



Urgency or Outcome as Guiding Principle for the Allocation of Deceased Donor Livers: A Questionnaire Survey Among Outpatients of a University Medical Department in Germany

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ABSTRACT

Introduction. The sickest-first principle has been pursued in the allocation of donor livers for transplantation with the introduction of algorithms based on the model of end-stage liver disease (MELD) score. In Germany outcomes of liver transplantation appear to be negatively influenced by the transplantation of patients with very high MELD scores and the use of donor organs with lower quality. Therefore, some have claimed, allocation should be based more on outcome-oriented criteria.

Methods. A survey with binary questions (yes/no) regarding the appreciation of values concerning the allocation of donor livers was performed among general medical outpatients of a university hospital. End-stage liver disease patients were excluded. Two hundred four returned forms were analyzed. Percentages of valid answers are given.

Results. In this study, 88%, 73%, and 41% of subjects answered they would be willing to undergo transplantation with an estimated outcome of 20%, 50%, and 80% 1-year mortality rate, respectively, for themselves. Choosing a possible recipient between 2 case examples, 68% of valid answers voted for the case with higher age and urgency and lower long-term survival. Seventy percent said urgency was more important than long-term outcome as a criterion for organ allocation. Under the assumption that urgency-based allocation would decrease average long-term survival of liver transplantation, 58% refused to deny even the sickest patients transplantation. Seventy-eight percent said that patients likely to achieve 50% long-term survival should not be denied liver transplantation.

Conclusion. In our study a majority of subjects prioritize urgency and granting a chance to avert imminent death over long-term survival per procedure. Equitable distribution of chances for survival may be estimated more than outcome maximization in terms of aggregate life-years gained.

IN FREE market economics the maximization of utility under the condition of scarcity is brought about by unrestricted exchange of goods. Ideally equilibrium may be reached, in which no imaginable transaction will increase the well-being of any one person without reducing that of another.

In solid organ transplantation, societally regulated algorithms of distribution have been envisaged instead of leaving organ allocation to market mechanisms. Obvious reasons are that dead donor organs are perceived as a societal

resource rather than a product belonging to an individual [1] and that many believe in recognition of human dignity and respect of human life that medical resources with immediate life-sustaining properties should be distributed

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more according to need or patient benefit than according to purchasing power.

For patients with end-stage liver disease and its associated complications, liver transplantation may be a life-saving treatment option. Since the early days of liver transplantation donor-recipient matching has been facilitated and long-term outcomes have been improved mainly due to the progress in immunosuppressive strategies. Today, liver transplantation has developed into a routine procedure with a reasonable risk-benefit relation for patients with advanced liver disease. Therefore, the demand for donor-livers by far exceeds supply in most countries, and the imbalance is increasing. Various efforts to reconcile conflicting aims in formulating allocation systems have been made. In Germany, with the introduction of a model of end-stage liver disease (MELD) score-based allocation in 2006, a sickest-first principle has been explicitly adopted, as in many other national or regional transplantation systems. MELD score predicts mortality risk of cirrhotic patients at 3 months on a scale from 6 to 40 points reflecting mortality risks between 1% and 98%. Consequently, in principle, this score ranks patients according to risk of death or urgency of transplantation.

Recently data of about half of the German liver transplantation programs has been published that connected worse outcome (measured as graft and patient survival) to patients who underwent transplantation with higher MELD scores [2].

This has highlighted the fact that conflicts may arise between the aim of granting equitable access to a life-sustaining treatment on the one hand and achieving optimal outcome per donor organ on the other hand, or—put another way—that more equitable access in chances for survival may have a price of less aggregate post-transplantation survival or less life-years gained of a transplantation service.

Given the pressing donor shortage, a discussion on the perceived need for a more outcome-oriented allocation system has arisen with proponents of the German transplantation establishment, promoting the exclusion of sicker patients from transplantation for the sake of outcome maximization per graft.

The normative ethical decision between guiding principles cannot be answered by medical science. In transplantation medicine the society as the community of potential organ donors is involved in a way that exceeds simple allocation of reproducible goods. Therefore, community values concerning organ allocation are of interest.

Few studies have published reporting community preferences concerning organ allocation and even less on the trade-off between urgency and efficiency. To our knowledge no data from Germany have so far been reported.

METHODS

A questionnaire containing multiple choice questions regarding demographic data and 3 groups of questions addressing risk assessment and allocation decisions was developed. To emulate the

Table 1. Demographic Data as Stated by the Participants

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Age		
Group 1 (<30 y)	30	14.7%
Group 2 (31–50 y)	66	32.4%
Group 3 (51–65 y)	57	27.9%
Group 4 (>65 y)	51	25.0%
Gender		
Men	93	45.6%
Women	110	53.9%
Possession of a donor card	44	21.6%
Possession of a driver's licence	180	88.2%
Health care-related employment at any time	62	30.4%
Insurance status		
Public	150	73.5%
Private	16	7.8%
Combined	36	17.6%
Level of education		
Public school	47	23%
Secondary school	69	33.8%
High school	26	12.7%
University of applied science	19	9.3%
University	40	19.6%
Ever worked	186	91.2%
Worker	18	8.8%
Employee	146	71.6%
Self-employed	22	10.8%
Civil servant	6	2.9%

binary decisions transplantation coordinators may face, all questions could only be answered as yes or no.

Questions Concerning Allocation Decisions

Questions 1a, 1b, and 1c. The scenario was “Imagine you have chronic liver disease. Your quality of life is extremely reduced. You are tired and depend on your relatives to care for yourself. You are hardly able to leave the house, because your abdomen and legs are swollen and painful. It is improbable that you will live beyond three months. During the past month you were hospitalised twice for a couple of days each.” Participants were asked, if they would accept liver transplantation for themselves if 1-year mortality rates after transplantation were 20%, 50%, or 80%, in 3 separate yes/no questions.

Questions 2a and 2b. These involved an allocation decision between 2 patients. The scenario consisted of 2 brief case histories. The first patient is a 60-year-old male with cirrhosis who is critically ill and in intensive care. He will die without a liver transplant. With liver transplantation, a 50% chance to survive is expected. The second patient is a 40-year-old male with cirrhosis. His expected 2-year mortality rate without transplant is 50%. After transplantation 80% long-term survival and a nearly normal quality of life are expected. Participants were asked to decide which patient should receive 1 available donor liver.

Question 2c. Patients were asked to approve or disapprove the following statement: “Averting an imminent threat to life is a more important argument than long-term success.”

Question 3. After a brief explanation concerning the fact that patients transplanted in a worse condition will have worse outcome in terms of long-time survival, participants were asked to approve or disapprove the following statements: 3a: “The sickest patients

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