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Medical Drone Technology | Membership Renewal | Reflections on Bangkok | Barcelona Congress

In Focus

THE ROLE OF GENOMICS IN TRANSFUSION MEDICINE

ISBT

Editorial

Over recent years the world of genomics has impacted on transfusion medicine and has helped our field particularly in the realms of blood cell typing and in the introduction of personalised medicine. The In Focus section contains five fascinating and informative articles related to genomics including personalised medicine, the role of genomics in TTIDs and in blood grouping and HLA typing.

The ISBT strategic plan 2019 – 2024 is launched in this issue of Transfusion Today – you will find our new vision and mission and renewed goals in a double page spread on pages 8 and 9. There is also a postcard insert for you to keep on your desk to remind you of the goals ISBT aims to achieve during this five year period. As the postcard says – we have acknowledged your answers to our 2019 survey and the comments you made and taken them into account in our strategic plan. I really hope that all our members will be engaged and help us to achieve the goals.

It's encouraging to see the growth in ISBT. Over the 11 years I have been at the society membership has grown from 1,398 in 2009 to 2,037 in 2020, a 45.6% increase. The growth in the number of young professionals is also really encouraging; the number of young professional members rose by 28% from 191 in 2018/19 to 245 members in 2019/20. Affiliate membership has grown to 32 in 2019/20. Don't forget to renew your membership for 2020/2021 – renewal is now open – and continue to enjoy the benefits offered to you as a member. Instructions for renewal are given on page 15.

We in the central office are in the last stages of preparation for the Barcelona congress. We are excited by the scientific programme and the programme we have organised for our young professionals. Make sure to join us and register before the early registration deadline of April 23. (See page 21).

Finally, this is my last editorial, I will retire on March 31. I have had the most fantastic time over the last 11 years, it has been a privilege to work for this great, truly international society. I have enjoyed meeting so many of you and getting to know about the successes and challenges in your day to day work life, I wish you all the best for the future. I hand over the executive director baton to Jenny White and wish Jenny great success in this very exciting job.

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Personalised transfusion medicine

Transfusion medicine is arguably one of the earliest hallmarks of the advent of modern medicine. The introduction of transfusion medicine practices has enabled over 100 years of life-saving interventions that benefit millions of recipients around the world on a yearly basis. Blood transfusion is based on three critical components: the blood donor, blood products and transfusion recipients. Early advancements in our understanding of donor and recipient biology and mismatches thereof allowed us to personalize blood transfusion interventions based on blood group antigen matching for several decades. More recently, the introduction of omics tools has enabled the elucidation of the molecular complexity of stored blood products, shedding light on the impact of donor biology on blood storability and, possibly, on the efficacy of transfusion therapies based on such products. It is in this context that transfusion medicine-precision omics approaches are being developed to address donor and recipient heterogeneity beyond blood group antigen mismatching, to also include considerations on donor genetic and environmental factors that impact the preservation of blood products.

Laboratory studies have elucidated recurring patterns in the so-called storage lesion (extensively reviewed in Yoshida et al.1), which includes the biochemical alterations to energy and redox metabolism of stored blood cells (either red cells or platelets). However, we just now begin to appreciate that the extent and progression of the so-called storage lesion is indeed impacted by donor-dependent variables, such as the capacity to sustain energy metabolism and antioxidant defenses in the context of storage in the blood bank. A paradigmatic example is represented by some very common enzyme deficiencies impacting the activity of key antioxidant enzymes, such as glucose 6-phosphate dehydrogenase deficiency, which affects ~400 million people worldwide and up to 13% of blood donors in some metropolitan areas. Similarly, habits like smoking and exercise prime blood cells to oxidant stress or boost the capacity to cope with it, respectively, thus affecting blood storability in the face of storage-induced oxidant stress. The introduction of omics tools, from genomics to proteomics and metabolomics, promises to advance our characterization of blood donors and the products of their generous altruistic donation.
For the foreseeable future, we will be able to use such molecular testing not only to identify blood groups, perform nucleic acid testing to ensure bacterial and viral safety, but also to leverage our understanding of the blood product as a drug of which doses, shelf-life and efficacy will be amenable to characterization by means of affordable, high-throughput, centralized testing. While most of these promises could be already fulfilled through the implementation of once-in-a-lifetime genotyping of blood donors, the simple characterization of the genome would fall short in appreciating the impact of the donor's lifestyle (e.g., smoking, diet, exercise) or microbiomes, and the impact such factors have on the metabolic age of the blood they donate.

In a Copernican revolution from the object (the blood product) to the subjects (donors and recipients), precision tools like omics approaches promise to put the person even more front and center of transfusion medicine efforts. By implementing currently available technologies, in the near future we will be able to perform molecular testing at the time of donation to inform unbiased decisions on the optimal processing strategies (e.g., leukofiltration, irradiation, pathogen reduction, storage additives), predict the product shelf-life based on molecular fingerprints at the time of donation, and even define the optimal category of recipients that would benefit the most from the transfusion of a blood product of well-defined molecular characteristics. In other terms, we would finally move past the characterization of blood product shelf-lives based on their chronological age (days elapsed since the time of donation) and embrace the concept of the metabolic age of the unit, 2 as determined through affordable, high-throughput, unbiased molecular testing.

Disclosure of Conflict of interest Though unrelated to the contents of this manuscripts, the authors declare that AD is a founder of Omix Technologies Inc and Altis Biosciencens LLC.

Personalized: /ˈpɜːsənəlaɪzd/ adj, designed or changed so that it is suitable for the needs of a particular person

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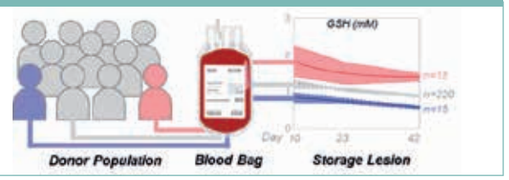
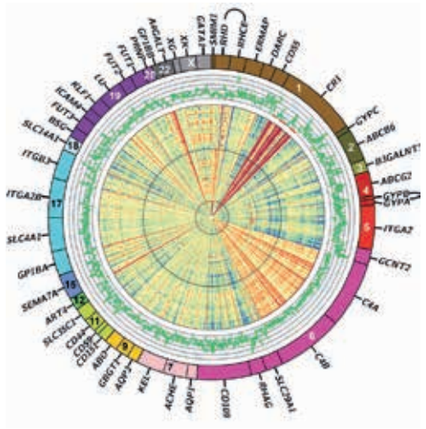
Figure 1 – The storage lesion is impacted by donor biology, with blood from some donors showing higher end of storage levels of antioxidants like reduced glutathione higher than those measured in fresh units from other donors. Blood, like people, does not all age the same. The interested reader is referred to references 1-3.





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Whole genome sequencing

Sequencing of an individual's genome is becoming more common in many areas of medicine with the development of faster, less expensive approaches for gene sequencing, termed Next Generation Sequencing (NGS). For transfusion medicine, comprehensive determination of all blood groups of interest in a single assay is not currently possible as DNA-array and multiplex approaches target a limited number of genetic variations. More than 2,000 alleles alone have been identified associated with altered RBC phenotypes and/or with antibody production.

In the last few years several groups have shown that whole genome sequencing (WGS), in which the coding exons and non-coding regions are sequenced [1-3], or whole exome sequencing (WES), in which only the coding exons are sequenced [4-6], or targeted NGS, in which specific genes of interest such as blood groups are captured and sequenced [7], allow comprehensive determination of RBC and platelet antigens[1-8] including RH genotyping.[4] The strength of this approach lies in the ability to detect all polymorphisms including null alleles, novel mutations, complex gene rearrangements, and determine gene copy number to identify rare and novel blood group variants that would otherwise go unrecognized. HLA typing is rapidly moving to targeted NGS supported by commercial investment. Blood group typing does not have that same commercial kit availability, although NGS panels to predict blood group antigens that include ABO and RH are in research development.

Importantly, as the cost of NGS continues to drop and patient genome sequencing as part of clinical care continues to grow, this information can be used for transfusion medicine. An individual's genome needs only be sequenced once in their lifetime, and the data can be "read" often. Analysis of existing NGS data for patients needing transfusion therapy would represent a cost-effective and practical use of existing information to select blood products. Automated software designed to interpret RBC phenotypes, HPA, and HLA represents a practical use of genomic information to streamline pre-transfusion testing, improve transfusion safety, and transform the way blood products are provided to patients.

