Key points

1. Patient blood management (PBM) involves the implementation of evidence-based transfusion guidelines to reduce variability in transfusion practice.

2. Patient safety is at the heart of transfusion practice and PBM.

3. PBM aims to improve clinical outcomes by avoiding unnecessary exposure to blood components.

4. PBM requires a multidisciplinary team approach to study, implement and monitor activities that can impact the use of blood and blood components.

5. PBM has many different strands and allows clinicians to focus on strategies that work for their patients within their transfusion environment.
9.1 Introduction

There is increasing awareness of the limited clinical efficacy of blood transfusion, concerns regarding its safety and the rising costs of providing blood products. Patient blood management (PBM) programmes are a solution to these problems. The practice of PBM involves the implementation of evidence-based transfusion guidelines to reduce variability in transfusion practice, and the establishment of multidisciplinary teams to study, implement and monitor activities that can impact the use of blood and blood components. PBM also aims to improve clinical outcomes by avoiding unnecessary exposure to blood components and a number of different models are described in the literature. Institutions are advised to review the available models and adapt one that works within their health care setting.

Learning outcomes

The goal of this chapter is to provide information on PBM and give readers a structure to implement this within their own clinical setting. Specifically, the reader should be able to:

- Devise a plan for using PBM strategies within their transfusion practice
- Consider which members of the multidisciplinary team are required to implement PBM, including the role of the Transfusion Practitioner
- Understand the importance of audit as both a tool for baseline assessment and for reviewing the impact of changes made
- Develop a strategy for the roll-out of safe transfusion practice education and information for all those involved in blood transfusion

9.2 Where do I start and how do I develop a plan of action?

John Kotter, a Harvard Business School professor, has outlined a strategy of change management (1). This strategy can be used to develop a plan of action for building a PBM programme. The place to start is that a crisis needs to be created. This crisis can relate to the availability of allogeneic blood; it can relate to the safety of the available blood; or, it can relate to the cost of acquiring a unit of blood.

Once the crisis has been recognized, a coalition of individuals needs to be created. These individuals need to be leaders who can implement and force change. They must have the power and resources to create change. A business plan then needs to be developed.

A strategy to optimize blood utilization and perioperative blood management is outlined in Table 9.1. An easy place to start is to make sure that clinicians are using blood appropriately and see where the best available evidence demonstrates benefit. Hospitals information systems should be set up to provide prospective auditing data on appropriate blood use. If prospective data collection is not possible, then retrospective auditing will need to be performed where blood use is reviewed by a team of experts to determine if use was appropriate. If use was inappropriate, this is then conveyed to the provider. This communication is ideally performed in a non-threatening, educational way.
### Table 9.1. A strategy to optimize blood utilization and perioperative blood management

<table>
<thead>
<tr>
<th>Transfusion practice</th>
<th>Leverage solutions to push evidence-based transfusion practice</th>
</tr>
</thead>
<tbody>
<tr>
<td>Autotransfusion</td>
<td>Follow national or professional society intraoperative blood recovery and reinfusion (cell salvage, normovolaemic haemodilution, component therapy) standards</td>
</tr>
<tr>
<td>Anaemia management</td>
<td>Implement a preoperative haemoglobin optimization programme</td>
</tr>
<tr>
<td>Reduce wastage related to blood product use</td>
<td>Reduce wastage as it relates to transfusion practice by reducing phlebotomy loss, eliminating preoperative autologous donation and reducing allogeneic blood wastage due to mishandling</td>
</tr>
<tr>
<td>Surgical technique</td>
<td>Minimize iatrogenic blood loss through meticulous surgical technique, limit sampling practice, use point-of-care testing</td>
</tr>
<tr>
<td>Reporting</td>
<td>Enhance physicians’ awareness through education and auditing of blood utilization practice</td>
</tr>
</tbody>
</table>

* For example, available at: AABB: [https://www.aabb.org/news-resources/resources/patient-blood-management](https://www.aabb.org/news-resources/resources/patient-blood-management)

Another focus is on anaemia management. Preoperative anaemia is associated with increases in perioperative morbidity and mortality. The prevalence of anaemia worldwide is staggering. A structure should therefore be in place for identifying and managing preoperative anaemia. Fig. 9.1 shows a treatment algorithm for this purpose. Additionally, in hospitalized patients, phlebotomy blood loss can be extensive, especially in critically ill patients from whom frequent blood samples are taken. Such patients tend to have bone marrow suppression in association with their illness, so regenerating a red cell mass is difficult when phlebotomy loss is repetitive.

