



## How to handle religious discussions with patients

# THE RELIGIOUS DIVIDE

| By Gina Gotsill

Several years ago, a patient at Virtua West Jersey Hospital Marlton, in Marlton, N.J., was diagnosed with metastatic colon cancer with spinal metastases. The patient was septic, bleeding from a spinal wound, and was experiencing kidney failure. Hospitalists recommended stopping treatment and moving the patient to hospice care. The patient's family refused, and told hospitalists that, according to their Christian faith, suffering was the only true path to heaven. Hospitalists kept the patient as comfortable as possible, but blood pressure problems and hypotension made it difficult for them to administer pain medication.

Hospitalists held numerous meetings with the

family and medical and nursing staff to discuss the ethical implications of the situation. Two months later, the patient suffered cardiac arrest and died.

"The medical staff and family were continuously at odds because the patient was suffering so much," says Marianne Holler, DO, a hospitalist at University of Medicine and Dentistry of New Jersey School of Osteopathic Medicine, who was part of the patient's medical team. "We were never able to discontinue life support throughout [the patient's] hospital stay."

Whether planning a routine procedure or end-of-life care, hospitalists may be called into religious discussions with patients, their families, spiritual

advisors, and hospital chaplains. While many hospitalists have received ethics and other professional training to prepare them for these conversations, some say the intersection of religion and medicine remains a challenging and multifaceted aspect of their practice.

### A Hospitalist's Belief

Hospitalists' brief relationships with patients may influence the degree of knowledge they have about an individual's religious beliefs, says Scott Enderby, DO, a hospitalist at Alta Bates Summit Medical Center in Berkeley, Calif. Over the years, primary care physicians may become less involved with a



patient's acute medical needs as they use hospitalist services to manage their inpatients, Dr. Enderby says. This means hospitalists must discuss patients' wishes regarding code status and resuscitation, end-of-life care, and other necessary treatments.

When discussing religion and treatment, hospitalists must put aside their personal beliefs, and this may not always be easy, says Dr. Thomas McIlraith, MD, medical director of Hospital Medicine at Mercy Medical Group in Sacramento, Calif. Dr. McIlraith recalls a Jehovah's Witness patient who cited religious beliefs when refusing a blood transfusion following a massive post-partum hemorrhage. The patient was severely anemic, and her hemoglobin levels plunged dangerously to 2 gm/dL. Leaders from the patient's church asked Dr. McIlraith to try hemoglobin substitutes, but he was unable to do so because these substitutes still were experimental and associated with significant complications, he says.

Dr. McIlraith had to act fast. He instructed the obstetrician on the case to stop drawing hemoglobin levels; the patient needed every drop of blood she had to carry oxygen. He administered erythropoietin and iron to stimulate red blood cell production. He also put the patient on high flow oxygen to help saturate the plasma. The patient survived without a blood transfusion or significant complications.

"I didn't think [the patient] was going to make it," says Dr. McIlraith. "This was a very difficult situation because I knew they would have benefited from a blood transfusion. But, I presented them with their options and respected their wishes."

### Religious Diversity

Religious diversity can be another challenging aspect of patient care. In its 2008 U.S. Religious Landscapes Survey, the Pew Forum on Religion and Public Life interviewed 35,000 Americans age 18 and older and found "religious affiliation in the U.S. is both very diverse and extremely fluid." The survey also found "people who are unaffiliated with any particular religion (16.1%) also exhibit remarkable internal diversity."

Asking questions is the key to understanding a patient's religious and spiritual needs, says the Rev. Peter Yuichi Clark, PhD, chaplain administrator at Alta Bates Summit Medical Center in Berkeley, Calif., who works closely with medical teams to assess and respond to these needs.

"I don't assume I know what a patient's religious needs are—even if I know what religion they profess to be," Clark says. "Some patients may be very devout but do not practice certain aspects of their religion, while others follow a religion in name only but look for religious support during a time of crisis."

