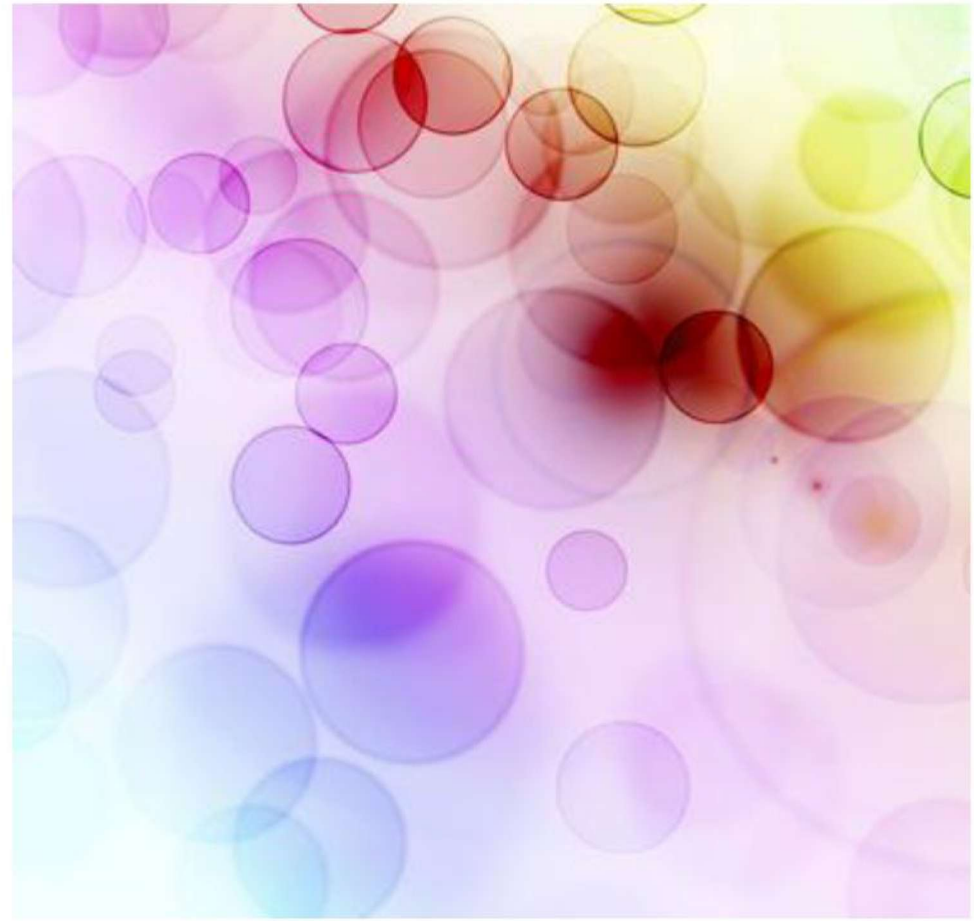
advancells
THE POWER TO CURE

Cardiovascular Disorders

Information for patients

Cardiovascular Disorder Treatment with Stem Cells from your own **Bone Marrow / Adipose Tissue**



Cardiovascular Disorders

Cardiovascular Disorders include a variety of conditions affecting the routine functioning of the Heart. It may include blood vessel diseases, heart rhythm problems known as arrhythmia and/or congenital heart disorders i.e. heart defects you are born with.

Our heart is a muscular pumping organ about the size of a fist situated at slightly left of the center in our chest. Being divided into two parts, right and left its main function is to supply oxygen rich blood to different organs of the body with proper coordination with the lungs.

It has four valves keeping our blood moving in the right direction, by opening only one way when they need. To function in a right way these valves must be formed properly with no leakage. These four valves are Tricuspid, Mitral, Pulmonary and Aorta. Heart beats in a very rhythmic movement involving contractions (systole) to force blood into the vessels to our lungs and body and relaxation (diastole) wherein the ventricles are filled with the deoxygenated blood coming from various parts of the body.

What Causes Cardiovascular disorders?

