



**Quality Improvement Programme: Safe and Effective Transfusion in Scottish Hospitals – The Role of the Transfusion Nurse Specialist (SAET Study)**

**SUMMARY REPORT**

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Grant-holder: Professor I M Franklin

**Contact**

A Gray  
EUB Group  
SNBTS  
Ellen's Glen Road  
Edinburgh  
EH17 7QT

Tel: 0131 536 5962  
Fax: 0131 536 5961

[sandra.gray@snbts.csa.scot.nhs.uk](mailto:sandra.gray@snbts.csa.scot.nhs.uk)

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## **MESSAGE**

**The most important lesson from the study is that delivering improved transfusion practice requires a co-ordinated, collaborative, inclusive approach, supported by senior management and clinicians, facilitated by the right person and informed by locally relevant data.**

## **INTRODUCTION**

A 3-year evaluation of the role of the transfusion nurse specialist was carried out as part of the Quality Improvement Programme: Safe and Effective Transfusion in Scottish Hospitals, working within identified hospitals in Scotland to establish a programme of clinical effectiveness and improvement in transfusion practice. The study commenced in February 2000 and was completed in March 2003

## **ENVIRONMENT**

Three large teaching hospitals and two district general hospitals took part.

## **GOALS**

To implement and evaluate a programme of training and education, support the implementation of transfusion guidelines and define core data sets that would support a process of continuous quality improvement. By this intervention, to reduce transfusion errors and wastage of donated blood. A further goal was to improve patient information about transfusion.

## **RESULTS**

We have summarized the results into the following categories: changes achieved; lessons learned, and tools, techniques and resources developed for future use.

### **Achievements in the two intervention sites**

- Over 1500 nurses and other health care workers received the SNBTS Better Blood Transfusion training programme on safe blood administration.
- Observational audit showed improved rates of compliance with blood administration procedures in one site.
- The number of incidents reported to SHOT increased, reflecting a greater awareness of the problems in transfusion practice.
- Change in error rates could not be shown as baseline data were unavailable and the low incidence rates would require a very large prospective study to show improved performance.

- In one site, a simplified blood administration process was designed, evaluated and introduced to routine use and is currently being evaluated.
- In one site blood wastage was reduced by cessation of an ordering procedure that generated wastage and both ordering and usage were reduced in some surgical units (Table 1).
- In a parallel study by the Effective Use of Blood group, the use of a data feedback intervention was associated with substantial reduction in red cell usage in specific elective orthopaedic procedures.

**Table 1: Blood component Use Figures for 2000 –2002 in Site A**

Blood Component	Units Transfused			Reduction (%) 2000 - 02
	2000	2001	2002	
Red Blood Cells	20,591	18,625	17,358	15.75
Platelets	1148	877	790	31.2
Fresh Frozen Plasma (FFP)	2087	1844	1514	27.5
Cryoprecipitate	936	376	494	47.2

### **Influence on the non-intervention sites and the wider NHSS**

As a result of interest in the study, the education programme has been taken up in the 3 non-intervention sites and also in all other NHSS acute hospitals and in some primary care trusts. The study has therefore increased awareness throughout the NHSS of the need to improve transfusion practice and stimulated action to achieve this.

### **Summary of key results**

#### *Year 1*

Baseline audits of practitioners' knowledge and competencies, transfusion protocols and practices were undertaken in all 5 hospitals, with the following results:

- 80% of registered nurses stated they had never received training in transfusion
- All 5 sites were in the process of developing or reviewing their Trust transfusion guideline
- 25% of patients had no identification (ID) check undertaken when having a pre-transfusion sample taken
- 49% of blood components collected had no patient ID check undertaken
- 11% of patients had no final bedside ID check undertaken prior to the administration of a blood component.

Review of Maximal Blood Ordering Schedules (MSBOS) demonstrated that crossmatch/transfusion (C/T) ratios of higher than 2:1 were frequent for a number of elective surgical procedures, pointing to over ordering of blood.

## Year 2

- The TNSs delivered a co-ordinated education and quality assurance programme at two intervention hospitals (sites A and C).
- Training in transfusion was delivered to >1500 practitioners. Only intervention site A made it mandatory for nursing staff to attend. Site A was the one site to deliver objective improvements.

## Year 3

- The new Trust transfusion guideline was widely available only at the 2 intervention hospitals
- The results of the self-assessment questionnaire demonstrated an overall improvement in 9 of the 17 aspects of knowledge assessed. Intervention site A demonstrated the largest improvement in scores (13/17)
- 18% of patients had no identification (ID) check undertaken when having a pre-transfusion sample taken – the biggest improvements in practice was observed at the intervention hospitals. Non-intervention site B also showed improvements. At the other 2 non-intervention hospitals practice had declined
- 11% of blood components collected had no patient ID check undertaken. The biggest improvements were shown at the sites where a collection slip had been implemented, non-intervention sites B and D, and intervention site A
- Only 4% of patients had no final bedside ID check undertaken prior to the administration of a blood component
- A review of MSBOS at intervention site A resulted in a reduction in blood ordering for a number of orthopaedic, urological and cardiac procedures. Site C deployed a MSBOS following the audit of blood ordering practices
- At intervention site A, the number of units of blood components transfused in the whole hospital declined by 16% for red blood cells to 47% for FFP, over the 3-year period of the study
- Over the 3-year period when the TNS was deployed there was a general trend towards improvement in a wide range of indicators of knowledge and practice.

