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Preface

Safe Blood and Blood Products is a series of interactive learning materials developed by the World Health Organization (WHO). The materials have been designed for use in distance learning programmes in blood safety, although they can also be used for independent study or as resource materials in conventional training courses and in-service training programmes.

The materials have been produced for staff with responsibility for donor recruitment and retention, and for the collection, testing and issue of blood for transfusion. They comprise the following modules:

- Introductory Module: Guidelines and Principles for Safe Blood Transfusion Practice
- Module 1: Safe Blood Donation
- Module 2: Screening for HIV and Other Infectious Agents
- Module 3: Blood Group Serology

The English edition was first published in 1993. French, Spanish, Russian, Chinese, Portuguese editions have since been produced and the materials have also been translated into a number of national languages.

This second, updated edition of the materials has been developed to reflect changes in transfusion medicine and laboratory technology since the publication of the first edition.

Distance learning in blood safety
Since the publication of Safe Blood and Blood Products, WHO has held a series of regional and sub-regional workshops for senior blood transfusion service personnel from over 100 countries on establishing national distance learning programmes in blood safety. Programmes have since been established in every region of the world, using the WHO learning materials.

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 provides a practical guide to the planning, implementation and evaluation of a distance learning programme in blood safety.

Other WHO learning materials
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.

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.

Additional learning materials in the Safe Blood and Blood Products series that are available or in development by the WHO Department of Blood
Safety and Clinical Technology (WHO/BCT) include:

- Costing Blood Transfusion Services
- The Blood Cold Chain
- Blood Collection
- Blood Components Production.

More detailed information on these materials and other documents and publications related to blood transfusion is available from WHO/BCT, which also issues regular reports on evaluations of the operational characteristics of many commercially available screening assays for transfusion-transmissible infections.

Information can be obtained from the BCT section of the WHO website at http://www.who.int/bct or by contacting WHO/BCT at WHO Headquarters or WHO regional offices.

Dr Jean C. Emmanuel  
Director, Blood Safety and Clinical Technology  
World Health Organization
INTRODUCTION TO THE PROGRAMME

1.1 INTRODUCTION
This Trainer’s Guide has been prepared for anyone responsible for organizing a distance learning programme in blood safety, using the learning materials, Safe Blood and Blood Products, developed by the World Health Organization (WHO). It describes the background, objectives and organization of a distance learning programme and how to use the learning materials. It also provides guidance on the roles of personnel designated as trainers and supporters, together with a brief introduction to each module of learning material.

It is essential to read this guide and familiarize yourself with the learning materials before the programme begins.

1.2 DISTANCE LEARNING IN BLOOD SAFETY
WHO has set the goal that every country in the world should have supplies of blood and blood products that are as safe as possible, accessible at reasonable cost and adequate to meet national needs. Its strategy for achieving this goal emphasizes the importance of:

- safer donations from low-risk blood donors
- testing all blood for the human immunodeficiency virus (HIV) prior to transfusion
- minimizing unnecessary blood transfusions.

The successful implementation of this strategy will largely depend on the knowledge, skills and commitment of the people working in every blood transfusion service and hospital blood bank. Training will obviously play an important part in this process of improving the quality and safety of the blood supply. The training of laboratory technical staff is a high priority, especially since many work under limited supervision and have few opportunities to update and extend their knowledge.

The importance of collecting blood only from voluntary non-remunerated donors from low-risk populations and for rigorous donor selection procedures highlights the equally vital need for the training of staff responsible for blood donor recruitment and retention, and blood collection.

In many countries, however, the need for updating and further training is so great that it will be impossible to meet it within the foreseeable future using conventional training approaches. Few countries have adequate facilities or sufficient numbers of trainers to be able to meet the training needs of large numbers of staff who are scattered over wide geographical areas. This is a particular problem in the training of staff working in small hospital blood banks that are a long distance from established training centres. Their training often takes place on an in-service basis, perhaps by other technical staff who themselves require further training to ensure that their knowledge and skills are fully up to date. Where short courses are available, staff invariably have to leave their workplace in order to attend them, which places additional demands on already hard-pressed services.

Perhaps the greatest constraint, however, is that the financial resources required to provide high-quality training on the required scale are not
available. The problem will become even more acute as increasing numbers of new personnel are recruited to meet projected staffing needs.

It is for this reason that the team responsible for Blood Transfusion Safety in the WHO Department of Blood Safety and Clinical Technology has developed Safe Blood and Blood Products, with the aim of assisting national blood programmes to overcome some of the logistic problems involved in providing training, particularly for staff who have several years of experience but who need to update their knowledge or learn new skills. Distance learning programmes in blood safety are a practical, cost-effective means of making the best possible use of limited training resources. They are already operating in many countries throughout the world, although the way that they are organized depends on the needs and circumstances in each country.

The distance learning approach

Conventional training is usually a highly centralized process that is based on direct contact between the trainer and learners, usually in a specialist training institution. In contrast, distance learning is an essentially decentralized approach that increases access to education and training opportunities by enabling teaching and learning to take place at a distance. Learners do not need to be in the same place as their trainer since most of the teaching takes place through the medium of interactive learning materials that have been specifically designed for this purpose. Since the bulk of the teaching input goes into the initial development of the materials, less face-to-face teaching is required. A small number of trainers can thus extend access to a large number of learners who do not have to leave their posts to participate in the training because they can undertake most of their study in the workplace or at home.

Laboratory practice is obviously an essential part of a technical training programme, but it does not necessarily need to be undertaken in a specialist training centre. Much of it can be completed in the learner’s own workplace, as long as a suitably qualified and experienced senior member of staff is available to supervise it. Where this is not feasible, short courses or practical workshops are required to ensure that learners can demonstrate their ability to apply their knowledge. However, since most of their learning will have been undertaken through their study of the materials, the duration of a course or workshop can be considerably shorter than in a conventional programme.

The WHO distance learning materials are unlike textbooks because they are not simply concerned with providing information and increasing learners’ theoretical knowledge, although this is one of their fundamental aims. Even more importantly, they provide a structured framework for learners to apply their knowledge in the context of their everyday work so that, ultimately, they will be able to do their jobs better. They do this by asking them to carry out a series of practical activities that build on their personal and professional experience and focus directly on their own particular work environment. The activities are specifically designed to help learners to strengthen their existing skills or develop new ones and to plan ways of introducing improved approaches and procedures in their work. They are equally applicable to staff working in small hospital blood banks and large blood transfusion services.

The approach used in a distance learning programme in blood safety therefore offers a number of advantages:

1. The combined use of specialized learning materials and local expertise makes it possible to provide a comprehensive and in-depth training programme that would normally only be available in a specialist training institution.

2. Uniformly high-quality training can be provided for all staff, regardless of where they work, because they will all study the same learning materials prepared by international blood transfusion experts.

3. A larger number of staff can be trained within the available resources because the core programme is contained in the learning materials. Trainers will therefore need to spend less time on planning and actually delivering training and can focus on building local systems to support learners as they work through the programme.
4 Training should be more cost-effective because most of it will be undertaken through independent study by individual learners in their own workplaces. The cost of providing the materials and organizing supervised practice will be lower than that of providing training entirely on a conventional face-to-face basis, particularly where travel and subsistence costs would normally be incurred. It will also minimize the disruption to services or the need to recruit replacement staff that would normally occur if learners were required to leave their posts to attend a course at the national blood transfusion service or another training institution.

5 Staff working in geographically isolated areas will not be disadvantaged because they will no longer be dependent on access to the limited numbers of qualified trainers and suitable training facilities currently available in many countries. Instead, most of the training – in the form of the learning materials – will come directly to them. This will also avoid them having to be separated from their families during the period of training.

6 The programme is flexible and can be tailored to meet the individual training needs of each learner, depending on their prior knowledge, skills and experience and the nature of their particular jobs and work environments.

7 The timing of the training can also be flexible because it does not necessarily have to start and finish on fixed dates. Instead, the programme can be organized to allow learners to enter it at any time and extend their study for as long they need in order to complete it to an acceptable standard. They can study the materials during the course of their working day, at times mutually agreed with their supervisors, and will have control over the pace at which they work on them. Those with more limited knowledge can spread their study over a longer period than those who are more familiar with the subject. The period of time required for study can therefore be adjusted to suit the ability and the needs of each individual learner.

8 The materials provide a permanent resource that learners can keep for future reference and share with their colleagues.

9 Senior staff can use the learning materials to update their own knowledge to ensure that they provide appropriate, comprehensive training and supervision for junior colleagues.

10 Although designed for use in distance learning programmes, the materials can also be used for independent study or incorporated into conventional training programmes. They can be used as an alternative to lectures to complement face-to-face teaching, thus releasing valuable staff time that can be used for practical work and individual tuition.

1.3 WHO IS THE PROGRAMME FOR?

Safe Blood and Blood Products has been developed primarily for staff working in blood transfusion services, hospital blood banks and public health laboratories who are involved in blood donor recruitment, blood collection and blood processing. The modules are not designed for basic or advanced training, and will be most useful for staff who have completed an initial training programme or who already have some experience. They will be particularly helpful for staff who do not have access to conventional courses. Module 1: Safe Blood Donation will also be useful for nurse–phlebotomists and anyone working in a non-governmental organization, such as a national Red Cross or Red Crescent Society, who is responsible for donor recruitment and retention, and blood collection.

The materials will also be of value to senior laboratory technical staff who are responsible for training or supervision and for medical staff who wish to enhance their understanding of blood transfusion practice. They offer a basic refresher and updating course for their own use and also provide a comprehensive resource that they can integrate into their own training programmes at basic or intermediate level.
1.4 THE STRUCTURE OF THE PROGRAMME

A distance learning programme in blood safety has two main components:
- the learning materials
- the learner support system.

The learning materials

The WHO learning materials form the core of a distance learning programme in blood safety. There are four modules, each of which has been written by experienced subject experts and reviewed by blood transfusion specialists from a number of different countries and WHO regions. The modules are designed to extend learners’ knowledge and skills in the following areas of blood transfusion practice.

Introductory Module: Guidelines and Principles for Safe Blood Transfusion Practice

The Introductory Module provides a foundation for the programme as a whole by explaining its aims and structure and introducing some basic principles for safe and efficient practice.

Module 1: Safe Blood Donation

Module 1 focuses on the recruitment and retention of low-risk blood donors as the first step in ensuring the safety of the blood supply. In particular, it emphasizes the importance of building up a panel of regular, voluntary non-remunerated blood donors.