Along with the potential strengths of NGS come several challenges. Efforts to create an algorithm to directly interpret NGS and to generate a transfusion-focused report are under development and validation.[3] Novel genetic changes of unknown significance in blood group genes will be encountered and will require evaluation. The ISBT Working Party on Red Cell Immunogenetics and Blood Group Terminology is working to catalogue clinically relevant as well as benign blood group variation and to establish an electronic allele database, as well as working with the Locus Reference Genome (LRG) to define blood group reference alleles to standardize interpretation.

One can envision the hospital transfusion service as part of the pipeline to mine existing NGS data for transfusion medicine. Knowing which antigens that a patient lacks and is at risk for sensitization would streamline pre-transfusion testing (number of rule-outs required) and enable informed selection of blood products. Genomic data promises to fundamentally change selection of products for patients for transfusion.

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Figure: Circos plot showing example of whole exome sequence (WES) depth of coverage for blood group genes. (modified from Transfusion 2019, 59:3256.)

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The role of genomics in Transfusion-Transmitted Infectious Diseases (TTID)

The implementation of highly specific and sensitive nucleic acid testing (NAT) for a range of blood-borne viruses has dramatically improved blood safety. However, emerging infectious agents remain a permanent threat in blood transfusion despite the implementation of several measures to prevent transfusion-transmission of unknown viruses. This is particularly relevant as a significant proportion of transfused subjects are immunocompromised.

In this context, metagenomics associated with next generation sequencing rapidly appeared as a suitable tool to explore bacterial and viral communities from various biological specimens. Indeed, this approach offers the possibility to detect simultaneously multiple organisms in a complex DNA/RNA mixture without culturing and any a priori knowledge of the microorganisms nucleic acid sequences. Metagenomic studies have thus revealed that the blood of healthy humans is not as sterile as previously supposed. Metagenomics has shown that donated blood products contain bacterial DNA from the Proteobacteria, Actinobacteria, Firmicutes, and Bacteroidetes phyla (Païssé S et al, Transfusion, 2016), and a large diversity of known viruses that are not part of the regularly monitored agents. Among them can be cited the Anelloviruses and HPgV-1 (formerly known as GBV-C), which are both nonpathogenic and commonly detected in human blood (Sauvage et al., Blood Transfus, 2016), and sequences derived from well-characterized viruses such as papillomaviruses, herpesviruses, polyomaviruses, poxviruses, picornaviruses and various small circular viruses (circo-, cyclo- and gemycircularviruses) (Furuta et al., Transfusion, 2015; Zang et al., Transfusion 2016; Brito et al., Vox Sang, 2018). Novel or unexpected viruses have been also identified in human blood such as a Flavivirus named human hepegivirus 1 (HHPgV-1), discovered in post-transfusion serum samples from blood recipients (Kapoor et al., mBio, 2015), the Giant Blood Marseillevirus (GMB), discovered initially in a pool of samples collected from asymptomatic blood donors from the South of France (Popgeorgiev et al., J Infect Dis, 2013) or a Human Astrovirus MLB2 detected in a fresh-frozen plasma unit, eligible for transfusion (Lau et al., Transfusion, 2017). Further investigations are still needed to determine the potential pathogenicity and transfusion transmissibility of these novel viruses detected by metagenomics. Finally, metagenomics has demonstrated its usefulness to complement routine diagnostics that failed to identify an etiologic agent in unexplained post-transfusion infectious events. Therefore, the investigation of a transfusion related-sepsis case led to the discovery of a novel Acinetobacter species in a pathogen-reduced platelet product (Crowford E et al., Clin Infect Dis, 2019).

In this regard, the characterization of the genetic content of entire communities of organisms from blood donors and blood recipients appears particularly relevant for the detection and surveillance of new, (re)-emerging or unexpected infectious agents, and particularly viruses, that could impair blood transfusion safety. However, for metagenomics to become widely applied as a diagnostic tool for both prevention and investigation of TTID, technical challenges remain to be addressed that include (i) improving the sensitivity of the method, (ii) the use of sequencing reagents free of environmental contaminants that could otherwise cause false positive, and (iii) specific bioinformatic skills (Sauvage et al., Transfus Clin Biol, 2016 and 2017; Waldvogel-Abramowski et al., Transfus Med Hemother, 2019).

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The role of genomics in blood group serology

I would like to touch on the role of genomics in the field of blood group serology from three perspectives: the blood group discovery mode, blood group problem solving mode and the total blood group predictive capability – with a word of caution!

To begin it is useful to ask "what is genomics?" A genome is an organism's complete set of DNA, including all of its genes. Genomics involves the sequencing and analysis of genomes through uses of high throughput DNA sequencing and bioinformatics to assemble and analyze the function and structure of entire genomes. From our perspective this includes the genes responsible, directly or indirectly, for the diverse structures on the red cell membrane that carry blood groups. Genomic studies will provide a complete blood group antigen predictive profile. [1]

As a technical note: genomic blood group studies may involve three different sequencing strategies: extracting blood group data generated from whole genome sequencing, or whole exome sequencing, or using a more targeted exome sequencing approach – targeting blood group genes. A recent review compares these three strategies. [2]
From the first perspective genomics in discovery mode has contributed to the recent rise in blood group systems that are formally registered by the ISBT. Nine blood groups were registered in the last decade – many in the last five years. Combined with the 29 systems reported over the 110 years since the discovery of ABO in 1901, this growth brings the official total to 38.

Large scale genomic studies have generated data sets from thousands of individuals. Study of these population data sets can provide a comparison of blood group profiles and frequencies among the world's populations. They also reveal potential novel alleles within specific populations which trigger further investigative studies. For example, one such study discovered an unexpected null allele in the ABO blood group among African population(s) – subsequently confirmed by serology. [3]
From the second perspective, genomic studies can be applied to explain serology antigen or antibody problems. A targeted blood group exome sequencing approach has been clinically useful to solve a spectrum of complex blood group serology problems within a red cell reference laboratory setting. Such problems arise, for example, from the presence of rare or novel changes on relevant blood group genes that have not previously been associated with an altered blood group phenotype. [4, 5]

The third perspective relates to the total blood group predictive capability. As the information in the genome includes all the genes responsible for blood group systems, complete blood group predictive profiles can be extracted from genomic data sets. Given that 328 to 330 antigens are registered by the ISBT this is powerful capability. [6] However, the significance of some variants detected by this method is not always clear.

A key point to remember is that all genomic based blood group profiles are predictions. There are many complex biological factors that regulate expression of a blood group antigen on the red cell membrane and it is important to remember that only serology will confirm whether the antigen is present.

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Other sources:
https://www.google.com.au/search?q=definitions+genome+and+genomics&gws _ rd=ssl#spf=1580195322154

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The role of sequencing for HLA typing

HLA typing started in the 1960s with serological techniques for class I antigens. For a long time, this was sufficient for transfusion medicine issues and for the transplantation of solid organs. In bone marrow transplantation, the importance of class I subtypes and class II antigens for graft versus host disease and for the mortality of the transplanted patients was soon recognized. In the early 1990s, newly developed molecular methods like the polymerase chain reaction with sequence-specific primers or the hybridization to oligonucleotides, allowed a more accurate HLA class I typing and also allowed the typing of HLA class II to an extent that was not possible by serological techniques.

The number of allele variants including non-expressed alleles (null alleles) at the class I and class II loci increased within short time and made the sequencing of stem cell donors and patients inevitable. Allelic variants of the antigen recognition domain (ARC) were to be identified, which is why at least exons 2 and 3 of HLA-class I alleles (encoding the alpha1 and alpha2 domains) and at least exon 2 of HLA-class II alleles (encoding the beta1 or alpha1 domain, respectively) were sequenced with the Sanger method. HLA sequencing accelerated the discovery of new alleles and so the number of HLA class I alleles increased from 210 in 1995 to 18,691 as by September 2019, the number of class II alleles increased from 261 to 7,065. Nowadays, sequence based typing (SBT) is the standard method for high-resolution HLA typing.

