

Original Publication

 OPEN ACCESS

Transfusion Ethics in a Pediatric Jehovah's Witness Trauma Patient: Simulation Case

Mathew Malkin, MD*, John Lenart, MD, Catherine A. Walsh, MD, Michelle Woodfin, MD, Marissa Vadi, MD

*Corresponding author: mmalkin@llu.edu

Citation: Malkin M, Lenart J, Walsh CA, Woodfin M, Vadi M. Transfusion ethics in a pediatric Jehovah's Witness trauma patient: simulation case. *MedEdPORTAL*. 2016;12:10450. https://doi.org/10.15766/mep_2374-8265.10450

Copyright: © 2016 Malkin et al. This is an open-access publication distributed under the terms of the Creative Commons Attribution-NonCommercial-Share Alike license.

Abstract

Introduction: Current ethical practice allows for adult patients with decision-making capacity to refuse blood transfusion, even at the cost of high morbidity or mortality. However, for an adult patient who is of the Jehovah's Witness faith, an unwanted blood transfusion confers a psychospiritual cost to the patient and a financial cost to health care entities. The ethical boundaries are increasingly ambiguous with minors who are members of the Jehovah's Witness faith. This simulation experience intends to identify and address knowledge gaps in the care of minors in an emergent setting using a biomedical ethics framework. **Methods:** This scenario provides an immersive simulation experience involving a 12-year-old Jehovah's Witness patient requiring emergent laparotomy for splenic hemorrhage. Patient interview (via simulation manikin with instructor voice) and care handoff take place in an operating room setting. The learner ascertains the patient's and family's refusal of blood products. Induction of general anesthesia results in profound patient hypotension secondary to acute blood-loss anemia. Pulseless electrical activity results if packed red blood cells are not administered. Ethical principles require the learner to impose an unwanted lifesaving therapy on a minor patient over the objections of family members. Secondly, the anesthesia provider must advocate for transfusion on these ethical grounds against a well-meaning but ultimately misguided surgeon who opposes transfusion. An included learner evaluation form based on ACGME core competencies facilitates postsimulation debriefing. **Results:** Participants were primarily anesthesia residents and fellows. Anecdotally, the residents said that it "felt good to be an attending" and that the simulation helped them appreciate how important conflict resolution skills are in the OR setting. Additionally, faculty appreciated the ability to assess the development of crucial assertiveness skills, with the option of remediating incorrect behavior during the debriefing. **Discussion:** This simulation experience provides experience in the emergent medical management of a pediatric trauma patient while also incorporating specific ethical consent issues unique to pediatric and trauma patient populations. Furthermore, this experience develops professionalism skills and practice in assertive patient advocacy.

Keywords

Trauma, Simulation, Ethics, Transfusion, Pediatrics, Jehovah's Witness

Educational Objectives

By the end of this module, the learner will be able to:

1. Obtain an appropriate SBAR (situation, background, assessment, recommendation) handoff from a surgeon, including past medical history, medications, and allergies; social history (including religious beliefs); mechanism of injury; primary and secondary trauma survey results; findings of imaging and laboratory studies completed in the emergency department; existing IV access; and urgency of the proposed surgical procedure.
2. Determine the ethics of and legal basis for administering blood to a Jehovah's Witness minor despite parental refusal.
3. Effectively communicate a patient's rapidly deteriorating clinical status to the surgeon and convey the need for blood transfusion despite the patient's and parents' refusal on religious grounds.
4. Challenge the authority of a surgeon when patient safety is compromised.

Appendices

- A. Simulation Case.docx
- B. Visual Materials.docx
- C. Evaluation Forms .docx
- D. Debriefing Guide.docx

All appendices are peer reviewed as integral parts of the Original Publication.

