Regenerative/Stem Cell Medicine Q & A

What is Regenerative/Stem Cell medicine?

Preliminary clinical studies indicate that regenerative/stem cell medicine may be beneficial to patients with most chronic pain issues. First Team Medical Clinics offers regenerative/stem cell injections to patients with pain in the shoulder, back, neck, knee, hip or other locations. This treatment is presently considered as “cutting edge” technology in contemporary health care. “Its primary application is the treatment of damaged, degenerated body tissue. This action is to enable the regeneration of human body parts, where cells and tissues can be engineered to grow healthy, functional organs (and musculoskeletal tissues) to replace diseased or degenerated ones; new genes can be introduced in to the body to combat disease.” US Federal Drug Administration- November 2017

“Stem cells can generate replacements for cells that are lost to injury or disease. This is no longer stuff of science fiction. This is the practical promise of modern applications of regenerative medicine.” FDA Commissioner, Scott Gottlieb, MD.

Experts expect regenerative medicine to expand rapidly as the aging and more interactive baby boomer generation seeks alternative and unconventional treatments, especially in the wake of rising demand for tissues and organs.

NIH: “As tech-savvy older generations retire and as risk-prone younger population segments seek unconventional and “futuristic” remedies, cutting-edge treatments like stem cells with growth factors, hyaluronic acid and cytokines will increasingly grow in demand and enter the mainstay of healthcare.”

Although the popularity within orthopedics physical medicine, and pain management is fairly recent, placental tissue derived products have a 100-year history of being used in other disciplines for their healing properties. The earliest record of research regarding stem cell therapy dates back to 1913 where an article appeared in the Journal of American Medical Association (JAMA) detailing the use of stem cells in the treatment of skin burn victims.
Regenerative/Stem Cells are undifferentiated cells that are harvestable from various tissues within our own human body; primarily fat tissue, bone marrow, and blood sources. These cells have the capabilities to differentiate into ANY other type of cell in the human body, as well as dividing into more stem cells. For example, stem cells can regenerate and renew cell to related tendon, nerve, ligament, cartilage, and bone tissue. Unfortunately, when tissues are aged or damaged, they can no longer produce healing stem cells as effectively as they once did. These “endogenous stem cells” are harvested from our own body, therefore having the same DNA, therefore eliminating the possibilities of tissue rejection. BUT these stem cell sources are also known to be age dependent and often subject to areas of relative toxicity (adipose) or the harvesting is very difficult or potentially susceptible to infection (bone marrow harvesting). Therefore, the source of your stem cells is very important, especially relating to the rate at which they multiply within the injected area:

Dr. Neil Riordan, PA, PhD states: “Not only does the number of Mesenchymal Stem Cells (MSCS) decline as we age, but so does their robustness. Their robustness is determined by a few main factors: the rate at which they multiply, the number of trophic factors they produce, and the rate of deterioration.” In addition: “MSCs in older individuals do not multiply, or double as quickly, nor do they produce healing trophic factors as do cells in younger individuals.”

Are there different types of Stem Cell Therapies?

There are two basic sources for regenerative medicine/stem cells, those from your own body and those from fetal tissue sources. We do have our own stem cells that are present in our own bodies all the time. In order to use these Stem Cells for treatment, they have to be “harvested” from your body, and then injected back into the area of concern. These “harvesting” sources cab be from our own bone marrow, plasma of our blood, or from our adipose/fat tissue. These procedures and its effectiveness are dependent upon the age and the source of the cells. A very popular form of treatment is Platelet Rich Plasma (PRP) which provide the growth factors that contribute to tissue regeneration, by assisting in stem cell movement, production, differentiation and extra-cellular matrix creation. PRP is used primarily in the Dayton by orthopedic specialists and pain management practices.

What is the Best Source for MSCs?

Dr. Neil Riordon: “Younger Cells, as found in umbilical cords, are more energetic in the system, and hence have a better chance of persisting and being more effective.” Riordan believes “the best stem cells; the ones with the best healing and regenerative powers, as well as the fewest complications, are adult stem cells which can obtained from donated umbilical cord blood, or

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**VARIATIONS IN ACTIVITY OF STEM CELL TYPES**

**ADULT (BONE MARROW, FAT)**
- **ADULT AGE:** One stem cell can multiply every 48 hours, leading to 32,000 cells in 30 days.
- **AGE 65:** One stem cell can multiply every 60 hours, leading to only 200 cells in 30 days.

