Patient Blood Management in Italy

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In line with Resolution WHA63.12 of 21/05/2010 from the World Health Organization[1], the Italian National Blood Centre has promoted an initiative aimed at systematising innovative and more effective methods and instruments for ensuring appropriate organisational and clinical management of blood use. This initiative is a ground-breaking multiprofessional, multidisciplinary and multimodal project encapsulated by the term Patient Blood Management (PBM). This strategy was already provided for in the 2012 plan for regional and national self-sufficiency in blood and blood products[2], in which the definition and implementation of "innovative and more effective methods and instruments to guarantee the appropriateness of the organisational and clinical management of blood" were promoted.

PBM combines several objectives - improving the outcome of patients and lowering costs - based not on allogeneic blood but on the patient's own haematological resources.

During 2013 the National Blood Centre, through the activation of a technical-scientific partnership with the Italian Society of Transfusion Medicine and Immunohaematology (SIMTI, *Società Italiana di Medicina Trasfusionale e Immunoematologia*) in relation to medical and surgical diagnostic-therapeutic pathways with the greatest impact on transfusion medicine, launched a national project to promote the first pilot application of PBM, in 2014-2015, in major elective orthopaedic surgery in adults.

The project was started with the establishment of a multidisciplinary working group, co-ordinated by the National Blood Centre. The working group was given the mandate to identify, within the context of the three "pillars" of PBM[3], the pharmacological and non-pharmacological strategies and techniques able to reduce the use of allogeneic blood transfusion and the supporting scientific evidence, initially in adult patients who are candidates for major elective orthopaedic surgery and, subsequently in patients from other medical and surgical fields. The recommendations produced by the working group ("Recommendations for the implementation of a Patient Blood Management programme - Application to major elective orthopaedic surgery in adults")[4] deal with all the strategies included in the three pillar of PBM[3] and were produced by the combined work of experts from the National Blood Centre and five scientific societies: SIMTI, the Italian Society of Anaesthesia, Analgesia, Resuscitation and Intensive Care (SIAARTI, *Società Italiana di Anestesia Analgesia Rianimazione e Terapia Intensiva*), the National Association of Medical Hospital Managers (ANMDO, *Associazione Nazionale dei Medici delle Direzioni Ospedaliere*), the Italian Society for the Study of Haemostasis and Thrombosis (SISET, *Società Italiana Studio Emostasi e Trombosi*) and the Italian Society of Orthopaedics and Traumatology (SIOT, *Società Italiana di Ortopedia e Traumatologia*).

Between 20-40% of patients who are candidates for major joint replacement surgery (hip or knee) have pre-operative anaemia[5]. Failure to treat these patients, with the intention of obviating avoidable transfusions, is equivalent to providing sub-optimal healthcare because it is known that pre-operative anaemia is a strong enhancer of morbidity and mortality and is a contraindication to performing elective surgery in which there is a substantial risk of bleeding[6].

Elective joint surgery is very common in the general, adult population. In the USA, each year more than 300,000 people undergo hip replacement surgery and, in the decade from 2000 to 2010, the number of total hip replacements in patients over 45 years old increased from 138,700 to 310,800, that is, from 142.2 to 257 per 100,000 population[7]. In 2009, again in the USA, 619,000 knee replacements were performed; from 2009 to 2010 the number of these operations increased by 6.1%, with parallel increases in related health costs[8]. In Sweden, it is estimated that the incidence of hip replacements in 2020 will be 341 per 100,000 population over the age of 40 years and will reach 358 in 2030[9]. In France, every year, over 250,000 hip and knee replacement operations are performed[10]. Likewise, in Italy, more than 160,000 arthroplasties are performed each year in 750 hospitals, with a mean increase of about 5% and an estimated cost of about one milliard Euros only for the surgical DRG (Diagnosis-Related Group). Although in absolute terms fewer knee replacement operations (over 60,000 in 2010) are performed than hip replacements (over 90,000 in 2010), the incidence of the former is increasing

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more rapidly (mean annual increase of 8.9% for knee replacement versus 2.6% for hip replacements)[11-13].

The implementation of multidisciplinary, diagnostic-therapeutic care pathways aimed at applying PBM strategies in elective joint replacement surgery, ideally also through the identification of specifically dedicated nursing staff[14], will circumvent or minimise the transfusion of allogeneic blood, guaranteeing all patients a better outcome as a result of a set of different, personalised intercessions.

A parallel, significant restriction of healthcare costs is also predicted. Indeed, the great interest currently been shown in PBM, not only in North America, has firm financial roots. In this respect, according to a recent report from a Chicago-based healthcare analysis company, the "Huron Healthcare Consulting Group", PBM is one of the ten "overlooked opportunities" that could enable healthcare systems to improve the quality of their performance considerably while reducing the cost of blood use by 10-20%, precisely through better management of this resource[15].

Transfusion therapy is one of the most frequently abused treatments and has a massive financial impact, in the order of milliards of dollars in the USA[16]; in fact, the overall cost of this treatment exceeds 400 Euros for each unit actually transfused[17], as concordantly demonstrated by various studies, carried out in both the USA and Europe, which have analysed, albeit with different methodologies, the costs of the whole process of delivering transfusion therapy[18,19].

In this context, the multidisciplinary recommendations for the implementation of PBM in elective orthopaedic surgery[4] are a useful instrument for healthcare staff and management in public and private structures, supporting the provision of cost-effective therapeutic services, compliant with high standards of care, aimed at preventing avoidable transfusions and ensuring better outcomes for patients.

The Authors declare no conflict of interest.

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