

English only
Distr.: Limited

Report of the Sixth General Meeting of the

**Global
Collaboration
for
Blood
Safety**

Bangkok, 16 – 18 November 2005

Blood Transfusion Safety
GCBS Secretariat
Department of Essential Health Technologies
World Health Organization, Geneva



**World Health
Organization**

Executive Summary

Introduction

Recognition of the need for a Global Collaboration for Blood Safety (GCBS) was first endorsed by 41 countries represented during the Paris AIDS Summit in 1994 and adopted by the Forty Eighth World Health Assembly as WHA resolution 48.27 (1995), by all 191 WHO Member States prioritizing the need for Global Collaboration to improve blood safety. The Global Collaboration for Blood Safety is a voluntary partnership of internationally recognized organizations, institutions, associations, agencies and experts from developing and developed countries sharing the expertise, identifying problems, seeking solutions and working towards the common goal of global blood safety, as equal collaborative partners. Since 2000, the GCBS have held five annual plenary meetings. The sixth plenary meeting was held at Thai Red Cross National Blood Centre in Bangkok, Thailand on 16-18 November 2005. The meeting was convened and organized by the Blood Transfusion Safety Team, Department of Essential Health Technologies within the Health Technology and Pharmaceuticals cluster. It was attended by 50 participants from GCBS collaborating organizations, individual experts, WHO Regional Advisers for Blood Safety and Blood Transfusion Safety team, WHO/Geneva. The meeting was chaired by Dr Jay Epstein and Dr Silvano Wendel. Dr Roger Y. Dodd and Dr Tom Krusius served as Rapporteurs. The agenda and programme of work were reviewed and adopted by the plenary group.

Summary of the meeting

New participating organization included the Arab Association of Blood Transfusion Services (AABTS), South Asian Association of Transfusion Medicine (SAATM) and Network for Advancement of Transfusion Alternatives (NATA) presented their activities of their organizations in global blood safety. All three organizations were unanimously elected as members of the GCBS.

Global efforts and progress in blood safety were reviewed. Presentations on WHO global efforts, PEPFAR activities in Africa and international activities in Côte d'Ivoire, Uganda, Malawi and Vietnam were given and discussed. Summary reports on important global activities including ISBT Working Party on TTIs, Global Harmonization Workshop convened by major blood service alliances, PPTA Round Table on Emerging Infectious Diseases, 4th WFH Global Forum and IVth IABs Symposium on Advances in Transfusion safety were given. Iron balance in blood donors and new developments in transfusion medicine such as minimizing bacterial contamination, malaria testing and enhancing availability of plasma derived products were discussed.

New issues of concern in global blood safety and availability were discussed in three break-out sessions, including:

- developing a global response system for making safe blood available in major international disaster situation;
- evidence-based medicine and clinical standards and use of rapid tests for TTIs in blood transfusion services
- fourth break-out sessions were organized to discuss and revise the TOR for the GCBS and the organization of the functions of the GCBS Secretariat. The TOR was

simplified and adopted by the general meeting and sent to WHO Legal Department for final review.

As next steps, the meeting proposed that the Planning Group develops a process of identifying a (unitary) focus for each year. The CDC offered to organize the first Planning Group teleconference. Dr Nabila Metwalli on behalf of WHO/EMRO offered to the Planning Group to host the next GCBS meeting in Cairo.

Three Task Groups were established, and the GCBS Secretariat will contact suitable lead organizations to coordinate the work of the following groups:

- 1) Task Group for Sustainable Financing of National Blood Programs in Developing Countries;
- 2) Task Group for Disaster Preparedness for Blood Systems; and
- 3) Task Group for Blood and Plasma Donor Iron Balance

Recommendations and Next Steps

1. GCBS participants reaffirmed their commitment to continue to work towards constructive collaborations within their shared missions and roles, including commitments of support. In particular, the GCBS participants recommended that the participating organizations :
 - provide and disseminate useable progress reports on their collaborations.
 - support efforts to better disseminate standards, guidelines and technical information from their organizations that may be useful globally to enhance safe donation, availability of safe blood and its appropriate use
2. Mindful of the essential role of WHO, GCBS tasks its planning group to engage in proposals for long-term strategic planning that might further enhance the effectiveness of the GCBS collaboration.
3. GCBS participants are encouraged to advocate, through their respective means, for:
 - the reinstatement of Immune Globulin on WHO's list of Essential Medications
 - continued WHO support for the availability of its Haemoglobin Colour Scale, where appropriate.
4. Mindful of the fact that in some countries with restricted economies, there is substantial morbidity and mortality from an insufficiency of coagulation factors, and recognizing that some countries have coagulation factors and/or starting materials that are surplus to their needs, participants are encouraged to influence policy makers and other stakeholders to facilitate the availability of such surplus materials to developing countries.
5. WHO, AABB, CDC and Sanquin agreed to initiate a task group to develop draft recommendations for an advocacy model for sustainable financing of National Blood Programs in developing countries, for consideration by the participating organizations.
6. ARCBS, TGA, ABTS, WHO, MBTS, NBTS(UK), IABs, SAATM, and PPTA Source agreed to assemble data and develop proposals for recommended strategies for

management of iron balance in blood and plasma donors, to include sharing experiences from different countries, to include:

- establishment of regionally appropriate Hb standards for blood and plasma donation
- use of iron supplementation and,
- appropriate diagnostic methods

7. GCBS participants are encouraged, through their own mechanisms, to expand international surveillance for adverse events related to donation as a basis to monitor and improve donor safety.
8. GCBS participants recommended that the participating organizations promote and where possible, support clinical studies to clarify the scientific basis for current transfusion practices and alternatives and to disseminate such information.
9. IFRCRCS, HSA, WHO, EBA, IPFA, NBCTRC, PPTA, AABB, NBTS Sri Lanka, agreed to form a task group to develop proposals for recommended strategies for disaster preparedness for blood systems.
10. GCBS participants recommended that the participating organizations promote the collection and sharing of data on the feasibility and utility in various settings of candidate strategies for:
 - control of bacterial contamination in blood components and
 - testing for malaria and other Transfusion Transmissible Infections (TTIs), including appropriate use of EIA and rapid tests.

Introduction

Recognition of the need for a Global Collaboration for Blood Safety (GCBS) was first endorsed by 41 countries represented during the Paris AIDS Summit in 1994 and adopted by the Forty- Eighth World Health Assembly as WHA resolution 48.27 (1995), by all 191 WHO Member States prioritizing the need for Global Collaboration to improve blood safety. The Global Collaboration for Blood Safety is a voluntary partnership of internationally recognized organizations, institutions, associations, agencies and experts from developing and developed countries sharing the expertise, identifying problems, seeking solutions and working towards the common goal of global blood safety as equal collaborative partners.

Since the year 2000, five annual general meetings of the GCBS have been held. The sixth plenary meeting of GCBS was held at Thai Red Cross National Blood Centre in Bangkok, Thailand on 16-18 November 2005. The meeting was convened and organized by the Blood Transfusion Safety Team, Department of Essential Health Technologies (BTS/EHT/WHO) within the Health Technology and Pharmaceuticals Cluster. It was attended by 50 participants from GCBS collaborating organizations, individual experts, WHO Regional Advisers for Blood Safety and Blood Transfusion Safety team, WHO/Geneva (see Annex 3 for list of participants). The meeting was chaired by Dr Jay Epstein and Dr Silvano Wendel.

Dr Rachanee O'Charoen, Director of the National Blood Centre, Thai Red Cross Society greeted all participants as the local host. She welcomed all the participants to Bangkok and the new National Blood Centre of the Thai Red Cross Society. Mr. Antin Charnvirakul, Ministry of Health warmly welcomed all participants to the meeting to discuss blood safety and mechanisms to assure safety. He expressed his strong commitment to the goals of GCBS, wished success on the meeting and declared the meeting open. Dr Neelam Dhingra, Coordinator, Blood Transfusion Safety, WHO welcomed the participants on behalf of WHO. She brought greetings of the Secretary General and Dr Steffenen Groth, Director, Department of Essential Health Technologies. She expressed WHO support to the objectives and work of GCBS. She emphasized the need to develop mechanisms for implementing the GCBS meeting recommendations. Dr Dhingra thanked Dr O'Charoen and the National Blood Centre of Thai Red Cross Society for excellent local arrangements and praised the accomplishments of the centre as a WHO Collaborating Centre.

The Chair, Dr Jay Epstein greeted all participants and thanked to Dr O'Charoen for local arrangements and Dr Neelam Dhingra for organizing the meeting. Dr Epstein was pleased to have Dr Silvano Wendel as vice chair. Dr Epstein also praised the fellowship of the group and noted its growth. Fifty one participants were present at the meeting. The list of participants is given in annex 3. and Dr Tom Krusius was elected as rapporteur, in addition to Dr Roger Y. Dodd (elected prior the meeting).

Dr Epstein reviewed the agenda and the programme work. The agenda was unanimously adopted by the meeting (Annex 2).

Objectives

The sixth GCBS meeting was convened with following objectives, described in details below.

1. To review the report of the fifth GCBS general meeting;
2. To review and adopt TORs for the GCBS

3. To introduce and elect new participating organizations
4. To review GCBS activities
5. To review global efforts and progress in blood safety
6. To identify and prioritize future issues and activities of the GCBS.

Review of the report of the fifth GCBS general meeting

Dr Epstein reviewed the meeting report of the Fifth General Meeting of the GCBS and thanked the rapporteurs of that meeting. No modifications or amendments to the report were proposed by the participants. The report was approved unanimously.

Review and adoption of Terms of Reference for GCBS

Dr Dhingra introduced the process of drafting the TOR for GCBS and noted comments received and added by the planning group to the draft distributed to participants. Dr Epstein discussed the history of TOR and stressed the need for consensus. The lively discussions that followed focused on membership, regional representation of membership, possibility of developing country representatives to attend GCBS meetings, funding of GCBS based on voluntary contributions or mandatory membership or registration fee. Dr Dhingra explained the mechanisms of the WHO funding to the GCBS. Funds are needed to support travel of participants from developing countries and secretarial work. WHO's support to the GCBS amounted to US\$50,000 in 2004 and US\$ 30,000 in 2005, however there is a need to find mechanism for sustainable finances for GCBS activities and meetings. Due to widely varying views, Dr Epstein proposed to table the document and use time during breaks and break-out sessions to consider the various approaches.

One break-out session was devoted to amend the TOR for the GCBS. Mr. Waller presented different models for GCBS' operation and means to reach consensus. The document was reviewed page by page. Amendments were adopted one by one.

The TORs were adopted by the meeting (Annex 1). The WHO Secretariat was requested to make confirming changes to the annexes and send the document to the WHO Legal Department for final review.

Theme 1: Introduction of new participating organizations

Presentations were given by representatives of the three new participating organizations and they were then unanimously endorsed as new GCBS members by the plenary group.

Arab Association of Blood Transfusion Services (AABTS)

Mr. Al-Omar presented the Arab Association of Blood Transfusion Services. Established in 1979 through the Council of Arab Health Ministers as a functional committee for the Directorate of Health and Environmental Affairs, within the league of the Arab countries comprising 23 countries. The objectives of the Association are to improve quality of blood transfusion services in order to ensure safety of blood and blood products, to enhance intergovernmental cooperation in the field of transfusion medicine, ensure proper utilization of transfusion medicine expertise in the Arab world, to establish interactive cooperation with international agencies and professional bodies and to strive for application of best policies and practices in the organization of the blood services. The association has been successful in organizing different kind of meetings, symposia and congresses on the management of blood

services and transfusion medicine in the Arab world, establishing the first Arabic Guide to the Arab Blood Transfusion Services, performing assessments of blood transfusion services in Mauritania and in the Republic of Yemen and providing support for blood banks in the State of Palestine.

South Asian Association of Transfusion Medicine (SAATM)

Dr Chaudhury presented the South Asian Association of Transfusion Medicine. SAATM is a trans-national organization of individual members operating in South Asian region for the development of blood transfusion services. Established in 2000, SAATM has to date arranged three annual congresses in transfusion medicine. The activities of the association include regular exchange of scientific information among members by E-Bulletin and annual congresses and postgraduate training (so far in India and Sri Lanka). Planned activities will include coordination of CME/Workshops at country level with local Societies/Associations, promoting voluntary unpaid blood donations in South Asia.

Network for Advancement of Transfusion Alternatives (NATA)

Professor Maniatis presented the Network for Advancement of Transfusion Alternatives. Founded in 1998, NATA unites experts in the field of transfusion medicine such as anaesthesiologist, surgeons and transfusion medicine specialists. NATA objectives are to provide education in the field of transfusion medicine and alternatives by promoting better use of blood products and transfusion alternatives in everyday clinical practice and by sharing experience among health care teams. NATA organizes Annual International Symposia and satellite symposia in major congresses, publishes a peer-reviewed journal (Transfusion Alternatives in Transfusion Medicine, TATM and Reference Textbook (TAB) for anaesthesiologists and intensive care specialists. The textbook is also available on line.