With second-generation sequencing methods (next-generation sequencing; NGS), large numbers of samples can be typed within a short time and at extremely low costs. ABO blood group and RH genotype can be determined within the same workflow, significantly reducing the typing effort for donor registries. Like Sanger sequencing, second-generation sequencing techniques are based on short read lengths (up to 500 base pairs).

The major challenges with all of these HLA-typing techniques are phase resolution of heterozygous positions, and the identification of null alleles when the causing polymorphism is located beyond the routinely typed regions. For such incomplete results additional testing is required. To overcome this problem, protocols using long-range PCR and subsequent shotgun sequencing were introduced for the typing of patients and selected donors. These protocols allow typing of complete genes and of additional gene loci with little additional cost. Most long-range protocols currently determine the sequences of the loci HLA-A, -B, -C, -DRB1, -DRB3,4,5, -DQA1, -DQB1, -DPA1, and -DPB1. The advantages of this approach are higher accuracy, the detection of almost all null alleles and a dramatic reduction of ambiguities. Although the importance of genes such as HLA-DRB3,4 and 5, HLA-DQA1 and HLA-DPA1 for allogeneic stem cell transplantation has not yet been clarified, their knowledge makes it easier to evaluate donor-specific HLA antibodies, for example as part of a virtual cross-match.

In the future, NGS methods based on long-read technologies (third-generation sequencing) will eliminate the problem of ambiguities and may even enable the sequencing of complete HLA haplotypes.

STRATEGIC PLAN

2019-2024

ISBT has a new Strategic Plan which will drive everything we do for the next 5 years. We want to expand on our recognition as a **truly global and inclusive society** with a high scientific focus which travels from ‘vein to vein’

We want to expand our global reach and will do this by engaging with our members locally, digitally and through our congresses and educational activities. We want to see our members develop and grow, this way **we will together achieve our vision.**

VISION

A world of safe and sufficient blood

MISSION

ISBT is a global community of professionals sharing knowledge to enhance transfusion practice. We do this by: providing opportunities for advancing knowledge and education & by advocacy for the welfare of blood donors and patients.

PRIORITIES

An example is given from each of our top priorities:

- **Develop and deliver a high-quality integrated education and training programme for ISBT**

  Develop and deliver an effective online educational toolbox on all aspects of Transfusion Medicine
- **Expand ISBT’s global reach with an emphasis on new regions**

  Improve ISBT brand awareness outside Europe and North Americaon Medicine
- **Increase participation of currently underserved members**

  Increase the number and involvement of Young Professionals & Transfusion Practitioners & Nurses
- **Increase the involvement of Working Parties in ISBT**

  Support all WPs to implement a work plan that aligns with ISBT strategy
- **Raise the reputation of ISBT publications**

  Ensure that Vox Sanguinis is a prestigious and high-impact journal
- **Develop an advocacy agenda**

  Advocate for effective, nationally coordinated and regulated blood services ensuring motivated blood donors, a safe and sufficient blood supply, patient-centred outcomes and community confidence.

STRATEGIC GOALS:

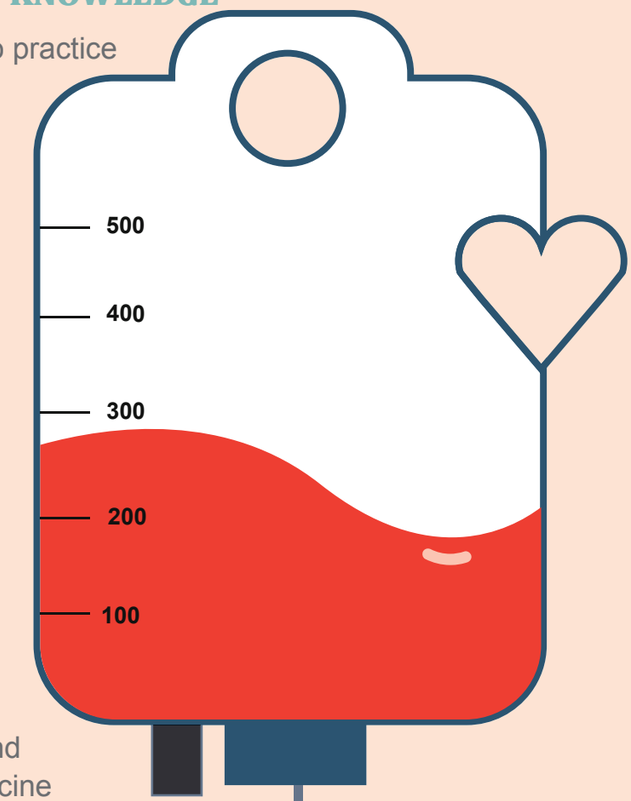
We are pleased to introduce our 9 strategic goals. These new goals are designed to keep, and build upon those things we do well and they also address areas where we feel we can improve.

EDUCATION & KNOWLEDGE

Be the global ‘go to’ organisation for transfusion medicine education and knowledge sharing

TRAINING AND IMPLEMENTATION OF KNOWLEDGE

Be the leader in transforming knowledge into practice



INTERNATIONAL OUTREACH

Engage transfusion medicine professionals and institutions globally

CONGRESS

Be the international congress of choice for transfusion medicine professionals

PUBLICATIONS

Be respected for high-quality scientific and professional publications

DIGITAL RESOURCES

Be a trusted ‘go to’ source for information and interaction in all aspects of transfusion medicine

WORKING PARTIES

Support Working Party activities to achieve outputs aligned with the ISBT strategy

GOVERNANCE

Be recognized for transparent and sustainable governance

ADVOCACY

Be the advocate for blood donors and patients

Elections for the ISBT Board of Directors 2020

Exercise your right as a member and vote!

ISBT exists for and is guided by its members. The Board plays a vital role in this process and all members who are eligible are invited to exercise your right and vote for the candidates who you feel will make effective Board members and lead ISBT forward into the next decade.
The electronic ballot for the ISBT Board of Directors 2020 will commence on March 17, 2020.

The positions that are to be contested are:
President Elect
Vice President
Treasurer
Regional Director Africa
Regional Director Europe
Regional Director South East Asia
Regional Director West Pacific

Invitation to participate email – action required
ISBT has once again partnered with Survey & Ballot Systems (SBS) to administer the 2020 election. To ensure your election specific broadcast email arrives safely in your inbox on or around March 17, 2020, please add the following email address as an approved sender; noreply@directvote.net. If you have any questions contact: office@isbtweb.org

Election process
All individuals who were accepted ISBT members on December 10, 2019 at 17:00 Central European Time will receive an email on March 17 or 18, 2020 from noreply@directvote.net with information and details for participating in the electronic ballot. Please follow the instructions received in the email. The voting process is straightforward and easy to follow. If you do not receive an email please check your spam or junk folders.

Candidate information
You can read the biography and statement of motivation for election for each nominated candidate as you go through the ballot process. There are two or three candidates standing for 5 of the 7 vacant positions.

Closing date and time of voting
Voting will close on Saturday May 9 at 23.59 Central European Time.

ISBT introduces its conflict of interest policy

The Standing committee on Ethics has over the last two years been working on an ISBT conflict of interest policy. The final version of the policy was accepted by the ISBT Board at its November meeting in Bangkok. The policy is already in use for the 2020 election candidates and will be rolled out to all those implicated by the introduction of the policy over the next few months.

ISBT is committed to ensuring the integrity of its medical, scientific, educational, and research activities. The Society acknowledges the key role that its Directors, Standing Committees and Working parties play in assuring its professional reputation and ensuring its ultimate success. This requires individuals in these positions to maintain a high level of independence and avoid any situation in which there could be a personal advantage (direct or indirect), either now or in the future, which could jeopardize their independence, integrity or impartiality or which might impact adversely on the reputation of the Society.

The Society is well served by the fact that many of those involved in its activities have diverse interests and are involved in a number of activities outside the ISBT. These interests enhance the expertise that these individuals bring to the various roles that they fill in representing the Society.

On occasion, situations may exist in which an individual serving the Society in an elected, appointed, or volunteer position or as an employee has some outside interest that could constitute a “conflict of interest”, as defined herein, or that could be perceived as constituting a conflict of interest. The ISBT’s position is to actively seek to address such issues, preferably before they arise, or, at a minimum, when they become known to the individual and/or the Society.

