AN OVERVIEW ANALYSIS OF BLOOD DONATION IN THE ISLAMIC REPUBLIC OF IRAN

Mahmood Mahmoodian-Shooshtari PhD*, Aliakbar Pourfathollah PhD**

Introduction

This article provides an update on the current status of blood supply in Iran. Iran is a large country with an area of over 1,648,000 km². It is comprised of 28 provinces, 282 districts, 724 cities, 742 towns, and over 2260 villages. The population is estimated to be more than 67 million, with 50.4% under the age of 19 years, and 4.4% over 65 years. The population growth rate is 1.41%. The safety and adequacy of blood supply depend on the commitment of each national health authority to the establishment of a well organized, nationally coordinated blood donation program. This requires the official recognition of a specific organization with the sole responsibility of blood transfusion services, an adequate budget, and a national blood policy and plan supported by a legislative and regulatory framework that governs all activities.

The Iranian Blood Transfusion Organization (IBTO) was established in May 1974 and is a nonprofit organization, attached to the Ministry of Health and Medical Education. From the onset, its mission has been to ensure effective and safe transfusion therapy throughout the country, with the objective of reaching the national self-sufficiency level. It is governed by a Supreme Council, which is comprised of five experts in hematology and related fields, appointed by the Minister of Health. The managing director, elected by the Supreme Council, ensures the proper implementation of the latter decisions. The financial resources of the IBTO are covered by the budget allotted to the IBTO by the government, as well as financial supports received from public and legal entities.

IBTO is comprised of 30 functional regional centers distributed as a network across the country, active in donor recruitment, blood collection, component preparation, blood screening, storage, and distribution. Nine of the said centers are “educational,” and active in the field of education, research, and training of transfusion medicine, in addition to their routine activities.

IBTO is responsible for establishing the National Blood Program, supported by the government. Blood collection is anticipated to come from voluntary, nonpaid basis and self-sufficiency is aimed at the provincial level. One of the key elements in donor screening is proper evaluation of donor’s medical history. The medical history is designed to identify potential donors, who are engaged in behaviors that put them in the high-risk category. Before dispatching, every single unit of blood is tested according to the set standards to maximize safety of the blood. The aim of this study is to report on the activities of IBTO during one year.

Materials and Methods

In a period of 12 months, from March 21, 2003 through March 20, 2004, a total of 1,761,514 blood donors were registered in 28 provinces throughout the country. Based on a standardized questionnaire consisting of 42 items including a medical history data were collected and analyzed for these donors.

Results

Two hundred thirty-three thousand and two hundred thirty-three (13%) of 1,761,514 applicant donors were rejected. The most frequent reasons for deferral were high/low blood pressure, consumption of medicines, cold-sore throat, and...
anemia. Figure 1 shows the number of blood donations in each province throughout the country. Of the 1,489,935 donations, 1,415,438 units (95%) were voluntary donations and 74,496 (5%) were from the patient’s family members (replacement donors) (no paid donors were among all). Eighty-seven percent of all donors were males and 13% were females. Forty-three percent of donors were repeated and 57% were first donors. The prevalence of antihepatitis C virus (HCV), antihuman immunodeficiency virus (HIV), and hepatitis B surface antigen (HBsAg) among all donors, was 0.065%, 0.014%, and 0.8%, respectively.

Figure 2 demonstrates the number of blood components prepared from whole blood. The percentage of products transfused as “whole blood” was <10%. Moreover, the blood donation rate was almost 22.05 units per 1000 population.

**Discussion**

The system of donor motivation is based on the participation of people in providing an entirely voluntary and nonremunerated blood donation. It is recognized that recruitment and retention of nonremunerated voluntary blood donors are the key to a safe and sufficient blood supply, which is essential to establishing an effective modern health care. Volunteers, altruistic blood donors, provide the safest blood supply. However, replacement and even paid donors are still recruited in some countries for provision of fractionated blood products or even for individual blood components. In countries with low and medium human development index (HDI), <40% of blood donations are from nonremunerated voluntary blood donors. In contrast, 95% of donations in Iran were from nonremunerated voluntary blood donors, showing that an appropriate implementation is at work. It seems that the rate of blood deferral (13%) is very high in Iran. For reduction of this rate, it is imperative to consider the main causes, which are in most instances temporary, and choose the best way to resolve them.

