or standardized mean differences (SMDs) for continuous outcomes. They interpreted SMDs according to rule of thumb where 0.2 or
smaller represents a small effect, 0.5 a moderate effect and 0.8 or larger, a large effect.

These investigators included 45 eligible RCTs (2,710 participants) from 47 publications; 20 RCTs had more than 2 allocation groups. A total of 29 RCTs compared FNB (with or without concurrent treatments including PCA opioid) versus PCA opioid, 10 RCTs compared FNB versus epidural, 5 RCTs compared FNB versus local infiltration analgesia, 1 RCT compared FNB versus oral analgesia and 4 RCTs compared continuous versus single-shot FNB. Most included RCTs were rated as low or unclear risk of bias for the aspects rated in the risk of bias assessment tool, except for the aspect of blinding. These researchers rated 14 (31 %) RCTs at high-risk for both participant and assessor blinding and rated 8 (18 %) RCTs at high-risk for one blinding aspect. Pain at rest and pain on movement were less for FNB (of any type) with or without a concurrent PCA opioid compared with PCA opioid alone during the first 72 hours post-operation. Pooled results demonstrated a moderate effect of FNB for pain at rest at 24 hours (19 RCTs, 1,066 participants, SMD -0.72, 95 % confidence interval [CI]: -0.93 to -0.51, moderate-quality evidence) and a moderate to large effect for pain on movement at 24 hours (17 RCTs, 1,017 participants, SMD -0.94, 95 % CI: -1.32 to -0.55, moderate-quality evidence). Pain was also less in each FNB subgroup: single-shot FNB, continuous FNB and continuous FNB + sciatic block, compared with PCA. Femoral nerve block also was associated with lower opioid consumption (IV morphine equivalent) at 24 hours (20 RCTs, 1,156 participants, MD -14.74 mg, 95 % CI: -18.68 to -10.81 mg, high-quality evidence) and at 48 hours (MD -14.53 mg, 95 % CI: -20.03 to -9.02 mg), lower risk of nausea and/or vomiting (RR 0.47, 95 % CI: 0.33 to 0.68, number needed to treat for an additional harmful outcome (NNTH) 4, high-quality evidence), greater knee flexion (11 RCTs, 596 participants, MD 6.48 degrees, 95 % CI ; 4.27 to 8.69 degrees, moderate-quality evidence) and greater patient satisfaction (four RCTs, 180 participants, SMD 1.06, 95 % CI: 0.74 to 1.38, low-quality evidence) compared with PCA. The authors could not demonstrate a difference in pain between FNB (any type) and epidural analgesia in the first 72 hours post-operation, including pain at 24 hours at rest (6 RCTs, 328 participants, SMD -0.05, 95 % CI: -0.43 to 0.32, moderate-quality evidence) and on movement (6 RCTs, 317 participants, SMD 0.01, 95 % CI: -0.21 to 0.24, high-quality evidence). No difference was noted at 24 hours for opioid consumption (5 RCTs, 341 participants, MD -4.35 mg, 95 % CI: -9.95 to 1.26 mg, high-quality evidence) or knee flexion (6 RCTs, 328 participants, MD -1.65, 95 % CI: -5.14 to 1.84, high-quality evidence). However, FNB demonstrated lower risk of nausea/vomiting (4 RCTs, 183 participants, RR 0.63, 95 % CI: 0.41 to 0.97, NNTH 8, moderate-quality evidence) and higher patient satisfaction (2 RCTs, 120 participants, SMD 0.60, 95 % CI: 0.23 to 0.97, low-quality evidence), compared with epidural analgesia. Pooled results of 4 studies (216 participants) comparing FNB with local infiltration analgesia detected no difference in analgesic effects between the groups at 24 hours for pain at rest (SMD 0.06, 95 % CI: -0.61 to 0.72, moderate-quality evidence) or pain on movement (SMD 0.38, 95 % CI: -0.10 to 0.86, low-quality evidence). Only 1 included RCT compared FNB with oral analgesia. These researchers considered this evidence insufficient to allow judgment of the effects of FNB compared with oral analgesia. Continuous FNB provided less pain compared with single-shot FNB (4 RCTs, 272 participants) at 24 hours at rest (SMD -0.62, 95 % CI: -1.17 to -0.07, moderate-quality evidence)
and on movement (SMD -0.42, 95 % CI: -0.67 to -0.17, high-quality evidence). Continuous FNB also demonstrated lower opioid consumption compared with single-shot FNB at 24 hours (3 RCTs, 236 participants, MD -13.81 mg, 95 % CI: -23.27 to -4.35 mg, moderate-quality evidence). Generally, the meta-analyses demonstrated considerable statistical heterogeneity, with type of FNB, allocation concealment and blinding of participants, personnel and outcome assessors reducing heterogeneity in the analyses. Available evidence was insufficient to allow determination of the comparative safety of the various analgesic techniques. Few RCTs reported on serious adverse effects such as neurological injury, post-operative falls or thrombotic events. The authors concluded that following TKR, FNB (with or without concurrent treatments including PCA opioid) provided more effective analgesia than PCA opioid alone, similar analgesia to epidural analgesia and less nausea/vomiting compared with PCA alone or epidural analgesia. The review also found that continuous FNB provided better analgesia compared with single-shot FNB; RCTs were insufficient to allow definitive conclusions on the comparison between FNB and local infiltration analgesia or oral analgesia.

