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EDITORIAL

An introduction to the special issue Blood Donor ResearchEva-Maria Merz^{1,2} & Pieter F. van der Meer^{3,4}¹*Department of Donor Medicine, Sanquin Research, Amsterdam, The Netherlands*²*Department of Sociology, Vrije Universiteit, Amsterdam, Netherlands*³*Department of Product and Process Development, Sanquin Blood Supply, Amsterdam, The Netherlands*⁴*Department of Clinical Transfusion Research, Leiden, The Netherlands*

With this special issue on Blood Donor Research, the ISBT Science Series gave us a forum to invite key researchers in the field of donor studies. We received great interest in our endeavour and are happy to present ten high-quality, diverse papers from researchers stemming from many different countries across Europe, North America, Australia and Asia. The current issue highlights three main themes in the field of Blood Donor Research: donor behaviour, donor health and blood product quality in association with donor characteristics.

Without blood donors, there would be no blood products to transfuse and no plasma donations for pharmaceutical drug production. In Europe alone, four million patients are treated annually with blood-derived products given by voluntary blood donors. However, often as little as 2%–3% of the population is registered as blood donor and donor numbers have been decreasing over the years. At the same time, the demand for blood products has not kept pace with the decreasing numbers of donors, in times of demographic change, immigration and longevity [1, 2]. Hence, it is crucial that a country's donor pool is sufficient, healthy and diverse enough to ensure access to every blood type and blood product that is needed. Targeted recruitment and retention of donors with specific characteristics are key in meeting the demands and improve donor management. A thorough and inclusive investigation of individual motives for blood donation, including a dynamic approach to donor careers, social network factors, and contextual and cultural differences, is vital to develop effective evidence-based donor management.

In this regard, Ferguson and colleagues from seven different countries examine the associations between different types of prosocial behaviour, including charity giving, volunteer work and blood and organ donation in UK, Malta, the Netherlands, Australia, the US, Hungary and Italy. They present convincing data on similarities and differences

across countries, and explain why a cross-cultural perspective on prosocial behaviour is needed.

Piersma and Klinkenberg in their inventive study advocate for more personalized and evidence-based recruitment and retention strategies to better reach out to groups of potential donors, who until now are often underrepresented in many Western blood establishments, that is, ethnic minority donors. They show interesting results on the association between different recruitment strategies and donor loyalty in the Netherlands.

Emotional reactions to receiving a deferral and the impact on donors' intention to redonate have been investigated by Gemelli and colleagues in Australia. They recommend that blood bank staff address donors' emotional responses to help diminish the negative impact of being deferred on donors' intentions to return.

Projecting future blood demand and the number of required donations is the topic of a Japanese contribution to this special issue. Kano and colleagues present an impressive amount of data from numerous medical institutions across the country and conclude that a close and continuous monitoring and evaluation of current and future practice regarding tailored donor education and recruitment is needed.

Although blood donation is generally regarded as a safe procedure, some short- and long-term side-effects may occur. Observational data suggest that some donors may benefit from donating while it might harm others [3]. As donors are a healthy group of individuals who donate voluntarily, any harm should be prevented. Studying and maintaining donor health is important for a safe and efficient blood supply.

By presenting first results from a linkage study, combining Australian Red Cross Blood Service data with a general population cohort of individuals aged 45 years and older (the Sax Institute's 45 and Up Study), and the New South Wales Admitted Patients Database, Gemelli and colleagues present a highly valuable effort in enabling the study of long-term health consequences of blood donation.

A study from Hong Kong, authored by Wong and colleagues, draws attention to donor vasovagal reactions and consequences for retention. They point to the importance of identifying those characteristics that put donors at increased risk for experiencing vasovagal reactions, and urge for developing interventions that reduce this risk.

Goldman and colleagues from the Canadian blood service advocate for more evidence-based selection criteria for donors with cancer history. They discuss in their short

report that less restrictive criteria also can have positive impact on donor availability and future retention.

A third line of important research in this special issue concerns the association between donor characteristics, blood product quality and patient outcome. Recent studies show that also the *in vitro* quality of stored red blood cell products or platelet concentrates may be affected by donor characteristics [4, 5]. Hence, a proper selection of donors, based on evidence-based criteria, is needed to minimize donor-associated risks for having poor product quality. The Dutch study by Bontekoe and colleagues calls for evidence-based selection criteria for donors who use non-steroidal anti-inflammatory drugs (NSAIDs). Another Dutch study by De Laleijne and colleagues examined the association between lipemic whole blood donations and the quality of red cell concentrates. They suggest that certain donor characteristics increase the risk for lipemic donations and therefore increased haemolysis during storage of red cell concentrates. Results of the study by Kipkeu and colleagues suggest that more attention should be paid to donor demographics, that is age and sex, in the provision of red cell concentrates for immunomodulatory studies and the impact on transfusion reactions.

All studies contribute to the idea that future research should not only try to shed light on the associations between donor characteristics, product quality and transfusion outcomes, but also try to elucidate the mechanisms behind such associations.

Taken together, donor research is key in the field of blood donation and transfusion to achieve three impor-

tant goals: recruit and retain sufficient donors with specific needed characteristics, maintain and improve donor health and ensure high quality of blood products.

We are grateful to all the contributors and for the great interest they have shown in the topic of donor research. Furthermore, we wish to also thank the reviewers for their efforts in obtaining this superb collection of papers. We look forward to more research in this important and growing field.

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