The disease is often caused by the damage due to atherosclerosis i.e. due to build up of fatty plaques in our arteries. This build up can thicken or stiffens blood vessels due to which the route of blood flow is narrowed down, which will eventually limit the blood passing to other organs or tissues. The common causes of abnormal heart rhythm may be

- Congenital heart defects
- Diabetes
- Smoking
- Alcoholism
- Stress and drug abuse
- Coronary artery disease

A healthy person's heart is free from any abnormal condition such as scarring causing arrhythmia. The heart, however which is diseased or deformed can trigger faulty electrical impulses causing arrhythmias. Other causes of cardiovascular disorders may include dilated, hypertonic or restrictive heart muscles causing cardiomyopathy and heart infections.

What is the prognosis?

Prognosis is better for the person when the diagnosis is made early and is treated. Similarly educating the public about early access to emergency services when a patient develops acute chest pain can help. Complications associated with the CVHD are

- Heart failure or cardiac arrest, involving loss of heart function, breathing and consciousness. If left untreated, it is life threatening.

- Stroke, happens when the arteries to the brain are narrowed or blocked so that very little blood riches to brain calling for medical emergency as the brain tissue begins to die within few minutes of onset of stroke.

- Peripheral artery disease develops when extremities such as legs don't receive enough blood to function

Is there any treatment?

The conventional treatment usually is the same for both men and women involving medications to prevent the formation of blood clots, lower the blood pressure and cholesterol, surgical procedures and adoption of healthy life styles.

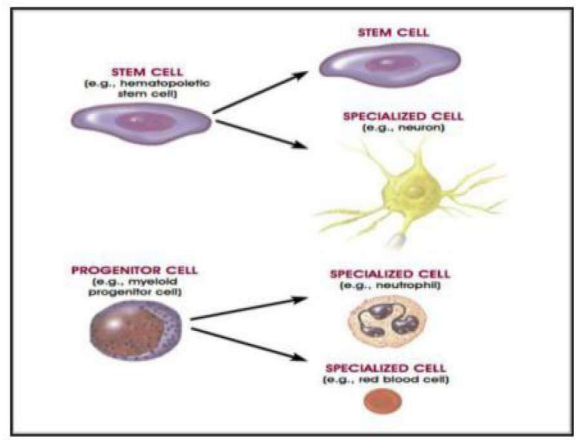
However the treatments are following only rehabilitative approach with associated risk of other side effects. However, as a result of thorough research, recently advanced and practiced stem cells treatment can be a smarter choice with minimum invasion and maximum response. Stem cells are the smart cells of our body which can be any cells if guided in a right direction.

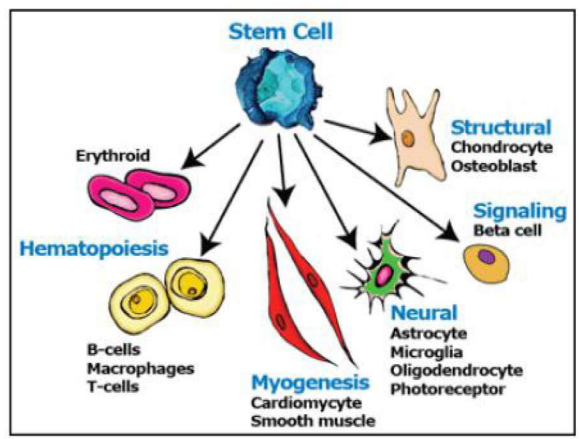
About Stem Cells

Stem cells are basically the "Master Cells" of the human body. These unspecialized cells lie dormant throughout the life and get activated when signals elicit from the site of injury. Upon enlivening they get navigated to the site of injury with the help of strong immune response stimulated by the body. At the site with the help of a programmed cell division they get differentiated into the specialized tissue specific cells. These newly formed daughter cells will be replaced for the damaged one, thus ceasing further progression of the diseased cells.

Thus, stem cells are known to be vital to the body for its normal wear and tear due to their exclusive characteristics such as

1. Undifferentiated cells capable of giving rise to any tissue specific cells.
2. Capability of prolonged self renewal having an unlimited life span and thus maintaining their number intact.
3. The ability to trigger the secretion of certain hormones and grow factors at the site of injury to facilitate damage repair.





