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GLOBAL BLOOD SAFETY INITIATIVE

REPORT OF THE GBSI INFORMAL CONSULTATION ON

"ASSESSMENT OF TRAINING NEEDS IN TRANSFUSION MEDICINE"

Geneva, 17-19 April 1991

HEALTH LABORATORY TECHNOLOGY AND BLOOD SAFETY

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1. INTRODUCTION

1.1 This document is addressed to national health authorities, particularly those in developing countries, to assist them in assessing staff requirements for training needs of blood transfusion services (BTSs) systematically and appropriately. Continuous monitoring and evaluation, using the proposed guidelines, will help national authorities to meet identified needs in training and organization.

1.2 Transfusion medicine is a distinct discipline with a vital role in the health care system. It is concerned with many subjects which overlap those of other disciplines: donor motivation, recruitment, selection and retention; blood processing (including collection, testing, and preparation, storage and distribution of blood and blood products); organization and management of BTSs; and appropriate use of blood and blood products. Transfusion medicine includes the clinical and scientific background to all of these topics and therefore impinges on many areas of medical practice. Its practitioners have a variety of qualifications and experience.

1.3 Shortage of manpower has been identified as one of the major constraints in development of BTSs. This is partly due to the lack of training opportunities and partly to the lack of defined career structures and clearly defined job descriptions for professionals in transfusion medicine. Appropriate training programmes will assist in meeting manpower requirements, and in development of skills leading to improved career prospects.

1.4 The appointment of an appropriately trained and qualified person as director of the BTS will facilitate manpower development. This person should have hospital, institutional and academic recognition.

1.5 Cooperation between blood transfusion centres and hospitals enhances the safety, efficiency and effectiveness of the BTS. All transfusion service staff have a vital role to play in promoting this cooperation. The establishment of hospital transfusion committees will further facilitate communication.

2. NEED FOR TRAINING

2.1 Transfusion practice has become increasingly complex because of the increased risk of transmission of infectious agents such as human immunodeficiency viruses (HIV) and hepatitis viruses. The need for safety of blood and blood products continues to demand sound, ethical practice.

2.2 In most developing countries, blood donations are inadequate to meet the need, and this is exacerbated by advances in health care which have resulted in increased demand for blood and blood products. BTSs have difficulty in meeting these needs without appropriately trained personnel. Training programmes must be related to present and future health plans.

2.3 The rapid technological advances in transfusion practice, e.g., apheresis, fractionation and testing protocols, have created a gap between users of blood and the BTSs. Blood transfusion personnel sometimes also lack knowledge of new technologies. Continuing eduction of users and BTS staff will help to resolve these problems.

2.4 Because transfusion therapy has strong interrelationships with several other disciplines, particularly haematology and immunology, training programmes in transfusion medicine must include appropriate knowledge and skills in these subjects. However, transfusion medicine demands special training because of the multi-disciplinary nature of blood transfusion activities.

2.5 Training programmes should include the main topics outlined in Section 1.2; that is, those related to blood donations, processing of blood, organization and management of BTSs, and appropriate use of blood and blood products.

2.6 The need to provide an efficient and effective transfusion service at a regional level (within the country) may complicate the training requirement of the national BTS because:

- additional personnel may be required;
- personnel training and scheduling of courses may be more complex;
- increased numbers and variety of qualified trained personnel would be required;
- career prospects of staff must be taken into account; and
- supervisory requirements are often increased.

2.7 Well-conceived training programmes will improve

- quality, efficiency and effectiveness of the BTS;
- training and teaching activities;
- cost effectiveness in training programmes; and
- research in transfusion medicine.

Although all staff working in BTSs require general training, this document addresses itself to professional staff only.

3. MAIN PROBLEMS TO BE ADDRESSED

The main problems to be addressed in designing training programmes in transfusion medicine are:

3.1 The need to recognize that transfusion medicine is a separate discipline with its distinctive requirements and that BTSs should not be part of laboratory services. However, this should not be at the expense of recognizing the relationships of transfusion medicine with other disciplines (e.g., haematology, laboratory medicine, or immunology). It would be an advantage to combine training in appropriate aspects of related disciplines whenever possible in order to rationalize training programmes, improve efficiency and reduce costs.

3.2 The difficulty of attracting and retaining people to work in blood transfusion services. This is partly due to a lack of career structures.