Manish Patel, MD, a hospitalist and assistant professor with the division of General Internal Medicine at University of Medicine and Dentistry of New Jersey-Robert Wood Johnson Medical School, says it is impossible to predict an individual's religious beliefs and how that may affect their hospital

stay—even when the physician practices the same religion as the patient. For example, Dr. Patel knows that some, but not all, Hindus observe a strict vegetarian diet and that Vitamin B12 deficiencies are more prevalent in vegetarian populations. However, diet may not be the cause of this deficiency if the patient is not a vegetarian. Rather than assume, it's important to ask Hindu patients if they observe a vegetarian diet, Dr. Patel says.

Some hospitalists find it difficult to engage patients in conversations about religion. In a study published in the June 2007 edition of the *Journal of Palliative Medicine*, researchers found physicians' knowledge of factors relating to end-of-life care, which included patients' religious and spiritual concerns

**I don't assume I know what a patient's religious needs are—even if I know what religion they profess to be. —The Rev. Peter Yuichi Clark, PhD, Alta Bates Summit Medical Center, Berkeley, Calif.**

and whether they affect decisions regarding end-of-life care, is poor.<sup>1</sup>

Hospitalists don't have much time to get to know the person, so it's even more important for them to have conversations about religion and end-of-life-care, says the study's lead author Susan DesHarnais, PhD, of Pennsylvania State University's Hershey Department of Public Health Sciences, Milton S. Hershey Medical Center College of Medicine. As important as these conversations are, Dr. DesHarnais learned hospitalists rarely have them.

When asked why she thinks these conversations rarely occur, Dr. DesHarnais said the research did not directly address that question, but she suspects the physicians don't have a lot of time. Also, end-of-life decision-making is difficult, and some people are not comfortable talking about it, she says.

"Another factor may be that hospitalists are used to using technology for medical intervention more than they are used to working with people when not much more can be done," she says.

Continued on page 30

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- ▶ Oral vancomycin was shown clinically superior to metronidazole for severe *C. difficile* infection<sup>†</sup>: 85% vs 65% (P= .04)<sup>1</sup>

<sup>†</sup> Severe disease defined as: White blood cell count  $\geq 20,001/\text{mm}^3$ ; severe abdominal pain due to *C. difficile* infection;  $\geq 10$  bowel movements per day. Clinical success: Resolution of *C. difficile*-associated diarrhea and absence of severe abdominal discomfort due to diarrhea for 2 contiguous days including day 10.<sup>1</sup>

- ▶ Oral vancomycin was shown clinically superior to metronidazole for severe *C. difficile* infection<sup>††</sup>: 97% vs 76% (P= .02)<sup>2</sup>

<sup>††</sup> Severe disease defined as 2 or more of the following: peripheral white blood cell count  $>15,000$  cells/ $\text{mm}^3$  within 48 hours of enrollment, age  $> 60$  years, temperature  $> 38.3^\circ\text{C}$ , albumin level  $< 2.5$  mg/dL—or admission to an intensive care unit, or presence of pseudomembranes on endoscopy. Cure: Resolution of diarrhea by day 6 and a negative *C. difficile* toxin A assay at days 6 and 10. The product used in this study was vancomycin liquid.<sup>2</sup>

\* Please note: metronidazole is not approved for use in the treatment of *Clostridium difficile*-associated diarrhea

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VANCOGIN HCl Capsules may be administered orally for treatment of enterocolitis caused by *Staphylococcus aureus* (including methicillin-resistant strains) and antibiotic-associated pseudomembranous colitis caused by *Clostridium difficile*. Parenteral administration of vancomycin is not effective for the above indications; therefore, VANCOGIN HCl Capsules must be given orally for these indications. **Orally administered VANCOGIN HCl Capsules are not effective for other types of infection.**

#### IMPORTANT SAFETY INFORMATION

To reduce the development of drug-resistant bacteria and maintain the effectiveness of VANCOGIN HCl Capsules and other antibacterial drugs, VANCOGIN HCl Capsules should only be used to treat or prevent infections that are proven or strongly suspected to be caused by a susceptible bacterium. When culture and sensitivity are available, they should be considered in selecting or modifying antibacterial therapy.

