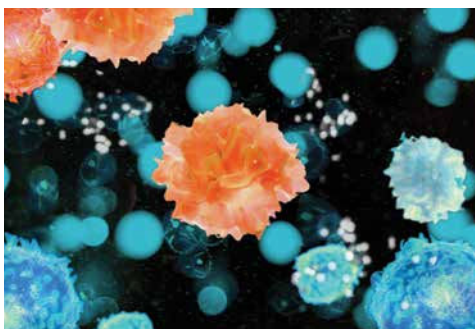


## REGENERATIVE MEDICINE

# Bone marrow aspirate concentrate (BMAC) injections



## About the procedure

Bone marrow aspirate concentrate (BMAC) is a promising, non-surgical regenerative treatment for various orthopedic injuries, including mild to moderate osteoarthritis, disc degeneration and soft tissue injuries. This therapy uses concentrated regenerative cells that are harvested from your own bone marrow to help the body heal itself. These cells, when injected directly into an injury site, prompt a rapid and efficient restoration of the tissue, returning it to a more healthy state by stimulating the body's natural healing response.

### HOW DOES IT WORK?

BMAC contains cells that are responsible for regenerating and rebuilding tissues and organs. These cells play a critical role in the body's natural healing process. When the body is injured, regenerative cells mobilize to the injury site to help it heal. With injuries or areas of degeneration that may be caused by aging or wear and tear, there may not be enough regenerative cells present for optimal healing. BMAC helps to overcome this problem by directly supplying concentrated regenerative cells to the injured or degenerated area through an injection of concentrated healing agents and cells. When these cells are introduced to the injured area, they initiate the body's natural healing process, generating new, stronger tissue.

The regenerative cells are harvested from your own bone marrow by a board-certified radiologist with advanced training in this procedure.

The site of extraction is locally numbed to minimize discomfort. Bone marrow is removed via needle aspiration from the back of your pelvis from an area called the iliac crest. The sample is placed in a centrifuge, which separates the platelets and the regenerative cells from the other components in order to generate a powerful concentrate to promote healing. The concentrated regenerative cells and healing components contained within bone marrow concentrate is introduced into the injured area using imaging guidance to ensure proper placement.

Immediately following the injection, the regenerative cells cause a release of cellular growth factors that trigger the body's healing response and rejuvenate the diseased cells. They also exchange ribonucleic acid (RNA) with the abnormal cells to restore their vitality, and differentiate into cells required for

repair of the ambient tissue. You may experience inflammation and soreness as the body's healing process begins. In fact, there may be little symptom relief for a period of 4 to 8 weeks. You will want to treat the injected area with care, like you would with a new injury, and avoid taking anti-inflammatory medications. Depending on the area that is injured, crutches or a sling may be recommended to minimize the use of the area as healing begins.

In the months that follow, tissue repair occurs. As this tissue matures, there is repair and strengthening of the tendons, ligaments and muscles of the injury site. In joints or discs, decreased inflammation and formation of new cartilage or disc material contributes to the healing process.



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## ARE BMAC INJECTIONS SAFE?

Research and clinical data show that BMAC injections are extremely safe, with minimal risk for any adverse reaction or complication. Because the regenerative cells are harvested from your own bone marrow, there is no concern for rejection or disease transmission. There is a small risk of infection from any injection into the body, but this is rare.

We do not use processed products obtained from other individuals such as umbilical cord-derived cells, placental-derived products or amniotic-based preparations. Multiple studies have confirmed that these birth tissue products contain no live cells. Further, since they come from another human being, there is a chance of disease transmission. If the manufacturing process is not conducted with the highest sterile procedure standards, the product may become contaminated, resulting in an infection when injected. Because of these risks, and lack of any demonstrable benefit, we have never used processed products in our centers.

## What to expect from your procedure

### BEFORE

- **Avoid taking anti-inflammatory medications**, such as ibuprofen, Naproxen and aspirin, for 10 days prior to the procedure and 3 months post procedure. These medications block the intended healing response facilitated by the post-injection inflammation.
- **Do not take any oral or injected steroids** for 8 weeks prior to and 3 months post injection.
- **If you have an active infection** and are taking antibiotics, the procedure should be postponed until the infection is treated.
- **Most patients require only a single bone marrow aspirate concentrate injection**, depending on the degree of injury. However, in challenging cases, if you experience significant relief that plateaus, a second injection may be indicated.
- **Payment for your procedure is due in full at the time of service.** Regenerative medicine procedures

are not covered by insurance and do not count toward your deductible. Some health savings accounts and health reimbursement accounts may cover the cost of the procedures - check with your HSA or HRA administrator to learn more about your specific plan allowances.

### DURING

- **The entire process takes approximately 90 minutes** to collect, concentrate and inject into an injury site and you will go home the same day.

### AFTER

- **You will need someone to drive you home** following the procedure.
- **Avoid icing the treated area** for 2 weeks following the procedure.
- **You may experience an “achy” soreness** at the site of the injury in the hours and days following the injection. The effect can last for several days, gradually decreasing as healing and tissue repair occurs.

- **To maximize the healing process, no strenuous activity** is advised for 2 weeks following your procedure. Activity may be increased as tolerated.
- **Following this period of rest**, you may resume normal day-to-day activities and light exercise.
- **A customized physical therapy program** may be recommended to enhance the success of the treatment.
- **Most patients begin noticing improvement within 4 to 8 weeks** following the procedure. Increased stability and strength are typically reported along with a decrease in pain. These improvements will continue for 6 to 9 months following this procedure.
- **You will need to schedule a follow-up appointment 2 weeks after** your procedure. We will continue to check in with you at regular intervals for the next 12 months to evaluate your response to therapy.



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