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Transfusion Today | Number 117, December 2018



Cellular Therapies

CAR T Cells

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Judith Chapman

Editorial

Our focus section in this issue is on cellular therapies. The origins of cellular therapy can be traced back to the nineteenth century when animal injections were used in an attempt to stop the effects of aging. Successful modern cellular therapies began in 1968, in Minnesota where the first successful human bone marrow transplantation took place. As a transfusion medicine scientist I am intrigued by the new developments such as the use of CarT cells and in regenerative medicine. Articles in the In Focus section will give you an insight into these two topics as well as others including cord blood.

I am looking forward to the next congress – the 29th regional congress which will be held in Basel, Switzerland. Basel is a beautiful city where old and new meet at the river Rhine which cuts the city in two. The Basel congress centre is in the heart of the city not that far from the river. It is a small venue and therefore gives delegates the opportunity to 'bump' into each other more frequently. The congress will have a packed programme of state of the art science with new topics and new speakers to ISBT. We hope you will join us.

ISBT is giving some prominence to young professionals, after all they are the future of developments in transfusion medicine and the future of our Society. The newly established Young Professionals council met for the first time in Toronto and they have been extremely active. Many initiatives are planned and we hope that young professionals in our field will really appreciate and benefit from these. Catch up with the council in the From the Central Office section of this issue.

I wish you season's greetings, and many good wishes for 2019. I hope it is a successful year for you.

Unproven therapies

We are indeed living in exciting and rapidly evolving times. The landscape of medicine is truly seeing a paradigm shift (a word often misused and over-interpreted) with potentially effective novel disease treatments across the entire spectrum from cancer to strokes and degenerative disease. Rare diseases, thus far lacking in efficacious therapeutic options are deservedly seeing new targeted treatments from disease modifying drugs to gene editing¹.

The recognition of the central and pivotal role played by the immune system in many diseases including cancer has resulted in the development of novel therapies like Chimeric antigen receptor (CAR-T) cells, and checkpoint inhibitors. Rigorous research leading to well-designed clinical trials have resulted in clear demonstration of overall survival advantage and therapeutic benefit. CAR-T cells has been evaluated by the Food and Drug Administration (FDA), USA and granted expedited and accelerated approval in recognition of its game changing status. Since then, CAR-T cells has now also been approved in the EU and countries worldwide are following on.

Perhaps most exciting of these advances is the myriad potential offered by stem cells (mesenchymal stromal cells, haematopoietic stem cells, induced pluripotent stem cells, etc.) and the therapeutic hope for tissue and cellular regeneration. There is still some way to go before the concept of organ replacement via cellular regeneration becomes routine but increasingly, it no longer seems to exist in the realm of science fiction. Closer to home, and starting from various stem cell sources, scientists are collaborating with transfusion medicine experts to investigate how to produce engineered and lab grown red cells and blood components, in large scale, for clinical transfusion.

Along with these scientific breakthroughs is the inevitable hype that comes with it. This is often oversold by the media as great success stories and public perception and false hopes are inevitably raised. This is understandable because current treatment options may not be available for many diseases. It would be tantalising if neural function and functional recovery could be consistently restored after cerebrovascular strokes and damaged myocardial function improved with progressive incurable cardiomyopathy. No wonder the public are willing to

seek out and pay for these “stem cell clinics” which claim to offer these medical advances.²

The one big caveat however, is that these treatments are yet to be proven. They might hold great promise but many uncertainties and questions remain. The untoward, unknown side effects are often not fully recognised, underplayed and not made clear to the public. This has led to serious adverse side effects, often life threatening, like the development of a neural glioproliferative tumour post intrathecal injections of embryonic, foetal and mesenchymal stem cells to a patient or vision loss after intravitreal injection of autologous stem cells.^{3,4} These serious incidents have rightly led the FDA to come down punitively on these clinics and to announce that this is a priority area to concentrate on, which is recognition of the under-reported and serious scale of the problem.

Most recently, international societies have taken an unequivocal stance on this “unregulated” practice. Both the International Society of Stem Cell Research (ISSCR) and the International Society of Cell Therapy (ISCT) have issued clear guidelines and published policy statements.⁵ The profusion of “stem cell” clinics worldwide proclaiming unsubstantiated claims is not only unethical and potentially dangerous, but impedes the development of the field which depends on the unbiased and objective accumulation of data and clinical endpoints conducted in formal clinical studies.

It is well accepted that all therapeutic drug treatments come with potential side effects. The reason why we continue to use them is because published peer reviewed results from well-designed clinical trials demonstrate its consistency and efficacy. In addition, that assessment of its efficacy has outweighed the untoward side effects or potential harm it may cause. These side effects have also been interrogated in the clinical trials and are therefore better understood. Unlike physics and mathematics where proof often needs to be irrefutable, “proven” therapies do not refer to drugs with complete efficacy and no side effects but rather that they have been through a rigorous process of analysis in clinical research and translational clinical studies leading to regulatory approval.



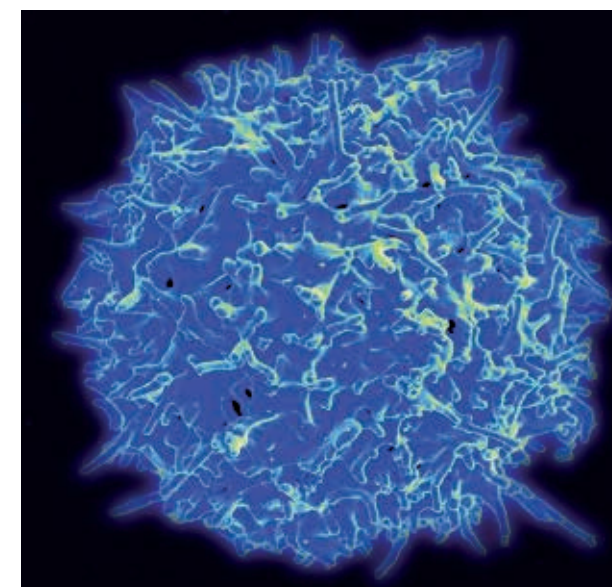
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All of this requires international coordinated action. Societies have taken the forefront. The Worldwide Network for Blood and Marrow Transplantation (WBMT) of which ISBT are part of is a World Health Organisation (WHO) partnered organisation and together with ISCT, is aiming to tackle this issue head on by making clear that experimental unproven therapy must be performed in a rigorous manner with robust clinical governance. Side effects can be fatal like CAR-T cells and the cytokine release syndrome. These therapies must be delivered within institutions with properly credentialed medical/transplant teams with intensive care and neurological support. It also aims to empower the medical community and the public with adequate information and knowledge about cell based medicine.⁶

There is an urgency for governments and health authorities to act and to achieve regulatory harmonisation. This field is too full of promise for it to be endangered by unlicensed and unauthorised use of these cell based modalities.⁷

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Healthy human T-cell

Umbilical cord blood banking: harnessing the potential

Cord blood banking is aiming at preserving the stem cells found in the blood of the umbilical cord and placenta after birth of a baby and includes the whole process from collection, through processing to storage. The cells are used today to treat hematological diseases such as leukemia but also increasingly in regenerative medicine. The advantages of cord blood stem cells include: immediate availability of cells, absence of risk to the donor, lower risk of graft-versus-host disease and a lower need for donor-recipient HLA compatibility. However, a limiting factor is the low number of hematopoietic stem cells.¹

The success of a transplant is dependent on the number of cells transplanted/kg body weight. With cord blood, the number of cells in a unit and the collected volume is dependent on a plethora of factors that vary considerably. These include the baby's weight, the size of the placenta, gestational age and the mother's ethnicity. To best preserve the potency and viability, the cells are frozen after being concentrated in a buffy coat by removing most of the red cells and plasma. Once frozen, the cells can be stored for a substantial period of time. Currently, cord blood units stored for 21-23.5 years have been shown to not only have a highly efficient recovery of cells and potency but also engraft and repopulate the hematopoietic system in a way consistent with freshly isolated cells.²

Cord blood is preserved for allogeneic use typically in a public bank or for autologous/family use in a family bank. Units in public banks are listed on national/international registries and are available for use by any patient in need. Most public banks focus on storing units from donors of mixed ethnicity, when an HLA-matched donor can be hard to find. On the other hand, when parents save cord blood in a family bank for a fee, the cells can be used for an autologous treatment of the donor baby, or used by an immediate relative for an allogeneic treatment. Typically, both types of banks work according to Good Manufacturing Practices and fall under the same regulatory umbrella as bone marrow stem cells. Both public and family banks are usually accredited by organizations such as AABB or FACT.

