

## Pre-registration adult nurses' knowledge of safe transfusion practice: Results of a 12 month follow-up study

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### SUMMARY

This research project ascertained student nurses' knowledge retention of safe transfusion practice following a standardised teaching and learning programme (produced by the Scottish National Blood Transfusion Service, United Kingdom (UK)) within a School of Nursing in Scotland, UK.

Several studies including the Serious Hazard of Transfusion (SHOT) annual reports demonstrated that there are risks to the patient in receiving blood components: receiving the wrong blood was the most common risk associated with blood transfusion (Ottewill, 2003; SHOT, 2007).

This evaluative study used a questionnaire to assess the level of knowledge students ( $n = 118$ ) attained on the day of the session, 4–6 months and 11–12 months following the session.

The study provided an insight into the effectiveness of a standardised teaching approach and highlighted areas for review in light of incorrect answers elicited. Despite all receiving the Standardised Programme, there was a wide range of initial overall scores achieved. The study demonstrated, within the small sample completing at all 3 time points, that there is clear degradation of knowledge during the study period. The influence of experience on knowledge retention appears to have a positive effect at 6 months but no appreciable effect at 12 months.

These outcomes merit further, more robust and multi centre investigation to identify if there is replication of results.

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### Introduction

On registration all nurses must have the ability to administer blood components safely. Blood transfusion however, is a complex, multi-step process and there is potential for error at each stage. The Serious Hazards of Transfusion haemovigilance reporting scheme have demonstrated each successive year since it was established, that the most common risk reported was the transfusion of the wrong blood component (SHOT, 1997–2007). Major causes cited are the incorrect identification of the patient at the time of collection and at the 'final bedside check'.

In 2000, the Scottish Blood Transfusion Service (SNBT) developed a standardised training programme for all healthcare professionals including student nurses in order to promote safe practice. This programme is currently being implemented across all NHS Hospitals in Scotland, and Gray et al. (2003) anticipated that it would impact on the quality of patient care by ensuring that students and trained staff use a consistent and comprehensive clinical skills base when caring for patients receiving blood components. It

is therefore timely to determine the impact of this programme on knowledge retention in student nurses. The aim of this study was to provide information on the effectiveness of a standardised approach and to inform a potential timescale in which to implement refresher courses or updates to help to ensure safe practice.

This paper reports on an evaluative research project that ascertained undergraduate adult student nurses' knowledge attainment and retention of safe transfusion practice following a standardised teaching and learning programme (produced by Effective Use of Blood Group).

### Background

#### Haemovigilance in blood transfusion

Blood transfusion is essential for modern clinical practice but, like all therapies, transfusion is not without risks (Hill et al., 2002; Ottewill, 2003; Wagner, 2004). During the last 10 years, there has been a proliferation of national haemovigilance systems across the 23 EU member states for collecting data on the hazards of transfusing blood (Faber, 2004). Outside of the EU, haemovigilance systems have been established in North America, South America and several countries in Asia. New Zealand and South Africa have also recently launched programmes (Faber, 2002). Despite

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the differences and limitations of all these systems, certain key and consistent messages have emerged. These are: that avoidable transfusion errors remain a major cause of death and injury and that more focus should be given to education and training.

Data from the UK Serious Hazards of Transfusion (SHOT) a 'Gold Standard' haemovigilance reporting scheme, demonstrate that the 'Incorrect Blood Component Transfused' (IBCT) category accounts for nearly 70% of reports, and that over eight years of reporting, 24 patients have died and 99 patients have suffered major morbidity (SHOT, 2007). Human error has been identified as contributing factor, the type errors identified include:

- the blood sample was drawn from the wrong patient
- patient details were recorded incorrectly on the blood sample label or the blood request form
- the wrong unit was collected from the storage site
- the formal final patient identity check was omitted or performed incorrectly at the time of the administration.

There have also been several government initiatives to improve transfusion practice, which support training and education in transfusion in NHS Scotland (MEL, 1999; NHS HDL, 2003). In addition in 2006, NHS Quality Improvement Scotland (QIS) issued *Standards for Blood Transfusion*. These standards are part of a national system of quality of assurance of clinical services and all hospitals will have to provide evidence that all staff involved in blood transfusion are trained and competent.

Education and training is fundamental to every aspect of blood transfusion safety. In 2000 the Scottish Blood Transfusion Service (SNBT) developed an innovative education programme to assist practitioners, including student nurses, involved in the transfusion process to provide high standards of care to patients. There are three levels of study and a variety of teaching materials are available including; face-to-face teaching programmes, self-directed learning materials, and an interactive e-learning resource at <[www.learnbloodtransfusion.org.uk](http://www.learnbloodtransfusion.org.uk)>.

