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Does time matter? An investigation of knowledge and attitudes following blood transfusion training

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ABSTRACT

The Scottish National Blood Transfusion service have developed an educational programme aimed at ensuring a high standard of care for blood transfusions to minimise risk to patients and healthcare practitioners. This paper investigates whether knowledge and understanding of, and attitudes towards, safe practice declined over time following completion of module 1 of the programme. An online survey was administered to a range of healthcare practitioners who had completed the module. The survey tool tested knowledge and ascertained views on blood transfusion practice and perceptions of the module's importance. Comparisons were made between participants 6–8 weeks, 12–14 months and 22–24 months since module completion. In-depth interviews were conducted with a sub-sample of survey respondents to explore attitudes in more detail. Findings indicate evidence of a slight though statistically significant reduction in the degree of emphasis respondents placed on the importance of understanding aspects of transfusions as time lapsed, but no difference was found in knowledge between those who took the course more recently and those who were up to two years post-module. The study's findings indicate that recognition of the importance of safe practice declines over time and thus also suggests that frequent refresher courses are important to maintain safe practice.

Introduction

Blood transfusions are one of the most commonly performed procedures in hospitals. Each year over 2 million units of blood and blood components are collected, processed and distributed by United Kingdom (UK) blood establishments to both National Health Service (NHS) and private hospital blood banks (Medicines and Healthcare products Regulatory Agency (MHRA) 2010). In NHSScotland (NHSS) approximately 260,000 transfusion samples are processed in a year resulting in over 200,000 blood components being issued to patients (Scottish National Blood Transfusion Service (SNBTS), 2011) Considering the scale of blood transfusion activity it may not therefore be surprising that international haemovigilance data and clinical studies continue to report errors at all stages of the transfusion process. Errors include, sampling processing errors, pre-transfusion testing errors, incorrect component collected or component for another patient and blood component issued before expiry but out of date (National Haemovigilance Office (NHO) 2009; Medicines and Healthcare products Regulatory Agency (MHRA), 2010; Bolton-Maggs and Cohen, 2011). In the UK 7048 Serious Adverse Blood Reactions and Events (SABRE) reports were submitted between 2005 and 2010 (MHRA, 2010).

Since its inception in 1996, the Serious Hazards of Transfusion (SHOT) system, a national confidential haemovigilance reporting scheme in the UK, has analysed over 2800 serious adverse events related to incorrect blood component transfusions. In total, 27 deaths occurred where transfusion was the contributory cause and 596 patients have experienced major morbidity (Knowles and Cohen, 2011). Although a continued decline in the proportion of deaths and major morbidity is attributed to successful haemovigilance (Bolton-Maggs and Cohen, 2011), of the 3054 reports submitted to SHOT in 2011, half of all events related to errors in the basic transfusion process, such as incorrect patient identification. Evidence also highlights problems with nurses' transfusion practice and adherence to recommendations (Hijji et al., 2010). The rate of transfusion errors and near misses is therefore of considerable concern.

Blood transfusions thus involve risk and hence safe practice is paramount. Deficiencies in transfusion knowledge can adversely affect patient safety (Gallagher-Swann et al., 2011) and education

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and training has been highlighted as one way of reducing incidence of adverse events (NHO, 2009; National Blood Authority Australia, 2010; Bolton-Maggs and Cohen, 2011). In the UK, SHOT recommended that every staff member involved in the transfusion process should have access to training and education relevant to their role (Stainsby et al., 2006). In this light, the Scottish National Blood Transfusion Service (SNBTS) developed an educational package aimed at all healthcare practitioners, namely the *Learnbloodtransfusion* (LBT) education programme. The programme is available to NHS organisations across the UK and Ireland and has also attracted international interest (Smith et al., 2010).

This study sought to establish how knowledge and understanding of and attitudes towards safe practice changed in the months and years after module completion. The knowledge, attitudes, and experiences of a range of hospital staff including nurses, midwives, doctors, porters, and bio-medical scientists were sought. The inclusion of different practitioners contrasts with previous studies that have focused on qualified nursing and nursing students (for example Hogg et al., 2006; Mole et al., 2007; Smith et al., 2010). A range of people are involved in the different aspects of transfusion process and consequently complete the LBT programme, therefore the study reported here, was designed to be inclusive of the multidisciplinary team.