In recent years, more focus has been given to the possible use of cord blood for indications other than transplantation. For example, a considerable focus has been on the use of



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cord blood cells in hypoxic brain injury, including cerebral palsy and autism.³ The mechanism of action is not thought to be so much replacement of cells in the brain but rather the immunosuppressive ability of cord blood cells to suppress an inflammatory state and to let the body heal itself.⁴

In addition, a large effort has been in the research of expanding cells, not only the stem cells but also other cell types such as mesenchymal stem cells that are present in cord blood. Many researchers are isolating specific cell populations from cord blood and expanding them ex vivo prior to therapy.⁵

When cord blood banking started it was seen as a complement to adult stem cells to be used for hematopoietic transplantation, mainly in children. The field has now evolved and much attention is now given to alternative uses in regenerative medicine. Cord blood has truly gone from being a waste product to a source of valuable cells.

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ISBT SEASON'S GREETINGS 2018

With best wishes for a successful 2019!

From the ISBT President, Board of Directors & ISBT Central Office

Haematopoietic stem cell transplants: where are we now?

Both Autologous and Allogeneic Haematopoietic Stem Cells Transplantation (HSCT) are well established treatments for patients with haematological malignancies including acute leukaemias, myelodysplastic syndromes and lymphoproliferative disorders. Over the years, refinements in transplant conditioning (reduced intensity, better resolution HLA typing) and progressive improvements in post transplant supportive care has led to better overall survival and a reduction in non relapse transplant mortality.¹

Safer and more effective transplants has meant that the age limit for allogeneic transplants has progressively increased to 70 years especially with the introduction of reduced intensity transplants. Recent publications have also demonstrated that extending the age group further is feasible and this is partly due to a better understanding and more robust risk assessment for transplant eligibility with the incorporation of formal comorbidity assessments like the Sorror score.²

In addition, the current landscape for haematological malignancy treatment has progressed tremendously with the introduction of novel drugs including targeted therapies and immunotherapies like PD-1 inhibitors. Many of these new therapeutic agents have been recently introduced in the algorithm of patient management; these include Multiple Myeloma (Carfilzomib, Daratumumab), Hodgkin Lymphoma (Brentuximab, Nivolumab), Acute Myeloid Leukaemia (Myelotarg, FLT3 inhibitors), Acute Lymphoblastic Leukaemia (Nelarabine, Blinatumumab) and Myelofibrosis (Ruxolitinib). This may mean 2 things. On the one hand, more patients are responding to such novel treatments including previously refractory and heavily treated patients and this cohort of patients are now eligible and may benefit from a transplant. On the other hand, some of these treatments have become so effective, the question being interrogated is whether consolidation with HSCT is now necessary. This critical issue is now being addressed in several randomised trials like in myeloma. In

addition, these new drugs can also be used to augment the benefits of HSCT—by incorporating these novel agents either into the conditioning and post transplant as maintenance.³

One of the main limiting factors for HSCT in the past has been the availability of matched unrelated donors especially for minority groups. Unrelated registries have responded by increasing the number of minority donors and other registries are being set up worldwide to increase the donor pool. HLA typing has also seen the introduction of high resolution molecular tissue typing methods and it is now routine to select matched donors based on 10 or even 12 loci compared to 6 in the past. Although this improved matching leads to better overall survival, the need for stringent matching may also reduce availability of matched unrelated donors. On the other hand, the continuing success of cord blood transplants and the advent of haplo-identical transplants have partially offset this problem.

Haploidentical or half-matched transplants is an exciting development that is already revolutionising HSCT. As all parents and children are by definition at least haplo-identical to a patient (since we inherit one set of genes from each parent), this immediately opens the availability for patients needing transplants especially in countries who historically have limited family size like China (paucity of matched siblings). The ready availability and easy accessibility of these family donors also means that the time to finding a suitable donor is drastically reduced. The ability to cross these HLA barriers and perform mismatched transplants was made possible by the addition of post transplant cyclophosphamide which allowed for these transplants to be done safely without increasing the incidence of Graft versus Host Disease (GvHD) as would have been expected from a mismatched transplant. Crucially, the current results from haplo-identical transplants have been impressive and considering that cyclophosphamide is comparatively an affordable drug; this has meant an impressive adoption of haplo-identical transplants worldwide.⁴

The treatment of GvHD has also seen major advances in the previous few years. GvHD remains a major cause of morbidity and mortality and the field has for the 1st time seen the approval of several new effective drugs for treating GvHD including ibrutinib and ruxolitinib. Several other exciting new drugs are also being tested in current clinical trials. There is also an increasing understanding of the role of the intestinal flora and microbiome in the development of GvHD.⁵

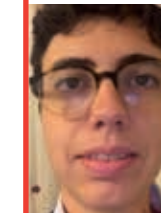
As the results of HSCT improves and the risk decreases, there is now great interest in expanding the range of disease potentially cured by HSCT. This is especially so in the non-malignant setting. Long term cure rates for Aplastic Anaemia are now routinely above 80% and adult patients with inherited red cell disorders like Sickle Cell Anaemia and Thalassemia are now being offered the chance of cure, something previously done mainly in the paediatric population. (ref) At the same time, there remains continued interest in using autologous HSCT as an immunomodulatory therapy in patients with autoimmune diseases like scleroderma and other like multiple sclerosis.

The future of HSCT is therefore bright and expanding.



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CAR T cells: current status

Chimeric Antigen Receptor (CAR) T cells are an autologous cell therapy product which is genetically manipulated, ex vivo expanded, and induces T cell mediated kill of targeted cancer cells.

Structure of the CAR

The extracellular domain of the engineered CAR specifically binds to a selected tumor antigen through a so-called single chain antibody fragment. A bridge domain spaces it from the intracellular domain. The intracellular domain contains signal transduction elements which confer the activation of the cell's endogenous T cell receptor (TCR) signalling structures. Four generations of CARs are known, and differ by the addition to the CD3 zeta binding domain of co-domains such as a CD28 motif (2nd generation), CD28 plus OX-40 (3rd generation) or an engineered CD28 motif generating additional proteins after activation (4th generation) (1).

The concept of CAR T Cell Therapy was first published in 1989 by Gross and colleagues (2). Two decades later, CAR T cells directed against the pan-B cell antigen CD19 were shown to confer overwhelming complete response rates in a series of children with acute lymphatic leukemia (3). In the past 12 months, two CAR T cell formulations were licensed in the US and one in Europe, and other licenses are expected in 2019 (see table 1). The first agent, Tisagenlecleucel / CTL019 was granted an FDA license for children and young adults up to 25 years with therapy-refractory ALL and at least two relapses. In 2018, also for adult patients with refractory diffuse large B cell lymphoma

after two or more systemic treatments. In August 2018, this therapy was licensed by European Medical Agency (EMA) for both indications. A second anti-CD19 CAR therapy, Axicabtagen-Cilo-leucel / KTE-C19, has been licensed in the US (4). These CAR T cell therapies are typically single-dose treatments with

2nd generation CAR constructs. Formulations using a CAR directed against the BCMA antigen of myeloma cells are soon expected to receive their first licenses (4,5).

Table 1: Granted and anticipated licensing of CAR T cells for therapy in the US and Europe.

At least 200 clinical trials using CAR T cells are currently listed within clinicaltrials.gov (4). They include new cancer-specific or cancer-selective target epitopes of the CARs and aim to extend the use of CAR T cells to solid tumors and other types of hematological malignancies.

The stepwise, GMP-grade production of CAR T cell therapies includes apheresis of low-density mononuclear cells, monocyte depletion by density gradient separations, T cell enrichments, transduction with the CAR using viral vectors, and T cell activation and expansion using anti-CD3/antiCD28 stimulation in the presence of interleukin-2 (6,7). Expansion periods range from one to three weeks.

Efficiency and side effects

CAR T cell graftment requires substantial immunosuppression. Moreover, strong first pass effects have been recorded, mainly in the lungs (8). Signs of immune activation include fever, which may be of early onset, hypotonia, and a severe cytokine release syndrome which can be fatal (9). The latter could be counteracted by the application anti-interleukin 6 antibody tocilizumab. It becomes evident that the transplanted cells disappear from the circulation in many patients in the hours following application, and that subpopulations of the transduced cells which engraft undergo substantial cell division (8).

Further developments

Important points which are likely to influence the future development of CAR T cell applications in clinical medicine include the cost of the therapies, questions such as whether it will be possible to limit side effects, whether resistance mechanisms of treated tumors develop after cell therapies, and the value of CAR T cells within multimodal tumor therapy. Also, whether new CAR T cell formulations underlie a „silencing“ in the tumor microenvironment, e.g. in solid tumors. New application fields of CAR T cells are arising, and include infection and autoimmunity, as well as an adjunct for allo-transplantation (1).

