

DEVELOPING A BLOOD CONSERVATION CARE PLAN FOR JEHOVAH'S WITNESS PATIENTS WITH MALIGNANT DISEASE

We trust this document will be helpful to the clinical team treating one of Jehovah's Witnesses for a malignant condition where blood or blood component support would normally be part of the treatment plan.

Patients who are Jehovah's Witnesses understand the constraints their beliefs produce. They wish to work with their doctors to be effectively treated within these constraints and welcome frank open discussions at all stages.

Originally presented at the British Society for Haematology 47th Annual Scientific Meeting
Bournemouth, April 2007

Reviewed August 2014

JEHOVAH'S WITNESSES' POSITION ON BLOOD

Patients who are Jehovah's Witnesses will refuse the transfusion of whole blood and its primary components (namely red cells, white cells, platelets, and plasma). They also decline preoperative autologous donation arrangements.

This, however, leaves **areas of choice** that may need to be considered and documented with the patient, in particular:

- The acceptability of plasma derivatives (albumin, fibrinogen concentrate, immunoglobulins, prothrombin complex concentrate, etc.) and cryoprecipitate.
- The use of extracorporeal equipment and procedures using the patient's own blood (such as blood salvage or apheresis techniques).
- The acceptance of bone marrow transplantation or peripheral blood stem cell transplantation procedures, if appropriate.

The involvement of the local Hospital Liaison Committee for Jehovah's Witnesses at an early stage may be helpful.¹

GENERAL CONSIDERATIONS

- **From the outset, the care plan needs to be designed to allow for the unavailability of primary blood component support; this should be well communicated to each of the multi-disciplinary teams involved in the treatment.**
- **Correction of anaemia of malignancy should begin as soon as possible in anticipation of surgery, chemotherapy, or radiotherapy. In addition to standard haematinics, the use of erythropoiesis-stimulating agents (ESAs) and IV iron may deserve special consideration when transfusion of primary blood components is not an available option.²**
- **If consistent with optimal treatment, consider the use of intensive therapies such as high dose chemotherapy or stem cell transplantation at an early stage, before the patient becomes excessively debilitated or anaemic from earlier treatment courses.**
- **Recalculate the normal risk/benefit equation without the use of primary blood component support. This may affect decisions with regard to, for example, the usage of blood salvage equipment in solid tumour surgery or the administration of erythropoiesis-stimulating agents. (See below.)**

ONCOLOGICAL SURGICAL PROCEDURES

Due to abnormal and enlarged tumour vasculature, solid tumour surgery carries a risk of heavy blood loss. In addition to modern meticulous haemostatic techniques, patients who are Jehovah's Witnesses may particularly benefit from strategies such as the following:

Blood Salvage. Many centres are now routinely using blood salvage equipment with microfiltration in solid tumour surgery without increased spread of disease or reduction in overall survival.^{3,4} This is a notable example of where the risk/benefit equation may shift because of the patient's refusal of blood.

Tumour Embolisation. Where appropriate, preoperative embolisation of the tumour's blood supply can be very effective in reducing intraoperative blood loss. Embolisation, radioembolisation, and chemoembolisation techniques can be effective therapies to shrink tumours and precipitate tumour cell death where surgery may not be appropriate or possible.^{5,6}

Radio Frequency Ablation (RFA) of tumours is a minimally invasive procedure usually carried out in a surgical setting.⁷ It could prove particularly useful in liver, kidney, lung, and bone neoplasia where standard surgery may be inappropriate or risky due to frailty, anaemia, etc.

CHEMOTHERAPY AND RADIOTHERAPY

Like all patients, Jehovah's Witnesses seek the most effective treatments, but since the nature of malignant disease and the treatment regimens inevitably create (often profound) anaemia, the challenge is to provide optimum treatment whilst avoiding unacceptable levels of anaemia.

Protocols for certain cancers may allow a choice of cytotoxic agents with varying degrees of myelosuppression.⁸

Localised radiotherapy in conjunction with chemotherapy may, if appropriate, lessen haemopoietic damage. Additionally, radiotherapy as a single modality has been demonstrated to be effective in the management of certain cancers such as Hodgkin's lymphoma, gliomas and paediatric medulloblastoma.

Brachytherapy, where possible, is an attractive blood conserving strategy; its use has proved effective in the treatment of tumours in a wide range of locations, for example, in cancers of the cervix, prostate, breast, and skin.

However, in many cases the range of optimal treatment choices is quite limited and therefore the **management of profound anaemia** remains a key issue.