5. Demonstrate appropriate professional composure during interactions with a hostile care team member.
6. Implement treatment strategies for hypotension secondary to hypovolemia, including calling for help, establishing additional IV access and/or invasive monitors, and obtaining and administering blood products and vasopressors.
7. Initiate and correctly execute the Pediatric Advanced Life Support pulseless electrical activity algorithm.
8. Complete a thorough debriefing to enable internalization of the debriefing process and assimilation of the experience into clinical practice.
9. Demonstrate the ability to call effectively on other resources in the health care system (e.g., hospital ethics committee or legal counsel).
10. Interpret physical and laboratory evidence of ongoing blood loss and select anesthetic induction agents accordingly.
11. Recognize the need for aspiration precautions during intubation.
12. Call for help and appropriately delegate responsibilities to responders.
13. Identify the risks and benefits of administering uncrossmatched blood in the setting of severe hemorrhage.
14. Recognize the causes of and correctly diagnose pulseless electrical activity.
15. Maintain effective closed-loop communication with the surgical team during a crisis situation.

Introduction

This simulation was created as part of our core anesthesiology simulation curriculum for residents and fellows. Medical ethicists have studied patient objection to blood transfusion, specifically in regard to the Jehovah's Witness faith.^{1,2} Current ethical practice allows for adult patients with decision-making capacity to refuse blood transfusion, even at the cost of high morbidity or mortality. On the other hand, unwanted blood transfusion confers a psychospiritual cost to the patient and a financial cost to health care entities.³ Minors who are members of the Jehovah's Witness faith, however, present a more ambiguous scenario. This simulation experience intends to identify and address knowledge gaps in the care of minors in an emergent setting using a biomedical ethics framework.⁴ Furthermore, it intends to develop professionalism and advocacy skills required of a health care consultant.⁵

Methods

Participants are given our standardized introduction to our simulation lab, which includes learning objections, scenario confidentiality, and limitations of simulation equipment. For this specific simulation, the scenario begins with the faculty instructor and surgeon confederate providing the learner with the designated information in the simulation case (Appendix A). The visual materials (Appendix B) are also provided during this time to complete the sign-out (situation, background, assessment, recommendation⁶) process. The information is delivered in an urgent fashion to establish the surgeon as an authority figure and to encourage emotional buy-in by the learner.

The simulation proceeds as detailed in the simulation case and should take 10-20 minutes. The faculty instructor and the simulation technologist adjust the condition of the patient according to the program and the learner's actions. The faculty instructor prompts the confederates via wireless communication device to encourage learner behavioral actions.

Equipment and Setup

- Environment: operating room (OR) with anesthesia machine.
- Manikin setup:
 - Adolescent-sized simulation manikin positioned supine in cervical collar.
 - Two peripheral IV lines attached to crystalloid fluid.

- Fluids available in OR: crystalloid (attached to IV lines), two bottles of simulated albumin.
- Fluids available outside OR (when prompted by simulation program): four units simulated uncrossmatched packed red blood cells.
- Monitors required:
 - Foley catheter.
 - Temperature probe.
 - Capnograph (end-tidal CO₂ detector).
 - Pulse oximeter.
 - Five-lead electrocardiogram.
 - Noninvasive blood pressure cuff.
- Other equipment required:
 - Surgical suction canister with blood.
 - Blood-soaked lap sponges.
 - Hotline/fluid warmer.
 - Fake blood/plasma.
 - Defibrillator.
 - Infusion pumps.
 - IV fluids and lines.
 - Labeled syringes.
 - Bag valve mask.
 - Stethoscope.
 - Suction.
 - Anesthesia machine with drive gas source.
 - Oral airways.
 - Laryngoscope.
 - Endotracheal tube.

Personnel

- Anesthesia provider:
 - Played by learner.
 - Manages anesthetic.
 - Provides evaluation of simulation experience.
- Circulating nurse:
 - Played by confederate.
 - Brings blood products to room.
 - Transports specimens to laboratory.
 - Receives directives from anesthesia provider.
- Surgeon:
 - Played by confederate.
 - Updates OR personnel regarding urgency of starting surgery ASAP.
 - Vehemently opposes blood transfusion in a Jehovah's Witness minor.
- Simulation technologist:
 - Prepares manikin and environment.
 - Executes simulation program in conjunction with faculty instructor.
 - Provides audiovisual tools necessary for debriefing.