Theme 2: Review of GCBS Activities

Dr Epstein reviewed the recommendations from previous GCBS general meetings and highlighted specific achievements. He indicated many important accomplishments including published meeting reports, recommendations, guidance documents, fact sheets and Aide-Mémoires, which have supported development of blood safety and promoted the visibility of the GCBS. Many of the documents have been adopted by WHO, others are still under preparation. The document on Minimal Standards for Blood Services is under review by the WHO Expert Committee on Biological Standardization. The accomplishments indicate that GCBS members can work together and achieve significant progress.

Mr. Bult and Dr Farrugia raised the issue of IV Immune Globulins which had been deleted from the WHO Essential Medicines Lists. It was proposed to establish a group, supported by GCBS, to develop a strong case for IV Immune Globulins in order to have them re-included in this list.

Theme 3: Global Efforts and Progress in Blood Safety

Highlights of WHO global efforts and progress in blood safety

Dr Dhingra presented the WHO efforts and the progress in global blood safety. The strategic objectives of WHO for supporting countries to achieve universal access to access to safe blood include development of nationally coordinated blood transfusion services, collect data for decision making and enhance international collaboration and partnership, promote quality

and safety by developing national quality systems, recruiting VNRBDs and testing all donations for HIV, HBV, HCV, syphilis and blood groups. WHO supports countries in policy development through advocacy and global strategies. WHO plays a standard setting role through providing recommendations, guidelines and tools to enhance blood safety. The other programmes of WHO relate to provision of training and training materials, access to suitable functioning equipment and use of new cost-effective technologies, safe and appropriate use of blood and implementation of good transfusion practice. WHO is developing recommendations and guidelines on organization and management of BTSs, has published WHO Global Database report 2001-2002 and is gathering and publishing data (Global Database questionnaire 2004 and assessment tool for situation analysis of BTSs) for decision making and by building collaboration and partnership such as the GCBS, the World Blood Donor Day and the WHO Expert Panel on Blood Transfusion, as well as with bilateral and multilateral partners and WHO Collaborating Centres. Through technical cooperation, capacities are also built in how to undertake assessments, planning, implementation and evaluation for establishing a national blood programme.

The World Blood Donor Day was celebrated on 14 June 2005. WHO and IFRC have developed strategies to reach 100 % VNRBD linked to the 2015 Millennium Development Goals.

Future priorities include a WHO Global Strategic Plan on Blood Safety and Availability for 2008 – 2015, development of evidence based donor selection guidelines, safe and appropriate use of blood, impact evaluation of blood programmes.

Progress and constraints in the PEPFAR programme: report from technical support organizations and countries

Dr Chen reviewed progress and constraints in the implementation of the PEPFAR programme. PEPFAR is a US\$15 billion program for 5 years: approximately US\$10 billion for 15 focus countries in Africa (Ethiopia, Uganda, Kenya, Tanzania, Rwanda, Zambia, Mozambique, Namibia, Nigeria, Zambia, Botswana and South Africa); Asia (Vietnam) and the Caribbean (Guyana and Haiti) and over US\$ 5 billion for 108 countries, international research and the Global Fund to fight AIDS, TB and malaria. As part of the programme, the goals of the program include: to treat at least 2 million HIV-infected persons with combination ART, to prevent 7 million HIV infections and to care for 10 million individuals infected with or affected by HIV including orphans. HIV prevention strategies include prevention of medical transmissions of HIV by safer medical injections and safer blood supplies. Blood safety will be enhanced, with the financial support of US\$ 75 million (2004-2005), coordinated by CDC and technically supported by WHOM, AABB, Sanquin. Safe Blood for Africa and Social and Scientific Systems, Inc (SSSI). The blood safety component of the PEPFAR focuses on infrastructure of blood services (regional centres), VNRBDs, testing with QA, transfusion and blood utilization, training, monitoring and evaluation and sustainability of the blood transfusion services.

WHO activities in Africa under the PEPFAR

Dr Tapko presented data on the implementation of the PEPFAR programme in Ethiopia and Namibia. PEPFAR has awarded funds to WHO to provide technical support to Ethiopia and Namibia. These countries have been awarded funds for the implementation of activities in national blood programmes. The objectives are to establish a nationally coordinated blood transfusion service with appropriate quality and monitoring systems, sustainable development of an adequate pool of low risk regular blood donors, testing of all blood for the four major

TTIs and appropriate use of blood. WHO has carried out work at its HQs, regional office in Brazzaville and country offices in Ethiopia and Namibia. At country level the work has included advocacy, building strong partnership with the Ministries of Health, harmonizing technical support with country action plans and building consensus among stakeholders. The projects will focus on policy and legislation, infrastructure and organizational management, human resources development and training in all aspects, voluntary blood donation, quality management and testing strategies, development of guidelines and research. The projects in both countries have progressed according to plans. Lessons learnt from the projects so far include the importance of good initial assessment, realistic planning, planning, and central role of a country focal person, building consensus and partnership and recognition of MOH leadership.

PEPFAR technical assistance: American Association of Blood Banks

Dr Dodd discussed AABB involvement in providing technical assistance for the rapid strengthening of blood transfusion services in Kenya, Mozambique, South Africa and Guyana in the PEPFAR programme. Dr Dodd described the organization of the projects and the planned activities and schedule for 2005-2007. The projects focus on development of national blood policies, legislation and regulations, development of blood service management and operations, development of training on national standards, infrastructure, blood supply system, equipment maintenance, training materials, data management and training in transfusion medicine. In South Africa with a developed blood transfusion service, AABB has a consultative role in reviewing and assessing SANBS's strengths and weaknesses and supporting SANBS to develop a donor risk model, MISdata warehouse, TQM and accreditation system design and implementation certification. All projects have progressed according to plans and schedule.

Sanquin Consulting Services: PEPFAR challenges and experiences

Dr Schmid described Sanquin's activities under PEPFAR programme in Africa, where the objectives are to provide expert guidance and technical assistance to the MOH or NBTS to rapidly develop and implement national safe blood programme with demonstrable results within the first year, and to develop sustained indigenous capacity to continue the programme after the project terminates. Sanquin is providing assistance to Rwanda, Tanzania, Zambia and Uganda. Dr Schmid discussed the organization and schedule of the programme, which in its second phase (ongoing) focuses on standards and QA, raising awareness of necessity to improve safety and efficiency, formulation of regulations and training of management capacity. The third phase will focus on infrastructure, blood donor and collection issues, blood processing and GMP, testing and appropriate use of blood.

International efforts to improve Blood Safety: South Africa

Professor Heyns described development and successful implementation of Donor Status Risk Management Model in order to reduce the risk of window period donations. In South Africa risk of a HIV positive donation is associated with demographic factors such as gender, geographic location of donation, donation frequency and ethnic background. The incidence rate of HIV infections in different demographic groups of blood donors vary from 0.01 to 14 %, with a rate of around 15% among the general population. By improving selection criteria of blood donors, the HIV positivity rate has decreased from 0.26 % (1998) to 0.06 % (2002).

The donor risk model promotes recruitment of young donors, regular donors, education of donors and using the quality cycle by monitoring rate of infections in blood donors,

improving donor selection criteria and optimizing the model. The model also includes training of staff, quality management and implementation of NAT screening. WHO training materials have been used in training of staff and improving quality management systems. PEPFAR has funded renovation of the regional training centres and the National Reference Laboratory. PEPFAR expertise has also been used to improve the national regulatory framework. A hierarchical processing and issuing system has been included in the model. Using this donor risk model, the South African National Blood Service has been able to reduce the residual risk of HIV in components derived from blood from regular donors as low as 1: 208.000.

International efforts to improve Blood Safety: Côte d'Ivoire

Dr Konate discussed development of blood transfusion services in Côte d'Ivoire under the PEPFAR programme and in collaboration with the Social & Scientific Systems, Inc. (SSS) and Belgium RC and EFSThe aim is to rapidly strengthens the National Blood Transfusion Service of Côte d'Ivoire in order to improve transfusion safety. The objectives are to ensure better coverage of national needs of blood products, improve quality of national blood supply and improve clinical use of blood products. The strategy includes designing a legal and regulatory framework, strengthening capacity of the national blood transfusion service, reorganizing blood bank network, strengthening and improving donor recruitment process and number of repeat blood donors, strengthening QA, developing an IT network for transfusion centres and training prescribers of blood. At present capacity of BTS has been strengthened by recruiting and training of personnel, establishing equipment specifications and purchasing equipment and supplies, creation of an IT department within the national centreacquisition of computers and installation of Progesa software, rehabilitation/renovation of the National Centre and establishing a new collection centre. A collaboration plan has been developed with blood donor associations, private sector, schools and faith-based organizations to communicate and mobilize population to donate blood. The expected results of the project by 2010 are to collect at least 150.000 units of blood each year, to process 80 % of the blood to components, to be able to track at least 70 % blood distributed to hospitals, to decrease the prevalence of HIV in repeat donors to less than 0.05%The HIV prevalence rate in the population at large is 12%.. Dr Konate finished his presentation with a discussion on how to achieve sustainability of project results.

International efforts to improve Blood Safety: Uganda

Dr Kataaha discussed international efforts to improve blood safety in Uganda. Uganda has a long history of collaboration with international organizations and agencies and governmental bodies such as WHO, SIDA, IFRC, EU, CDC, JICA and French Government to develop the blood service. There is at present no national blood policy or a BTS with an adequate legal status. There is also a lack of permanent staff and infrastructure. The TTI rate in blood donors is high and, unfortunately rising. The rate of HIV positive donors has decreased from 15% to 2.1% and the number of blood units collected has increased by 100.000 during the last 15 years. A strategy plan has been developed, including establishment of an autonomous, well functioning organizational structure, allowing the BTS to manage its budget, increasing the proportion of educated and safe VNRBDs and number of donations to meet the needs of hospitals and ensure effective testing of all four TTIs of all donations. Regional blood banks need rehabilitation, transport vehicles for donor recruitment and blood collection and adequate equipment for testing, storage and transportation. Effective QA and training of staff will also need to be a future focus.

International efforts to improve Blood Safety: Malawi

Dr Emmanuel gave a presentation on the Malawi BTS EDF VIII project. The 5 year project is funded by EU and was started 2002. An independent Malawi BTS was established and Malawi Transfusion Service Trust was formally constituted as the responsible authority. The objectives of the project are to provide a safe and adequate blood supply for all those needed in recognized health care establishments, to reduce TTI transmission by blood transfusions, to promote appropriate clinical use of blood and to establish a centralised BTS. The project will lead to establishment of a National BTC in Blantyre and two regional centres. The trust will define the "roles and responsibilities" of the BTS, draft a constitution to provide a legal framework with appropriate legislation and regulation, establish an Executive Committee of the BTS to facilitate the work of the BTS Senior Management Team and prepare conditions of service for BTS staff.

To date, the following progress has been made: construction of three centres; training courses for staff in donor recruitment and blood collection, blood processing, laboratory methods and quality management have been organized; an efficient organization and management structure has been established, all donated blood is tested for HIV, HBV and syphilis; blood cold chain system has been developed for centralized testing and distribution of components to hospitals, five type of blood components are routinely provided from two BTCs; lectures, seminars and workshops on clinical use of blood for medical undergraduates, nurses and medical officers have been organized, collaboration with College of Medicine and MOH has been developed to enhance appropriate clinical use of blood and appropriate laboratory practice and storage of blood in hospital laboratories; BTS policy, plan and legal framework have been reviewed and approved and submitted for an official legal instrument.

Among future challenges are collaboration and support from MOH and funding agencies; transparent and equitable budgeting; incorporation of blood and blood products into annual pharmaceutical budget lines for all Central and District Hospitals; recognition of the importance of role of blood transfusion safety in health care; capacity building and infrastructure development to improve facilities and skills in all hospital laboratories and establishment of Transfusion Committees to all hospitals to oversee and to develop blood transfusion guidelines.

