

**The
Clinical
Use
of
Blood**

Handbook



**World Health Organization
Blood Transfusion Safety
GENEVA**

Introduction

The Clinical Use of Blood forms part of a series of learning materials developed by WHO/BTS in support of its global strategy for blood safety. It focuses on the clinical aspects of blood transfusion and aims to show how unnecessary transfusions can be reduced at all levels of the health care system in any country, without compromising standards of quality and safety.

It contains two components:

- A module of learning material designed for use in education and training programmes or for independent study by individual clinicians and blood transfusion specialists
- A pocket handbook for use in clinical practice.

The module

The module is designed for prescribers of blood at all levels of the health system, particularly clinicians and senior paramedical staff at first referral level (district hospitals) in developing countries.

It provides a comprehensive guide to the use of blood and blood products and, in particular, ways of minimizing unnecessary transfusion.

The handbook

The pocket handbook summarizes key information from the module to provide a quick reference when an urgent decision on transfusion is required.

It is important to follow national guidelines on clinical blood use if they differ in any way from the guidance contained in the module and handbook. You may therefore find it useful to add your own notes on national guidelines or your own experience in prescribing transfusion.

The evidence base for clinical practice

The Clinical Use of Blood has been prepared by an international team of clinical and blood transfusion specialists and has been extensively reviewed by relevant WHO departments and by Critical Readers from a range of clinical disciplines from all six of the WHO regions. The content

reflects the knowledge and experience of the contributors and reviewers. However, since the evidence for effective clinical practice is constantly evolving, you are encouraged to consult up-to-date sources of information such as the Cochrane Library, the National Library of Medicine database and the WHO Reproductive Health Library.

The Cochrane Library. Systematic reviews of the effects of health care interventions, available on diskette, CD-ROM and via the Internet. There are Cochrane Centres in Africa, Asia, Australasia, Europe, North America and South America. For information, contact: UK Cochrane Centre, NHS Research and Development Programme, Summertown Pavilion, Middle Way, Oxford OX2 7LG, UK. Tel: +44 1865 516300. Fax: +44 1865 516311. www.cochrane.org

National Library of Medicine. An online biomedical library, including *Medline* which contains references and abstracts from 4300 biomedical journals and *Clinical Trials* which provides information on clinical research studies. National Library of Medicine, 8600 Rockville Pike, Bethesda, MD 20894, USA. www.nlm.nih.gov

WHO Reproductive Health Library. An electronic review journal focusing on evidence-based solutions to reproductive health problems in developing countries. Available on CD-ROM from Reproductive Health and Research, World Health Organization, 1211 Geneva 27, Switzerland. www.who.int

The appropriate use of blood and blood products

Key points

- 1 The appropriate use of blood and blood products means the transfusion of safe blood products only to treat a condition leading to significant morbidity or mortality that cannot be prevented or managed effectively by other means.**
- 2 Transfusion carries the risk of adverse reactions and transfusion-transmissible infections. Plasma can transmit most of the infections present in whole blood and there are very few indications for its transfusion.**
- 3 Blood donated by family/replacement donors carries a higher risk of transfusion-transmissible infections than blood donated by voluntary non-remunerated donors. Paid blood donors generally have the highest incidence and prevalence of transfusion-transmissible infections.**
- 4 Blood should not be transfused unless it has been obtained from appropriately selected donors, has been screened for transfusion-transmissible infections and tested for compatibility between the donor's red cells and the antibodies in the patient's plasma, in accordance with national requirements.**
- 5 The need for transfusion can often be avoided by:**
 - The prevention or early diagnosis and treatment of anaemia and conditions that cause anaemia**
 - The correction of anaemia and the replacement of depleted iron stores before planned surgery**
 - The use of simple alternatives to transfusion, such as intravenous replacement fluids**
 - Good anaesthetic and surgical management.**

Appropriate and inappropriate transfusion

Blood transfusion can be a life-saving intervention. However, like all treatments, it may result in acute or delayed complications and carries the risk of transfusion-transmissible infections, including HIV, hepatitis viruses, syphilis, malaria and Chagas disease.

The safety and effectiveness of transfusion depend on two key factors:

- A supply of blood and blood products that are safe, accessible at reasonable cost and adequate to meet national needs
- The appropriate clinical use of blood and blood products.

Transfusion is often unnecessary for the following reasons.