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Generic Name	Target Structure	Vendor	Approvals	Indications
Tisagenlecleucel , CTL019 (Kymriah)	CD19	Novartis	2017 FDA (USA) 2018 EMA (EU)	Pediatric ALL, subtypes of adult lymphoma
Axicabtagen-Cilo-leucel, KTE-C19, (Yescarta)		Gilead Sciences	2017 FDA (USA)	
bb2121 and others	B-cell maturation antigen (BCMA)	Celgene	anticipated in 2019	Multiple myeloma
LCAR-B38M		Legend Biotech	anticipated in 2019	

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Personalized cell therapies

Tremendous success has been gained in recent years by engineering various immune effector cells in the experimental and preclinical setting⁽¹⁾. New cell therapies with unsurpassed efficiency for the treatment for hematological malignancies were initiated in clinical studies, but also revealed - previously unknown - severe adverse effects. Chimeric antigen receptors (CAR) mostly introduced into T-cells combine an extracellular antigen receptor specific for a target antigen with intracellular elements triggering a signaling cascade and releasing effects of the T-cell and finally killing the cell carrying the target antigen. So far, the most common antigens selected are ubiquitous public antigens like CD19, which are expressed on malignant cells but are mainly representing all B cells. Therefore, adverse reactions resulting from apoptotic effects on B cells and the depletion of non-malignant cells carrying CD 19 are common. Due to clinical success CAR T-cells were recently approved by FDA and EMA.

In other malignant diseases, especially in solid tumors, attacking cancer cells with receptors to public antigens is rather ineffective⁽²⁾. Tissue specific antigens may be aberrantly expressed on cancer cells. These tumor specific antigens, which are private neo-antigens caused by non-synonymous mutations in cancer cells, may occur at different levels. Neo-antigens are as well patient and tumor specific peptides. They are immunogenic because they are not expressed in the thymus and do not induce tolerance. As these neo-antigens are presented on major histocompatibility complex receptors (MHC), T-cell receptors (TCR) may be very specific and induce anti-tumor action. Tumor infiltrating lymphocytes (TIL) are known to be very effective in the detection of neo-antigens in solid tumors with high mutational burden resulting in the killing of these tumor cells⁽³⁾. Adoptive TIL therapies are developed for melanoma, which is well known for its high mutational burden. But the most critical questions are raised when the clinical time-scale collides with regulatory issues. Adoptive TIL therapy is commonly of undefined composition and requires additional efforts to characterize and enrich effector cells.

This may be circumvented by applying deep-sequencing technologies to discover neo-antigens. This approach enables directed cell therapies in which CAR's can be constructed to bind to these neo-antigens and their respective presenting MHC molecule. However, selecting the right neo-antigen might not be possible in tumors with low mutational burden. Here, the identification of TILs with higher frequency might be an alternate path by using high throughput capturing methods⁽⁴⁾. Both approaches exemplify important steps for any type of personalized cell therapy.

The patient's immune repertoire as well the mutational burden and cancer antigens should be characterized. As the manipulation of the immune system is the core of the treatment to effectively target highly complex cancer cells, post-response predictors should be defined. Sufficient production of well-designed effector cells in GMP production facilities are paramount to meet needed quality and clinical time-scales. Of great importance for personalized cell therapies will be a new challenge to meet regulatory requirements in a time constrained setting with the direct interaction of many other experts - a new chance for transfusion medicine.

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Human platelet lysates

The terminology of human platelet lysate (HPL) defines a cell-free, protein rich fluid produced from lysed or activated platelet concentrates, rich in growth factors and other cell growth promoting biomolecules important for wound healing and tissue repair⁽¹⁾. HPL is used as a clinical-grade supplement of growth media needed for expanding human cells, such as mesenchymal stromal cells (MSC) ex vivo^(2, 3). The propagated cells, after reaching a clinically meaningful dose, are used for transplant into patients as part of cell therapy procedures, or as clinical adjunct in regenerative medicine.

Since the first demonstrations of its benefit to expand MSCs⁽⁴⁾, HPL is gaining popularity as a powerful xeno-free growth medium supplement that avoids the immunological and zoonotic infectious risks potentially associated with fetal bovine serum (FBS), the previous gold standard for this application⁽²⁾. In the last few years, it has been demonstrated that the cell growth stimulating factors present in platelet concentrates intended for transfusion exhibit a good stability, paving the way for producing HPL from expired (> 5-7 days after collection) platelet concentrates. When reaching their expiry date, outdated platelet concentrates can be frozen and stored by blood establishments for further manufacturing into HPL, in a way essentially similar to what is done for producing plasma for fractionation. The lysis process of the platelets can be achieved by a series of freeze and thaw cycles (-80/+37°C), or alternatively by calcium salt activation. Both approaches, physical or physiological, induce the release of the factors present within the platelets into the plasma or plasma/platelet additive solution compartment.

Activation, that is associated with the generation of endogenous thrombin, leads to a depletion of fibrinogen, as it is converted into an insoluble fibrin clot that can be removed by centrifugation. Further processing steps include clarification, sterile filtration, dispensing into final containers, freezing and storage until use⁽²⁾. Such fluid contains ~0.1-100 ng/mL of a range of growth factors and cytokines, and ~30-50 mg/mL of total proteins. It is added to the culture medium at a final concentration of 5-15% depending upon cell expansion requirements, and usually at a dose less than that needed when employing FBS.

In order to achieve standardisation, HPL is currently produced by pooling platelet concentrates from up to 16-50 donors. As pooling inherently increases the risk of contamination by blood-borne infectious agents, in particular viruses, viral inactivation treatments of HPL are required as pool size increases. Two distinct viral inactivation approaches are considered: use of pathogen-reduced (e.g. Intercept® or Theraflex®) as raw material to produce HPL, or implementation of dedicated virus inactivation step (e.g. solvent/detergent or gamma-irradiation) on the pool of platelet lysate. The workshop entitled "Human Platelet Lysate: Current Standards and Future Developments" recently organized by the ISBT Working Party on Cellular Therapies, provided an excellent forum on the status of production, quality control, use for cell expansion and regulation of HPL. Proceedings are expected to be published in the very near future providing an update on the quick developments taking place in the field⁽⁵⁾.

In conclusion, the possibility to use outdated platelet concentrates for novel and meaningful applications in human therapies provides a new paradigm for blood transfusion medicine. Blood establishments should explore such clinical applications, which not only contribute to improving the sustainability of blood collection organizations, but also expand the frontiers of the clinical benefits of blood products.

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Dear ISBT members,

My first few months on the job as ISBT President have been both exciting and interesting. I have already had the honour of accepting two awards to ISBT from fellow organisations that wanted to express their gratitude to what ISBT is, does and stands for. A mere two weeks after I was inaugurated in my new role for this illustrious society, we were presented with the Presidential Award at the biennial congress of the Africa Society of Blood Transfusion in Arusha, Tanzania. A week ago, ISBT received the President's Award from the American Association of Blood Banks at their annual meeting in Boston. I would like to congratulate all members, staff and board of the ISBT! You have made a difference not only to blood recipients and donors but also to other societies, together with which we work to improve our transfusion practices worldwide.

I was also greeted with much warmth and appreciation at many other meetings attended since our own congress in Toronto, not least at well-organized blood transfusion conferences held in Manila in August and Moscow in September, where I was impressed by the high attendance and eager-to-learn participants.

This issue of Transfusion Today contains the last article in our series celebrating the bicentennial anniversary of the first human-to-human blood transfusion. To round it off, we will gaze into the crystal ball and offer you a forward-focussing glimpse into the future of transfusion medicine. In fact, the main theme of the whole issue is slightly futuristic in that we have asked a group of experts from one of our Working Parties to give us their view on the current status and future of cell therapy. I feel confident that you will find them as fascinating as I do.

Don't forget to check the website for our next congress in Basel – it went live only a few weeks ago, on Oct 10. More news and info about this European highlight for 2019 is also available in an article found in this issue. The more I learn about the perfect location of this picturesque Swiss city on the border of both France and Germany, the more I look forward to going there for our congress and the chance to enjoy the Rhine valley.

I wish you a happy festive season and look forward to meeting you in Basel or Bangkok in 2019. And finally, as always - thanks for your support of ISBT, the global go-to organisation for high-quality science and education in transfusion medicine!