- Low haemoglobin levels – **positive ventilatory oxygen support** may be needed at critical points. Recent concerns over the use of **ESAs (erythropoiesis-stimulating agents)** in cancer management deserve careful consideration. However, evidence of their beneficial effects continue to be published⁹ and they may have a key role in treating a patient group refusing major blood component support.^{1,10} Here again, there is a significant shift in the risk/benefit calculation. The combined administration of **IV iron** with **ESAs** has been shown to enhance results.¹⁰ Where the use of ESAs is contra-indicated, **IV iron** alone may in certain cases improve haemoglobin levels.^{11,12} In post-therapy recovery, recently modified ESAs with different dosing schedules may be especially attractive.
- Neutropenia – **Granulocyte Colony-Stimulating Factor (GCSF)**, together with prophylactic antibiotics, can be effective in reducing febrile neutropenic episodes. Again, recently modified versions of GCSFs can allow a greater flexibility of dosing schedules.¹³
- Thrombocytopenia – can pose a serious problem to the Witness patient experiencing complications, such as sepsis, during chemotherapy, or undergoing myeloablative procedures. Recent guidelines have significantly reduced platelet transfusion triggers.¹⁴ Additionally, although recombinant thrombopoietin preparations failed to prove useful therapeutically, recently **TPO Mimetic agents** have been licensed and very successfully used for the treatment of ITP (Idiopathic Thrombocytopenic Purpura). There are currently trials that may provide the basis to extend the license for these agents to the treatment of chemotherapy induced thrombocytopenia.^{15,16} In the meantime, the treatment of severe thrombocytopenic events rely on agents such as **antifibrinolytics** (e.g. Tranexamic Acid), or coagulation factors, as in **cryoprecipitates, prothrombin complex concentrates, fibrinogen concentrate**¹⁷, and possibly **activated factor VIIa** (rFVIIa; NovoSeven®). The acceptance of coagulation factors, along with rFVIIa, will need to be determined by each patient.

BONE MARROW TRANSPLANT (BMT) AND PERIPHERAL BLOOD STEM CELL TRANSPLANTATION (PBSCT)

An increasing number of cases are being reported of Jehovah's Witness patients who are undergoing, and surviving, autologous and allogeneic BMT and PBSCT.^{18,19,20} These procedures raise many issues for both the treating clinicians and the patient. The involvement of the local Hospital Liaison Committee for Jehovah's Witnesses at an early stage may be constructive.

Reduced Intensity Conditioning (RIC) procedures. Although non-myeloablative, the efficacy of these procedures is generally viewed as dependant upon the active presence of harvested donor white blood cells in the transplantation and, frequently, the later infusion of further donated lymphocytes. In such circumstances, RIC procedures would appear to be unacceptable to a patient who is one of Jehovah's Witnesses.²¹

Apheresis procedures in malignant disease include the reduction of paraprotein levels in myeloma, autologous stem cell harvest, etc., and these will be a matter of personal choice for the Jehovah's Witness patient. From a clinical perspective, any anaemia from apheresis procedures will also have to be considered. In the area of stem cell mobilisation for peripheral blood collection, new mobilising agents

producing enhanced harvests (hence necessitating fewer apheresis sessions) have now entered clinical practice.²²

PALLIATIVE AND END-OF-LIFE CARE

The use of blood component support in palliative care is infrequent, but does have a place in symptom control associated with anaemia (fatigue, breathlessness, etc.). Of course, such symptoms are not solely caused by anaemia in malignancy and can be managed successfully in other ways. Current care pathways allow appropriate care to be given to people in the last days of life whether at home, in hospital, or in a hospice.

Jehovah's Witnesses believe that life is sacred and seek all reasonable and humane ways to sustain and prolong it. However, it is not believed necessary to undertake extraordinary or costly measures if the general consensus of the treating team is that this is merely prolonging the dying process.

Jehovah's Witnesses have no rituals or practices to perform for those who are dying, nor last rites to be administered to those *in extremis*, and there are no special requirements to be observed by medical or nursing attendants at the time of death.

PAEDIATRIC CONSIDERATIONS

Current guidelines stress the increased hazards associated with blood transfusion in minors, particularly neonates and young children.²³

However, it is acknowledged that childhood cancers invariably require intensive treatment with frequent reliance on primary blood component support. Clinicians are averse to paediatric allogeneic blood exposure except where absolutely necessary.¹⁵ This is especially the case where the patient and family have religious objections and consider it to be a violation of the body. Many of the blood conserving strategies applied to adults can, where possible, be considered for children to avoid such exposure.

In the case of teenagers and adolescents, in addition to considering parental concerns, recent professional guidelines encourage the young person's own involvement at all stages of treatment decision-making.²⁴

We would like to thank the following for their contribution and review in the preparation of this document:

Dr Derek R. Norfolk – Consultant Haematologist, NHS Blood & Transplant and Leeds Teaching Hospital Trust
Prof Mark Bellamy – Professor of Critical Care Anaesthesia, St James's University Hospital, Leeds
Dr Joanna Dent – Consultant Oncologist, Huddersfield Royal Infirmary
Dr Maria H. Gilleece – Consultant Haematologist, St James's University Hospital, Leeds
Dr Mary Kiely – Consultant in Palliative Medicine, Huddersfield Royal Infirmary
Prof Sally E. Kinsey – Consultant Paediatric Haematologist, St James's University Hospital, Leeds
Prof Liakat Parapia – Consultant Haematologist, Bradford Royal Infirmary, Bradford
Dr Timothy J. Perren – Consultant Oncologist, St James's University Hospital, Leeds
Dr Michael Richards – Consultant Haematologist, St James's University Hospital, Leeds
Dr Mehmet Sen – Consultant in Radiation Oncology, St James's University Hospital, Leeds
Dr Erika de Wynter – Research Fellow, Molecular Medicine, St James's University Hospital, Leeds

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