The role of the transfusion nurse in the hospital and blood centre

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The transfusion process is complex, involving many interlinking chains of events, and a multidisciplinary group of health professionals with different levels of awareness and understanding of transfusion practice. In recent years, many measures have been implemented to increase blood component safety and the clinical transfusion process. Haemovigilance programs report the greatest risks to patients from transfusion in many countries now relate to hospital-based steps in the process.

The role of the Transfusion Nurse (TN) is evolving as an integral part of efforts to optimise appropriate use of blood components, reduce procedural risks and improve transfusion practice generally. The TN position is a relatively recent specialist role within hospitals and blood services, and continues to develop with growing experience of areas requiring intervention in the clinical setting, and increasing expectations for improvements in transfusion clinical governance.

The role typically includes activities to improve clinician and patient awareness of transfusion issues and practical knowledge of blood product use, and therefore to improve clinical decision-making and enhance blood administration processes, along with responsibilities for education/training, auditing and adverse event follow-up. Within the Blood Service in Australia the role also covers approval and provision of specialised blood products along with many of the hospital-based TN functions.

The TN serves as an expert resource and has been fundamental in development of tools, resources and skills in the following areas:
- Patient blood management:
- Education
- Governance
- Professional development
- Research

Benchmarking across organizations has demonstrated that availability and review of comparative data can be a powerful motivator of change. Reviews of the TN role/programmes highlighted their effectiveness and resulted in ongoing support/funding. Skills and attributes such as confidence, persistence, energy, excellent communication/technical knowledge and clinical experience are key requirements for the roles success.

**Conclusion** The specialist transfusion practitioner/Transfusion Nurse is an integral part of a multidisciplinary team, supporting efforts at institutional and national levels to reduce transfusion risks and improve practice.

**Key words:** transfusion practice, transfusion nurse, transfusion practitioner.
Introduction

The transfusion process is complex, involving many interlinking chains of events, and a multidisciplinary group of health professionals with different levels of awareness and understanding of transfusion practice. In recent years, numerous measures have been implemented to increase both the safety of blood components and the transfusion process itself. However, haemovigilance programmes continue to report that the greatest risks to patients from transfusion in many countries relate to hospital-based steps in the process, particularly transfusion of the wrong blood component.

Over the last decade, many countries have introduced clinical transfusion practice improvement programmes to optimize appropriate use of precious blood components, reduce the procedural risks of transfusion administration processes and improve transfusion practice generally. These improvement activities typically involve a multidisciplinary team, and the role of the Transfusion Nurse (TN) is evolving as an integral part of these programmes and continues to develop with growing understanding of areas requiring intervention in the clinical setting, and increasing requirements for improvements in transfusion clinical governance. The TN is (generally) a relatively recent specialist position within hospitals and blood services. The role is multifunctional, requiring diverse skills and attributes, and incorporates a range of clinical, quality, risk management and educational activities.

Drivers underpinning clinical transfusion practice improvement programmes

A number of factors have prompted the development of practice improvement programmes:

1. **Clinical governance**: Many countries now have requirements from healthcare quality accreditation bodies that include standards for transfusion governance, and considerable resources may be required to demonstrate compliance. For example in Australia, both the Australian Commission for Safety and Quality in Healthcare (a national, standard-setting body) and the Australian Council on Health Care Standards (a hospital assessment and accreditation body) now have detailed requirements for transfusion practice.

2. **Risk management**: International haemovigilance data indicate significant hazards associated with the transfusion of incorrect or inappropriate blood components, plus a substantial number of near misses with the potential for harm.

3. **Demand**: The demands for blood and blood products are increasing each year in many countries for a variety of reasons, such as ageing populations, changes in treatment options, introduction of new technologies, and improvements in supportive therapy. With increased demands come associated costs, including costs associated with production, management and administration of blood components and fractionated blood products.

4. **Patient expectations**: Patients are now much more informed about treatments, including transfusion, and their potential risks, and have expectations for more information to make informed decisions about their therapy.

