

The critical push for traceability compliance: A District General Hospital experience.

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Abstract

Blood remains one of the world's vital substances. Blood and its products save millions of lives every year. Blood products are therapeutic and are derived from human whole blood, they are fragile, expensive and heavily freighted around the world [1]. The continuing emergence of infectious agents is another aspect affecting the blood safety. However, the global nature of the plasma industry had been an example where blood products have crossed the boundaries.

Introduction

It is imperative to highlight the critical push for traceability of blood and its products. The ability to trace the pathway of the blood from the recipient to the original donor and vice versa is an important public health safeguard. In addition, accurate record keeping is an essential part of professional practice. The mandatory developments of the traceability process due to European legislation, Blood Safety and Quality Regulation (BSQR), Clinical governance and patient safety has prompted the necessity for this project [2-4].

The study explored and identified why blood traceability compliance was poor within some wards at the DGH. This study explored various practices of staff involved in the blood transfusion chain, and in some other NHS Trusts in the United Kingdom. The study also identified the risk factors that led to poor traceability compliance, explored the variation of compliance across the wards.

Some of the categories developed, explored and analysed were:

- Training of staff collecting and administration of blood product
- The Knowledge of staff about the perception of traceability compliance.
- Laboratory staff professionalism.
- Ward staff responsibilities about traceability compliance.
- Ward staff attitudes and perception about the traceability model.

The transfer of patient's within the wards and clinical areas might be considered a risk factor with traceability compliance; this was agreed by 50% of the respondents. It was apparent that some of the respondents thought that they should report damage or destroyed label [5-7].

The survey of the ward managers gave us an insight of the variety of services we deliver to the frontline staff of the

transfusion services within the Trust. The training tools available, methods for sending labels back and the inconsistency of the porters were highlighted. The gap in communication between the laboratory and the end-user was immediately taken on board. The response has led to innovative led services using the air tube system, we encouraged incident reporting and review at every stage of the transfusion process

A questionnaire was designed, piloted and sent to blood bank managers of NHS Trust to explore traceability compliance within individual Trust and to compare our processes with consensus within our region.

On the percentage of staff trained on the collection of blood products, 50% of the participants agreed the percentage was between 51%-75%, while the other half claimed that the percentage was between 76%-100%. Eighty-one percent of the participants said that they had less than 5000 red cell units transfused last year. Twelve per cent agreed transfusing more than 5000 red cell units, and 6% did not know the number of red cell units transfused during the previous year. Average traceability compliance was more than 75% for 94% of the respondents, while 6% said it was less than 75%. On whether having a method for feedback to the users of blood transfusion services within the trust, 81% reported they did have such a mechanism, while 19% said they did not [8-10].

The complication of the transfusion process had been raised with previous studies. Researchers highlighted deficiency in design of the transfusion electronic process, more training to avoid over reliance on the technology for the key steps in patient identification. Another weakness of the electronic process was the lack of a requirement forcing the clinical staff to enter observation during and after the transfusion. The electronic process needs to be redesigned to promote greater consistency in practice in what documentation is brought to the fridge and to ensure that the right blood is collected[11].

A systemic review was carried out to determine the varieties of blood tracking systems accessible and I synthesized evidence on the effectiveness of these blood tracking systems.

The secure blood system comprises of a handheld or fixed terminal, a barcode reader, a biometric sensor for reading fingerprint and a keypad. The biometric records a fingerprint from the trained health worker. The system makes it possible to identify and check the units assign to the recipient of blood. Patient's can be recognised easily whether conscious or unconscious, fingerprinting was used as an alternative identification. computerized identification and data capture systems such as bar-code technology and radiofrequency identification (RFID) can be a key enabler in minimising transfusion errors [2]. RFID remains a superior technology to the traditional bar-code system in many ways[12].

Electronic devices have demonstrated significant reduction in staff workload by reducing unnecessary work associated with cross matching, transporting and returning unused blood, the blood bank and clinical staff workload is reduced to approximately 70% [3]. Blood management inventory has optimised by using electronic tracking system; older blood unit can be identified and used before it reaches its expiry date and this reduces wastage[13-15].

