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Distributive Justice in Kidney Allocation

Abstract: For patients suffering from renal failure, cadaveric donor kidneys are a scarce and valuable good. In 1996, the Eurotransplant International Foundation implemented a new kidney allocation system. The aim of this paper is to identify and discuss issues of distributive justice in kidney allocation, with an emphasis on the basic features of the new Eurotransplant system. Particular consideration is given to waiting time and medical success.

1. Introduction

Patients suffering from end state renal failure (ESRF) require regular dialysis unless they receive a kidney transplantation. In contrast to those ESRF patients who have undergone a successful kidney transplantation, dialysis patients cannot fully participate in social, cultural and working life. Therefore, for such patients, human donor kidneys are a valuable good. Since the number of ESRF patients waiting for a kidney transplantation far exceeds the number of donor kidneys available, there is a problem of scarcity in the allocation of organs.[1] Whereas the transplantation of kidneys from living donors is permissible only under very restricted conditions, cadaveric donor kidneys are generally allocated by institutions operating with centralized allocation systems. In this paper, some issues of distributive justice regarding cadaver kidney allocation are identified and discussed. I shall focus on the kidney allocation system which the Eurotransplant International Foundation, an institution run voluntarily by transplantation centres in Austria, the Benelux countries and Germany (with the addition of Slovenia in 2000) installed in 1966.

It is clear that kidney transplantation raises many complex and controversial moral questions. In this paper, I cannot avoid to leave several aspects out of the discussion, even though they are indirectly relevant for the problem of distributive justice in cadaveric kidney allocation: firstly, the problem of the specification and fair application of criteria which are used for including a patient in the waiting list; secondly, organ procurement—the problems of consent, brain death, and incentives for potential donors; thirdly, I have limited the discussion

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[1] A note on terminology: a 'good' is meant to be something which it is worthwhile to have or to strive for.—For some statistics on kidney transplantation in the year 1996, see Kliemt 2001, 133. Further statistical data are available at the web-site http://www.transplant.org.

to the criteria used in the Eurotransplant system and, more specifically, I have focused on waiting time and medical success, which is why I neglect the question of whether additional criteria ought to be included.[2]

2. The New Eurotransplant Kidney Allocation System

The implementation of the kidney allocation system currently used by Eurotransplant was the result of a discussion process initiated several years ago. In the early 1990's, an increasing number of physicians working at transplantation centres in the Eurotransplant region maintained that the allocation system then in use, which gave high priority to tissue matching, was in need of modification. Since graft survival rates decrease with the number of mismatches between the donor's and the recipient's Human Leucocyte Antigenes (HLA), virtually no-one has disputed that HLA matching should play a crucial role in allocating kidneys. However, those who expressed dissatisfaction with the old system felt that disparities in waiting times—maximally in excess of 15 years, with an average of about two years—are a gross injustice. Results of computer simulations carried out by Thomas Wujciak and Gerhard Opelz have shown that waiting times could be substantially adjusted if minor compromises with regard to HLA matching were to be accepted. In 1996, a new Eurotransplant Kidney Allocation System (ETKAS) based on an algorithm developed by Wujciak and Opelz was established.[3]

The essential components of ETKAS are as follows.[4] For each potential kidney recipient and each available donor kidney, five integer values are determined, which represent the degree to which the kidney/patient pairing fulfils specific criteria. In the following, for each criterion, the corresponding range of values is specified; the subsequent figure, in the second set of brackets, indicates the maximum achievable value:

1. *HLA mismatch* (seven possible values for 0 to 6 mismatches) {400}.

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[2] Concerning problems of organ procurement, see Rhodes 1998, 329–333. An overview of selection criteria, which might be of moral relevance for the allocation of scarce medical resources, is given in Harris 1998.—Schöne-Seifert 1996, 618–623, provides a very good introduction to moral issues arising in organ transplantation. For an additional survey, see Ach/Anderheiden/Quante 2000. Problems of justice in bioethics in general are discussed in Beauchamp/Childress 1994, Ch. 6.