International efforts to improve Blood Safety: Viet Nam

Professor Tri discussed international efforts in Viet Nam to improve blood safety. It is estimated that in 2005, 380.000 blood units (250 ml) were collected even though the calculated need is 1.600.000. A high proportion of blood donors are paid donors. HBV (15 %) and HCV (3 - 5 %) infections are common in the general population. The blood service is decentralized: 81 central hospitals and up to 150 district hospitals collect blood and screen blood donors for TTIs. Around 90 % of blood is used as whole blood and adequate blood grouping and cross match is not performed in hospitals. Only few hospitals have established Hospital Transfusion Committees. With technical assistance and funding from international agencies and organizations (WHO, World Bank, WFH, ISBT) and Governmental institutions and agencies (China, Malaysia, Singapore, Australia, Luxembourg, Britain, France, Canada, USA and Thailand) the Government and the Ministry of Health have focused attention on blood transfusion services, including review and update of regulations and guidelines on blood services and blood transfusion. Furthermore, a movement to increase the number of VNRBDs has been launched; four regional blood centres are going to be constructed by 2007 and the National Institute of Hematology and Blood Transfusion is going to be established. Important achievements include an increase in the number of blood units collected from

VNRBDs (to 52 % and 70 % in some provinces), all blood is tested for HIV, HBV, HCV, syphilis and malaria, by using rapid tests before blood donation the proportion of discarded blood units has decrease to < 1 % and QM has been introduced in many blood centres.

Discussion that followed, focused on how sustainability can be assured when the project and external funding ends. It was generally agreed that the GCBS participants should work on principles and framework for sustainable financial systems for blood services.

Theme 4: Reporting back on important global activities in Blood Safety

Summary report on proceedings of ISBT Working Party on Transfusion-Transmissible Infections: July 2005

Dr Silvano Wendel presented objectives and activities of ISBT WP-TTID. The Working Party (WP) is an active constituent of ISBT, using the insight, experience and intellectual capacity of members according to their areas of interest, and evaluates and advocates approaches to increase blood safety throughout the world in order to reduce the frequency of TTIDs. The WP includes individual members, observer individuals, institutional liaisons, corporate members and honorary members. It develops and performs epidemiological surveys on TTIDs, develops a global data base and sample repository for relevant viruses, bacterial surveys and a global repository on transfusion relevant bacterial strains, studies parasites with a potential for transmission by blood transfusion and studies strategies to prevent transfusion transmission of parasites and discusses risk analysis for vCJD and other TSEs. Recently the WP founded a new subgroup to investigate the importance of HBV NAT and anti-HBc screening and re-entry protocol for donors who repeatedly tested anti-HBc reactive, anti-HBs positive and NAT negative.

Summary report on proceedings of Global Harmonization Workshop for Blood Services: August 2005

Dr Clair Watts informed the GCBS on the Global Harmonisation meeting. There is concern for global blood products and blood transfusion quality and safety. Science is needed to make proper contribution. Decisions in one country impact on other countries. The way forward is cooperation. Cooperation creates the opportunity to be proactive in shaping the future. The meeting was attended by blood bankers, government officials, regulators, representatives from device, drug and plasma industry and from patient organizations. The meeting concluded that for harmonization to work active engagement of stakeholders is needed, cooperation has to be started small in order to achieve early success, decision making has to be transparent and based good science and future needs should be anticipated to see and understand the "big picture". The meeting agreed to the following next steps: 1) to develop a model based on the NATO Blood Alliance to explore cross-border blood exchange models and emergency preparedness, 2) to establish a Blood Harmonization Forum and 3) to establish a working group of blood operators to identify early targets for harmonization and examine models for the harmonization processes.

Summary report on proceedings of Round Table 2 on Emerging Infectious Diseases (PPTA): September 2005

Mr. Bult reviewed the outcomes of the first Round Table on Emerging Infectious Diseases (EID) as the basis of the second EID Round Table. Highest priority is facilitating communication and coordination among patients, regulators and industry. Effective and timely communication is an important first step in developing "best practices" for addressing EID threats. Coordination activities enable more effective utilization of resources, foster a

harmonized approach to addressing risks and provide atmosphere for consistent communication of risk. The objective of the second EID Round Table was to develop a plan that will allow real time communications using current information technology as a venue for generating notices of EID threats, asking questions of participants and sharing information. The Round Table concluded that patient advocacy groups should be part of the first line of communication; plasma, blood and tissues should be included as carriers of EIDs; communication strategy needs to be institutionalized by providing a venue or platform where interested parties can meet; communication strategy should be two tiered: internal and external, audiences for communication need to be refined; policymaking should not default to regulators and appropriate information can lead to decision tree. Furthermore, communication strategy should be structured around defined elements: Persons to control communication processes, platform for communication, decision making process and rules to be defined. The round table recommended that WHO and CDC should be part of the initiative.

Summary report on proceedings of the 4th WFH Global Forum on the Safety and Supply on Treatments for Bleeding Disorders: September 2005

Mr Skinner reviewed the World Hemophilia's Fourth Global Forum, with the theme "Increasing the worldwide supply of safe, affordable factor replacement therapy". What are the means to increase the worldwide supply? A multivariate approach is required, including management of existing resources, utilization of all treatment options, developing new markets, reducing manufacturing costs, developing innovative pricing structures and manufacturing innovation, and also humanitarian aid. In replacement therapy, optimal treatment management is an important consideration when making decisions locally. Science is needed to support treatment decisions. Both plasma-derived and recombinant products are important to meet global supply needs, and all treatment options must be available. Global collaboration on inhibitor surveillance is essential to better understanding risk and management of inhibitor development.

Summary report on proceedings of IVth IABs Symposium on Advances in Transfusion Safety: October 2005

Dr Farrugia reviewed the IVth International Association for Biologics Symposium on Advances in Transfusion Safety. The symposium included sessions on optimal use of blood as a route to blood safety, emerging infectious agents, fitting new techniques into the safety paradigms, regulation as the driver for blood safety, transfusion and blood safety in the Asia-Pacific and harmonizing practise and products.

The symposium concluded that patient management in blood transfusion is a key element to blood safety; some aspects of the storage lesion of components have severe effects on patient outcomes and may require review of the current paradigm of component therapy; the orientation of blood banks to GMP and the pharmaceutical model overseen through product regulators has enhanced the safety of blood products; blood transfusion as a process leading to patient care needs to be organized around all the components of the process; establishing and maintaining a continuous engagement with the public will lead to an informed awareness of the benefits and limitations of the current blood management system and the sustainability of the blood supply; emerging and re-emerging infectious agents threaten blood safety and the effects of globalization on the prevalence of these agents needs to be factored into blood safety policy (including surveillance programs); surveillance and residual risk data should be used in risk assessments, thus assisting public policy makers in decision making on blood safety measures and resource allocations. Experience from the Asia-Pacific region show that

commitment to quality improvement, optimal usage, intelligent resource utilization and community engagement can deliver well-structured and safe blood systems.

Theme 5: Iron Balance and Blood Donors

Iron, anaemia and blood donation

Dr Frank Boulton reviewed the physiology of iron and the effect of blood donation on iron stores and haemoglobin levels in blood donors. Iron lost in one donation (200–250 mg) equates to the amount normally absorbed by women in 5 to 6 months. Blood donation should not lead to depleted iron stores. The goal should be that donors are iron replete when recruited the first time and are maintained replete before each donation.

Since regular donation induces iron depletion as well as iron deficiency, regular donors have to be protected. How can blood donors effectively and economically be monitored for iron depletion? There is no optimal laboratory test for monitoring this. Education of blood donors regarding food habits is important in the prevention of iron depletion. Iron supplementation may produce adverse effects, thus it is better to supplement donors selectively and in relatively low doses. An optimal supplementation strategy is not yet worked out.

Donor health status

Dr Tony Keller presented data on how to keep blood donors iron replete and healthy. Blood services around the world have adopted varying minimum haemoglobin levels for blood donors in an effort to maximize donation rates while protecting the health of the donor. Low haemoglobin levels are the largest single cause of donor deferral. Iron deficiency is common in the general population especially in pre-menopausal females and this may be exacerbated by blood donation. Pre-donation haemoglobin measurement is a poor indicator of iron deficiency. Improved methodologies for haemoglobin measurement and iron status contribute both to donor care and blood supply management. The serum free transferrin receptor (sTfR) appears to be the most promising measurement to ensure that clinically important iron deficiency is detected while minimizing donor loss. Failure to act to protect donor health will ultimately have profound effect on donor recruitment and retention.

Dr Keller recommended collation for information on iron deficiency in blood donors world wide; performing further studies to define readily applicable, currently available methods for diagnosis of iron deficiency; developing simple cheap and effective pre-donation tests to assess iron status in blood donors, addressing population health issues in relation to iron deficiency by health authorities; promoting education of new and regular blood donors with reference to the importance of iron rich diets and defining and promoting effective methods for the prevention and treatment of iron depletion and deficiency in blood donors.

Theme 6: New Developments in Transfusion Medicine

Minimizing bacterial contamination

Dr Lin reviewed means to minimize bacterial contamination in blood components. Bacterial contamination causing morbidity and mortality has long been recognized as risks in blood transfusion. With advancement in viral detection technologies, substantially improving viral safety, bacterial contamination has become a global blood safety concern. Bacterial contamination can be decreased by stringent donor selection, environmental hygiene, improved donor arm skin preparation techniques, diversion of the first part of blood donation, bacterial detection and pathogen reduction/inactivation. Bacterial culture of platelet

components on day 2 does not detect all contaminated components. Slow growing bacteria may be undetected. Are these bacteria dangerous for the patient? Will the residual risk be reduced if anaerobic culture is included in the routine testing on day 2.

Dr Lin concluded that new standards have been and will continue to be developed in order to reduce bacterial risk of blood transfusion. As optimal methods, procedures and timing for bacterial testing have yet to be defined and standardized, the entire collection, testing, component preparation, storage, distribution and transfusion process should be approached. Risk of septic transfusion reactions can also be reduced by good transfusion practice including transfusion of patients only when it is necessary, by being aware of bacterial contamination, by careful component inspection before transfusion, by careful monitoring of the patient receiving transfusion and prompt intervention if necessary and by haemovigilance measures.

Malaria testing and blood safety

Dr Kwon reviewed epidemiology prevention strategy of transfusion-transmitted malaria in South Korea. The incubation period of transfusion-transmitted malaria varies depending on the number and type of parasites introduced and conditions of the host. In general the incubation period of transfusion-transmitted malaria is shorter than in natural infection. Malaria parasites remain viable in stored blood for at least one week. Malaria is most commonly transmitted by whole blood or red cells, but can also be transmitted by platelets, FFP and frozen red cells. Strategies to prevent transmission of malaria by blood vary from country to country, depending on the epidemiological situation: endemic or imported malaria.

Endemic, Vivax malaria was endemic in Korea but was eradicated in the late 1970's, however in the 1990's malaria has again become endemic in Northern parts of the country. Measures to prevent transmission of malaria by blood transfusions include enhanced donor selection criteria, electronic exclusion system, screening for malaria antibodies and, malaria antibody screening was implemented in Seoul and Kyounggi areas. The rate of positive results has been 0.3% to 0.4%, which means that approximately 4.000 units of blood are discarded annually. Guidelines for blood supply indicate that only the blood collected in malaria risk-free areas shall be supplied for transfusion. In circumstances of severe blood shortage, blood can be collected in relatively high-risk areas only from December to February when the incidence of malaria infections is lowest. Red cells shall be supplied only after 2 weeks have passed since collection. These measures have been successful. Only 0 - 2 cases of transfusion-transmitted malaria have been detected annually during the last years.

Enhancing the availability of plasma-derived products

Mr. Armstrong presented the work of the Plasma Issues Working Group of the GCBS on enhancing the availability of plasma-derived products. The project is a good example of inter-organizational collaboration through the GCBS. The project concept was proposed by Miklos Fulop, CEO WFH. Project objectives are to enhance the availability of affordable plasma-derived products by requesting blood service and plasma fractionation organizations to donate fresh frozen plasma, cryoprecipitate or cryo poor plasma for the manufacture of F VIII and FIX products suitable for treatment of haemophilia A and B. The products will be distributed to needy organizations affiliated to WFH for treatment of patients. Several potential plasma or intermediates suppliers have been identified. National Bioproducts Institute, South Africa, has volunteered to perform processing, filling and lyophilisation. Organizational, financial, governmental, regulatory and legal – product liability issues have to be addressed by the participating organizations in order to facilitate the release of material for manufacture of products and subsequent distribution.

Theme 7: Addressing New Issues of Concern in Global Blood Safety and Availability

Break-out session 1: Developing a global response system for making safe blood available in major international disaster situations, emerging infectious diseases /effects of bioterrorism on blood supply

Dr Teo presented the results of the break-out session. Disasters can be man made or natural. Disasters may have great impact on health, e.i. among other by exposing the population to infectious agents and influence the supply of blood and plasma. Lessons learnt from recent disasters include communication within the country; the need for volunteers to undertake language translations wherever foreigners are involved, and scaling of responses from individual centre to regional, to national, to outside the country, depending on the magnitude of disaster. At present no global awareness and response network for safe blood availability at, or to affected area exists. No analysis has yet been done of disaster situations which could reduce blood stock or increase demand. No information is available of the actual need for blood in different situations and how different situations may discontinue supply to patients with chronic need for blood.

