Uploaded to the VFC Website

2017

This Document has been provided to you courtesy of Veterans-For-Change!

Feel free to pass to any veteran who might be able to use this information!

For thousands more files like this and hundreds of links to useful information, and hundreds of "Frequently Asked Questions, please go to:

Veterans-For-Change

If Veterans don't help Veterans, who will?

Note: VFC is not liable for source information in this document, it is merely provided as a courtesy to our members & subscribers.

New blood treatment technology could reduce malaria risk following blood transfusions

Published on April 26, 2016 at 9:15 AM

Patients, especially children, who undergo blood transfusions in sub-Saharan Africa are at high risk of transfusion-transmitted malaria. A new trial, published in ***The Lancet*** today, suggests that treating donated blood with a new technology that combines UV radiation and vitamin B is safe and could minimise the risk of malaria infection following blood transfusions.

"In many countries in sub-Saharan Africa where malaria is endemic, a high proportion of the population carry the parasite but do not show any clinical symptoms. This is particularly problematic when it comes to donated blood transfusions as it puts the recipients at high risk of infection if no blood treatment procedure is provided," says Professor Jean-Pierre Allain, lead author from the University of Cambridge, Cambridge, UK. "Testing for parasites such as malaria is expensive and until now, there have been no technologies capable of treating whole blood, which is most commonly used in transfusions in sub-Saharan Africa. This is the first study to look at the potential of pathogen-reduction technology in a real-world treatment setting and finds that although the risk of malaria transmission is not completely eliminated, the risk is severely reduced."

The study is published ahead of World Malaria Day (Monday 25th April). Every year, approximately 214 million people worldwide are infected with acute malaria, the majority of whom are in Africa. Malaria is caused by the parasite *Plasmodium.* It is usually transmitted by mosquito but can also be transmitted through blood transfusions – this is particularly dangerous for children who have not developed any immunity, or adults with some degree of immunodeficiency such as pregnant women.

Currently, in Europe, donated blood is subjected to a large number of safety measures. Commonly used procedures for whole blood include nucleic acid testing, blood filtration or bacterial culture but these are not done in most developing countries because of a lack of resources. A number of pathogen reduction technologies also exist to treat blood components such as plasma or platelets. However, in developing countries, particularly in sub-Saharan Africa, 70% of blood transfusions are of whole blood. Detecting *Plasmodium* in donated blood is very difficult – the only current, affordable option is using microscopes but this is insensitive and unreliable.

In Ghana, 50% of blood donors carry the *Plasmodium* parasite, and 14-28% of patients who receive a blood transfusion will later test positive for *Plasmodium.* In this study, researchers investigated the effectiveness and safety of a new pathogen reduction technology that uses UV light and vitamin B2 (riboflavin) to reduce the levels of the parasite in donated whole blood. The study follows earlier work which found that the technology was capable of inactivating *Plasmodium* and other pathogens, including HIV, hepatitis C, and hepatitis B virus in vitro.

223 adult patients from the Komfo Anokye Teaching Hospital in Kumasi, Ghana who needed a blood transfusion because of severe anaemia or haemorrhage took part in the study. The study was a double blind randomised controlled trial. As would be the case in normal clinical practice, neither the doctors nor the patients knew whether the donated blood units or recipients carried the *Plasmodium* parasite.

The research team analysed blood samples for all of the transfusion recipients on the day of the transfusion and 1, 3, 7 and 28 days later. By studying the sequences of *Plasmodium* genes present in the blood, the researchers were able to tell whether the patients were likely to be carrying the donor parasite after the transfusion.

A total of 65 patients were not previously carrying the parasite – half received parasite treated blood, and the other half received parasite untreated blood. 22% of patients (8/37) who received untreated blood later tested positive for malaria parasite, compared 4% (1/28) of patients who received treated blood.

Coagulation parameters, platelet counts and haemostatic status of the patients were similar whether patients received treated or untreated blood. The technology did not appear to affect the coagulation properties of the blood, and patients who received the treated blood had slightly fewer allergic reactions to those who received the untreated blood (5% vs 8%).

The technology is currently in the testing phase, and the authors add that further studies, in larger population groups, and in particular at risk populations such as young children and pregnant mothers are now needed.

Writing in a linked Comment, Dr Sheila F O'Brien, Canadian Blood Services, Canada, says:

> Pathogen reduction technology inactivates not only *Plasmodium* parasites but also a broad range of transfusion-transmissible pathogens, including HIV, hepatitis C, and hepatitis B…The anticipated introduction of this technology for all products including red blood cells heralds a dramatic transformation in approach in transfusion medicine. In developed countries, pathogen reduction technology would further reduce the already low risk of transmitting infections. It would also address concerns from emerging pathogens such as *Babesia microti*, West Nile virus, Chikungunya virus, and Zika virus. The cost of implementation of the technology would be countered by a range of efficiencies in the manufacturing process — notably, a reduction in infectious disease testing and donor deferral.

She adds:

> The risk that blood recipients in Africa must accept, especially children, would be considered an intolerable risk in developed countries. Evidence that transfusion-transmitted infections in whole blood can be safely addressed by pathogen reduction technology while maintaining the clinical benefit of the transfusion underscores the potential for this treatment to revolutionise transfusion safety in Africa where it is most needed.

Source:
http://www.thelancet.com/
