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Less toxic bone marrow transplants on horizon

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Bone marrow transplants that do not require dangerous and often toxic chemotherapy could soon be possible, US researchers said Wednesday after seeing initial success with experiments on mice.

The method developed by a team of scientists at Stanford University mimics the approach used in immunotherapy, in which cancer patients undergo a treatment that trains their immune systems to attack tumor cells.

If it works in humans, it could help improve treatments for lupus, juvenile diabetes, multiple sclerosis, organ transplants and even cancer.

"There is almost no category of disease or organ transplant that is not impacted by this research," said Irving Weissman, professor of pathology and of developmental biology at Stanford and co-author of the report in the August 10 edition of the journal *Science Translational Medicine*.

Currently, anyone receiving a bone marrow transplant—also known as a stem cell transplant—must undergo chemotherapy or radiotherapy to kill the patient's own population of blood stem cells first.

That makes the potentially life-saving operation dangerous and even fatal for up to one in five patients. Organ, nerve and brain damage can also result.

So researchers devised a new approach that includes an antibody and biologic agents that helped the mice's own immune systems deplete their blood-forming stem cells, making way for transplanted cells from a donor.

"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 percent to effectively zero," said the paper's senior author, Judith Shizuru, a professor of medicine at Stanford.

More research is planned for studies involving people.

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