technology TODAY

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Deactivating Blood Pathogens

MEDICAL professionals today handle human blood as a bio-hazardous material. This is necessary because many people in the general population are infected with pathogens that transmit diseases through simple physical contact with an infected person's blood.

Even after testing, blood can contain bacteria and viruses that weren't detected and can cause transfusion-transmitted diseases. Today's blood-screening tests only detect pathogen antibodies rather than their associated diseases.

This means a recently infected person might not have enough pathogen antibodies to detect. The medical profession calls this a "window period," where a recently infected person can test negative but still pass on a disease.

With all the possible dangers, people all over the world still need blood transfusions at a rate of one person every three seconds. A current U.S. Blood Bank method of protecting our blood supply is to simply discard donor blood if health professionals have safety concerns after reading a donor questionnaire.

In 1997 U.S. Blood Banks discarded 232,000 pints of blood (latest data available) to protect transfusion recipients from the chance of receiving "tainted" blood.

To protect themselves from possible infection, many people today use a just-in-time delivery system to donate their own blood just long enough before their surgery to give their body time to replace the volume that they donated. They then have their own blood transfused back during their operation.

Images courtesy of the Cerus Corporation.

A new, recently developed blood-cleansing technology deactivates pathogens in blood components. The most intriguing part of this system is the fact that it deactivates known, unknown, and even potentially emerging pathogens.

This process has been developed by the Cerus Corporation of Concord, CA. Their process, Helinx INTERCEPT Blood System, cleanses blood by crossing cell walls and viral membranes to deactivate the genetic code found in DNA and RNA.

The Helinx INTERCEPT Blood System process stops the replication of white blood cells, viruses, bacteria, and other types of pathogens that the blood might contain. Since red blood cells, blood platelets, and plasma don't contain DNA or RNA, they aren't affected by this blood-cleansing treatment.

Blood components (platelets, plasma, and red blood cells) are often used in combination or separately to treat patients. Today Europe, Canada, Japan, and the U.S. are all testing the effectiveness of the Helinx INTERCEPT Blood System deactivation process for the separate cleansing of platelets, plasma, and red blood cells.

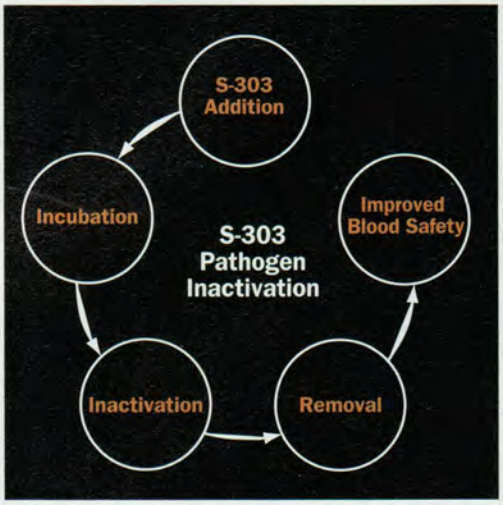
On October 16, 2002, Europe approved this pathogen inactivation process for the treatment of blood platelets. On October 21, the Directorate of Health for Canada approved this same platelets treatment.

At the time this article was written, clinical trials in Europe and Canada are still underway for the treatment of plasma and red blood cells. In the U.S., the FDA hasn't completed its clinical trials, so the process can only be used in the U.S. in approved clinical studies.

If this process stands up to final scrutiny, the transfer of transfusion-transmitted diseases could become a thing of the past. You can learn more about the Helix INTERCEPT Blood System on the web by going to **www.cerus.com**.

Recalling the Facts

1. Why is human blood treated as a bio-hazardous material?
2. How does the Helix INTERCEPT Blood System prevent pathogen infection?



The pathogen inactivation process

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