



CLINICAL GUIDELINES

CMM-612: Grafts

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EviCore

By ~~EVERNORTH~~

EviCore healthcare Clinical Decision Support Tool Diagnostic Strategies: This tool addresses common symptoms and symptom complexes. Imaging requests for individuals with atypical symptoms or clinical presentations that are not specifically addressed will require physician review. Consultation with the referring physician, specialist, and/or individual's Primary Care Physician (PCP) may provide additional insight.

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CMM-612.1: General Guidelines

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Application of Guideline

- The determination of medical necessity for grafts (orthobiologics) is always made on a case-by-case basis.
- For additional timing and documentation requirements, see **CMM-600.1: Prior Authorization Requirements**.

Health Equity Considerations

Health equity is the highest level of health for all individuals; health inequity is the avoidable difference in health status or distribution of health resources due to the social conditions in which individuals are born, grow, live, work, and age. Social determinants of health are the conditions in the environment that affect a wide range of health, functioning, and quality of life outcomes and risks. Examples include the following: safe housing, transportation, and neighborhoods; racism, discrimination, and violence; education, job opportunities, and income; access to nutritious foods and physical activity opportunities; access to clean air and water; and language and literacy skills.

CMM-612.2: Recombinant Human Bone Morphogenetic Protein (rhBMP-2) (InFuse®)

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CMM-612.2: Recombinant Human Bone Morphogenetic Protein (rhBMP-2) (InFuse®)

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Application of Policy Section

- The clinical criteria in this policy section are intended to only address the scope and clinical indications for Recombinant human bone morphogenetic protein – 2 (rhBMP-2) (InFuse®) in **spinal fusion**.
 - This policy is not intended to address Recombinant human bone morphogenetic protein – 2 (rhBMP-2) (InFuse®) for use in the appendicular skeleton (e.g., tibial fracture non-union repair surgery).
- These criteria are developed to manage individuals that are considered **very unlikely to fuse without rhBMP-2**.
 - Individuals that are considered very likely to fuse without rhBMP-2 include the following: most pediatric individuals; healthy individuals undergoing one-level lumbar fusion procedures; and healthy individuals undergoing routine anterior and posterior cervical fusions. For specific criteria, see the applicable surgery type for which rhBMP-2 is being requested.

Recombinant Human Bone Morphogenetic Protein (rhBMP-2) (InFuse®) Indications

Recombinant human bone morphogenetic protein – 2 (rhBMP-2) (InFuse®) is considered **medically necessary** when performed for ANY of the following procedures when ALL of the associated criteria have been met:

Anterior or Posterior Cervical Fusion

- The individual does not have any known contraindications including pregnancy or hypersensitivity/allergy.
- Performed for an associated approved spinal fusion
- The individual has EITHER of the following conditions that would place the individual at high risk of fusion failure without rhBMP-2:
 - neuromuscular scoliosis
 - occipitocervical pathology

Anterior Lumbar Interbody Fusion (ALIF)

- Performed for an associated approved **stand-alone** anterior lumbar interbody fusion (ALIF)
- The individual does not have any known contraindications including pregnancy or hypersensitivity/allergy.
- The individual is skeletally mature

Posterolateral Lumbar Fusion (PLF), Posterior Lumbar Interbody Fusion (PLIF), and Transforaminal Lumbar Interbody Fusion (TLIF)

- The individual does not have any known contraindications including pregnancy or hypersensitivity/allergy.
- Performed for an associated approved spinal fusion
- There is a high risk of fusion failure due to ANY of the following clinical scenarios:
 - High risk for fusion failure using traditional autogenous bone grafting in ANY of the following planned surgeries:
 - revision spinal fusion for pseudoarthrosis following previous failed spinal fusion
 - spinal fusion in a compromised graft bed (e.g., prior radiation therapy)
 - thoracolumbar fusion for correction of spinal deformity performed at more than one level
 - multi-level spinal fusion (i.e., 3 or more spinal motion segments)
 - long posterior fusions to the sacrum in adult individuals undergoing correction or stabilization of spinal deformity
 - single-level lumbar or lumbosacral fusion (with or without interbody) when there is Meyerding Grade III or greater spondylolisthesis
 - High risk of fusion failure using traditional autogenous bone grafting due to ANY of the following metabolic or other conditions:
 - current smoker
 - insulin diabetic with poor glycemic control
 - chronic renal disease
 - alcohol use disorder (AUD)
 - corticosteroid dependence
 - neuromuscular scoliosis
 - traditional autogenous bone graft is not available, is inadequate in volume, or is of poor quality due to ANY of the following:
 - rheumatoid arthritis
 - osteoporosis
 - trauma with concomitant pelvic injury
 - individuals at high risk for post-harvest iliac crest fracture