Adverse events include nephrotoxicity, ototoxicity, reversible neutropenia, thrombocytopenia, and "Red Man's Syndrome." In patients with renal dysfunction or those receiving concomitant therapy with an aminoglycoside, serial renal function testing should be performed. In patients receiving concomitant therapy with another ototoxic agent, serial tests of auditory function may be helpful in order to minimize the risk of ototoxicity. Infrequently, allergic reactions, including anaphylaxis and exfoliative dermatitis, have been reported.

Clinically significant serum concentrations of vancomycin have been reported in some patients treated with VANCOGIN HCl Capsules for pseudomembranous colitis caused by *Clostridium difficile*. It is noteworthy that total systemic and renal clearance of vancomycin are reduced in the elderly. Monitoring of serum concentrations may be appropriate in patients with renal insufficiency and/or colitis.

VANCOGIN HCl Capsules are contraindicated in patients with a known hypersensitivity to vancomycin.



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Dr. Holler, who worked as a social worker before attending medical school, agrees that many physicians are uncomfortable with end-of-life decisions.

“Many physicians are 25 to 30 years old during their training,” says Dr. Holler. “They have been in school for many years. Some are discovering their own spiritual identity at the same time they are dealing, or learning to deal, with patients and families and where they are spiritually or religiously. Many haven’t dealt with these issues in their own personal lives yet.”

While Dr. Holler says she believes most doctors are caring and compassionate, end-of-life and religious discussions use different skill sets than those that pre-

serve and extend life. “Often times we are not taught when enough is enough and how to convey that to patients and families,” says Dr. Holler. “Many doctors are afraid that they are conveying that they are giving up or that it isn’t worth it in the long run. So, many physicians find it easier to ‘keep going.’”

### The Medical Community’s Response

The medical community is responding to shifting cultural and religious demographics, and more doctors are paying attention to religious diversity, Clark says. But a 2003 Joint Commission study of 60 public and private hospitals

across the country, “Hospitals, Language and Culture: A Snapshot of the Nation,” found that hospitals still have work to do in this area.

“We found that hospitals are collecting data on patients’ religion, but it’s just not clear how they use it to improve services,” says Amy Wilson-Stronks, project director for health disparities with the Joint Commission and principal investigator of the study.

The current Joint Commission standards require hospitals to respect patients’ spiritual needs, beliefs, and values. Spiritual care issues first appeared in the 1969 accreditation manual and were adopted into standards in 1992,

Wilson-Stronks says.

### Accommodating Patients

Awareness and communication can benefit patients, hospitalists, and medical staff as a whole. For example, Alta Bates Summit’s intensive care unit staff in Berkeley, Calif., turned to Chaplaincy Services about Muslim patients’ requests to continue their daily prayers, which include thorough washing of their hands, forearms, and other parts of their bodies (even when intravenous lines are attached). Chaplaincy Services reached out to an Islamic network group for advice and learned patients could rub a stone across their bodies to wash themselves. Chaplaincy Services now makes these stones available for staff and patients, Clark says.

Medical staff also works with Chaplaincy Services to accommodate Muslim patients’ wishes to face in the direction of Mecca during prayer, which can require maneuvering beds and other equipment, he says.

Some patients and their families may not understand how their religious tradition addresses code status, resuscitation, and when it is appropriate to withhold treatment, says Richard Rohr, MD, vice president of medical affairs at Cortland Regional Medical Center in Cortland, N.Y. While working as a hospitalist, Dr. Rohr suggested moving a terminal patient to palliative care and seeking a do not resuscitate (DNR) order. The patient’s family refused, and told Dr. Rohr they were Catholic and a DNR would violate their religious beliefs.

According to Dr. Rohr, DNR status and palliative care are described in the code of ethics adopted by the Catholic Health Association, and this type of care is generally provided at Catholic hospitals.

“I gently told them that this was within their religion, but they said no to palliative care and the DNR,” Dr. Rohr says. “The patient eventually died but it was much more difficult for them. They were subjected to active treatment that they couldn’t really benefit from.”