[3] See de Meester *et al.* 1998, 1154, for a brief description of the old Eurotransplant system. The results of the computer simulations are presented and discussed in Wujciak/Opelz 1993a, 1993b. De Meester *et al.* 1998 discuss data related to the performance of the system in the first year after its implementation. Recent statistics regarding its performance are given in Persijn *et al.* 2001. For the history of the new ETKAS, see Kliemt 2001, 137–139, and Ahlert/Kliemt 2001, 193–195. Kliemt 2001, 134–137, also provides a brief introduction to the medical background to kidney transplantation.

[4] In my description of ETKAS, I rely on de Meester *et al.* 1998, 1154–55 (ETKAS as introduced on March 11, 1996). There are minor differences to the algorithm originally proposed by Wujciak and Opelz which also need not concern us here. The same comment applies to changes ETKAS has undergone since it was introduced.—There are rules which result in patients being subject to exceptions, which will not be dealt with here.

2. *Waiting time* (linear scale) {200}.
3. *Mismatch probability*, i.e. the probability that there will be a kidney with one or no mismatches among the next 1,000 donor kidneys becoming available (linear scale) {100}.
4. *Distance*, i.e. the distance over which the kidney would have to be transported (four values for local, regional, national, international) {260}.
5. *National net import/export balance*, i.e. the difference between kidneys exported out of and imported into the country in which the patient's transplantation centre is located (linear scale) {200}.

When a new kidney becomes available, for each potential recipient, a point value is determined for each of these criteria and the kidney is offered to the patient with the highest overall number of points.

The five criteria have been included for different reasons. HLA mismatch is related to graft survival chance and, therefore, to medical success.[5] Distance is also relevant for the chances of medical success, since transportation distance is correlated to cold ischemia time—the period of time during which the organ is not incorporated in a cardiovascular system—which, in turn, affects the survival chances of the graft. Both the factors distance and import/export balance create incentives for local kidney procurement. Waiting time has been, of course, included since disparities in waiting time were among the most important reasons for reforming the old system, and, finally, mismatch probability gives additional points to patients with rare HLA phenotypes which otherwise would be disadvantaged.

The arguments Wujciak and Opelz used in the discussion of different kidney allocation algorithms, including their own, were based on data about the effects which the different options are likely to produce. In their analysis, they worked with realistic assumptions about the structure of the waiting list and the availability of kidneys of different kinds.

Whilst their strategy has proven to be highly effective with reference to comparisons of different kidney allocation systems as a whole, I shall start the subsequent analysis from a different perspective. In order to be able to focus more closely on some of the moral issues involved in kidney allocation, it is useful to begin by looking at individual allocation decisions rather than attempting, in a direct manner, to assess the overall consequences which one may predict the implementation of an allocation system would result in. As will become clear in the course of this analysis, the discussion of issues arising in individual decisions also has consequences for a comparison of allocation systems on a larger scale.

Let us begin by framing the problem of kidney allocation in as general a form as possible.[6] As there are fewer donor kidneys than potential recipients, we can assume that there are a number of patients waiting for a kidney. The

[5] Due to advances in research on immunosuppresive therapy, physicians increasingly doubt the high importance of HLA matching. This does, however, not imply that the role of criteria referring to overall medical success is being doubted.

[6] In doing so, I draw upon Ahlert/Gubernatis/Kliemt 2001, 160–161.

problem of allocation reduces, in its most basic form, to the question of who will receive a donor kidney when one becomes available. This simplified definition of the problem has, of course, to be considered with reference to the fact that, over time, both the number of patients and the number of kidneys available increases. However, it will be useful to simplify the problem still further by starting with a situation in which there are only two potential kidney recipients.

3. Waiting Time

Let us suppose that you are faced with the problem of choosing which of two potential kidney recipients should be given a single, available donor kidney. Let us also assume that the only difference between them—or, at any rate, the only difference you know about[7]—is that the first patient has been waiting longer than the second. In this situation, it seems obvious that the patient who has waited the longest should be given priority.

The fact that there is virtually no disagreement about this makes it all the more interesting to ask for supporting reasons. One might argue that giving the kidney to the second patient is blatantly unfair. Even if this is true, however, it does not follow that the first patient should be favoured, since there is still the alternative of tossing a coin. A better reason is to point out that, in giving the kidney to the first patient, we are following the rule 'first come, first served'. This rule, in turn, seems to express one of the most fundamental features of our idea of fairness: everyday situations in which we apply it abound. If 'first come, first served' is a rule of fairness, we seem to be required to follow it unless there are conflicting rules which have a bearing on the situation.