3.3 Inadequate or inappropriate training facilities, including those required for specialized training, due mainly to inadequate funding.

3.4 The need to increase the awareness of administrators and trainers of the special requirements for training people to motivate, recruit and retain blood donors; the importance of quality assurance as related to transfusion medicine and practice; the necessity for continuing education; and the importance of the appropriate use of blood and blood products.

4. ASSESSMENT OF TRAINING NEEDS

The assessment of training needs includes (a) estimating the numbers of each category of staff to be trained and (b) deciding on the content of training programmes. These are based on the activities of BTSs. These vary, but are themselves based on the objectives of the BTSs:

4.1 Objectives of the national blood transfusion service

The main objective is to ensure the **adequacy, safety and effectiveness of the blood supply by developing an efficient, coordinated and cost-effective organization.** This is achieved through the following:

- **adequate management and administration;**
- **sufficient voluntary non-remunerated and regular blood donations;**
- **appropriate and adequate procedures for blood processing,** including collecting, testing, preparing, storing and distributing blood and blood products;
- **appropriate use of blood and blood products.**

4.2 Tasks required to meet these objectives:

The tasks listed in this section may be used for determining the teaching objectives, and drawing up the curriculum and teaching programme for the various categories of staff working in BTSs (see Section 5, Developing training programmes). It is acknowledged that some BTSs will not be able to undertake all of the tasks, particularly in their early stages of development. However, each BTS should try to carry out at least those which will satisfy the basic levels of operation[1].

4.2.1 Management and administration:
- policy formulation and implementation
- strategic planning and organization of the national transfusion service to include:
  - assessment of needs
  - estimates of personnel required for current and future needs
  - planning and undertaking training of staff (including continuing education)
  - management information systems
  - quality assurance
  - development of administrative structures
  - organizing adequate and sustainable funding and budgetary control of activities
  - maintenance of facilities, equipment and vehicles
  - evaluation of activities
  - research

4.2.2 Blood donation:
- motivation, recruitment, selection and retention of blood donors
- development through studies of appropriate blood donor motivation methods and materials
- development of sustainable donor recruitment approaches and community support to meet needs
- development of sustainable donor retention systems
- organization of donor record keeping
- donor care and welfare
- organization of mobile and fixed-site blood collection sessions
- community relations
- preparation of health education material to enable informed donor self-deferral
- identification of safe donors.

[1] WHO/LAB/89.5: *Minimum targets for blood transfusion services.*

4.2.3 Blood processing:

- safe blood collection including donor medical screening, predonation counselling
- testing of blood including blood group serology and tests for markers of transfusion-transmissible infections
- appropriate and safe storage and transportation of blood and blood products
- preparation of appropriate components
- preparation of quality assurance protocols and standard operating procedures for personnel, equipment, procedures and reagents
- research.

4.2.4 Appropriate blood usage:

- promotion of the national use of blood and components
- monitoring of blood usage at all levels
- monitoring of transfusion requests
- assistance in development of appropriate hospital blood transfusion protocols
- implementation of alternative programmes to homologous blood, i.e., plasma substitutes, autologous procedures
- research.

4.3 Personnel to meet specific tasks

The lists below provide examples of categories of staff who perform the tasks related to each of the main areas of activities outlined in Section 4.2. They indicate the considerable variation of their functions in different countries and with relation to the activity of BTSs.

4.3.1 Management and administration:

- administrator
- medical officer
- technical staff

4.3.2 Blood donations:

- social scientist or blood donor motivator
- personnel with training in communication skills (blood donor recruiter or organizer)
- the director and other members of the service with aptitude in communication skills.

4.3.3 Blood processing:

- medical officer
- nursing staff
- technical staff

4.3.4 Appropriate blood usage:

- medical officer
- technical staff
- hospital staff (nurse/doctor/technical staff)

4.4 Estimating staff requirements

4.4.1 Estimates of the number of each category of staff to be trained must be based on estimates of the staff required for carrying out the BTS activities. This will depend on:

- the amount of blood collected;
- the level of sophistication of the services;
- organization, function and coordination of the service at national or regional level;
- the health of blood donors, including the prevalence of infectious agents transmissible by blood;
- manpower availability in the country; and
- clinical demands reflecting health care structure and sophistication, and the health and demography of the general population.