The break-out session made the following recommendations: Hierarchy of response depending on the scale of disaster should be defined; global response system requires government responsibility to enable timely provision of aid across country borders, e.g. policies and regulations for import/export of blood/components, transportation and customs requirements; a global network of warning and alert system and distribution of relevant information should be established and this network and alert system should be integrated into a global disaster management system; global mapping of blood supply and potential or high risk areas should be carried out; cross-border arrangements should be planned due to different regulations and requirements; networking and collaboration among institutions and organizations dealing with issues above should be encouraged; arrangements to enable timely response in providing aid should be set in place e.g. for movement of blood across borders and availability of a transportation fleet; a coordinating body at global and regional level and national focal points should be established including capacity building. Furthermore the alert, warning and response system should be periodically monitored and evaluated. WHO should organize regular forums and workshops on disaster management and run periodic drills to test readiness of the global system for different scenario.

Break-out session 2: Evidence based medicine/clinical standards

Dr Boulton gave a presentation on behalf of Dr McClelland. Need of blood varies in different countries depending on the level of health care. Use of blood components also varies from hospital to hospitals within the same country. In developed countries, approximately 50% of blood is transfused to "medical" patients, 40% to "surgical" patients and 10% to treat life-threatening bleeding. At present, indications for blood transfusion are based more on tradition than on evidence. There are few randomized clinical trials on use of blood and many of these studies indicate that a restricted transfusion policy is better for the patient than a more liberal policy. Fortunately, several well-planned randomized controlled trials are in progress and will provide evidence about the clinical effectiveness of transfusion. However, it has to be recognized that some patients groups may be at risk from low haemoglobin levels, patients still die from under-transfusion and delays in blood availability can contribute to deaths from bleeding.

Break-out session 3: Use of rapid tests for transfusion-transmissible infections in blood transfusion services

Dr Allain presented the results of the break-out session. Rapid tests are used across the world, particularly in developing countries for testing millions of donated blood units and also in some situations for testing of blood donors. There is a wide range of tests with very different levels of performance. Rapid tests as well as EIAs are subject to batch to batch variations and technical errors; many countries do not have centralized blood systems and smaller units i.e. hospital based blood collection are still the norm in many areas, and quality assurance rules apply to rapid tests as well as EIAs or NAT. The choice of rapid tests depends on the environment, including performance, number of tests/day, availability of power, resources, affordability, storage conditions, information about evaluation against recognized panels such as WHO and ease of use.

The break-out session recommended that countries should move towards centralized quality assured services; that all testing systems should be evaluated, validated and quality assured according to appropriate methods and panels. A comparative evaluation of EIA and rapid tests in similar epidemiological conditions would be desirable.

Break-out session 4: Revision of TOR and organization of the GCBS Secretariat

Mr Waller presented the results of break-out session, which discussed several alternative models to enhance effectiveness of this collaboration. GCBS's structure could be based on from an open meeting or network of interested parties and individual people to an alliance of members. One aspect is the reorganization of the GCBS Secretariat to achieve optimal leverage for its work. There is a need to review the organization of GCBS and develop a strategic plan for GCBS and identify mechanism to enhance its effectiveness from only being a collaborative discussion forum.

Dr Dhingra reiterated that developing collaboration and partnerships is a core function of WHO. However, sustainable funding for WHO blood safety activities including GCBS meetings and activities related to GCBS still needs to be ensured. GCBS has succeeded in providing a forum for discussion and information change. There is a need to identify newer mechanisms to support the developing world, through this collaboration, to be more effective at country level.

Theme 8: GCBS Administrative Issues

Dr Dhingra reviewed the funding mechanism for GCBS. The GCBS Secretariat has developed a budget for the GCBS' work. The operating expenses of the GCBS Secretariat include travel and meetings. During 2005, 8 participants from developing countries were supported. The GCBS Secretariat is planning to arrange a meeting of a budget group to develop a resource mobilization strategy.

The following 12 participants were elected by unanimous consent as members of the Planning Group in addition to the Chair, Vice-chair and secretariat of GCBS: Allain, Ashford, Ayob, Bharucha, Boukef, Chen (replaced by Lawrence H. Marum), Dodd, Evers, Farrugia, Konate, Teo, and Waller.

Theme 9: Future issues and activities - recommendations and Action Plan

Planning and future perspectives for the GCBS

The meeting proposed that the Planning Group develops a process of identifying a (unitary) focus for each year of work. The CDC offered to organize the first Planning Group teleconference. Dr Nabila Metwalli on behalf of WHO/EMRO offered to the Planning Group to host the next GCBS meeting in Cairo.

The GCBS Secretariat was requested to compile all items on promotion of information sharing related to donor recruitment and screening of donated blood.

Three Task Groups were established, and the GCBS Secretariat will contact suitable lead organizations to coordinate the work of the following groups:

- Task Group for Sustainable Financing of National Blood Programs in Developing Countries
- Task Group for Disaster Preparedness for Blood Systems
- Task Group for Blood and Plasma Donor Iron Balance

Development of recommendations and action plans

Based on the presentations and results and conclusions of discussions and break-out sessions the following recommendations and next steps were identified:

1. GCBS participants reaffirmed their commitment to continue to work towards constructive collaborations within their shared missions and roles, including commitments of support. In particular, the GCBS participants recommended that the participating organizations :
 - provide and disseminate useable progress reports on their collaborations.
 - support efforts to better disseminate standards, guidelines and technical information from their organizations that may be useful globally to enhance safe donation, availability of safe blood and its appropriate use
 -
2. Mindful of the essential role of WHO, GCBS tasks its planning group to engage in proposals for long-term strategic planning that might further enhance the effectiveness of the GCBS collaboration.
3. GCBS participants are encouraged to advocate, through their respective means, for:
 - the reinstatement of Immune Globulin on WHO's list of Essential Medications
 - continued WHO support for the availability of its Haemoglobin Colour Scale, where appropriate.
4. Mindful of the fact that in some countries with restricted economies, there is substantial morbidity and mortality from an insufficiency of coagulation factors, and recognizing that some countries have coagulation factors and/or starting materials that are surplus to their needs, participants are encouraged to influence policy makers and other stakeholders to facilitate the availability of such surplus materials to developing countries.
5. WHO, AABB, CDC and Sanquin agreed to initiate a task group to develop draft recommendations for an advocacy model for sustainable financing of National Blood Programs in developing countries, for consideration by the participating organizations.

6. ARCBS, TGA, ABTS, WHO, MBTS, NBTS(UK), IABs, SAATM, and PPTA Source agreed to assemble data and develop proposals for recommended strategies for management of iron balance in blood and plasma donors, to include sharing experiences from different countries, to include:
 - establishment of regionally appropriate Hb standards for blood and plasma donation
 - use of iron supplementation and,
 - appropriate diagnostic methods
7. GCBS participants are encouraged, through their own mechanisms, to expand international surveillance for adverse events related to donation as a basis to monitor and improve donor safety.
8. GCBS participants recommended that the participating organizations promote and where possible, support clinical studies to clarify the scientific basis for current transfusion practices and alternatives and to disseminate such information.
9. IFRCRCS, HSA, WHO, EBA, IPFA, NBCTRC, PPTA, AABB, NBTS Sri Lanka, agreed to form a task group to develop proposals for recommended strategies for disaster preparedness for blood systems.
10. GCBS participants recommended that the participating organizations promote the collection and sharing of data on the feasibility and utility in various settings of candidate strategies for:
 - control of bacterial contamination in blood components and
 - testing for malaria and other Transfusion Transmissible Infections (TTIs), including appropriate use of EIA and rapid tests.

Closing remarks

Dr Epstein, the Chairperson of the GCBS meeting thanked the participants for active participation and a productive meeting and closed the meeting. Dr Dhingra thanked all participants on behalf of WHO.

Annex 1

GLOBAL COLLABORATION FOR BLOOD SAFETY (GCBS)

AMENDED TERMS OF REFERENCE

Mission: Promote and strengthen international collaboration on safety of blood products and transfusion practices.

1. Preamble

Recognition of the need for a Global Collaboration for Blood Safety (GCBS) was first endorsed by 41 countries represented during the Paris AIDS Summit in 1994 and adopted by the Forty- Eighth World Health Assembly as WHA resolution 48.27 (1995), by all 191 WHO Member States prioritizing the need for Global Collaboration to improve blood safety.

The Global Collaboration for Blood Safety is a voluntary partnership of internationally recognized organizations, institutions, associations, agencies and experts from developing and developed countries sharing the expertise, identifying problems, seeking solutions and working towards the common goal of global blood safety as equal collaborative partners. WHO is a participant of GCBS and also provides its secretariat.

2. Goal

Consistent with the Declaration of the Paris AIDS Summit, 1 December 1994, and World Health Assembly Resolution WHA 48.27, May 1995, the GCBS has been established with the following goals:

Improved collaboration among organizations, agencies and institutions involved in the safety of blood products and transfusion practices, with a view to:

- a) encouraging and facilitating information exchange;
- b) promoting standards including current good manufacturing practices for blood and related products for transfusion;
- c) fostering the establishment of cooperative arrangements aimed at promoting the safety of blood donors and recipients in all countries; and
- d) promoting the safety, adequacy, quality and appropriate use of blood and blood products.

3. GCBS Objectives

The GCBS participants agree to collaborate in facilitating progress in the following areas:

- international consensus on essential principles of global blood safety;

- encouraging the recognition and establishment of national blood programmes;
- identifying priorities for the prevention of transfusion-related disease;
- implementation of appropriate and recognized transfusion practices, which ensure donor and recipient safety and are free from discrimination;
- effective recruitment of safe donors through the use of appropriate selection criteria;
- assuring quality and safety in the preparation of blood and blood products;
- safe international practices for the collection, storage and transport of plasma and the preparation and distribution of its derivatives;
- the bi-directional traceability of blood products between donor and recipient whether in-country or across national borders; and
- promote evidence-based use of blood and blood products
- The exchange and use of information by encouraging data collection, management and dissemination.

Whereas, the GCBS is not a legal entity, it is a forum hosted by WHO which provides the participants the opportunity to discuss matters which fall within these Terms of Reference, including in particular as referred to in paragraph 2 (a) to (d) above, and where appropriate, to formulate proposals and recommendations in that regard to the participating organizations, agencies and institutions. Proposals and recommendations will be made by consensus and will only be addressed to the GCBS participants. Such proposals and recommendations do not commit the participating organizations or participating governmental agencies and institutions in any way, but constitute a reference for guidelines, official policy or other action, as appropriate, under the responsibility, and according to the prerogative, mandate and internal rules and procedures of each such participating organization, agency or institution.

4.1 Collaborating Parties:

To ensure an effective and efficient GCBS, the GCBS is open to the following collaborating parties:

Participants

- (a) Intergovernmental organizations, including World Health Organization and international non-governmental organizations, **scientific organizations and institutions**, with an active involvement in the safety of blood products and transfusion practices, which preferably extends to more than one WHO region;
- (b) Governmental institutions and agencies involved in the safety of blood products and transfusion safety;
- (c) International industry associations/umbrella organizations **for example** representing **organizations involved in collection of blood and plasma**, manufacturers of plasma

derivatives, diagnostic reagents, devices or other products or services relevant to blood safety and safe transfusion practices; and

(d) WHO Collaborating Centres (annex 3) active in the field of the safety of blood products and transfusion practices.

Ideally, an appropriate regional representation, including in particular from developing countries, should be ensured. To promote the achievement of such appropriate regional representation, certain of the above mentioned criteria for participation may be waived by the General Meeting, where deemed necessary or advisable to achieve the GCBS mandate and objectives, including inter alia by allowing individuals from developing countries, with outstanding expertise and experience, and active internationally in the safety of blood products and transfusion practices, to become a participant in the GCBS.

Co-opted experts

The General Meeting may invite individual experts, with outstanding experience and active internationally in the safety of blood products and transfusion practices, to participate in certain meetings of the GCBS (including Working Group Meetings: see below), for the purpose of sharing information and/or advising the GCBS on matters within the sphere of their competence. Co-opted experts will not, however, be considered as participants, nor have a role in the GCBS decision making process.

Observers and Liaisons

The General Meeting may furthermore invite organizations and individual experts, who do not meet the criteria for participation, but are involved in activities which are relevant to all or part of the mandate and objectives of the GCBS, to attend all or certain designated meetings of the GCBS, as observers. In addition, organizations which do meet the criteria for participation in GCBS, but do not wish to become involved as full participants, may at their request attend all the meetings of the GCBS as liaison.

Observers will not participate in the discussions and deliberations of the GCBS, nor have a role in the GCBS decision making process. Upon invitation of the Chairperson, observers may, however, make a statement to present their views or position on the issue under consideration.