Martin Olsson

Welcome to our new members

(September 2018 - November 2018)

Africa

- **GHANA:** Lilian Antwi Boateng
- **TANZANIA:** Don-Dolcetto Ngilisho
- **SOUTH AFRICA:** Thabiso Rapodile

Americas

- **CANADA:** Darlene McCroary
- **CHILE:** Carilina Jimena Hernandez Gonzalez
- **MEXICO:** Clemente Salvadoc Garcia Tunales, Gloria Mendoza Ballesteros
- **PERU:** Alina Carrasco Gil
- **USA:** Cassandra Josephson, Victoria Parker, Ljiljana Vasovic

Eastern Mediterranean

- **IRAQ:** Hoshiar Mohammad
- **MOROCCO:** Ahmed Abouyoub
- **OMAN:** Sabah Al-Mahrooqi, Saif Al Hosni
- **UAE:** Azza Riad, Lubnar Haymour

Europe

- **BELGIUM:** Rene Seghaye
- **GERMANY:** Veronika Lenz, Konstanze Aurich, Linda Schonborn
- **ICELAND:** Ina Bjorg Hjalmarsdottir
- **NETHERLANDS:** Jenesse Van Boxtel
- **ROMANIA:** Corina Posea
- **UNITED KINGDOM:** Lauren Kirkpatrick

South East Asia

- **India:** Hem Chandra Pandey, Remi Remakanth, Saikat Mandal, Joy Mammen, Jess Elizabeth Rasalam, Snehil Kumar, Anila Mani, Gayathri AM, Kahan Jayesh Shah, Lubna Naseer Chowdhary, Kamini Khillan, Rasika Dhawan Setia, R Sreelatha, Sadesh Yemalwad, Srivalli Arjunan, Rudrappa Chavan

Western Pacific

- **AUSTRALIA:** Louis Do, Robert Harley
- **CHINA:** Xun Wang, Xia Huang, Shaohua Ding
- **JAPAN:** Toshio Yabe
- **MALAYSIA:** Faraizah Abdul Karim



Join us in Basel for our 29th Regional congress where you will have the opportunity to engage with fellow professionals from around Europe and the world for the exchange of science and knowledge in transfusion medicine.

Basel

Basel is positioned at the junction of the French, German and Swiss borders. In 15 minutes visitors are able to cross three borders and thereby increase the number of countries visited in 2019. The river Rhine splits Basel in two and has contributed to its growth as a key trade and transport hub. It is a centre for medical companies including the headquarters of Roche and Novartis. It is also an attractive city with plenty of cultural highlights including museums and galleries. Make sure to spend some extra time in Basel and wander through the cobbled streets of the lofty and beautiful Altstadt in Grossbasel (Greater Basel) on the Rhine's south bank before crossing the Mittlere Brücke to Kleinbasel (Little Basel) for a more 'everyday' feel and riverside al fresco dining.

Congress venue

The Congress Center Basel enjoys a downtown location. It is a compact congress centre giving delegates the opportunity to easily connect with each other. It is a short travel times to many hotels in the city using the excellent tram system. If you are staying in a hotel you will receive a free public transport ticket for the duration of your stay.

Website

Up to date information regarding the congress scientific programme, abstract submission, the trade exhibition, registration and hotel accommodation is available on the congress website www.isbtweb.org/Basel.

Key Dates

Abstract submission	March 6, 2019
Early registration	May 9, 2019
Late registration	June 13, 2019
Onsite registration	June 14, 2019

Register before May 9 to receive the early registration discounted rate. Renew your ISBT membership to receive the member discount, you can save up to €150. You are invited to submit an abstract and share your work with colleagues and peers either through an oral or poster presentation. If you are 40 years or younger and planning to submit an abstract of which you are the first- and presenting author, you are eligible to apply for a Harold Gunson Fellowship. Successful applicants will receive complimentary registration, accommodation and flight. More information about conditions and the application procedure are available on the Basel congress website.

The Scientific Programme

Saturday marks the local day with a scientific programme prepared by the local organising committee. On Sunday the Academy (Education) day will take place in which various transfusion medicine topics will be covered. The sessions will include donor management, immunohaematology challenges in sickle cell disease, artificial intelligence and ethics, clinical transfusion in infants and children, TTI, novel technologies in IT and platelet and granulocyte immunobiology. Many of the sessions will be interactive, meaning you can use your Basel congress app to interact with the speaker or moderators during the session.

“There were so many young professionals who presented their work and it was so impressive that at such a young age they have done such wonderful studies.” - M. Devnani



In the main scientific programme there will be parallel sessions with dedicated streams that cover the complete transfusion medicine supply chain from the donor to the patient. Parallel sessions will include an invited speaker and selected oral presentations from submitted abstracts. Many of the invited speakers are once again new to ISBT congresses. Three plenary sessions will be held from 10.30 – 12.00 each day and will cover the subjects Bridging the Gap – resource poor and resource rich countries, Big Data and a Glimpse of the Future. The poster session will be held on Tuesday June 25 from 17.30.

Young professionals

The Young professionals (YPs) breakfast gives YPs the opportunity to meet experts in their sphere of work in an informal setting whilst enjoying breakfast. The dedicated Young Professionals session will consist of oral presentations from the highest scoring abstracts submitted from YPs. Workshops designed with YPs in mind will be held including a repeat of the successful workshop in Toronto on grant writing. A YP informal reception will also take place. More information on this will become available on the Basel congress website in due course.

Transfusion Practitioners

Transfusion Practitioners (TPs) will have three sessions; a networking breakfast, and two scientific sessions with a mix of invited speakers and selected abstracts for oral presentation.

Social programme

The opening ceremony will be held on Sunday June 23 and includes welcome speeches, prize presentations and entertainment featuring Dr Eidgenoss, a talented entertainer playing different musical instruments such as the Alphorn and the Swiss accordion and yodelling.

The welcome reception and opening of the trade exhibition will take place after the opening ceremony. Meet up with friends and colleagues and enjoy Swiss culinary treats. Walk through the exhibition hall and visit the exhibition booths and discover the latest developments in transfusion technology.



The congress party will be held in the Markthalle where we will have an ISBT street food festival. The Markthalle food booths will be open and serving cuisine from around the world. There will be quiet rooms, games rooms and a live band and dancing. Come and experience a not to be forgotten ISBT congress party.

Further information is available on www.isbtweb.org/Basel

Expressions of interest for hosting ISBT congresses in 2022 and 2023

ISBT will hold an International congress in June 2022, a European (regional) congress in June 2023, and a non-European regional congress in November 2023.

Expressions of interest are invited from National Blood Transfusion societies or National Blood Transfusion institutes for hosting a congress in conjunction with ISBT. This is an exciting opportunity for you to work with ISBT on providing a state of the art, inspirational congress for blood transfusion professionals.

ISBT congresses are organised by the ISBT Core Professional Congress Organiser and the ISBT Central Office. The Local Organising committee will have some responsibilities including proposing topics for the scientific programme and making suggestions for the social programme.

If you are interested in hosting an ISBT Congress, please send a letter expressing your interest to ISBT Central Office. Please make sure to follow the instructions on what to include in the application carefully. The closing date for expressions of interest is January 7, 2019.

Please send an email to wingerden@isbtweb.org to receive more information regarding the requirements for the expression of interest for the international congress 2022 and for the regional congresses 2023.

Membership renewal for 2019-2020

Thank you for supporting ISBT during a successful 2018-2019 membership year. We appreciate your continued ISBT membership and We hope that you will renew your membership and continue to enjoy the benefits of ISBT membership. The membership fee will remain unchanged and as ever ISBT aims to give you value for money. we will keep supporting you to make your membership of maximum benefit to you.

Your current benefits as an ISBT member will continue to include;

- Free access to ISBT Education: view accredited congress webcasts, read educational eBooks and more
- Free access to webinars and Live Journal Clubs: learn about various topics presented by experts in the field
- Discount on ISBT congress registration fees. In 2019 we will organise two regional congresses in Basel, Switzerland and Bangkok, Thailand.
- Free access to the ISBT Forum: online network with colleagues and experts in your field
- Free access to ISBT's quarterly magazine Transfusion Today and Vox Sanguinis, a high impact journal
- Being part of a global community
- Discounted membership fees for young professionals, Transfusion Practitioners and Allied Health Professionals (conditions apply)

ISBT is keen to see growth in the two new membership categories; Allied Health Professional and Transfusion Practitioner. With the few changes made at the beginning of the year in particular the introduction of the new membership categories, allied health professional and transfusion practitioner, we are keen to see these grow. Therefore if you fall into one of these categories please get in touch with membership on membership@isbtwe.org when you are renewing your membership. Allied Health Professionals include medical laboratory technicians or scientists who have undertaken an undergraduate qualification, medical laboratory technicians who have undertaken a diploma or certificate course in medical laboratory technology and bioengineers.

Transfusion Practitioner include transfusion liaison nurses, transfusion safety officers, haemovigilance officers and patient blood management nurses. If you fall into one of these categories please contact membership@isbtweb.org when you are renewing your membership.

We look forward with great anticipation to the new membership year and your continued membership and participation, for growth, participation and connection within our international transfusion community.

Membership renewal for 2019-2020 will start on March 1, 2019.



