

Blood transfusion



As doctors have come to be more knowledgeable about the circulatory system and the blood that runs through it, the use of blood transfusions have steadily declined. As a result transfusion alternatives have steadily increased. Through out this progression of knowledge such debates have come up, such as religious and ethical questions regarding transfusions of blood and blood fractions. There are also arguments regarding whose choice it should be to refuse a medical treatment, much less the transfusion of blood. At times some doctors will not go through with surgery without the option of using a blood transfusion. The fascination with the human body and its components has always been prevalent. Documented dissection of the human body dates aback to ancient Egyptian times. Between 300 and 250 B. C. Egyptians were studying the anatomy of cadavers. Around that same time, 300 B. C., Greek physician Praxagoras showed that there were tubes connected to the heart. Sometime after that dissection was outlawed in ancient Egypt and the progress of learning about blood and the body was stopped for thousands of years. Around 1300 A. D. doctors in Italy began to dissect corpses again. Since this time many more medical facts and strides have been bought forth. But, all these medical pioneers were hampered by the inability to see more than the human eye would allow. Necessity is the mother of invention, many would say. This is certainly true with the invention of the microscope. " In 1661 Italian anatomist Marcello Malpighi was able to see, with the aid of the microscope, the very fine blood vessels connected to capillaries. With the discovery of these capillaries the concept of circulation was complete" (Magills p. 931). In 1850 the discovery of white blood cells was made. French physician Casimir Joseph Davaine noticed cells that were uneven and pale. In 1869 Davaine noticed that these pale cells would absorb

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small bits of foreign matter. Another significant discovery, which is of great importance in the transfusion of blood, is that of blood types. The blood types are A, B, AB and O. The discovery was made by an Austrian doctor by the name of Karl Landsteiner in 1901. The discovery of blood types was an important observation because if two blood types come together the reaction could be fatal. The definition of blood transfusion is " the introduction of whole blood or blood components (such as platelets, red blood cells or fresh frozen plasma) directly into the bloodstream" (Magills p. 1673). Transfusions began erratically and curiously in 1665 when Dr. Richard Lower suggested that blood might be transfused from one animal to another. Apparently the transfusion worked. In 1667 Mr. Aurther Cogan passed blood from a pig into himself and claimed success, although undocumented. A little while later Dr. Jean Denys gave a patient lamb's blood as a transfusion. This patient experienced a violent reaction, but lived none the less. Sadly though, a patient died from a similar treatment in 1668 (Smith p. 262). Human blood has been transfused since the early nineteenth century. The first well documented transfusion of human blood to a patient was administered by James Blundell on September 26, 1818 (Magills p. 1679). There are two main types of transfusions. An autologous blood transfusion is a self donated unit of blood. A patient donates ahead, prior to the surgery. The patient donates the number of units of blood expected to be lost during surgery as predicted by the surgeon. This type of transfusion can not be done any later than 72 hours before the elected procedure. Allogeneic blood transfusion is blood donated by unknown donors. The selection criteria used for selecting donors must comply with local regulations concerning local blood collection. A healthy man or woman of average height and weight has a circulating blood

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volume of ten pints (5 liters). Removing a pint (one half a liters) of blood does not have a serious result (Hackett p. 190). The benefits to receiving a blood transfusion, as seen by the medical community, is to increase circulating blood volume and the oxygen carrying capacity within the blood stream when blood loss has occurred. This can occur as the result of trauma or surgery that results in high blood loss or in anemic patients. There are criticisms to receiving blood transfusions. " Allogenic blood appears to suppress the immune system of the recipient. Although, there is still much to be learned about this phenomenon , the effect may adversely influence recurrence rates and mortality following some forms of cancer surgery and may lead to increased susceptibility to viral and bacterial infections" (Magills p. 1679). In addition, blood is known to be a complex and ever changing body fluid. Disease testing can only keep up with known and identified disease entities. Many now in existence are yet to be discovered. Even for some known diseases there is a window of conversion in which a person has been exposed and carries a yet undetectable blood disease (Hackett p. 191). HIV has a six month conversion window. A bigger problem for blood bank testing than HIV is an immune reaction called TRALI (transfusion related acute lung injury) " first reported in the early 1990's, TRALI is a life-threatening immune reaction following a blood transfusion... one report states that TRALI is now near the top of the list for causes of transfusion-related deaths in the United States and Britain, making it a bigger problem for blood bank is than high-profile diseases like HIV" (Awake p. 7). There are medical alternatives to the use of blood transfusions as well as preventative measures that one can consider. One of these is the use of blood volume expanders such as normal saline or lactated ringers solutions. One of the