Liaisons may participate in the discussions and deliberations of the GCBS, but will not have a role in the GCBS decision making process.

Each observer and liaison organization will designate no more than one representative to attend the GCBS meetings.

4.2 General Meeting

The GCBS will be guided by the General Meeting, consisting of one representative from each participating organization. The General Meeting is expected to meet at least once a year and will review reports of activities, conducted as part, or as a result, of the GCBS, as well as proposals within the GCBS mandate, as presented to the General Meeting by the Planning

Group. The General Meeting will select a maximum of twelve participants to participate in the Planning Group for 3-year terms, i.e. in addition to the Chairperson, Vice-Chairperson and WHO (as the GCBS secretariat) as ex-officio participants in the Planning Group. The responsibilities of the General Meeting will furthermore be to put forward proposals and make non-binding recommendations on matters within the GCBS mandate to the GCBS participants. To this end, the General Meeting will review the reports and proposals presented to it by the Planning Group, and where appropriate, recommend all or part of their content for endorsement by the respective GCBS participants. The General Meeting will also be responsible for: (i) confirming the acceptance of new participants, co-opted experts, observers and liaisons in the GCBS; and (ii) establishing Working Groups to address and advise the GCBS on issues relevant to its mandate.

The General Meeting will perform its responsibilities as aforesaid by consensus of all participants. The General Meeting will biennially elect a Chairperson and a Vice-Chairperson to act for a two-year term **in accordance with the terms of Annex 1 attached hereto**. A Chairperson and Vice-Chairperson may not act for more than two consecutive terms without a one term hiatus. The General Meeting will annually elect two rapporteurs, to act for a one-year term.

4.3 Planning Group

The Chairperson of the General Meeting will chair the Planning Group. The responsibilities of the Planning Group will consist of the following: (a) Coordination of reports and proposals of relevant collaborating parties for review by the General Meeting, (b) Review and overall presentation of the output/reports of the Working Groups to the General Meeting, (c) Review and **provisional** acceptance of applications for participation, observership, and liaison in the GCBS, for confirmation by the General Meeting, (d) Identification of the need for co-opted experts (as described above) to support the achievement of the GCBS objectives (for confirmation by the General Meeting), and (e) Identification of the need for the establishment of Working Groups to address and advise the GCBS on specific issues relevant to the GCBS mandate (for confirmation by the General Meeting). (f) Submission of proposals for nomination of candidates for Chairperson, Vice-Chairperson and Rapporteur to the General Meeting. **The Planning Group will operate by consensus, and will conduct its meetings in person or via electronic means at least once a year, preferably six months prior to the General Meeting of the GCBS.**

4.4 Working Groups

As noted above, the GCBS may establish Working Groups to address and advise the GCBS, on specific issues relating to the safety of blood products and transfusion practices. In some instances, such Working Groups may need to be formally constituted, and will be required to meet in order to perform their assigned task. In other cases, a Working Group may be constituted in a less formal manner and carry out its task by correspondence. Each Working Group will prepare a report on the outcome of its work. This report will be presented to the General Meeting through the Planning Group.

4.5 Secretarial support for the GCBS

Subject to the availability of sufficient human and financial resources for this purpose, secretarial support for the GCBS will be provided by WHO, through the Blood Transfusion

Safety programme, Department of Essential Health Technologies (EHT) at the Organization's headquarters in Geneva. In this connection, WHO will: (a) coordinate the organization of the meetings of the General Meeting, and of the Planning and Working Groups, (b) prepare and distribute -in consultation with the Planning Group- draft agendas, meeting reports, progress reports, etc, (c) receive and submit applications for participation, observership and liaison in the GCBS to the Planning Group and General Meeting, respectively, in accordance with the procedure described above, and (d) receive and inform the General Meeting of notices of termination.

In addition, WHO will, as part of its secretarial support for the GCBS:

- act as a central repository of information and documentation relevant to the GCBS (including in particular reports of the General Meeting and Working Groups), and disseminate and distribute such information and documentation as appropriate (including through the GCBS website referred to below); and
- service a GCBS website, the technical content of which will be determined by consensus of the General Meeting and will include the above-mentioned information and documentation. GCBS documents and other output will be free from copyright, and will be disseminated with appropriate disclaimers, including that the content does not necessarily reflect the views or stated policy of the participating organizations, agencies and institutions (including WHO, acting as the secretariat for the GCBS), as well as a clarification of the nature of the proposals/recommendations put forward in such GCBS documents, along the following lines:

“ Consistent with the Declaration of the Paris AIDS Summit, December 1994, and World Health Assembly resolution WHA 48.27, May 1995, the GCBS has been established to improve collaboration among organizations, agencies and institutions involved in the safety of blood products and transfusion practices. The GCBS meeting has reached a consensus on the proposals and/or recommendations contained in this document. These proposals and/or recommendations do not, however, necessarily reflect the views or stated policy of the participating organizations, agencies or institutions, nor are they in any way binding on, nor do they commit, the organizations, agencies and institutions to whom they are addressed. These proposals and/or recommendations constitute a reference for guidelines, official policy or other action, as appropriate, under the responsibility, and according to the prerogative, mandate and internal rules and procedures, of each such organization, agency or institution authority. The names of the GCBS including its parties should not be used in connection with commercial or promotional purposes without the written permission of GCBS and/or any such participant, as the case may be.”

5. Financing of, and fundraising for, the day to day operation of the GCBS (including the secretarial support)

Each participant, observer, liaison and co-opted expert will, in principle, be responsible for meeting its own expenses in relation to the GCBS (including, but not limited to, travel and subsistence for the attendance of General Meetings, Planning Group meetings, Working Group meetings, etc). Subject to the availability of funds, the GCBS Secretariat may, in consultation and agreement with the Chairperson, decide to support the participation of certain developing country organizations or individuals, and/or of co-opted experts.

The secretarial support and related day to day operation of the GCBS will be financed by voluntary contributions from the participants. In addition, WHO may raise funds from other sources to support the work of the GCBS, in accordance with WHO's established policies and principles.

GCBS will establish a mechanism to provide sustained support for participation by representatives of developing world countries. GCBS recognizes the role of the WHO secretariat to solicit voluntary support from member participants based on recognized budgetary needs.

The acceptance by WHO of any contributions for the GCBS from the participating organizations, agencies and institutions, as well as from other sources will be subject to WHO's established policies and principles (as referred to above), and to WHO's financial rules and regulations, administrative procedures and practices.

WHO will administer any such financial contributions in accordance with the aforesaid financial rules and regulations, and administrative procedures and practices (including WHO's normal programme support costs (PCS) charge. WHO will provide the participating organizations, agencies and institutions with an annual financial report, including information on contributions received to support the GCBS secretariat and related day to day operation of the GCBS, and justifying how these funds have been used.

6. Applications

Applications to become a participant, observer or liaison will be addressed to WHO, as the GCBS secretariat, for submission to the Planning Group and the General Meeting, in accordance with these Terms of Reference and the procedure described in **Annex 2** attached hereto.

7. Termination

Any participant, observer, liaison and co-opted expert may decide to terminate its involvement in the GCBS by providing written notice to WHO as the GCBS secretariat. WHO will remove the organization, agency or institution or individual in question from the list of participants, observers, liaisons and co-opted experts, and inform the General Meeting accordingly.

In addition, it should be noted that:

- the involvement of observers and co-opted experts extends only for as long as they are invited by the General Meeting; and that
- the involvement of any participant and liaison will terminate (on a voluntary basis or by consensus of the General Meeting), if and when this participant or liaison ceases to meet the criteria set forth in the first paragraph of section 3.1 above or no longer subscribes to the mission and goals of the GCBS as described in section 1 above.

8. Amendments

These Terms of Reference may be modified by consensus of all participating organizations.

Annex 1 of terms of reference

Chair and Vice-Chair of the GCBS General Meeting

The General Meeting will biennially elect a Chair and a Vice-Chair from among the GCBS participants, to act for a two-year term, in accordance with the terms set forth below. A Chair and Vice-Chair may not act for more than two consecutive terms. A Chair and Vice-Chair will hold office until their respective successors are elected.

Only participants of the GCBS are eligible to be nominated as Chair or Vice-Chair. Their participation in the GCBS should have extended over at least two years, and they should be willing in principle to hold office for at least one full two year term.

The Chair and Vice-Chair will be elected by the General Meeting at the beginning of the session at which such elections are to be held. Prior to the start of any such session, WHO, as the secretariat, will ensure that there is at least one nomination meeting the criteria set forth above, for each office. Unless the Chair and/or the Vice-Chair are elected by acclamation, the election for either office will be held by secret ballot. A candidate for Chair or Vice-Chair, as the case may be, will be declared elected provided that he/she has obtained a majority of the votes of the GCBS participants present and voting. If in a first ballot (for the election of a Chair or Vice-Chair, as the case may be) no candidate obtains the majority required, a second ballot will be held which will be restricted to the two candidates obtaining the highest number of votes. If in the second ballot the votes are equally divided, the previously elected Chair will decide between the candidates by drawing lots. The newly elected Chair and Vice-Chair will immediately take office.

The function of the Chair will be to declare the opening and closing of each General Meeting, to direct the discussions in accordance with the agenda approved by the General Meeting, accord the right to speak, put questions, announce decisions, and ensure the application of the Terms of Reference. The Chair will accord to participants and liaisons the right to speak in the order of their request. In addition, the Chair will at the end of the discussion on a given subject, invite observers (at their request) to make a statement to present their views or position. The Chair will generally maintain the order at the General Meetings. In this connection, the Chair may call to order any speaker whose remarks are irrelevant to the subject under consideration. Finally, the Chair may propose to the General Meeting to limit the time allowed to each speaker.

If the Chair is unable to attend a General Meeting or any part thereof, the Vice-Chair will preside.

If the Chair or Vice-Chair is for any reason unable to complete his/her term of office, the General Meeting will elect a new Chair or Vice-Chair, as the case may be, to act for the remaining period of the term. If the Chair is unable to act in between sessions, the Vice-Chair will act in his/her place.

Annex 2 of terms of reference

Applications

Applications to become a GCBS participant, observer or liaison will be addressed to WHO, as the GCBS secretariat, for submission to the Planning Group and the General Meeting, in accordance with the Terms of Reference and the procedure described herein below:

1. All applications will be submitted in writing and will need to clearly indicate whether the interested party wishes to become a participant, observer or liaison.
2. Following the receipt of such an application, WHO, as the GCBS secretariat, will provide the applicant with a copy of the GCBS Terms of Reference.
3. In order for an application to be considered, the applicant will be required to submit adequate information and documentation regarding its legal status, membership, mandate, aims and objectives, as well as a summary of its activities as they relate to the criteria to become a participant, observer or liaison, as described in paragraph 4.1 of the Terms of Reference. Individuals applying to become a participant, observer or liaison will be required to provide adequate information and documentation regarding their expertise and experience in the safety of blood products and transfusion practices, together with a summary of their international activities as they relate to the goal and objectives of the GCBS.
4. WHO will circulate each application, together with the information and documentation provided, to the Planning Group for consideration.
5. Following such provisional acceptance of an application by the Planning Group, WHO, as the GCBS secretariat, will:
 - extend an invitation to the applicant to attend the next General Meeting as an observer and to make a presentation on its international activities relevant to the GCBS; and
 - provide the application, together with the information and documentation provided, to the General Meeting for consideration.
6. Following consideration of all information and documentation, as well as the above mentioned presentation, the General Meeting will proceed to take a final decision on the application.