To minimize phlebotomy loss, the following could be considered:

- Point-of-care testing devices could be used (if available), which use microlitre quantities of blood to obtain laboratory information.
- Routine blood draws scheduled at set times should be limited.
- The use of paediatric samples with smaller volumes should be considered.
- Consideration should be given to “waste” volumes taken at the beginning of the phlebotomy process to minimize the amount of discarded blood.

One of the most effective techniques for managing surgical blood loss is through the use of autotransfusion, sometimes called cell salvage or intraoperative cell salvage, where shed surgical blood is collected, processed and reinfused (see Chapter 8, section 8.5). In many parts of the world, blood is simply collected, filtered and reinfused. Many blood volumes can be returned to a patient via autotransfusion. However, if this blood is not managed appropriately, injury to a patient can occur. A common danger is from using sterile water to wash the shed blood and causing massive red cell lysis. Another danger comes from connecting a primary reinfusion bag directly to a patient’s intravenous line and causing an air embolism. Thus, a robust quality control system needs to be established to ensure that the technician operating the equipment is appropriately educated and trained, is aware of these dangers and monitors the blood processing appropriately. In addition, quality assurance testing of the machines should be performed at regular intervals to make sure that they are working appropriately.
**Figure 9.1. Algorithm for managing patients who are anaemic and who have been identified as being at high risk of needing a transfusion during a surgical procedure**

- **IV iron recommendations**
  - Iron sucrose (Venofer)
    - 400 mg infused over 2.5 hours x 2 doses (separated by 14 days)
    - Drug cost = $148/dose ($296/course)
  - Ferric carboxymaltose (Injectafer)
    - 750 mg infused over 15 minutes x 1 dose
    - Drug cost = $727/dose ($727 course)

- **Laboratory hemoglobin**
  - Male: ≤ 12 gm/dl
  - Female: ≤ 11 gm/dl

- **Ferritin**
  - ≤ 50 ng/ml

- **No anemia**
  - Consider iron therapy
  - Determine cause and need for GI evaluation

- **Ferritin < 50 ng/ml**
  - Anemia, iron deficiency unlikely
  - Consider anemia workup
  - Consult Internal Med/Hem
  - Consult Renal in the presence of chronic kidney disease

- **Ferritin ≥ 50 ng/ml**
  - Iron deficiency anemia
    - Evaluate possible causes based on clinical findings
    - Consider GI consult
    - Commence iron therapy

- **Surgery scheduled < 4 weeks**
  - IV iron
  - Also use IV iron if GFR ≤ 30
    - Goal for preoperative dose: 500-1000 mg IV Fe

- **Surgery scheduled ≥ 4 weeks**
  - Ferrous sulfate
    - 324 mg BID-TID
    - Evaluate response after 2 weeks and 1 month

---

* T/S: Type and Screen
  T/CM: Type and Cross-Match

Source: Reproduced with permission from UPMC patient blood management program.

### 9.3 Oversight of transfusion practice in the hospital

Oversight of transfusion practice in the hospital should cover hospital transfusion service senior management structure and responsibilities, engaging clinicians and patients, and the structure and function of the Hospital Transfusion Committee.
CHAPTER 9: IMPLEMENTING A HOSPITAL-BASED PATIENT BLOOD MANAGEMENT PROGRAMME

Every hospital should have some mechanism for overseeing the use of blood. Traditionally, this has taken the form of the Transfusion Committee. Typically, this committee will review blood product and component use, adverse events associated with blood, the crossmatch to transfusion ratio, and changes in the management of blood products and components. This traditional committee can evolve to become a Patient Blood Management Committee, which performs the traditional activities of a Transfusion Committee as well as taking responsibility for quality improvement activities. These activities can include:

- review of the phlebotomy practice;
- implementation of preoperative anaemia management;
- implementation of point-of-care testing;
- development of a bloodless medicine programme for the care of patients who refuse blood; and
- guidelines for the use of adjuncts such as tranexamic acid.