Families often seek the advice of spiritual advisors when making difficult decisions about code status and DNR orders. Barbara Egan, MD, a hospitalist at Memorial Sloan-Kettering Cancer Center in New York City, recalls treating an Orthodox Jewish patient who was suffering from end-stage disease. Death was imminent, and hospitalists recommended palliative care. The patient’s family members balked at the recommendation and insisted hospitalists “do everything possible” to treat their loved one. Soon after, the family’s rabbi arrived to counsel the family. After visiting the patient and speaking to medical staff about the prognosis, the rabbi urged the family not to pursue further treatment or artificial resuscitation. The patient was moved to a palliative care unit and passed away within a few days.

“The family’s rabbi told them exactly what I had: that there were no useful medical interventions for the

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##### INDICATIONS AND USAGE

**This preparation for the treatment of colitis is for oral use only and is not systemically absorbed. VANCOCIN HCl Capsules must be given orally for treatment of staphylococcal enterocolitis and antibiotic-associated pseudomembranous colitis caused by *Clostridium difficile*. Orally administered VANCOCIN HCl Capsules are not effective for other types of infection.**

**Parenteral administration of vancomycin is not effective for treatment of staphylococcal enterocolitis and antibiotic-associated pseudomembranous colitis caused by *C. difficile*. If parenteral vancomycin therapy is desired, use an intravenous preparation of vancomycin and consult the package insert accompanying that preparation.**

VANCOCIN HCl Capsules may be administered orally for treatment of enterocolitis caused by *Staphylococcus aureus* (including methicillin-resistant strains) and antibiotic-associated pseudomembranous colitis caused by *C. difficile*. Parenteral administration of vancomycin is not effective for the above indications; therefore, VANCOCIN HCl Capsules must be given orally for these indications. **Orally administered VANCOCIN HCl Capsules are not effective for other types of infection.**

To reduce the development of drug-resistant bacteria and maintain the effectiveness of VANCOCIN HCl Capsules and other antibacterial drugs, VANCOCIN HCl Capsules should be used only to treat or prevent infections that are proven or strongly suspected to be caused by susceptible bacteria. When culture and susceptibility information are available, they should be considered in selecting or modifying antibacterial therapy. In the absence of such data, local epidemiology and susceptibility patterns may contribute to the empiric selection of therapy.

##### CONTRAINDICATION

VANCOCIN HCl Capsules are contraindicated in patients with known hypersensitivity to vancomycin.

##### PRECAUTIONS

###### General

Prescribing VANCOCIN HCl Capsules in the absence of a proven or strongly suspected bacterial infection or a prophylactic indication is unlikely to provide benefit to the patient and increases the risk of the development of drug-resistant bacteria.

Clinically significant serum concentrations have been reported in some patients who have taken multiple oral doses of vancomycin for active *C. difficile*-induced pseudomembranous colitis; therefore, monitoring of serum concentrations may be appropriate in some instances, e.g., in patients with renal insufficiency and/or colitis.

Some patients with inflammatory disorders of the intestinal mucosa may have significant systemic absorption of vancomycin and, therefore, may be at risk for the development of adverse reactions associated with the parenteral administration of vancomycin (see package insert accompanying the intravenous preparation). The risk is greater if renal impairment is present. It should be noted that the total systemic and renal clearances of vancomycin are reduced in the elderly.

Ototoxicity has occurred in patients receiving vancomycin. It may be transient or permanent. It has been reported mostly in patients who have been given excessive intravenous doses, who have an underlying hearing loss, or who are receiving concomitant therapy with another ototoxic agent, such as an aminoglycoside. Serial tests of auditory function may be helpful in order to minimize the risk of ototoxicity.

When patients with underlying renal dysfunction or those receiving concomitant therapy with an aminoglycoside are being treated, serial monitoring of renal function should be performed.

Use of vancomycin may result in the overgrowth of nonsusceptible organisms. If superinfection occurs during therapy, appropriate measures should be taken.

##### ADVERSE REACTIONS

**Nephrotoxicity** — Rarely, renal failure, principally manifested by increased serum creatinine or BUN concentrations, especially in patients given large doses of intravenously administered vancomycin HCl has been reported. Rare cases of interstitial nephritis have been reported. Most of these have occurred in patients who were given aminoglycosides concomitantly or who had preexisting kidney dysfunction. When vancomycin HCl was discontinued, azotemia resolved in most patients.

