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Patients Likely to Survive for More Than One Year Have a Right to Organ Transplantation Regardless of Age

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The proposition is absurd that older age should altogether preclude candidacy for organ transplantation. It is even dubious to suggest that the scales should be weighted against the old in order to preferentially direct organs to younger recipients. The argument here might be that younger patients have longer to function in society, and that their responsibilities are apt to be greater as parents or sources of family support.

At an even more pragmatic level, justification for discriminating against the elderly could be sought by assuming or demonstrating that the results are poorer, and that this is an inefficient use of the organs. A natural corollary could follow that the patient's best interests are not well served by vain attempts that merely extinguish more quickly the flickering life flames.

The disaccreditation of transplant procedures by their use in old patients was a natural fear when such operations were first performed on a large scale. The first large group of non-twin kidney transplant recipients who survived for long-term observation came from our University of Colorado program in 1962-1964.¹ By the end of 1964, an estimated 90% of the chronic renal transplant survivors in the world came from this bellwether effort in which candidacy was restricted to those younger than 50 years. Diabetics were excluded as well.

The same rationale was invoked in the early trials of liver transplantation,² and transplantation of the heart.³ The argument was developed unusually completely for livers. An upper age limitation of 50 years for liver transplant candidates was agreed upon in November 1973 by myself and the Council of the American Association for the Study of Liver Disease. The objective was to give what was then a procedure struggling for recognition a reasonable chance for success and acceptance. At this earlier time, older patients faced a high intraoperative risk, especially when the inferior vena cava and portal vein were cross-clamped during the anhepatic phase of the liver transplantation. Those who survived surgery to be

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3 treated with postoperative immunosuppression faced the bleak prospect of
9 high-dose steroid therapy with its devastating and age-related complica-
0 tions.⁴ Such complications of immunosuppression blighted the survival of
1 recipients of any type of organ.

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4 29961 from the National Institutes of Health, Bethesda, Maryland.

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0 Technical refinements in all of the transplant procedures, as well as im-
1 provements in immunosuppression, have increased the safety both of the
2 operations and of aftercare. The most important new factor was the intro-
3 duction in 1978 by Calne et al.⁵ of cyclosporine therapy for renal trans-
4 plantation and the combination of cyclosporine with low-dose steroid ther-
5 apy in 1979.⁶ After actual follow-up of 4 to 6 years,⁷ there appeared to be
6 no penalty in our hands in terms either of patient or graft survival for
7 transplanting a cadaveric kidney into patients over the age of 50 years
8 versus a younger cohort.

9 Even more surprising were the results after liver transplantation.⁸ In a
0 recent study, the outlook was compared in adult liver recipients whose age
1 was less than 50 years with that in adults who were 50 years or older at
2 the time of liver replacement under cyclosporine-steroid immunosuppres-
3 sion. Cyclosporine and prednisone were used for immunosuppression in
4 455 adults who had orthotopic liver transplantation between March 1980
5 and August 31, 1986. In the event of uncontrolled rejection, polyvalent
6 antilymphocyte globulin (ALG) or monoclonal ALG (OKT3) was used in
7 some cases as a short-term adjunct. Azathioprine occasionally was added
8 to cyclosporine and prednisone for maintenance therapy, either because
9 of smoldering rejection or to allow reduction of the cyclosporine doses in
0 patients with nephrotoxicity. The techniques of liver transplantation were
1 not influenced by age.

2 Of these recipients, 363 were 18 to 49 years old (average, 35.8 ± 8.5
3 years). The other 92 were 50 to 77 years (average, 55.7 ± 4.8). Malews
4 accounted for 40.7% of the younger group and 45.7% of the older group.
5 The principal diseases for which transplantation was carried out were pri-
6 mary biliary cirrhosis and postnecrotic cirrhosis (Fig 1).

7 In 1980 none of the recipients was as old as 50 years, but by 1985 and
8 1986 this proportion had increased to 22.7% and 31.5% of adults, re-
9 spectively (Fig 2). The actuarial survival curves were slightly more favor-
0 able for the younger patients. However, the differences between the two
1 age groups were not statistically significant in the first 5 years (Fig 3). The
2 oldest patient, who was 76 years, was discharged from the hospital in 3
3 weeks and has had no trouble in the succeeding year. Previously, she had
4 been chronically hospitalized.

5 Of the 61 living recipients in the older age group, almost all have had
6 complete rehabilitation as defined by a return to full domestic function, full
7 employment, or freedom from medical care during retirement except for
8 routine outpatient follow-up. This rate of rehabilitation is similar to that
9 recently reported by Iwatsuki et al.⁹ for all liver recipients.