## Lessons Learned

### *Environment*

We recognized at the outset that staff are preoccupied with multiple conflicting priorities in their attempt to provide optimal patient care and that the importance of safe and effective transfusion would need to be raised in their priorities if the intervention was to have a good chance of success. We anticipated that engagement of even one or two key consultant clinicians could be the catalyst to building support.

The experience of the study has only strengthened this view. Acceptance of the intervention and achievement of change depended on the level of support provided by:

- the local lead clinician
- the HTC chair and other clinical members

- nurse managers
- hospital transfusion laboratory managers.

Without this, the TNS experienced difficulties in stimulating local clinical teams into action, and was left to generate action plans with inadequate input. For the TNS in this situation it was difficult to sustain enthusiasm and the role became frustrating.

#### *The Transfusion Nurse Specialist (TNS) Role*

A critical success factor was the personality of the TNS. Confidence, persistence, energy, communication skills and a good 'fit' with the local team, allied to good technical knowledge, local knowledge and clinical experience characterized those who made most impact. Even with these qualities the success and effectiveness of developing this role were dependent on variables unique to each hospital that were outwith the control of the TNS.

#### *Information and data about local practice*

Where the TNS could enable the HTC and local clinicians to be presented, in a constructive way, with data about almost any relevant aspect of their own team or hospital's practice, interest and enthusiasm were usually generated.

#### *Better Blood Transfusion Continuing Education Programme*

The study highlighted the scale of the education and training task. This element of the study targeted the limited area of the basic procedures for safe ordering and administration of blood. To deliver the education programme to all relevant staff, assess competence, and maintain currency requires effective communication with very large numbers on a continuing basis. This highlights the need for appropriate tools and techniques, and a commitment of resources to sustain a programme that has even a limited objective.

The study further shows that the current approved procedures are too complex to be performed reliably, even with good training. The current BCSH guideline for blood administration has no less than 80 specific required steps. A priority is to simplify such procedures to make them both do-able and effective as was achieved in site A.

#### *Data on local practice: acquiring and using it effectively*

Good local information can engage the interest of the people who can make change happen, provided the process of obtaining, preparing and sharing the data engages them. The study showed that to obtain relevant information from the multiple, disconnected, existing sources is labour intensive, and that time and effort spent in preparing the ground with local clinicians is essential to be confident that feedback of practice data will help to motivate change

## *Wastage of blood*

Clinicians were generally quite unaware that blood was wasted and mostly recognized that this was unacceptable. However the study highlighted the inadequacy of our information about the use and wastage of blood. Much better data is essential to enable planning and testing of changes intended to reduce wastage. We also concluded that the existing, fragmented, blood distribution system is a major factor in wastage, and that if efficient distribution is to be achieved, a redesigned process, integrated and managed from the SNBTS production sites right to the recipient will be required.

## **Tools, Techniques and Resources**

- Audit tools for assessment of transfusion practice and monitoring of change in aspects including blood ordering and administration
- A new protocol for investigation of transfusion errors and the corrective actions (yet to be evaluated)
- The Better Blood Transfusion Continuing Education Programme: trainers' materials, face to face teaching packages, self-directed learning materials and a pilot e-learning website
- Transfusion procedure protocols were developed in all 5 study sites and implemented in the 2 intervention sites
- A clinical transfusion guideline was developed and implemented in 1 intervention site and has been shared with some other NHSS hospitals.

## **DISSEMINATION OF THE REPORT**

The study report was widely distributed to all study participants, the SNBTS Clinical User Group, SNBTS Clinical Directors and NHSS Hospital Transfusion Committee Chairpersons. The results of the study have been presented at local, national and international meetings during 2003 / 2004.

## **PRESENTATIONS**

1. Buchanan S, Fitzsimmons E. Improving Patient Safety. *Transfusion Medicine*, 13:1, 41. Poster presentation at the British Blood Transfusion Society Annual Scientific Meeting, Manchester, 2003.
2. Gray A, Buchanan S (2003). Safe and Effective Transfusion Study. *Transfusion Medicine*, 13:1, 5. Oral presentation at the British Blood Transfusion Society Annual Scientific Meeting, Manchester, 2003.
3. Pirie E, Gray A, Todd A, Innes J, Fordham J (2003). Better Blood Transfusion Continuing Education Update. *Transfusion Medicine*, 13:1, 43. Poster presentation at the British Blood Transfusion Society Annual Scientific Meeting, Manchester, 2003.

4. Gray A, Buchanan S (2003). Safe and Effective Transfusion Study. Poster Presentation, American Association of Blood Banks, San Diego, November 2003
5. Gray A. Evaluating the Role of the Transfusion Nurse Specialist. Oral presentation at the British Society of Haematologists Annual Meeting, Cardiff, 2004.