**Ototoxicity** — A few dozen cases of hearing loss associated with intravenously administered vancomycin HCl have been reported. Most of these patients had kidney dysfunction or a preexisting hearing loss or were receiving concomitant treatment with an ototoxic drug. Vertigo, dizziness, and tinnitus have been reported rarely.

**Hematopoietic** — Reversible neutropenia, usually starting 1 week or more after onset of intravenous therapy with vancomycin HCl or after a total dose of more than 25 g, has been reported for several dozen patients. Neutropenia appears to be promptly reversible when vancomycin HCl is discontinued. Thrombocytopenia has rarely been reported.

**Miscellaneous** — Infrequently, patients have been reported to have had anaphylaxis, drug fever, chills, nausea, eosinophilia, rashes (including exfoliative dermatitis), Stevens-Johnson syndrome, toxic epidermal necrolysis, and rare cases of vasculitis in association with the administration of vancomycin HCl.

A condition has been reported that is similar to the IV-induced syndrome with symptoms consistent with anaphylactoid reactions, including hypotension, wheezing, dyspnea, urticaria, pruritus, flushing of the upper body (“Red Man Syndrome”), pain and muscle spasm of the chest and back. These reactions usually resolve within 20 minutes but may persist for several hours.

##### USE IN SPECIFIC POPULATIONS

###### Pregnancy

**Teratogenic Effects — Pregnancy Category B** — The highest doses of vancomycin tested were not teratogenic in rats given up to 200 mg/kg/day IV (1180 mg/m<sup>2</sup> or 1 times the recommended maximum human dose based on mg/m<sup>2</sup>) or in rabbits given up to 120 mg/kg/day IV (1320 mg/m<sup>2</sup> or 1.1 times the recommended maximum human dose based on mg/m<sup>2</sup>). No effects on fetal weight or development were seen in rats at the highest dose tested or in rabbits given 80 mg/kg/day (880 mg/m<sup>2</sup> or 0.74 times the recommended maximum human dose based on mg/m<sup>2</sup>).

In a controlled clinical study, the potential ototoxic and nephrotoxic effects of vancomycin HCl on infants were evaluated when the drug was administered intravenously to pregnant women for serious staphylococcal infections complicating intravenous drug abuse. Vancomycin was found in cord blood. No sensorineural hearing loss or nephrotoxicity attributable to vancomycin HCl was noted. One infant whose mother received vancomycin HCl in the third trimester experienced conductive hearing loss that was not attributed to the administration of vancomycin HCl. Because the number of patients treated in this study was limited and vancomycin HCl was administered only in the second and third trimesters, it is not known whether vancomycin HCl causes fetal harm. Because animal reproduction studies are not always predictive of human response, VANCOCIN HCl Capsules should be given to a pregnant woman only if clearly needed.

###### Nursing Mothers

Vancomycin is excreted in human milk based on information obtained with the intravenous administration of vancomycin HCl. However, systemic absorption of vancomycin is very low following oral administration of VANCOCIN HCl Capsules (see **CLINICAL PHARMACOLOGY**). It is not known whether oral vancomycin is excreted in human milk, as no studies of vancomycin concentration in human milk after oral administration have been done. Caution should be exercised when VANCOCIN HCl Capsules are administered to a nursing woman. Because of the potential for adverse events, a decision should be made whether to discontinue nursing or discontinue the drug, taking into account the importance of the drug to the mother.

###### Pediatric Use

Safety and effectiveness in pediatric patients have not been established.

###### Geriatric Use

Clinical studies of vancomycin HCl for oral use did not include sufficient numbers of subjects aged 65 and over to determine whether they respond differently from younger subjects. Other reported clinical experience has not identified differences in responses between the elderly and younger patients. In general, dose selection for an elderly patient should be cautious, usually starting at the low end of the dosing range, reflecting the greater frequency of decreased hepatic, renal, or cardiac function, and of concomitant disease or other drug therapy.