Annex 3 of terms of reference		
WHO Collaborating Centres		
REGION	TITLE OF THE CENTRE	DIRECTOR/ HEAD
African Region		
Harare, Zimbabwe,	WHO Collaborating Centre for Blood Transfusion	Dr M.E. Chitiyo Medical Director, National Blood Transfusion Service Mazowe Street North PO Box A101, Avondale, Harare Tel: + 263 4 70 78 04/793552 Fax: + 263 4 70 78 02 E-mail: nbts@africaonline.co.zw
Americas Region		
Sao Paulo, Brazil	WHO Collaborating Centre for Quality Control of Serology in Blood Banks	Dra. Márcia Otani Mitiko Chefe Depto Controle de Qualidade Serologia Fundação Pró-Sangue Hemocentro de São Paulo Av. Enéas de Carvalho Aguiar, 155 CEP 05403-000 São Paulo SP Tel: +55 (11) 3061-5544 (Ramal 353) Fax: +55 (11) 3088-8317 e-mail: otanimarcia@uol.com.br
Eastern Mediterranean Region		
Tunis, Tunisia	WHO Collaborating Centre for Blood Transfusion	Professor Kamel Boukef Director, National Blood Transfusion Centre, Ministry of Public Health, 13 rue Djebel Lakhdar, Bab Saadoun, Tunis, 1006 Tel: +216 71 574 106 Fax: +216 71 562 957 e-mail: kamel.boukef@rns.tn

Amman, Jordan,	WHO Collaborating Centre for Blood Transfusion	Dr Janiet Merza Niquir Director, National Blood Bank, P.O. Box 10058, Al Ashrafieh, Amman Tel:+962 (6) 474 91 23 Fax: +962 (6) 474 91 23 e-mail: nbbam@moh.gov.jo
European Region		
Antwerp, Belgium	WHO Collaborating Centre for HIV/AIDS Diagnostics and Laboratory Support	Dr Luc Kestens Director, Department of Microbiology Institute of Tropical Medicine 155 Nationalestraat B-2000 Antwerp Belgium Tel: +32-3 247 63 32 Fax: +32-3 247 63 33 e-mail: ikestens@itg.be
Langen, Germany	WHO Collaborating Centre for Quality Assurance of Blood Products and in vitro Diagnostic Devices	Professor Rainer Seitz Director, Paul-Ehrlich-Institute (PEI) Paul Ehrlich Str. 51-59 D-63225 Langen Germany Tel: +49-6103 77 2600 Fax: +49-6103 77 1250 e-mail: haematology@pei.de
Helsinki, Finland	WHO Collaborating Centre for Transfusion Medicine, Immunohaematology & Plasma Fractionation	Dr Jukka L. K Rautonen Director, Finnish Red Cross Blood Transfusion Service Kivihaantie 7, FIN-00310 Helsinki, Finland Tel: +358-9-5801 260 Fax: +358-9-5801 233 e-mail: jukka.rautonen@bts.redcross.fi

Groningen, Netherlands	WHO Collaborating Centre for Technology for Health Care (Blood Transfusion)	Prof Cees Th. Smit Sibinga, Director Sanquin Consulting Services Post Box 11085, NL- 9700 CB Groningen Netherlands Tel: +31 50 361 00 61 / +31 6 2223 4325 Fax: +31 50 361 90 39 E-mail: sibinga@wolmail.nl c.smitsibinga@sanquin.nl consulting@aabb.org
Bristol, United Kingdom of Great Britain and Northern Ireland	WHO Collaborating Centre for Immunohaematology	Professor David J Anstee Director International Blood Group Reference Laboratory(IBGRL) National Blood Service Southmead Road Bristol BS10 5ND United Kingdom of Great Britain and Northern Ireland Tel: +44-117 991 2103 Fax: +44- 117 959 1660 e-mail: david.anstee@nbs.nhs.uk
London, United Kingdom of Great Britain and Northern Ireland	WHO Collaborating Centre for Diagnostic Haematology Technology	Mrs Anne Bradshaw Director, Department of Haematology Imperial College of Medicine, Hammersmith Hospital Campus Ducane Road London W12 0HS United Kingdom of Great Britain and Northern Ireland Tel: +44-208 383 1975 Fax: +44-208 383 1979 e-mail: abradshaw@hhnt.org

London, United Kingdom of Great Britain and Northern Ireland	WHO Collaborating Centre for Laboratory and Diagnostic Support	Dr John Parry Director Sexually Transmitted and Bloodborne Virus Laboratory Virus Reference Department(V.R.D.) Health Protection Agency 61 Colindale Avenue London NW9 5HT United Kingdom of Great Britain and Northern Ireland Tel: +44-208 383 1975 Fax: +44-208 383 1979 e-mail: abradshaw@hhnt.org
Watford, United Kingdom of Great Britain and Northern Ireland	WHO Collaborating Centre for Quality Assessment in Haematology	Dr E. J. Parker-Williams United Kingdom National External Quality Assessment Scheme for General Haematology, UK NEQAS (H) Watford General Hospital PO Box 14 Watford WD 18 0FJ United Kingdom of Great Britain and Northern Ireland Tel: +44-1923 217 878 Fax: +44-1923 217 879 e-mail: haem@ukneqas.org.uk
South-East Asia Region		
Bangkok, Thailand	WHO Collaborating Centre for Training in Transfusion Medicine	Dr Rachanee O'Charoen, Director, National Blood Centre, Thai Red Cross Society, 1871 Henri Dunant Road, Pathumwan, Bangkok 10330 Thailand Tel: +662 251 3111/252 4106-9 Fax: +662 255 5558 E-mail: rachanee@redcross.or.th

Western Pacific Region		
Fitzroy, Australia	WHO Collaborating Centre for AIDS	Dr Elizabeth M. Dax Director, National Serology Reference Laboratory(NRL) St Vincent's Institute of Medical Research 4 th floor, Healey BUILDING 41 Victoria Parade Fitzroy, Vic 3065 Australia
Shanghai, China	WHO Collaborating Centre for Blood Transfusion Services	Professor Zhu Yongming President, Shanghai Blood Center #1191, Hongqiao Road Shanghai 200051 Peoples Republic of China Tel +86 21 6278 0789 Fax +86 21 62958414 E-mail: ymzhu@sbc.org.cn
Singapore	WHO Collaborating Centre for Transfusion Medicine	Dr Diana Teo Director, Centre for Transfusion Medicine Health Sciences Authority, 11 Outram Road Singapore 169078 Tel: +65 229 06 00 Fax: +65 223 86 82 e-mail: Diana_TEO@hsa.gov.sg

Annex 2



Global Collaboration for Blood Safety (GCBS)

Sixth General Meeting

16–18 November 2005

National Blood Centre, Thai Red Cross Society, Bangkok, Thailand

A WHO Collaborating Centre

PROGRAMME OF WORK

Wednesday, 16 November 2005		
08.15	Pick up of GCBS participants from foyer of Pathumwan Princess Hotel	
08.30	Registration	
09.00	Opening Ceremony <ul style="list-style-type: none"> • Ministry of Health, Thailand • Director National Blood Centre Thai Red Cross Society • WHO Headquarters, Geneva 	H.E. Mr. Antin Charnvirakul Dr Rachanee O'Charoen Dr Neelam Dhingra
09.20	Welcome and introduction of participants	Dr Jay Epstein, chair Dr Silvano Wendel, Vice chair
09.30	Adoption of the agenda, objectives of the meeting and programme of work	Chair/Vice-Chair
09.40	Review/adoption of relevant reports <ul style="list-style-type: none"> • Fifth GCBS meeting (November 2004) • Adoption of terms of reference 	Chair/Vice-Chair
Theme 1: Introduction of New Participating Organizations		
09.50	Arab Blood Transfusion Society: international blood safety activities	Mr Ibraheem A.AL-Omar
10.00	South Asian Association of Transfusion Medicine:	Dr K.K.S. Kuruppu

	international blood safety activities	
10.10	NATA (Network for Advancement of Transfusion Alternatives): international blood safety activities	Prof Alice Maniatis
10.20	Acceptance of new participants and discussion	Plenary
10.30	Tea/coffee	
Theme 2: Review of GCBS Activities: Progress and Achievements		
11.00	Review of implementation of recommendations from previous GCBS meetings (2000–2004)	Chair/Vice-Chair
12.00	Discussion	
Theme 3: Global Efforts and Progress in Blood Safety		
12.30	Highlights of WHO global efforts and progress on blood safety	Dr Neelam Dhingra
12.45	Progress and constraints in PEPFAR: report from technical support organizations and countries	Dr Robert Chen
13.00	Lunch	
14.00	WHO activities in Africa in PEPFAR	Dr J.B Tapko
14.15	PEPFAR technical assistance: American Association of Blood Banks	Dr Roger Dodd
14.30	Sanquin Consulting Services: PEPFAR Challenges and experiences	Dr Martin Smid
14.45	International efforts to improve Blood Safety: South Africa	Prof. Anthon du P. Heyns
15.00	International efforts to improve Blood Safety: Côte d'Ivoire	Dr Seidou Konate
15.15	International efforts to improve Blood Safety: Uganda	Dr Peter K. Kataaha
15.30	Tea/Coffee	
16.00	International efforts to improve Blood Safety: Malawi	Dr Jean C. Emmanuel
16.15	International efforts to improve Blood Safety: Viet Nam	Prof Nguyen Anh Tri
16.30	International efforts to improve Blood Safety: Iraq	Dr Nabila Metwalli
16.45	Discussion	
17.00	Summary of the day	
18.00	Social Event: Optional -Dinner on Chao Phraya River Cruise during Loy Krathong festival.	
Thursday 17 November 2005		
Theme4: Reporting back on important global activities in Blood Safety		
09.00	Summary report on proceedings of ISBT Working Party on Transfusion-Transmissible Infections: July 2005	Dr Silvano Wendel
09.15	Summary report on proceedings of Global Harmonization	Dr Clair Watts

	Workshop for Blood Services: August 2005	
09.30	Summary report on proceedings of Round Table 2 on Emerging Infectious Diseases (PPTA): September 2005	Mr Jan Bult
09.45	Summary report on proceedings of 4th WFH Global Forum on the Safety and Supply of Treatments for Bleeding Disorders: September 2005	Mr Mark Skinner
10.00	Summary report on proceedings of IVth IABs Symposium on Advances in Transfusion Safety: October 2005	Dr Albert Farrugia
10.15	Discussion	
10.30	Tea/coffee	
Theme 5: Iron Balance and Blood Donors		
11.00	Iron, anaemia and blood donation	Dr Frank Boulton
11.15	Donor health status	Dr Tony Keller
11.30	Discussion	
Theme 6: New Developments in Transfusion Medicine		
11.45	Minimizing bacterial contamination of blood components	Dr Che Kit Lin
12.00	Malaria testing and blood safety	Dr So Young Kwon
12.15	Enhancing the availability of plasma-derived products	Mr Duncan Armstrong
12.30	Discussion	
12.45	Lunch	
Theme 7: Addressing New Issues of Concern in Global Blood Safety and Availability		
13.45	Breakout session 1 Developing a global response system (infrastructure and communication issues) for making safe blood available in: <ul style="list-style-type: none"> ▪ Major international disaster situations ▪ Emerging infectious diseases/effects of bio-terrorism on blood supply 2 Evidence-based medicine/clinical standards 3 Use of rapid tests for transfusion-transmissible infections in blood transfusion services	Dr Rachanee O'Charoen Dr Frank Boulton Dr Silvano Wendel
15.15	Tea/coffee	
15.45	Presentations and discussion on breakout sessions	Dr Jay Epstein
17.15	Summary of the day	Rapporteur
17.30	Welcome Reception (Blood Centre)	
18.30	Satellite meeting	PEPFAR Participants

Friday 18 November 2005		
Theme 8: GCBS Administrative Issues		
09.00	Funding for GCBS (WHO-Geneva to be connected via teleconference if facilities exists)	Secretariat
09.15	Election of planning group members and rapporteurs	Chair/Vice-Chair
Theme 9: Future issues and activities - Recommendations and Action Plan		
09.30	Development of draft recommendations and action plans	Chair/Vice-Chair
10.30	Tea/coffee	
11.00	Development of draft recommendations (continued)	
12.00	Planning and future perspectives for GCBS <ul style="list-style-type: none"> ▪ Identification of joint projects to address GCBS recommendations ▪ Funding ▪ Meeting venues 	Plenary
13.00	Next steps	Dr Neelam Dhingra
13.15	Closing remarks	Chair/Vice-Chair

Annex 3



Global Collaboration for Blood Safety (GCBS) - 6th General Meeting

16-18 November 2005

National Blood Centre, Thai Red Cross Society, Bangkok, Thailand

A WHO Collaborating Centre

LIST OF PARTICIPANTS

Status of participation	GCBS participant
<i>Organization/Institution/ Association represented</i>	<i>Nominated member</i>
African Society for Blood Transfusion (AfSBT)	Prof. Kamel Boukef President, African Society for Blood Transfusion (AfSBT) c/o National Blood Transfusion Centre Ministry of Public Health 13 rue Djebel Lakhdar, Bab Saadoun, Tunis, 1006, Tunisia Tel: +216 71 568 903 Fax: +216 71 562 957 E-mail: kamel.boukef@rns.tn
American Association of Blood Banks (AABB)	Dr James Reilly COO Africa/Caribbean Project, and Director, Global Development AABB Consulting Services Division 8101 Glenbrook Road Bethesda, MD 20814 Tel: +1.301.215.6511 /+1.301.792.5885 Fax: +1.301.907.6895 E-mail: jreilly@aabb.org