Module 2: Screening for HIV and Other Infectious Agents

Module 2 deals in detail with screening for the human immunodeficiency virus (HIV) and applies the same principles to screening for other transfusion-transmissible infections.

Module 3: Blood Group Serology

Module 3 focuses on the ABO and Rhesus blood group systems and includes details of techniques for blood grouping and compatibility testing.

It is important for learners to work through the Introductory Module before moving on to the other modules since it explains the way in which the materials are structured and how to use them. It also covers core material which provides the basis for their study of the other modules. Once they become familiar with the approach used in this module, they should feel confident about moving on to the more specialized material.

The modules follow a logical sequence in the donation process from the recruitment of donors to the issue of safe blood for transfusion. However, once they have completed the Introductory Module, learners can use the other modules in the order that best meets their own priorities and particular training needs. For example, a laboratory technician in a small hospital may spend most of his time on serological work and on screening blood for transfusion-transmissible infections and may only occasionally come into direct contact with donors. He may decide to start with Module 3 to revise his basic serological knowledge and skills, then to work through Module 2 which focuses on HIV and other infectious agents before coming to Module 1, which deals with the recruitment of low-risk donors. Where learners’ work is very specialized, one or more of the modules may not be directly relevant to them at all at present. It is therefore important for learners to discuss their training needs with their own supervisors and to identify the most appropriate order in which to study the modules.

The learner support system

The materials have been designed for global use in widely varying situations, ranging from countries with sophisticated and comprehensive blood transfusion services which are responsible for the collection of blood and its supply to hospitals, to countries where much of the blood collection and processing is organized on a local basis. The materials should therefore require little or no adaptation at country level.

In contrast, the way in which the materials are used will differ considerably from country to country. Although the materials are the central part of a distance learning programme, learners are not expected to study them in isolation. Some kind of learner support system is necessary to ensure that, even if geographically isolated from training facilities, individual learners are not educationally isolated. If they have no one to turn to when they encounter any problems, they are more likely to require longer to complete the programme or even fail to complete it all. Most
problems can usually be resolved quite easily, however, if appropriate support is available.

The nature of the support system developed within each country will, in part, depend on the structure of its blood programme and its training priorities. *Establishing a Distance Learning Programme in Blood Safety: A guide for programme coordinators* (WHO, 1998) provides detailed guidance on the structure and organization of a distance learning programme. It is suggested that the programme is coordinated at national level, with a two-tier system of learner support provided by trainers at regional or provincial level and by supporters in learners’ own workplaces.

**The trainer**

Trainers are responsible for coordinating training and providing tutorial support for a group of learners in their locality. For simplicity, the term ‘trainer’ is used here to refer to anyone outside an individual learner’s own workplace who has responsibility for:

- selecting participants for the learning programme
- supporting and monitoring the progress of a group of learners during the course of their study
- maintaining contact with learners’ supporters
- organizing supervised practice.

Section 2 outlines the role of the trainer and Sections 4–6 suggest specific actions to be taken before training commences, during the training and after its completion. It is important to recognize, however, that these sections simply provide broad guidelines and that the role of the trainer and the way in which the programme is organized and managed must be determined within each country.

**The supporter**

The learning programme is designed to be work-based: that is, it is largely studied within the learner’s own workplace rather than in a specialist training institution. Although the materials have been designed for individual learning, it is important that learners do not feel isolated and unsupported and that they have easy access to someone who can explain anything they find difficult to understand and who will encourage them to apply what they are learning in the context of their own work. Each learner is therefore asked to identify someone within their workplace who is willing to take on the role of what we term the ‘supporter’ or mentor. Where suitably qualified and experienced senior staff are available, they can also supervise learners’ practical work.

The role of the supporter is described more fully in Section 3.

1.5 THE STRUCTURE OF THE MODULES

The modules all have the same structure, which has been designed to promote the application of theoretical knowledge to the learner’s own work.

**Module objectives**

In Section 1 of each module, there is a list of overall objectives that explain what learners should be able to do by the time they have completed the module. They will be asked to complete an activity in which they assess their current knowledge, skills and experience in relation to each objective. When they reach the end of the module, they will be asked to look at these objectives again to assess how much they have learned and whether they need to do further work on any of the sections.

**Sections**

Each objective is covered by a separate section of the module which provides the basic information needed to understand the subject. It is important that learners take as much time as they need to read through each section, and to answer the self-assessment questions and complete the activities. They should mark anything that they find difficult, then go back to those parts when they have finished the section and reread them until they are able to understand them. If they still find them complicated, they should seek help from their individual supporters or other senior colleagues within their own workplace and, if necessary, from their trainers. It is essential that they are encouraged to ask for assistance whenever they need it in order to avoid feeling inadequate and losing motivation.

Where learners are already familiar with some of the material, they should read it through carefully...
as a means of revision. They should also answer the self-assessment questions and carry out the activities because they are designed to help them to check their knowledge and identify any improvements that could be made in their own area of work.

Some parts of the modules may be more relevant to individual learners’ work than others. This will depend on where they work and what their job is. They should therefore concentrate particularly on the parts that are directly relevant to them. These areas should be agreed with each learner before they start work on a module.

**Learning objectives**
At the beginning of each section, there is a list of learning objectives that explain what learners should be able to do when they have completed that section. Like the broader module objectives, they are a guide for their learning and will help them to assess their own progress. They may even want to set additional objectives for themselves to help them apply what they are learning.

**Activities**
As learners work through each section, they will be asked to complete a number of activities. The three activities in Section 1 of each module are specifically designed to help them prepare for their studies, by asking them to:

- identify their personal ‘supporter’ for their work on that module who can provide continuing encouragement and assistance while they are studying the material
- assess their current knowledge, skills and experience in relation to each module objective
- prepare a Study Plan.

Many of the activities ask learners to review current approaches and procedures in their workplace, try out new ideas or methods, and identify ways of improving specific aspects of their work. They may suggest that learners consult with colleagues, look at records or search for information, as well as plan and carry out particular tasks. These activities may take some time for them to complete, but it is important that they are done thoroughly since their purpose is to help learners to perform their functions more effectively and to identify any improvements that they think could be made in their workplace.

These kinds of activity are not designed to test learners and so there are no right or wrong answers. Since they focus directly on their own work, their answers will largely depend on local conditions and circumstances. There are checklists for these work-based activities in the section *Activity Checklists and Answers* at the end of each module, which have been included to help learners decide whether they have completed these activities adequately and to the best of their ability. If they are not satisfied with their responses, or have faced any problems or constraints, they will find it helpful to discuss them with their supporter or supervisor. In fact, many of these activities specifically suggest that they should discuss their ideas with their colleagues.

The remaining activities are designed to help learners to test their ability to apply their knowledge. They will find most of these kinds of activity in Modules 2 and 3. Once they have completed an activity of this kind, they should check their response with the correct answer in the Activity Checklists and Answers. If their answer is incorrect, they should go back to the relevant part of the section and read it again until they are sure that they have understood it and, if necessary, ask a senior colleague to explain it further.

**Action List and Action Plan**
In some activities, learners are asked to note down their ideas or recommendations for improving specific procedures or other aspects of their work. They are asked to summarize them on the Action List, which they will find in the last section of each module.

Learners may be able to implement some of their recommendations before they reach the end of the module, but others will take more time. When they reach the final section, therefore, they will be asked to review all the ideas that they have listed and to draw up an Action Plan to put them into practice. They will need to discuss this with their supporter, supervisor and, perhaps, other senior members of staff so that, together, they can plan how to improve the efficiency and effectiveness.
of their programme. They will also need to discuss their Action Plan with their trainer. The Action Plans provide them with an important opportunity to apply what they have learned by making practical improvements in their workplace. The Action Plans are therefore the most important part of their work on this learning programme.

It may not be possible, however, for learners to introduce all the changes that they feel are appropriate, perhaps because they are not responsible for that particular area of work or because there are not enough staff or financial resources available. In such cases, it is particularly important that they should discuss their ideas with their supporter and supervisor so that they can set some objectives that they all agree are realistic, given the circumstances in which they work.

Summary
The summary at the end of each section lists the main points covered in the section.

Self-assessment
Self-assessment questions are included at the end of most sections of the modules. These are simply to help learners to assess for themselves whether they have understood important points in the section. They are not like an examination. Once they have decided on their answers, they should look at the section Answers to Self-assessment Questions at the end of the module to check whether they are right. If they have chosen the correct answers, they should be ready to start work on the next section. If any of their answers are incorrect, they should go back to the relevant part of the section and read it again. If they still find it difficult to understand something, they should ask their supporter to explain it to them.

Progress Check
The Progress Check at the very end of each section asks learners to look back at the learning objectives for that section and to assess whether they have achieved them. The objectives are simply intended as a guide for their own learning so it is to learners’ own benefit to be as honest as possible in evaluating their progress. If they feel that they have not achieved any of the objectives, they should go back over the relevant parts of the section. If necessary, they should then discuss any problems with their supporter or supervisor or, if necessary, with their trainer.

Glossary
In Modules 1, 2 and 3, there is a Glossary, which contains definitions of technical terms. The first time that any word in the Glossary is used, it is marked in bold (heavy type) in the text and the definition is given in the margin.

Appendices
Each module includes one or more appendices, which contain supplementary material such as examples of standard operating procedures, and more detailed information on selected topics.

Offprints
A small number of offprints accompany each module. These are copies of items that appear in the text or the appendices which learners may wish to display in their workplace.

1.6 ASSESSMENT
Assessment is generally used to evaluate whether an individual has reached a specified standard and is therefore eligible for a qualification or some other form of recognition. There are no examinations or other kinds of formal assessment built into the modules, although some countries may wish to introduce formal assessment procedures through an academic institution, recognized training centre or professional body.

Regardless of the means used to measure learners’ progress and achievements, however, the most important test of their ability will be the quality of their own work and of the service provided by their blood transfusion centre or blood bank. This is why the implementation of their Action Plans is essential.

Assessment also serves to detect any weaknesses or problems in relation to individual learners or to the programme as a whole and to indicate any action that needs to be taken. It is therefore an important part of the process of monitoring and evaluation. For example, if a learner appears to be making slow progress, the problem may be that their supporter does not
have sufficient specialist knowledge to explain some of the more unfamiliar concepts. More frequent contact with the trainer may therefore be required. Alternatively, the trainer may need to negotiate with the learner’s supervisor for more time to be allocated for working through the materials.