Clinically significant serum concentrations have been reported in some patients who have taken multiple oral doses of vancomycin HCl for active *C. difficile*-induced pseudomembranous colitis; therefore, monitoring of serum concentrations may be appropriate in some instances, e.g., in patients with renal insufficiency and/or colitis. Some patients with inflammatory disorders of the intestinal mucosa may have significant systemic absorption of vancomycin and, therefore, may be at risk for the development of adverse reactions associated with the parenteral administration of vancomycin. The risk is greater if renal impairment is present. It should be noted that the total systemic and renal clearances of vancomycin are reduced in the elderly (see **PRECAUTIONS, General**).

##### OVERDOSAGE

Supportive care is advised, with maintenance of glomerular filtration. Vancomycin is poorly removed by dialysis. Hemofiltration and hemoperfusion with polysulfone resin have been reported to result in increased vancomycin clearance.

**Treatment** — To obtain up-to-date information about the treatment of overdose, a good resource is your certified Regional Poison Control Center. Telephone numbers of certified poison control centers are listed in the *Physicians’ Desk Reference (PDR)*. In managing overdosage, consider the possibility of multiple drug overdoses, interaction among drugs, and unusual drug kinetics in your patient.

##### Carcinogenesis, Mutagenesis, Impairment of Fertility

No long-term carcinogenesis studies in animals have been conducted.

At concentrations up to 1000 µg/mL, vancomycin had no mutagenic effect *in vitro* in the mouse lymphoma forward mutation assay or the primary rat hepatocyte unscheduled DNA synthesis assay. The concentrations tested *in vitro* were above the peak plasma vancomycin concentrations of 20 to 40 µg/mL usually achieved in humans after slow infusion of the maximum recommended dose of 1 g. Vancomycin had no mutagenic effect *in vivo* in the Chinese hamster sister chromatid exchange assay (400 mg/kg IP) or the mouse micronucleus assay (800 mg/kg IP).

No definitive fertility studies have been conducted.

##### PATIENT COUNSELING INFORMATION

Patients should be counseled that antibacterial drugs including VANCOCIN HCl Capsules should only be used to treat bacterial infections. They do not treat viral infections (e.g., the common cold). When VANCOCIN HCl Capsules are prescribed to treat a bacterial infection, patients should be told that although it is common to feel better early in the course of therapy, the medication should be taken exactly as directed. Skipping doses or not completing the full course of therapy may (1) decrease the effectiveness of the immediate treatment and (2) increase the likelihood that bacteria will develop resistance and will not be treatable by VANCOCIN HCl Capsules or other antibacterial drugs in the future.

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patient,” Dr. Egan says. “But they really needed to hear it from him before they could come to an agreement on a DNR.”

Physicians’ reactions to religion at the bedside have evolved the past 25 years, says Kenneth Patrick, MD, ICU director at Chestnut Hill Hospital in Philadelphia. Physicians were more paternalistic then, and believed they knew what was best for their patients—and their families—regardless of their patient’s religious beliefs.

While serving as a fellow at Memorial Sloan-Kettering Cancer Center, Dr. Patrick worked with a terminally ill Buddhist patient in the intensive care unit. When death was imminent, the ICU director allowed Buddhist monks to light candles and pray in the room during the hours leading up to the patient’s death. At the time, this was not something that was normally done in a hospital, Dr. Patrick says. While the ritual may have kept medical staff from checking vital signs as often as they would have normally, he says this did not affect the patient’s treatment.

“I believe it is incumbent on the hospitalist to adjust his or her beliefs to be more accepting of our patients’ values,” Dr. Patrick says. “I can agree to any request I find to be reasonable and in the patient’s best interest, even if it is different than what I believe.” **TH**

