# Revolutionary technique could reduce lifelong drugs for transplant patients

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Researchers have developed a ground-breaking procedure that could avoid the need for transplant patients to spend the rest of their lives taking a cocktail of drugs to stop their system from rejecting their new organ, according to a series of papers in the August issue of *Transplant International*.

The team, led by Professor Fred Fandrich from the University of Schleswig-Holstein in Kiel, Germany, has developed a technique based on tailor-made regulatory cells.

This involves taking infection-fighting white cells from the blood of the transplant recipient and subjecting them to a highly complex procedure involving cells taken from the living or deceased donor. The tailor-made cells are then administered back to the patient.

In the two clinical trials described in Transplant International this was done in two ways, either after the transplant, as an addition to the traditional drug therapy to stop the patient's immune system rejecting the kidney, or before the transplant surgery was carried out.

"Until now the only option for transplant patients has been to take a cocktail of drugs for the rest of their lives" explains lead author Dr James A Hutchinson from the University's Division of Transplantation Medicine and Biotechnology.

"These drugs can cause severe side effects and cannot always prevent the

slow destructive process of chronic rejection which often leads to the failure of the transplanted organ.

"That is why our use of transplant acceptance-inducing cells (TAICs) in kidney transplant patients is such an exciting development, as it could eventually offer patients who have had transplant surgery a much higher quality of life, free from complex drug regimes.

"Although our use of TAICs is still in the preliminary stages, the results of our clinical trials on 17 kidney transplant patients are promising."

During stage one of the clinical trials 12 patients received kidneys from deceased donors and were give the TAICs in addition to the traditional drug therapy used to prevent organ rejection. Nine men and three women aged between 30 and 61 took part in the trial.

Ten of the 12 patients were weaned off conventional immunosupression drugs over a period of eight weeks, starting in the fourth week after transplantation. Medical staff were then able to wean six of them down to low-dose tacrolimus monotherapy, which is a much less intrusive drug regime with fewer side effects.

"We concluded that although the stage one trial showed that TAIC therapy was both safe and clinically practicable, the trial was unable to provide evidence that postoperative TAIC administration has a beneficial effect" says Dr Hutchinson.

Stage two comprised five patients who were transplanted with kidneys from live donors and received TAICs before their surgery was carried out.

Four men and one woman aged between 39 and 59 took part in the trial. Two received a kidney from their brother, one from his daughter and

two from a spouse.

One patient was able to go eight months without any immunosuppression drugs and a further three were successfully weaned from a conventional immunosuppression regime to low-dose tacrolimus monotherapy.

"Although our stage two clinical trial did not provide conclusive evidence of a beneficial effect of pre-operative TAICs treatment, the results were encouraging" says Dr Hutchinson.

"They suggest that TAICs promote a physical state that might allow us to minimise the drugs we use to stop the patient's immune system from rejecting their new organ."

None of the patients in either trial experienced acute or delayed adverse events as the result of the TAIC infusion.

"Our research clearly shows that infusing TAICs into patients before they have a kidney transplant, or after the procedure has been carried out, is a practical and safe clinical option.

"Although this procedure is still being developed and refined, it poses an exciting possibility for clinicians and patients alike."

Source: Wiley