TABLE 1

Staff requirements related to annual donations

	Number of donations per year				
Staff category	**UP TO 2000**	**UP TO 5000**	**UP TO 10000**	**UP TO 20000**	**UP TO 50000**
Medical Officer	PT	PT	1	1	1
* Nurses	1-2	1-2	2-3	3-4	5-10
* Technical Staff	1-2	2-3	3-6	6-10	10-20
Donor Recruitment/ Motivation Officer	0-1	1	1	1-2	2
Secretary	1	1	1	1-2	2-3
Administrator	PT	PT	PT or FT	1	1-2

* If night duty is required, nurses and technicians should be polyvalent, if possible.
PT= part-time; **FT**= full-time.
Source: Based on *Organization of blood transfusion services: manual for investigators and project directors. Part IV.* League of Red Cross and Red Crescent Societies, 1983, Geneva.

Hospital staff and other external health workers or community support personnel would also benefit from orientation and rotational training courses.

4.4.2 It would be useful for BTSs to draw up a plan for collecting sufficient blood to satisfy the country's needs over a period of time (e.g. 5 years), and then prepare a time-table to reach this target. This would help in forecasting the staff requirements (and, therefore, training needs) over that period.

The number of staff required will increase with increasing levels of activity but this would not be in linear proportion to the number of blood donations. Experience has shown that the ranges shown in Table 1 are adequate to meet the needs of most BTSs. It must be emphasized that the lower figure in each category in a minimum and that these figures relate to professional staff only.

5. DEVELOPING TRAINING PROGRAMMES

5.1 Overall training objectives

To provide the opportunity to trainees to acquire the appropriate knowledge, skills and attitudes to enable them to perform their tasks efficiently and competently.

To improve the quality of transfusion practice.

To provide referral services in clinical and laboratory aspects of blood transfusion practice.

To meet the specific needs of development plans for BTSs by monitoring effectiveness and appropriateness of training.

To promote research and development activities.

5.2 Designing training programmes

In developing a training programme, specific training objectives must be established first, and then the curriculum is written. The training programme is based on the curriculum. Flexibility is necessary in establishing training objectives, because they will vary between countries and according to the activities of the BTSs.

A task-oriented grid system can help in drawing up specific training objectives based on the activities of each category of staff. This is illustrated in Table 2 for a country in which the professional staff consist of medical officers, technical staff, nurses and blood donor organizers. The numbers in the table refer to levels of responsibility for performing activities and related tasks: level "1" indicates the major responsibility for performing; level "2" indicates a supporting role; and level "3" indicates responsibility common to all professional staff in the BTS, regardless of their roles.

In this example the medical officer's activities are primarily in management and administration, clinical interaction (appropriate use of blood) and some aspects of blood processing (storage, product preparation and distribution). These aspects of processing are shared with the technical staff who are, in addition, primarily responsible for laboratory testing. Nurses carry the major responsibility for collecting blood, and blood donor organizers for motivating, recruiting, selecting and retaining donors.

The specific training objectives having been formulated for each category of staff from the list of activities in Table 2, the more detailed tasks (see Section 4.2) can then be used to draw up the training curricula and programmes. As has already been pointed out, only those tasks relevant to the activities of the BTS are selected for this purpose. Appropriate weighting must be assigned for details of the topics to be covered and the length of time to be spent on each.

TABLE 2

Use of a grid system to determine training objectives

Tasks	Medical officers	Technical Staff	Nurses	Blood donor organizers
Management and administration:				
financial	1*	2	3	3
personnel	1	2	3	3
quality assurance	1	1	2	3
logistics	1	2	3	3
Blood donation:				
motivation	2	3	2	1
recruitment	2	3	2	1
selection	2	3	2	1
retention	2	3	2	1
Blood processing:				
collection	2	2	1	3
testing	2	1	3	3
storage	1	1	3	3
product preparation	1	1	3	3
distribution	1	1	3	3
Appropriate use of blood:	1	2	2	3

* Numbers refer to levels of responsibility (see text).

Regardless of their previous training and experience all staff joining the service should have a common orientation and core training programme. This would include the basic principles of management and administration, including quality assurance; the importance of blood donors and principles of donor motivation, selection and care; principles of blood processing; and the importance and principles of appropriate blood usage. All categories of staff should take the orientation together and should then have brief rotations in various departments of the service. More detailed training related to specialization and/or development of training skills in specific aspects of transfusion practice would follow, as appropriate, for each staff category. Hospital staff and other external health workers or community support personnel would also benefit from orientation and rotational training courses.