Roger Dodd



Louis Katz
Chief Medical Officer America's Blood Centers



In memoriam: Celso Bianco, 1941-2018

Celso Bianco, ISBT President 2014 - 2016, passed away on 16 August 2018 in Bethesda, Maryland, after a long illness. He will be remembered by all of us for his many and varied contributions to transfusion medicine, not only in the United States, but globally.

Celso graduated from the Medical School of Sao Paulo with an MD degree in 1966 and completed an internal medicine residency at the Hospital Sao Paulo in 1968. He moved to the United States in 1969. Celso entered the blood community in 1982 at the Lindsley F. Kimball Research Institute of the New York Blood Center, eventually being appointed as the center's Executive Vice President for Medical Affairs. Celso subsequently joined the headquarters of America's Blood Centers. He was ABC's President in 1999-2000 and it's Executive Vice President 2000-2012, when he retired.

Celso served the U.S. Food and Drug Administration formally as a member of its Blood Products Advisory Committee from 2008-12. He was a member of the Department of Health and Human Services Advisory Committee on Blood Safety and Availability from 2002-06 where he was an early champion of risk-based

decision making. Celso was a prominent member of the International Society of Blood Transfusion, serving on the Board of Directors and becoming the society's President for 2014-16. His knowledge, skills and personality benefitted the Society and its membership no end. His service was recognized through an honorary membership of the Society.

Through his entire expatriate professional career, he never lost a deep love for his homeland, traveling often to Brazil to participate in their debates about the best ways to fulfill our fundamental mission—supporting delivery of the best possible care to the patients we serve. His continuing relationship with Brazil included organising a "Best of the ISBT" day at the ABBH congress in 2016.

Through his humanity and empathy, Celso was seen as a peacemaker. He always had a creative resolution for problems. He had a zest for life, and the capacity to draw his friends and colleagues into that enthusiasm. His passing will leave an unfillable void in our profession, but his accomplishments, warmth and humanity will be cherished in our memories.

His knowledge, skills and personality benefitted the Society and its membership no end. His service was recognized through an honorary membership of the Society.

ISBT Young Professional Council

This year, ISBT has established a new council of Young Professionals with the mission of engaging and enriching Young Transfusion Medicine Professionals to increase their ISBT membership value and participation in the Society's activities. The council maintains communication with the ISBT board, the standing committee of the ISBT Academy, and the ISBT Central Office to ensure that the needs of the Young Professionals' community are met. It also aims to influence the strategic direction of ISBT in relation to Young Professionals and their career development.

The Council has international representation and members are appointed by the ISBT board. Young Professional Council members are selected to be ISBT members in good standing, working in transfusion medicine and under 40 years of age. The term of membership is three years from time of enrolment.

Current members of the Young Professionals Council are

- Arwa Zakariya Al-Riyami (chairperson)
- Tyler Hutchinson (secretary)
- Yanli Ji
- John-Paul Tung
- Sophie Uyoga
- Cécile Toly Ndour

ISBT is a great society with many learning and networking opportunities for Young Professionals. Membership of the ISBT offers great opportunities for self-learning and career development. ISBT has fourteen working parties in which members are welcome to join. Moreover, the annual ISBT congresses offer great opportunities for attendees to advance their knowledge, share their research and interact with the



Council members (left-to-right): Arwa, Tyler, Yanli, John-Paul, Sophie, and Cécile.

experts in the field. ISBT has many activities tailored to young professionals. For instance, during ISBT Congresses Young Professionals breakfast sessions are organised. These sessions allow Young Professionals to interact with colleagues and have discussions pertaining to their work and the future of blood transfusion. Moreover, several workshops take place during the ISBT Congresses that are tailored towards Young Professionals. To support participation of Young Professionals at ISBT Congresses, ISBT offers yearly travel awards (Harold Gunson Fellowships) for Young Professionals. ISBT has a rich Education website that contains a lot of educational material including webcasts captured at ISBT regional and international congresses, educational eBooks, and the recording of the webinars on different transfusion-related topics. Moreover, the society recently launched a mobile app to access all ISBT Education material on iOS or Android mobile devices.

We aim to engage Young Professionals, enhance their interactions with ISBT, and raise awareness of opportunities and activities within ISBT. This will be achieved through the use of social media, the online platforms (website and forum) and contributions in Transfusion Today. Moreover, we thrive to increase the existing opportunities for active participation of Young Professionals in the educational events offered by ISBT such as webinars and live journal clubs. In addition, the council aims at improving the experience of the Young Professionals at ISBT congresses and improve the value of their ISBT membership in general.

To learn more about us, kindly visit the Young Professional Council's webpage at <http://www.isbtweb.org/about-isbt/young-professionals-council/>

Transfusion practitioner networking breakfast 2018



Clare O'Reilly
Transfusion Safety Nurse, Canada

The first Transfusion Practitioner (TP) event was held at the 25th Regional Congress of ISBT in London 2015. Since then there have been TP networking sessions in Dubai in 2016 and Copenhagen in 2017. The TP networking sessions are organised by the ISBT Transfusion Practitioner Steering Committee which is a small but dynamic group of TPs from Australia, UK, the Netherlands and Canada. Each year the session is structured slightly differently with a "meet the expert" theme in London, "speed meeting" in Dubai and afternoon tea Q&A" session in Copenhagen. In Toronto, the session returned to a breakfast with over 100 delegates from 32 different countries registered and approx. 80 delegates attended. On arrival, delegates completed a "hello my name is" sticker with their name and something personal, e.g. a hobby and a topic of interest. Delegates were encouraged to choose a table to meet someone new. The sessions included time to mingle, grab some breakfast and find a table, a discussion period, and finally 15 minutes for networking and exchange of emails. At registration, delegates were invited to select two topics of interest (see Table 1).

Table 1. List of topics	
Topic	Order of preference
Clinical transfusion practice	47
Policy and procedure development	36
Quality and safety (including audit)	34
Patient blood management	32
Education	29
Haemovigilance	22
Change management	9
Lab works	2
Other	2

During the discussion period delegates listed two challenges on post-it notes related to the selected discussion topic from Table 1, then they listed strategies they have, or proposed to use, to address/overcome the challenges. Delegates were encouraged to share hints for others, who may not have TP roles in place. The room was buzzing with conversation.

Feedback from delegates throughout the congress was positive and additional feedback was sought in a survey.

A brief summary of the survey results are:

- One-third of respondents gave the event a 5 star rating
- 48% of respondents met many new people
- 96% of respondents took contact information from other delegates at the event
- 33% of respondents have been in contact with other delegates since the event
- 37% of respondents plan to reach out to other delegates.

Respondent comments:

"It was an exciting time for me and I appreciated the opportunity to attend. It was one of my conference highlights since it totally pertained to the work I do."

"It was well worthwhile, although a little short. I'm sure we could have gone on for a couple of hours at least, so interesting to see how others do business!!"

"It seemed like a number of people were looking at how to implement the role or embed it into their health service."

Respondent suggestions:

"More inter-table interactions thru mediator", "Longer if it could be possible fitted in".

Feedback will be used to plan future TP networking events. The TP Steering committee thank all those who attended the networking breakfast in Toronto. A reminder that communication can continue through the TP forum on the ISBT website; the forum is open to non-ISBT members. Also, ISBT has a special membership rate for TPs. We look forward to seeing you at the next TP networking event in Basel.



The future of transfusion medicine

As a transfusion community, we are part of the chain of people making it possible to save the life of a person with the gift of blood or tissues. To improve our work is one of the most satisfying challenges we are experiencing. In the near future, the ongoing innovation in biotechnology and data analysis definitely carries the promise that we will further advance our field and raise the standards of care. We are also living in an era in which the various ways we interact and exchange knowledge are becoming such that we even can meet 'live' in virtual reality. A growing network of knowledge sharing can form the basis of more collegial support and co-creation of solutions to advance transfusion medicine in currently resource limited countries.

It has already been predicted for years that in the future we will replace blood transfusion by alternative therapies or products. Patient blood management, new techniques in surgery, new drugs and adapted protocols in the treatment of haemato-oncology patients has already led to a reduction in the necessity of blood transfusions as part of part of treatment protocols. It is to be expected that patients with genetically-based haemoglobinopathies in the near future can be cured, which would be a major achievement in patient care. A higher number of people reach old age, with can be accompanied by multi morbidity and chronic illness. For the group of patients needing transfusion support for a longer period, it seems that solutions are still far away. It may be, however, that we find clues to generate a new set of hematopoietic progenitor cells, may be via iPS, or other ways to support ongoing healthy hematopoiesis at an old age.