When this committee is established, it is important to have representatives of services that use blood such as surgeons, anaesthetists, haematologists, renal physicians and obstetricians; members of the supply chain who negotiate contracts for blood and related services; members who understand the legal challenges associated with the provision of blood; transfusion medicine specialists, scientists and nurses.

9.4 Clinical practice audit, performance and quality metrics

Auditing should start with a basic understanding of where a hospital’s blood resources are being utilized. For instance, if a hospital uses 1000 units of blood per year, it would be useful to know which services and which physicians use this blood. This knowledge would facilitate any quality improvement practices that might be undertaken. Once a basic understanding is achieved, developing volume-adjusted metrics is valuable to separate changes in blood product use from changes in hospital admission rates or in surgical volume. So, if 1000 units of blood per year are being provided for 1000 surgical procedures, a metric of 1 unit per surgical procedure can be used to compare performance if the surgical cases expanded to 1200 or decreased to 800. Fig. 9.2 and Table 9.2 show examples of reports looking at blood utilization. Table 9.2 is a report with volume-adjusted blood use by inpatient admissions and surgical procedures, and Fig. 9.2 looks at blood usage in hip surgery.

Once a basic understanding of where blood is being used has been achieved, reports comparing physicians across similar domains are valuable. A useful example is comparing surgeons who perform total joint replacement surgery. If a hospital finds that one surgeon is doing a total knee replacement without transfusing any blood while another surgeon is administering transfusions to 40% of his or her patients, an opportunity would exist for performance improvement. In total joint replacement, variability can arise from different surgical approaches, different thrombosis prophylaxis, different transfusion thresholds and differences in placement of surgical drains, among others.
Figure 9.2. Blood product use for a single surgical procedure, total hip replacement, which is performed frequently

<table>
<thead>
<tr>
<th></th>
<th>2009 Q 3</th>
<th>2009 Q 4</th>
<th>2010 Q 1</th>
<th>2010 Q 2</th>
<th>2010 Q 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Discharges</td>
<td>376</td>
<td>442</td>
<td>432</td>
<td>411</td>
<td>409</td>
</tr>
<tr>
<td>Total receiving blood</td>
<td>153</td>
<td>179</td>
<td>138</td>
<td>175</td>
<td>151</td>
</tr>
<tr>
<td>% Total that receive</td>
<td>40.7%</td>
<td>40.5%</td>
<td>31.9%</td>
<td>42.6%</td>
<td>36.9%</td>
</tr>
<tr>
<td>Average units per case</td>
<td>1.97</td>
<td>1.93</td>
<td>1.87</td>
<td>2.22</td>
<td>1.87</td>
</tr>
<tr>
<td>ALOS w blood</td>
<td>3.8</td>
<td>3.4</td>
<td>3.3</td>
<td>3.4</td>
<td>3.6</td>
</tr>
<tr>
<td>ALOS w/o blood</td>
<td>3.5</td>
<td>3.3</td>
<td>3.1</td>
<td>3.1</td>
<td>3.1</td>
</tr>
<tr>
<td>Ave charges w blood</td>
<td>$90,965</td>
<td>$81,021</td>
<td>$82,873</td>
<td>$78,380</td>
<td>$79,704</td>
</tr>
<tr>
<td>Ave charges w/o blood</td>
<td>$65,493</td>
<td>$63,276</td>
<td>$62,018</td>
<td>$65,165</td>
<td>$68,276</td>
</tr>
<tr>
<td>% Autologus</td>
<td>12.4%</td>
<td>10.1%</td>
<td>8.0%</td>
<td>9.1%</td>
<td>12.6%</td>
</tr>
<tr>
<td>Home discharge %</td>
<td>71.5%</td>
<td>70.4%</td>
<td>83.1%</td>
<td>73.5%</td>
<td>69.9%</td>
</tr>
<tr>
<td>Facility discharge %</td>
<td>28.5%</td>
<td>29.6%</td>
<td>16.9%</td>
<td>26.5%</td>
<td>30.1%</td>
</tr>
</tbody>
</table>