Davies and colleagues argued that it is likely that electronic system is likely to fail from time to time. In their view, technology should be used to help individuals rather than to take over their thinking. They concluded that it is vital not to undervalue the role of comprehensive education, training and continued support, which is essential for the successful implementation of an engineered transfusion process supported by the technology[4].

RFID tags can hold more data than a barcode and can include patient's data such as allergies, blood needs a special requirements. Secondly, RFID did not entail the use of light beams like barcode and RFID tags can be interrogated purely by proximity to an electric reader. Consequently, robust studies are required to determine the return on investment (ROI) for the use of RFID technology.[16-19]

Radiofrequency Technology (RFID) shows to be a potential technology, because of advantages in managing blood inventory and preventing overstocking. It had been successfully implemented in Paediatric Transfusion using a High Frequency RFID system in managing product products inventory. Briggs concluded in their studies more research is required in bigger hospitals with trauma centres. Briggs also suggested that RFID provided enhancement in the quality of patient care but the return of investment and privacy appears to be a challenge in the adoption of this technology in Transfusion Medicine. As RFID gains recognition in Transfusion Medicine significant impact is expected with regards to patient safety [5].

Results

During 2005-08, the low users accrued average traceability compliance of 68.5% with a 95% confidence interval

(CI)=65.1 to 68.6, the medium users accrued an average compliance of 73.8% with 95% CI=72.4 to 75.2 and the high users had an average compliance of 80.2% with 95% CI=79.7 to 80.7. The low usage group had a significant lower compliance than the medium and high usage groups ($p < 0.001$) using independent t test.

There was a statistically significant difference between timing of transfusions and average traceability compliance ($p = 0.04$) with a median test of 0.59. Traceability compliance was better during the day compared to night.

Sixty-one % of the respondents reported that 76-100% of their staff had been trained within the past year, it was apparent that as the number of trained staff increased, the respective ward traceability compliance improved, using Spearman rank correlation, there was a strong correlation between staff trained and ward traceability compliance ($r = 0.59$, $p = 0.002$).

Some recommendations for the change of practice were implemented in response to this study and there was a sharp increase in percentage compliance from 82.0-100.0 % in 2010; on the whole the average traceability compliance from 2009 -10 was 91%. Analysis of variance showed that there was no significant difference in the compliance means of the low, medium and high group between 2009 - 2010 ($F = 0.70$, $p = 0.51$) and this association was maintained each year after evaluation. One sample t-test was conducted between the two methods, the mean compliance for method 1 was 65% with a confidence interval 95% CI=54.1 to 70.7, sd 11.7% while method 2 was 91% with a confidence interval 95% CI=86.9 to 93.3, s.d 8.7%. The overall compliance rates improved with the introduction of the new approach for traceability method within the Trust. Recommendations for the change of practice were implemented in response to this study.

Discussion

There is a lack of positive reception of the involvement of the traceability pathway. Traceability had been poorly understood and inadequately controlled in many cases. The level of safety, effectiveness and quality of blood and its products must be maintained and optimised on a regular basis. The only real test of effectiveness tends to be in live situations when an adverse event has occurred and needs to be handled urgently. In such situation traceability has often found to be deficient with long delays in tracing products and identifying recipients.

The recommendations implemented include:

- The appointment of a new MLA staff to assist with the traceability compliance
- The appointment of a clinical transfusion practitioner to train and ensure a safe practice on the wards.
- Provision of trainers on special wards and clinical supervision.
- Clinical diagnostic and assessment skills training. .
- Clinical guidelines and protocols to follow
- Development of a competence programme for clinical and non-clinical staff

- Annual training and updates

Conclusion

The study reiterated the value of a trained transfusion practitioner specialist to provide support and training for the staff involved in the collection and administration of blood within the Trust. The finding also uncovered the impact of training and continuous professional development (CPD). The trainers on the wards had a high traceability compliance, compared to some wards without a trainer. The wards with high transfusion events were more compliant than low users. This information enable us to scale up training in the low performing areas of the Trust. Privacy and data protection are concerns with the use of RFID as well as many wire technology. In addition, the following must be considered, firewalls that protect the RFID database; tag disposal and recycling; shielding RFID tag or tags reading areas with metal screens to prevent unauthorized access before implementation of RFID.

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