Types of Stem Cells

With respect to their origin these Stem cells are broadly classified into two main naturally occurring cell types such as **Embryonic stem cells** and **Adult stem cells**. The third one is reprogrammed in the lab to satisfy ethical as well as scientific demands; they are named as **Induced Pluripotent stem cells.**

Embryonic Stem Cell

These cells are the most preliminary cells isolated from the inner cell mass of the blastocyst of preimplantation stage embryos. With their unlimited expansion capacity and ability to differentiate into almost all cell types of the body; earlier they were considered as the potential sources of the regenerative medicines. But the increasing burden of ethical speculations and animal studies showing abnormal occurrence of tumor ex vivo rendered them ineffective for the therapeutic application.

Adult Stem Cells

These cells are settled in adult body organs. They are less controversial due to their ease of isolation

advancells
THE POWER TO CURE

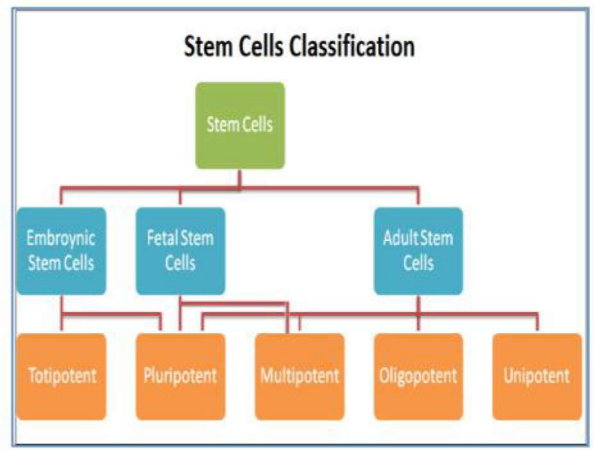
and their production does not require any destruction of embryo. These cells pose a very low or no risk of immune rejection when applied as therapeutic.

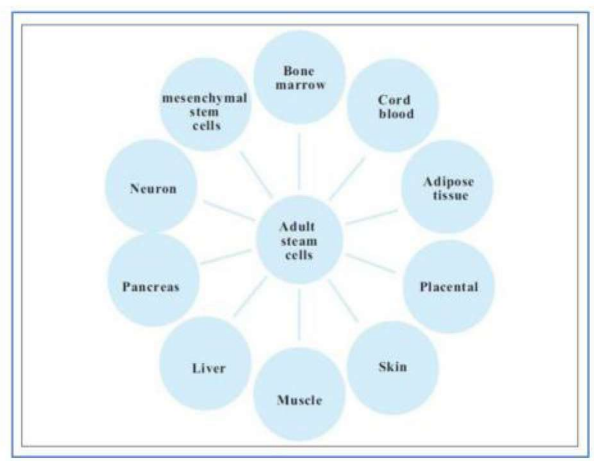
Since they are present in an adult fully grown organ, they are capable of differentiating cell of their lineage only contrary to the embryonic stem cells giving rise to all lineages. Apparently these cells can be directed to become specific cells with the addition of specific growth factors. These properties make them attractive candidates for the therapeutic application in the contemporary field of regenerative medicine.

Induced Pluripotent Stem Cells (iPSCs)

These are adult somatic cells genetically reprogrammed in vitro to an embryonic stem cell like state by being forced to express gene such as OCT-4; important for maintaining Pluripotent property of embryonic stem cells. Although the technology is still in a juvenile state; additional research is needed to use them in transplantation medicine.

Out of the different types mentioned above Adult Autologous Stem cells are known as the most potent and versatile. They are thus the most opted cell sources due to easy isolation, demonstrative plasticity and minimum ethical barricades.





Examples of Autologous stem cell sources are Bone Marrow, Adipose Tissue etc. and we have achieved ultimate expertise over it.

The Advancells Cardiovascular Treatment

Advancells uses very comprehensive and individualized treatment pattern, by obtaining stem cell from two sources adipose-derived stem cells (ASCs) and bone marrow-derived stem cells (BMSCs). Through our multidisciplinary team of specialists; we are giving the best treatment possible to improve recovery.

The entire procedure consists of following phases:

Pre Treatment Assessments, Stem Cell Procedure, Stem cell Implantation and Rehabilitation.

Objectives of the Treatment

Our Treatment objectives are to maximize the longevity and improve quality of life to a significant extent.