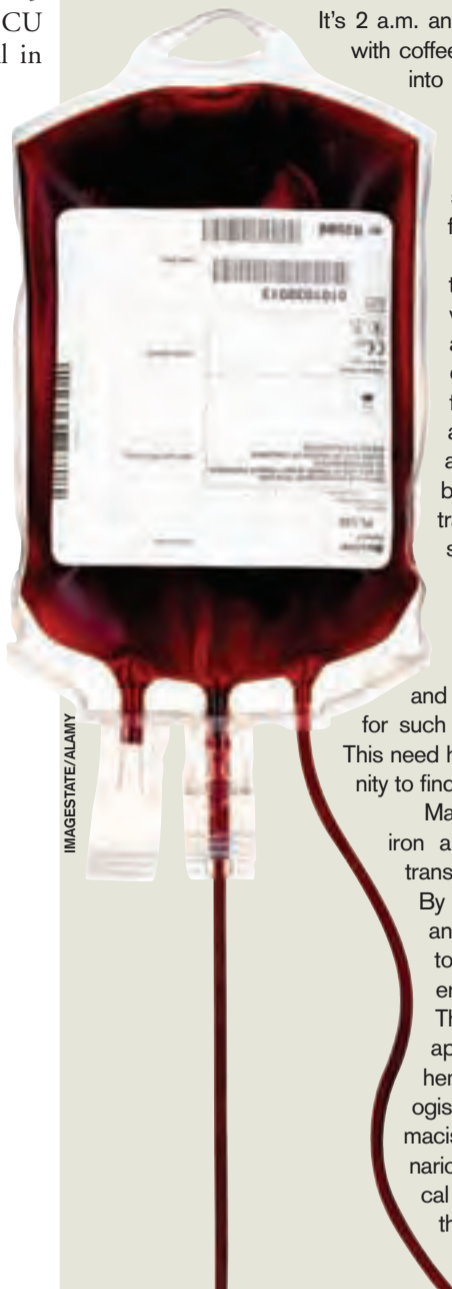
*Gina Gotsill is a journalist based in California.*

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# HOW RELIGION HAS PIONEERED BLOOD CONSERVATION TECHNIQUES

| By Susanne Mierendorf, MD



IMAGESTATE/ALAMY

It’s 2 a.m. and you’re admitting a 45-year-old with coffee-ground emesis that just turned into bright red blood. The patient grabs your arm, “I am a Jehovah’s Witness,” he says. Then he calmly and decidedly says “no” to your advice to perform a blood transfusion.

This patient’s belief about transfusion comes from a Bible verse (Acts 15:19-21: “... abstain ... from blood.”). In general, Jehovah’s Witnesses have a firm religious directive not to accept blood products. Some are open to receiving their own blood and fluids back (e.g., autotransfusion and perioperative cell-saver devices). Some also accept pooled protein products.

As hospitalists, we need to find out what is acceptable to our patients prior to transfusion and (in some cases) modify practices for such patients as Jehovah’s Witness. This need has spurred the medical community to find alternative therapies.

Many countries use pre-operative iron and erythropoietin (EPO), autotransfusion, and cell-saver surgeries. By minimizing iatrogenic blood loss and optimizing cardiac and respiratory support, most patients can tolerate anemia, even in acute illness. The situation may call for a team approach with the hospitalist, hematologist, surgeon, anesthesiologist, interventional radiologist, pharmacist, and nurse. Each clinical scenario requires an individualized clinical management plan that respects the wishes of any patient who refuses blood transfusion.

## BACKGROUND

Physicians have had to be concerned with Jehovah’s Witnesses’ refusal of blood transfusion for decades. Surgeries with high potential for blood loss (e.g., coronary bypass and total joint replacement) have forced healthcare providers to rethink and strategize other methods.<sup>1</sup> These include early surgery or embolization, cautery, fibrin glue products, positioning the patient perioperatively to allow permissive hypotension, and normothermia. Some even phlebotomize before surgery, keeping volume isovolemic with saline. The idea is the blood lost perioperatively will be at a lower hematocrit—this is the hemodilutional technique.<sup>2</sup> Some Jehovah’s Witnesses accept blood back post-operatively.

Physiologically, an otherwise healthy patient can tolerate a hematocrit down to 15%. In a landmark article in the *New England Journal of Medicine* in 1999, Hébert, et al., compared the outcomes of restrictive transfusion (hemoglobin 7-9 g/dL) with liberal transfusion (hemoglobin 10-12 g/dL) in critically ill patients.<sup>3</sup> The mortality rate during hospitalization was significantly lower in the restrictive strategy group (22.2% vs. 28.1%,  $p=0.05$ ). Hemoglobin levels at 7 g/dL have not been linked to increased myocardial oxygen consumption, poor wound healing, nor localized tissue hypoxia. In most cases, this level of anemia does not justify transfusion, as long as circulating volume can be maintained. More liberal transfusion to higher levels may have a paradoxical effect on microcirculation, increasing viscosity and decreasing better outcomes.