Let us consider another counterfactual scenario. Patient A and patient B have been waiting for a kidney for one and two years, respectively. There is one kidney K1, which can be allocated now, and you know that in one year from now there will be another kidney K2, which can be allocated then. Assume that there are no other patients waiting for a kidney and that all other factors, such as the chances of medical success, are equal. It seems clear that patient B should receive K1 now and that patient A should receive K2 one year from now. The allocation of K1 to B now and K2 to A then can be seen as a straightforward application of the rule, 'first come, first served'. Since both patients will end up waiting for the same period of time for a transplant, the example shows that 'first come, first served' can be regarded as a rule for the fair distribution of waiting time. Although this point might be rather obvious, it is important to note that a short (or no) waiting time is a good whose fair distribution is, amongst others, a factor involved in kidney allocation.

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[7] This is to be taken literally: you have no information about their identity.

4. Medical Success and Graft Survival Chance

There is wide agreement that criteria referring to medical success are among the most crucial ones to be applied in the allocation of scarce medical resources. The importance of medical success is more than obvious when one considers cases in which certain allocations do not make sense, from a medical point of view, because the probability of success approaches zero. Let me give two examples related to kidney allocation. It does not make any sense from the medical perspective to disregard blood group matching: incompatibility of blood groups will result in failure. Moreover, cadaveric donor kidneys will be damaged if cold ischemia time is too long. Scarce and valuable medical resources would simply be wasted if criteria of this kind were not taken into account.

The problem of medical success, however, is more complicated. The extent to which a transplantation will be successful can only be assessed in terms of probability. In general, therefore, it is not possible to support a specific decision regarding allocation by pointing out that the alternatives would not work. This is the reason why issues concerning medical success are complex and have given rise to much controversy.

It is obvious that the success of medical treatment is something one should strive for in transplantation medicine, and, in this sense, medical success is a good. Phrased in a more informal manner: more medical success is better than less. In order to clarify the role of criteria linked to medical success in kidney allocation, we need to ask what kind of good medical success is and how it can be measured.

Clearly, the longer a graft functions, the greater is the success which can be attributed to a particular transplantation. Therefore, a long graft survival time is a good. Since it would be obviously absurd to maintain that graft survival time is an intrinsic good—in the sense that a long survival time would be good 'for the sake of the graft'—graft survival time should, of course, be considered to be a good for the patient: the longer the survival time of the graft, the better it is for the patient who has undergone the transplantation. The fact that medical success is also a good for physicians—since one of their goals is professional success—does not appear to be of much relevance in the context of the problem under discussion. (It is of *some* relevance, though, since the chance of medical success is an incentive for physicians to produce research results which are likely to have beneficial consequences for patients in the future.)

Ex ante, the survival time of a graft can only be predicted: probabilities depend, amongst other things, on the number of HLA mismatches and on cold ischemia time. The survival chances of a graft are available in the form of probabilities which indicate how likely it is that the graft will survive over a certain number of years. For first transplants, one-year graft survival chances range from 0.88 (0 mismatches) to 0.75 (6 mismatches).[8]

Since the survival time of the graft is a good for the patient, we can use graft survival chances *ex ante* for measuring this good: the higher the graft survival

[8] Wujciak/Opelz 1993a, 517. One-year survival chances for second transplants range from 0.84 to 0.63.

chance, the better it is for the patient. In the interests of simplicity, I use the expression "graft survival chance" always to refer to the *one-year* graft survival chance in the subsequent text.[9]

5. Individual and Overall Medical Success

Let us consider another situation in which one donor kidney K is to be given to one of two patients, A and B. If the kidney were to be transplanted to A, the (one-year) graft survival chance would be 0.9; in the case of B, it would be 0.7. Let us assume that all other things are equal. There would appear to be little doubt that patient A should be given the priority as the recipient of the kidney to be transplanted. We now need to examine the reasons which might be advanced for this decision.

In order to facilitate the discussion, it is helpful to represent the choice situation in the form of a matrix in which the columns represent the two patients and the rows represent the two possible allocations. The matrix fields contain *ex ante* information about the amount of the good each patient would receive under the possible allocations. As I have argued above, the individual graft survival chance can be taken as a measure of the amount of individual good a patient is likely to obtain from a transplantation. In the event that a patient is not the recipient of a transplant, the value 0 is assigned. The roman numerals (I–IV) are used for the purpose of reference at a later point in the text.

