peri-operative care series

Few of us would override a legally competent patient's right to refuse treatment. However, when the treatment could potentially save the individual's life we feel uncomfortable with that refusal. We adopt a protective attitude and attempt to reason with our patients. We explain the likely medical consequences of declining the treatment. After all, it is our professional duty to try to make people better and to save their lives. Blood is one such treatment.

Patients refuse blood for many reasons. Some are worried about the risk of infection and disease that may be transmitted as a result. Others are concerned about being given the wrong type or suffering an allergic reaction. Occasionally patients refuse blood for religious reasons and as professionals, we worry about its decreasing availability and increasing costs.

In this article, Whyman *et al* revisit and update us on the principles of bloodless surgery and some of the issues raised when managing Jehovah's Witness patients.

There are 34 Jehovah's Witness hospital liaison committees in the UK. They are a free resource. I would encourage you to contact them at any time at their central office on 020 8906 2211 or his@uk.jw.org if you have any queries about managing Jehovah's Witness patients.

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Avoiding blood transfusion in surgical patients (including Jehovah's Witnesses)

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Question

A 72-year-old male Jehovah's Witness has an infrarenal abdominal aortic aneurysm requiring surgery. He will not accept the use of allogeneic blood. What strategies could be employed in this situation and in other surgical patients to reduce the need for peri-operative blood transfusion?

Jehovah's Witnesses

What is acceptable?

Jehovah's Witnesses report a UK membership of 140,000 (7.5 million worldwide). The absolute refusal of whole blood and major blood components is a core value of their faith and non-consensual transfusion is regarded as gross physical violation and leaves the physician open to legal challenge.¹

However, certain 'fractions' of blood components and other interventions are considered a matter of individual choice (Table 1). In an elective situation Jehovah's Wit-

nesses will usually identify themselves and should be asked to clarify their own personal decisions surrounding the use of blood products. In an emergency situation they may be identified by their relatives or carers and most Witnesses will carry an advance directive.

Legal considerations and advance directives

For a competent adult Jehovah's Witness, the refusal of blood must be respected. This refusal may require that a bespoke treatment plan be prepared. Most Jehovah's Witnesses will have given prior consideration to the use of blood and should produce a detailed advance directive. Copies are usually kept with the GP, family or friends. If valid and applicable the directive must be honoured and to this end the content should be scrutinised in detail by the medical team. Discussion of the risks and benefits as well as the additional risk associated with refusal of blood transfusion should be part of the informed consent process. This discussion should be in the presence of a witness, and be

Table 1 Acceptability of fluids, blood and blood-related products and procedures in Jehovah's Witnesses

Not acceptable	May be acceptable
> Whole blood	> 'Fractions' of blood
> Packed red cells	products (albumin,
> Platelets	immunoglobulin,
> White cells	vaccines, clotting factors,
> Plasma	prothrombin complex
> 'Predonation' of blood for	concentrates)
later autotransfusion	> Organ donation and
	transplantation
	> Acute normovolaemic
	haemodilution*
	> Heart bypass*
	> Haemodialysis*
	> Cell salvage*

*May be acceptable on the basis of individual choice especially where blood can be managed via a continuous circuit (the UK Cell Salvage Action Group's factsheet, *Cell Salvage in Jehovah's Witness patients*, provides technical guidance)

documented and signed in the patient's notes. Additionally, for an elective procedure on a Jehovah's Witness patient, a surgeon may refuse to undertake the operation.

In the UK, the Department of Health has produced a specific consent form for patients refusing blood transfusion and the Witness community has published a care plan for surgery in Jehovah's Witnesses, which reviews available therapies with the patient. Local representatives from the Jehovah's Witness hospital liaison committee may be pivotal in assisting with this process.

In the case of an unconscious Jehovah's Witness patient with severe haemorrhage, unless there is clear evidence (such as an advance directive) stating that even with life-threatening bleeding the patient would not accept blood, the medical team should act in the best interests of the patient with or without the use of blood.²

For children of Jehovah's Witnesses, legal precedent supports life-saving transfusion against parents' wishes but two doctors of consultant status should clearly document the reasons for transfusion and the parents should be involved throughout the decision-making process.

Principles of bloodless surgery

'Bloodless surgery' refers to a number of peri-operative measures to reduce the need for blood transfusion and improve outcomes (Table 2).