0 A similar expansion of the recipient pool has been seen in our heart
1 transplantation program.¹⁰ As the scope of transplantation has broadened
2 for all organs, the impact of these changes on public health policy has
3 become harder and harder to delineate, largely because of uncertainty
4 about the upper age limit for candidacy. Absolute age proscriptions would
5 seem to be unenforceable. Consequently, the pool of recipients of all or-
6 gans has steadily enlarged with progressive elimination of the prejudice
7 introduced by age.

8 On October 1, 1987, a national system for the equitable allocation of
9 kidneys, livers, and hearts, based on experience acquired in Pitts-
0 burgh,^{11, 12} went into effect. Age as a condition for reciprocity was not
1 even considered by those who designed the plan for the United Network
2 for Organ Sharing (UNOS), a private and previously voluntary organiza-
3 tion that has been given the legal contractual obligation to distribute ca-
4 daveric organs. Any effort to put an age ceiling cap on potential recipients
5 almost certainly would have been challenged in the courts.

6 Such questions about age could be made moot if the supply of organs
7 were more efficiently used. Makowka et al.¹³ have shown that the criteria
8 for liver donor status have been made unreasonably rigid, causing a wide-
9 spread wastage of organs. Undoubtedly, the same is true for the other
0 major organs. Distribution also can be made more efficient, and this will
1 be one of the principal advantages of the new UNOS distribution system.
2 It may be that a choice between an old recipient and a young one does
3 not have to be made.

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3 Governor Richard Lamm, former governor of the state of Colorado, has
4 expressed many fundamental objections to high technology in medicine as
5 exemplified by transplantation.¹⁴ Mr. Lamm pointed out that too much of
6 the high-intensity care provided for aged or hopelessly ill patients is not
7 only costly, but that it may be inhumane when all that is achieved is pro-
8 longation of painful dying. This message is so important that it deserves
9 the kind of thoughtful examination that is emerging from quality of life
10 studies now coming from many transplant centers. It is obvious that the
11 degree of rehabilitation is so good in the majority of organ transplantations
12 that it is an extension of meaningful life that is being purchased.

13 But what of the cost? The demonstration that advanced age per se is
14 not a devastating prognostic factor after transplantation could be viewed
15 with alarm by funding agencies responsible for the financing of care for
16 these older patients. Such fears about runaway expenses may be un-
17 founded. The alternative of dialysis for patients with renal disease is more
18 costly than transplantation. The diseases for which the elderly have received
19 liver and heart transplantation are chronic, with the need for repeated and
20 costly hospitalizations in the course of slowly dying. It is now clear that
21 such expenditures can be diverted in properly selected cases to resolution
22 of the problem by transplantation.

23 It has been said that society and its institutions are judged by the way
24 they treat those who cannot defend themselves, as exemplified by its very
25 young and very old. An objection to treating the elderly with transplanta-
26 tion would be an objection in many cases to the only treatment capable of
27 liberating these patients from hospital life, restoring them to society, and
28 putting an end to a continuous accrual of expenses down a therapeutic cul
29 de sac.

30 It is conceivable, but highly unlikely, that society someday will decide
31 that no patient with liver disease, or diseases of certain other organ systems
32 such as the heart or kidney, will be treated if they are beyond a certain
33 age. If so, arguments against transplantation of older patients will have
34 great weight. Physicians caring for the elderly will be expected to deter-
35 mine the cheapest way to exercise what will have become a priestly, not
36 therapeutic, function. Until then, the proper first decision by those serving
37 society will be *whether* treatment should be carried out. If the answer is
38 yes, the appropriate second question will be: What is the best way? Then,
39 what will be purchased per health care dollar will be real, not symbolic,
40 for patients of all ages.

41 Developments in transplantation and artificial organ technology have
42 changed forever the philosophy by which organ-defined specialties such
43 as nephrology, hepatology, and cardiology are practiced. Until recently,
44 what could be offered victims of vital organ failure was a rearguard ap-
45 proach designed with diet, medicines, or surgical procedures to extract the
46 last moment of life-supporting function from the failing organ. Now, and
47 for the first time in human history, the breathtaking possibility has emerged
48 of when all else fails, starting over with an organ graft or a manufactured
49 organ. It will not be possible to exclude from this revolutionary develop-
50 ment patients merely because they have passed a certain age.