Suggested entry requirements for the various categories of staff working in BTSs are indicated in Table 3. Again it must be stressed that specific training objectives, curricula and programmes for different categories of staff will vary depending on the country and the activities of the BTS.

5.3 Types of training programmes

All training programmes have advantages and disadvantages depending on the number and type of staff to be trained, the availability and ability of trainers and the appropriateness of the facilities to the objectives of training. The objectives can be met by using a combination of training approaches which may include institutional (i.e., classroom) and in-service training, and may involve face-to-face and/or distance learning. Careful curriculum design is essential regardless of the approach used.

5.3.1 Classroom training in a institution of higher learning is necessary to provide multidisciplinary core training necessary for all staff entering the BTS regardless of their roles or responsibilities. This is appropriate for acquiring basic knowledge and basic techniques, but is usually not very effective in developing the attitudes necessary for building appropriate relationships with donors and patients. This can be achieved by combining it with in-service training.

TABLE 3

Suggested entry requirements for BTS professional personnel

Category	Entry requirements
Medical officer	Medical degree with full registration
Nurse	State registration
Technical staff	* Basic training in general clinical laboratory technology
Donor motivator	Social science qualification (e.g. health education)
Donor recruiter	Proven communication skills
Administrator	Degree or diploma in personnel management and/or accounting

* Technical aspects of laboratory medicine equipment procurement, maintenance and use, and all aspects of quality assurance.

5.3.2 The BTS itself should offer in-service training and continuing education for all staff.

In-service training is excellent for developing appropriate skills, knowledge and attitudes.

Continuing education is necessary:
- to ensure that staff members maintain contact with developments in their field
- to maintain the safety and quality of the service

- to reflect the effectiveness of training in transfusion medicine and to support its future direction.

It would include meetings, conferences, workshops, journal clubs and research.

5.3.3 Distance learning is an inexpensive, effective tool for training and for upgrading skills, but must be carefully supervised and supplemented by face-to-face workshops which will assist in evaluating progress.

5.3.4 Specialized training may be required for certain aspects of the service and would normally result in certification.

5.4 Training sites

5.4.1 Whenever possible, attempts should be made to offer training nationally. Guidelines on criteria for selection of national training centres are outlined in WHO's *Collaboration in Training in Transfusion Medicine*[2]. Priority for the type of training and categories of staff to be trained should be decided by each country according to its needs. Many countries may have to focus initially on the training of technical staff.

5.4.2 However, a major constraint in some countries is the lack of trainers and supervisors. In these cases training outside the country will be necessary. Ideally this should be offered regionally in a centre as close as possible to the trainee's country. Selected national centres may be upgraded to regional training centres to assist other countries to become self-sufficient. International support is required for this effort.

5.4.3 Whatever the type of training, the award of certificates will facilitate national and international recognition of those successfully completing courses.

5.4.4 Training programmes and trainees should be monitored and evaluated continually for effectiveness. Guidelines on protocols for measurement of personnel performance, product quality and standardization of procedures are provided in Collaboration in training in Transfusion Medicine.

6. SUMMARY OF RECOMMENDATIONS

6.1 Training in transfusion medicine should be related to present and future health plans following systematic review of the national blood transfusion service by health planners.

6.2 Training programmes in transfusion medicine must be widely based because of the strong interrelationship of several clinical disciplines.

6.3 Since multidisciplinary core training leads to better understanding of the needs and objectives of the service by all staff, such training programmes should be provided for all staff joining the service.

6.4 Training programmes must be established for donor recruitment staff in order to equip them with skills to motivate the public. Blood donor characterization studies should be carried out in order to help to plan donor motivation programmes.

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[2] WHO/LBS/92.7: *Collaboration in Training in Transfusion Medicine*.

6.5 Programmes of continuing education are necessary to:

- ensure that staff members keep up to date with developments;
- help maintain the quality of the service and the safety of transfused blood and blood products; and
- ensure sound clinical transfusion practice.

These programmes should be the direct responsibility of the transfusion service.

6.6 Measurements of personnel performance, product quality and standardization of procedures should be established in order to monitor and evaluate training.

6.7 Training centres in transfusion medicine must be adequately staffed and funded to enable them to perform their tasks satisfactorily.

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