



Transfusion is a Multidisciplinary Responsibility – An Audit of the Transfusion Process

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Background

Blood transfusion is a frequently employed modality of treatment in clinical practice. Transfusion is inherently risky, comprising multiple procedures involving multiple operators ranging from medical, nursing to supporting staffs. The 2D barcode scanning system was introduced in Queen Mary Hospital (QMH) in October 2007 to assist patient identification during sample collection for pre-transfusion compatibility testing & blood administration. A substantial reduction in incidents related to patient misidentification has been demonstrated, together with an improved documentation of the patient identification procedures. Other steps of the transfusion process, however, are entirely operator-dependent.

Objectives

- To evaluate the **utilization of 2D-barcode scanning system** in the transfusion process, i.e., at sample collection for pre-transfusion compatibility testing & blood administration..
- To evaluate the **documentation of the blood transfusion process**, including informed consent, checking procedure before administration, & monitoring of the patient before, during & after blood administration.
- To examine the **duration of infusion** of a unit of red cells / whole blood.

Methodology

- All in-patients prescribed blood transfusion with a pre-transfusion compatibility test request sent to QMH Blood Bank during the audit period (0000 Hr 5 October to 2359 Hr 9 October 2009) were included.
- Patients who were transfused intra-operatively & in the Emergency Medical Ward were excluded.
- An audit form was designed (Figure 1). Part I of the form was completed by QMH Blood Bank staff when the first unit of blood was collected from QMH Blood Bank. The Clinical Audit Team would collect the audit form & went to the respective ward to verify the medical records for completion of Part II.

Figure 1: The audit form used in this audit

Results

- A total of 172 requests for pre-transfusion compatibility testing were received by QMH Blood Bank. The Departments of Medicine & Surgery were major users of the Blood Bank service, accounting for 34.3% & 20.35%, respectively, of activities during the audit period.
- One hundred & seventy-six episodes of blood transfusion were conducted in the wards across 12 clinical departments. Transfusion activity in the Departments of Medicine & Surgery were most active, accounting for 36.93% & 18.18%, respectively.
- The overall compliance rate was 94.87%, ranging from 71.43% to 100%.
- Utilization of 2D-barcode scanning system for patient identification at sample collection scored 99.43% compliance, while for blood administration 100%.
- Informed consent** was documented in 97.73%.
- Monitoring of vital signs during blood administration** was done in 97.73% to 98.86%.
- Only 80.00% to 86.29% of the transfusion notes were completed, with end volume, time & date documented.
- Infusion of the blood unit was completed within 4 hours in only 71.43%.
- The **rate of transfusion** was not prescribed in 6.25%.

Discussion

The 2D-barcode scanning system for patient identification in transfusion has been introduced in all HA hospitals for a few years. The purpose of implementing this system is to reduce the risk associated with patient/recipient misidentification, which is an important cause of major, or even fatal, transfusion incidents. It is rather unexpected to encounter in this audit cases where this very convenient system was not used in clinical areas equipped with this. It is important for frontline staffs to understand the medicolegal implication of not using this system for patient identification should transfusion incident happen.

This audit also revealed the quality of documentation of the transfusion process in QMH was variable. On one hand, monitoring of the patients before & after blood administration, & the documentation of the checking procedure before blood administration were always done. On the other hand, important steps were omitted in some, albeit few, cases.

Blood transfusion is always considered analogous to administration of drugs to patients. Transfusion safety, in fact, closely mirrors the principles of medication safety. One of the most important measures to ensure safety of both medication & transfusion is the precision of the prescriptions, which in the latter includes the **rate of transfusion** of the blood unit. The transfusion rate shall always be prescribed by the doctors after careful consideration of the clinical context, & the nurses must follow the prescribed rate at all times. Any variance to the prescribed rate must be based on sound clinical justification & documented in the patient's record.

Although the vital signs were documented before & after the administration of the blood unit in all patients in this audit, monitoring during administration was not performed in all cases. **Monitoring of the recipients during administration** is particularly important as many adverse transfusion reactions manifest as unstable vital signs. Seemingly minor reactions may subsequently develop into a severe reaction requiring transfer to a higher level of care. The check at 15 minutes after the start of the transfusion is the least that can be done to ensure proper observation. If there is any suspicion of an adverse reaction, the transfusion should be withheld & the observation stepped up. Appropriate medical attention should be sought.

It is well known that the risk of transfusion-transmitted infectious diseases, particularly viral infections, have been drastically reduced in recent years. Transfusion, however, is still associated with risks particularly from severe adverse reactions, e.g., transfusion-related acute lung injury (TRALI), transfusion-associated circulatory overload (TACO), anaphylaxis, & septic reaction, etc.. Substantial resources & efforts have been invested by Hong Kong Red Cross Blood Transfusion Service to reduce such risks. It is thus still important to fully inform the potential recipients before starting the transfusion. **Informed consent** must be documented in all cases of transfusion to avoid potential medicolegal consequences.

In conclusion, this audit has revealed areas for improvement in the **documentation of the transfusion process** in QMH, namely, informed consent, prescription of the rate of transfusion & monitoring of the recipient during the actual administration. This requires multidisciplinary collaboration. Appropriate reinforcement measures have been conducted & a follow up audit has been planned. It is important to realize that:

Transfusion safety is a multidisciplinary responsibility.