Note: The table at the top of the figure shows average blood product use, whereas the bullet graph at the bottom shows where individual surgeons fall. Each bullet represents a single surgeon and the size of the bullet represents the number of surgeries that he or she performed in a reporting period. The x-axis shows the average number of patients who were transfused with erythrocytes during the reporting period whereas the y-axis shows the average number of units transfused during a transfusion episode. The variability in transfusion results from different transfusion triggers, different surgical approaches to replacing the hip, and differing deep vein thrombosis prophylaxis.

Source: Reproduced with permission from UPMC patient blood management program.
### Table 9.2. Blood product use with volume adjustment for total surgical cases and for inpatient admissions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Whole blood</td>
<td>4</td>
<td>0</td>
<td>4</td>
<td>-100.0</td>
<td>0.00</td>
<td>0.00</td>
<td>-100.0</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>0.00</td>
<td>-100.0</td>
</tr>
<tr>
<td>Packed cells</td>
<td>78,397</td>
<td>68,586</td>
<td>9,811</td>
<td>-12.5</td>
<td>0.37</td>
<td>0.31</td>
<td>-16.4</td>
<td>0.52</td>
<td>0.42</td>
<td>0.10</td>
<td>-19.8</td>
<td></td>
</tr>
<tr>
<td>Leukoreduced red cell product</td>
<td>32,924</td>
<td>29,191</td>
<td>3,733</td>
<td>-11.3</td>
<td>0.16</td>
<td>0.13</td>
<td>-15.2</td>
<td>0.22</td>
<td>0.18</td>
<td>0.04</td>
<td>-18.7</td>
<td></td>
</tr>
<tr>
<td>Red blood cells, divided</td>
<td>3,192</td>
<td>2,587</td>
<td>605</td>
<td>-19.0</td>
<td>0.02</td>
<td>0.01</td>
<td>-22.5</td>
<td>0.02</td>
<td>0.02</td>
<td>0.01</td>
<td>-25.7</td>
<td></td>
</tr>
<tr>
<td>Washed/frozen cells</td>
<td>136</td>
<td>296</td>
<td>(160)</td>
<td>117.6</td>
<td>0.00</td>
<td>0.00</td>
<td>(0.00)</td>
<td>108.1</td>
<td>0.00</td>
<td>0.00</td>
<td>(0.00)</td>
<td>99.6</td>
</tr>
<tr>
<td>FFP/thawed plasma</td>
<td>41,419</td>
<td>38,142</td>
<td>3,277</td>
<td>-7.9</td>
<td>0.20</td>
<td>0.17</td>
<td>-12.0</td>
<td>0.27</td>
<td>0.23</td>
<td>0.04</td>
<td>-15.5</td>
<td></td>
</tr>
<tr>
<td>Cryo-poor plasma</td>
<td>1,793</td>
<td>1,967</td>
<td>(174)</td>
<td>9.7</td>
<td>0.01</td>
<td>0.01</td>
<td>(0.00)</td>
<td>4.9</td>
<td>0.01</td>
<td>0.01</td>
<td>(0.00)</td>
<td>0.6</td>
</tr>
<tr>
<td>Platelets</td>
<td>71,969</td>
<td>60,707</td>
<td>11,262</td>
<td>-15.6</td>
<td>0.34</td>
<td>0.27</td>
<td>-19.3</td>
<td>0.48</td>
<td>0.37</td>
<td>0.11</td>
<td>-22.6</td>
<td></td>
</tr>
<tr>
<td>Cryoprecipitate</td>
<td>11,435</td>
<td>9,272</td>
<td>2,163</td>
<td>-18.9</td>
<td>0.05</td>
<td>0.04</td>
<td>-22.5</td>
<td>0.08</td>
<td>0.06</td>
<td>0.02</td>
<td>-25.6</td>
<td></td>
</tr>
<tr>
<td>Plateletpheresis</td>
<td>2,113</td>
<td>1,915</td>
<td>198</td>
<td>-9.4</td>
<td>0.01</td>
<td>0.01</td>
<td>-13.3</td>
<td>0.01</td>
<td>0.01</td>
<td>0.00</td>
<td>-16.9</td>
<td></td>
</tr>
<tr>
<td>Granulocytes</td>
<td>23</td>
<td>36</td>
<td>(13)</td>
<td>56.5</td>
<td>0.00</td>
<td>0.00</td>
<td>(0.00)</td>
<td>40.7</td>
<td>0.00</td>
<td>0.00</td>
<td>(0.00)</td>
<td>43.6</td>
</tr>
<tr>
<td>Total</td>
<td>210,481</td>
<td>183,508</td>
<td>26,973</td>
<td>-12.8</td>
<td>0.99</td>
<td>0.83</td>
<td>-16.6</td>
<td>1.39</td>
<td>1.11</td>
<td>0.28</td>
<td>-20.0</td>
<td></td>
</tr>
</tbody>
</table>