51 For the most part, debate about the role of age in determining candi-
52 dacy has been restricted to professional societies. It is hoped that the mat-
53 ter will not become political, an issue upon which votes are cast and thus
54 a campaign issue affecting the election of officials. When the state is seen
55 by such public servants as the agent and protector of the good of the
56 public, notions of utilitarian balance can be invoked, with the result that
57 the interests of the state can always be placed ahead of the needs or claims
58 of the very individuals whom the state supposedly serves.

59 Those who believe that an individual human life is above bartering also
60 believe that the preeminent and transcendent status of the human person-
61 ality is the bedrock of our secular, pluralistic society. The taking or debas-
62 ing of life by withholding effective treatment ought not to be justifiable, no
63 matter how great the offsetting "benefit" to the public good.

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Colin E. Atterbury, M.D.

A physician should decide whom to treat on the basis of objective medical criteria. He should not provide either nostrum or procedure to a patient whom it will not benefit. When a physician's remedy might cause only harm, he is in fact restrained by ancient oaths from administering it. On the other hand, there is no ethical justification for withholding what is tested and found to be efficacious. Nevertheless, when multiple patients meet objective medical criteria but resources are limited, other criteria, which we are about to discuss, must be used. An argument against transplanting everyone who would benefit from transplantation, even those of advanced years, therefore, can only be based on the presumption that resources are limited. In this meditation, for it is really that rather than a spirited argument, I will be using the specific example of transplantation of the liver, the organ I know best, but many of my observations and conclusions are appropriate for transplantation of other organs as well.

In ethical discussions about rationing scarce medical resources, it is fashionable, and perhaps even instructive, to use the analogy of the lifeboat. In a lifeboat, when not all can be saved and decisions must be made about who should live and who should die, the rule in maritime law, as found in *U.S. vs. Holmes*,¹ is that casting lots is the only accepted procedure that would avoid arbitrariness and offer equal rights' to life.

But other rationing schemes, in lifeboats and in medical ethics, are possible. One can, for instance, appeal to the free market, or one can assess the relative worth of the recipients.² Using the marketplace to determine who gets scarce resources is common in most sectors of American life. There has always been a reluctance, however, to extend unfettered the principles of the free market into health care. We as a society have generally tried to make lifesaving care available to rich and poor alike. There is no general sympathy for selling places in lifeboats. If we use social worth criteria, enshrined values of the middle class majority are likely to be used. Such a scheme is unpleasant enough should hard choices have to be made between heads of households and single persons, laborers and poets, and unemployable mothers of small children and working fathers. Contemplating the use of social worth criteria is chilling, however, when those of us who are free spirits realize that no one who marches to a different drummer would need apply. Many of us, therefore, prefer to eschew the marketplace and abjure the use of social worth criteria in favor of the principle of first come, first served, which has been determined by some ethicists to be the moral equivalent of casting lots.

It is clear that resorting to the marketplace, social worth criteria, or the first-come, first-served lottery would all leave room for at least some elderly passengers in our metaphorical lifeboat. They could buy a seat, earn it from garnering the esteem of the selectors, or have had the luck of the draw. My arguing against the question posed by this debate, therefore, would appear to suggest that I have invoked lifeboat imagery but have rejected lifeboat solutions. I have not. An explanation is due.

That explanation will first require that I examine my assumptions. I cannot invoke lifeboat ethics (who shall be saved when not all can be saved) if lifeboat conditions do not apply. As one ethicist has written, discussing rationing, i.e., the withholding of beneficial therapy, without establishing that the analogy exists is at the least to have poorly thought through the problem and at the most to have been unethical.³ I do not want to advocate a position that is unethical. No one in a lifeboat should go overboard if the rescue ship has been spotted on the horizon, if extra food and water are hidden among the survivors' few belongings, or if the lifeboat has just been launched and no one is yet hungry or thirsty enough to be near death. If there is no food or water at all, on the other hand, the death of a few will do nothing to save the others and no one should go overboard. Invoking the language and rhetoric of rationing requires that the analogy actually exists: There must be food and water, it must be in insufficient supply to preclude all passengers surviving, and no action must be possible to increase the supply.

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Debates in Medicine

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As the analogy applies to liver transplantation, there is food and water. Transplantation saves lives, both in younger and in older patients. That our society's capabilities of providing it are insufficient to preclude all surviving, and that nothing can be done to increase the supply, remain to be established.

