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TRANSFUSION
CLINIQUE ET BIOLOGIQUE

Transfusion Clinique et Biologique 22 (2015) 1–4

Original article

Improving blood transfusion practice by educational emphasis of the Blood Utilization Committee: Experience of one hospital

Amélioration des pratiques transfusionnelles consécutive au renforcement du Comité de sécurité transfusionnelle : bilan de l'expérience d'un établissement de santé

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Abstract

Aim. – The aim of this study was to reduce crossmatch to transfusion ratio through development of a new Blood Utilization Committee.

Background. – Blood utilization hinges on the cooperation between transfusion services, medical staff, nursing and administration. Transfusion committees have attempted to bring about better oversight and bridge the gap between departments but in our institution this did not work until we had a catalyst to drive the effort. The unabashed desire and enthusiasm of one of our cardiac surgeons for self-improvement led to the formation of a new Blood Utilization Committee in October of 2012.

Study design and methods. – Crossmatch and transfusion data were gathered from our blood bank information system starting with the 4th quarter of 2011 through the 1st quarter of 2013. The crossmatch to transfusion ratio (C:T) was calculated and comparisons were made between the results from before and after the initiation of the committee.

Results. – At the commencement of the committee the initial C:T for the cardiac team was 2.48. We calculated a decrease of the C:T to 1.5 four months after the November 2012 formation of the new committee. The *P*-value calculated ($P < 0.0005$) proved that the decrease was statistically significant.

Conclusion. – The initial impulse generated by the cardiothoracic surgery team is now spreading to other DRG groups in our hospital and we are seeing a drop in their C:T as well. Better blood utilization is attainable when the physicians who perform most transfusions lead the charge.

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Keywords: Hemosiderosis; Iron overload; Transfusion; Hemovigilance

Résumé

Objectif. – L'objectif de cette étude était de réduire le ratio « nombre d'unités de sang compatibilisées/nombre d'unités de sang transfusées » (C/T) grâce à la formation d'un nouveau Comité de sécurité transfusionnelle.

Contexte. – L'utilisation des produits sanguins repose sur l'articulation entre les services transfusionnels, les équipes médicales et infirmières, et l'administration. Les comités de sécurité transfusionnelle essaient d'avoir la meilleure analyse de cette articulation et d'en réduire les dysfonctionnements. Ceci n'a pas bien fonctionné dans notre établissement jusqu'à l'arrivée d'un nouveau catalyseur. L'enthousiasme et la persévérance à progresser d'un de nos chirurgiens cardiaques ont conduit à la refonte du Comité de sécurité transfusionnelle en octobre 2012.

Matériel et méthodes. – Les données sur les épreuves de compatibilité et les produits transfusés ont été extraites de l'informatique transfusionnelle pour la période allant du quatrième trimestre 2011 au premier trimestre 2013. Le ratio C/T a été calculé et comparé pour les périodes avant et après l'initiation du nouveau comité.

Résultats. – Au démarrage du nouveau comité, le ratio C/T initial du service de cardiologie était de 2,48. Ce ratio a ensuite baissé pour atteindre 1,5 quatre mois après la mise en route du nouveau comité en novembre 2012. Ce recul est statistiquement significatif ($p < 0,0005$).

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Conclusion. – L'élan impulsé par l'équipe de chirurgie cardiothoracique est désormais en train de s'étendre aux autres départements cliniques de notre établissement, où l'on observe aussi un recul du ratio C/T. Une meilleure utilisation des produits sanguins est possible dès lors que les prescripteurs qui transfusent le plus s'emparent de cet objectif.