Pre-operative measures

A thorough history and examination are paramount to assess physiological reserve, identify cardiopulmonary disease amenable to optimisation and ascertain whether the patient is taking medication that may increase blood loss (eg non-steroidal anti-inflammatory drugs, steroids, aspirin, anticoagulants and some herbal treatments). Attempts should be

made to minimise the number of blood tests required for investigation. Do not take a group and save a sample as this is not permitted. Pre-operative anaemia should be investigated and treated with appropriate supplementation of iron, folate and/or vitamin B12. Erythropoiesis stimulating agents can improve red cell mass but need time to deliver results (at least 2–3 weeks). Haematology expertise may be necessary to assist with dose calculation and iron supplementation. Surgeons should ensure that multidisciplinary team discussion has taken place and the appropriate equipment and expertise is available. As far as possible, a senior surgeon, anaesthetist and theatre team should undertake the operation.

Intra-operative measures

The aims of intra-operative techniques utilised in theatre are to reduce surgical blood loss, decrease oxygen consumption and increase oxygen delivery. Surgeons should consider in addition to the use of diathermy, radiofrequency ablation, harmonic scalpel or some of the other haemostatic aids and topical haemostats that are available. It is important to maintain normothermia and, where appropriate, procedures (such as bilateral mastectomy) should be performed in stages to reduce the risk of major blood loss. Minimally invasive alternatives to major surgery (particularly interventional radiology techniques) should be considered and near-patient haemoglobin and clotting tools (eg HemoCue® and thromboelastograms) may be valuable in blood conservation.⁵

Controlled hypotension may reduce bleeding although the safe lower limit is unknown. A target mean arterial blood pressure of at least 50mmHg must be maintained to allow autoregulation for cerebral blood flow. However, persistent hypotension could result in irreversible ischaemic organ damage and this risk is higher in patients with significant cardiovascular, cerebrovascular, renal or hepatic disease.

Acute normovolaemic haemodilution (ANH) involves the removal of whole blood from the patient after induction of anaesthesia but prior to the start of the operation and replacement with crystalloid or colloid fluids to maintain intravascular volume. This technique relies on adequate physiological compensation for the acute blood loss, primarily by an increase in cardiac output, with fewer red blood cells being lost during surgery. ANH may be acceptable to Jehovah's Witness patients. Some may request that the removed blood remain in a closed circuit within their body, which is achieved by modifying intravenous lines. Blood salvage techniques using cell salvage or drain collection systems are valuable tools and the risks of cell salvage are low in the presence of infection or malignancy.⁴ Salvaging blood from swabs may also be helpful.

Post-operative measures

Post-operative transfusion avoidance strategies focus on reducing blood loss (and unnecessary blood tests), avoiding sepsis and adequately supplementing nutrition, iron, vitamin B12 and folate. Post-operative blood salvage from surgical drains may be feasible after specific procedures.

Table 2 Summary of blood conservation strategies that may be considered

Pre-operative	Intra-operative	Post-operative
<ul style="list-style-type: none"> > Detailed assessment and medical optimisation > Consider improving haemopoiesis > Plan equipment and personnel (senior surgeon/anaesthetist) 	<ul style="list-style-type: none"> > Consider laparoscopic procedure vs open > Undertake staged procedure > Regional anaesthesia > Deliberate controlled hypotension > Controlled hypo/normothermia > Careful positioning – increase venous drainage > Ensure haemostasis (consider haemostatic aids) > Acute normovolaemic haemodilution > Cell salvage > Consider the use of vasoconstrictors > Consider the use of tranexamic acid/recombinant factor VIIa/desmopressin 	<ul style="list-style-type: none"> > Detect and minimise blood loss > Cell salvage > Avoid/prevent sepsis > Increase haemopoiesis > Optimise cardiorespiratory function

Post-operative respiratory care should include supplemental oxygen, chest physiotherapy and rapid recognition and treatment of respiratory complications. These measures in addition to good analgesia and adequate intravascular volume (to maximise cardiac output) will help optimise oxygen delivery.

Conclusions

Although Jehovah's Witnesses do not accept allogeneic blood transfusion, the avoidance of blood transfusion is desirable in all surgical patients. The application of blood conservation strategies such as those described in this article may help reduce blood loss. The surgical team will need to take account of the principles of bloodless surgery when planning any treatment.

Summary

- > When treating Jehovah's Witnesses, the surgical team should carefully discuss the risks and clarify which products and treatments are available and might be acceptable to the patient.
- > A range of multidisciplinary pre, peri and post-operative blood conservation strategies can be employed to reduce the need for transfusion and should be considered in the management of all surgical patients.

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