Can a bloodless surgery program work in the trauma setting?

Yes, as one hospital is proving. Read on to learn why this program is so successful.

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DAVE GREEN. 37 was severely injured when he was hit by a car. Air lifted to our medical center, he had a hemoglobin level of 6 grams/dL and a BP of 65/33 mm Hg on arrival. But as a practicing Jehovah’s Witness, he refused blood transfusions and couldn't be persuaded to change his mind.

Because of Mr. Green's low hemoglobin level, the trauma surgeons didn't want to operate. Consequently, his bleeding was never adequately controlled. Numerous phlebotomies to obtain specimens for blood work further depleted his blood supply. Ultimately, only clear greenish serum could be drawn: His hemoglobin level was so low (0.8 grams/dL) that his blood was no longer red.

Mr. Green was our patient in 1997. Looking back, we realized that some standard nursing care provided to him was counterproductive, even harmful. For example, he was turned regularly, no one realizing that this would disturb clots that had formed to halt bleeding. His level of arousal was also checked frequently, fueling a need for oxygen that couldn't be met by his reduced hemoglobin level. Within a few hours, Mr. Green died.

In his case it set off a chain of events in our facility that resulted in a Bloodless Medicine and Surgery Program (BMSP). The program wasn't costly or difficult to implement, and it's been successfully used to treat all kinds of patients, including those with traumatic injuries. In this article, we'll tell you how we did it.

Talking the talk

We started with a multidisciplinary group, including trauma surgeons, nurses, and blood bank representatives, who worked with the Jehovah’s Witnesses Hospital Liaison Committee. The church elders in this group were specially trained in medical treatment acceptable to Jehovah’s Witnesses. To help build a successful program from the ground up, a nurse who also was a Jehovah’s Witness was hired to design and implement it. The result was a BMSP that meets the cultural, religious, legal, and clinical standard of care for a patient who refuses a blood transfusion for any reason. (See Why would a patient refuse a transmission?)

- The BMSP is built on this foundation:
  - respect for each patient's religious, cultural, and personal beliefs
  - recognition of his legal right to give informed consent to medical treatment and to refuse treatment
  - development of clinical expertise in stabilizing, supporting, and treating patients for whom blood transfusions would otherwise be indicated. (For details on clinical guidelines, see A sample bloodless medicine protocol.)

Since 1997, our facility's BMSP has treated more than 2,500 patients, including many with cancer and sickle-cell disease. Patients have even undergone open-heart surgery and renal transplant in a "blood-less" setting. The following case illustrates how BMSP can help a patient with traumatic injuries who refuses transfusions.

Ironing out problems

Jim Dowling, 23, suffered traumatic leg injuries in a work-related accident. Both legs were crushed, with one open fracture and one closed fracture. When he identified himself as a Jehovah's Witness upon arrival, the BMSP nurse was called by the trauma team and immediately met with the patient and his family. Mr. Dowling was sent to the operating room for reduction of the fractures, then to the surgical intensive care unit.
Postoperatively, Mr. Dowling's hemoglobin was 5.1 grams/dL. He received supplemental oxygen via nasal cannula and was started on hematinsics (intravenous iron and erythropoietin), a treatment that was acceptable to him. (Many Jehovah's Witnesses will accept infusions of minor blood components, such as albumin clotting factors or immunoglobulins.) Phlebotomies were performed very conservatively.

Although he was pale and tachycardic, he had no major problems. He was alert with adequate pain control and a stable BR. Mr. Dowling required repeated surgical debridements over the next 2 weeks. His hemoglobin remained between 4.2 and 6 grams/dL, and hematinsics, limited blood tests, and other supportive measures were continued. His condition remained stable. Recognizing the patient's ability to tolerate the anemia, the staff continued to provide appropriate “bloodless” care.

At least twice a day a staff nurse from the BMSP visited Mr. Dowling and provided support. This nurse also worked with the staff and critical care physician to clarify issues regarding transfusion-free care, such as minimizing phlebotomy and continuing supportive measures.

Mr. Dowling later had skin flaps and rod insertion on both legs. After that surgery, his hemoglobin level began to climb, and it remained between 7 and 9.6 grams/dL for the rest of his hospitalization, although he received no blood products. He was ambulating before his discharge to a rehabilitation facility.

**Proactive approach**

Creating a BMSP for patients who refuse blood transfusions took effort, but it's paid off. Compare the two cases we've discussed here. In the first, nothing was done proactively to address clinical issues created by the patient's refusal to accept transfusions. Clinicians spent most of their energy trying to convince the patient to change his mind rather than implementing alternatives to transfusion and conserving the patient's blood.