The learning materials have been designed to provide three ways of evaluating learners’ work during the programme.

**Self-assessment**

Learners are asked to assess their own learning, using the Answers to Self-assessment Questions, Activity Checklists and Answers, Progress Checks and the outcomes of their Action Plans. Self-assessment offers them an opportunity to test their own knowledge and understanding and to make their mistakes in privacy. If they answer a self-assessment question incorrectly, it simply serves as a warning that they need to spend a little more time on that topic to ensure that they understand it before moving on to the next subject. If they feel that they are unable to achieve one of the stated learning objectives, self-assessment acts as an indicator that they either need to work through a section, or part of a section again, or that they need to seek help from their supporter or supervisor.

It is important for learners to understand that the programme is designed to respond flexibly to their particular learning needs and that it is to their own benefit, as well as to that of the service in which they work, to be honest in assessing their own work. Many learners enjoy the higher level of control over their own learning that self-assessment offers. Others who are used to traditional education and training systems need specific encouragement to take a more active role in evaluating their own progress. It is therefore important for them to understand the value of self-assessment in helping them to identify any problems so that they can seek assistance from an appropriate source.

**Workplace assessment**

As learners work through the materials, their supporter or supervisor should monitor their progress through regular meetings, discussion of their work on their activities and observation of their practical work. They will also need to discuss and approve any changes that learners want to introduce through their Action Plans, as well as to monitor their implementation.

The supporter may also be asked to provide a written report on what the learner has achieved during the course of their work on each module.

**Trainer assessment**

The trainer with overall responsibility for a group of learners will need to assess whether their work has met the specified standard. Regular contact should therefore be maintained both with each individual learner and with their supervisor or supporter. In addition, it is important to ensure that learners document their work on the activities and Action Plans so that their progress can be evaluated.

If learners participate in any workshops or short courses as part of the programme, their ability to apply their knowledge can be assessed through discussion and observation of their practical work.
2

The Role of the Trainer

2.1 THE TRAINER AS FACILITATOR

If you have accepted the role of trainer in a distance learning programme in blood safety, you will find that in many respects it is very different from that in a conventional training programme where you would be responsible for a wide range of activities, including course design, teaching through lectures and demonstration, practical supervision and assessment. In contrast, in this programme, overall course design and much of the teaching have already been undertaken through the development of the materials that lead learners through a structured programme of study. Your role thus changes from being a direct teacher to being a training manager and facilitator. This does not mean that your role becomes less important, but rather that it is different. The programme could certainly not work effectively without the facilitation of the trainer.

Once the programme becomes established in your country, you will almost certainly find a variety of ways of using the materials as part of your overall training strategy. In this section, however, we shall outline the broad functions of the trainer that need to be undertaken to maximize the chances of learners successfully completing the programme and using it effectively to improve the quality of their work.

2.2 AN OVERVIEW OF THE ROLE

As a trainer and facilitator with responsibility for planning and managing the programme for a group of learners, your main functions are likely to include:

- identifying overall training needs and priorities
- identifying suitable centres to participate in the programme and establishing contact with them
- selecting suitable candidates to participate in the programme
- gaining the support of learners' supervisors and other senior colleagues for their participation in the programme, including the allocation of time for studying the materials, the creation of a positive learning environment in which they are encouraged to apply what they are learning, and support for the introduction of any appropriate improvements that they have identified as being necessary
- identifying the training needs and priorities of individual learners
- informing them about the programme and how it operates
- advising them on how to use the materials and on where they can find specialist assistance
- advising on the sequence of study that will best meet each learner’s particular needs and capabilities and assisting them to develop a realistic Study Plan for their work on each module
- ensuring that they find a suitable supporter within their workplace who can provide continuing support and practical assistance and briefing each supporter on their role
- preventing learners from feeling isolated by maintaining regular contact
by whatever means are feasible, whether through periodic meetings or by post or telephone

- encouraging and motivating them by assisting them to develop their learning skills and by providing feedback on their progress
- counselling them whenever they need any help that their supporter is unable to provide
- organizing group meetings, short courses or workshops for practical work and enabling learners to meet with others who are also undertaking the programme
- ensuring the quality of the programme and of individual learners’ work through monitoring and evaluation.

Sections 4–6 explain in more detail what these functions might involve at different stages of the training.

2.3 SOURCES OF SUPPORT

If you are unfamiliar with this learning approach, in which a structured programme of training takes place ‘at a distance’, the various components of the trainer’s role may seem somewhat daunting. Over time, the programme will evolve in a way that best meets your country’s particular needs. In the same way, you will gradually refine your own role and find the most appropriate and effective means of ensuring the quality and effectiveness of the programme. In the early stages, however, it will be necessary to test out different approaches and methods of organization in order to develop a suitable structure for the programme.

Until now, the distance learning approach has never been used for training in blood transfusion practice. However, it is widely used throughout the world in a variety of disciplines and at different educational levels and there may be an open university or correspondence college in your country that operates in a similar way. If there is, it is worth contacting the institution to obtain advice and guidance on organizing distance education programmes and supporting learners.

The World Health Organization office in your country will be a key source of support and may support the organization of a national training workshop to help you to prepare for your role as a trainer. It will be important to maintain close contact to report on progress and, equally important, to provide feedback on the materials which can be taken into account in any future revisions.

The ministry of health and, in particular, the programme manager of the national AIDS control programme should be invaluable sources of assistance. Whether you work in a blood transfusion service, a large hospital laboratory, a university or another institution, your own colleagues should also be able to provide ideas and practical support.

Finally, if there are other trainers involved in the programme, it will be important to meet them on a regular basis, or at least to maintain contact by telephone, to identify any problems that any of you may be facing and to work together to find ways of continually strengthening the programme.
3

The Role of the Supporter

3.1 THE NEED FOR LOCAL SUPPORT

The distance learning approach necessarily means that learners will have to take more personal responsibility for their own learning than in conventional courses. They are not required to attend lectures at specific times, but instead are asked to prepare a Study Plan as a guide for their study and to work through the learning materials on their own. They are asked to undertake activities for which there are not necessarily any right or wrong answers and where they are often expected to review the approaches or procedures in their own workplace and make recommendations on ways of improving them. They are even expected to assess their own progress.

For some learners, this is a challenge to which they respond enthusiastically, valuing the increased control over their own learning that it offers them. Others find it more difficult to adjust to less direct contact with a trainer or to the increased self-discipline and motivation required for independent study. They may lack confidence in their ability to acquire new knowledge and skills, particularly if they completed their basic training several years ago and have not had any opportunities for further training. They may feel embarrassed about acknowledging any difficulties that they are experiencing in understanding the material, completing the activities or studying independently. They may also be reluctant to evaluate current procedures and suggest improvements in case they are perceived as being critical of established practices.

For this reason, it is essential that all learners have access to a supporter – someone within their own workplace who can provide continuing support and assistance as they work through the learning materials. It is important for them to understand that it is not only acceptable, but also desirable, for them to ask for any help that they need. It is also important that there is someone who will monitor their progress, actively provide encouragement and reassurance and identify any problems that they are experiencing so that they can be resolved before the learner loses confidence and becomes demotivated.

3.2 AN OVERVIEW OF THE ROLE

The support needs of learners will vary considerably and it will take some time for each supporter to identify the particular kinds of assistance most needed by their own learner. In general, however, the role of the supporter is likely to involve:

- ensuring that adequate time has been allocated for the learner to study the materials, carry out the activities and develop an Action Plan
- meeting the learner on a regular basis, perhaps every two weeks or when they have completed a section in the module, to review their progress and explain anything that they do not fully understand
- suggesting appropriate sources of information, such as other members of staff, local organizations, reference books or specialist institutions
- recognizing any worries or difficulties that the learner may be experiencing in adjusting to distance learning and suggesting ways of overcoming them
providing encouragement and reassurance about the learner’s achievements to maintain interest and motivation

- preventing the learner from feeling isolated
- encouraging them to evaluate existing procedures and to try out new approaches in their work
- supervising their practical work, where feasible, to ensure that they can apply their knowledge safely and effectively
- discussing the findings from their work on the activities
- reviewing their Action List and Action Plan for each module and discussing their recommendations
- providing support for the implementation of recommendations that are agreed to be realistic and feasible
- maintaining contact with the trainer and reporting on their progress.

### 3.3 SELECTING A SUPPORTER

The very first activity in each module asks each learner to select a supporter for their work on that module. Senior staff should already be aware of the need to designate a suitable person for this role from earlier discussions when it was first agreed that the centre would participate in the programme. They may already have identified an appropriate person to act as the supporter. It is important, however, that the learner should be able to play an active part in the selection of the supporter since it is essential for them to feel comfortable with that person. Good interpersonal communication skills are therefore an equally important qualification for the role of the supporter as technical expertise.

Ideally, the supporter should be the learner’s supervisor or another senior colleague with more advanced qualifications and specialist expertise in the area that they are studying. Some learners undertaking this programme will have easy access to suitably qualified and experienced senior staff who can act as their supporter during their study. In large institutions such as a national blood transfusion service, for example, there may be members of staff with specific responsibility for training or, at least, senior staff who already undertake training as part of their role. It may be possible for the learner to select a different supporter for their work on each module if there are senior members of staff with specialist expertise in those particular areas.

The availability of the learning materials and access to the trainer with overall responsibility for managing the learning programme should enable centres of this kind to provide learners with an adequate level of support that requires relatively little time and that fits within their normal supervisory role. In these circumstances, relatively limited input may be required from the programme trainer and once the programme is firmly established, the centre may be able to operate it on a semi-autonomous basis.

The majority of learners participating in the programme are, however, likely to work in small hospital blood banks where there is no structured training programme and where there may even be little supervision. Even if there is no one with specialist technical expertise, it is not realistic to expect learners to undertake a period of prolonged study in relative isolation without access to someone who can provide assistance whenever they encounter any problems. In these circumstances, the need for a supporter becomes even greater.

It may therefore be necessary to ask one of the hospital medical staff to act as the supporter, even though that person may not be able to deal with questions relating to certain technical issues. As outlined in Section 3.2, there are a number of other important aspects of the supporter’s role that do not require specialist knowledge. A higher level of technical support will be required from the trainer, however, who will also need to ensure that the supporter is coping with the learner’s needs and is comfortable with the role.
4

Before the Training

4.1 PLANNING AND PREPARATION

As in any training programme, careful planning and thorough preparation are essential to ensure that the programme runs as smoothly as possible and to avoid serious problems emerging at a later stage. In preparing for the introduction of this programme, the key issues to be considered are:

- the materials
- overall training needs and priorities
- the selection of participating centres
- the selection of learners
- the preparation of learners for entry to the programme.