	<p>Dr Roger Y. Dodd Executive Director, Biomedical Safety American Red Cross Holland Laboratory 15601 Crabbs Branch Way Rockville MD 20855, USA Tel: +1 301 738 0641 Fax: +1 301 738 0495 E-mail: dodd@usa.redcross.org</p>
Australian Red Cross Blood Service	<p>Dr Tony Keller National Donor & Product Safety Manager Australian Red Cross Blood Service GPO Box B80 Perth WA 6838, Australia Tel: 618-9472-2022 Fax: 618-9472-2020 Email: akeller@arcbs.redcross.org.au</p>
Biomedical Excellence for Safer Transfusion (BEST) Collaborative	<p>Prof. John Hess Professor of Pathology and Medicine University of Maryland 5606 Oak Place Bethesda, MD 20817, USA Tel: + 410 328 3834 Fax: + 410 328 6816 E-mail: jhess@umm.edu (Unable to attend)</p>
Council of Europe (CoE)	<p>Ms Jacqueline Lostao Secretary to the Council of Europe Expert Committee on Blood Transfusion(SP-HM) Directorate General III- Social Cohesion Department of Health and of the partial Agreement in the Social and Public Health Field Health Division 67075 Strasbourg Cedex, France Tel: + 33 (0) 3 88 41 28 47 Fax: + 33 (0) 3 88 41 27 26 E-mail: alina.tatarenko@coe.int (Unable to attend)</p>

Centres for Disease Control and Prevention	Dr Robert T. Chen Leader, Medical Transmissions Team HIV Prevention Branch Global AIDS Program Centres for Disease Control and Prevention (CDC) 1600 Clifton Rd (E-04) Atlanta, GA 30333 USA Tel: +1 404-639-8648 Fax: +1 404-639-8114 E-mail: rtc1@cdc.gov
Établissement français du sang, France	Dr Alain Beauplet Head, International Affairs, Etablissement français du Sang Rue Pierre Jean Gineste BP 91614-35016 Rennes cedex, EFS Tel: +33 2 99 54 42 22 Fax: +33 2 99 54 42 22 E-mail: alain.beauplet@efs.sante.fr
European Blood Alliance	Dr Clair Watts European Blood Alliance (EBA) Plesmanlaan 125 1066 CX Amsterdam, The Netherlands. Tel: +31-20-512-3291 Fax: +31-20-512-3559 E-mail: eba@sanquin.nl
<sp>European Commission (EC)	Ms Frances M. Delaney Health and Consumer Protection Directorate-General Public Health and Risk Assessment Directorate Health Measures Unit European Commission JMO C5/73A, L-2920 Luxembourg Tel: +352 4301 38215 Fax: +352 4301 33248 E-mail: frances.delaney@cec.eu.int (Unable to attend)
Luxembourg	Dr Jean-Claude Faber Luxembourg Red Cross Blood Transfusion Service Medical Direction L-1840 Luxembourg E-mail : transfusion@croix-rouge.lu

<p>Food and Drug Administration (FDA), USA</p>	<p>Dr Jay Epstein (Current Chairperson) Director, Office of Blood Research and Review Centre for Biologics Evaluation and Research Food and Drug Administration, HFM-300, 1401 Rockville Pike, Rockville, MD 20852, USA Tel: +1 301 8273518 Fax: +1 301 8273533 E-mail: epsteinj@cber.fda.gov</p>
<p>Health Canada</p>	<p>Dr Peter R. Ganz Director, Health Canada, Biologicals and Radiopharmaceuticals Evaluation Centre Tunney's Pasture, Building #6 Ottawa, Ontario Canada KIA OL2 AL:0603D Tel: +1 613 952 0237 Fax: +1 613 948 3655 E-mail: Peter_ganz@hc-sc.gc.ca</p>
<p>International Plasma Fractionation Association (EPFA)</p>	<p>Mr Theo Evers Executive Director, European Plasma Fractionation Association (IPFA) Plesmanlaan 125 PO Box 9190, 1006 AD Amsterdam , The Netherlands Tel: +31 20 512 35 61 Fax: +31 20 512 35 59 E-mail: ipfa@sanquin.nl</p>
<p>International Trauma Anaesthesia and Critical Care Society</p>	<p>Dr Maureen McCunn International Trauma Anaesthesia and Critical Care Society Department of Anaesthesiology University of Maryland School of Medicine 22 South Greene Street, Room T4R10 Baltimore, Maryland 21201-1595, USA Tel: +1 (410) 328 2359 Fax: +1 (410) 328 7175 E-mail: mmccunn@umm.edu (Unable to attend)</p>
<p>International Association of Biologicals</p>	<p>Prof. Jean-Pierre Allain Division of Transfusion Medicine, University of Cambridge Long Road Cambridge CB2 2PT, UK Tel: +44 1223 548044 Fax: +44 1223 242044 E-mail: jpa1000@cam.ac.uk</p>

<p>ICCBBA</p>	<p>Mr Paul Ashford Executive Director of ICCBBA, Inc 4117 Hillsboro Pike ; 103-307 , Nashville , TN 37215 , USA Tel: +1 615 309 8928 Fax: +1 615 309 8928 E-mail: paul.ashford@wbs.wales.nhs.uk</p>
<p>International Consortium for Blood Safety (ICBS)</p>	<p>Dr Mohamed El-Nageh Executive Director, International Consortium for Blood Safety New York Blood Center, 310E 67th Street, New York, NY 10021, USA Tel: +1 212 570 3319 Fax: +1 212 570 3320 E-mail: Elnagehmm@aol.com</p>
<p>International Federation of Blood Donor Organizations (IFBDO)</p>	<p>Mr Niels Mikkelsen Secretary-General, Bloddonorernei Denmark Vesterbrogade 191, 1800 Frederiksberg, Denmark Tel: +45 70 13 70 14 Fax: + 45 70 13 70 10 E-mail : mikkelsen@bloddonor.dk</p>
<p>International Federation of Red Cross and Red Crescent Societies (IFRCRCS)</p>	<p>Dr Che Kit Lin Hospital Chief Executive Hong Kong Red Cross Blood Transfusion Service 15 Kings Park Rise Kowloon Hong Kong Tel: 852 2710 1301 Fax: 852 2780 1862 E-mail: cklin@ha.org.hk</p>
<p>International Society of Blood Transfusion (ISBT)</p>	<p>Dr Paul Strengers Secretary-General ISBT Central Office Jan Goyenkade11, NL-1075 HP Amsterdam The Netherlands Tel: 31 20 512 32 39 Fax: 31 20 673 7306 E-mail: isbt@eurocongres.com</p>
<p>Plasma Protein Therapeutics Association, Europe (PPTA)</p>	<p>Mr Charles Waller Executive Director, Plasma Protein Therapeutics Association Europe, Boulevard Brand, Whitlock 114/115, B-1200 Brussels, Belgium Tel: +32 2 705 5811 Fax: +322 705 5820 E-mail: ppta.eu@ppta.global.be</p>

PPTA Source	Mr Jan Bult President, PPTA Source 147 Old Solomon's Island Road – Suite 100, Annapolis, MD 21401 USA Tel: + 410 263 8296 Fax: + 410263 2298 E-mail: jbult@pptaglobal.org
Swiss Red Cross Blood Transfusion Service	Dr Guy Levy Medical Director Blood Transfusion Service SRC Gutenbergstrasse 14 Postfach 5510 3001 Bern, Switzerland Tel : +41 31 380 81 86 Fax: +41 31 380 81 80 E-mail : guy.levy@redcross.ch (Unable to attend)
Thalassaemia International Federation (TIF)	Dr Androulla Eleftheriou Scientific Director, Thalassaemia International Federation 31 Ifigeneias Street, 2007 Strovolos Nicosia – Cyprus Tel: +357-22-319129 Fax: +357-22-314552 E-mail: thalassaemia@cytanet.com.cy (unable to attend)
Therapeutic Goods Administration (TGA) Laboratories, Australia	Dr Albert Farrugia Senior Adviser and Head, Blood and Tissue Unit, Office of Devices, Blood and Tissues, Therapeutic Goods Administration, P.O. Box 100, Woden, ACT, Australia 2606 Tel: +61 (2) 6232 8539/ +61 413 018 413 Fax: +61 (2) 6232 8939 E-mail: albert.farrugia@health.gov.au
UK NBS	Dr Frank Boulton Consultant Haematologist National Blood Service Coxford Road, Southampton SO16 5AF, United Kingdom Tel: +44 238 029 6704/ +44 771144 7643 Fax: +44 238 029 6778 E-mail: frank.boulton@nbs.nhs.uk

World Federation of Hemophilia (WFH)	Mr Mark Skinner President, World Federation of Hemophilia 1155 23rd Street NW #3A Washington, DC 20037-3303 USA Tel: +1 (202) 253 8342 Fax: +1 (202) 296 1352 E-mail: mskinner@vzavenue.net
World Health Organization (WHO)	Dr Neelam Dhingra Coordinator Blood Transfusion Safety Department of Essential Health Technologies World Health Organization-HQ Avenue Appia 20, CH-1211 Geneva 27, Switzerland Tel: +41 22 791 46 60 Fax: +41 22 791 48 36 E-mail: dhingran@who.int
WHO Collaborating Centres	
AFR	
Zimbabwe	Dr M.E.Chitiyo Medical Director, National Blood Transfusion Service Mazowe Street North PO Box A101, Avondale, Harare Tel: + 263 4 70 78 04/793552 Fax: + 263 4 70 78 02 E-mail: nbts@africaonline.co.zw (unable to attend)
AMRO	
Brazil	Dra. Márcia Otani Mitiko Chefe Depto Controle de Qualidade Serologia Fundação Pró-Sangue Hemocentro de São Paulo Av. Enéas de Carvalho Aguiar, 155 CEP 05403-000 São Paulo SP Tel: +55 (11) 3061-5544 (Ramal 353) Fax: +55 (11) 3088-8317 E-mail: otanimarcia@uol.com.br (unable to attend)
EMR	

Tunisia	Pr Kamel Boukef Director, National Blood Transfusion Centre, Ministry of Public Health, 13 rue Djebel Lakhdar, Bab Saadoun, Tunis, 1006, Tunisia Tel: +216 1 574 106 Fax: +216 71 562 957 E-mail: kamel.boukef@rns.tn
Jordan	Dr Janiet Merza Niquir Director, National Blood Bank, P.O. Box 10058, Al Ashrafieh, Amman, Jordan Tel: +962 (6) 474 91 23 fax: +962 (6) 474 91 23 E-mail: nbbam@moh.gov.jo (unable to attend)
EUR	
Germany	Professor Rainer Seitz Director, Paul-Ehrlich-Institute(PEI) Paul Ehrlich Str. 51-59 D-63225 Langen Germany Tel: +49-6103 77 2600 Fax: +49-6103 77 1250 E-mail: haematology@pei.de (Unable to attend)
	Dr Uwe Unkelbach Head of Section Batch Release of Blood Products, Albumin, Logistic Paul-Ehrlich-Institute(PEI) D 63225 Langen Tel: +49-6103-77-2658 Fax: +49-6103-77-1250 E-mail: unku@pei.de
Finland	Dr Tom Krusius Medical Director, Finnish Red Cross Blood Transfusion Service Kivihaantie 7, FIN-00310 Helsinki, Finland Tel: +358-9-5801 270 Fax: +358-9-5801 233 E-mail: tom.krusius@bts.redcross.fi
Netherlands	Dr Martin. Smid Managing Director Sanquin Consulting Services P.O. Box 11085 9700CB Groningen, The Netherlands Tel: +31-503610061 fax:+31-503619039 E-mail: m.smid@sanquin.nl

United Kingdom of Great Britain and Northern Ireland	<p>Professor David J Anstee Director, International Blood Group Reference Laboratory (IBGRL) National Blood Service Southmead Road Bristol BS10 5ND United Kingdom of Great Britain and Northern Ireland Tel: +44-117 991 2103 Fax: +44- 117 959 1660 E-mail: david.anstee@nbs.nhs.uk (Unable to attend)</p>
SEAR	
Thailand	<p>Dr Rachanee O-Charoen Director, National Blood Centre, The Thai Red Cross Society, 1871 Henri Dunant Road, Pathumwan, Bangkok 10330 Thailand Tel: +662 251 3111/252 4106-9 Fax: +662 255 5558 E-mail: rachanee@webmail.redcross.or.th</p>
WPR	
Australia	<p>Prof. Elizabeth M. Dax Director, National Serology Reference Laboratory (NRL) St Vincent's Institute of Medical Research 4th floor, Healey Building 41 Victoria Parade Fitzroy, Vic. 3065 Australia Tel: (61-3) 9418 1111 Fax: (61-3) 9418 1155 E-mail: liz@nrl.gov.au</p>
China	<p>Professor ZHU Yongming President, Shanghai Blood Center Director, WHO Collaborating Center for Development and Research for the Services of Blood Transfusion #1191, Hongqiao Rd. Shanghai 200051, Peoples Republic of China Tel +86 21 6278 0789 Fax +86 21 62958414 E-mail: ymzhu@sbc.org.cn</p>