Bauer et al (2014) noted that pain following TKR is a challenging task for healthcare providers. Concurrently, fast recovery and early ambulation are needed to regain function and to prevent post-operative complications. Ideal post-operative analgesia provides sufficient pain relief with minimal opioid consumption and preservation of motor strength. Regional analgesia techniques are broadly used to answer these expectations. Femoral nerve blocks are performed frequently but have suggested disadvantages, such as motor weakness. The use of lumbar epidurals is questioned because of the risk of epidural hematoma. Relatively new techniques, such as local infiltration analgesia or adductor canal blocks, are increasingly discussed. The present review discussed new findings and weighted between known benefits and risks of all of these techniques for TKR. Femoral nerve blocks are the gold standard for TKR. The standard use of additional sciatic nerve blocks remains controversial. Lumbar epidurals possess an unfavorable risk/benefit ratio because of increased rate of epidural hematoma in orthopedic patients and should be reserved for lower limb amputation; peripheral regional techniques provide comparable pain control, greater satisfaction and less risk than epidural analgesia. Although motor weakness might be greater with FNBs compared with no regional analgesia, new data pointed towards a similar risk of falls after TKR, with or without peripheral nerve blocks. Local infiltration analgesia and adductor canal blockade are promising recent techniques to gain adequate pain control with a minimum of undesired side-effects. The authors concluded that FNBs are still the gold standard for an effective analgesia approach in knee arthroplasty and should be supplemented (if needed) by oral opioids. An additional sciatic nerve blockade is still controversial and should be an individual decision. Moreover, they stated that large-scale studies are needed to reinforce the promising results of newer regional techniques, such as local infiltration analgesia and adductor canal block.

An UpToDate review on “Total knee arthroplasty” (Martin et al, 2014) states that “Increasingly, patients are managed with femoral nerve blocks in order to reduce the complications and the delay in rehabilitation associated with general anesthesia and with indwelling epidural catheters. Patient-controlled analgesia (PCA) can be useful in the post-arthroplasty setting. Subsequently, oral opioid analgesics may be used. Pain control after total knee replacement has improved
considerably with increasing use of multimodal pain management strategies. This typically includes “preemptive” management with acetaminophen, cyclooxygenase-2 (COX-2)-selective nonsteroidal antiinflammatory drugs (NSAIDs), femoral nerve blocks, regional anesthetics, and periarticular injections”.

CPT Codes / HCPCS Codes / ICD-9 Codes

**Peripheral Nerve Blocks**

CPT codes covered if selection criteria are met:

64400 -
64450

ICD-9 codes covered if selection criteria are met:

338.11 - Acute pain
338.19
338.21 - Chronic pain
338.28

**Chronic Pain Post Herniorrhaphy**:

CPT codes covered if selection criteria are met:

64425

ICD-9 codes covered if selection criteria are met (not all inclusive):

550.00 - Hernia of abdominal cavity
553.9

**Intercostal Nerve Blocks**:

CPT codes not covered for indications listed in the CPB:

64420 -
64421

ICD-9 codes not covered for indications listed in the CPB (not all inclusive):

353.8 Other nerve root and plexus disorders [intercostal neuritis]

**Suprascapular Nerve Blocks**:

CPT codes not covered for indications listed in the CPB:

64418

ICD-9 codes not covered for indications listed in the CPB (not all inclusive):
The above policy is based on the following references:

11. Rutkove SB. Overview of lower extremity peripheral nerve syndromes. UpToDate [serial online]. Waltham, MA: UpToDate; reviewed November 2012.


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