4.2 THE MATERIALS

Once you have been selected as a trainer for the programme, you will need to familiarize yourself with the materials. It is possible that you will be asked to attend a workshop in preparation for your role as trainer and it is important to read the materials before you attend.

Sections 7–10 in this Trainer’s Guide provide a brief overview of the contents and the overall objectives for each module and suggest the stages at which individual or group meetings with learners or workshops might be particularly useful.

When you are reading through each module, make a note of:

- any equipment or materials that might be needed
- any parts of the text that you think some learners might find difficult
- any activities that some learners might have problems in completing
- any supplementary material that learners might find helpful, such as national guidelines or policies
- sections that need to be supported by supervised practice.

4.3 IDENTIFYING OVERALL TRAINING NEEDS AND PRIORITIES

The learning programme is designed to be flexible so that it can be used to meet a wide range of needs. However, it will obviously not be feasible to involve all staff requiring further training as soon as the programme is introduced.

It is therefore important to identify priorities in training needs. For example, if some hospitals in your country bleed their own donors and do not yet routinely screen all donated blood for transfusion-transmissible infections (TTIs), the priority is likely to be to train their laboratory technical staff to perform TTI testing. At a later stage, the programme can be used to provide refresher training and upgrade the skills of staff in larger centres where blood is already tested.

Alternatively, the priority in your country may be to focus on staff who received their basic training several years ago and who have had no opportunities for refresher and updating courses.

4.4 IDENTIFYING AND CONTACTING PARTICIPATING CENTRES

Once the overall training priorities have been established, the next step is to identify the
centres that will take part in the programme. Until the programme is firmly established, it may be wise to select a relatively small number of centres to participate on a pilot basis so that the programme can be monitored and any unexpected problems can be identified and resolved before it is introduced on a wider scale.

The training priorities that are identified will, to some extent, determine the selection of centres but it is also important to take any financial or logistic constraints into account. For example, staff working in small and relatively isolated hospital blood banks are likely to be in greater need of training than those in larger blood transfusion centres. However, they will also need a higher level of support from the trainer, particularly if there are no senior technical staff who can supervise their work. It should be possible to maintain regular contact by telephone, post or e-mail, but the time and costs involved in occasional visits to these learners and in organizing supervised practice will invariably be greater than in centres where much of the support required can be provided within the workplace.

Since there is unlikely to be unlimited time or financial resources to devote to the programme, it will be necessary to find a balance between the training needs and the resources available. For example, a decision must be made on whether to focus initially on a particular region or area in which there are a number of suitable candidates for the programme, which would enable you to organize individual or group meetings at relatively low cost because they are all in the same locality. Alternatively, if learners are widely scattered throughout a large area, you may not be able to visit them very often, but the programme would probably have a wider impact more quickly.

Following the selection of the blood centres and blood banks that will be involved in the programme, you will need to contact the director or the person who is responsible for training in order to explain:

- the aims of the programme and how it will operate
- the audience for whom the programme has been designed
- the specific benefits that the programme is expected to bring to the centre in which the learner works
- the support that you will provide for the learner
- the support that the learner will need within the workplace.

It is important to emphasize that learners will need active support from their supervisors and senior colleagues during their work on the programme, including:

- the designation of a senior member of staff as their supporter
- the allocation of sufficient time for study that will not disrupt normal work procedures or place additional demands on the learner or other staff
- the allocation of time for meetings with the supporter and, occasionally, with the trainer
- approval to participate in any group meetings or workshops that are organized as part of the programme
- approval to carry out the activities in the modules and to develop an Action Plan
- a willingness to discuss the ideas and recommendations in the Action Plan and assist in the implementation of those that are agreed to be realistic and feasible.

4.5 SELECTING LEARNERS

The selection of learners will, to a certain extent, depend on the criteria used to select participating centres. In smaller centres, there may only be one suitable candidate. In larger centres, you may wish to involve all those who would benefit from further training since, where there are several learners in the same centre, they can provide each other with mutual support, particularly in identifying ways in which they could improve procedures and practices. It will also be easier for you to maintain contact with them. Alternatively, you may wish to select or ask the director to nominate only one or two candidates.

In the initial stages of the programme in particular, it is important to choose learners who demonstrate a high level of enthusiasm and commitment. Since it is a new programme, unexpected problems
will almost inevitably arise and it is important that
learners have sufficient confidence and motivation
to try to deal with them.

In selecting learners, you will need to take a
number of factors into account, including:

- their individual training needs in relation to their current or future work
- their basic knowledge, skills and experience in blood transfusion practice
- their interest in undertaking further training
- their willingness to study by distance learning
- the level of support they are likely to receive from senior colleagues
- their ability to read and comprehend English.

4.6 PREPARING LEARNERS FOR ENTRY TO THE PROGRAMME

Much of the success of the programme will
depend on learners receiving the support that they require and knowing that they can seek help whenever they require it. Learners studying at a
distance can easily lose motivation if they are uncertain about what they should be doing. They need to feel ‘safe’ and often simply need reassurance that are making good progress. It is therefore vital that, from the start, they have a clear understanding of the programme and how it operates so that they know exactly what is expected of them. It is dangerous simply to send learners the materials without explaining how they should use them or giving them an opportunity to ask questions and express any fears or anxieties that they may have.

Wherever possible, you should meet learners before they start work on the programme, either individually or in a group. If you are unable to meet them at any other time, a visit before they begin to study the Introductory Module will be extremely valuable in helping to avoid problems at a later stage. If this is not possible, perhaps because the distance is too great, try to make contact with them individually, preferably by telephone. It will be helpful to provide each learner with their copy

of the Introductory Module before the meeting so that they can familiarize themselves with the style and approach used in the programme.

Use the initial meeting to:

- get to know the learners and their current work
- explain the objectives of the programme and how it will operate
- explain your role
- clarify what learners are expected to do
- ensure that each learner has access to someone who can act as their supporter
- identify each learner’s specific interests and training needs
- develop a Study Plan with each learner
- ensure that learners have an opportunity to ask questions and raise any worries and concerns that they may have about any aspect of the programme.

Introduction

Briefly introduce yourself and then ask learners to introduce themselves by:

- telling you about their previous training, qualifications and experience
- describing their current work
- saying what they hope to achieve by undertaking the programme.

The programme

Explain the objectives and structure of the programme and what you expect both learners themselves and the centres in which they work to gain from it.

Describe your role and what learners will be expected to do. It is important to explain that they will be expected to make a commitment to the programme and take personal responsibility for their own study. Unlike a traditional course where they would be taught according to a prearranged timetable and would spend much of their time
listening to lectures, they will have to plan their own study time and take a more active role in their own learning, particularly through their work on the activities and Action Plan in each module. They may be excited about being involved in the programme, but apprehensive about their ability to succeed, particularly if they completed their basic training several years ago and are unused to studying. Introduce the role of the supporter within their own workplace and ask them to begin thinking about who might be suitable.

Then use the modules to help describe how the programme works, including the following points:

- an overview of the contents of each module
- the main features of the modules, including the learning objectives and how they relate to the activities
- the importance of the activities: you may find it helpful to select some examples for discussion
- the Action Lists and Action Plans and how they evolve out of the work undertaken in the activities
- the concept of self-assessment and how learners can use the self-assessment questions and progress checks to review their own progress
- other forms of assessment that may be used
- the support that will be available while they are working through the modules, including:
  - local support provided by their own supporter
  - meetings with you
  - group meetings and practical workshops.

The supporter

During your initial meeting with learners, ask them to read Section 1.4 in the Introductory Module and to complete Activity 1 which suggests that they identify a suitable person to act as their supporter before they start work on the module. They may find it helpful to look quickly through the Introductory Module to help them to decide on the kind of person who will be most useful to them.

Ideally, the supporter should be the learner’s supervisor or should at least be more experienced than the learner in the particular content area, but this may not always be possible. A learner who is the only laboratory technician in a small hospital, for example, would probably have to ask one of the medical staff or the hospital superintendent to act as supporter. This will mean that you will have to keep in closer contact with them than with learners who have access to a senior laboratory technologist who can answer any questions they may have about technical issues. However, even if there is no ideal person available, ensure that someone in the learner’s workplace is allocated responsibility for providing encouragement and help with any problems that may emerge.

Learners will obviously need to obtain the agreement of the person whom they have asked to take on the role of supporter. If you meet learners at their own workplace, you should be able to talk to their supporter to explain what it involves. Wherever possible, senior members of staff who are likely to take on the role of supporter should be invited to the initial meeting with the learners. If this is not possible, it will be necessary to speak to them later by telephone to ensure that they are clear about what they need to do.

Learners are asked to complete the same activity to identify a suitable supporter at the beginning of each module. In many cases, the same person will act as supporter for their work on all the modules, but learners in larger centres may wish to select a different supporter with specialist expertise for each module.

Training needs

Each learner will have slightly different training needs which will depend on a number of factors, including:

- their general level of education
- their training
- their experience
- the type of centre in which they work
- their current job
- the training priorities identified by their supervisors.

It is important to plan the programme of study to meet the particular needs of individual learners. Some will need to work through all the modules,
while others will only need to study one or two. The order in which they need to study them may also vary.

Activity 2 in each module is designed to help learners to assess their individual training needs in relation to each content area and the specific module objectives. During your initial meeting, ask them to complete this activity for the Introductory Module and, if possible, for the other modules that they will be studying later in the programme. They will probably find it helpful to look quickly through the text to assess how much of the material is new to them and how much will be largely revision for them. You may like to discuss the outcomes with their supervisor since their assessment of their own knowledge, skills and experience may be somewhat unrealistic or inaccurate. Some learners who lack self-confidence may be unnecessarily modest in their assessment, while others may be overconfident about their ability.

The assessment of learners’ training needs will enable you and the individual learner to:

- identify the sections on which the learner particularly needs to concentrate and which may take them longer to complete
- identify any sections that are not directly relevant to their current work and which they may not need to study in detail
- identify the parts of the materials for which they may need a higher level of support, both from their supporter and from you
- provide a baseline for evaluating their learning when they have completed a module.

