

Common antimalarial drug could be used to treat major injury

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A common anti-malarial drug Artesunate could be used to reduce organ failure following injury, according to an early study in rats led by Queen Mary University of London (QMUL).

The repurposing of the affordable and safe drug could help save the lives of major trauma patients, and the promising results have already led to human [clinical trials](#) being planned for this year, supported by the Health Innovation Challenge Fund.

Trauma is a leading cause of death with five million victims a year. About 40 per cent of trauma deaths are due to hemorrhagic shock, which is when severe [blood loss](#) makes it difficult for the heart to pump sufficient blood around the body, leading to multiple organ failure.

Lead researcher Chris Thiernemann from QMUL's Centre for Trauma Sciences said: "Multiple organ failure affects one in three severely injured patients, and one in four of those will die. Those that survive still experience prolonged periods in intensive care, infections and other complications. But despite its catastrophic impact, there are still no specific treatments for organ failure.

"We've now discovered that the drug Artesunate, which has already been used by thousands of people with malaria, is also effective for treating severe haemorrhage and blood loss in rats.

"Not only is the drug extremely safe, having already been tested in over

180 clinical trials, but it is also cheap. It could therefore be a highly effective option for the NHS and the rest of the world, and we're now getting ready to test its effect on organ injury in a human population."

The study, published in the *Annals of Surgery*, showed that when injured rats were administered Artesunate, the drug had a marked protective impact on organ integrity and reduced [organ failure](#).

The drug appeared to work by enhancing the protection of organs by reducing the body's excessive inflammatory response to injury and blood loss, and by activating well-known cell-survival pathways.

The lower dose of Artesunate shown in the study to be effective in [hemorrhagic shock](#) is identical to the dose used in patients with malaria, many of which also have multiple organ dysfunction.

Artesunate is based on an ancient Chinese herbal remedy, produced in large quantities in China, and is recommended by the World Health Organization as the treatment of choice for severe malaria. It has also been shown to have anti-cancer, anti-viral and anti-inflammatory effects. Professor Tu of the Chinese Academy of Sciences was awarded the 2015 Nobel Prize for Medicine & Physiology for her discovery of the artemisinins (artesianate-like drugs).

The researchers say that Artesunate would be administered as an intravenous injection to code red patients with major haemorrhage, in the helicopter, ambulance, or on arrival in A&E.

On the basis of these laboratory tests, a new clinical trial is being set up at the Royal London Hospital, UK. Running for two years, Artesunate will be administered to a sample of patients admitted to the Major Trauma Centre, and outcomes measured during their hospital stay and following discharge. This Health Innovation Challenge Fund trial is

supported by the Wellcome Trust and the Department of Health.

More information: Artesunate Protects Against the Organ Injury and Dysfunction Induced by Severe Hemorrhage and Resuscitation. Regina Sordi, Kiran K. Nandra, Fausto Chiazza, Florence L. Johnson, Claudia P. Cabrera, Hew D. Torrance, Noriaki Yamada, Nimesh S.A. Patel, Michael R. Barnes, Karim Brohi, Massimo Collino and Christoph Thiemermann. *Annals of Surgery* 2016.

Provided by Queen Mary, University of London

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