5. **Availability of new clinical practice guidelines and research findings**: for example, in the areas of blood conservation, including intra- and post-operative cell salvage techniques and the development of pre-operative anaemia management clinics [such as from the UK Better Blood Transfusion (BBT), and Canadian onTrac programs].

Many governments and health agencies have considered these factors and now place increased emphasis on appropriate use and management of blood, and as a consequence, some have provided direction and resources, including financial support, to establish clinical transfusion practice improvement initiatives.

What do these programmes look like?

Established clinical transfusion practice improvement programmes and the activities within them vary significantly both between and within countries; and are strongly influenced by the local health care system needs and government expectations. Programmes generally involve a multidisciplinary team raising awareness around transfusion to improve practical knowledge of blood product use, and provide a basis to improve clinical decision-making and enhance blood administration processes and patient care. Data generated from audits and other programme activities can be powerful motivators of change and tools for benchmarking within and across organizations.

The individuals undertaking these roles have various titles, such as TN, TN specialist or consultant, transfusion safety officer, haemovigilance officer and specialist practitioner of transfusion. In Australia, New Zealand and the UK these specialist transfusion practitioner positions are now well established and are predominantly nursing roles, while in other settings, personnel with scientific/technical (e.g. Canada) or medical (e.g. France) backgrounds may perform some or all of these activities. In all cases, they work very closely with other healthcare professionals in transfusion support, patient blood management and blood conservation. Links to some established programmes and groups are provided at the end of this article.
Support PBM including blood conservation practices (e.g. UK Better Blood Transfusion including e-learning programme for cell salvage, see http://www.learncellsalvage.org.uk)

- Provide tools and materials, such as patient information brochures (e.g. for management of iron deficiency anaemia), fact sheets and other materials which are age and culturally appropriate. [see BloodSafe and Blood Matters websites]
- Manage nurse-led clinics for anaemia management (see OnTrac website)
- Promote multidisciplinary team approach – e.g. involvement in clinical ward rounds enabling real-time education or clinical intervention

### Education

- Develop and implement programmes within health services and blood services, including:
  - Online e-learning programme for cell salvage, see http://www.learncellsalvage.org.uk
  - Bloody Easy (Transfusion Ontario): see http://www.transfusionontario.org
  - Scottish National Blood Transfusion Service (SNBTS): see http://www.learnbloodtransfusion.org.uk
  - Develop templates to provide consistent transfusion information and assist new TNs
  - Educational posters on indications, special requirements, identification, blood sampling, transfusion reactions, etc. (see Better Blood transfusion tools)
  - Newsletters to highlight important messages

### Governance

- Develop and implement policies and procedures, manuals, clinical guidelines, charts and forms to support safe and appropriate transfusion practice. For example:
  - Policies and procedures to support new clinical practice guidelines and/or requirements, e.g. for massive transfusion, or for specialised products such as intravenous immunoglobulin and recombinant factor VIIa
  - Institutional activities to support blood supply contingency planning strategies
  - Patient identification – conduct audits and make recommendations for change, develop policy, conduct trials and participate in implementation of technology, i.e. radiofrequency identification system (RFID) for patient ID – e.g. Blood Track
  - Informed consent – develop and implement policy and procedures, patient information (age appropriate and culturally sensitive) and forms to support increased patient knowledge and understanding of risks. Establish and support hospital transfusion committees, to provide authority and action change improvement processes. Transfusion reaction follow-up and incident reporting internally and externally, including to Haemovigilance programs
  - Prepare reports to national and local governments, local institutions/organisations/departments and clinicians

### Professional development

- Develop resources for new TNs e.g. UK BBT tools – ‘A drop of knowledge,’A Wealth of Knowledge and Blood Matters ‘Handbook for Transfusion Practitioners 2010’
- Clinical support networks to facilitate information and resource sharing and provide support to TNs (e.g. Australia/NZ AUSPOTS’ and UK SPOT networks
- Participate in post-graduate specialist qualifications: e.g. Blood Matters/University of Melbourne Graduate Certificate in Transfusion Practice. TNs have played a major part in designing and delivering this course
- Participate in local, national and international professional meetings and conferences to share knowledge