Background/literature

A number of initiatives were endorsed by the Department of Health in the UK with the explicit intention of improving care and reducing the incidence of adverse events (Scottish Executive Health Department (SEHD), 1999, 2003, Gray et al., 2004; NHS QIS, 2006). One of the main recommendations to emerge from these initiatives was the importance of providing relevant and accessible training and education for all staff involved in the transfusion process. The NHS in Scotland mandated that only staff who had completed the LBT education programme and demonstrated competence appropriate to their role should participate in the clinical transfusion process (NHS QIS, 2006). *Module 1*: *Safe Transfusion Practice* was the foundation module with content covering haemovigilance, blood group serology, requesting, sampling, collection, administration procedures and management of adverse events. The module was aimed at medical and nursing staff, operating department practitioners, clinical support workers, phlebotomists and porters and was set up to be accessed either face-to-face or via eLearning (Department of Health (DH), 2011).

The module can be viewed within a context in which education has been seen as a key component of achieving safe practice (Scottish Government, 2007). Specifically, training, competency assessments and continuing professional development have all been identified as an integral part of the quality system in all organisations involved in blood transfusion (NHO, 2009; MHRA, 2010; Knowles and Cohen, 2011). Hogg et al. (2006) have highlighted how educators use education and training to try to minimise risk at all stages of the transfusion process. They evaluated the effects of a simulated ward exercise with six registered nurses who had attended a theoretical education session on safe practice. Outcomes from the exercise demonstrated that the simulation raised awareness of error detection and safe practice in the simulated environment; however how long this awareness remained heightened was not ascertained.

Studies which have investigated the impact of time on nursing knowledge following transfusion education report mixed findings. Smith et al. (2010) evaluated undergraduate adult nursing student knowledge and retention of transfusion practice following a teaching programme at three different time points post education programme. The study demonstrated an apparent degradation in knowledge from the 31 students who completed the knowledge questionnaire on the day of the session, 4–6 months and at 11–12 months. Mole et al. (2007) also evaluated nursing students' knowledge over time, specific time points analysed being pre-course, and at four weeks and one year post course. Results from the study were varied and actually showed some knowledge improvement over time for some aspects, for example knowledge of blood groupings and blood compatibility, but knowledge regression in other aspects, such as with respect to blood collection procedures and checking errors.

Studies that have explored knowledge retention and attitudes following education intervention mostly indicate increased knowledge and greater recognition of self efficacy (Eustacia et al., 2000; Barber et al., 2003; Schneiderman et al., 2009; Young et al., 2008). However, few studies have looked at how this knowledge or attitudinal perspective changes over time. Those studies that have investigated the implications of time for educational initiatives in healthcare report mixed results. Eustacia et al. (2000) assessed acquired knowledge in paramedics completing a paediatric resuscitation course and reported a return to baseline levels of knowledge within 6 months. A similar result was shown in a study monitoring Advance Life Support skills in anaesthetists (Semeraro et al., 2005) and, notably in view of the subject matter of the study reported here, in transfusion knowledge among physicians (Gharehbaghian and Javadzadeh Shahshahani, 2009). However, some studies have demonstrated more sustained impact on knowledge retention following education participation (Shanley et al., 1998; Wilkes et al., 2003). While evidence about the sustaining impact of education participation remains mixed, there is a consensus that educational programmes should lead to measurable and sustained improvements in healthcare practice.

The implications of elapsed time for educational initiatives aimed at improving safety are notable. If either knowledge or attitudes are declined in the weeks, months and years following completion then the need to invest in on-going refresher courses would be clear, hence the rationale behind the study reported here which set out to investigate how knowledge and attitudes changed after completion of the LBT module.

Methods

The primary objective of the study was to evaluate the module on behalf of the Scottish National Blood Transfusion Service. However, the evaluation also provided an opportunity to investigate retention of knowledge and attitudes after module completion and attitudes towards module revalidation. We utilised both quantitative and qualitative methods, the former providing an objective measure of knowledge and attitudes whilst the latter providing a more in-depth insight from the perspective of participants themselves (Clark, 1999). Qualitative techniques can supplement the findings of a quantitative study, and as used in the context of this study, can use exploratory questions for additional clarification of findings (Polit and Beck, 2012). Findings from the two separate analyses were drawn together to develop an overall interpretation of findings.

Recruitment

Participants were invited to take part through an email sent by the Scottish National Blood Transfusion Service to those who had completed the module. To maximise response rate, emails were specifically sent to those who were at particular points in time post completion: (1) 6–8 weeks, (2) 12–14 months, and (3) 22–24 months following module completion. These time points were arbitrary but were chosen to indicate short, medium and longer