Type of Treatment

The procedure exploits the use of Autologous Stem Cells isolated from your own body.

advancells
THE POWER TO CURE

Being an Autologous they are not rejected by the body and hence are completely safe and risk free. At present we are isolating stem cells from two sources such as **"Bone Marrow"** and **"Adipose Tissue"**. Both these sources are available in abundance from where stem cells can be easily isolated without many manipulations.

Once you are enrolled with us for the treatment, we will intimate you regarding the date and time of the treatment. The entire treatment plan will be divided into three parts;

1. **Inductive Support**: - Complete assistance will be given to the patient in all pre treatment procedures such as consultation, hospitalization (If required), Assessments.

2. **Stem Cell Procedure**: - Generally the entire procedure takes around 7-8 hrs including 1-2 hrs of source aspiration, 2-3 hrs of stem cell isolation and injection of the isolated stem cells back into the body. The processing of sample is done in a state of the art class 10000 clean room facility wherein we strictly adhere to maintain quality of standards. Wherein the extracted sources undergo minimum manipulation such as been spun in a centrifuge to cull out a stem cells.

ADVANCELLS STEM CELL TREATMENTS

Adipose Tissue Extraction

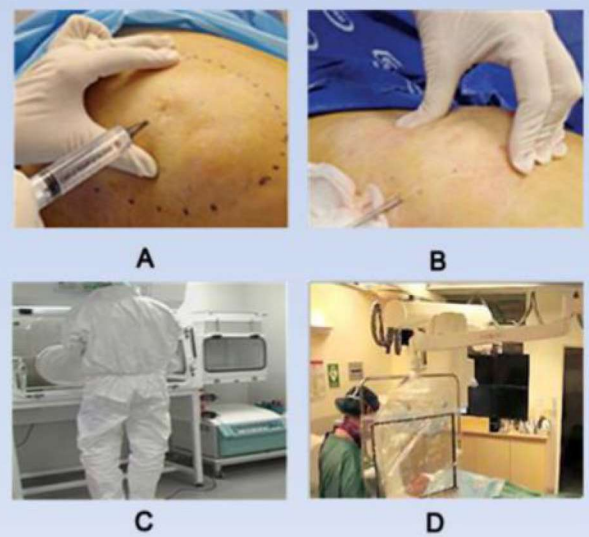


Figure 1: Adipose Tissue collection procedure

A. Application of tumescent anesthesia
B. Adipose Tissue collection by lipoaspiration
C. Isolation of Stem Cells in the clean room
D. Intra-arterial catheter based Injection of stem cells at the targeted site

Bone Marrow Extraction

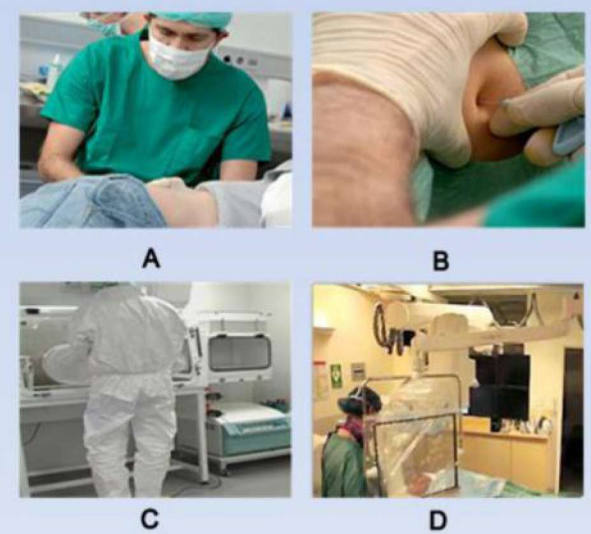


Figure 2: Bone Marrow collection procedure

A. Application of local anesthesia
B. Bone Marrow collection by needle insertion in the hip bone
C. Isolation of Stem Cells in the clean room
D. Intra-arterial catheter based Injection of stem cells at the targeted site

3. **Stem cell Implantation**: - Once isolated, intensified and ready for reinstalling back into the body, we work out different mode of implantation; depending upon patient's health condition.