	A	B
K transplanted to A	0.9 (I)	0 (II)
K transplanted to B	0 (III)	0.7 (IV)

Table 1

In assessing medical success, one of the most important parameters used in transplantation medicine is graft survival *rate*. The one-year graft survival rate is the *percentage* of grafts still functioning one year after transplantation. (As was the case for graft survival chance, in the following, the term "graft survival rate" will refer to *one-year* graft survival rates. Note 9 applies accordingly). Graft survival rates are among the parameters commonly used for measuring the overall medical success of an allocation system.

In the case under discussion, the application of the concept of graft survival rates is not straightforwardly possible, since only one kidney is to be allocated. Let us therefore consider a sequence of decisions of the type just introduced

[9] One could also work with other values such as, for example, the n-year survival chance (for $n > 1$), the average of n-year survival chances (for different values of n), the time integral over all graft survival chances, etc. The problem of choosing between these options involves problems both about the availability of data and of measuring a good which comes with different probabilities over time. Although these issues are important, they can be ignored for the purpose of the line of argument presented in this paper.

with A and B being generic names for the respective patients. If it is always the A-patient (or the B-patient, respectively) who receives the kidney, then the (one-year) graft survival rate is likely to be 90% (or 70%, respectively). We can now state the argument from graft survival rate favouring patient A. Other things being equal, kidneys are to be allocated in such a way that the graft survival rate is maximized. Graft survival rate is maximized when, other things being equal, the kidney, in situations of the type under discussion, is allocated to the patient with the higher graft survival chance. Therefore, A should receive the kidney.

The argument from graft survival rate can be transferred to situations of a more general type. Consider a situation in which two kidneys (K1, K2), which we assume to be of the same type, are to be allocated to two out of three patients (A, B and C). Under every possible allocation, two patients receive a kidney and one does not. As in the above example, the table describing the situation contains individual survival chances, i.e. *ex ante* information about the amount of good an individual patient is likely to receive.

	A	B	C
no kidney for A	0	0.9	0.7
no kidney for B	0.8	0	0.7
no kidney for C	0.8	0.9	0

Table 2

As in the case discussed before, in order to apply the argument from graft survival rate, we need to assume that there is a sequence of decisions of the type depicted in Table 2. Suppose the kidneys are always allocated in such a way that patient A does not receive a kidney. Then, 90% of the kidneys allocated to B-patients are likely to survive for at least one year and 70% of the kidneys allocated to C-patients. This is why the overall (one-year) graft survival rate is likely to be 80% in the long-term, if always the first row is chosen. For the second and the third rows, we obtain values of 75% and 85%, respectively. Hence, with other things being equal, if graft survival rate is to be maximized, the kidneys should be allocated to patients A and B.

To generalise: when k kidneys are to be allocated among n patients (with $k < n$), the graft survival *rate* will be maximized by allocating the kidneys in such a way that the average graft survival *chance* (for all probabilities greater than 0) is maximal.

As the example just given makes clear, ranking different possible allocations according to average graft survival chances is equivalent to ranking them according to the sums of all numbers in one line of the table. Since these numbers represent an *ex ante* measure of the good of individual medical success, maximizing graft survival rate amounts to maximizing the sum of the individual good. If one believes that, other things being equal, graft survival rate has to be maximized, one is therefore committed to accepting a version of utilitarianism.

6. Utilitarianism and Fairness

Utilitarianism, however, is not the only possibility of arguing for giving the kidney to patient A in the situation depicted in Table 1. There are also principles of distributive justice supporting the idea that the greater probability of medical success should be decisive in the first example discussed in the preceding section. I shall now illustrate this point by showing how the famous difference principle, defended by John Rawls, bears upon the case under discussion. Rawls argues in favour of the equal distribution of certain goods, unless an inequality favours the least fortunate. In other words, in order to compare two possible allocations, one needs to compare the status of the least well off individual in relation to the good in question. Since, after both possible allocations illustrated in Table 1, the least fortunate individual is a patient having no functioning kidney (II and III), the least well off in both scenarios can be said to be equally badly off in this respect. Hence, the difference principle in the version just stated has no implications of relevance to this case. However, Rawls proposes an extension of the principle which is intended to cover cases in which the status of the least well off is equal under different allocations. In such a case, he argues, the status of the second-worst off is decisive. (And, if the second-worst off are equally good or bad off as well, we need to look at the third-worst off, etc.)[10] In Table 1, the second-worst off individual under both allocations is the patient to whom a kidney is allocated, respectively (I and IV). As the graft survival chance is higher for patient A, he is favoured by the (extended) difference principle. It is easy to verify that the application of this principle to the situation illustrated in Table 2 leads to the same result as does utilitarianism.