- 1 The need for transfusion can often be avoided or minimized by the prevention or early diagnosis and treatment of anaemia and conditions that cause anaemia.
- 2 Blood is often unnecessarily given to raise a patient's haemoglobin level before surgery or to allow earlier discharge from hospital. These are rarely valid reasons for transfusion.
- 3 Transfusions of whole blood, red cells or plasma are often given when other treatments, such as the infusion of normal saline or other intravenous replacement fluids would be safer, less expensive and equally effective for the treatment of acute blood loss.
- 4 Patients' transfusion requirements can often be minimized by good anaesthetic and surgical management.
- 5 If blood is given when it is not needed, the patient receives no benefit and is exposed to unnecessary risk.
- 6 Blood is an expensive, scarce resource. Unnecessary transfusions may cause a shortage of blood products for patients in real need.

The risks of transfusion

In some clinical situations, transfusion may be the only way to save life or rapidly improve a serious condition. However, before prescribing blood or blood products for a patient, it is always essential to weigh up the risks of transfusion against the risks of not transfusing.

Red cell transfusion

- 1 The transfusion of red cell products carries a risk of serious haemolytic transfusion reactions.
- 2 Blood products can transmit infectious agents, including HIV, hepatitis B, hepatitis C, syphilis, malaria and Chagas disease to the recipient.
- 3 Any blood product can become contaminated with bacteria and very dangerous if it is manufactured or stored incorrectly.

Plasma transfusion

- 1 Plasma can transmit most of the infections present in whole blood.
- 2 Plasma can also cause transfusion reactions.
- 3 There are few clear clinical indications for plasma transfusion. The risks very often outweigh any possible benefit to the patient.

Blood safety

The quality and safety of all blood and blood products must be assured throughout the process from the selection of blood donors through to their administration to the patient. This requires:

- 1 The establishment of a well-organized blood transfusion service with quality systems in all areas.
- 2 The collection of blood only from voluntary non-remunerated donors from low-risk populations and rigorous procedures for donor selection.
- 3 The screening of all donated blood for transfusion-transmissible infections: HIV, hepatitis viruses, syphilis and, where appropriate, other infectious agents, such as Chagas disease and malaria.
- 4 Good laboratory practice in all aspects of blood grouping, compatibility testing, component preparation and the storage and transportation of blood and blood products.
- 5 A reduction in unnecessary transfusions through the appropriate clinical use of blood and blood products, and the use of simple alternatives to transfusion, wherever possible.

Other than in the most exceptional life-threatening situations, blood should not be issued for transfusion unless it has been obtained from appropriately selected donors and has been screened for transfusion-transmissible infections, in accordance with national requirements.

Whatever the local system for the collection, screening and processing of blood, clinicians must be familiar with it and understand any limitations that it may impose on the safety or availability of blood.

Principles of clinical transfusion practice

Transfusion is only one part of the patient's management. The need for transfusion can often be minimized by the following means.

- 1 The prevention or early diagnosis and treatment of anaemia and the conditions that cause anaemia. The patient's haemoglobin level can often be raised by iron and vitamin supplementation without the need for transfusion. Red cell transfusion is needed only if the effects of chronic anaemia are severe enough to require rapid raising of the haemoglobin level.
- 2 The correction of anaemia and replacement of depleted iron stores before planned surgery.
- 3 The use of intravenous fluid replacement with crystalloids or colloids in cases of acute blood loss.
- 4 Good anaesthetic and surgical management, including:
 - Using the best anaesthetic and surgical techniques to minimize blood loss during surgery
 - Stopping anticoagulants and anti-platelet drugs before planned surgery, where it is safe to do so
 - Minimizing the blood taken for laboratory use, particularly in children
 - Salvaging and reinfusing surgical blood losses
 - Using alternative approaches such as desmopressin, aprotinin or erythropoietin.

PRINCIPLES OF CLINICAL TRANSFUSION PRACTICE

- 1 Transfusion is only one part of the patient's management.
- 2 Prescribing should be based on national guidelines on the clinical use of blood, taking individual patient needs into account.
- 3 Blood loss should be minimized to reduce the patient's need for transfusion.
- 4 The patient with acute blood loss should receive effective resuscitation (intravenous replacement fluids, oxygen, etc.) while the need for transfusion is being assessed.
- 5 The patient's haemoglobin value, although important, should not be the sole deciding factor in starting transfusion. This decision should be supported by the need to relieve clinical signs and symptoms and prevent significant morbidity or mortality.
- 6 The clinician should be aware of the risks of transfusion-transmissible infections in the blood products that are available for the individual patient.
- 7 Transfusion should be prescribed only when the benefits to the patient are likely to outweigh the risks.
- 8 The clinician should record the reason for transfusion clearly.
- 9 A trained person should monitor the transfused patient and respond immediately if any adverse effects occur.

预览已结束，完整报告链接和二维码

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