If the unavailability of livers for transplantation was all that constituted insufficient supply, then I would have to concede that I have failed to meet the test of my metaphor. Something can be done to increase the supply. There are about one million hospital deaths each year. If only 2% of these patients are suitable candidates, then 20,000 donors annually are potentially available.⁴ At the time of this report, however, the number of actual donors was only about one eighth the potential number. This discrepancy between the possible and the actual is especially discouraging when one examines additional data. Only 5% of donations are at the suggestion of the family. However, when families are asked by physicians to donate, the agreement rate is 80%. If organs are still being obtained from only one in eight eligible donors, there is clearly a need for physicians to take greater initiative in requesting organs. If liver unavailability, therefore, were the only argument for a need to limit transplantation, imposing rationing would be unethical until such time that every effort has been exhausted in an attempt to increase the supply.

The resources that are scarce are more general. There are limited numbers of transplant surgeons. They cannot be asked to do so many transplants that they do not have time to sleep, write scholarly papers, teach, or attend hospital or university committee meetings. There is a nationwide shortage of nurses. This shortage has led to a limitation on admissions in some hospitals and to limitations in the number of intensive care unit beds in others. Medicare already rations the amount of money it will pay physicians, and through Diagnosis Related Groups limits the amount it pays hospitals regardless of the resources their patients consume. The skills and resources needed for a transplantation program are extensive. In addition to surgeons, hepatologists, anesthesiologists, and pathologists with special training, transplantation centers also need to staff procurement programs and sophisticated blood banks as well as provide expertise in immunology, radiology, microbiology, nuclear medicine, and other areas. Estimated expenses for liver transplantation from referral to discharge have ranged from \$70,000 to \$200,000 per patient. Medication to maintain immunosuppression alone can approach \$10,000 per year. This is expensive technology.

The number of transplant surgeons is already increasing; committees can perhaps be attended by other surgeons, and economic incentives and attention by administrators to job satisfaction issues can be improved to increase the number of nurses. The availability of all the other resources could perhaps be increased merely by our economy's earmarking more money for health care.

I have moved from a discussion of actual shortages to the issue of whether the shortages can be alleviated. It may be argued that the health budget is small compared to the defense budget, and that resources would not be scarce if our legislators merely chose to alter our national priorities. The rhetorical cry "guns or butter" can be recast as "guns or livers." Even if we turn our swords into scalpels and increase our allocation for health care, the general public might not want their dollars to go toward more transplantation of livers. They might prefer that these resources be used instead for lowering infant mortality, preventing and treating AIDS, preventing coronary artery disease, or making nursing homes more available and more humane. On the other hand, they might actually want butter, or what it symbolically represents, which may not be health care at all. There are still the problems of hunger, environmental pollution, replacing bridges and highways, and more. There are always competing needs. If we have not already reached the point where we cannot increase our allocation of health care resources, we surely are approaching it.

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Debates in Medicine

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Once I have suggested the validity of invoking lifeboat ethics, or at least have established what is necessary to invoke them, the task is to justify not adhering to lifeboat ethical solutions. If older patients do as well as younger ones in the initial years, should they not be equally eligible for transplantation? Even with scarce resources, consistency with my previous arguments would seem to require that I subscribe to the principle that older candidates be allowed to enter the first-come, first-served lottery. I would, therefore, seem to be hoisted on my own petard. Refusing to provide an efficacious procedure to the elderly could be seen as denigrating their value as persons and as denying them their legitimate rights. Such denial might be construed as gerontocide. At the least it would be an abrogation of the principle that all persons should have equal access to health care and that similar medical cases should receive similar medical treatment regardless of their personal characteristics.

Consider, however, that I have not exhausted all the rules by which persons and societies make choices in the setting of shortages. Ponder the situation of two telephone calls requesting liver transplantation arriving in Pittsburgh at the same time and being screened simultaneously by two staff members, whose evaluations are completed simultaneously. Such a situation is unlikely, but this is an argument. If both patients needed to go to the operating room at the same time and only one liver was available, the surgeon might flip a coin. If the only difference between the two patients was a matter of race or sex, we would in fact expect the surgeon to do so. If, however, one patient is 20 years old and the other is 70, would the surgeon be *obligated* to flip a coin, since both would do equally well for the first several years, or could he, drawing upon our society's values, choose the 20-year-old without being accused of ethical impropriety?

If new livers lasted only 5 years, then the 70-year-old and the 20-year-old might get equal use of it and the flip of the coin might be the only ethical solution. But patients who survive for 1 year and are doing well at its end are likely to survive for 5 years, and if they are still doing well, they have the potential of surviving for 20. Without getting mired in the actuarial complexities of the anticipated life expectancy of a 20-year-old as opposed to a 70-year-old, let us assume that the 20-year-old has a potentially longer life-span. He will get greater use from the liver than the 70-year-old will because his survival will be longer. Therefore, by a principle that may well be a just one even if not a strictly medical one, he could be chosen over the 70-year-old. It is my guess that in this situation most surgeons would be comfortable selecting the 20-year-old. There is an allocation principle lurking here, and the question is how to give it expression. However, first back to our trope.

