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Safer stem cell transplants offer hope to MS and diabetes patients

By **Sarah Knapton**

HUNDREDS of thousands of people could be cured of autoimmune diseases such as arthritis, multiple sclerosis, diabetes and lupus after scientists discovered how to make stem cell transplants safe.

Autoimmune diseases occur when the body's immune system attacks and destroys healthy body tissue by mistake. Transplants of bone marrow stem cells from healthy donors have been shown to reset the immune system and reverse fatal conditions.

However, doctors have been reluctant to carry out the treatments as before the healthy cells can be given, the patient must be stripped of the malfunctioning immune system using radiotherapy or chemotherapy. In 20 per cent of cases, the patient dies from this procedure and surgeons are reluctant to attempt a transplant unless there is no other hope.

Now Stanford University has shown it is possible to remove the defective immune system using a technique which encourages the body to eat up malfunctioning blood cells. Researchers have proved it works in animals but are hopeful it will also be effective in humans. "If it works in humans like it did in mice, we would expect that the risk of death from blood stem cell transplant would drop from 20 per cent to effectively zero," Prof Judith Shizuru.

The scientists have developed antibodies which latch on to malfunctioning blood stem cells and flag them up to "waste disposal" cells, known as macrophages, whose job is to eat up harmful material in the body.

The treatment completely clears the way for transplanted blood stem cells from a donor to take up residence in the bone marrow and generate a whole new blood and immune system.

It means that any disease caused by the patient's own blood and immune cells, including blood cancers, could be cured by a one-time application of blood stem cell transplantation.

It is estimated that around 1.8 million people in Britain suffer from an autoimmune disease, while 25,000 people a year are diagnosed with blood cancers.

The research was published in the journal *Science Translational Medicine.*