**Study Plan**

Once learners have identified the modules that they need to study and the areas on which they particularly need to concentrate, they will find it helpful to make a Study Plan to help them organize their work on the programme. Activity 3 in each module asks them to think carefully about the amount of time that they might need to study each section, including completing the self-assessment questions and activities, and taking into account their existing knowledge, skills and experience. They will need to talk to their supervisor about the amount of time they can be allocated on a regular basis for their work on the programme and to set some target dates for the completion of each section. It may, for example, be possible for them to be allocated half a day or a day each week for study, although it should be possible for them to complete some of the activities during the course of their normal work. They should also note the dates of any meetings scheduled with their supporter and with you. Working out a timetable should help learners to pace themselves and will assist you in planning the dates of group meetings or workshops. You will find an example of a Study Plan, taken from the Introductory Module, on page 18.

The amount of time that learners will need to complete each module will depend on a number of factors, including their existing knowledge and the amount of time they have available for study. As a broad guideline, the Introductory Module may require around 30–40 hours of study time, spread over a period of around two months, including the time needed to complete the activities and prepare the Action Plan. The other modules will probably require considerably more time. Some learners will complete them much more quickly, however, while others will take longer. Once they have completed the Introductory Module, they will have a clearer idea of how much time they are likely to need to work through the other modules. The time required for the actual implementation of the Action Plan for each module needs to be negotiated when the plan is discussed and agreed during their work on the last section in each module.

The timetable set before learners begin their work on a module should not be unchangeable. This is where the flexibility of the distance learning approach offers practical advantages. The Study Plan will almost certainly require modification once the learner starts work on the module and becomes familiar with the material and the style of learning. This does not matter since it is important that they work through the material at a pace that enables them to learn effectively. They will probably take longer to complete the work than they originally planned, perhaps because what might seem an easy activity on paper may turn out to be quite challenging in practice.
### EXAMPLE OF STUDY PLAN

<table>
<thead>
<tr>
<th>Section</th>
<th>Rating (1 to 4)</th>
<th>Planned completion dates</th>
<th>Meeting dates</th>
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<tbody>
<tr>
<td>Section 2 Professionalism</td>
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<tr>
<td>Section 3 Safety Procedures</td>
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<td>Section 4 Quality and Quality Assurance</td>
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<td>Section 5 Safe Storage and Transportation of Blood and Plasma</td>
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<td>Section 6 Preparation of Basic Solutions</td>
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<td>Section 7 Stock Control</td>
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<tr>
<td>Section 8 Action Plan</td>
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</tbody>
</table>

**Notes**
It is important to ensure that each learner, or their supporter, keeps you informed about any changes needed to their Study Plans so that you can identify the reasons and take whatever action may be required. The allocation of time for study may, for instance, be reduced because of pressure of other work or their supporter may be absent at a time when they need help in order to progress any further. In such cases, it may be necessary for you to discuss the problem with their supervisor in order to find a solution. The learner may be having difficulties in understanding some of the concepts and need additional guidance which their supporter cannot provide. Alternatively, they may have lost motivation because they find it difficult to cope with the distance learning approach and need a higher level of support. Whatever the reason, however, any significant amendments that are made to the Study Plan need to be investigated.

Maintaining contact
At the end of your initial meeting with learners, make sure that they have no further queries or concerns about the programme and that they fully understand what they will be expected to do.

Remind them when you will be contacting them again and what work you expect to be completed by that time. Ensure that each learner, and their supporter, has the address and telephone number where you can be contacted and explain that they should get in touch with you if they have any problems or queries that cannot be dealt with by their supporter. Reassure them that it is part of your job to provide them with support and that they should not be nervous about asking you for help. You will probably find it helpful to confirm the best times for them to contact you if they are able to telephone you, since this will make them feel more comfortable about doing so.
5

During the Training

5.1 MAINTAINING CONTACT

Once the programme has started, it will be important to keep in touch with learners and their supporters to monitor their progress and help them to deal with any problems. To a large extent, however, the level of support that you will need to provide will depend on the nature of the support that is available within the learner’s own workplace. For example, once the programme has been set up and staff are familiar with how it operates, a relatively large centre with several senior members of the technical staff may be keen to manage the programme with little external support. The majority of learners, however, are likely to require a higher level of support, especially those who are particularly isolated.

Ideally, you should be able to meet learners periodically during their work on the modules as well as to organize a workshop or short course for practical work on each module. Face-to-face meetings on both an individual and group basis will obviously be more cost-effective and easier to arrange if there are a number of learners in the same area. In some cases, however, it may not be feasible to meet learners and it will be necessary to maintain contact by telephone, fax, post or, where available, e-mail.

It is important to build meetings into learners’ Study Plans by letting them know well in advance when they will take place and what work you will expect them to have completed by that point. If only one meeting is possible, learners will generally find it most beneficial if it takes place at the stage when they have completed a module and are preparing their Action Plan.

In this section, we shall focus on:

- telephone, e-mail and postal contact
- individual meetings
- group meetings
- practical workshops or short courses.

5.2 TELEPHONE, E-MAIL AND POSTAL CONTACT

There are essentially three ways in which the telephone, e-mail and post can be used effectively as part of the learner support system.

1. You will probably wish to maintain regular contact with supporters to monitor their learners’ progress and make sure that no problems have arisen which cannot be dealt with locally. You will also need to inform them of the dates of meetings or workshops that are organized as part of the programme.

2. Correspondence, e-mail and the telephone can be used to provide a ‘helpline’. There are likely to be occasions when either supporters or learners will wish to contact you to seek advice or assistance. As suggested in Section 4.6, it may be helpful to set aside specific times when you will be available to deal with telephone calls and to encourage them to limit their calls to those times.

3. The telephone can be used as an alternative to face-to-face meetings. Where this is necessary, it is important to make constructive use of the limited time that will be available and you may
During the training, wish to make prior arrangements by post for a "telephone tutorial" to take place on a particular time and date so that both you and the learner can be well prepared for it. When it takes place, have your records to hand and agree the points you are going to discuss before you begin.

Always try to sound friendly and interested during the conversation since the learner may be nervous about talking to you on the telephone. Focus on the points agreed for discussion, but listen carefully to what the learner is saying in case there are hints that they may not be revealing something that is worrying them. As in face-to-face meetings, summarize the points covered and any action to be taken and agree the date and time of the next contact. Make a brief note of the conversation and put it in the learner’s file.

5.3 INDIVIDUAL MEETINGS

Meetings with learners on an individual basis can serve a number of functions, including:

- reviewing their progress and identifying any problems they may be experiencing in relation to their study
- agreeing any changes needed to their Study Plan
- clarifying any points in the modules that they do not understand or find difficult
- discussing issues raised by the modules in relation to their own work
- discussing their responses to the activities and any recommendations that they have added to their Action List or included in their Action Plan
- reviewing their progress in implementing their Action Plan
- preparing for work on later sections in a module or the next module.

You should also be able to talk to the learner’s supporter and supervisor to monitor their progress and assess the impact that it is having on their work.

It is important to structure the meeting, while at the same time creating a relatively informal environment in which the learner is able to relax and talk openly about any doubts or problems they are having with the materials or the distance learning approach. Remember, it is not easy studying in relative isolation and an important part of the meeting will be to show that you appreciate the effort they have made and to provide encouragement and reassurance to help maintain motivation. It is essential to praise the positive aspects of their work and to talk constructively about ways of improving any areas in which they have demonstrated weaknesses. You may find it helpful to use the following steps as guidelines for your meetings.

1. Review the learner’s records before the meeting so that you are familiar with their training needs, experience and progress to date.

2. Outline the purpose of the meeting at the beginning and check that the agenda covers all the points that both you and the learner wish to discuss.

3. Work through the agenda, ensuring that each point is finished before moving on to the next.

4. Encourage the learner to ask questions and express opinions and concerns.

5. At the end of the meeting, summarize what has been discussed, including any actions that you and the learner have agreed need to be carried out. Set a rough timescale for the completion of each action.

6. Check that the learner feels that the meeting has covered all the points that they wish to make and that they are clear about what needs to be accomplished next.

7. Make a short note of the meeting and the actions agreed for the learner’s file.

Learners will probably look forward to meetings with you, but may also feel a little apprehensive in case their work has not reached the required standard. They will probably have a number of questions to ask and may also wish to discuss some problems that they feel unable to talk about with their supporter or which the supporter is unable to resolve for them.
Avoid ‘re-teaching’ the material contained in the modules. You will probably want to check how well a learner has understood key points, but it is important to use the time available to deal with any issues that have proved to be particularly difficult or where the learner is keen to explore the subject in greater depth rather than simply to cover the same ground. Don’t feel that you have to be able to answer every question during the meeting. One of the objectives of the programme is that learners should take more responsibility for their own learning and it may be appropriate to suggest alternative sources of information. For example, you might be able to suggest that they contact a particular person in the ministry of health who can answer a specific query. There are occasions, however, where the learners are asked to find out the same information, such as in Activity 9 in Module 2 which asks them to find out the prevalence of HIV and the number of AIDS cases in their country. It may be simplest for you to obtain the information and circulate it to them so that it is available when they reach that particular activity.

Where a learner is facing problems in coping with the programme or relating it to their work, try to adopt a counselling approach, guiding them to find an appropriate solution for themselves rather than solving the problem for them. In some cases, they will simply need reassurance that other learners share the same doubts or fears about their ability and that they are making satisfactory progress. In others, they may be facing difficulties in completing certain activities, and it may be necessary to modify the activities or to advise the learner to leave them out.

On occasions, there may be internal problems that are affecting the learner’s capacity to complete the work. If their centre is particularly short-staffed, for example, it may be difficult for them to find sufficient time for studying and it may be necessary for you to negotiate a solution on the learner’s behalf.

5.4 GROUP MEETINGS

If there are several learners in the same area, you may be able to hold occasional one-day group meetings to cover some subjects in more depth, deal with common problems and perhaps undertake some practical work. Learners usually enjoy meeting other people who are also working through the materials and group meetings can be particularly valuable opportunities for stimulating ideas about how to implement their Action Plans. One of the greatest benefits is that they help to break down feelings of isolation because they enable learners to share any problems and concerns and to provide mutual support. Often, when learners realize that others have also found a particular topic challenging, they become more confident about their own ability and find it easier to cope in the future if they find anything difficult to understand. Learners may also find it valuable to arrange their own meetings to continue their discussions on an informal basis.