### Audit and research

- Plan and conduct audits of clinical practice (e.g. administration practice, overnight transfusion, sample collection and compliance, appropriateness of transfusion against guidelines, patient identification and storage and handling).
- Use audit data to support practice change and benchmarking. Participate in research, including clinical trials

### Table 1

Examples of activities of some practice improvement programmes and the role of the TN in achieving results

<table>
<thead>
<tr>
<th>Activities and achievements</th>
<th>Key elements/skills of TN</th>
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<tr>
<td>Promote and participate in Patient Blood Management (PBM) programs:</td>
<td>Knowledge, preparation, implementation, support and education, Clinical input, real-time education to patients/staff and clinical intervention</td>
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<tr>
<td>Education</td>
<td>Knowledge, development and implementation, support and education, Understanding and working with technology, Being a change agent, Project management, Communication with and across disciplines</td>
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<td>Professional development</td>
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Role of the transfusion nurse

Skills and attributes of the TN

The skills and attributes of TNs/practitioners are important factors in the success of the role and their contribution to clinical transfusion practice improvement programmes.

Transfusion nurses are vital connections between the different health professionals engaged in the transfusion chain, in particular, those beyond the transfusion laboratory. They act as educators, trainers, co-ordinators, data collectors, project managers and change agents. They are critical components of hospital transfusion teams, and provide invaluable support for the efforts of the hospital transfusion committee (or equivalent).

The TN skills should include comprehensive and current knowledge of transfusion practice, excellent communication skills, an ability to interact with a broad range of people from hospital executives, quality co-ordinators, senior and junior medical officers, scientists and nurses, to patients and relatives. The ability to understand and work with the local hospital/health service ‘politics’ is a definite advantage when implementing change. Skills such as effective project management and coordination, and attributes such as confidence, energy and persistence are necessary to see ideas through implementation and to fruition. As practice change is often achieved slowly, a coordinated and persistent approach is required for truly ‘embedded’ long term changes.

Achievements

The TN has been fundamental in the development and implementation of many improvements; however, it must be noted that while the TN is the driver and agent of many of these changes, strong local leadership and support from management is also essential to the process, and especially required to ensure there is a continuous cycle of improvement. Depending on the role and the organization, this support could be provided by a number of sources including hospital clinical champions, transfusion team and transfusion committee, the blood service transfusion medicine team, and professional TN networks and specialty societies.

Where practice improvement programmes are well established and have been evaluated they have demonstrated increased awareness and knowledge to support decision-making and appropriateness of transfusion, ultimately resulting in improved outcomes in patients [1].

Table 1 demonstrates the complexity and diversity of some of the achievements that have been possible within these programmes and also outlines key elements and skills of the TN required to achieve these results.

The Australian experience

A number of transfusion practice improvement programmes have been established over the past decade in Australia, generally constructed as formal collaborations between state/territory health departments and the Australian Red Cross Blood Service and in partnership with local hospitals. Their activities, and those of the TNs employed within them, reflect both national and local state or territory government priorities, resulting in variation in activity and responsibility depending on the context and location of their work. For example, some TNs oversee activities in a large area health service (either metropolitan or regional) covering many hospitals and health services, whereas others are based at one hospital, such as a large metropolitan university teaching hospital. At the time of publication, there were approximately 75 specialist nurse positions across Australia. A review of the TN role and the Blood Matters program conducted in 2007 highlighted the effectiveness and resulted in ongoing support/funding.

A Graduate Certificate in Transfusion Practice was developed by the Blood Matters program and is now offered entirely on line for Blood Matters by the University of Melbourne. This specialist qualification is recommended for TNs undertaking this role in Victoria. Since 2003, a total of 70 students across Australia have successfully completed the course, including a number of international and non-nursing background participants.

In some Australian states, funding has been secured to introduce additional resources in the form of non-specialist nurse transfusion trainers (TT) and ‘link’ nurses to implement quality activities at regional and rural hospitals. These roles are typically undertaken on a part-time basis, 1 day/week or fortnight, depending on the number of transfusion episodes in their hospital.