Generally, a conflict of interest could be said to exist when individuals have material or intellectual interests outside the Society specifically in the field of transfusion medicine and science that could influence or could be perceived as influencing their decisions or actions not to be in the best interest of the Society.

The intent of this policy is not to prevent members of ISBT who have relevant relationship(s) with commercial interest(s) or other interests from involvement in the activities of the Society but rather to ensure that ISBT promotes an environment whereby decisions are made that are independent of control from commercial, and other, interests and free of commercial bias. Openness and transparency about possible conflicts of interest is important to maintain integrity and public trust in the organization.

The atmosphere ISBT wishes to create is one in which individuals are comfortable asking questions relating to conflict of interest without feeling awkward or accusatorial and where recusing one’s self from participation in discussions that might be perceived as constituting a conflict is the norm rather than the exception.

The policy covers individuals who hold positions of influence and or authority within ISBT. This includes:
- Members of the ISBT Board (including observers)
- Chairs and members of Standing Committees
- Officers of Working Parties as defined in the ToRs
- ISBT Employees

ISBT is grateful to Peter Flanagan, Chairperson of the ISBT Standing Committee on Ethics and members of the committee for their work on this policy.

The policy is available on the ISBT website.

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Open access

Helping researchers share their work with the world

Open access is now widely accepted as a model for scholarly publishing and allows authors to meet the needs of any institutional requirements. Funds and mandates for open access publication are being established by more governments, research funders, and institutions. The concept of Open Access has been around for more than a decade but within the last two years the development has really gained momentum, and Open Access has become an important and integral part of most publishers future strategy.

Basically, the idea is that Research needs to be available to the public to drive innovation and invention, and so people can find the information they need to make decisions in their lives. At Wiley, our Open Access journals are supported by a network of authoritative journals and societies as well as internationally renowned editorial board members. All research articles published in Wiley Open Access journals are immediately freely available to read, download and share. Wiley Open Access publishes a number of online journals across biological, chemical and health sciences.

An accelerator in the Open Access development was clearly the launch of Plan S in September 2018. The plan, which requires that from 2021 scientific publications which are being funded by public grants have to be published in compliant Open Access journals, was supported by cOAlition S, a consortium of research funders.

As the publishing partner of ISBS, we are working towards finding sustainable business models in order to accommodate the need of Open Access. A landmark in this, happened in January 2019 where Wiley concluded negotiations with Project DEAL which is a consortium of German Libraries and Research Institutions that was commissioned by the Alliance of Science Organisations in Germany, represented by the German Rectors' Conference, the HRK. DEAL represents nearly 700 mainly publicly funded academic institutions in Germany (such as universities, universities of applied sciences, research institutions, state and regional libraries), including the most important science and research organisations in Germany. Wiley was the first publisher to partner with Projekt DEAL for a countrywide deal in Germany to better address the growing research market and evolving needs of researchers. In essence, this means that researchers (acting as corresponding authors) at Projekt DEAL institutions can publish articles Open Access in Wiley's journals at no cost. The partnership will better support institutions and researchers in advancing open science, driving discovery, and developing and disseminating knowledge.

This publication model has gained popularity and currently, Wiley has also entered into agreement with the following countries where the same terms apply:

Sweden (BIBSAM), The Netherlands (VSNU), Austria (KEMO), Norway (UNIT) and Hungary (EISZ)
To sum up what this means for you as a member of the ISBT: if you are the corresponding author of an article to be published in Vox Sanguinis or the ISBT Science Series and if you are from either Germany, Sweden, the Netherlands, Austria, Norway or Hungary, you are entitled to have your article published as an Open Access publication at no additional cost to you. And in this way, you can easily share your work with the world.

ISBT Education

What's new?

NEW! – ISBT Corporate Partner Education webinars

ISBT has invited its Corporate partners to host webinars. These webinars will be organized not to promote products but to share knowledge by our Corporate Partners. Please check the website to see the list of the upcoming webinars.
www.isbtweb.org/isbt-academy/webinars/

New regulations for Academy applications

Funding is available for educational activities such as hospital training, practical or theoretical workshops or congress sessions organized by a national or regional society. Applications for events need to be submitted a minimum of six months before the event is held.
Furthermore, there will be a possibility to request two types of financial support: € 5000 or € 12000.

Please do read the guidelines first before filling in the online application forms. (http://www.isbtweb.org/isbt-academy) Applications are reviewed by an Advisory committee.

ISBT relaunches its forum

We have listened to you and heard about the challenges you faced with our 'old' forum. ISBT has rebuilt the forum and it is now available through 'My ISBT'. The forum was launched in its rejuvenated format in early March. Its there for our members so please use it to post comments, ask questions, or connect with other ISBT members.

Education eNews

From January 2020, ISBT members will receive education eNews once a month. These electronic newsletters will include updates on ISBT Education, webinars and Live Journal Clubs, academy applications and more.

ISBT Education App

Don't forget that ISBT has an education app. Download it to your smartphone or tablet and receive all the content that is on the education portal on your mobile device. A great way to update yourself while on the move.

Welcome to our new members

December 2019 - March 2020

Americas
Argentina: Oscar Antonio Canle
Brazil: Tamires Delfino dos Santos
Chile: Veronica Bustamente Rebolledo
USA: Maria Barcelona, Krystalyn Hudson, Alexander Carterson, Barbara Bryant, Nancy Dunbar

Eastern Mediterranean
Egypt: Mohammed Farouk Abouelfarag
UAE: Mariem Zouaoui, Nazik Hamad Eltilib

Europe
Belgium: Ellen Van den Acker
Netherlands: Alie de Waard- Annema
United Kingdom: Nicholas Gleadall

South East Asia
India: Moni Udani, Chippy C.S., Bableen Kaur Ghotra, Akanksha Jivrag Neogi, Priya Prasad, Gurkiran Kaur, Arashdeep Singh, Paramjit Dhot, EPK Michael, Harish Warbhe

Western Pacific
Australia: Agnes Nsofwa, Eileen Roulis, Amanda Ormerod
Japan: Hidekatsu Sakata, Asashi Tanaka, Kazuhiko Ikeda, Ryuji Tanosaki, Yuji Yonemura
New Zealand: Elizabeth Holly Perry

Ubonwon Charoonruangrit
National Blood Centre of the Thai
Red Cross Society
Thailand

Bangkok congress report

I remember one special day in 2016, during 34th International ISBT Congress in Dubai, when the Thai representatives were interviewed by the ISBT executives for bidding on the upcoming Regional Congress, in order to bring back ISBT Congress the second time to Bangkok Thailand again after the first one was arranged in 2005. The National Blood Centre of the Thai Red Cross Society had been selected to host the 30th ISBT Regional Congress in Bangkok in 2019. Over the course of the next three years, we worked hard on this great job, together with excellent supporting team of ISBT, the board members especially Ms Judith Chapman, and the professional organizers.

One of the most memorable events of the 30th ISBT Bangkok Congress, held 16th to 19th November 2019, was the auspicious occasion when Her Royal Highness Princess Maha Chakri Sirindhorn, Vice President of the Thai Red Cross Society inaugurated the opening ceremony and graciously addressed all participants and honored guests. H.R.H princess was interested in Dr. Martin L Olsson's lecture topic: "A World of Safe Blood - Matching Donor and Patient for Transfusion in the 21st Century." The participants expressed great appreciation when ISBT's President, Dr. Olsson proposed an Honorary Membership for H.R.H. Princess.

Dr Martin L Olsson, ISBT President, introduced H.R.H. Princess to the exhibitions displayed 5 decades activities of National Blood Centre of the Thai Red Cross Society and ISBT 200 years' history of blood transfusion development.

A total of 1,537 participants from 67 countries registered for the congress, and 52 corporate partners, exhibitors and sponsors supported the congress in which the participants were able to update the latest modern technologies and also expand their networks. The scientific program comprised 7 academy sessions, 4 plenary sessions, and 10 parallel scientific sessions, while 379 scientific abstracts were accepted presentations.

Being a host country, we were so happy to welcome participants from around the world as relatives with the warmth and sincerity of our Thai culture. The smiles, joyful and friendliness from blood transfusion professional friends while attending the "Bangkok 2019" were precious rewards that we received from this event.