Learners may expect a traditional classroom approach to be used in their group meetings, with lectures and formal question and answer sessions. However, since the materials act as the teacher in this programme, your role is essentially one of facilitator, rather than instructor. As with individual meetings, you will need to plan the structure of the meeting carefully to make the best possible use of the time available. Set some clear objectives for the meeting and focus on planning activities that will meet the varying needs of this particular group of learners. If possible, arrange for flipcharts, a blackboard or an overhead projector to be available for recording information and summarizing reports of group discussions.

It is important to avoid covering the same material that is contained in the modules, unless there are common problems in understanding or there is particular interest in certain topics. It is essential to create an environment in which learners feel able to participate actively and identify issues that they particularly wish to discuss. You may wish to introduce some exercises to test their knowledge, but one of the major functions of group meetings should be to focus on the application of knowledge to practice. You may therefore decide to devote a major part of the meeting to discussion of learners’ work on the activities and the implications of their findings for their own work. They will almost certainly find it valuable to compare notes on policies and working practices and to work together in seeking solutions to common problems. Small group discussion is particularly valuable for problem-solving and action planning.
5.5 SHORT COURSES AND PRACTICAL WORKSHOPS

Practical work is an important part of the programme and where an appropriate level of supervision can be provided by the supporter or other senior colleagues, it can be undertaken in the workplace.

Wherever possible, however, short courses or practical workshops should be organized, particularly in relation to Modules 2 and 3. In some countries, it may be possible to organize a series of workshops in different parts of the country in institutions with suitable facilities and where resource persons are available.

As with group meetings, it is important to allocate time at the beginning of the course or workshop for participants to suggest issues that they would like to discuss and to respond positively to the needs that they have identified for themselves.

Short courses and workshops provide an obvious opportunity to demonstrate screening for transfusion-transmissible infections (TTIs), blood grouping and compatibility testing techniques and to enable learners to practise them under close supervision. Practical laboratory work on Module 2 should focus on the assays currently used in learners’ own laboratories for routine TTI testing. Where learners come from larger centres where enzyme linked immunosorbent assays (EIA), particle agglutination and simple rapid assays are all used, they should be asked to perform each technique under supervision to assess their ability to carry them out safely and efficiently in their own laboratories. Some learners, however, may work in small testing centres that currently use only particle agglutination or simple rapid assays. Although they should understand the principles of EIA techniques and will find it interesting to see them demonstrated, they should not be asked to perform them during the workshop because they will not need to use them on return to their own laboratories and they will not remember them accurately unless they perform them routinely on a daily basis. Any learners from laboratories that subsequently begin to use EIA technology should receive specific training in the techniques at that time.

In order to minimize the costs involved in practical laboratory work, workshops should be organized in conjunction with a tutor who is responsible for routine testing on a daily basis in the blood transfusion centre or institution in which the course is being held. The most effective method will be to use the ‘see one, do one and teach one’ approach. Following an initial demonstration, routine daily tests can be performed by learners under close supervision by the tutor, with other learners observing the techniques and then taking their turn to perform the tests. The testing involved in quality control and quality assurance will also provide a valuable opportunity to use routine testing as part of the practical component of the course, without incurring any additional costs for the purchase of test kits.

Short courses or workshops can also be used for other practical activities apart from benchwork and associated record-keeping. Like group meetings, they should also be used to focus on parts of the materials that learners find most difficult and for discussion of ways of improving approaches and procedures in the workplace. For example, if learners identify a common need to improve the documentation in their laboratory, such as a donor clinic register, a record of anti-HIV screening results or a blood request form, time could be allocated for them to work together on developing one that would be suitable for use in each centre. Where hospital blood banks collect their own blood from the relatives of patients rather than being supplied by a blood transfusion service, the group could jointly develop a plan for recruiting more voluntary non-remunerated donors. Alternatively, you could organize a role play to strengthen learners’ skills in providing predonation counselling or ask them to plan and practise giving a brief public talk.

5.6 RECORD-KEEPING

Keeping records is an important part of managing the programme and enabling you to provide appropriate support to learners. Records will also assist you in the process of monitoring and evaluation and will therefore be an important part of your quality system. Only simple records are required, but they should be kept up to date at all times. The essential records include:

1. The names, addresses and telephone numbers of all learners.
2. The names, addresses and telephone numbers of all supporters.
3 A file for each learner containing:

- a brief summary of their training, qualifications, experience and current work
- a note of the names, positions and qualifications of senior members of staff in the centre in which they work and of any other people in the same locality who might be able to provide additional support, where necessary
- a copy of learners’ Study Plans, including dates for agreed contacts by telephone, post and in individual meetings
- notes on telephone conversations and individual meetings, including any action required, the date by which it should be completed and the outcome
- reports from supporters on learners’ progress in working through the materials and in supervised laboratory practice
- a copy of learners’ Action Plans, with reports on their progress in implementing them
- brief notes on their participation in group meetings, short courses or workshops, including an assessment of any practical work they have undertaken.

4 A record of any common problems faced by learners or supporters, together with the action taken to resolve them.

5 Notes on any group meetings, workshops or short courses held, including objectives and structure, resource persons and a summary report.

There may be other records that you wish to keep. You may also find it helpful to keep notes on the particular strengths and weaknesses of the materials that will assist in their evaluation and future revision.
6 At the End of the Training

6.1 MONITORING AND EVALUATION

Once the programme has been in operation for some time and the first group of learners have completed it, it will be important to evaluate it carefully in order to identify any ways in which it can be strengthened in the future. A simple definition of quality is ‘fitness for the purpose’. In this case, the question to be answered is whether the programme has provided an appropriate kind of training to an appropriate level for the staff whose training needs have been identified as a priority.

There are four main areas for evaluation:
- the learners
- the materials
- the learner support system
- the impact of the programme.

6.2 EVALUATING LEARNING

Perhaps the most important area for evaluation is the outcomes of the programme. In other words, have the majority of learners achieved the objectives specified for each module that they have worked on and has this resulted in a significant improvement in the quality of their work?

Section 1.6 outlined the various ways in which assessment can be undertaken throughout the course of the training. It will also be important to ask for a final report by learners’ supporters or supervisors when they have completed the programme.

In addition, you may wish to ask for a further report a few months later when the impact of the training should have become more evident. As the programme progresses, you will probably identify a number of ways in which more structured assessment can be undertaken. Whichever form of assessment is used, however, it is important to provide feedback to the learners so that they can use it to further strengthen their knowledge and skills.

It is particularly important to congratulate learners when they complete each module and, eventually, the whole programme. They will need to feel that the effort they have made is recognized and valued so that they will feel motivated to continue finding ways of improving the quality of the service that they provide. Although there may be no formal recognition for learners who successfully complete individual modules or the whole programme, they will certainly appreciate some kind of certificate of completion. This will demonstrate not only that they have undertaken the training, but also that they have shown sufficient commitment, motivation and self-discipline to persevere with it over a considerable period of time.

Even if the outcomes are disappointing, it is important to recognize the effort that learners have made to complete the training. However, it will be essential to identify whether the weakness lies in the materials or in the learner support system.

6.3 EVALUATING THE MATERIALS

The learning materials were thoroughly reviewed throughout the developmental stages by blood transfusion specialists from different parts of the world. They have been translated into a number
of languages and have been used on a wide scale in many countries throughout the world. Evaluation has shown that they can be highly effective in delivering training at a distance, particularly when accompanied by a structured system of learner support. In some countries, additional materials have been prepared to suit the particular needs of staff undertaking the programme or the modules have been complemented by the use of other materials, such as journal articles and videos.

It is important that trainers responsible for implementing the programme contribute to a continuing evaluation process so that any areas of weakness can be identified and improvements made to increase the effectiveness of the materials in the future. You will need to assess, for example, whether:

- the learning objectives were relevant and appropriate
- the materials contained too much or too little information
- the level of the materials was too basic or too advanced
- the self-assessment questions were helpful or too simple
- the style and language used were too simple or too complex
- the learners made significant progress in expanding their knowledge and applying it appropriately and effectively in their everyday work
- the activities were useful in assisting learners to identify any improvements that were needed to established approaches and procedures
- the learners found the Action Plans helpful in planning and introducing positive changes into their own area of practice.

Whenever a group of learners complete a module, therefore, it is worth noting down their comments and your own observations on the modules and about any topics on which additional materials might be useful. The supporters may also be able to offer helpful comments on the materials, including the appropriateness of the level and any areas that learners found especially useful or where they experienced particular difficulty. You may find it helpful to use a questionnaire for learners and supporters to provide a framework for evaluation.

Once comments on the materials have been collected, it would be helpful to send them to the World Health Representative in your country.

### 6.4 Evaluating the Learner Support System

An equally important part of the evaluation process will be to assess the appropriateness and effectiveness of the support system provided for learners. As the programme progresses, you will almost certainly encounter unanticipated needs or problems and devise ways of dealing with them. However, it is important to make a systematic assessment of the support system in order to identify whether it will need any major modifications in future years. The starting point for this assessment should be your own role as the trainer responsible for organizing the programme and whether you had sufficient information about the programme, experience and support to perform it effectively.

It will also be important to assess whether:

- the selection of learners was appropriate and that the materials were not too advanced for them
- the training needs of learners were accurately identified
- the learners were adequately prepared for the programme and understood how to use the materials and make effective use of the learner support system
- the learners were allocated sufficient time for study
- the selection of supporters was appropriate and they were able to provide an adequate level of support
- the learners developed realistic Action Plans and received encouragement and support in putting them into practice
- there was sufficient contact between trainers, learners and their supporters
- there were sufficient meetings and opportunities for practical work.
The programme should open up new opportunities for access to high-quality training for staff who would normally have little opportunity of attending a course to update or upgrade their knowledge and skills. However, there is always room for improvement and systematic monitoring and evaluation will enable you to identify any changes needed to ensure that the programme operates to its maximum possible level of effectiveness.

6.5 EVALUATING THE IMPACT OF THE PROGRAMME

The real test of the programme’s value will, of course, be the quality of learners’ work in the future and the impact of their participation on the transfusion service or blood bank in which they work.

The impact of the programme will, however, be directly related to the quality of the programme itself. It is therefore essential that all elements of the programme are monitored and evaluated in a systematic way in order to assess its effectiveness in meeting its objectives.

Monitoring and evaluation should be coordinated on a national basis in order to generate comparable data from different parts of the country, but every trainer has an important role to play in contributing to the evaluation process through their records, reports and feedback. Establishing a Distance Learning Programme in Blood Safety: A guide for programme coordinators provides guidance on approaches to programme monitoring and evaluation, including suggestions for indicators.