- Faculty instructor:
 - Introduces scenario.
 - Manages flow of scenario with simulation technologist.
 - Provides postsimulation debriefing.
 - Evaluates performance of learner.

Individual or group debriefing (Appendix D) may be used, with or without video playback, and should take approximately 30 minutes. The learner should utilize self- and/or peer rating of performance; identify and discuss anesthetic issues, psychologic impact, patient issues, and surgical issues; identify the impact of the experience, clarify facts and concepts used in the simulation, and defuse the emotional experience of the learner to facilitate achieving the learning objectives of the simulation; and apply the simulator experience to the real clinical world and evaluate behaviors that emerged in the scenario.

Faculty assistance with debriefing has been described as highly beneficial by participants. Additional debriefing may also be provided by medical ethicists, clergy, and experts in the medical-legal field. We have not yet had the opportunity to conduct this simulation with a member of the Jehovah's Witness faith as a learner. This may stimulate additional discussion during the debriefing and allow for invaluable learner feedback.

Learners are assessed through an evaluation form (Appendix C) based on Accreditation Council for Graduate Medical Education core competencies. Components of this assessment include critical actions that demonstrate adequate medical knowledge, maintenance of professional demeanor during conflict, and understanding of systems-based practices in providing patient care. Learners can then evaluate the effectiveness of the simulation experience via the evaluation form and provide additional comments, as necessary, using the form provided.

Results

Our simulation program provides various physiologic states as the patient's condition worsens. Learner actions may deviate from the expected sequence of events, requiring faculty members to quickly alter the simulation program. As a result, the faculty or technician controlling the manikin must have knowledge of how to control a simulation manikin. Making the manikin respond to the learner's management decisions provides a more realistic learning experience. While we provide a learner evaluation tool, it has not been formally validated for resident evaluation. Rather, the tool provides faculty members with information regarding overall knowledge gaps that should be highlighted during simulation debriefing. The evaluation forms were created based on our experience with this simulation as opposed to being created a priori. Because of this, our results are still more anecdotal than objective. We encourage other simulation educators to further refine these tools.

Challenges we have encountered while performing this case include inadequate manpower to run the simulation requiring script adaptation to the resources available. Two confederates should ideally be available to play the roles of circulating nurse and surgeon to ensure consistency between iterations. We have run similar scenarios with another learner in the role of the surgeon. Feedback indicates that learners still felt the exercise and debriefing were beneficial despite not receiving the fully immersive experience. This scenario is also dependent on trainee familiarity with the surgical procedure, causes of hypotension, treatment of hemorrhagic shock, and Pediatric Advanced Life Support.⁷ All learners for this case were anesthesia residents, though their postgraduate year of training varied. Confederates can provide cues to a junior learner to allow the case to progress while also facilitating team building. Faculty and learners reported that successful completion of the scenario (with or without cues) was necessary to the experience and adequate debriefing. One final potential challenge is early termination by a resident who quickly assumes control and administers blood. The confederate in the surgeon role is essential in facilitating the professionalism aspect in this situation.

The learners who participate in our anesthesia department's simulation curriculum are all anesthesia residents and fellows. This scenario can certainly be adjusted to suit a variety of training levels and disciplines while maintaining the core learning objectives. Our residents generally did not hesitate in transfusing the minor patient, which indicated better training in ethical principles than we had expected. However, the conflict resolution component was particularly well received as being unique. Residents frequently voice anxiety when disagreeing with a surgical attending in the nonsimulated OR setting. They are obliged to call their supervising attending, who will have the necessary discussion with the surgeon. While passive observation may still be valuable, a main tenet of simulation holds active participation in higher value. This scenario allows trainees to act as the patient's primary advocate without repercussion. The residents said that it "felt good to be an attending" and that the simulation helped them appreciate how important conflict resolution skills are in the OR setting. Additionally, faculty appreciated the ability to assess the development of crucial assertiveness skills, with the option of remediating incorrect behavior during the debriefing.