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latest alternatives to be discovered is called hemoglobin-based oxygen carrier or HBOC. " Unlike red blood cells, which must be refrigerated and discarded after a few weeks, the HBOC can be stored at room temperature and used months later. Also, since its cell membrane with its unique antigen types are gone, severe reactions due to mismatched blood types pose no threat" (Awake p. 11). With blood transfusions there comes a dilemma, an ethical dilemma. Some of the most well known of these dilemma's are surrounding blood transfusions, doctors and Jehovah's Witnesses. Time pressures and powerful emotions by the health care team as well as the patient and their family can complicate this ethical dilemma (Lo p. 9). The doctor may feel a strong sense of duty toward the patient. Duty here is defined as " a responsibility, associated with professional status, that requires specific action." (Kanoti p. 101) The duty in this case is to save the patient's life. The patient may have a strong sense of duty toward God; to live their life within a certain set of standards which they believe are God given. Combined with the concept of autonomy, a moral dilemma appears. A moral dilemma is defined as " a clinical predicament whose solution requires a choice between competing obligations" (Kanoti p. 102). The question that comes up is " Who's decision should it be to accept or refuse some aspect of medical treatment?" Many doctors believe it is the physician's decision because they have the many years of schooling and experience. They feel that it is their responsibility to choose the right treatment. On the other side there are people who argue that it is the patient's right to choose what treatment they receive due to the fact that it is the patient's body and they have to live with the decision. The value of autonomy comes into play as a patient's right. Autonomy is defined as " A person's capacity to make self-

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reliant, independent, individual decisions" (Kanoti p. 102). Consequently, the doctors should use their knowledge and experience to educate to the fullest sense so in turn the patient can make an educated decision. This would result in the patient being given all possible options and the possible outcomes as the doctor sees it. This should be done by the physician keeping in mind all aspects that make up that patient; their physical, emotional and intellectual capacities. One of the most well known controversies surrounding blood transfusions is that of between Jehovah's Witnesses and doctors. Jehovah's Witnesses believe in abstinence from blood. Jehovah's Witnesses base their abstinence from blood on the scriptural principle first introduced in the Old Testament or Hebrew scriptures. In the book of Leviticus 17: 14 they believe the writer was inspired to write that " the soul (or life) of every sort of flesh is its blood..."(New World Translation of the Holy Scriptures). They feel this principle is restated in the New Testament or Greek scriptures in the book of Act 15: 28, 29. There it states " For the holy spirit and we ourselves have favored adding no further burden to you, except these necessary things, to keep abstaining from..... blood". Even though a person's circumstances change, for Jehovah's Witnesses these standards do not. With the medical technology available today the fractionation of blood products makes this principle difficult to apply. Each individual that identifies themselves as one of Jehovah's Witnesses has to decide for themselves if a particular blood fraction would be acceptable to their conscience. Would a pregnant woman that has miscarried take a rhogam shot? Would a person bit by a rabid dog take rabies shots? Would someone that got bit by a snake take antivenin serum? All of these treatments contain some fraction from blood. The acceptance or rejection at this level of blood fractionation must

be left up to the individual. Of course these standards upheld by Jehovah's Witnesses have met with persecution. Doctors have refused to treat Jehovah's Witnesses, they have also tried to badger them in accepting a transfusion. A real ethical dilemma may develop, for a witnesses, when a person is a trauma victim. Perhaps they have sustained injuries resulting in massive internal bleeding; a gunshot, stabbing or car accident. When the situation is considered critical and timely a doctor trained to transfuse blood in these situations fights with their conscience. Within the Hippocratic Oath it states " Most especially I must tread with care in matters of life and death.... I will remember that I do not treat a fever chart, a cancerous growth, but a sick human being whose illness may effect the persons... stability"(Nova)

This is where the use of alternatives to blood transfusions could be considered. Blood volume expanders like normal saline or lactated ringers solution could be given as well as high flow oxygen therapy. Bloodless surgery programs have been prompted by the needs of Jehovah's Witnesses and the growing fear of diseases like HIV and hepatitis c. There are bloodless programs in, Hartford Hospital in Hartford, Connecticut, Florida Hospital South in Orlando, Florida, Baptist Hospital in Jacksonville, Florida and also in Maine, Rhode Island, California just to name a few. In conclusion, as medical knowledge continues to gain ground in understanding the human body, also the options for treatment will continue to grow. But at the receiving end of these treatments is a human being with strong morals and a family. When it comes to blood transfusions there are many avenues to choose from. Such as individual blood components and bloodless alternatives. It will continue to challenge doctors and other health care professionals as to how to best meet the needs of individual patients while still respecting them. But one thing is

sure, doctors must be commended for their continued efforts to grapple with this perpetual dilemma.