Surprisingly, Dr Harold Gunson's report that the previous ISBT congress "Basel 2019" was a farewell from the international transfusion stage of himself as he stepped down from the post as the Director of Swiss Transfusion SRC. October 1, 2019 was also my time as well, retiring from the Director of National Blood Centre of the Thai Red Cross Society. The "Bangkok 2019" ISBT congress was also my farewell from 40 years of blood transfusion professional official work.

Therefore I would like to offer some reflections to our blood service society that I had given to the "Bangkok 2019" ISBT congress party dinner: "Blood transfusion service professionals have a common characteristic of supporting the patients from behind as well as along with successful clinical treatments. In Thai, we figuratively call the people working hard behind the scenes as putting the gold leaf behind the Buddha image. We praise those who do good things out of sight without expecting fame. It is ISBT that provides opportunities to bring these behind the scenes professionals together, promising that our society will never die if we hold on together."

Thank you for always good friendship and support.

Yanli Ji
Institute of Clinical Blood
Transfusion, Guangzhou Blood
Center, China

Young professionals workshops at ISBT congresses

In 2017 ISBT introduced workshops at its congresses, the first two were titled peer reviewing scientific papers and writing a scientific paper. They were conducted by the editors of Vox Sanguinis and the ISBT Science Series. Following the establishment of the ISBT Young Professionals Council in 2018, additional workshops dedicated to young professionals of the transfusion medicine field were introduced during the congresses in Basel and Bangkok. The topics of the workshops covered many aspects relevant to young professionals, such as career development, grant writing and presenting a research idea to a panel of international leading experts. The aim of these activities was to offer young professionals opportunities to communicate with a senior expert face to face and support them with their future transfusion career.

The Workshop on "Pitch your research idea" was held during the 29th Regional Congress in Basel. The young professionals presented their primary research idea and data to the mentors. After this short presentation (pitch), there was time for a discussion and the mentors provided their suggestions. The small meeting room and the informal atmosphere made the communication easier and it gave the participants a possibility to practice their presentation skills, find inspiration and improve their research.

For the Workshop on "Career development in transfusion medicine for young professionals " that was held during the 30th Regional Congress in Bangkok, the young professionals were working in groups and used colourful drawings to show their career development plans for the next five to ten years. The participants shared their struggles with each other and with the mentors, who then gave tips on how to overcome these issues. It was a very nice experience for the young professionals that will certainly help them with their career development.

During the "Grant application" Workshop in Bangkok ISBT congress, the senior experts shared their experience with how they became successful with grant applications but also encountered a great amount of frustration along the way. In a passionate discussion, the speakers encouraged the attendees to be persistent and to put more efforts in grant applications in order to achieve their goals.

In summary, it is highly recommended for the young generation of transfusion professionals to take part in different activities including workshops at ISBT congresses. Extensive networking, collision of thoughts and in-depth discussions will help the young professionals to develop and to make their great contributions for the improvement of transfusion medicine around the world in the near future and feel welcome in the ISBT family.

If you have any suggestions for a future young professionals workshops, please feel free to contact us: Yanli Ji jiyanli2013@163.com or Satyam Arora satyamarora83@gmail.com. Don't forget to follow up the council news on ISBT social media account #ISBTYoungBlood and share with us your thoughts and experiences. See you in Barcelona!

The 36th international congress of the ISBT, Barcelona, Spain

Join us for the 36th international congress of the ISBT in Barcelona. Explore Barcelona during your congress visit, Barcelona has a very old history, an excellent cuisine and a variety of artistic treasures.

Academy Day Sunday June 7, 2020
The sessions in the Academy day are all educational and designed to get delegates up to speed with developments in transfusion medicine both theoretically and practically. Many of the sessions will be interactive when delegates will be able to use the congress app to ask questions and to vote.

Session A1	Aspects to be considered to connect with the donor community
Session A2	Transfusion protocols in trauma and massive bleeding
Session A3	Advancing blood systems globally – the WHO vision
Session A4	Solutions to unmet transfusion needs –novel platelet products and antigen modified cultured red blood cells
Session A5	How to conduct research studies and
Session A6	New laboratory techniques used in the transfusion laboratory to improve clinical advice and product selection
Session A7	All about the ISBT activities – educational activities, what ISBT can offer the young professional and clinical transfusion outreach activities
Session A8	Sickle Cell Disease and molecular techniques in treatment and transfusion policy

Main scientific programme

Plenary sessions
The plenary sessions are focused on three very current topics in transfusion medicine. Delegates will have the opportunity to hear eight out of nine speakers who are new to an ISBT congress.

Plenary 1, Monday – Post partum haemorrhage – how can it be reduced?
Rachel Collis, Roderick Larsen Reindorf and Beverley Hunt and Matt Keep will cover management of post-partum haemorrhage, the challenges of post partum haemorrhage in Africa and lastly a multimedia approach to post partum haemorrhage.

Plenary 2, Tuesday – The gut microbiome in transfusion medicine
The speakers are all new to ISBT; Stephen Withers will talk about converting RBC units to group O with gut-derived bacteria, Hadi Goubran Messiha will cover the microbiome and transfusion in cancer patients, and Genjamin Lelouvier will be exploring the microbiome of healthy blood donors and its role in potential transfusion reactions.

Plenary 3, Wednesday – Arthropod transmitted infections: New strategies for eradication
The presentations include; the Monkeybar project: identifying environmental factors for emerging zoonotic malaria, engineering malaria resistance in mosquitoes: gene driving and Alternative strategies for mosquito-borne arbovirus control". The speakers are all new to ISBT; Kimberley Fornace and Andrea Crisanti and Grant Hughes all from the UK.

Education Sessions
During the main scientific programme there will be two education sessions.

The first session is an update on Rh disease and the WIRhE initiative. Rh disease of the foetus and newborn has virtually disappeared from Western Europe, North America and Australia, however Rh disease remains in other parts of the world leading to complications. It is estimated that ~ 50% of pregnant women who need Rh (D) immunoglobulin do not receive it. A new, organization founded in 2019: the Worldwide Initiative for Rh Disease Eradication (WIRhE) aims to eradicate Rh disease by "connecting the world to protect mothers and babies." Presentations will include 'the global epidemiology of Rh disease and the rationale for the WIRhE initiative,' 'current issues in Rh disease: the perspective from Nigeria', 'improving Rh disease prevention in rural Pakistan,' and Rh disease prevention in Europe.'

The second session is titled 'All you want to learn about Guidelines.' ISBT has decided to support the International Collaboration for Transfusion Medicine Guidelines (ICTMG) in a number of ways and the Barcelona congress gives the opportunity to highlight guideline writing, implementation and use. The session will include 'how to develop international transfusion guidelines,' 'guideline implementation: successes and challenges from the UK experience' and 'adapting guidelines for global application – how ISBT can help.'

Transfusion Practitioner (TP) programme
Saturday June 6 The International Transfusion Practitioner journey and beyond. A workshop for TPs and transfusion safety officers.

This is the first ever ISBT TP workshop and promises to be a very interesting and stimulating day, with sessions on what is a Transfusion Practitioner and the uniqueness of the role, how it has evolved over time, with specific aspects of the role highlighted such as haemovigilance and patient blood management.
In the afternoon there will be workshops which are a great opportunity to engage with other TPs on the day, and of course share experiences, knowledge and learn.

Tuesday June 9
TP session on the extended roll of the TP.

Further details of the TP programme are available on the congress website.

ISBT Run
All delegates are invited to join us for the 5 km ISBT Run. Let's start the day fit and fresh.

Tuesday, June 9, 2020, Time: 06.30 - 07.30
You can sign up for the Run during the registration process.

Party
The party will take place at the Poble Espanyol, here you can observe popular architectural richness, discover the culture, traditions, scenery, folklore and gastronomy of the different regions of Spain. Tickets can be purchased for € 50 during the registration process.