With regard to the situations depicted in Tables 1 and 2, utilitarianism and the (extended) difference principle prescribe the same allocations. This might lead one to believe that, ultimately, it does not really matter whether one subscribes to utilitarianism or the difference principle. This, however, is not the case as can be shown with reference to another example. Let us suppose that two kidneys, K1 and K2, are to be allocated to two patients, A and B. There are two possible choices: either patient A receives kidney K1 and patient B receives K2, or vice versa (these options are abbreviated as K1/K2 and K2/K1). The individual (one-year) graft survival chances under the alternative allocations are shown in Table 3:[11]

	A	B
K1/K2	0.7	0.7
K2/K1	0.9	0.6

Table 3

One can readily recognise that utilitarianism—i. e. the maximization of graft survival rate—requires one to opt for K2/K1, whereas the difference principle

[10] See Rawls 1971, § 13.—Note that there is a slight oddity in terminology: if n individuals are involved, the n^{th}-worst off is identical with the one who is *best* off.

[11] An expert in nephrology has assured me that such a situation is, in principle, possible.

favours K1/K2. We can conclude: if one regards the medical success of individual transplantations (measured in terms of graft survival *chance*) as being of importance, one is not committed to striving for the maximization of overall medical success. Medical success is a good for the patients, and utilitarianism is one but not the only principle one can regard as governing its allocation.

7. Waiting Time vs. Medical Success

Fairness concerning the distribution of waiting time on the one hand and overall medical success on the other are commonly held to be desirable properties of a kidney allocation system. If the fair distribution of waiting time were the only problem in kidney allocation, there appears to be wide agreement that there are good reasons for operating on a 'first come, first served' basis, or, at any rate, according to some other acceptable principle of fairness. If, on the other hand, medical success were the only issue, it is commonly agreed that graft survival rate is an indicator one should be specifically concerned with. I have argued in Section 5 that when one believes that, *ceteris paribus*, graft survival rate should be maximized, one implicitely subscribes to a form of utilitarianism.

As a matter of fact, of course, neither waiting time nor medical success is the only issue. The crucial problem is how to make a decision under realistic conditions when both factors are involved. The analysis presented above suggests that we face a conflict of principles—fairness with regard to waiting time, on the one hand, and utilitarianism with regard to individual medical success, on the other. This, however, does not imply that there is no room for further argument.

Both in the case of waiting time and in the case of medical success, what is at stake is the distribution of certain goods. These goods have in common that they relate to periods of time: with other things being equal, the time a patient waits for a kidney should be made as short as possible. And—again, with other things being equal—the survival chance of a transplant should be made as high as possible. To make this point less formally, waiting time and individual medical success are important factors which one needs to consider in kidney allocation, since the idea is to make bad times as short and good times as long as possible. Seen from the perspective of the individual patient, therefore, the goods at stake in kidney allocation have much in common.

One implication of this is that it is difficult to see how one can consistently attach importance to individual medical success while, at the same time, disregarding waiting time. If one's desire for medical success is ultimately based on one's aim of prolonging the period in which the patient can lead a much better life than he could without a kidney, then one is also apparently committed to being concerned about making the unfavourable time before transplantation as short as possible.[12]

Let us suppose now that individual medical success should, other things being equal, be distributed according to utilitarian considerations. Note that

[12] If this is correct, a kidney allocation algorithm primarily working with HLA matching, as for example the old ETKAS, can hardly be justified.

this is equivalent to maintaining that, other things being equal, graft survival rate should be maximized. If it is true that, ultimately, both the reduction of individual waiting time and the maximization of individual medical success are goods for the same type of reason, then it is difficult to see why waiting time should be distributed according to a criterion so different from that governing the distribution of individual medical success. Therefore, if one believes that, other things being equal, graft survival rate should be maximized, then one is committed to distributing waiting time according to utilitarianism, as well—unless one is able to provide a reason showing that waiting time is, despite the point made above, in important respects different from individual medical success, so that it is conceivable that it should be, other things being equal, distributed according to a different criterion.