While the overall impact of the programme will not become immediately evident, evaluations conducted in a number of countries indicate that, where well-organized programmes have been established, they have quickly resulted in higher levels of knowledge, understanding and competence – and a direct impact on blood safety.

The evaluations have commonly revealed that the most significant effect of participation is an awareness and a pride on the part of individual learners that they can each make a tangible contribution, however small, to improved blood safety in their own blood centre or blood bank, 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’.

In the long term, evaluation will help to assess whether the programme has been effective in achieving the following outcomes:

- increase in the number of voluntary non-remunerated blood donors
- increase in the number of repeat donors
- increase in the number of units of blood tested for transfusion-transmissible infections in accordance with the national policy on screening
- reduction in the number of units of blood discarded because of evidence of infectious disease markers
- reduction in the number of errors in blood grouping and compatibility testing
- reduction in the number of units of blood discarded because of deterioration during storage and transportation.

Even when learners have completed the programme, it will therefore be important to maintain contact with them and their supervisors to identify the longer-term outcomes of their studies and the extent to which they have contributed to tangible improvements in the quality and effectiveness of the blood transfusion service. This feedback will enable the identification of any modifications needed to the programme as well as any continuing or additional training needs.
7

Introductory Module: Guidelines and Principles for Safe Blood Transfusion Practice

7.1 MODULE AIM

The aim of the Introductory Module is to provide a foundation for the programme as a whole by explaining its objectives and structure and how the learning materials are to be used. It also introduces some basic core material that is relevant to all staff working in the field of blood transfusion.

All learners should therefore complete the Introductory Module before starting work on any of the other modules in the programme.

7.2 MODULE CONTENTS

The Introductory Module is divided into eight sections.

Section 1: Introduction to the Module outlines the contents of the module and contains activities that are designed to help learners to prepare for their work on it.

Section 2: Professionalism looks at the issue of professionalism within the transfusion service and hospital blood bank and considers the importance of confidentiality, standards of behaviour and dress and the role of professional organizations.

Section 3: Safety Procedures concentrates on health and safety in the workplace, particularly in the laboratory. It covers common hazards, the use of safety guidelines, protective clothing, the safe disposal of waste and disinfection procedures. It also considers the hazards associated with the handling of blood and the dispatch of samples.

Section 4: Quality and Quality Assurance introduces the principles of quality assurance, which is vital to a safe and efficient transfusion service. It includes simple guidelines on preparing and using standard operating procedures, record-keeping and monitoring.

Section 5: Safe Storage and Transportation of Blood and Plasma focuses on developing an effective blood cold chain, temperature monitoring and the transportation of blood and plasma within the hospital or blood bank.

Section 6: Preparing Basic Solutions deals with the preparation of four basic solutions commonly used in blood transfusion practice: copper sulfate, antiseptic, saline and disinfectant solutions.

Section 7: Stock Control focuses on making the best use of consumable resources by developing and maintaining an efficient and cost-effective system of stock control.

Section 8: Action Plan is the final section in which learners are asked to review all the ideas they have included in their Action List and to prepare an Action Plan as a basis for improving working practices in their transfusion centre or hospital blood bank.
7.3 MODULE OBJECTIVES

There are six overall objectives for the Introductory Module which specify what learners should be able to do as a result of reading the text, answering the self-assessment questions, completing the activities and preparing their individual Action Plan.

When learners have finished working through the module, they should be able to achieve the following objectives:

**Section 2**
Demonstrate a professional approach to their work.

**Section 3**
Identify specific hazards in their workplace and contribute to the design and implementation of safe working procedures.

**Section 4**
Contribute to the maintenance of a quality system in their workplace.

**Section 5**
Develop and maintain a system for the safe storage and transportation of blood and blood products.

**Section 6**
Prepare four basic solutions commonly used in blood transfusion practice.

**Section 7**
Efficiently manage stocks of consumables.

7.4 LEARNER SUPPORT

It is particularly important to meet with all learners before they undertake any work on this module, although they will benefit from receiving their copy of the module in advance. They can then read Section 1 and, before the meeting, think about Activities 1, 2 and 3 which are designed to help them prepare for their work on the programme. They can also become familiar with the approach used in the materials and identify any areas that are not relevant to their particular area of work.

The Introductory Module is fairly basic and is designed to provide a relatively gentle introduction to distance learning. Nevertheless, since this is the first module that they will be studying, learners are likely to need a high level of support until they become used to this style of learning, particularly in relation to quality assurance. It will therefore be important to maintain close contact with each learner and their supporter through individual or group meetings, or by telephone or e-mail so that any difficulties associated with the distance learning approach can be identified and resolved at an early stage.

Learners are likely to need considerable assistance when they formulate their Action Plans and will find a face-to-face meeting at this stage extremely helpful. It will give you an opportunity to ensure that their Action Plans are appropriate and realistic and that they are receiving the support they require from their colleagues to put them into practice. It will also enable you to identify any problems that they are experiencing and that need to be addressed before they move on to the next module.

The meeting can also be combined with preparatory discussions for their work on the next module since they can begin work on this while they are implementing their Action Plans for the Introductory Module.
8

Module 1: Safe Blood Donation

8.1 MODULE AIM

With the rapid increase in the number of people with transfusion-transmissible infections, and in particular the human immunodeficiency virus (HIV), the selection of healthy blood donors at low risk of transfusion-transmissible infection is crucial in assuring the safety of the blood supply.

The aim of Module 1 is therefore to help learners to develop the knowledge and skills needed to ensure that blood donation is safe, both for donors themselves and for the recipients of their blood. In particular, it focuses on ways of:

- reducing the proportion of unsafe blood that is collected
- building up a panel of voluntary non-remunerated donors who are willing to give blood regularly, since these are the foundation of a safe blood supply.

The module has been developed for personnel who are responsible for donor recruitment and the collection of blood, including donor recruitment organizers and nurse–phlebotomists, and for laboratory technical staff in hospital blood banks in which blood is collected.

8.2 MODULE CONTENTS

Module 1 is divided into ten sections.

Section 1: Introduction to Module 1 outlines the contents of the module and contains activities that are designed to help learners to prepare for their work on it.

Section 2: Identifying Low-risk Donors examines the advantages and disadvantages of different types of blood donor and emphasizes the importance of voluntary non-remunerated donors for a safe and adequate blood supply. It also looks at risk behaviour and the transmission of HIV infection and explores ways of identifying sources of safe blood.

Section 3: Estimating Blood Requirements introduces three simple methods for calculating the amount of blood required to meet the needs of the learner’s own locality.

Section 4: Donor Education, Motivation and Recruitment explores ways of improving the safety and adequacy of the blood supply by developing an appropriate education, motivation and recruitment campaign to attract voluntary non-remunerated donors.

Section 5: Organizing Donor Clinic Sessions deals with planning and organizing fixed and mobile donor clinics and with evaluating the effectiveness of blood donor sessions.

Section 6: Blood Donor Selection focuses on procedures for screening donors in order to ensure their own safety as well as the safety of the recipients of their blood, including predonation counselling, the medical history, the health check and donor deferral.

Section 7: The Care of Blood Donors looks at ways of ensuring that all donors receive a high standard of care before, during and after donating blood and that the experience of donation is safe, efficient and pleasant for them.

Section 8: Blood Donor Records considers the various types of donor record and their uses and asks learners to explore ways of improving the effectiveness of record-keeping in their centre.
Section 9: Donor Retention and Recall focuses on ways of encouraging voluntary non-remunerated donors to give blood regularly.

Section 10: Action Plan is the final section in which learners are asked to review all the ideas they have included in their Action List and to prepare an Action Plan as a basis for improving working practices in their blood collection centre.

8.3 MODULE OBJECTIVES

There are eight overall objectives for this module which specify what learners should be able to do as a result of reading the text, answering the self-assessment questions, completing the activities and preparing their individual Action Plan.

When each learner has finished working through this module, they should be able to achieve the following objectives:

Section 2
Identify low-risk donor populations and explain the importance of encouraging potentially unsafe donors to self-defer.

Section 3
Estimate the number of donors needed to meet the blood requirements of their locality.

Section 4
Develop an effective education, motivation and recruitment campaign to increase the number of voluntary non-remunerated blood donors.

Section 5
Plan and organize fixed and mobile donor clinic sessions.

Section 6
Develop and maintain effective donor selection procedures.

Section 7
Provide a high standard of care for donors before, during and after donation.

Section 8
Maintain an efficient donor record-keeping system.

Section 9
Develop an effective system for retaining regular voluntary non-remunerated donors.

8.4 LEARNER SUPPORT

Before learners start work on Module 1, you will need to contact them to assess their specific training needs in relation to the module objectives and to identify any sections covering tasks that are not undertaken in their centre or that they do not currently perform. Discuss these areas before they draw up their individual Study Plans in order to identify the parts of the module that are particularly relevant to their own work and to decide on the most appropriate sequence for study.

The sections in this module follow a logical sequence in the establishment of an effective blood collection programme. However, depending on the stage of development of the learner’s own programme, they may prefer to study them in a different order and to focus initially on the sections that relate most directly to their current work. For example, if their blood bank still depends on family or family replacement donors, they may decide to leave Sections 4 and 9 on the recruitment and retention of voluntary non-remunerated donors until they have completed the other sections. This will enable them to concentrate initially on strengthening their existing programme before trying to expand into new areas of activity.

It is important to maintain contact with each learner during their work on the module. Your initial discussions should indicate any sections that are likely to be particularly challenging or time-consuming and for which additional support may be required. For example, where learners have little experience in planning the education, motivation and recruitment of voluntary non-remunerated donors, they may find it helpful to take part in a group meeting or workshop where they can share their ideas and experiences and work together on developing a broad strategy. Similarly, a workshop may be useful if there is a common need to improve the donor record-keeping system in a number of centres so that they can work together on developing suitable documentation.

If it is possible to organize only one group meeting, this should ideally be held when all members of the group of learners have completed the module. This will enable you to identify any topics that have proved to be particularly difficult or demanding and to undertake any direct teaching
that may be required. It will also enable learners
to work together on problem-solving and on sharing
practical ideas for implementing their Action
Plans.