In the meantime, we are living on the doorstep of the introduction of affordable comprehensive donor blood group antigen genotyping. Sharing this information in open access will provide insight in the donor pool worldwide, enabling transfusion support also in complex cases in various different countries. It also makes it possible to improve the donor and patient match and decrease RBC alloantibody formation. Culturing of antigen-profile shaped red blood cells is already possible and that will lead to new tools to enable straightforward red blood cell alloantibody testing in multi-ethnic societies. It may be possible to culture a sufficient number of these cells to replace a donor-based transfusion, but upscaling can be very costly. Ideally, we obtain such an understanding of the biology of the allo-and autoimmune response as occurring primary or secondary to various disease states, that we shut-off these responses. In this way we would obtain toleration if red blood cell alloantibody formation has occurred upon transfusion, transplantation or pregnancy. The work on cellular products for cancer therapy, together with the generation of monoclonal antibody therapy will provide new insights for immunomodulating therapy to be used in allo-and autoimmune mediated blood cell destruction. But the latter may be more wishful thinking than soon happening.

Of course, we do need to work on the generation of artificial blood cells or just compounds that can transport oxygen or those that can stop bleeding. This will guarantee immediate transfusion support for the bleeding patient in emergency situations or during operation. As a first step, it may be that we already will soon use frozen platelet fractions or cold stored platelets more often as a first-line transfusion product in the bleeding patient in emergency situations or during



Masja de Haas

Vice President Diagnostics BV, unit Health Care, Sanquin, the Netherlands

surgery. It may be that we already have technology available to manufacture oxygen-transporting and releasing particles or to generate a drug that temporarily decreases the affinity of hemoglobin for oxygen, lowering transfusion thresholds, because of increased functionality of the patient red cells. The options of artificial oxygen delivering and coagulation supporting products, will simplify the inventory management in hospitals. And even might allow for more centralized stock management, which would be of great advantage in less resourced countries. Another reason to work hard on safe and affordable alternatives for transfusion with red cells or platelets is that the risk of transfusion transmitted diseases may increase. On the one hand we have seen how disease can spread from animals into the human system and can be present in our donor blood as a blood transmittable disease. And on the other hand, global warming is a driver in the increase in parasite, virus and bacterial burden worldwide. Our donors are already great travelers, coming into contact with possible transfusion transmittable diseases, but these diseases will now spread more widely.

It is to be foreseen that for the coming decades we will continue to rely on the altruism of our blood donors. It therefore is so important to take good care of their health and to reduce unnecessary use of blood products. In the future, the ongoing collection and analysis of large data sets and biomarker analysis will enable the generation of a personalized donation advice. By collecting clinical and laboratory data on the in depth understanding of the occurrence of anaemia and of bleeding in any type of disease, or on any age, combined with information on the effectiveness of transfusions in patients, the advice to

transfuse red cells or platelet may also become more precise for the individual patient.

In conclusion, the ongoing understanding of the biology of disease and the effect of donation and transfusion, the biotechnical innovation, the opportunities provided by artificial intelligence and our increased world wide networking tools promise a lot for transfusion medicine. It is to be wished that we continue to share this knowledge and that we feel inspired to disrupt the current practice and to help to solve the world wide problems in the optimal support of the patients in need of transfusion therapy.

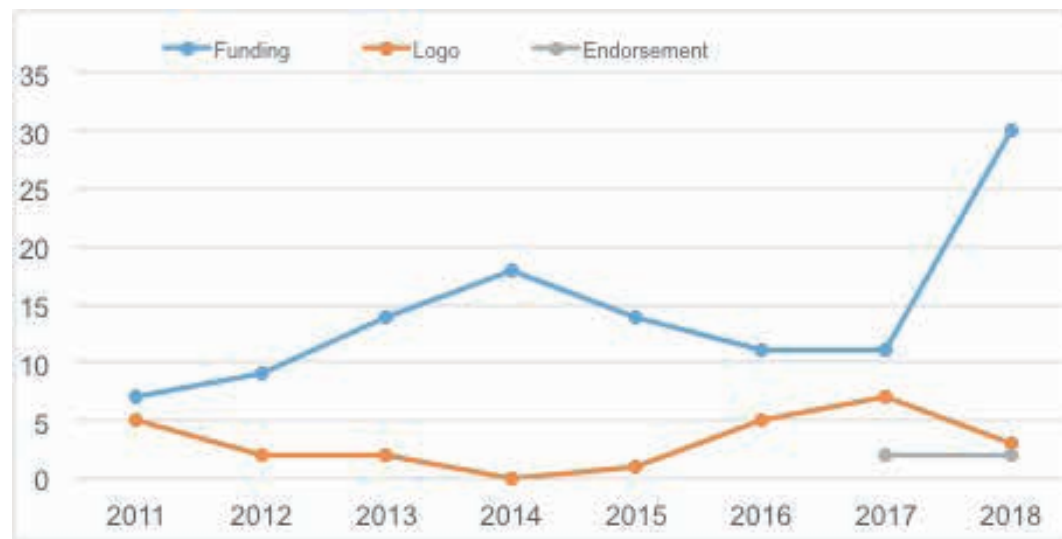
This article was written with input from the colleagues of IHD and blood bank of Sanquin and all asked during the recent BLOOD 2018 meeting in Brisbane.

ISBT Education

ISBT Academy supported events

The ISBT Academy supports applications for education activities. Anyone can apply to the Academy for funding of an educational activity, the use of the ISBT logo or the endorsement of educational courses. There are two application deadlines, April 1 for events to be held in June-November and October 1 for events to be held in December-May.

In 2018/2019, a high amount of applications were received. The majority, 30 of these were requesting financial support, 3 applied for the use of the ISBT logo and similarly to 2017/2018, 2 applications were submitted for the endorsement of courses.



The educational activities that were supported this year had a good geographic distribution including applications from Australia, China, Denmark, France, Germany, Guatemala, India, Indonesia, Italy, Kazakhstan, Malaysia, Mexico, Pakistan, Peru, Russia, Serbia, South Korea, Tanzania, The Netherlands, Tunisia, UK, Ukraine, United Arab Emirates and the USA.



The next application deadline for ISBT Academy support for events being held between June and November is April 1, 2019. Details and information about the applications are to be found on <http://www.isbtweb.org/knowledge-education/>.



Barbee Whitaker
Senior Director Department of Research, AABB, USA

The 18th international haemovigilance seminar: July 2018, Manchester UK

The International Haemovigilance Network (IHN), in collaboration with the Serious Hazards of Transfusion (SHOT) UK professional organization and the Irish Blood Transfusion Service, coordinated the 18th International Haemovigilance Seminar in July 2018 prior to the annual SHOT meeting, at the Lowry Theatre in Manchester UK. The Seminar had a programme of broad haemovigilance interest and offered an opportunity to learn and network with over 110 haemovigilance professionals from throughout the world. There was generous support for the seminar from Cerus, Immucor, Mak-System International Group, Macopharma, and ISBT.

Following a welcome from Erica Wood, President of IHN, the Seminar opened with presentations on definitional and pathophysiological aspects of Transfusion Associated Circulatory Overload (TACO), Transfusion Associated Acute Lung Injury (TRALI), and Transfusion Associated Dyspnea (TAD). Jo Wiersum-Osselton presented the latest update on the proposed definition for (TACO) and described the results of the international validation by haemovigilance experts. Alexander Vlaar provided an update on the newest thinking about TRALI and acute respiratory distress following and independent of transfusion. Chester Andrzejewski led the audience down the rabbit hole of TAD, through a comprehensive review of TAD cases and a discussion of the TAD overlap with TACO and TRALI.

In the afternoon there were parallel sessions; the first session on donors and donor attributes and included studies of the ideal inter-donation interval (varying individually and by sex) by David Roberts and the role of haemovigilance in pairing donors and blood recipients for optimum transfusion efficacy (Pierre Tibergien). The second parallel session focused on transfusion recipients and included presentations on haemovigilance in pediatric patients (Simon Stanworth) and a report from the study of platelet transfusion after acute stroke due to spontaneous cerebral haemorrhage

associated with antiplatelet therapy (PATCH; Charlotte Cordonnier). Selected short presentations from submitted abstracts accompanied each session. Many of the major presentations are publicly available on the IHN website (<https://ihn-org.com/seminars/2018-manchester>). There were sixteen abstracts accepted for oral presentations and twenty-three posters presented.

On day two of the seminar the programme began with parallel sessions on biovigilance and global haemovigilance. Presentations from Steve Anderson of the US FDA and from Arlinke Bokhorst opened the biovigilance session. Steve covered the US programs for reporting adverse events associated with transfusion and (non-organ) transplant as well as newer programs at FDA that are using innovative technologies to address technical and structural challenges to biovigilance in the US healthcare system. The parallel session included presentations on different hemovigilance systems including China, Taiwan, Spain, and Ghana. Willem Ouwehand gave the first of the plenary lectures on genomics and big data and how they are being developed in the UK, including the use of high throughput sequencing to identify rare variants in genes encoding proteins involved with platelet functional disorders. He reported that any patient entering certain clinical trials will now have their entire genome sequenced and applied this to better diagnostics for rare diseases. Other plenary sessions focused on research in human factors and the role of error in the process of transfusion (Paula Bolton-Maggs and Alison Watt). It was well appreciated that human factors represent unmet potential for improving transfused patient safety in all countries.