When we discuss the lifeboat analogy we should remember that an allocation principle is frequently invoked even before passengers reach the lifeboat. "Women and children first" is the classic formulation; our society wants to insure the survival of its young and those who care for them. In the late 1980s we might alter the formulation to "children and caregivers first." Women who are not responsible for immediately protecting the life of a child and nurturing him or her after rescue have probably earned the right to go down with the men. The moral intention is clear, however. We yield to those who have the longest future, to those who have not yet had their fair share of life.

Could we not even argue that this principle of giving to those who will get the greatest use is a medical criterion by which we should always make medical decisions? After all, it is a decision our surgeon is likely to have made in the forced-choice situation we described. To so argue is to lose sight of the role of a medical criterion, which this one is not. One thoughtful analysis has pointed out that allocation criteria for scarce resources comprise at least two parts: rules of exclusion and rules of final selection.⁵ Identification of who would not benefit provides the rules of exclusion. Women and children first is a rule of final selection, as would be provision for placing a crew member in each boat to insure the survival of the passengers.

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"have not yet fulfilled
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These are criteria enlightened by societal values and society's sense of justice. Only medical rules of exclusion, however, are truly objective. Values, even enlightened ones, should not be slipped into medical exclusion rules. In their formation of medical criteria, physicians should presume an unlimited supply and exclude only those who cannot benefit.⁶ Society, through expressed public policy or, in its absence, perhaps local ethics committees, must occasionally enlighten the final selection rules. However, even criteria derived from well-formulated public policy ought not offend our sense of justice by excluding the disadvantaged, the powerless, or the unpopular. In our political system, after all, regardless of talent, intellect, wealth, productivity, or respectability, we are all, when it comes to the inalienable rights of "life, liberty, and the pursuit of happiness," created equal. The national sense of justice resists the tyranny of a majority that would sacrifice or exploit a minority.

In preferring those who will get longer use, can we defend this selection principle over a lottery even if we acknowledge that we are using rules of final selection enlightened by society instead of objective medical criteria? American society has never had much patience with the utilitarian calculus of the greatest good for the greatest number. We have a tradition of defending the importance of absolute rights of the individual. When the utilitarian principle comes into conflict with individual basic rights, careful arbitration has always been necessary. When A is given something B is denied, and especially if something is taken away from B and given to A, we demand meticulous justification. Such justification requires that its root word, justice, be proven to have been served. But we do in fact give to A and not B. People below certain income levels, to use one example, get food stamps; the wealthy do not. To make food stamps available we impose taxes and give to the poorer what we have taken away from the richer. We do not, however, have much tolerance for taking away from any group to give to those who lack need. We are all incensed when we see those we think to be in comfortable circumstances having access to food stamps at our expense. We particularly dislike making the rich richer from public funds. Our principle seems to be that we are interested in taking away from some and giving to others only to insure that everyone has at least a minimum entitlement to the national wealth. We do not propose that we all be equal. One physician-ethicist has written that all members of a just community should receive a minimal allocation of life's necessities before we bestow luxury commodities or services on other members.⁷ Perhaps the same principle can be applied to years of life. Shelter, traditional medical care, and adequate food and clothing are not luxuries bestowed upon the elderly; providing expensive technology for the purpose of adding additional years to an already full life goes beyond bestowing basic needs.

We are all entitled to live to adulthood, make contributions to society, fulfill our personal goals, and raise families. Our society does its best to see that there is adequate medical care for us to reach our mature years, and increasingly it is trying to meet the challenge of caring for us when we begin to fail. The author of a recent book has argued that the time has come for "setting limits."⁸ Perhaps we should decide as a society that after the age of 65 or 70 we are entitled to be fed, housed, made comfortable, and have our suffering relieved as best as possible, but are no longer entitled to have expensive technology used to prolong our life beyond the currently recognized usual natural life-span. We have no right to live forever even if the technology becomes available. It is a curious negation of the kantian imperative, but in our present circumstances we can does not mean that we ought.

Is the use of age an injustice because we are treating one class differently from another? It is a limitation of rights, of everyone's rights, but not bias. There is no analogy to selection on the basis of sex or race or creed. Our criterion for selecting who will be transplanted does not operate *between* lives but *within* lives.⁹ We all have the expectation of growing old. Opting to use our resources to increase the likelihood that this will indeed occur for all of us, rather than opting to use those resources to extend further and further certain individual lives, is not an unfair encroachment on our liberties. It is a concession to the survival of our society. We are choosing to increase to the maximum degree each individual's likelihood of attaining a certain life-span rather than merely extending the life-span of the oldest.