Tuesday, June 9, 19.00 - 23.00
Poble Espanyol

Deadline Early Registration Fee: April 23, 2020

www.isbtweb.org/barcelona

Prize and award winners 2020

ISBT Presidential Award

Anneke Brand

Anneke is recognised for her work related to many areas of transfusion medicine including her pioneering work in the field of prevention of immunisation caused by blood transfusions. She investigated centrifugation- and filtration-leukoreduced blood components for treatment of hemato- oncology patients, and showed that alloimmunization could be diminished or even prevented when using leukoreduced blood components [Eernisse & Brand, Exp Hematol 1981]. She also showed that cytomegalovirus transmission could completely be prevented when all components were leukoreduced. With Leo van de Watering, she evaluated the logistics and cost effectiveness of leukoreduction in a number of randomized clinical trials. Since then, “universal” leukoreduction of all cellular blood components has become an accepted practice in many countries. These developments have greatly improved the quality of life, as well as chances of survival for hemato-oncological patients. In 1994 together with Fred Valkenburg, she founded the cord blood bank in Leiden. She has co-authored more than 350 papers and to this date is a well respected specialist in transfusion medicine.

The Jean Julliard Prize winner for young scientists 40 years and younger:

Angelo D’Alessandro

Angelo D’Alessandro (age 35), PhD is an Assistant Professor at the Department of Biochemistry and Molecular Genetics, University of Colorado Denver – Anschutz Medical Campus. He is also the founder and director of the Metabolomics Core of the School of Medicine and Colorado Cancer Center. He received his PhD at the Tuscia University (Italy) under the aegis of the Italian National Blood Center. His postdoctoral career focused on Mass Spectrometry-based Omics technologies at Bruker Daltonics (Bremen, Germany), Cancer Metabolism at the Beatson Institute for Cancer Center (Vousden Lab - Glasgow, Scotland) and Metabolomics in Transfusion Medicine at the University of Colorado Denver (Aurora, USA). He has published over 235 papers in peer-reviewed scientific journals.

Wednesday June 10 ISBT Prize and Award sessions
09.00 - 10.00 Jean Julliard prize plenary session including presentations by Angelo D’Alessandro and Jean Daniel Tissot
10.30 - 12.00 ISBT Presidential award plenary session including presentations by Anneke Brand and Simon Stanworth

The Presidential Award and the Jean Julliard Prize will be given during their respective sessions.

Young professionals programme in Barcelona

Sunday, June 7
19:00 – 21:00
Young Professionals Drinks and snacks
Exhibition area
Come and have a drink and chat with your fellow young professionals during the welcome reception.

Monday, June 8
7:00 – 8:15
Young Professionals Breakfast
The breakfast provides the opportunity for young professionals to discuss their work with senior and established transfusion medicine experts. Sign up, indicate your field of work and you will be matched up with experts and other fellow young professionals.

Monday, June 8
8:30 – 10:00
Peer review workshop
The aim of peer review is to assess the quality and originality of manuscripts in a scholarly journal. Miquel Lozano (Vox Sanguinis) and Denese Marks (ISBT Science Series) will host this workshop on peer reviewing with the intention to invite the participants to become reviewers.

Monday, June 8
16:00 – 17:00
Speed Dating
The speed dating is a one hour social event for young professionals to enable the young professionals to meet the representatives of the ISBT Board, Young Professionals Council, ISBT Academy, Vox Sanguinis Editorial Board and the ISBT Working Parties.
This event is hosted by the Young Professionals Council.

Tuesday, June 9
8:30 – 10:00
Leadership and transition from the lab to the office
This workshop is for those, who are planning to make a career change and step out of the lab to transition into a new leadership role. The session will explore what it means to be a leader, to manage people, change, our leadership style and interaction with our organisations.
The workshop will be hosted by Judith Chapman.

Tuesday, June 9
14:00 – 15:30
Present your research idea to a panel of experts
Attendees, who registered and were selected will have the possibility to present their research ideas to a panel of experts in 5 minutes. After the presentation the panel will give tips and suggestions.
The workshop will be hosted by Henrik Ullum.

From ISBT Central Office

Nadine Shehata
Mount Sinai Hospital
Canada

Katerina Pavenski
St. Michael's Hospital
Canada

Collaboration between ICTMG and ISBT

The International Collaboration for Transfusion Medicine Guidelines (ICTMG) was established in 2011 and has 28 members from 10 countries. The aims of the ICTMG are to develop evidence based transfusion medicine guidelines to optimize transfusion care by using a widely collaborative international effort with consistent up-to-date methodology and to establish consistency while reducing redundancy in guideline development. The purpose of developing guidelines is to help improve the quality and consistency of transfusion care. Guidelines are intended to condense the abundant scientific knowledge into a usable format, decrease variation in transfusion practice, support efficient utilization of resources and priories research activities. The selection of topics for guideline development is determined by whether there is a variation of transfusion practice, whether there is a discrepancy between evidence-based knowledge and day-to-day clinical practice, where the proposed intervention/practice could reduce patients' morbidity and mortality or improve quality of life, or improve transfusion safety and/or whether the topic is of policy importance. The ICTMG guidelines are intended for health care providers providing transfusion, hospital transfusion medicine services, blood agencies, health care systems and Transfusion Societies.

The ICTMG has published three guidelines (platelet transfusion in hypo proliferative thrombocytopenia, red cell specifications for patients with hemoglobinopathies and fetal neonatal alloimmune thrombocytopenia (FNAIT)) and five systematic reviews (HLA matching for platelet transfusion, crossmatching platelets for transfusion, antenatal interventions for FNAIT, postnatal interventions for FNAIT, and HPA antibody determination for FNAIT). The ICTMG is embarking on three new guidelines, platelet transfusion, albumin use and hemolytic disease of the newborn (HDN). Guideline development also comprises methods to facilitate incorporation of guideline recommendations into daily practice. As such, ICTMG has developed three podcasts and for FNAIT a patient education pamphlet available in seven languages all obtainable at ICTMG's website, ictmg.org.

Guideline development involves several stages. Following the selection of the guideline topic, guideline panelists with expertise in the topic selected are invited to provide input in the development of the guideline. Expertise is sought from health care providers, patients and policy makers. The scope of the guideline is discussed and decided before conducting a systematic review of the scientific literature. The guideline panel reviews the synthesized data for the transfusion intervention and drafts recommendations that are subsequently reviewed by societies to ensure recommendations are clear and implementable. The guideline process is supported by the ICTMG secretariat funded by Canadian Blood Services and the five committees of the ICTMG, the Executive Committee, the Topic Selection Committee, the Methods Committee, the Editorial Committee and the Dissemination and Implementation Committee.

Many ICTMG members are members of ISBT and actively contributing to guideline development. ISBT was also represented at the Transfusion Guidelines Alignment group with a meeting held in 2018 around the ISBT Toronto congress to explore options for supporting ICTMG's future work. A more formal collaboration between ISBT and ICTMG has now been agreed and will be underpinned with a Memorandum of Understanding (MoU).

The partnership between ICTMG and ISBT provides ample opportunities for collaboration because of the shared common interest of advocating for best practices in transfusion medicine. The partnership will facilitate exchange of knowledge and support knowledge synthesis, the identification of quality initiatives and the promotion of research particularly focusing on implementation science that is the methods used to incorporate transfusion therapy that has have been shown to be effective into daily practice. Education and training are integral components of this collaboration to ensure future growth and collaboration of the joint initiatives.

There is a broad range of initiatives available for participation offered by the ICTMG. Involvement in the development of systematic reviews and educational modules such as podcasts, the assessment of social media to assist in dissemination of the guideline, the development of methods to assist practitioners to implement changes in practice and the evaluation of those methods are a few of these options. Guidance is provided from ICTMG members who have the expertise in these techniques to foster ongoing education in transfusion content as well as guideline methodology.

The ISBT Clinical Transfusion Working Party will serve as an ongoing link between ISBT and ICTMG and will promote broader participation of members from low and medium HDI countries to ensure that guidelines include a focus on areas relevant to these countries. Representatives from the ISBT Young Professionals Council are actively engaging with ICTMG activities with an excellent platform for learning key critical skills around guideline development. A joint educational session on guideline development and implementation challenges will be held at the ISBT Barcelona Congress in June 2020. Going forward there is scope for support from the ISBT Academy for developing educational resources and outreach activities to promote wider awareness of guidelines facilitating implementation. Where appropriate submission of publications of ICTMG guidelines or supporting commentaries to Vox Sanguinis will further enhance awareness around these high quality guidelines amongst ISBT members.