Discussion

This simulation scenario evolved from a young patient who previously presented to our hospital requiring an interventional radiology procedure to treat splenic rupture. This case generated a number of hypothetical scenarios that stimulated debate among attending anesthesiologists, surgeons, and residents. From these conversations, it became clear that medical simulation would be a useful tool in evaluating knowledge gaps and exploring the ethical issues intrinsic to blood transfusion. Ultimately, we aim to run this case as an interdisciplinary exercise involving general surgeons (as confederates) and OR staff (nurses, technicians, etc.) as well as anesthesia providers. This will allow us to assess team dynamics and crisis resource management skills among health care providers who work together clinically. An interdisciplinary debriefing will allow learners to better understand the concerns and priorities of different care providers during a crisis situation. An alternate version of this scenario may be written that requires a surgical learner to advocate for blood transfusion against an unwilling anesthesiologist confederate. Through interdepartmental collaboration, the relevant ethical and professional issues can be thoroughly explored and applied to benefit our shared patients.

Mathew Malkin, MD: Assistant Professor of Anesthesiology, Loma Linda University School of Medicine

John Lenart, MD: Associate Professor, Division of Anesthesiology, Loma Linda University School of Medicine; Assistant Professor of Graduate Nursing, Loma Linda University School of Nursing

Catherine A. Walsh, MD: Assistant Professor of Plastic and Reconstructive Surgery, Loma Linda University School of Medicine

Michelle Woodfin, MD: Assistant Professor of Anesthesiology, Loma Linda University School of Medicine

Marissa Vadi, MD: Assistant Professor of Anesthesiology, Loma Linda University School of Medicine

Disclosures

None to report.

Funding/Support

None to report.

Ethical Approval

Reported as not applicable.

References

1. Lawson T, Ralph C. Perioperative Jehovah's Witnesses: a review. *Br J Anaesth*. 2015;115(5):676-687. <http://dx.doi.org/10.1093/bja/aev161>
2. West JM. Ethical issues in the care of Jehovah's Witnesses. *Curr Opin Anaesthesiol*. 2014;27(2):170-176. <http://dx.doi.org/10.1097/ACO.0000000000000053>

3. Trentino KM, Farmer SL, Swain SG, et al. Increased hospital costs associated with red blood cell transfusion. *Transfusion*. 2015;55(5):1082-1089. <http://dx.doi.org/10.1111/trf.12958>
 4. Beauchamp TL, Childress JF. *Principles of Biomedical Ethics*. 5th ed. New York, NY: Oxford University Press; 2001.
 5. Sydor DT, Bould MD, Naik VN, et al. Challenging authority during a life-threatening crisis: the effect of operating theatre hierarchy. *Br J Anaesth*. 2013;110(3):463-471. <http://dx.doi.org/10.1093/bja/aes396>
 6. Haig KM, Sutton S, Whittington J. SBAR: a shared mental model for improving communication between clinicians. *Jt Comm J Qual Patient Saf*. 2006;32(3):167-175.
 7. Kleinman ME, Chameides L, Schexnayder SM, et al. Part 14: Pediatric Advanced Life Support: 2010 American Heart Association Guidelines for Cardiopulmonary Resuscitation and Emergency Cardiovascular Care. *Circulation*. 2010;122(18)(suppl 3):S876-S908. <http://dx.doi.org/10.1161/CIRCULATIONAHA.110.971101>
-

Received: March 14, 2016 | **Accepted:** June 27, 2016 | **Published:** September 1, 2016