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At present, this selection principle need be invoked only for expensive technology designed to prolong life beyond a certain, admittedly arbitrary, range. It requires that physicians acknowledge that the duty of medicine is, after a certain age, more to comfort than to prolong life. Such a selection principle is not meant to deny the entire range of medical care beyond a certain age. Indeed, the expectation should be that in return for rationing the elderly would benefit from a greater effort to insure that they have adequate food, clothing, shelter, income, and access to basic health care. Accepting such a principle is not a mandate that the elderly get on about the business of dying to make room for the rest of us. It does impose a limit on expensive life-prolonging technologies like organ transplantation. Perhaps it admits a slippery slope whereby more and more would be denied to the elderly, but at each attempt we must be satisfied that what is being restricted is truly in short supply, that there is no waste or abuse, and that nothing can be done to alleviate the shortages. By interdicting organ transplantation and similar technologies beyond a certain age limit, we are making it possible to increase the supply of more basic needs. Refusing to apply expensive technologies beyond the normative "natural life-span" requires that we physicians come to terms with our abhorrence of death and modify our refusal to accept its inevitability. I realize that these attitudes that I now propose we abandon have been responsible over the centuries for a steady increase in the average natural life-span. Our increasingly limited resources, however, dictate that our current medical goal should be relief of suffering and the realization by as many people as possible of a normal natural life-span rather than pursuit of immortality.

I acknowledge that there are difficulties in implementing this transition from pure rules of exclusion to rules of final selection. I am not prepared to specify what the normal natural life-span should be, nor am I ready to declare that it is completely certain that now is the time to shout "Away, all boats!" It is, however, at least time for lifeboat drill.

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Editor's Comments

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AUTHORS COPY
10/11/88

This is an unusual debate for this book, dealing not with the mechanics of how best to diagnose and treat disease, but rather with a larger question of medical ethics. How society addresses this question has very practical effects, however, on the lives of patients and the decisions that must be made by many physicians.

It has been proposed that in the event of limited resources (organs and dollars), society should restrict organ transplantation to younger patients. Dr. Starzl makes the counterargument that imposing age restrictions on organ transplantation is an absurd proposition.

From firsthand experience he traces the history of the decision to restrict transplantation to those under 50 years of age. He points out that technical refinements in transplant procedures, along with the availability of new and improved immunosuppressives such as cyclosporine, have resulted in increased transplant survival regardless of the age of the recipient. He intimates that the courts should challenge the legality of any effort to put an "age ceiling cap" on transplantation eligibility.

Looking for other solutions to the problem of limited resources, he suggests that greater efficiency in the organ distribution system would make a greater number of organs available. He further explains that the unreasonably rigid criteria for liver donor status have caused usable organs to be wasted. Addressing the issue of cost, Starzl states that liver transplantation is actually a less expensive alternative for end-stage renal disease than is dialysis. In the case of liver and heart transplantations as well, medically treating chronically ill patients requires repeated and costly hospitalizations and results in slow and expensive deaths.

Dr. Starzl believes that we should be preparing for the time when artificial organs become available. If society sets the precedent of restricting organ transplantation to the young, will the allocation of artificial organs be similarly restricted? He concludes by saying, "The taking or debasing of life by withholding effective treatment ought not to be justifiable, no matter how great the offsetting 'benefit' is to the public good."

Dr. Atterbury argues that no matter how difficult it may be for physicians ethically to justify withholding procedures that can extend productive life, when resources are limited society must establish criteria for allocating resources and physicians must abide by those criteria. Thus, whereas Dr. Starzl argues that there would be less of a problem with limited resources if our system of organ distribution were more efficient and our donor criteria more liberal, Dr. Atterbury attests that regardless of the possibilities, a real shortage of organ exists. As long as that is the case, criteria must be established for their distribution.

Dr. Atterbury then describes how these criteria might be determined. He points out that criteria could be based on as simple and random a process as casting lots, or on as complex and rationalistic a process as an assessment of relative worth. However, he cautions that if we fail to establish criteria, shortages could lead to a black market atmosphere that would favor the rich at the expense of the poor. Were we to utilize social worth criteria, "those who march to a different drummer" would probably be excluded in favor of those whose values coincide with the majority. He states also that another acceptable criterion would be to provide organs on a first-come, first-served basis.