Alessandra Lelis
ABHH
Brazil

ISBT at the 2nd Highlights of ISBT at Hemo 2019, Brazil

The Brazilian Association of Hematology, Hemotherapy and Cell Therapy (ABHH) thanks the ISBT Academy for its support of the 2nd Highlights of ISBT held in Rio de Janeiro on November 6th, 2019. The event provided South Americans with significant content from the ISBT 2018 international congress in Toronto and the ISBT 2019 European congress in Basel.

The second edition of Highlights of ISBT day was a great success. The institutions' representatives: Dante Langhi Jr. (ABHH President) and Judith Chapman (ISBT Executive Director) reemphasized the importance of upholding the partnership between both organizations. The event reviewed the main subjects discussed, as well as the most relevant topics in the field of transfusion, which can contribute directly to patients.

The Highlights of ISBT 2019 signalled the sequence of a cooperation program between the two entities, intending to make such cooperation a regular activity in Brazil.

Dante Langhi (ABHH President), Dimas Tadeu Covas (ABHH Director) and José Orlando Bordin (ABHH Hemotherapy committee member) were on the Scientific Committee.

The program covered Iron and biobanking: steel storage for future donor research, Emerging threats - dengue and HEV, Complex serology with molecular typing approaches, Glycoforms of antibodies and their association with auto-and alloantibody mediated blood cell destruction, Cell-free fetal DNA, Monitoring transfusion complications through Haemovigilance, TRALI identification of novel risk factors and potential therapies, Implementing Patient Blood Management in Brazil and The ISBT renewed code of ethics – a new way for blood transfusion professionals.

ABHH joined Brazilian governmental, transfusion professional, blood establishment and industry partners in supporting the event, which welcomed 200 people from Brazil.

We would like to thank the participants, speakers, and supporting organizations who made the event such a success. ISBT Academy funding enabled for four international speakers - Katja van den Hurk from Sanquin Blood Supply Foundation, Frederik Banch Clausen from Copenhagen University, Rik Kapur from Sanquin Research and Judith Chapman ISBT's Executive Director.

We also had four local speakers - José Eduardo Levi from USP, Lilian Castilho from UNICAMP, Geni Neumann Camara from OPAS / OMS and Bruno Benites from UNICAMP.

Finally, ISBT also had a booth at Hemo 2019 with helpful transfusion medicine literature, and information on ISBT.

Viola Shano
Regional Hospital of Lezha
Albania

A guide for the establishment of a national haemovigilance system in Albania

The Association "Blood Transfusion Doctors in Albania" held on October 12, 2019 in Tirana, Albania, the conference "A Guide for Establishment of a National Haemovigilance System in Albania". This important activity for the Albanian transfusion medicine sector was held thanks to the generous financial support of the ISBT Academy in the Netherlands.

The ISBT support was requested for these parts of the program: Characteristics of successful haemovivilance systems, Organizational models for a national haemovigilance system, Prerequisites for an effective national haemovigilance system, International haemovigilance activity.

The Association had the great honor to welcome in this activity two ISBT experts, two French experts and two from Kosovo.

The educational objectives of the conference were to provide:
- Policy guidance on establishing a haemovigilance system as part of the national blood and health systems;
- Information and technical guidance on the specific measures and actions needed to implement a haemovigilance system.

The number of participants in the conference was around one hundred person, mainly doctors of Transfusion Medicine from Tirana and other regions, clinicians, nurses, staff of the National Blood Transfusion Center, students of the Medicine University.

The conference was a combination of theoretical knowledge and practical information, questions and discussions. Based on the ISBT experts advice, the participants were divided into two working groups and each expert led one workshop, respectively I. Group discussed the topic Patient-Haemovigilance and the II. Group, Donor-Haemovigilance. Each group was facilitated by a national expert and the participants had the possibility to discuss among themselsves various issues of heamovogilance.

At the end, the organisers shared with participants an evaluation form, which was anonimously completed by each participant. The summary of the evaluation was analysed by the organizers and will be used as a guide for future trainings needs. The conference was finalised with the certificate ceremony. The organizers took care to use the logo of the ISBT in all materials for visibility reasons.

Claude Tayou Tagny
Faculty of Medicine and Biomedical Sciences, Cameroon

Training in clinical research for transfusion services in Africa

Report of the first edition in Cameroon

Background and justification
A clinical research course on prevention of blood-borne viral infections was provided for 12 years (from 2007 to 2018) at the Institut Pasteur in Paris in collaboration with the University of California San Francisco and Vitalant Research Institute (UCSF/VRI) in San Francisco and the National Institute of Blood Transfusion (INTS) in Paris.

As a result of the course 30 articles were published and the best trainees continued to additional training. The course was discontinued in 2018 and as a result is now offered closer to its African audience.

Objective of the course
The overarching objective of this first course was to build capacity in clinical and epidemiological research in the field of transfusion medicine.

Approach
The course was hosted and endorsed by the Faculty of Medicine and Biomedical Sciences, University of Yaoundé I between November 4 and 11, 2019. This course was oriented young professionals wishing to conduct research in blood transfusion; surgeons, anesthesiologists and other transfusion clinicians; and public health specialists. Participants were selected according to their scientific / medical training, professional experience and writing ability. We enrolled 12 full time participants and 9 part-time participants from 7 French-speaking countries. The professors came from the USA, France and University of Yaoundé, Cameroon. The theoretical content included: 1) background information on blood-borne infections; 2) theoretical lectures on the methodology of clinical and epidemiological research; and 3) workshops during which each trainee wrote their own clinical research protocol addressing research questions consistent with their professional interests and those of their organization. The protocol writing training followed a textbook written by Hulley et al. entitled "Designing clinical research". Finally, all participants evaluated the lectures, workshops and overall training content using an evaluation form.

Outcome and comments
Each of the 12 trainees developed a research question and a 6-page research protocol in transfusion safety, with topics including:

- Risk factors for transfusion-transmitted HTLV and HCV viruses;
- Occult hepatitis B virus infection;
- Etiology of poor haemoglobin increments after transfusion in sickle cell disease;
- Sensitivity and specificity of HIV and HCV assays; and
- Assessment of blood donor health questionnaires.

At the end of the two-week course, all trainees were subjected to peer review by their colleagues during the final oral examination. Of the 12 full-time trainees, 4 had excellent performance, 6 had good performance and 2 had satisfactory performance. In total, the participants reported a high score of 3.4 over 4 for the overall course and reported their satisfaction.

Based on the success of this edition, we plan to continue this course in future years for the benefit of Francophone African transfusion medicine professionals.

Acknowledgement
We also thank the sponsors of this course for funding travel and accommodation for international teachers and participants. They are: Association pour la Recherche en Transfusion (France); The International Society for Blood Transfusion (The Netherlands); the International Training in AIDS Prevention Studies (ITAPS) program of the University of California San Francisco (USA); Vitalant Research Institute (USA); Terumo Corporation (Belgium); and Institut National de la Transfusion Sanguine, Paris (France).
We also acknowledge Drs. Steven Hulley and Willi McFarland of UCSF, who developed the original UCSF course from which the current course was developed and who allowed the use of the approach and materials of this course.

References
1. Hulley SB, Cummings SR, Browner WS, Grady DG, Newman TB. Designing Clinical Research. 4th Edition. Lippincott Williams & Wilkins, 2013, 378 pp.

Zahida Qasim
Divisional Headquarters Teaching Hospital Pakistan

Training workshop on advances in immunohaematology through ISBT Academy support

The Divisional Headquarters Teaching Hospital and Irfan Blood Bank through Academy support of the International Society of Blood Transfusion (ISBT) organized a 2-day training workshop on 'Advances in Immunohaematology' in Mirpur, AJ&K. The subject workshop was attended by the representatives of public and private blood banks which included medical technologists, blood transfusion officers and postgraduate residents.

The technical session included lectures on Introduction to Immunology, Antigen-Antibody Reactions, ABO Blood Group System Genetics and Biochemistry, Rh Blood Group System Genetics, Minor Blood Group Systems, Antiglobulin Test, Cross-match via Gel Card, and Screening and Identification of Allo-Antibodies. The practical hands on training were provided to all participants (divided in two groups) on the lectures delivered. In addition, discrepancies of blood groups and troubleshooting procedures were explained practically. Each participant was provided an opportunity to perform at least one procedure in front of the group.

