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Teaching transfusion medicine: current situation and proposals for proper medical training



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ABSTRACT

The current curricula in medical schools and hospital residence worldwide lack exposure to blood transfusion medicine, and require the reformulation of academic programs. In many countries, training in blood transfusion is not currently offered to medical students or during residency. Clinical evidence indicates that blood transfusions occur more frequently than recommended, contributing to increased risk due to this procedure. Therefore, the rational use of blood and its components is essential, due to the frequent undesirable reactions, to the increasing demand of blood products and the cost of the process. Significant improvements in knowledge of and skills in transfusion medicine are needed by both students and residents. Improvements are needed in both background knowledge and the practical application of this knowledge to improve safety. Studies prove that hemovigilance has an impact on transfusion safety and helps to prevent the occurrence of transfusion-related adverse effects. To ensure that all these aspects of blood transfusion are being properly addressed, many countries have instituted hospital transfusion committees. From this perspective, the interventions performed during the formation of medical students and residents, even the simplest, have proven effective in the acquisition of knowledge and medical training, thereby leading to a reduction in inappropriate use of blood. Therefore, we would like to emphasize the importance of the exposure of medical students and residents to blood services and transfusion medicine in order for them to acquire adequate medical training, as well as to discuss some changes in the current medical curricula regarding transfusion medicine that we judge critical.

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Introduction

The inadequacy of the current medical curricula in blood transfusion in Brazil makes it necessary to recast the academic

programs of medical graduation and residence. In the majority of countries, training in blood transfusion is not currently offered to medical students or residents, and thus curriculum teaching is poor in this area.¹ The optimal clinical use of blood and blood products requires profound theoretical

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and practical knowledge of transfusion medicine. While the importance of a continuous knowledge transfer in transfusion medicine is well recognized, less is known about the character and scope of education provided to medical students and residents.² Despite major advances in different medical disciplines and the application of modern specialized therapeutic methods, transfusion medicine is still traditionally practiced by non-specialized medical practitioners, who are unaware of the numerous advances in transfusion medicine.¹

The lack of knowledge in blood transfusion can reduce transfusion safety and cause significant harm to the patient. Thus, competent performance becomes an essential requirement in transfusion medicine, preventing possible complications and transfusion reactions.³ Transfusions are becoming increasingly important in medical treatments nowadays. The awareness that these procedures have an inherent risk, makes it necessary to keep a watchful eye on the quality of transfused blood. This is directly linked to the standards of quality of the blood provider, which starts with the recruitment of blood donor candidates, a fact that many physicians are unaware of. Of utmost importance is a full understanding of the correct indications of blood components, which is the initial step in increasing transfusion safety. "Muse before you transfuse" is a rule that all potential transfusers should utilize (J.P. Isbster, personal communication).

Considering that a large number of medical students and residents will be involved in the course of their practice, whether be it medical or surgical, with health services where the prescription of blood components and derivatives is necessary, it is mandatory to have appropriate and solid knowledge through theoretical and practical training. This training must aim to enable a correct prescription and use of blood products. However, at present a considerable number of young physicians are unaware of the importance of blood use, and lack the knowledge on the indications and hazards of the use of blood products, despite medical education programs that are increasingly looking to train general professionals, who should be able to aptly prescribe blood components.

The prescription of blood components mobilizes a complex structure through a cyclical process that starts with the awareness of the population regarding blood donation, which comprises the selection of adequate candidates to donate and ends with the processing and adequate storage of the blood component.

This precious and expensive product will ideally later be made available to the patient in need of a blood transfusion through a precise indication and with adequate support during the procedure. For this to be accomplished, it is necessary to invest in the medical training of both the general practitioner and the specialist who, in Brazil today, do not receive training in their graduation and residence programs.

We would like to discuss some changes in the current medical curriculum regarding transfusion medicine that we judge critical and analyze some information on the educational practice in transfusion medicine throughout the world, with particular emphasis on the education and training of medical students and residents.

Educational practice in transfusion medicine in the world

In Australia, medical student education is primarily the responsibility of universities and their associated teaching hospitals. Different structures exist at various universities, with some offering undergraduate and others postgraduate medical school programs. The content, amount and timing of transfusion teaching vary greatly between medical schools. Some programs include transfusion content from the first year of training, while others only include it at later stages. The education mainly consists of lectures and tutorials with great diversity between institutions with regard to practical vs. didactic teaching methods. Medical resident teaching is provided largely by the academic teaching hospitals. There is again considerable variation between institutions as to the timing, content and emphasis placed on teaching transfusion medicine. Most will include transfusion as part of the intern education program; however, the extent and content of teaching in this area varies greatly. There is currently no national, standardized curriculum in transfusion for all medical students or residents. University teaching hospitals set their own curricula, and the relevant staff at individual training hospitals determines the content of local transfusion teaching to junior resident staff. Some Australian states require completion of a transfusion module before or during internship or residency in their public hospitals. Completion of these courses, however, is not required for medical school graduation or medical registration.²

In Brazil we have a common hematology and transfusion medicine (called *hemotherapy*) residence program in the country; the latter accounts for approximately 30% of a minimum 2-year program. Some private hospitals maintain a residence program and then the blood transfusion service is responsible to provide adequate training and education on the clinical aspects concerning patient blood management for all residents during their training. The educational program may include lectures and practical activities covering the basic blood cycle (recruitment, collection, processing of blood components, storage, pre-transfusional tests, prescription of blood components and transfusional reaction management), therapeutic aphaeresis; platelet refractoriness management (clinical and laboratory), blood transfusion in intensive care unit; maximum blood surgery ordering schedule (MBSOS); autologous blood transfusion (mainly intra-operative salvage); infectious marker donor counseling, etc. In addition, residents follow the permanent blood transfusion service medical staff in their daily activities, which allows them to see the medical problems that occur in hospitals.²

In France, blood transfusion is not a full university discipline. Some French medical schools have university professors specialized in transfusion, who provide their courses to medical students. In other medical schools, hematologists teach transfusion, but the number of hours is often low. Residents specializing in transfusion can do internships in blood banks, but there are very few of them. The curriculum varies in each Hospital-University Center for both medical students and residents, but the French Society of Blood Transfusion (SFTS) regularly updates a standard curriculum. The organization

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