The past few decades have witnessed enormous improvements in our ability to assure the safety of blood components against viral infections; however, serious threats remain. As pinpointed by J. Barbara [1], bacterial contamination of platelet concentrates in particular is a major ongoing concern. Furthermore, despite the fact that the introduction of nucleic acid testing appears to have brought under control the risk of infection by viruses classically associated with transfusion, newly emerging viruses, mutant strains, protozoa, and known viruses mistakenly regarded as harmless remain a constant threat for both patients and the blood supply.

Although major improvements in safety have been achieved through better collection techniques, more stringent donor selection, more and better screening and less donor exposure, and although blood transfusion has become safer than ever before, it does not appear to be possible to completely eradicate the residual risk of infection due to inherent limitations in each of these methods.

Pathogen inactivation, in contrast, affords a proactive approach, taking advantage of the fact that all DNA and RNA present in blood products is unwelcome, whether from microorganisms or from leukocytes. Amotosalen’s mechanism of action is described by S. Wollowitz [2]. Amotosalen in combination with UVA presently is indicated for pathogen inactivation of platelet concentrates, and will soon become available for plasma. The efficiency of the method has been extensively proven against a vast array of microorganisms classically or potentially associated with transfusion complications.

In order to be acceptable for clinical use, pathogen inactivation must be proven to have no adverse effects on either platelets or the recipient of platelet transfusions.

Preclinical studies have shown that platelet integrity and function are maintained following treatment with amotosalen. Furthermore, the INTERCEPT™ Blood System for platelets has been subjected to extensive clinical testing, which has examined the recovery and survival, safety and tolerability, and haemostatic and therapeutic efficacy of treated platelets. Successful phase-I and -II studies led to two phase-III trials, each focussing on the therapeutic efficacy of amotosalen-treated platelets (SPRINT and euroSPRITE), which revealed no clinical safety concerns. Moreover, the proportion of patients who developed persistent immunologic platelet refractoriness was similar between the two groups, with no evidence of antibodies to neoantigens seen in either group.

Compounds that target DNA and RNA necessarily have the potential not only for acute and chronic toxicity but also for genotoxicity of both the parent compound and its breakdown products. Results of toxicological studies with amotosalen are reviewed by A. D. Dayan [3], who concludes that there is no genotoxic risk to patients.

The INTERCEPT Blood System for platelets not only inhibits pathogen replication, but also prevents leukocyte proliferation and cytokine generation. As suggested by F. Schlenke [4], the INTERCEPT Blood System for platelets may become an alternative to gamma-irradiation.

The full benefits of this innovative technology, however, will only be felt when similar inactivation procedures cover the entire range of blood components.

T. Hervig and I. Aksnes [5] report on their experience of validating and implementing the INTERCEPT Blood System for platelets in a Norwegian blood centre, and conclude that it is feasible even for smaller transfusion centres. Similar observations were made in the Blood Transfusion Centre of Mont-Godinne, where INTERCEPT was implemented in October 2003 and led to a very reasonable increase in workload.

Although the cost of introducing the INTERCEPT Blood System for platelets for pathogen inactivation remains substantial, it needs to be considered in the light of the wide array of benefits provided by the avoidance of new testing, unnecessary donor exclusion on merely hypothetical grounds, the possibility of an extended platelet shelf life and, even more importantly, the satisfaction of delivering safer products to our patients. Transfusion accidents constitute a serious threat for the blood supply – they are not only disastrous for the recipients, they are also highly frustrating for both donors and blood centre staff.

Their real cost is therefore difficult to estimate. When considering the cost-effectiveness of this new invention, the whole spectrum of these advantages should be taken into account.

J.C. Osselaer, Yvoir, Belgium

References