



DISTANCE LEARNING IN BLOOD SAFETY

A flexible, cost-effective approach to staff development in blood transfusion services

Blood saves lives

Blood transfusion is an essential part of modern health care which helps to save millions of lives each year. It is expensive, however, and uses a scarce human resource; so scarce that, in many developing countries, people still die due to an inadequate supply of blood and blood products.

The emergence of the human immunodeficiency virus (HIV) in the 1980s highlighted the importance of ensuring the safety, as well as the adequacy, of national blood supplies. While the major route for the spread of HIV is heterosexual transmission, it is estimated that the transmission of HIV through blood transfusion is more than 90% efficient.

Preventing the transmission of HIV and other infectious agents, including hepatitis viruses and syphilis, through blood and blood products is a goal that can be attained by every national blood programme. Far too often, however, many recipients remain at risk of transfusion-transmissible infections as a result of poor blood donor recruitment and selection practices, the use of untested units of blood and unnecessary transfusions.

WHO strategy for blood safety

The World Health Organization (WHO) has identified blood safety as a health issue requiring high priority and has developed the following integrated strategy for global blood safety:

- ◆ The establishment of well-organized, nationally-coordinated blood transfusion services with quality systems in all areas
- ◆ The collection of blood only from voluntary non-remunerated blood donors from low-risk populations
- ◆ The screening of all donated blood for transfusion-transmissible infections including HIV, hepatitis viruses and syphilis; and good laboratory practice in blood grouping, compatibility testing and blood processing
- ◆ A reduction in unnecessary transfusions through the appropriate clinical use of blood.

Training in blood safety

Inadequate training jeopardizes the safety of blood and blood products and adversely affects the quality of care for patients requiring transfusion.

Analysis of data from the WHO Global Database on Blood Safety indicates that, globally, 72% of countries cannot meet identified training needs, usually because of limited budgets, inadequate facilities and insufficient numbers of experienced trainers.

Even where suitable training facilities and personnel exist, staff may be scattered over wide geographical areas without easy access to training institutions. Services may be unable to release them for prolonged periods and many individuals are unwilling to leave their families to attend a lengthy course.

In practice, opportunities for training are often least available for those who need it most, particularly staff working in small blood banks at first referral (district hospital) level who are responsible for a wide range of tasks in the laboratory. Many have received inadequate training in the past and work under limited supervision. Even where in-service training is available, it is often provided by staff who themselves may not have had opportunities for updating or further training.

As a result, there may be considerable variations in the quality of staff performance – and therefore in the safety of the blood supply.

Distance learning in blood safety

Distance learning is widely used in professional and vocational education throughout the world, but has not previously been used in the field of blood transfusion. The Blood Transfusion Safety Team in the WHO Department of Blood Safety and Clinical Technology (WHO/BTS) has included distance learning in its strategy to support training in blood safety because it offers national blood programmes a cost-effective means of expanding training activities when resources and facilities are limited.

Distance learning offers a flexible way of increasing the coverage and quality of training in blood safety because much of the process of teaching and learning takes place outside conventional training institutions. Trainers and learners do not need to be in the same place at the same time for effective learning to take place since most of the teaching is delivered through materials that are specially designed for self-directed learning. Learners study in their own workplace, organizing their study time to fit in with their work and personal commitments, with ongoing guidance, tutorial support and practical training provided through a local learner support system.

This approach enables training to be provided for larger numbers of staff and with less disruption to services than is possible with conventional courses. Fewer trainers are required and there is less need for residential course attendance and replacement staff cover. Since a distance learning programme can be established on a national basis, it also provides an opportunity to promote the standardization of approaches and procedures.

Nevertheless, distance learning programmes in blood safety should be seen as a complement to – rather than a substitute for – conventional education and training programmes, enabling maximum benefit to be made from scarce resources.

WHO learning materials

Safe Blood and Blood Products

Safe Blood and Blood Products is a series of interactive learning materials designed for use in distance learning programmes in blood safety. The materials have been produced for staff with responsibility for donor recruitment and for the collection, processing and issue of blood for transfusion.

The materials were particularly developed for personnel who have completed an initial training programme and have practical experience, especially those who have been in service for some years and have had no further training, but can also be used at both basic and more advanced levels. They can also be used as resource materials in conventional courses and in-service training programmes or for independent study.