Finally, the IHN awards were announced. Paula Bolton-Maggs was awarded the International Haemovigilance Network Medal and Jo Wiersum-Osselton, the International Haemovigilance Network Award. Jo's Award Lecture was entitled, "Haemovigilance: are we making a difference?"



Usman Waheed
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Professional development and intensive training course on immunohaematology

The Safe Blood Transfusion Programme SBTP, Pakistan organized a training course on 'Immunohaematology' to train the technical workforce of the Regional Blood Centres (RBCs) and attached Hospital Blood Banks (HBBs). These workshops were supported by the German Development Bank (KfW) through EPOS Health Management. The specific objectives of the workshops included training of existing work force in the correct use of immunohaematological techniques and developing capacity on quality control parameters as per national QC guidelines



The Regional Blood Centre is a new entity in the blood transfusion system of Pakistan. Although relatively new, the new infrastructure has resulted in considerable upsurge of the quality of blood transfusion services. In Pakistan, only a few blood centres are performing red cell antibody detection and identification tests which is a basic requirement for the availability of safe blood. Therefore, SBTP planned for a 3-day training course on immunohaematology at three different RBCs so they become advanced 'Centres of Excellence' in their respective provinces in the field of transfusion medicine. The workshop was prepared and organized by Dr. Saeed Ahmed and Usman Waheed, Technical Experts, SBTP. Before the course initiated, all participants were sent an email containing all presentations and procedures on immunohaematology and quality control. During the workshop, all participants were provided with hard copies of national guidelines, SOPs and other printed literature.

The participants of the workshop were able to obtain training in fundamental areas of blood group serology and

by the end of the workshop were able to carry out 'tube' and 'gel' techniques for major and minor blood groups, and antibody detection and identification. Practical sessions were accompanied by lectures, interactive sessions with the facilitators where the participants informally asked questions related to the practical work.

It was clear after the workshops that the standards and quality control procedures used in many blood banks may need improvement, and considerable re-training and de-training of staff is needed.

The pre-course assessment showed a lower level of understanding while the post-course assessment results showed encouraging results. A significant change was observed in case of RBC Quetta where the pre-course assessment average was ~35% and raised up to 72% in the post course assessment. The programme was rated as excellent by most participants in response to a post-workshop evaluation questionnaire, with requests for longer and more frequent workshops. The highlight of the workshops was the evident enthusiasm of the participants who were most eager to learn and willing to concentrate for long hours every day in the workshop to enhance their professional skills and knowledge.

The concluding session and certificate distribution ceremony were chaired by Prof. Hasan Abbas Zaheer, National Coordinator, SBTP. He briefed the participants about SBT Programme and various activities that are being undertaken since the blood safety reform process commenced in Pakistan. The participants were also assured of post-training support through SBTP, Islamabad.



Helene Paarup
Department of Clinical
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Improving scientific presentations and responsiveness to feedback

A PhD course held prior to the European Conference on Donor Health and Management 2018

Being a good researcher and a good communicator does not necessarily go hand in hand. However, international knowledge sharing through scientific presentations and publications is a must for today's researchers, including conference presentations on abstracts, posters and oral presentations. Therefore, with blood donors as the common denominator for their research, PhD students were offered a course in epidemiology and statistics, oral and written presentation techniques, feedback, donor behaviour and blood banking, prior to attending the 3rd European Conference on Donor Health and Management held in Copenhagen in September 2018.

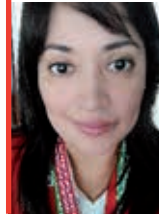
Having only 1,5 day and a group of researchers ranging from beginners to advanced level, lectures were kept compact but with an extensive academic breadth in order to serve as a wide introduction for beginners, and a brush-up for more advanced researchers. The course was targeted at young researchers within blood donor health, recruitment, and donor base management and aimed to meet the versatile backgrounds of the PhD students; from medicine and molecular biology to social science and business studies.

Of the 18 who had signed up 14 students participated, all being utmost active throughout the course; listening, asking, telling, and debating. The session on epidemiology and statistics included definitions of study designs, study populations and reference groups; exposure, risk factors, outcomes, risk estimates, prevalence and incidence rates, as these make up a basic knowledge helping to benefit from for instance many conference presentations. Written presentation techniques included abstracts and posters for international meetings, emphasizing that these are academic presentations. The do's and don'ts of scientific manuscripts and academic citation rules were discussed, and oral presentation techniques introduced the range from speed presentations to keynote speeches, how to communicate the key message, and the use of AV-equipment.

To focus on donor health, a session on marketing including donor behaviour and recruitment was held. A session on blood banking and looking at the different structures of blood banking in public hospitals in Scandinavia, non-public blood-collecting organisations in Europe, and of blood banking in the US was organised. This comparison helps to keep the local conditions in mind when studying literature and remembering to explicitly state these in the study when presenting one's own data.

The sessions on responsiveness to feedback included students' own presentations about their life and work to push them out of their comfort zones. Attentive listening is important for giving feedback, which should take into account many things, such as body language, eye contact, the tone of the voice, and talking speed next to the content of the presentation. To ensure that the feedback was coped with in a responsive manner a positive feedback structure was used: Feedback was given in three steps starting with what was good, followed by what could be better, ending with what special thing comes naturally to the presenter. This model generally promotes a very safe setting helping to accept the feedback by pinpointing what could be improved and not what was bad. Finally, learning what others see as a special gift in your performance gives the opportunity to work on becoming even more personal in future presentations.

This feedback technique was also used to evaluation the course, and at the following conference the PhD students were responsible for scoring the best poster presentation using their newly acquired skills. This was the first PhD course held prior to the European Conference on Donor Health and Management. According to feedback from students and lecturers the course was so successful that it has earned a regular place prior to future European Conferences on Donor Health and Management.



Ina Noelia Pérez Huaynalaya
Blood Bank Chief in Clínica
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Coordinator of the ISBT Days
Project



José Luis León Vega
Clinical Pathology Department,
Blood Bank – Arzobispo Loayza
Hospital

ISBT days at the 2018 congress of the Latin American society of clinical pathology

The first “ISBT Days” in Peru were held at the AUNA-Clinica Delgado facilities with support from the School of High Postgraduates Medicine Studies from AUNA Hospitals (ESECS) and was organised within the framework of the XXIV Congress of the Latin American Association of Clinical Pathology and Laboratory Medicine (ALAPAC) and the VI Peruvian Congress of Clinical Pathology and Laboratory Medicine held in Lima from 6-8 September 2018.

The educational project was split up into two days: Donor’s Medicine Day in Latin America at the Delgado Clinic facilities, and Haemorrhage Control and Monitoring of the Bleeding at Los Delfines Hotel.

A total of 100 participants attended the two days representing several Latin American countries. In order to reflect all of Latin America, we supported the attendance of several teachers.

The programme of the ‘ISBT Days’ at the ALAPAC Congress included the following topics:

- Organization of Blood Drives, an Ecuadorian Red Cross Model
- Medicine of Donation: State of the Art
- Haemovigilance and Donor Safety Criteria in AUNA
- Indicators of Donor Safety: Measurement of Fe, Ferritin and Hb
- Adverse Reactions of Blood Donation and Apheresis in AUNA
- Haemovigilance of Donors from an International Accreditation Perspective
- Selection of Candidates for Cell Therapy
- Human Development Rate and Volunteer Blood Donation
- Hospitalary Transfusional Committees
- Derivation of Blood Units in Emergency situations: Ecuadorian experience

- Perioperative Blood Saving Techniques: Role of Blood Bank Services
- Massive Transfusion Protocol: Adherence to the Protocol and Training
- Assessment of Hemostasis by Point of Care in Surgery
- Blood Bank in situations of natural disasters and terrorism in Latin America: how to be prepared?
- Platelet Contamination Detection: What is the best method for screening?
- Factors of platelet growth and use of platelet gel in reconstructive surgery

Attendees raised the following recommendations:

- Encourage the research in the field of medicine of the donor and the correct practice of transfusional medicine
- Promote the bleeding risk control as well as the PBM programs in the Latin-American region
- Promote more educational activities in the region
- Participate actively at the Network of ISBT

We are happy to have had so many attendees and we look forward to next year’s meeting in Lima.