Legally and ethically, a competent adult patient has the right to refuse any medical treatments, including those that could save his life. Under the law, he isn't required to give a reason or to justify his decision. The refusal of lifesaving care can be difficult for health care professionals to accept. In Mr. Green's case, the emotionally charged atmosphere clouded the judgment of the medical and nursing staff and created a barrier to optimum care.

In Mr. Dowling's case, the staff was prepared to take a different approach. Instead of focusing on what couldn't be done, we focused on what could be done. The BMSP let us protect the patients right to refuse treatment while providing the best nonblood clinical management available.

Our facility continues to provide staff development about the belief system of Jehovah's Witnesses and acceptable treatment options for all patients who refuse transfusions. This has improved care and greatly reduced the frustration experienced by staff and patients because of cultural misunderstandings.

**Everyone wins**

In our experience, addressing the right of the patient to refuse blood transfusions has had many benefits. Clinical outcomes are improved because we have a program in place to provide alternatives to transfusion. The program also helps protect hospital and staff from legal liability connected to nonconsensual treatment. And even patients who don't refuse transfusions benefit because they feel more confident about their care knowing that the hospital is committed to a policy of blood conservation. The BMSP truly has been a "win-win" situation for patients and staff alike.

**RESOURCES**


Why would a patient refuse a transfusion?

Jehovah’s Witnesses base their refusal of blood transfusions on their interpretation of several Bible passages that they believe prohibit blood transfusions. However, decisions about some types of treatment are left to the individual. For example, some Jehovah’s Witnesses accept minor blood fractions (such as albumin) and auto transfusion.

Not all patients refuse blood transfusions for religious reasons. For example, many are afraid of blood borne infection, such as HIV/AIDS or hepatitis, or transfusion reactions. Banking units of their own blood before major planned surgery is an option for these patients. However, it isn’t an option for Jehovah’s Witnesses.

Other people strongly object to blood transfusions for personal reasons. For example, they may have heard of someone who had a bad experience with a transfusion, or they may simply feel squeamish about having another person’s blood put into their veins. People who object to transfusion because of fears or squeamishness may change their mind with education about the safety of the blood supply and the possible benefits of transfusion. Address the patient’s misconceptions without bias, providing education, not coercion. Give the patient information on the risks, benefits, and alternatives to treatment and let him make his own decision.

A sample bloodless medicine protocol

- **Assessment**
  - Obtain baseline complete blood cell count, serum hemoglobin profile, serum folate, serum vitamin B<sub>12</sub>, prothrombin time, and activated partial thromboplastin time.
  - Note if the patient has used aspirin or other nonsteroidal anti-inflammatory drugs, warfarin, clopidogrel, or other anticoagulants.
  - Patients under age 18 should be typed and crossmatched. (State laws let minors be transfused against their parents’ wishes.)

- **Hematinic therapy**
  - If the patient has sustained significant blood loss (hemoglobin level of 10 grams/dL or less) and the patient or his health care proxy indicates it’s acceptable, administer an initial dose of 40,000 units of erythropoietin subcutaneously and additional weekly doses of 40,000 units subcutaneously as indicated.
  - Patients with low hemoglobin levels and iron studies indicating normal iron levels who can take oral iron should be given 325 mg of ferrous sulfate three times a day, with a stool softener.
  - Administer 5 mg of oral folic acid daily and 200 to 1,000 meg of vitamin B<sub>12</sub>, if indicated by serum levels and if prescribed.
  - Patients who can’t tolerate oral iron and those with inadequate iron stores (iron saturation below 20%) may be given I.V. iron.

- **Supportive measures**
  - Administer supplemental oxygen. Keep the patient normothermic and minimize activities (including nursing care) that increase oxygen consumption.
  - Maintain intravascular volume to prevent hypotension. Provide sedation if indicated. (The patient may need endotracheal intubation and sedation if he becomes hemodynamically unstable.)
  - Eliminate unnecessary procedures and invasive monitoring and minimize patient movement, which may dislodge clots and trigger bleeding.
  - Prepare a patient with significant blood loss and anemia for hyperbaric therapy, if indicated.

- **Minimize iatrogenic blood loss**
  - Minimize blood draws. The frequency and appropriateness of blood tests depend on the patient’s diagnosis and clinical assessment.
  - If blood testing is needed, use pediatric tubes.
  - Use transcutaneous pulse oximetry rather than drawing blood specimens for arterial blood gas analysis. Consider end-tidal carbon dioxide measurement as an adjunct to pulse oximetry in intubated patients.
  - Monitor the patient closely to prevent hypertension and hypervolemia.

- **Ongoing assessment**
• Monitor the patient for frank or occult bleeding and intervene promptly.
• Prepare him for immediate surgery if active bleeding can’t be controlled by nonoperative measures.
• Take measures to avoid infection and treat infection promptly if it occurs. In a bloodless medicine or surgery patient, infection can decrease erythropoiesis.