Four modules have been published:

- ◆ Introductory Module: *Guidelines and Principles for Safe Blood Transfusion Practice* introduces some basic principles that provide a foundation for other modules
- ◆ Module 1: *Safe Blood Donation* focuses on the recruitment, selection and retention of voluntary non-remunerated blood donors from low-risk populations
- ◆ Module 2: *Screening for HIV and Other Infectious Agents* deals in detail with screening for HIV and applies

the same principles to screening for hepatitis viruses, syphilis, malaria and Chagas disease

- ◆ Module 3: *Blood Group Serology* focuses on the ABO and Rhesus blood group systems and techniques for blood grouping and compatibility testing.

The modules are not conventional textbooks, even though one of their principal aims is to ensure that learners' knowledge is comprehensive and up-to-date. Through a series of practical activities, the modules also encourage learners to evaluate their practice and identify ways of improving approaches and procedures in their own blood centre or blood bank. Their work on each module culminates in the development of an Action Plan to improve the efficiency and effectiveness of their area of work and, following discussion and approval by their supervisor, its implementation during the succeeding months.

The Clinical Use of Blood

The Clinical Use of Blood consists of an open learning module and pocket handbook which provide comprehensive guidance on transfusion and alternatives to transfusion in the areas of general medicine, obstetrics, paediatrics and neonatology, surgery and anaesthesia, trauma and acute surgery, and burns. They are designed to promote a reduction in unnecessary transfusions through the wider use of plasma substitutes and more effective prevention and treatment of the conditions that may make transfusion necessary.

These materials have been developed for prescribers of blood at all levels of the health system, particularly clinicians and senior paramedical staff at first referral level in developing countries. They have been designed for use in undergraduate and postgraduate programmes, in-service training and continuing medical education programmes, including distance learning programmes, as well as independent study.

WHO has also published recommendations on *Developing a National Policy and Guidelines on the Clinical Use of Blood* which encourage the use of the learning materials in education and training programmes to promote effective clinical decisions on transfusion.

Other learning materials

Other materials in development include:

- ◆ *Safe and Effective Blood Collection*
- ◆ *Blood Components Production*
- ◆ *The Blood Cold Chain*.

Developing a distance learning programme in blood safety

While learning materials such as *Safe Blood and Blood Products* are central to a distance learning programme in blood safety, building an effective programme involves more

than simply selecting staff for further training, providing them with copies of the modules or other resource materials and assessing what they have learned. Distance learners should not be expected to study in isolation. A system is needed to ensure that all staff who participate in the programme, however geographically distant from a training centre, receive guidance and support throughout their study.

An organizational structure must therefore be established to manage the four key components of a distance learning programme in blood safety:

- ◆ Delivery of the modules
- ◆ Tutorial support
- ◆ Practical work in study centres or learners' own workplaces
- ◆ Assessment of learning.

The structure of the programme need not be complex. The structure that is most appropriate for each country will depend on national needs and circumstances, but should be designed to make full use of the existing health service and training infrastructure at all levels.

A distance learning programme is generally coordinated at national level, usually by the national blood transfusion service, although in larger countries, a coordinator may also be appointed at state, provincial or regional level.

Typically, tutorial support is provided by a small number of experienced trainers, each with responsibility for a group of learners in their province or region, who provide teaching and guidance through:

- ◆ Regular contact by post, fax, telephone or e-mail
- ◆ Group tutorials
- ◆ Practical training sessions at designated study centres.

In addition, individualized guidance, practical supervision and feedback are provided by a supporter or mentor at local level, ideally by the learner's own supervisor. In a small hospital blood bank, there may not be a senior laboratory technologist who can take on this role; in such cases, the local support function can be undertaken by a clinician, but a higher level of support will be required at a distance from the trainer.

Group tutorials and practical training are held periodically in an institution designated as a study centre, such as a blood transfusion centre, reference laboratory, university, technical training institution or large hospital. However, practical training can take place in any centre where the routine screening and testing of blood takes place, as long as a trainer or suitably-qualified supporter is available for teaching and supervision. In some circumstances, it may be more appropriate or cost-effective for a trainer to make periodic visits to learners for individual tutorials and practical work.

Since learners are absent from their workplace for only a limited period of time, the costs of programme personnel, administration, travel and subsistence and the use of facilities for group tutorials and practical sessions are substantially less than in a conventional training programme. Capital costs include the purchase or reproduction of the learning materials and the training of programme personnel.

The combination of specialized learning materials and local expertise thus makes it possible to offer a standardized, in-depth training programme that would otherwise normally only be available in a residential course in a recognized training institution. Once established, the programme provides a framework for additional education and training activities.

Supporting the development of distance learning programmes

In collaboration with all six WHO Regional Offices, WHO/BTS has held a series of regional and sub-regional workshops for senior blood transfusion service personnel from almost 100 countries on establishing national distance learning programmes in blood safety. Programmes have since been established in every region of the world.