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Mots clés : Ratio sang compatibilisé/sang transfusé ; Utilisation des produits sanguins ; Audit des pratiques transfusionnelles

1. Introduction

Blood transfusion can be a life-saving procedure, however, it is not entirely risk-free. The threat of contracting transfusion-transmitted diseases including but not limited to hepatitis B and C, and human immunodeficiency virus remains a concern. Additionally, the patient may also be at risk for incompatible transfusions due to red cell antibodies, mis-transfusions, and various other transfusion related reactions. Health issues are not the only concern for patients but the monetary costs of transfusions should also be kept in mind. Therefore, it is imperative to keep usage of the blood products to a minimum by transfusing only when absolutely necessary.

C:T is the ratio of crossmatched units to the number of transfused units of blood. It provides an estimate of the number of unnecessary crossmatches that are being performed [1]. A C:T greater than 2.5 is an indicator of poor blood utilization [2]. Unwarranted crossmatching can result in excessive costs for the transfusion services and increased blood wastage as the inventory becomes more difficult to manage [3]. Currently many hospitals aim for a C:T of less than 2 as a marker of good clinical assessment and practice [4]. This ratio is used as evidence of appropriate clinical judgment when requesting crossmatches.

AABB standards and the Code of Federal Regulations expect hospitals to review blood transfusion practices and outcomes. These reviews become important when qualifying for Medicare/and Medicaid reimbursement [5]. A Blood Utilization Committee may be created by hospitals for the purpose of providing an oversight of blood usage. The organizational structure of the committee can vary from institution to institution.

In 2003, our institutional transfusion guidelines were introduced to our hospital staff. The Blood Utilization Committee had previously existed in our hospital for over twenty years and was ultimately dismantled in 2004 due to its ineffectiveness. From 2004 to the present time, appropriateness of transfusions is reviewed by the hospital's surgical and medical quality assurance committees. Until 2012, approximately 10% of all transfusions were manually screened retrospectively by the transfusion service manager and prospectively by the medical director and, if deemed necessary, referred to the appropriate committee. At the present time, all transfusions are electronically reviewed. If a transfusion is suspected of being inappropriate or falls outside the institutional transfusion guidelines either by prospective review or retrospective electronic

review, the case is forwarded to the respective committee (medical or surgical). A member of the appropriate committee is assigned the chart for review to determine whether the transfusion meets clinical criteria. If the reviewer finds that the transfusion was appropriate the case is dismissed, however, if the reviewer has any question regarding appropriateness of the transfusion, it is brought to the committee for discussion. For transfusions of questionable clinical indications, the committee writes to the physician requesting an explanation and encloses a copy of the current institutional transfusion guidelines.

In October 2012, a new Blood Utilization Committee was organized motivated by one of the cardiac surgeons. It consists of the Chief Medical Officer, a cardiac surgeon, an anesthesiologist, the transfusion service manager and the medical director, a pathology resident, and a process improvement representative from our Center for clinical excellence.

2. Materials and methods

Six months of retrospective cardiac surgery cases data on blood utilization was collected from October 2011 to March 2012 and the C:T was calculated. The data, as well as, educational material were presented at the first Blood Utilization Committee in October 2012. The meeting consisted of an "open" format where all members reviewed the data and participated freely in the discussion and decision-making. During the first meeting, data was shared which indicated that there was an increasing trend in blood utilization by the participating cardiothoracic surgeon when compared to his national peers. Blood utilization guidelines including indications for RBC transfusion, reviews of transfusion protocols, blood usage, transfusion complications and the type and screen testing protocol were discussed. The members of the committee were extremely enthusiastic regarding the type and screen protocol and discussed, among other items, how quickly blood would be available if transfusion became necessary for a patient who had a negative antibody screen. After this first meeting, a novel cardiac surgery transfusion protocol was established in December 2012 which included the latest institutional guidelines (Table 1). The goal of the protocol was to reduce the C:T by ordering preoperative type and screen in the majority of non-emergent cardiac procedures such as minimally invasive valve replacements and scheduled coronary artery bypass grafts (CABG). After implementation of the new protocol, the data from cardiac surgery cases was collected from December 2012 to May 2013 and the C:T was calculated.

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