



India: An emerging global centre for stem cell therapy

Commercial stem cell transplants are being conducted for blood-related diseases

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WITH healthcare services for stem cells transplantation available in the country at lesser cost, India is fast emerging as a global destination for such therapies for several critical ailments.

Commercial stem cell transplants are being conducted in the country for blood-related diseases at around 20 hospitals, including AIIMS in New Delhi, Tata Memorial in Mumbai, Apollo Hospitals, CMC Vellore and Global Hospitals.

"Around 200 bone marrow or cord blood transplants are happening in India every year. The success rates are also high," said Mayur Abhaya, executive director of Lifecell International.

Apollo also has some doctors who have the expertise to do the procedures. The group has done about 300 transplants for various blood-related disorders such as leukemia, lymphoma and thalassaemia. Of this, about 60 per cent patients were from abroad.

According to C Immanuel, director of academics and research, Global Hospitals, there are several inquiries coming in from abroad for these therapies. The hospital expects to launch stem cell therapies for spinal cord injuries, injured heart muscles and liver cirrhosis in the next year.

Some recent researches have proved that adult and embryonic stem cells may be able to replace

What are stem cells?

Stem cells are unspecialised cells that have two defining properties: the ability to differentiate other cells and the ability to self-regenerate. The ability to differentiate is the potential to develop into other cell types and self-regeneration is the ability of stem cells to divide and produce more stem cells.

Based on their origin, these can be divided into:

- **Embryonic Stem Cells:** cells are obtained from donated embryos that have developed from eggs fertilised in vitro (in the lab), not from eggs fertilised in a woman's body.
- **Adult Stem Cells:** An adult stem cell is an undifferentiated cell found in a tissue or organ.
- **Cord Blood Stem Cells:** Umbilical cord blood is human blood obtained from the placenta and umbilical cord shortly after birth. Stem cells are derived and preserved from this.

damaged heart muscle cells and establish new blood vessels. The studies may lead to a major breakthrough for curing the heart diseases as heart attacks and congestive heart failures are among the nation's most prominent health challenges.

"In less than three years, studies are able to explain the magical aspects of these stem cells. They have an ability to regenerate and grow into various types of cells including endothelial (cells lining the blood vessels), heart cells and smooth muscle cells," said Dr KK Sethi, senior cardiologist, Delhi Heart and Lung Institute.

In the past five decades, rates of coronary disease among urban populations in India have risen from 4 per cent to 11 per cent. 60 per cent patients in India suffer from acute coronary syndrome, as compared with 40 per cent in the developed world.

The World Health Organisation estimates that India is set to be the heart disease capital of the world by 2010 accounting for 60 per cent of the world's cardiac patients.

"India can pull a lot of patients for stem cell therapies as in the case of other treatments it has quality doctors and offers the service at lesser cost and time. Compared with developed countries, 20 to 30 per cent cost saving is possible in Indian hospitals and the waiting time also can be lessened by nine to 10 months," said Dr S Jayanti, director of Apollo Hospitals Educational and Research Foundation (AHERF).

The group will soon launch stem cell researches for cardiovascular disorders, neuro-degenerative problems, liver diseases, muscular dystrophy, spinal cord injury and limb ischemia.

"Some of the hospitals which

Pic above: Embryologist Ric Ross places human embryos onto a petri dish at the La Jolla IVF Lab in La Jolla, California

have the infrastructure are conducting researches in areas other than blood-related disorders. Apart from cord blood cells, researches are also being conducted to look into the potential of mesenchymal stem cells in tissue regeneration for ailments such as diabetes, arthritis, heart stroke, cardiac arrhythmia, spinal cord injury, multiple sclerosis, critical limb ischemia.

"Once such therapies get commercial acceptance globally, India too will be able to use them for treatment in a large scale," said Abhaya. Together with US-based Harvest technologies and Sri Ramachandra University in Chennai, Lifecell is conducting trials in limb ischemia.

But the country still lacks a regulatory body to oversee the procedures. "A regulatory purview of donorship, cell harvesting, preservation, research and transplant is necessary to enhance credibility. A National Apex Committee for Stem Cell Research Therapy under Indian Council of Medical Research was mooted in 2007. But the committee is yet to be formed," he said.

At present, hospitals have their own ethical committees and before initiating treatment they seek approval for therapies from drug controller general of India. ■