Singapore	Dr Diana Teo Director, Centre for Transfusion Medicine Health Sciences Authority, 11 Outram Road Singapore 169078 Tel: +65 229 06 00 Fax: +65 223 86 82 E-mail: Diana_TEO@hsa.gov.sg
<i>In individual capacity as an expert</i>	
AFRO	
Côte d'Ivoire	Dr Seidou Konate Médical Adviser, Centre National de Transfusion Sanguine, KM4 Boulevard de Marseille 18 BP, 898, Abidjan 18 Tel: +225 22522666/ 07 07 91 11 Fax : +225 21358060 E-mail: plasma@aviso.ci
South Africa	Prof. Anthon du P. Heyns Director, South African National Blood Service, Private bag X14, Weltevreden Park, 1715 South Africa Tel: +27 11 761 91 11 Fax: +27 11 761 91 13 E-mail: aheyns@inl.sanbs.org.za
	Mr Duncan Armstrong Executive Director, Natal Bio products Institute, 10 Eden Road, Pinetown 3610, Private Bag X9043, Pinetown 3600 Tel: +27 31 719 67 89 Fax: +27 31 708 56 14 E-mail: armstrongd@nbi-kzn.org.za
Uganda	Dr Peter K. Kataaha Senior Medical Consultant, Ministry of Health, P.O. Box 1772, Kampala Tel: +256 41 259 195/257 155 / 25677431880 Fax: +256 41 257 484 E-mail: director@ubts.go.ug
AMRO	

Argentina	<p>Dr Ana Emilia del Pozo National Coordinator of Clinical Use of Blood Commission, International Affairs Secretary, Association Argentina de Hemoterapia e Immunohematologia Chacabuco 824,CP 1069, Buenos Aires Tel: +54 11 43620645 Fax: +54 11 43085325 E-mail: adelpozo@speedy.com.ar anaemiliad03@yahoo.com.ar (unable to attend)</p>
Brazil	<p>Dr Silvano Wendel (Current Vice-Chairperson) Medical Director, Blood Bank, Hospital Sirio Libanes, Rua D. Adma Jafet 91, 20 Andar, Sao Paulo, 01308-050 Tel: +55 11 3255 7746 Fax: +55 11 3257 1290 E-mail: snwendel@uninet.com.br</p>
Honduras	<p>Dr Elizabeth Vinelli Medical Director, National Blood Program, Cruz Roja Hondureña, 2a Avenida, Entre 6a y 7a calle, Comayagüela, M.D.C. Tel: +504 237 18 00 Fax: +504 238 0185 E-mail: cenasa@honduras.cruzroja.org (unable to attend)</p>
EMRO	
<sp>Iran	<p>Dr Hasan Aboulghasemi Managing Director Iranian Blood Transfusion Organization IBTO bldg Hemmat EXP. Way, Teheran Tel: 009821 8288582/3 Fax: 009821 8288581 (unable to attend)</p>
	<p>Dr Ahmad Gharehbaghian Iranian Blood Transfusion Organization Department of Research and Educational Affairs</p>
EURO	

Czech Republic	<p>Dr Lenka Walterova Head of Dept. Clinical Haematology Regional Hospital Liberec OKH KNL 46063 Liberec Czech Republic Tel: 00420-602-163242 Fax: 00420-485312023 E-mail: lenka.walterova@nemlib.cz (Unable to attend)</p>
The Netherlands	<p>Prof Cees Th. Smit Sibinga Academic Institute for International Development of Transfusion Medicine (IDTM), University of Groningen, Sanquin Blood Bank Noordoost, Post Bus 11085, Groningen, 9700 CB Tel: +31 50 361 00 61 / +31 6 2223 4325 Fax: +31 50 361 90 39 E-mail: c.smitsibinga@sanquin.nl Consulting@aabb.org (Unable to attend)</p>
	<p>Dr Kees Groeneveld Scientific Officer, Health Council of the Netherlands, P.O. Box 16052, 2500 BB Den Haag The Netherlands Tel: +31 70 340 56 88/75 20 Fax: +31 70 340 75 23 E-mail: K.Groeneveld@gr.nl (unable to attend)</p>
Russian Federation	<p>Professor Evgueni Selivanov Director, Russian Institute of Haematology and Transfusiology 2nd Sovestskaya Street 16, St Petersburg, 193024 Russia Tel: + 7 812 274 56 50 Fax: +7 812 274 9227 E-mail: evgsell@mail.wplus.net (Unable to attend)</p>
United Kingdom of Great Britain and Northern Ireland	<p>Dr Brian McClelland SNBTS, Ellen's Glen Rd, Liberton, Edinburgh, Tel: 44 (0) 7887 933 472/ 44 (0) 131 536 5962 Fax: 44 (0) 131 536 5781 E-mail: brian.mcclelland@snbts.csa.scot.nhs.uk (Unable to attend)</p>
SEAR	

India	Dr Zarin S. Bharucha Transfusion Medicine Expert, 4/40 Wadia Baug, G D Ambekar Road, Mumbai, 400033, India Tel: +91 22 24710214 Fax: +91 22 24714927 E-mail: zsbharucha@rediffmail.com
India	Dr Nabajyoti Choudhury Medical Director, Prathama Blood Center, Jivraj Mehta Hospital, Vasna, Ahmedabad-380007, India. Phone:+91-79-26600101 (O); 79-26851228 (R); Fax: +91-79-26611850; Mobile:9825414251. Email: nc@prathama.org Nabajyoti_2000@yahoo.com
WPR	
Hong Kong	Dr Che Kit Lin Chief Executive, Hong Kong Red Cross Blood Transfusion Service 15 King's Park Rise, Kowloon Hong Kong Tel. no.: 852 2780 1862 FAX: 852 2780 1862 E-mail: cklin@ha.org.hk
Japan	Dr Kenji Tadokoro Executive Officer, Blood Service Headquarters Japanese Red Cross Society 1-1-3 Shiba-Daimon, Minato-ku Tokyo 105-8521 Japan Tel: +81-3-3437-7506 Fax: +81-3-3459 1560 Email: k-tadokoro@bs.jrc.or.jp
Malaysia	Dr Yasmin Ayob Director, National Blood Centre, Jalan Tun Razak, Kuala Lumpur, 50400 Malaysia Tel: +603 26 95 55 55 Fax: +603 269 258 26/80362 E-mail: yasminpd@tm.net.my
Invited Organization/Speakers	

Individual Expert	<p>Dr Jerry Holmberg Senior Advisor for Blood Policy and Executive Secretary Advisory Committee on Blood Safety and Availability Department of Health and Human Services 1101 Wootton Parkway, Suite 250 Rockville, MD 20852, USA Tel: + 301-443-2331 Fax: + 301-443-4788 E-mail: Jholmberg@osophs.dhhs.gov (Unable to attend)</p>
Individual Expert	<p>Professor Nguyen Anh Tri Director, National Institute of Haematology and Blood Transfusion 78 Giai Phong Street, Hanoi, Vietnam Tel : 844 8687 863 Fax: 844 8687 863 Email: trihnvn@yahoo.com</p>
Arab Blood Transfusion Society	<p>Mr Ibraheem A.AL-Omar, Ph.D. General Director of laboratories and Blood Banks Ministry of Health Saudi Arabia Tel: +966555420133/ +9664359904 Fax: +96614350503 E-mail: alomar70@hotmail.com</p>
Korean Red Cross Blood Service	<p>Dr So Young Kwon Director, Blood Transfusion Research Institute, Korean Red Cross 164, Chongno-gu Pyungdong Seoul Korea Zip code : 110-747 Tel : 82-2-3210-0380 Fax : 82-2-3210-0340 E-mail: skywon@redcross.or.kr</p>
Malawi Blood Transfusion Service	<p>Dr Jean C. Emmanuel Project Manager/ Technical Adviser Malawi Blood Transfusion Service Project P. O. Box 1055, Blantyre, Malawi Tel: +265 1622 612/ +265 9962 156 fax: +265 1 622612/ +265 1 673063(telefax) E-mail: emmanuelj@africa-online.net</p>

<p>Network for advancement in Transfusion Medicine and Alternative (NATA)</p>	<p>Professor Alice Maniatis Chief, Haematology, Henry Dunant Hospital 107, Mesogeion Ave. Athens, GR 11526 Greece Tel:+210 (697) 9161/697 602 5010 Fax: E-mail: alicemaniatis@yahoo.com</p>
<p>South Asian Association in Transfusion Medicine(SAATM)</p>	<p>Dr M Bindusara Director, National Blood Transfusion Service, Sri Lanka 555 Elvitigala Mavatha Colombo 05 Sri Lanka Tel: 0094(77)758 3858/ 00941 554 655 Fax: 0094(77) 554 755 685 289 E-mail: drmm@sltnet.lk (Unable to attend)</p>
	<p>Dr K K S Kuruppu Senior Medical Officer, National Blood Transfusion Service Sri Lanka 555 Elvitigala Mavatha Colombo 05 Sri Lanka Tel: 0094(77) 758 3858 Fax: 0094(77) 554 755 E-mail: kkskuruppu@yahoo.com</p>
<p>Observers</p>	
<p>Arab Blood Transfusion Society</p>	<p>Dr Amin Hussain Al Amiri. Director , Dept. of Blood Transfusion and Research Services Sharjah Blood Transfusion and Research Centre Tel: + 971 50 6464371 Fax: + 971 6 5388717 E-mail: alamiriamin@hotmail.com (unable to attend)</p>
<p>Établissement français du sang France</p>	<p>Mrs Claudine Hossenlopp I Établissement français du sang 29 rue du Chemin blanc 37250 Veigne, France Tel: +33 2 47 65 90 48/33 68 999 55 90 Fax: +33 2 47 65 90 48E-mail: claudine.hossenlopp@efs.sante.fr</p>

Iran Blood Transfusion Organization	Dr Ali Akbar Pourfathoullah Former Managing Director Iranian Blood Transfusion Organization IBTO bldg Hemmat EXP. Way, Teheran Off: 009821 8288582/3 Fax: 009821 8288581 E-mail: pourfa@ibto.ir (unable to attend)
WHO REGIONAL OFFICES	
Dr Jean-Baptiste Tapko Regional Adviser Blood Safety WHO Regional Office for Africa (AFRO)	Tel: +47 2 41 39250 Fax: +47 241 39511 E-mail: tapkoj@afro.who.int
Dr Jose Cruz Regional Adviser Laboratory WHO/PAHO AMRO, Regional Office for the Americas	Tel: +1 202 974 3230 Fax: +1 202 974 3663 E-mail: CRUZJOSE@paho.org
Dr Nabila Metwalli Regional Adviser Laboratory WHO Office for Eastern Mediterranean Region (EMRO)	Tel: +202 670 5314 Fax: +202 2765416 E-mail: metwallin@emro.who.int
Dr Valentina Hafner Medical Officer WHO Regional Office for Europe (EURO)	Tel: +45 39 17 1265 Fax: +45 39 18 18 E-mail: IKA@who.dk
Dr Rajesh Bhatia WHO Office for the South East Asian Region (SEARO)	Tel: +11 23370804 Fax: +11 332 7972 E-mail: kumaris@whosea.org
Dr Yu Jungping Blood Safety Specialist WHO Office for the Western Pacific Region (WPRO)	Tel: + 632 528 9848 Fax: +632 521 1036 Email: yuj@wpro.who.int
WHO SECRETARIAT	
Dr Steffen Groth Director, Essential Health Technologies	Tel: +41 22 791 4387 Fax: +41 22 791 48 36 E-mail: groths@who.int
Dr Neelam Dhingra (Project Leader, GCBS Secretariat) Coordinator Blood Transfusion Safety (BTS)	Tel: +41 22 791 46 60 Fax: +41 22 791 48 36 E-mail: dhingran@who.int

Ms Jan Fordham Technical Officer Blood Transfusion Safety (BTS)	Tel: +41 22 7913644 Fax: +41 22 791 48 36 E-mail: fordhamj_@who.int
Dr Noryati Abu Amin Medical Officer Blood Transfusion Safety (BTS)	Tel: +41 22 7913948 Fax: +41 22 791 48 36 E-mail: abuaminn@who.int
Dr Justina Kordai Ansah Technical Officer Blood Transfusion Safety	Tel: +41 22 791 1456 Fax: +41 22 791 4836 E-mail: ansahj@who.int
Mrs Beryl Armstrong Technical Officer Blood Transfusion Safety	Tel: +41 22 791 3431 Fax: +41 22 791 48 36 E-mail: armstrongb@who.int
Ms Pamela Suzanne Drameh External Relations Officer HQ/HTP/ERT	Tel: +41 22 7913211 Fax:+41 22 79 14836 E-mail: dramehp@who.int
Dr Ana Maria Padilla Marroquin Scientist HQ/HTP/EHT/QSD	Tel:+41 22 791 3892 Fax: +41 22 791 4836 E-mail: padillaa@who.int