Addressing the issue of organ shortages, Dr. Atterbury reports that organs are currently being obtained from only one of every eight eligible donors, with only 5% of donations made at the suggestion of the family. However, when families are asked by physicians to allow donation, the agreement rate is 80%, suggesting that physicians could help to alleviate organ shortages by taking a greater initiative in requesting organs.

He concludes that it would be unethical to restrict transplantation on the basis of age until every effort has been undertaken to increase donor organ supply. However, he argues that other resources are indeed limited. There are an insufficient number of specially trained surgeons, nurses, hepatologists, pathologists, and anesthesiologists. Many times during the year there are limited blood supplies. Limited financial resources are also a factor, with the costs of liver transplantation ranging from \$70,000 to \$200,000 per patient, and posttransplantation immunosuppressive medications may cost as much as \$10,000 a year.

Debates in Medicine

To overcome the deficiency in resources, society would have to earmark even more money for health care at a time when it is attempting to do just the opposite. Perhaps, Dr. Atterbury argues, society should allocate funds first for the satisfaction of basic needs for all people, including shelter, a standard level of medical care, and food and clothing, before funds are used for expensive technology to add additional years to the already long lives of a relatively few persons. He advocates that resources should be used to extend the lives of the young and to improve the relative well-being of all until they reach a certain age, after which resources should be used more to comfort than to prolong life. Thus, he says, "By interdicting organ transplantation and similar technologies beyond a certain age limit, we are making it possible to increase the supply of more basic needs."

Along a related line of thought, he reasons that society has many other problems other than that of organ transplantation. As a society, we might prefer to allocate financial resources in other directions, such as to prevent and treat AIDS, lower infant mortality, provide homes for the homeless, feed the hungry, build highways, or address a variety of other existing needs.

He asks the question: If only one liver is available but two patients are in urgent need, one 20 years old and the other age 70 and neither can survive until another liver becomes available, how should the surgeon decide to which patient to allocate the liver? Should the surgeon just flip a coin? Or does it make some sense to give it to the younger patient?

Although both patients may survive for 5 years or longer, the liver may survive for 20 years and, accordingly, the patient with the greatest anticipated life-span should be given the organ. He further argues that it is proper to adopt the principle of "greatest use" as a medical criterion, giving organs to those who will make the greatest use of them. However, in the formation of medical criteria, he admits that physicians "should presume an unlimited supply and exclude only those who cannot benefit."

As I read both arguments, I found myself agreeing with both. In my capacity as a physician, not as a god, what right do I have to decide who should live and who should die? By restricting transplantation on the basis of age, it seems clear that I would be making such a determination. Traditionally, patients have had the right to restrict heroic treatments that might prolong their lives, but physicians have not had that right.

If we were to institute the rule that no one over age 50 or 60 or 70 could receive an organ transplantation, regardless of their general health and potential contribution to society, is it conceivable that organs might actually be wasted? Is it not possible that, at times, organs would become available in a given community or region and that this rule would preclude their use in an older person, even when no younger person actually needed a transplant? This may seem an implausible situation, but when societies, governments, or other authorities make firm rules, those rules are enforced and potential wastage and unnecessary death could result.

On the other hand, when there is truly a shortage of organs, what right does a physician have to decide whether that organ should be given to the 70-year-old rather than to the 20-year-old, or vice versa? In a society where the rights of the individual are cherished, how can society transcend those rights in this life-and-death situation?

I wish that the arguments had been presented in such a way as to eliminate the moral ambiguity of this situation. In the absence of divine guidance, I would vote for allocating organs on a first-come, first-served basis, but would move people up on a transplant waiting list by giving extra weight to those at greatest risk of dying. Within that group, I would give extra weight to those who are younger. Thus, the young and dying would have priority over the old and dying, but in a situation in which no one is within hours or days of death, organs would be allocated on the basis of need rather than age.