CMM-612.3: Bone Marrow Aspirate Concentrate (BMAC)

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CMM-612.3: Bone Marrow Aspirate Concentrate (BMAC)

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Definition/Technique for BMAC

- Bone Marrow Aspirate Concentrate (BMAC)** is intended as a high concentration of viable connective tissue osteoprogenitor cells.
- The aspiration technique requires that no more than 2 mL of blood is aspirated from any given area in the iliac crest to avoid dilution with peripheral blood. The aspiration of 80 to 100 cc of marrow from the iliac crest is performed using a **sequential technique** (Muschler) through a small incision made over the iliac crest through different trajectories until the desired amount is obtained. (A single aspiration instead of using a sequential technique produces the lowest yield of viable cells.) The aspirate is then transferred to the concentrating device (centrifuge) that removes the red blood cell fractions and plasma.
 - To fabricate composite hybrid grafts, the BMAC can be admixed to the osteoconductive biocompatible substrates of choice (e.g., collagen sponges, hydroxyapatite [HA] substrates and other porous ceramics as well as particulate demineralized bone matrix [DBM]).

BMAC Indications

Bone marrow aspirate concentrate (BMAC) is considered **medically necessary** when ALL of the following criteria have been met:

- BMAC is obtained using the sequential technique (as outlined in the **Definition/Technique for BMAC** section)
- Used as hybrid or composite grafting (combined osteoinductive and osteoconductive) including autologous corticocancellous iliac crest bone graft (ICBG)
- Performed for an associated approved **postero-lateral lumbar spinal fusion** with or without spinal instrumentation

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CMM-612.4: Bone Graft Substitutes

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- See **Bone Graft Substitutes** in **CMM-615: Non-Indications**.

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Not Medically Necessary

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Recombinant Human Bone Morphogenetic Protein (rhBMP-2) (InFuse®)

- Recombinant human bone morphogenetic protein – 2 (rhBMP-2) (InFuse®) performed without meeting the criteria in **CMM-612.1: General Guidelines** and the applicable surgery section of **CMM-612.2 (anterior or posterior cervical fusion; ALIF; or, PLF, PLIF, and TLIF)** is considered **not medically necessary**.
- Recombinant human bone morphogenetic protein – 2 (rhBMP-2) (InFuse®) is considered **not medically necessary** when performed for EITHER of the following (unless there is a high risk for fusion failure without rhBMP-2):
 - routine anterior or posterior cervical fusion surgery
 - routine pediatric spine fusion procedures including correction of adolescent idiopathic scoliosis

Bone Marrow Aspirate Concentrate (BMAC)

- Bone marrow aspirate concentrate (BMAC) is considered **not medically necessary** when ANY of the following apply:
 - BMAC is combined with allograft or synthetic scaffold as a substitute for autologous bone graft for spinal fusion with or without spinal instrumentation
 - application to cervical/thoracic spinal fusion surgery with or without instrumentation
 - anterior spinal fusion surgery with or without instrumentation
 - application to spinal decompression without fusion
 - disc arthroplasty surgery
 - use of lumbar interspinous devices
 - use of unfractionated BMAC
 - infection (e.g., discitis, epidural abscess, osteomyelitis)
 - primary or metastatic neoplastic disease of the spine

Bone Graft Substitutes

- ALL of the following bone graft substitutes (for the enhancement of bone healing) are considered **not medically necessary**:
 - rhBMP-7 (i.e., OP-1™)
 - INFUSE/MASTERGRAFT™ posterolateral revision device
 - human amniotic membrane bone graft substitute
 - cell-based substitutes other than a bone marrow aspirate (e.g., mesenchymal stem cell therapy, Osteocel®, ViviGen®, Trinity®) when used to enhance bone healing

- human growth factors (e.g., fibroblast growth factor, insulin-like growth) when used to enhance bone healing
- allograft bone graft substitutes used exclusively as stand-alone stabilization devices for fusion (e.g., TruFuse® for isolated facet fusion, NuFix™ for isolated facet fusion, BacFast® HD for isolated facet fusion)
- bone graft substitutes used to reduce donor site morbidity (e.g., iliac crest donor site reconstruction)
- ceramic-based products (e.g., β -TCP)
- OptiMesh® deployable grafting system

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The inclusion of any code in this table does not imply that the code is under management or requires prior authorization. Refer to the applicable health plan for management details. Prior authorization of a code listed in this table is not a guarantee of payment. The Certificate of Coverage or Evidence of Coverage policy outlines the terms and conditions of the member's health insurance policy.