Part of the follow-up to the workshops has been the production of *Establishing a Distance Learning Programme in Blood Safety: A Guide for Programme Coordinators*. This manual covers all the topics addressed in the regional workshops in more detail and draws on expertise from distance education programmes in other fields as well as the insights and experience of workshop participants.

Evaluating the impact

WHO is currently undertaking an evaluation of the relevance and effectiveness of the learning materials and progress in setting up distance learning programmes in blood safety. It is documenting the approaches used in different countries and regions and will share their experience with others. It will also facilitate contacts between countries with established distance learning programmes and those at an earlier stage of development.

There has been a positive response to the WHO learning materials, which are regarded as being comprehensive and of high quality. Most countries that have participated in the workshops use them as resources in conventional training programmes, including diploma courses and in-service training, or have distributed them for individual study.

Throughout the world, there is considerable variation in the scale and organization of distance learning programmes. The most spectacular progress has been made in Central and South America where, since 1997, the majority of countries have

started national distance learning programmes, some on a large scale. In Argentina, for example, a network of 275 study centres has been established and over 3500 personnel are involved in the programme.

In China, a nationally-coordinated programme is being established by the Ministry of Public Health for up to 100 000 personnel in blood transfusion centres and hospital blood banks in all 31 provinces and municipalities.

Other countries have launched programmes on a small scale by training a core group of BTS personnel who then become trainers or supporters as the programme expands.

Some countries have developed a system for the formal assessment of learning and offer a nationally-recognized qualification to successful candidates, such as the Diploma in Safe Blood and Blood Products, validated by the Open University of Santa Domingo, which is offered in the Dominican Republic.

Findings from evaluation visits by consultants and responses to an evaluation questionnaire indicate that five factors are critical to the establishment of an effective distance learning programme in blood safety:

- ◆ Commitment and support of the Ministry of Health and other health authorities
- ◆ Appointment of a National Programme Coordinator and, where appropriate, State, Regional or Provincial Coordinators
- ◆ Establishment of a national Advisory Group or Steering Committee to advise on and assist in programme planning and implementation

- ◆ Validation and accreditation by a recognized academic institution, such as an open university
- ◆ An adequate budget for the purchase or reproduction of learning materials and operational costs.

Evaluation findings indicate that, where well-organized distance learning programmes have been established, they are already resulting in higher levels of knowledge, understanding and competence – and a direct impact on blood safety. In countries which still rely on family/replacement blood donors or paid donors, there has been a particularly positive impact on the recruitment and retention of voluntary non-remunerated donors and on procedures for blood donor selection.

Perhaps the most significant and exciting effect is the motivation and empowerment of learners, particularly through their work on the activities and Action Plans in each module. For some, their achievement has been to initiate a donor education, motivation and recruitment programme in their locality or to introduce procedures for the selection of blood donors. For others, it has been to ensure the correct storage of blood and blood products or to introduce standard operating procedures and systems for the documentation of donations 'from vein-to-vein'.

Each blood transfusion service and hospital blood bank is unique and individual learners will therefore identify different priorities in their Action Plans, but the most important outcome appears to be an awareness and a pride that they can each make a tangible contribution, however small, to improved blood safety in their own blood centre or blood bank.

Publication information

Safe Blood and Blood Products

© World Health Organization 2001, ISBN 92 4 154546 1
631 pages [English, French, Spanish, Portuguese, Russian, Chinese].
Sw.fr. 120.-. In developing countries: Sw.fr. 84.-. Order no. 1150490

Establishing a Distance Learning Programme in Blood Safety: A Guide for Programme Coordinators

© World Health Organization 1998, WHO/BLS/98.3
124 pages [English, Spanish, Portuguese. French forthcoming].

The Clinical Use of Blood in Medicine, Obstetrics, Paediatrics, Surgery & Anaesthesia, Trauma & Burns

© World Health Organization 2001, ISBN 92 4 154538 0
337 pages [English. Spanish, French and Portuguese forthcoming]
Sw.fr. 40.-. In developing countries: Sw.fr. 28.-. Order no. 1150484

The Clinical Use of Blood Handbook

© World Health Organization 2001, ISBN 92 4 154539 9
219 pages [English. Spanish forthcoming]
Sw.fr. 15.-. In developing countries: Sw.fr. 10.50. Order no. 1150485

Developing a National Policy and Guidelines on the Clinical Use of Blood

© World Health Organization 1998, WHO/BLS/98.2
27 pages [English, Spanish, Portuguese]

For further information on other learning materials and publications see www.who.int/bct
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