The programme has been implemented across all NHS Hospitals in Scotland and is also available to hospitals in NHS England, Wales, Northern Ireland, Southern Ireland, and a number of private organisations. The programme has gained an international reputation and is accessed by learners from countries such as America, India, Holland and Italy. Canada and Australia have also developed e-learning programmes for blood transfusion and these can be accessed at <[www.sunnybrook.nextmovelearning.com](http://www.sunnybrook.nextmovelearning.com)> and <[www.bloodsafelearning.org.au](http://www.bloodsafelearning.org.au)>.

#### Student nurse education—United Kingdom

Following changes in nurse education from apprenticeship training to the higher education setting, concerns were raised about the lack of practical skills newly qualified nurses had on registration within the UK (Fitzpatrick et al., 1994; Philips et al., 1994; While et al., 1995; Luker et al., 1996; Macleod Clark, 1996; May et al., 1997; Runciman et al., 2000).

Further work undertaken at UK government level, *Making a Difference to Nursing and Midwifery Pre-registration Education*, resulted in Health Service Circular 1999/219 (UKCC, 1999; DoH, 1999a; DoH, 1999b). This latter document highlighted the need to have skilled competent practitioners and emphasised the importance of bringing together theory and practice. In Scotland *Raising the Standard*, a White Paper on education and skill development placed the development of clinical skills and competencies at the centre of nursing education (Scottish Office, 1997).

In an effort to improve the standard and competence of clinical skills within newly qualified nurses, the Nursing and Midwifery Council introduced, firstly, the Standards for Proficiencies for Pre-

registration Nursing (NMC, 2004) and, secondly, the Essential Skills Clusters (NMC, 2007). This means that the development of certain clinical skills is a statutory requirement for registration within the UK, and blood transfusion is part of these requirements.

In response to the identified need to improve skills proficiency in undergraduate education (Kirk et al., 1997; May et al., 1997; Carlisle et al., 1999; UKCC, 1999) and the need to improve transfusion practice (NHS QIS, 2006) the SNBTS student education programme was developed.

Safe Transfusion Practice (Module one) Student Programme uses a blended approach of theory and practical skills (Ciofi, 2001; Gibbons et al., 2002) that incorporates a standardised powerpoint presentation that covers, aspects of SHOT reports, sampling, storage of transfusion, collection of transfusion products, patient identification, monitoring of transfusions, identification of transfusion reactions and actions to take. The use of a video portrays aspects of sub optimal practice and clearly illustrates how easy it is to make errors if the correct procedures are not followed. The aspect that is unique to the HEI in the study is the use of a simulated exercise. As students have little or no experience of transfusion practice prior to the session the use of a simulated exercise enables them to practice the patient identification checks (as identified by SHOT (2007) as a key point for error occurrence). The standardised learning and teaching approach is summarised in Fig. 1.

#### Knowledge retention

Within HEIs, knowledge ascertained is usually assessed at the end of the period of study for example at the end of a module by one or more of a multitude of assessment methodologies and the assumption is that these short term gains are retained (Kerfoot et al., 2007). Fundamental to nurse education is translation of this theoretical knowledge into clinical practice and how long this knowledge is retained for. The challenge with some aspects of practice is that skills and knowledge acquired may not be used on a daily basis and have to be reproduced without notice (Wang et al., 2008). Blood transfusion is such a practice not encountered every day and therefore further emphasises the need for robust education and re education to ensure knowledge to guide clinical practice. Robust education teaching strategies must strive to

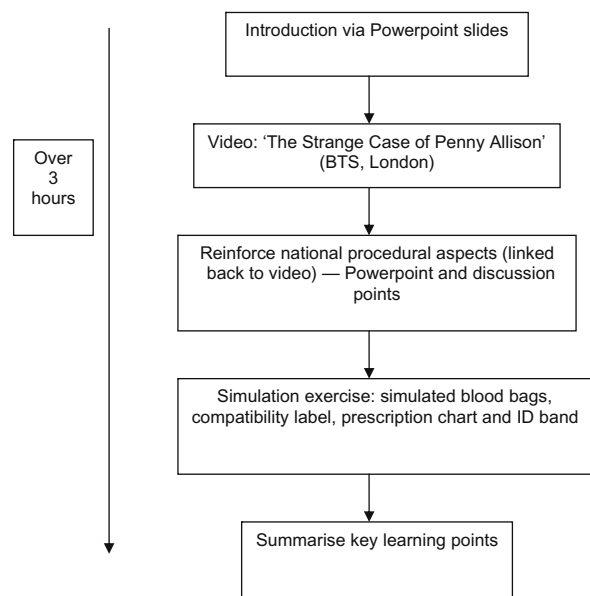


Fig. 1. A flowchart of learning and teaching methods employed.

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