**PLACENTAL ALLOGRAFT**
- **AGE 0:** Stem cells multiply every 20-24 hours, leading to 1 billion stem cells in 30 days.
umbilical chord tissue, from healthy live births." “So, umbilical MSCs which come from discarded tissue are just as good as your own MSCs”.

This explains why umbilical chord MSCs are so potent- they come from a very young, healthy human being. We have found that Umbilical cord MSCs are the most potent when compared to bone marrow, fat, and menstrual cell MSCs, all of which we’ve used and have been extensively tested.

How does it work?

The body’s stem cells are responsible for stimulating the healing process and renewing and repairing injured tissues. These cells are capable of changing into the specific types of cells the body needs to promote tissue restoration. Regenerative cell injections can relieve pain and improve range of motion in your joints by treating the damaged connective tissue. When injected into injured area, the theory is that the placental allograft tissues stimulate repair and your body regenerates only what’s needed.

Regenerative Cell injection therapy works by injecting the placental allograft directly into the tissue that needs repair. Once in place, these cells will produce chemicals that signal a reduction in inflammation and encourage cell reparation. These cells have specific properties and actions including, eliminating scar tissue accumulation, reducing infection, and then replacing the previously damaged tissue with newly differentiated cells. It was recently determined that the actions of mesenchymal stem cells can occur for up to one year after introduction into the damaged area.

What is a Regenerative/Stem cell Medicine “injection”?

Regenerative cell injections are administered directly into the joint or tissue where the stem cells develop into the specific type of cells that are lacking or damaged. This type of therapy works with your body to give you the best whole self without surgery or prescription medication. Our clinicians first perform a thorough physical exam and diagnoses the underlying cause of your condition to determine whether stem cell injections are the best course of treatment for you. Up to date x-rays are recommended to assure the present condition of the joint in question. Our Nurse Practitioner is certified in joint injection procedures and performs the injection process using color ultrasound guidance to target the Stem Cells allograft in the proper location within the effected joint.

The ACTIONS of Regenerative Medicine allografts when injected into a damaged, degenerated joint:
Anti-inflammatory
Regenerative (replaces damaged tissues)

AND, some clinical research shows evidence that suggests that stem cells can be in an area repairing damaged tissues for up to one year after insertion!

**Our clinical team may recommend regenerative/stem cell therapy to promote healing and prevent pain from:**

- Osteoarthritis (OA): degenerative arthritis and joint disease
- Partially torn or sprained ligaments: such as ACL tears or ankle sprains
- Torn or partially removed cartilage: such as torn knee meniscus
- Sprained or surgically repaired tendons: including shoulder rotator cuff tears
- Repetitive stress injuries: from chronic overuse

Other conditions that have been shown to be clinically responsive to regenerative medicine are:

- Sprains and strains
- Back and neck injuries
- Diabetic neuropathy
- Carpal Tunnel Syndrome
- Chronic plantar fasciitis
- Heel pain
- Chronic joint pain
- Hip injuries
- Tennis and golfer’s elbow
- Achilles tendonitis
- Jumper’s knee
- Ligament tears, injuries
- Lumbar, spine, disc pain and dysfunction
- Muscle injuries
- Pulled hamstring
- Shoulder injuries
- ACL injuries
- Joint injuries
- Quadriceps injuries
- Arthritis
- Rheumatoid Arthritis
- Fractures
- Post-surgery healing
- Soft tissue damage
- Wounds
- Burns
- Aesthetic, antiaging applications
- And much more!

Stem cell research and treatment is occurring throughout the world. Within the United States, most major universities and research hospitals are involved with the study and remedy via regenerative medicine. Here in Ohio, it is known that The Ohio State University and The Cleveland Clinic are both studying the effectiveness of stem cell treatment for terminal nervous system disorders, as well as, some forms of cancer.

**How does Regenerative cell therapy injections compare to other more conventional treatment for joint pain and degeneration?**
What are the sources of these placental stem cells?

These cells are harvested from the placental tissues that come from healthy, full term C-section live births, in a hospital setting. These tissue samples are from the umbilical cord connective tissue (Wharton’s Jelly) which provides the blood supply to the developing fetus. These stem cells are deemed as “immune-neutral” and then the tissues are thoroughly processed and tested prior to qualifying as functioning tissue samples. “Immune-neutral” means that these cells have yet to establish any genetic or immune identification that would cause rejection. These tissues are NOT associated in any way with procedures collected from fetal abortions. It is actually against federal law to use aborted fetal tissue for stem cell research or therapy.