Note: When total blood products are evaluated in this chart, a −12.8% reduction in products is seen; however, when adjusted for changing volumes, the reductions look much larger. For instance, if blood product use is volume-adjusted based on the total inpatient admissions, then the reduction looks dramatically larger at −20.0%. Source: Reproduced with permission from UPMC patient blood management program.
Another report can cover the inappropriate use of blood. A hospital would need to define what is considered appropriate or inappropriate use of blood in association with laboratory criteria and evidence-based guidelines on best practice. The reporting of inappropriate blood use allows for targeted education of providers who use blood inappropriately. It also provides an opportunity to develop some cost-saving metrics. This allows clinicians and their teams to see the positive financial impact of appropriate blood use and the financial savings could potentially be directed to other health care initiatives.

Clinical audits should also cover quality and safety activities such as storage and handling of the blood products, administration practices and compliance with hospital policies and procedures. Useful resources for blood transfusion audits include:

- National Comparative Audit of Blood Transfusion (http://hospital.blood.co.uk/audits/national-comparative-audit/).

### 9.5 Guidelines on the clinical use of blood including maximum surgical blood ordering schedules (MSBOS)

In the 1970s, MSBOS were developed to prevent patients from arriving in the operating room without adequate blood being available. The MSBOS were generated by surveys performed by surgeons to determine the anticipated need for blood for their particular surgery. Surveys were repeated annually in an attempt to maintain a current MSBOS. Several investigators have suggested that using electronic tools to provide data on actual blood product need is a more effective system. But even though MSBOS have become a slightly archaic tool for supporting the most up-to-date surgical techniques, they are a good starting point for those who wish to begin reviewing their blood ordering and usage and have not yet implemented electronic systems within their health care system.

Health care providers manage surgical blood ordering in different ways. At the University of Pittsburgh, United States, the recommendations are stratified according to three groups:

- patients needing no preoperative blood screening;
- patients who should have a type and screen performed; and
- patients who should be screened and crossmatched.

These categories would reflect historical blood need of less than 5%, 5–25%, and greater than 25%, respectively.

### 9.6 Education and training on the clinical use of blood

For patients to receive a safe and appropriate blood transfusion, it is essential that all those involved in the blood transfusion process are provided with information and training. This requires the implementation of a comprehensive
education programme that includes the latest evidence-based information, uses a range of learning techniques, and allows easy access and flexibility to ensure compliance.

When current clinical practice is understood (which can be achieved using audits or surveys), this can be compared with any guidelines or standard operating procedures (SOPs) that are in place. If no guidelines or SOPs are available, comparisons can be made with national guidelines from other countries such as the British Society for Haematology (BSH) or the AABB (formerly the American Association of Blood Banks). When developing transfusion guidelines, it is important that:

- They are evidence-based, wherever possible (noting ongoing evidence gaps in many areas of clinical transfusion practice).
- They are based on local practice.
- They take into account what is feasible within the institution.
- A collaborative approach is taken involving representatives in the process, with a group chair.
- Clinical staff can read them easily and they guide them on how to manage the patient undergoing a transfusion.
- Education can be delivered based on the guidelines.

