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A Newsletter Focused on the Most Recent Scientific Advances in the Fields of Transfusion, Human Tissues, and Stem Cells

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Cost/benefit analyses of screening blood donations for West Nile virus

Two cost/benefit analyses of the implementation of blood donation testing for West Nile virus (WNV) yield ratios of the same order as those of screening tests for other transfusion-transmitted viruses. A minipool testing strategy, coupled to individual donation testing in areas of high WNV prevalence, appears sensible in terms of cost/benefit analysis.

Custer, B. (Blood Systems Research Institute, San Francisco, CA, USA), et al. (2005). **The cost-effectiveness of screening the U.S. blood supply for West Nile virus**. Ann Intern Med 143 (07): 486-492.

Korves, C. T. (Columbia University, New York, NY, USA), et al. (2006). **Cost-effectiveness of alternative blood-screening strategies for West Nile virus in the United States**. PLoS Med 3 (02): e21.

Safety of platelets subjected to a pathogen inactivation treatment

Latest work by the SPRINT Study Group confirms that platelet concentrates subjected to INTERCEPT, a pathogen inactivation treatment, are safe for transfusion to humans. However, the treatment adversely affects platelet counts in concentrates, resulting in an increased number of platelet transfusions required per patient.

Snyder, E., et al. (Cerus Corp., Concord, CA, USA). (2005). **Clinical safety of platelets photochemically treated with amotosalen HCl and ultraviolet A light for pathogen inactivation: the SPRINT trial**. Transfusion 45 (12): 1864-1875.

Murphy, S., et al. (Cerus Corp., Concord, CA, USA). (2006). **Platelet dose consistency and its effect on the number of platelet transfusions for support of thrombocytopenia: an analysis of the SPRINT trial of platelets photochemically treated with amotosalen HCl and ultraviolet A light**. Transfusion 46 (01): 24-33.

Capacity and performance of a new leukoreduction filter that removes pathogenic prions from red cell concentrates

Pall Corporation has recently developed a filter designed for leukoreduction of red cell concentrates that simultaneously removes prions, the infectious agent responsible for transmissible spongiform encephalopathies. Two studies confirm that the new filter effectively removes pathogenic prions, without adversely affecting the quality of filtered red cell concentrates.

Saunders, C., et al. (Welsh Blood Service, Pontyclun, Wales, United Kingdom). (2005). ***In-vitro* evaluation of the PALL *Leukotrap* Affinity Prion Reduction Filter as a secondary device following primary leucoreduction**. Vox Sang 89 (4): 220-228.

Sowemimo-Coker, S. (Pall Corporation, Port Washington, NY, USA), et al. (2005). **Removal of exogenous (spiked) and endogenous prion infectivity from red cells with a new prototype of leukoreduction filter**. Transfusion 45 (12): 1839-1844.

Is the prion protein involved in blood cell renewal?

Work from teams led by Lindquist and Lodish at the Massachusetts Institute of Technology (Cambridge, MA, USA) suggests that the normal prion protein, whose aberrant form is responsible for fatal neurodegenerative diseases, is normally involved in the long-term renewal of all blood cell lineages.

Zhang, C. C., et al. (2006). **Prion protein is expressed on long-term repopulating hematopoietic stem cells and is important for their self-renewal**. Proc Natl Acad Sci U S A 103 (07): 2184-2189.

Variant Creutzfeldt-Jakob disease (vCJD): species barrier and genotype effects

The team led by J. C. Manson, from the Institute for Animal Health (Edinburgh, Scotland, United Kingdom) has generated genetically modified mice lines in which the two copies of the gene coding for the prion protein have been replaced by genetic variants encoding the human form of the protein. Inoculation assays using different pathogenic prion strains suggest that the three combinations of human prion gene variants are all susceptible, albeit to variable degrees depending on the actual combination of gene variants, to vCJD when a vCJD prion strain is used for inoculation. In addition, mice harbouring human gene variants appear much more resistant to prion disease when a strain isolated from a bovine suffering from mad-cow disease is used for inoculation.

Bishop, M. T., et al. (2006). **Predicting susceptibility and incubation time of human-to-human transmission of vCJD**. Lancet Neurol 5 (05): 393-398.

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