

Risk-Benefit Ratio: Hazardous Surgery and Experimental Therapy

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In Jewish tradition a physician is given specific divine license to practice medicine. According to Maimonides and other codifiers of Jewish law, physicians are obligated to use their medical skills to heal the sick; patients are also obligated to care for their own health and life. We do not have title over our lives or bodies. We are charged with preserving, dignifying, and hallowing our lives. We must eat and drink to sustain ourselves. Similarly, we must seek healing when we are ill.

Another cardinal principle in Judaism is that human life is of infinite value. The preservation of human life takes precedence over all commandments in the Torah, with three exceptions; avoiding adultery, murder, and incest. Life's value is absolute and supreme. Thus, an aged man or woman, a mentally retarded person, a deformed baby, or a dying cancer patient all have the same right to life as you or I. To preserve a human life, even the sabbath and the Day of Atonement may be desecrated. All rules and laws other than forswearing the three sins are suspended for the overriding consideration of saving a human life. The corollary of this principle is that one is prohibited from doing anything that might shorten a life, even for a very short time, since every moment of human life is also of infinite value.

The problem is to weigh, in Judaic terms, the possibility of shortening even the brief life span of a terminally ill patient against the possibility of cure or prolonged survival if a hazardous treatment or experimental procedure is attempted. Given an extremely ill patient whose prospective life-span is very short, perhaps only a few days or weeks; and given a therapy or treatment

method which, if successful, would allow the patient to heal and to live for a prolonged period, months or years, but which, if not successful would cause the patient to die immediately, how should physicians conduct themselves in such a case? Should they risk the definite short period of life remaining for the patient by administering the drastic remedy with the hope that the patient may be rescued from danger and live for a prolonged period? In other words, should physicians abandon the patient's definite but short life span in favor of the possible significant prolongation of life by the administration of this hazardous treatment?

This difficult problem confronts not only the physician but also the patient and the family. They too must be able to decide this question, which is not purely medical. Is the patient allowed to accept hazardous surgery or experimental therapy? This is a basic decision which includes medical, moral, and legal aspects. We must provide a definitive decision from the viewpoint of Jewish law and ethics for the physician, the patient, and the family.

An illustrative case exemplifies the problem. A 9-year-old girl with acute lymphoblastic leukemia, treated with the best chemotherapeutic regimens available, fails to achieve remission of her disease after eight months of treatment; further chemotherapy is thought to have less than a 5% chance of success. She has a very low white blood cell count and is in constant danger of developing serious, even life-threatening infection. She also has a very low platelet count and is in constant danger of serious bleeding. The pediatric hematologist suggests bone marrow transplantation as a final resort. Tissue typing is done and the father of the child is found to have the same tissue type as the child. The chances for a successful bone marrow transplant are thought to be about 60%. However, the procedure itself is

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associated with a 25% mortality and a very high morbidity. Most patients suffer from a complication called graft-versus-host disease in which the donor bone marrow—in this case the father's—causes serious and sometimes fatal signs and symptoms in the recipient, the child. Without the transplant, the child may have no chance of remission or cure, and her life expectancy is thought to be weeks or, at best, months. On the other hand, long remissions following bone marrow transplants for acute leukemia, although unusual, do occur in perhaps 20%–25% of patients.

What are the moral and ethical issues raised by this case? The child is 9 years old. Does age play a role in deciding whether bone marrow transplant is sanctioned in moral teaching? The disease afflicting the child, acute leukemia, is invariably fatal if untreated. Therefore, not to treat seems to be an unacceptable approach in view of the supreme value of human life. However, this patient was treated. The best chemotherapeutic regimens were used and were unsuccessful in arresting the disease. Now we physicians are faced with the possibility of employing the highly risky technique of bone marrow transplantation, with the risk-benefit ratio I have cited. Does Jewish law recognize the concept of risk-benefit ratio? Does Judaic moral teaching consider the statistical probability of prolonging life versus the mortality rate or the odds of shortening life? May a hazardous therapeutic procedure be instituted in a dying patient if there is a slim chance of cure, even though the chances of survival are much less than even? How does one define “slim”? Is a bone marrow transplant a recognized, accepted, widely used modality of treatment, like a kidney or an eye transplant, or is it still highly experimental? Should one differentiate between therapeutic approaches that are hazardous, and hazardous procedures that are entirely experimental?

The use of certain drugs—daunorubicin, cytosine arabinoside, vincristine, prednisone, asparaginase—to treat acute leukemia is certainly fraught with hazard because toxicity is considerable. However, the efficacy of these and other chemotherapeutic drugs is also well known. Chemotherapy is able to produce long survival in about 60% of children with acute lymphoblastic leukemia. We, as physicians, administer these drugs in anticipation of a cure, despite the known

risks and side effects. Should we sanction such risks in the use of a new experimental drug or procedure such as bone marrow transplantation, whose cure-rate potential is not clearly known?

In the case at hand, may the child undergo the bone marrow transplantation? Must she undergo the bone marrow transplantation? Is marrow transplantation therapeutic or experimental, or both? May the doctor offer this form of hazardous treatment? Must he do so? Does Judaism have a discretionary or mandatory attitude toward procedures that involve significant risk? What is significant risk? Would our ethical teachings sanction bone marrow transplantation in this case because of the life-threatening nature of the underlying illness, even though the procedure itself may lead to the early death of the patient?

Numerous other ethical questions are involved in this case. If the procedure is sanctioned, is consent required? From whom? May the father subject himself to the danger and risk, albeit small, of serving as a donor? If the child dies following the transplantation, may an autopsy be performed? Theological and philosophic questions can also be raised by this illustrative case. If God ordained that this child should die at age nine of acute leukemia, how dare we, as physicians, interfere with God's will and attempt a bone marrow transplant to cure the child? How can we, as physicians, add harm over and above the harm produced by the disease itself? If physicians cannot recommend a specific experimental treatment or procedure on the basis of sound scientific principles, may they offer it as a one-in-a-million chance? Would Judaism prefer an approach in which a patient is left to chance?

I return to the basic tenet of Judaism that I enunciated earlier, the supreme value of human life. This principle is based, in part, upon our belief that we were created in the image of God. Therefore, when a human life is in danger, even when there is no hope for prolonged survival but only for very short term survival, all commandments of the Torah are set aside. Any act which can prolong a human life supersedes all the commandments of the Torah except the three cardinal ones. What do we physicians do in this case? I ask Rabbi Tendler to discuss and answer, if possible, some or all of the ethical and legal questions I have raised concerning risk-benefit ratio in hazardous treatment and experimental therapy.