When the standards of appropriate use of blood are in place, this helps to provide a framework for the education of clinical staff.

Consider the transfusion process as a framework for education as shown in Table 9.3.

### Table 9.3. Components of a framework for education

<table>
<thead>
<tr>
<th>Decision to transfuse</th>
<th>Appropriate use of blood</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Use of blood components</td>
</tr>
<tr>
<td></td>
<td>Review of transfusion triggers</td>
</tr>
<tr>
<td></td>
<td>Consideration of alternatives</td>
</tr>
<tr>
<td>Blood administration</td>
<td>Collecting blood safely from the laboratory</td>
</tr>
<tr>
<td></td>
<td>Checking of blood at the patient’s bedside</td>
</tr>
<tr>
<td></td>
<td>Monitoring of the patient during the transfusion</td>
</tr>
<tr>
<td></td>
<td>Monitoring of blood wastage</td>
</tr>
<tr>
<td>Management of adverse events</td>
<td>Management of transfusion reactions</td>
</tr>
<tr>
<td></td>
<td>Management of unexpected events (e.g. transfusion errors)</td>
</tr>
<tr>
<td>Patient blood management</td>
<td>Consideration of preoperative management strategies (e.g. iron therapy)</td>
</tr>
<tr>
<td></td>
<td>Hospital-wide initiatives (e.g. iatrogenic anaemia review)</td>
</tr>
<tr>
<td></td>
<td>Quality programme associated with autotransfusion</td>
</tr>
</tbody>
</table>
A number of different approaches are available for educating and training clinical staff on the clinical use of blood (Table 9.4).

Table 9.4. Possible approaches for educating and training clinical staff on the clinical use of blood

<table>
<thead>
<tr>
<th>Type of approach</th>
<th>Advantages and disadvantages</th>
</tr>
</thead>
<tbody>
<tr>
<td>PowerPoint presentations</td>
<td>Can be given in the classroom setting&lt;br&gt;Easy to update when information changes&lt;br&gt;Information can be delivered to a large number of people at one time&lt;br&gt;Information retention by those listening is not guaranteed</td>
</tr>
<tr>
<td>E-learning</td>
<td>Can be undertaken whenever the learner is ready&lt;br&gt;Information retention can be monitored by the use of assessments&lt;br&gt;Requires access to the internet&lt;br&gt;Programmes from other countries can be considered&lt;br&gt;Difficult to update as software program writers are required</td>
</tr>
<tr>
<td>Workshops</td>
<td>Learners can be taught in small groups&lt;br&gt;Specific topics can be covered&lt;br&gt;Understanding of information can be assessed through feedback activities Activities require facilitation&lt;br&gt;Participants need to be released from duties to attend</td>
</tr>
<tr>
<td>Informal ward-based teaching</td>
<td>Session times can be set when clinical areas are less busy with staff performing patient-related duties (e.g. 08:00 or afternoons)&lt;br&gt;Staff are close to the session&lt;br&gt;Sessions can be tailored according to clinical area (e.g. surgery or obstetrics)&lt;br&gt;Activities risk being cancelled if the ward becomes busy, or the trainer cannot deliver the session</td>
</tr>
</tbody>
</table>

For all sessions
- Know the audience (e.g. senior clinicians, doctors in training, registered nurses)
- Understand the learning needs of the group to enable trainers to decide which information is more relevant to a particular group
- Ensure the information given is accurate and current
- Where possible, obtain feedback from participants to assist in improving future sessions

Other useful resources
- Patient information leaflets so staff can become familiar with them
- Posters for clinical areas to promote safe transfusion messages
- Bookmarks that staff can take away
- If available, use smart phone apps with information that can be referred to once the session is over

9.7 Patient blood management: haemovigilance structures and reporting

WHO recognizes the importance of haemovigilance to identify and prevent occurrence or recurrence of transfusion-related adverse events, and to increase the safety, efficacy and efficiency of blood transfusion, covering all activities of the transfusion chain from donor to recipient (Box 9.1) (2).
Box 9.1. Definition of haemovigilance

What is haemovigilance?