In most cases, you will not be able to transfuse a Jehovah’s Witness patient. In these cases, we offer several viable alternative therapies.<sup>4</sup>

1. **Decrease blood loss.** First, consider decreasing the amount of blood loss. This can include reducing the frequency of blood draws because the usual reason for these checks is to detect the threshold for transfusion, using pediatric or small volume tubes for phlebotomy and avoiding other unnecessary blood draws.
2. **Consider alternatives to anticoagulant prophylaxis** for DVT

prophylaxis, such as intermittent pneumatic compression devices, and avoid medications that may have the adverse effects of anemia and thrombocytopenia. These include aspirin, NSAIDs, platelet aggregate inhibitors, and some antibiotics. *Example:* Substitute a proton pump inhibitor for an H2 blocker. If there is a strong clinical indication, such as aspirin, in cerebrovascular accidents, discuss the risks and benefits with the patient.

3. **Use non-blood volume expanders**—even before the patient shows clinical signs of blood loss. Crystalloids are the first line for volume replacement, including normal saline and ringer’s lactate. Colloids and starch solution have not been proven effective and may even be detrimental. As part of the ABC management of any acutely ill patient, oxygenation is essential. This includes optimization of cardiac output by improving preload, afterload, and possibly inotropic therapy. Also consider interventions that minimize oxygen consumption, such as appropriate analgesia and sedation or muscle relaxant, in the mechanically vented patient.

4. **Treat anemia:** Regardless of the EPO level, critically ill patients respond to high-dose EPO therapy. The use of EPO 330 u/kg daily for five days and then on alternate days for at least two weeks reduces the need for blood transfusion.<sup>5</sup> Iron therapy has proven useful in maximizing the response to EPO. Hemostatic drugs, such as aprotinin, may decrease blood loss and prevent the need for blood transfusion. Other pharmacological agents that may enhance hemostasis include tranexamic acid, epsilon-amino caproic acid, desmopressin, conjugated estrogen, and prothrombin complex concentrate. Vitamin K may also be useful in patients with malabsorption, on antibiotics or anticoagulants, or patients with liver disease.

5. **Reduce the risk of blood loss:** Recombinant activated factor VIIa has been shown to reduce blood loss in nonhemophilic patients who are acutely ill.<sup>6</sup> Doses ranging from 60 mcg/kg to 212 mcg/kg have been successful in published reports.<sup>7</sup> Factors VIIa, VIII, and IX are available as recombinant products.

Fresh frozen plasma is separated from blood and may be acceptable to the Jehovah’s Witness. These proteins are indicated in coagulopathic patients, those with liver disease, and those requiring warfarin reversal. Cryoprecipitate includes factors VIII, XIII, fibrinogen, von Willenbrand factor, and fibronectin. This may be useful in a low-fibrinogen coagulopathy. Some surgical patients may accept a cell-saver device perioperatively that salvages their blood and fluid from the surgical site, filters it, and returns it to the patient.

If a patient becomes hemodynamically unstable (even after adequate intravenous fluid resuscitation) you must consider surgical intervention. It may be as simple as applying fibrin glue topically, or more invasive, such as removing an organ or sewing off a femoral artery laceration from cardiac catheterization to control hemorrhage. Angiographic embolization is commonly used in these circumstances as it is expeditious and generally a less-invasive way to stop bleeding. Risks and benefits from the loss of an organ, such as a kidney, or loss of fertility, as with a hysterectomy to stop bleeding, must be outlined.

Studies have shown that restrictive transfusion strategy in acutely ill patients has decreased morbidity and mortality. There are other risks of transfusions, such as transfusion reactions, lung injury, allergic reactions, sepsis, circulatory overload, and transmitted infections.

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