Image 1: Donor Medicine Day in Clínica Delgado facilities - AUNA. Massive assistance.



Kostin Alexander Igorevich
Head of the Department of Clinical and Production Transfusiology and Gravitational Blood Surgery



Bulanov Andrey Yulievich
Chief freelance specialist transfusiologist

Modern transfusion technologies for medical practice

Results of the annual academic and research conference in Moscow, Russia.

On 20-21 September 2018, in Moscow, under the egis of ISBT (International Society of Blood Transfusion) and Moscow Health Department, the annual academic and research conference “Modern transfusion technologies for medical practice” was successfully held. This year, as part of the scientific program, one of the most current topics was presented at the conference: “Immunological and viral safety of transfusion therapy”



The conference united over 600 specialists including transfusiologists, hematologists, oncologists, immunologists, epidemiologists, etc. and served as the site for discussion of new technologies for the increase of quality and infectious safety of blood components.

The conference was opened by Andrey Yulievich Bulanov, Havkina Elena Yurievna, Aihler Olga Valeryevna, and Maiygorova Olga Andreevna. The first conference day presented a variety of presentations’ themes, bright discussion after each lecture with titles such as “Modern technologies providing the increase of immunological safety of transfusions”, “Transfusion care in pediatrics: immunohematological risks”, “Modern solutions for quality increase and infection safety of blood components”.

Several international speakers were invited. Topics included “Red blood cell genotyping in clinical practice”, “Newly opened systems of blood groups”, “Alloimmunization in pregnancy: program of the antenatal screening and prophylaxis in Sweden”, and “Analysis of

the 25-year experience of standardization of IDT-HAT and serology methods in blood screening”.

Simultaneous translation was provided allowing guests to interact with their hosts. The evening was completed in the lounge room where the founders of the Russian transfusiology – expounded how national transfusiology had been founded and was developing, as well discussing its prospectives and further development.

The second conference day was held in the leading specialized medical institution of the country, S.P. Botkin Municipal Clinical Hospital. As part of the scientific program, national and international specialists in transfusiology presented their reports. As in the training center for healthcare professionals — Medical Simulation Center of the Botkin Hospital, the round table titled “Complicated individual selection of donor red blood cells” was held where all participants were able to pose questions to the speakers.

The annual academic and research conference with international participation “Modern transfusion technologies for medical practice” comprised of:

- 2 training days
- 2 sites one of which is the S.P. Botkin Municipal Clinical Hospital
- Over 600 delegates from Russia, Kazakhstan, Uzbekistan, Sweden, Spain, the Netherlands, and Belgium
- 18 speakers from Russia, 6 foreign reporters from Sweden, the Netherlands, Spain, and Belgium
- 3 scientific meetings which contained 24 reports on current themes, 1 round table
- Over 10 internet resources were information partners of the event.

We thank the lecturers for interesting reports, and delegates for the live interest to each presentation and the conference in general!



Swaibu Gatare
medical doctor at Ministry of Health, Rwanda

Drones delivering blood and essential medicines to hospitals

In 2016, the government of Rwanda partnered with Zipline, to operate the world's first national drone delivery program for blood and other lifesaving medical products. These drones, called Zips, can carry two to six units of blood at a time and deliver in 15 - 45 minutes depending on a hospital's location. The Rwandan government delivers blood to hospitals throughout the country, ensuring that hospitals always have the supplies they need to save lives.

Rwanda has an ambitious vision to put all 12 million citizens within 30 minutes of any essential medicine. Every second matters in emergency management. The use of drones was the perfect solution to many of the last mile challenges that have been traditionally difficult to overcome. It is impossible to forecast accurately down to the need of a single patient. The government has provided an easy solution by centralizing supply and providing on-demand, emergency medical deliveries by drone.

- Doctors are now empowered to provide the quality care with all necessary supplies on hand.
- Patients can now be treated close to home.
- We eliminate waste from potential overstocking when health workers know that they have a quick and reliable source of supply.

Supply is not a developing country problem, it is a global issue. Rwanda was just the first one to recognize the potential of this technology and decided to do something about it first and fast.

Within the first year, Healthcare workers saved an average of 3.1 hours per delivery and a total of 10,115 hours of lost time on road pick up they could instead dedicate to patient care. This October 2018, 2 years after Rwandan President Paul Kagame launched the world's first national drone delivery service, over 7,000 deliveries have been made, with 30% of those being emergency deliveries. A total of more than 13,400 blood units have been delivered. In February 2018, Zipline obtained the highest rating from the health facilities being served in a performance evaluation conducted by the National Blood Services.

When a doctor or medical staffer needs blood, they place an order through the haemovigilance order portal. They are then sent a confirmation message saying a Zip is on its way. The Zip flies to the health facility at up to 100 km/h. When it is within five minutes of the destination, the medical staffer receives a notification. The Zip then drops the package, attached to a parachute, into a special drop zone.



2019

February 7
MEDLAB Dubai
Dubai, UAE

May 18
Haemovigilance workshop
Hong Kong, China

June 22 - 26
29th Regional Congress of ISBT
Basel, Switzerland

November 16 - 19
30th Regional Congress of ISBT
Bangkok, Thailand

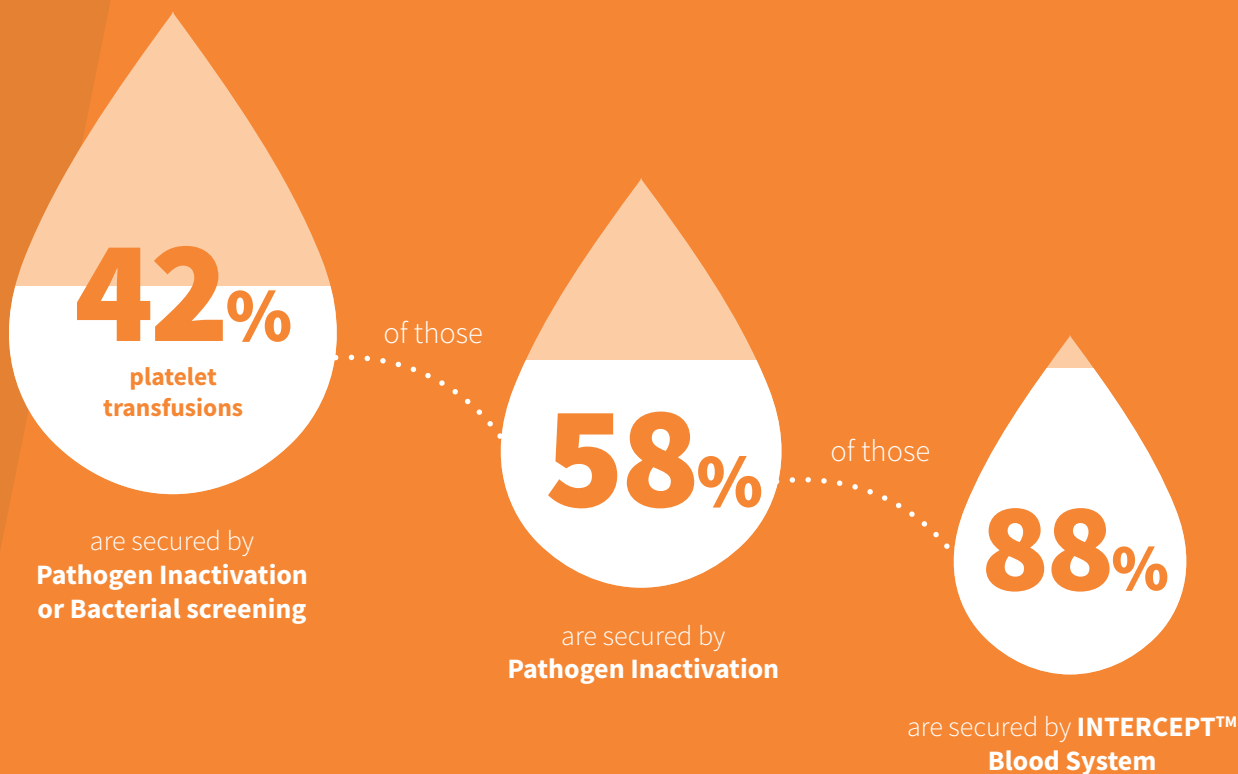
Future ISBT Congresses



Basel
Bangkok
Barcelona

29th Regional Congress of the ISBT, Basel, Switzerland, June 22-26, 2019
30th Regional Congress of the ISBT, Bangkok, Thailand, November 16-19, 2019
36th International Congress of the ISBT, Barcelona, Spain, June 6-10, 2020

What have you done to **protect your patients?**



EU Platelet Safety Today

More at interceptbloodsystem.com

References

Represents EU and Switzerland December 2017 market size data provided by national, regional and individual blood centres.
Data on file.