To avoid and reduce adverse transfusion reactions and complications, the need for routine antibody detection in the blood bank laboratory is of paramount importance. In Pakistan, red cell antibody detection tests and identification procedures conforming to acceptable international standards are not performed routinely in blood centres in Pakistan. The workshop is expected to increase the sensitization about performing these investigations routinely and build the technical capacity of the blood bank personnel to perform these investigations.

Pre- and post-course assessment was done to have a systematic collection and analysis of information to improve participants' learning. Participants were given a questionnaire with 25 multiple-choice questions at the beginning and at the end of training. Overall, the knowledge after the post-course assessment was raised from 54.9% to 72.6%.

The workshop ended with a vote of thanks from Head of Pathology Department, Zahida Qasim. She thanked the participants and speakers for their presence and appreciated the efforts of the organizing team in conducting the workshop in a professional manner. She said the active participation from all hospitals and blood banks professionals has been very encouraging and we hope the same kind of support in the future. Souvenirs and certificates were distributed among the keynote speakers and participants. The workshop was evaluated before the concluding session through an Evaluation Questionnaire. The results of the evaluation provided appreciated remarks regarding workshop. The results will be used to further improve the capacity building programmes in future.

Academy Event on Patient Blood Management
An ISBT academy event dedicated to patient blood management (PBM) was organized for the first time in India by Department of Transfusion Medicine and Blood bank, All India Institute of Medical Sciences, Jodhpur in collaboration with International Society of Blood Transfusion (ISBT) and Indian Council of Medical Research (ICMR) on November 29th and 30th, 2019.

Seminar on Dynamics of the Recent Dengue Outbreak in Pakistan

XVIIth Argentine Transfusion Medicine Congress

7th ESTM Iberian Course. Dra. Gracinda de Sousa Memorial
Barcelona, October 4 – 6 , 2019

Fellowship winners at Blood 2019, the ANZSBT Annual Scientific meeting, Perth, Australia

Behnaz Bayat
Institute for Clinical Immunology and Transfusion Medicine
Germany

Granulocyte workshop in Bangkok,
Thailand, Nov 15, 2019

To promote the young professionals in developing the diagnostic laboratories, ISBT working parties organized a number of workshops. During the 30th regional congress, in Bangkok, the granulocyte immunobiology working party organized a genotyping of human neutrophil antigens (HNAs) workshop.

The workshop was opened with the greeting message from Plaiwan Suttanon (faculty of Allied Health Sciences) and Behnaz Bayat. The importance of HNAs typing as the first step in granulocyte serology was described. HNAs genotyping potential in prediction of immunization related diseases such as neonatal alloimmune neutropenia (NAIN) and also the prevention of transfusion-related acute lung injury (TRALI) as a serious transfusion complication was explained.

The workshop was organized into two parts: theory and practical. The theory part began with the talk about the neutrophil's development and functions, presented by Sira Nanthapisal followed by the neonatal alloimmune neutropenia presented by Mika Mitsuhashi. Behnaz Bayat closed the session by her talk about TRALI.

In practical parts, the team of Oytip Nathalang (Onruedee Khantisitthiporn, Jeerapong Thanongsaksrikul, Kamphon Intharanut, and Picharwee Ponraweethitikorn) guided the participants in DNA isolation from whole blood, amplification of HNA-1 gene using sequence-specific primers (SSP-PCR) and analysis of PCR-products by electrophoresis.

At the end of the workshop, the genotyping results were discussed. All the workshop participants have been able to amplify the HNAs segments and the genotyping results for all three test samples were according to pre-obtained sequencing results.

At the end of the workshop, the possibilities for organizing serial workshops following granulocyte serology concepts were discussed. The majority of participants found it essential and beneficial for the development of future granulocyte serology laboratories to organize follow-up workshops.

In the end, the workshop was evaluated by participants. The majority of the participants appraise the HNA-genotyping workshop as a great success. They found the workshop an opportunity to meet up with the other colleagues, exchange the ideas, and develop a network for the establishment of granulocytes diagnostic laboratory.

Naa Adorkor Yawson
The Health Care Systems Integration Lead at FlyZipline
Ghana

Justina K. Ansah
National Blood Service Ghana
Ghana

Zipline's medical drone technology: the game changer for blood delivery

Drone technologies are today revolutionizing the world. In many countries, they are being deployed to perform everyday tasks like fertilizing crop fields on an automated basis, monitoring traffic incidents, surveying hard-to-reach places, or for military operations, especially in the developed economies.

One area where the impact of drone technologies has been significantly felt is in the health sector, particularly in the delivery of blood/blood components to health facilities in developing countries.

This is an area that has been tried and perfected by the drone technology giant, Zipline; a US medical product delivery company headquartered in South San Francisco, California. Zipline designs, builds, and operates drone aircraft.

Given that a substantial amount of road networks in most developing countries like Ghana are in very poor conditions, delays have characterized the delivery of blood/blood components and the resultant effect in some cases have been loss of precious lives.

It is against this background that the introduction of Zipline's drone technology in the blood delivery chain in Ghana has been hailed as a game changer in the overall healthcare delivery system.

Ghana's Vice President, Dr. Mahamudu Bawumia officially launched the first of four drone delivery sites on April 24, 2019 at Omenako, a village near Suhum in the Eastern Region.

Poised to deliver on its promise of operating from four bases in Ghana, Zipline on October 11, 2019, had the President of Ghana, Nana Akufo-Addo, officially launched its second delivery center at Mpanya near Mampong in the Ashanti region. All four distribution centers are expected on board before the first half of 2020.

Zipline's mission in Ghana is clear; to operate 24 hours a day, seven days a week from four distribution centers – each equipped with 30 drones and deliver medical supplies, especially blood/blood components to 2,000 health facilities, serving 12 million people across Ghana.

Since the official launch in April, a number of successful lifesaving deliveries in the area of emergency supply of blood products to save the lives of pregnant women, for example, have been made.

As at the end of December 2019, a total of 15,368 essential medical products have been delivered from the two sites at Omenako and Mpanya to about 200 health facilities. Out of this number, over 900 were emergency deliveries and the rest being re-supply.

Ghana's medical drone contract with Zipline is not only for the supply of blood products. Over 148 other medical products have been approved by the ministry of Health for delivery via drones.

For the first time in Ghana, sickle cell patients had their Hydroxyurea medications delivered via drones, thereby reducing the distance patients have to travel for their regular medications. Doctors in the beneficiary hospitals say they now work with peace of mind knowing that even in cases of emergency, when blood products are needed, Zipline will be available to supply within the shortest time. The number of referral cases to bigger hospitals as a result of no medications have also reduced drastically because when the hospitals run out of stock, they can rely on Zipline to supply that which will be required to save the life of a patient.

Significant to mention is the fact that Zipline sends blood and other medical products to as far as Ekye in the Afram Plains area of Ghana. This is about 4 hours' drive time by road including crossing a lake via a ferryboat. Given that many areas within Afram plains are hard to reach, Zipline drones have brought a huge relief to these communities as the drones are able to deliver medical products within 45 minutes of receiving the order via sms, WhatsApp or phone calls.

Experts in Ghana say the intervention of Zipline is very timely as it is responding to specific needs that posed huge challenge in the times past.

2020

March 16 - 20, 2020
HBTSSN International Congress 2020
Port Harcourt, Nigeria

March 19 - 20, 2020
Austrian Society for -blood group serology and transfusion medicine (ÖGBT)
Vienna, Austria

March 25 - 26, 2020
IPFA 5th Asia Workshop on Plasma Quality and Supply
Chonburi, Thailand

March 27 - 28, 2020
Centro de Sangre de Concepcion and Ministerio de Salud - Subsecretaria de Redes Asistenciales
Course on Patient Blood Management
Santiago, Chile

April 15 – 16, 2020
Tracing processes in the blood transfusion system
Bologna, Italy

April 16 – 18, 2020
The 6th Slovenian Congress of Transfusion Medicine
Portorož, Slovenia

June 6 - 10, 2020
36th International Congress of the ISBT
Barcelona, Spain

June 15 - 16, 2020
Haematology and Blood Disorder Conference
London, United Kingdom