The umbilical cord tissues that we utilize as the source of our allografts are FDA allowed for joint injections. They are comprised of the umbilical cord mesenchymal stem cells, growth factors, proteins and Hyaluronic Acid. This is to promote the development of a favorable environment within the injected joint area for stem cell activity. These are donated placental (umbilical cord) tissues from pre-screened, healthy expectant mothers, after an uncomplicated, successful C-section (the placenta is the extra tissue left after the birth). These placental tissues and fluids are then processed in “clean room” environment that exceeds American Association of Tissue Banks (AATB) standards, and are subjected to stringent United States Pharmacopeia (USP) testing.

Our supplier of allograft tissue is Predictive Biotech, headquartered in Salt Lake City Utah. Below is an in-depth brochure/chart that we supply to our stem cell candidates, regarding the different sources and elements of the stem cell injection therapy. It also provides a comparison of the different available sources of stem cells. If you wish to investigate our allograft source: [https://www.predictivebiotech.com](https://www.predictivebiotech.com)
Are you trying to avoid joint replacement surgery? If the joint is damaged, yet not severely degenerated, stem cell injection therapy has been found to renew and replace the damaged tissues. Patients opt to avoid replacement surgery for a number of reasons, but primarily these three: prolonged down time from their active lifestyles, some have been told they are too young for joint replacement surgery, they fear surgery or they have complicated health issues that may make a surgery an unacceptable, problematic option.

We are often asked: How can patients determine if regenerative/stem cell medicine is the right choice?

Not every patient will be a good candidate for regenerative/stem cell injection treatment. Patients who are interested in treatments with the placental/umbilical allograft should discuss the issue with one of the clinicians at First Team Medical Clinics. The doctor will be able to explain the possible benefits of stem cell injection therapy, as well as any other treatment options that may be appropriate. We have found that patients who are diabetic heal slower, as previously reported and therefore do not get noticeable results for a more prolonged period.

Remember, long before your symptoms show up, there are things that our present medical system is NOT addressing: A loss of function of the joint, the loss of structural integrity of the joint, as well as loss of ideal chemistry within the joint. If we can help you, we will tell you, AND, if we can’t help you, we will tell you.

Note: The National Institutes of Health defines regenerative medicine as the “process of creating living, functional tissues to repair or replace tissue or organ function lost due to age, disease, damage or congenital defects.

Arkansas State Law enacted April 2017

- The Emerging Therapies Act of 2017 was signed into law by Governor Asa Hutchinson, granting pilot access to State Employees and Teachers to Regenerative Injection Therapies as a treatment of orthopedic conditions on their health care plans.
- Arkansas now leads the country as the first state to adopt a policy to include these emerging therapies in state employee health insurance.
- “This could potentially save the state $100 Million using regenerative medicine as an alternative to surgery or pharmaceuticals for orthopedic conditions,” states Morgan Pile, Executive Vice President of Regenerative Medicine Solutions.
- “Amniotic tissue have been shown to be effective treatments with up to an 80% savings of surgical costs with virtually absent complications.”
Diane C.: “I learned a lot going through the program after my SC injection. I’m back to working out and doing yoga without pain”.

Sharon B.: “I had both knees injected after many years with knee replacement joints, I have had some remaining pain but they are feeling different and have “bounce”. I feel that this will add years to my “new” knees I would do it again”.

Ray B.: “Great results, my thumbs are back to fully functional!”

Sonya B.: “I wish I had heard of Regenerative Medicine therapy sooner. I missed out on several activities because I couldn’t walk very well. I am improving every day and I like it! Thanks to all here at First Team Medical!”

Pauletta A.: “I am very pleased with the outcome of the stem cell therapy. I do often recommend it to others, the staff was great and all the help they provided.”

Doug T: “After 40+ years of running, my knees were wearing out. First Team Medical taught me new exercises after the injection for knee and leg strength and flexibility; and introduced me to Stem Cell Therapy. Good as New!”

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**COMPARE COSTS**

| National average for KNEE REPLACEMENT: | $46,000-76,000 |
| Out of Pocket Deductible, CO-INSURANCE AND REHAB: | $4,000-15,000 |

For more information and a free CONSULTATION Call: 937-426-9265