4. **Rehabilitation**: - Post treatment, care involves reclamation therapies such as Physiotherapy, Occupational Therapy, Speech Therapy, patient's counselling etc. for accelerated recovery. The follow up schedule will be provided at the time of discharge.

ADVANCELLS STEM CELL TREATMENT

ELIGIBILITY CRITERIA	STEM CELL SOURCES	IMPLANTATION
Pre Treatment Assessments • Routine Blood Tests • Routine Urine Analysis • Infectious disease testing • Physical Examination • Chest X Ray • ECG, EKG, Stress Test • Echo **Pre-op Procedures** • MRI • Scan • Medical History **Counselling**	The source of stem cells can either be Bone Marrow or Adipose Tissue or Both depending upon the assessment. • **Bone Marrow:-** 100-120 ml of bone marrow is collected from iliac crest with the application of general anaesthesia. • **Adipose Tissue (Fat):-** 100 cc adipose tissue is collected from the belly area with application of local anaesthesia.	Specialists exercise various input options for implanting cells back into the body depending upon physical condition and treatment demand. •**Intravenous Injections (IV):-** Infusion through vein • **Intra-arterial Injections:-** Catheter based infusion directly into the heart.

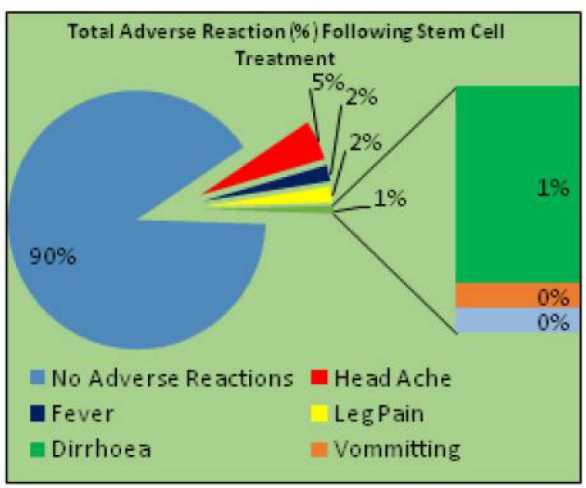
ADVANCELLS STEM CELL TREATMENTS

Quality Control Parameters	Post Treatment Care
Cell counting & Viability Assessments • Stem cell isolation and separation from unwanted cells • Number of cells recovered through Trypan Blue Viability Assessments • Percentage of Live cells • Documentation **Flow Analysis /characterisation of Bone Marrow Mononuclear Cells (BMMSCs)** • Total percentage of CD 34+ and CD45+ cells recovered **Flow Analysis /characterisation of Adipose Tissue (SVF Cells)** • Total percentage of CD 73+and CD90+ and CD 105+ cells recovered	**Rehabilitation** • Behaviour and emotional development • Communication & Social interaction • Self regulation, cognitive skills, academic skills and adaptive skills. • Psychological counselling • Evaluation such as ECG • Physical Check up • Follow up

Our client will get a third party certificate from an internationally accreditated lab for the cell count and viability.

Possible Adverse events from the treatments

Since stem cell therapy in minimally invasive and reasonable safe procedure none of our patients treated so far have observed any major offshoot from the transplant, but complaints are consistent with the expected reaction to routine IV/LP injections such as fever, headache, pain, diarrhoea, vomiting and allergic reactions. Less than 5% of our patients have experienced any of these symptoms.



Follow Up

Once you have returned home, a member of our medical team will monitor your progress in given intervals via telephone and email. For your convenience, a telephone 'hotline' is always at your disposal.

General

No additional charges will be incurred unless you are required to extend your stay at the medical center as a result of complications. Costs do not include additional stem cell treatments. If another treatment is necessary, we will discuss potential options with you. You will receive an invoice one week prior to treatment. This invoice must be paid in-full before treatment can begin.

Note: If your bone marrow/adipose tissue sample is negative or the stem cells cannot be administered due to unforeseen medical circumstances, you will only be required to pay charges incurred to that point. In the case of a negative sample, it might be possible to schedule another collection.

Contact us

For more details visit: www.advancells.com or E-mail: info@advancells.com

A-102, Sector V, NOIDA-201 301

U.P – INDIA

Helpline

Helpline No. : +91 9654321400