Haemovigilance is a set of surveillance procedures covering the entire transfusion chain, from the donation and processing of blood and its components, to their provision and transfusion to patients and their follow-up. It includes the monitoring, reporting, investigation and analysis of adverse events related to the donation, processing and transfusion of blood, and taking actions to prevent their occurrence or recurrence.

Source: reference (2).

Patient safety is at the heart of transfusion practice and PBM. Reporting systems play a fundamental role in enhancing patient safety by enabling learning from failures and potential failures, and then putting systems in place to prevent them from recurring. Many health care providers have established the Haemovigilance Officer role, with the responsibility for investigating and reporting transfusion reactions, adverse events and near-misses both internally and externally to national haemovigilance schemes.

Investigating these events ideally includes communicating directly with the staff and patients involved to collect all the essential details about the event and the factors that led to it. This information will help determine the final conclusion (type of reaction), and recommendations for future transfusion plans for the patient, and/or the implementation of corrective and preventive measures.

Haemovigilance is often part of the Transfusion Practitioner role (see section 9.7), or it could be allocated as a key task to a member of staff such as a senior nurse, a senior scientist or a clinician, if no Haemovigilance Officer or Transfusion Practitioner roles are in place.

Surveillance through audits can help to identify current clinical practice, understand the transfusion processes and any gaps or potential risks that may be present. Review and assessment of staff knowledge can help to guide what education is needed and these activities all contribute to quality improvement (3).

Haemovigilance is also linked to the donation side of the transfusion process with the monitoring and recording of serious adverse events associated with donation. Although donation is safe for most donors, a small proportion may suffer an adverse event and surveillance of these events helps improve donor and overall transfusion safety (4).

Haemovigilance is the responsibility of everyone who is involved in the transfusion process, including the patient. It should be part of the quality cycle of transfusion that works towards safe transfusion practice.

9.8 Patient blood management and the Transfusion Practitioner (TP)

The term TP is often used to describe roles related to safety and appropriate use of blood, including activities to reduce use and provide alternatives. TPs come from a number of different health care backgrounds, although they are predominantly nursing or biomedical scientists. They are regarded as an important link, bridging the gap between the laboratory and clinical areas, nursing staff, medical teams and support staff (5). Other terms that are used to describe the role include:
transfusion nurses

transfusion safety officers

haemovigilance officers

PBM practitioners

PBM officers.

As PBM requires a multidisciplinary approach, the primary role of the TP is to promote safe and appropriate use of blood or appropriate alternatives to a wide range of clinical colleagues across health care establishments. They play a role in engaging and educating scientific, medical and nursing colleagues, pulling together available resources, collecting and sharing data and evaluating activities intended to improve patient outcomes. They may do this by sourcing information and resources from clinical colleagues in other health care establishments.

An example of a PBM strategy that the TP might wish to lead is to examine if patients are going into surgery with anaemia that could be managed before surgery. The TP could use audits to demonstrate the need for anaemia management. With these data, and in conjunction with the PBM team, the TP could develop a process, suited to the organization, to address the need and to improve patient outcomes. If organizations do not have a TP, elements of the role could be incorporated within other clinical roles, whether this is medical, nursing or scientific staff, there are projects that can be undertaken to promote PBM.

The incumbent of the TP role is uniquely placed to work with all teams bridging the transfusion gap and ensuring that the patient remains at the centre of the transfusion process. TPs are expert practitioners in transfusion medicine including blood administration, appropriate use and laboratory practices. They ensure that clinical staff have access to the most up-to-date transfusion training and policies and, as a result, patients and families are given the right transfusion information.
References


Suggested reading

International Society of Blood Transfusion [online]: (www.isbtweb.org/working-parties/clinical-transfusion and links from this page to ISBT PBM resources, accessed 13 June 2021)