The TN role is also an integral part of the Transfusion Medicine Services (TMS) team at the Australian Red Cross Blood Service. The TMS team provide clinical and technical transfusion advice and support to clinicians, hospitals and laboratories nationally.

Currently, 14 TNs are employed within the Blood Service across Australia to cover each state and territory. The Blood Service TN role includes approval and provision of specialised blood products with particular reference to intravenous immunoglobulin (IVIG) and specialised platelet support, along with assistance with clinical advice, education and support. In Australia, IVIG is an intensively managed blood product, with the Blood Service designated as one of the key authorized approvers; as such the Blood Service TNs are key facilitators of these approvals, along with other members of the TMS team. The Blood Service TNs have assisted governments with the implementation and
ongoing education and support of the ‘Criteria for clinical use of IVIG in Australia’ (Commonwealth of Australia 2007) and provided input to the recent review of this document. The Blood Service TN role also incorporates the coordination and provision of specialised platelet support (i.e. HLA-matched and directed products). The Blood Service TNs work closely with the hospital-based TNs and the role also includes clinical audit and research (see below).

The TNs in Australia are actively involved in all aspects of transfusion practice improvement as outlined in Table 1. Some additional interesting aspects of the TN role in Australia include participation in a range of clinical research projects, such as:

1. Data linkage activities, where hospital admission data are linked with laboratory data to help understand usage patterns at institutional and regional levels.
2. A study of hospital intern knowledge of blood and blood transfusion, which has been helpful in planning further educational interventions.
3. Collecting patient data for a number of clinical registries such as the Australian and New Zealand Haemostasis Registry (to capture non-haemophilia-related use of recombinant factor FVIIa), and the new national registries for neonatal alloimmune thrombocytopenia and thrombotic thrombocytopenic purpura.
4. National coordinator role for the Australian arm of the international ‘TOPPS’ study (a randomized controlled trial examining the use prophylactic platelet transfusions in patients with haematological malignancies).
5. Mapping and costing studies of red cells and platelets.

Within Australia, each clinical transfusion practice improvement programme regularly uses an email network or online forum at regional (e.g. Blood Matters – Transfusion Interest Group) or national (Australian Specialist Practitioners of Transfusion – AUSPOTS) level to interact, and share resources or information from colleagues, including through national networks in other countries such as the UK Specialist Practitioner of Transfusion (SPOT) group.

Challenges for the TN role

1. Facilitating change and maintaining the drive and enthusiasm to continue to promote and support change where in some settings there is little evidence and conflicting clinical and other priorities.
2. The complexity of the transfusion chain and the number of staff involved, with frequent turnover, which creates sustained pressure on the number and frequency of education requirements.
3. Maintaining funding to support and maintain programmes in the setting of tight healthcare budgets is a constant challenge and requires proactive managers and the use of data to demonstrate the value and need for such programmes. In Australia, support and funding has generally been focused at hospitals in the public sector to date but it is hoped to expand this further to the private sector and rural areas in the future.

Where to from here?

In the current healthcare climate, and with imperatives to reduce costs and risks, it is important that the outcomes and achievements from these clinical transfusion practice improvement programmes continue to be circulated and published, to share results, celebrate achievements, identify problems, minimize duplication of effort and assist with benchmarking. Collaboration between programmes can both maximize results and reduce workloads, generating cost efficiencies and serving to provide a variety of additional skills and experiences for TNs, including opportunities for exploration of new technologies and their implementation. Where institutions, regions or countries are exploring or establishing new programmes, established programmes could provide valuable support and direction by sharing knowledge and experiences.

Summary/conclusion

Specialist transfusion practitioners/TNs have played significant roles in delivering the many achievements of the transfusion practice improvement programmes established to date, working as part of multidisciplinary teams at institutional and national levels in hospitals and blood services to reduce transfusion risks and improve practice. Sustaining improvements in transfusion practice requires the continued support and co-ordination of these efforts.

Disclosures

The authors declare that there are no potential conflicts of interest.

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Further reading

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