Code	Code Description/Definition
+20930	Allograft, morselized, or placement of osteopromotive material, for spine surgery only (List separately in addition to code for primary procedure)
+20931	Allograft, structural, for spine surgery only (List separately in addition to code for primary procedure)
+20936	Auto graft for spine surgery only (includes harvesting the graft); local (e.g., ribs, spinous process, or laminar fragments) obtained from same incision (List separately in addition to code for primary procedure)
+20937	Auto graft for spine surgery only (includes harvesting the graft); morselized (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
+20938	Auto graft for spine surgery only (includes harvesting the graft); structural, bicortical or tricortical (through separate skin or fascial incision) (List separately in addition to code for primary procedure)
+20939	Bone marrow aspiration for bone grafting, spine surgery only, through separate skin or fascial incision (List separately in addition to code for primary procedure).

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Evidence Discussion (CMM-612)

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Evidence Discussion (CMM-612)

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Grafts

Risks and complications associated with the use of recombinant human bone morphogenetic protein-2 (rhBMP-2) have been well documented in the literature.^{40,55,67,68,103} Complications include, but are not limited to, the following: swelling; edema; heterotopic ossification; osteolysis; seroma/hematoma; infection; arachnoiditis; dysphagia/airway obstruction (anterior cervical surgery); and neurological deficits (myelopathy, radiculopathy).^{40,55,67,68,103} Given the potential possibility for serious complications, proper surgical candidacy selection is critical to minimize the risk benefit ratio.

There have been over 20 randomized control trials which have shown equivalent or superior efficacy of rhBMP-2 to iliac crest bone graft (ICBG).^{67,68} The literature supports the use of rhBMP-2 for stand-alone anterior lumbar interbody fusion (ALIF).^{20,66,67,68,77,103} rhBMP-2 is also supported for posterolateral lumbar fusion (PLF), posterior lumbar interbody fusion (PLIF), and transforaminal lumbar interbody fusion (TLIF) when there is high risk for nonunion with autogenous bone graft or in those individuals with inadequate or poor quality autogenous bone available.^{20,66,67,68,77,103} The North American Spine Society (NASS) *Coverage Policy Recommendations: Recombinant Human Bone Morphogenetic Protein (rhBMP-2)* (2014) includes the following high-risk conditions: revision posterior fusion; individuals with poor quality or unavailable iliac crest autograft (trauma with concomitant pelvic injury, rheumatoid arthritis, etc.); multilevel surgeries (>3 levels), particularly those extending to the sacrum or pelvis; elderly individuals with osteoporosis; previous radiation or other insult to the fusion bed; metabolic factors that are likely to interfere with proper autograft incorporation (e.g., smokers and diabetics).⁷⁷

Use of rhBMP-2 is not recommended for routine single level posterior/posterolateral fusions in healthy adults and routine pediatric spine fusion procedures (e.g., adolescent idiopathic scoliosis). Due to risks of airway obstruction and dysphagia with the use of rhBMP-2 as an adjunct in cervical spine surgery,^{88,101} it is only recommended for individuals at very high risk for fusion failure (neuromuscular scoliosis, occipitocervical pathology) and not for routine anterior and posterior cervical fusion procedures.⁷⁷ rhBMP-2 is not recommended for individuals who are skeletally immature.⁵⁴ It should also be noted that there is insufficient evidence to support the use of rhBMP-7.^{10,33}

The literature pertaining to the use of bone marrow aspirate concentrate (BMAC) in spine surgery consists mainly of small observational studies.^{4,12,51,56,76,104} There

have been few randomized controlled trials, and the trials contained low numbers of participants.^{51,56} Although the studies have supported the use of BMAC, strong evidence-based conclusions are unable to be made at this time.

There is also lack of sufficient high-level evidentiary support for the use of the following: platelet rich plasma; mesenchymal stem cell therapy; human amniotic membrane bone graft substitute; human growth factors (e.g., fibroblast growth factor, insulin-like growth); bone graft substitutes used to reduce donor site morbidity; ceramic based products; allograft graft substitutes used exclusively as stand-alone stabilization devices for fusion; OptiMesh® deployable grafting system; and, INFUSE/MASTERGRAFT™ posterolateral revision device for the enhancement of bone healing.^{22,26,33,38,42,43,53,64,70,71,72,85,97}

As risk for major complications exists with grafting procedures, it is critical to optimally ensure that individuals receive treatment that is appropriate, safe and effective. Although the use of any coverage criteria includes the possible risk of delayed care, application of evidence based criteria best ensure patient safety and highly outweigh any clinical harms.

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