A new WHO initiative

Assuring safety and availability of blood products in developing countries

An Essential Element of a Public Health System

The 'Achilles' Project

Medicinal products derived from human donations of blood and plasma play a critical role in health care. Blood-derived medicinal products, such as blood clotting factors and human immunoglobulins (polyvalent and specific) are included in the *WHO Model List of Essential Medicines*[1] reflecting the international recognition by health care systems and patient organizations of their importance in treating congenital and acquired life-threatening diseases like bleeding, trauma or immune diseases.

During the last three decades, the transmission of infectious diseases by blood (notably HIV and hepatitis) has demonstrated the crucial importance of modern quality systems and effective regulation in a) the preparation of plasma as a raw material (plasma for fractionation) for the manufacture of medicinal products and b) in the supply of other blood components such as platelets and red cells.

Following the introduction of improved methods for blood/plasma donation screening and processing, GMP principles and associated regulation, the quality and safety of blood and plasma collected in developed countries has dramatically improved. In contrast, comparable levels of quality, safety and availability do not yet exist in most developing countries where plasma potentially available for manufacture does not meet necessary quality standards for manufacture and as a result is destroyed. Therefore, patients in those countries either do not have access to these essential medicines or at best continue to be exposed to the risk of transfusion-transmitted infections as well as a variety of severe adverse events related to transfusion.

This new WHO initiative aims to lay the foundations for an international resource which will enable developing countries to take an active role in providing an affordable and sustainable supply of essential, high quality blood derived medicines to their populations. The increasing international demand in developed countries and high cost of these products together with limited opportunities to increase plasma supply for their manufacture will continue to place them beyond the reach of most developing countries

The safety and quality of such products (e.g. the widespread transmission of HIV and HCV) has, in the past, been the '*Achilles Heel'* of transfusion services and associated industries in the developed world. In the absence of international support and action, there is a continued risk of similar outcomes in developing countries.

PROJECT GOALS

This project seeks to increase the availability of safe blood derived products for developing countries by supporting their implementation of national validated quality and safety standards for blood establishments using the expertise and experience available from developed countries. Specifically, the goal is to raise the manufacturing activities of blood establishments to international standards by adapting the principles of an existing WHO prequalification system for medicines to the production of human plasma for fractionation.

[1] The *List* identifies individual medicines that together could provide safe effective treatment for the majority of communicable and non-communicable diseases.

Plasma collected in 'prequalified' blood establishments would be suitable for processing elsewhere into plasma derived medicinal products for return to the country of origin. Countries participating in this process would be in a position to achieve an affordable and sustainable supply of safe products.

Internationally-agreed WHO guidelines will be developed for implementing good manufacturing practices (GMP) in the preparation of blood components. These will be used as standards for prequalification together with the WHO Recommendations for the production, control and regulation of blood plasma for fractionation, recently adopted by the WHO Expert Committee on Biological Standardization[2]. .

WHO ACTION PLANS

WHO is uniquely placed to coordinate the necessary international expertise from blood establishments, industry and experienced regulatory authorities to achieve the above goals. The WHO Department of Medicines, Policies and Standards will lead and coordinate the following actions with the collaboration of WHO Collaborating Centers, international experts in preparation of blood components and plasma products manufacturing, international scientific organizations such as ISBT and the WHO Blood Regulators Network. The key actions will be:

1. Development of comprehensive guidelines to support training and inspection activities.
2. Upgrading quality assurance systems and regulatory expertise initially in two pilot countries.
3. Organise inter-regional training seminars for blood establishments and regulatory authorities covering safety, quality and GMP for the production of plasma for fractionation.
4. Development of specific and measurable health care outcomes to monitor success and progress e.g. plasma available, reduction in infectious disease markers in blood donors, decrease in GMP errors and economic benefit.

The project will be conducted as a pilot in two selected countries. A successful outcome will provide the resources, materials, experience and infrastructure necessary for subsequent wider international application. There are no other alternative strategies to meet developing countries needs for this important group of essential medicines.

OUTCOMES

The project will deliver the following specific and wider public health benefits:
a) Sustainable and affordable supply of safe essential products in developing countries for the treatment of congenital diseases, trauma and immunological mediated conditions;
b) Optimal use and benefit from donated blood plasma;
c) Reduction of infectious disease transmission via blood-borne pathogens, both within countries and across national borders;
d) Improved quality and safety of all products from blood establishments through the enforcement of national (and international) quality assurance regulations;
e) Substantial contribution to national/ regional public health programmes through e.g. improved population epidemiology of infectious diseases (HIV, hepatitis B and C etc.), prevention and control of disease transmission, blood donor health monitoring (anaemia, hypertension etc.)
f) Comprehensive and achievable set of internationally agreed upon standards for blood establishments
g) Potential application of quality systems and GMP principles to other medical laboratory disciplines
h) Involvement of developing countries in international transfusion community and associated industries.

SCOPE

The project will be conducted as a demonstration project in two selected countries.

[2] WHO Technical Reports Series No 491: Annex 4