It may not be possible to hold any group meetings
at all, perhaps because learners are widely
dispersed geographically. However, it will be
extremely important to contact them individually
once they have formulated their Action Plans
during their work on Section 10 to ensure that
they are realistic and that they are receiving the
support they require from colleagues in order to
put them into practice. This meeting could be
combined with preparatory discussions for their
work on the next module, since they can continue
to implement their Action Plan whilst studying
another module.
Module 2: Screening for HIV and Other Infectious Agents

9.1 MODULE AIM

Even where a panel of regular voluntary non-remunerated donors has been established and careful screening and selection procedures are followed, some donors will prove to be seropositive for HIV or other infectious agents. All donated blood must therefore be screened to ensure the safety of the blood supply.

The aim of Module 2 is therefore to strengthen learners’ knowledge and skills in screening donated blood for transfusion-transmissible infections.

9.2 MODULE CONTENTS

Module 2 is divided into nine sections.

Section 1: Introduction to Module 2 outlines the contents of the module and contains activities that are designed to help learners to prepare for their work on it.

Section 2: Infection and Infectious Agents looks at four types of infectious agent and the transmission of these agents by blood transfusion. It also provides an introduction to the basic immunology of infection and to screening for infectious agents, such as HIV.

Section 3: The Human Immunodeficiency Viruses examines HIV infection and the consequences of infection. It describes the structural features of HIV and the basic stages of infection and considers routes of transmission and the prevention of its spread. It provides background information that learners can use for reference purposes.

Section 4: Principles of Screening Assays for Transfusion-Transmissible Infections focuses on approaches to screening for TTIs and explains the principles behind the different types of assay.

Section 5: Selecting Screening Assays for Transfusion-Transmissible Infections will help learners to identify the most suitable type of screening assay for their particular circumstances. It explains the importance of sensitivity and specificity and considers various factors to take into account in developing a screening programme.

Section 6: Using Screening Assays for Transfusion-Transmissible Infections deals with the performance of screening assays, including handling screening results, confirmatory testing, recording and storing test results, and safety procedures in handling positive donations, assay components and waste.

Section 7: Quality Systems in Screening for Transfusion-Transmissible Infections emphasizes the importance of quality systems in the maintenance of an effective screening programme and covers standard operating procedures, laboratory worksheets and audit trails.

Section 8: Screening for Other Transfusion-Transmissible Infections describes the basic features of infection with hepatitis B virus, hepatitis C virus, human T cell leukaemia viruses (HTLV-I and II), syphilis, malaria and Chagas disease, and explains their significance for blood transfusion practice.

Section 9: Action Plan is the final section in which learners are asked to review all the ideas they
have included in their Action List and to prepare an Action Plan as a basis for improving working practices in their laboratory.

### 9.3 MODULE OBJECTIVES

There are seven overall objectives for this module which specify what learners should be able to do as a result of reading the text, answering the self-assessment questions, completing the activities and preparing their individual Action Plan.

When each learner has finished working through Module 2, they should be able to achieve the following objectives:

* **Section 2**
  Explain the role of microorganisms as infectious agents in human disease and their significance for blood transfusion.

* **Section 3**
  Describe HIV infection and the significance of infection for blood transfusion practice.

* **Section 4**
  Outline the principles of the diagnostic assays most commonly used to detect transfusion-transmissible infections and the differences between them.

* **Section 5**
  Select the most suitable type of screening assays for use in their own laboratory.

* **Section 6**
  Contribute to the development of an effective screening programme for transfusion-transmissible infections and maintain accurate records of the screening results.

* **Section 7**
  Develop an appropriate quality system for their laboratory to maintain an effective screening programme.

* **Section 8**
  Recognize the basic features of other infectious agents and their significance for blood transfusion practice.

### 9.4 LEARNER SUPPORT

You should attempt to meet each learner, together with their supervisor or supporter, before they begin Module 2 in order to identify their specific training needs and agree on an appropriate plan for their study. They may already be familiar with much of the material in the module, but it is important to ensure that their knowledge is completely up-to-date since there have been many recent developments in relation to screening for transfusion-transmissible infections. Other material may be new to them and they may find it quite complex. Sections 3 and 4, for example, contain a great deal of information that is provided primarily as reference material. While it is not necessary for them to memorize all the details, they do need to understand them. It is therefore important to ensure that each learner has easy access to a supporter who has sufficient expertise to explain anything that they might find difficult.

Parts of the module may not be directly relevant to some learners. It is not appropriate for most hospital blood banks, for example, to use EIAs. However, learners should understand the principles of these assays, as well as those that they currently use, and, where possible, should have an opportunity to observe their use during a practical workshop. Similarly, Chagas disease may be unfamiliar to many learners since it does not occur in many parts of the world. However, they should find it interesting to read about it and compare it with the diseases that are prevalent in their own country. Before learners start work on the module, therefore, you should ask them to identify any sections which cover tasks that they do not perform. Discuss these before they draw up their Study Plan for Module 2.

The overall aim of this module is to ensure that learners are capable of screening blood for transfusion-transmissible infections safely and efficiently. It is therefore important to ensure that they have adequate opportunities for practical benchwork to consolidate their work on Sections 4 and 6. Supervised practice in screening for the other infectious agents covered in Section 8 should also, wherever possible, be built into their work on Module 2. This practical work can be undertaken in their own laboratories if there are adequate facilities and suitably qualified and experienced senior staff who are familiar with the learning programme. Wherever possible, however, learners should attend a short practical course or workshop in a larger institution at national or provincial level, such as the blood transfusion service or a university. As suggested in Section 5.5, practical laboratory work should focus on the
assays that learners are currently using and can take place, under close supervision, during the course of routine daily testing.

Ideally, you will be able to meet learners periodically, either on an individual or a group basis, to review their progress. However, if it is possible to organize only one meeting, this should be held after they have completed the module and have formulated their Action Plans. It will provide an opportunity not only to assess their practical skills, but also to ensure that they have fully understood the material and are using their knowledge to find ways of ensuring the quality of their own screening programmes through their Action Plans.
10

Module 3: Blood Group Serology

10.1 MODULE AIM

Patients sometimes die following a blood transfusion as a result of errors in blood grouping or compatibility testing or because blood or plasma has been selected or issued incorrectly. It is therefore essential that laboratory technical staff understand the basic scientific principles underlying their serological work, perform the tests correctly and are able to interpret the results accurately.

The aim of Module 3 is therefore to help learners to strengthen their knowledge and skills in blood group serology to ensure that donated blood issued for transfusion by their blood bank is as safe as possible for the recipients.

10.2 MODULE CONTENTS

Module 3 is divided into eight sections.

Section 1: Introduction to Module 3 outlines the contents of the module and contains activities that are designed to help learners to prepare for their work on it.

Section 2: The Components and Functions of Whole Blood describes the constituents of blood and explains their importance.

Section 3: Basic Blood Group Immunology focuses on antigens, antibodies, the antibody immune response and antigen–antibody reactions.

Section 4: The ABO Blood Group System considers the importance of the ABO blood group system in blood transfusion practice. It explains basic genetics and the inheritance of blood groups, the development of A and B red cell antigens, the subgroups of the A antigen and high-titre antibodies.

Section 5: The Rh Blood Group System considers the importance of the Rhesus (Rh) blood group system in blood transfusion practice. It explains the genetics of the Rh system, the importance of correct RhD typing and testing for the weak D (D<sup>+</sup>) antigen.

Section 6: Compatibility Testing and Issuing Blood focuses on compatibility testing and procedures for the selection and issue of blood, both routinely and in an emergency. It also deals with procedures for investigating transfusion reactions, record-keeping and managing stocks of blood and plasma.

Section 7: Techniques for Blood Grouping and Compatibility Testing focuses specifically on the main techniques used in blood grouping and compatibility testing. Instructions for performing these techniques are provided in Appendix 1.

Section 8: Action Plan is the final section in which learners are asked to review all the ideas they have included in their Action List and to prepare an Action Plan as a basis for improving working practices in their laboratory.

10.3 MODULE OBJECTIVES

There are six overall objectives for this module which specify what learners should be able to do as a result of reading the text, answering the self-assessment questions, completing the activities and preparing their individual Action Plan.
When each learner has finished working through Module 3, they should be able to achieve the following objectives:

**Section 2**
Explain the functions of the main components of blood and their importance in blood transfusion practice.

**Section 3**
Explain the red cell antigen–antibody reaction and the factors that affect it.

**Section 4**
Explain the ABO blood group system and use the results of cell and reverse ABO grouping tests to identify the blood groups of donors and patients.

**Section 5**
Explain the Rh blood group system, and identify when to use RhD positive or RhD negative blood and when to test for the weak D (Dw) antigen.

**Section 6**
Explain the importance of compatibility testing and develop and maintain appropriate procedures and records for the safe request, selection and issue of blood under routine and emergency conditions.

**Section 7**
Explain the principles of the main techniques used in blood grouping and compatibility testing and perform them safely and accurately.

### 10.4 LEARNER SUPPORT
You should attempt to meet each learner, together with their supporter or supervisor, before they begin Module 3 in order to identify their specific training needs and agree on an appropriate plan for their study. The contents of Module 3 are likely to be largely familiar to most learners and those using it primarily for refresher purposes may need to spend less time working through it than other modules in the programme. It is important, however, to ensure that they understand the scientific principles underlying their work and, in particular, that they can perform blood grouping and compatibility testing techniques safely and accurately. Some learners may be particularly interested in Section 6, which focuses on the procedures to be followed in compatibility testing, and the selection and issue of blood.

Wherever possible, individual or group meetings should be held periodically to review learners’ progress and deal with any problems that they may be facing. For example, an individual or group meeting when they have completed Section 7 would enable you to review their theoretical knowledge and understanding of the ABO and Rhesus blood group systems and their assessment of any weaknesses in the procedures currently used in their blood bank for compatibility testing and the issue of blood.

Learners will also need adequate opportunities for practical benchwork to consolidate their work on Section 7, which outlines the main techniques used in blood grouping and compatibility testing, and to ensure that they are capable of performing the techniques safely and accurately. Instructions for performing these techniques are all contained in Appendix 1. As with Module 2, learners’ practical work can be undertaken in their own laboratories if it can be supervised by suitably qualified and experienced senior staff who are familiar with the learning programme. Wherever possible, however, learners should attend a short practical course or workshop in a larger institution, such as the national blood transfusion service or a university. If this is held after they have completed Section 8 and have formulated their Action Plans, it will also provide an opportunity to ensure that their plans are appropriate and realistic and that learners are receiving the support they require from their colleagues in order to implement them.