Surveys of viral markers in the donor population from well-developed blood systems demonstrate that donor selection procedures result in marker prevalence and incidences, which are significantly lower than that of the general population. Furthermore, lower rates in repeated donors attest to the efficiency of the selection and screening process.

In Iran, only 43% of all donors were repeated donors, whereas in most European countries more than 90% of blood donations are provided by repeated donors. At the time of this study, the prevalence of HIV, HBV, and HCV did not exist in the data provided among first time and/or repeated donors by IBTO. However, the prevalence of anti-HCV, anti-HIV, and HBsAg, among all donors was 0.065%, 0.014%, and 0.8%, respectively. It seems that the prevalence of viral markers in the donor population are quite different from that of the general population, although there is no reliable data available in the general population. There are
An overview analysis of blood donation in Iran

Donors are a selected population at low risk of infectious diseases due to public education, donor clinic information, and donor health assessment. In addition, there exists a systematic serologic screening of every donor deemed eligible that allows a complete enumeration of rates among donors.

Monitoring of posttransfusion reactions is an important part of hemovigilance. Hemovigilance is defined by the Council of Europe as the detection, gathering, and analysis of information regarding untoward and unexpected effects of blood transfusion. It is not only a surveillance system monitoring the patients at bedside, but comprises all the steps in the transfusion chain—from blood donors to patients.

Unfortunately, in Iran a good documentation and systematic process of hemovigilance has not been implemented yet. Fortunately, in recent years positive steps have been taken to implement a comprehensive process of hemovigilance system throughout the country.

In Norway, at the Blood Bank of Oslo, the majority of repeated donors receive an appointment to donate through ordinary mail. The donors are requested to rebook or cancel, if they are unable to donate at the proposed time. Some overbooking is necessary to achieve a reasonable level of activity. However, large variations in donor arrival occur, leading to periods of low and periods of extreme activity with correspondingly unacceptable waiting times for the donors.

In Iran, people are becoming more aware of blood donation. The trend is to give them more information about blood donation, screening of donors, collection of blood, postdonation care, and use of blood and blood products. The core verbal and visual messages about donation, which form the basis of an integrated communication strategy, are central to both recruitment and retention. These could be adapted for use in posters, talks, interviews, and all the usual communication tactics.

Effective clinical transfusion practice requires that the whole blood is separated into its various components, so that the right component is available for the right patient. The availability and use of blood components is limited in many low- and medium-HDI countries, often as a result of a lack of organization, a poor infrastructure, and a low level of awareness about the appropriate clinical use of blood. The use of whole blood is ten times higher in low- and medium-HDI countries than in developed nations. In Iran, analysis of the use of whole blood shows that the percentage of blood transfused as “whole blood” is <10% (Figure 2).

Globally, the blood donation rate in developed countries (high HDI) is almost 20 times (41 – 50 units/1000 population) higher than that in countries with a low HDI (0 – 10 units/1000 population). In Iran, the blood donation rate is almost 22 units/1000 population. However, at the present time, this is pretty sufficient to prepare enough blood for patients in need of labile blood components.
In conclusion, strategies for improving the overall quality, efficiency, and safety of laboratory operation; recruitment and retention of voluntary donors on constantly reminding people about the need for blood donors; reassuring people about their fears and doubts; and rewarding them by excellent service, when they make their donation, should be planned on a national and/or regional level.

Acknowledgment
We would like to thank all participants of this survey. The IBTO centers in 28 provinces: Tehran, Fars, Khoozestan, Khorasan, Isfahan, Sistan and Balouchestan, Gilan, Kerman, East Azarbaijan, Golestan, Kermanshah, Hormozgan, West Azarbaijan, Yazd, Markazi, Lorestan, Semnan, Hamadan, Ghazvin, Kordestan, Booshehr, Chaharmahal and Bakhtiyari, Ghom, Ardabil, Zanjan, Ilam, and Kohkilooieh and Boyerahmad are also acknowledged. We gratefully acknowledge Dr. Maghsoudlu for advising on blood donation analysis and Mr. Mostafa Moghadam for his helpful comments and continual guidance on the work.

References