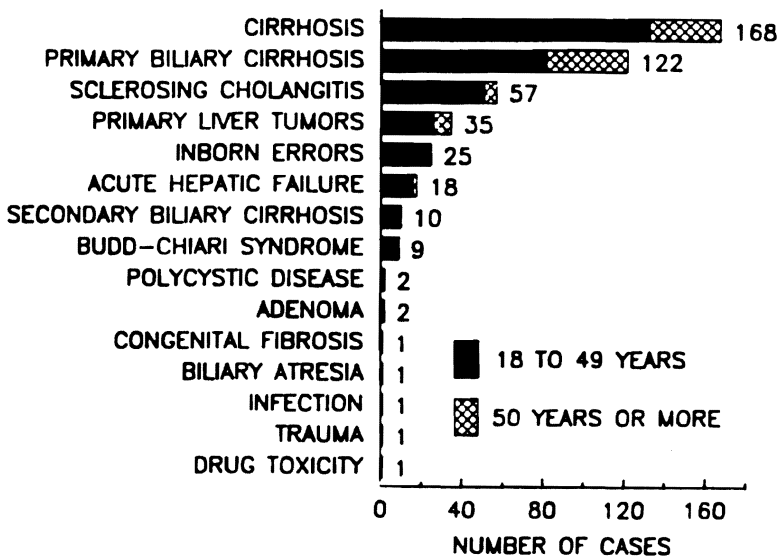
It is conceivable that, in practice, such a system would result in the deaths of more older people and the preservation of the lives of more of the young. However, it would prevent a system in which strict rules could stop any older person from ever receiving a transplant. My suggestion is an attempt to balance the needs of the individual with the needs of society. It conforms neither to the demands of Dr. Starzl nor those of Dr. Atterbury, but until the time comes when the efficiencies and liberalization of the criteria advocated by Dr. Starzl and the increased supply of organ donors as advocated by Dr. Atterbury become fact, we must have some guidelines and, for me, this seems to be the best that can be offered right now.

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AUTHOR'S

PRIMARY INDICATIONS FOR LIVER REPLACEMENT



Dolley ca (54)

Fig 10 (55)

Diseases for which liver transplantation was carried out in 455 patients. (55) FlxQ

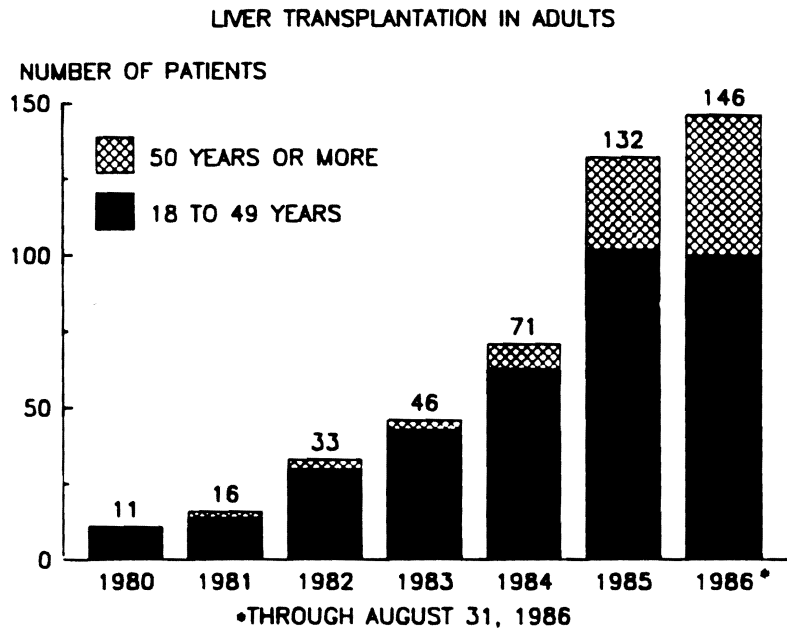


Fig 20 (5) ^{number of} Yearly increases in older patients treated with liver transplantation. (55) (1 x f)

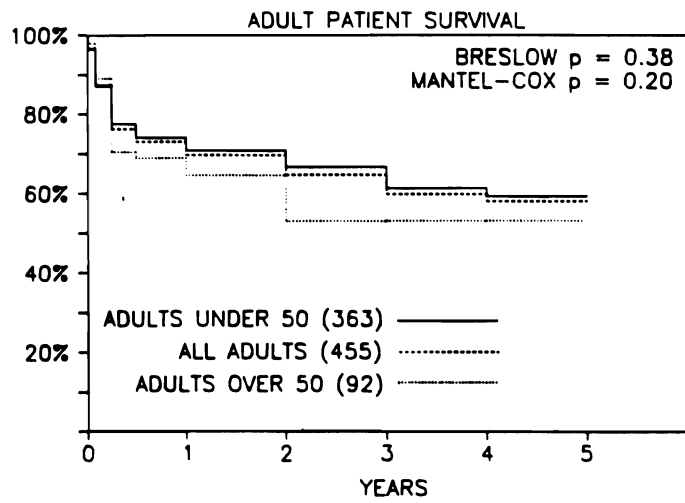


Fig 30(5)

Influence of age on actuarial survival after liver transplantation. (K)