The argument just presented can, as it were, also be run in the other direction. Distributing waiting time according to utilitarian principles would, other things being equal, amount to striving for minimizing the overall sum of waiting time. This is, however, likely to lead to rather unfair distributions of waiting time. In so far as one is not ready to accept a kidney allocation system resulting in excessively long individual waiting times—and there seems to be wide agreement about this—, one is committed to distributing waiting time, other things being equal, according to principles of fairness. If this is so, one needs to argue why the distribution of individual medical success should be governed by a criterion so very different from the one relevant for the distribution of waiting time. Thus, if—other things being equal—one is concerned about fairness with regard to waiting time, one has to provide specific arguments why the maximization of overall medical success, i.e. graft survival rate, is an important goal. There is one point which appears to support the concern for graft survival rate which needs to be commented on. If one abandons the goal of maximizing overall medical success, one runs, it seems, the risk of 'wasting' valuable medical resources. This thought, however, is not very helpful in itself. There are many scarce goods for which we find the application of a utilitarian principle of maximization unacceptable, even though there might be a sense in which allocating them other than according to utilitarianism involves 'wasting' them. What is at issue is precisely the question of whether there are reasons for treating individual medical success of kidney transplantations in a different way.

8. Conflicting Goals and Pragmatic Arguments

In order to identify the different moral principles which underlie certain properties of allocation algorithms commonly taken to be desirable, it has proven to be useful to work with extremely simplified and highly counterfactual cases.

Different kidney allocation systems, however, can hardly be compared by looking at how they deal with individual cases.[13] As I have indicated above,

[13] This is not meant to imply that individual cases are totally irrelevant in this respect. There are singular decisions which we would not accept by any system of allocation, whatever its other merits may be.

Wujciak and Opelz operated at a much more general level in their computer simulations, the results of which ultimately led to the introduction of the new ETKAS. They investigated the foreseeable overall consequences of the implementation of different allocation algorithms, including the one on which the new ETKAS was then modelled. They used empirical data from the Eurotransplant area, in order to predict, for different allocation algorithms, average HLA mismatches, graft survival rates and several other parameters.

The problem they faced was this: if one were to allocate kidneys chiefly according to waiting time, optimal results with regard to overall medical success could not be expected.[14] Conversely, maximizing overall medical success may lead to gross inequalities in waiting time. In their own words:

> "All discussed selection procedures show the same dilemma: a high survival rate *and* a short waiting time seem to be contradictory. [...] We sought a solution by combining the three factors mismatch grade, waiting time, and [mismatch probability] in a simultaneous procedure." (Wujciak/Opelz 1993a, 519)

Wujicak and Opelz were facing a conflict of goals. They were concerned about both the goal of maximizing—as far as possible—graft survival rate (i.e. overall medical success) and the reduction of excessive waiting times, and they succeeded in developing an algorithm which reconciled both goals to a degree which was deemed acceptable.[15]

As the quotation makes clear, Wujiak and Opelz took their goals to be given. They were not much concerned about underlying moral principles, and rightly so: their aim was to enable consensus. Their strategy has proven to be highly effective in relation to this aim. Most probably, their proposal would not have found its way into practice if they had not succeeded in fulfilling different sorts of aspirations.

In addition, there were several other pragmatic constraints which they faced. Although it seems morally problematic to reward patients registered at transplantation centres located in a country with a favourable kidney import/export balance, there have been—and apparently still are—good reasons for including this parameter in ETKAS. Around the time Wujciak and Opelz published their results, the stability of Eurotransplant's co-operative venture appeared to have been under threat, not only because of the discussion about waiting time and medical success, but also due to the fact that large inequalities in national import/export balances caused friction. By including the factor import/export

[14] Compare, however, Hild 2001. Hild's main idea is as simple as it is appealing: patients are ranked solely according to waiting time, and the first patient on the list is offered an available donor kidney. The patient himself can now decide whether to accept or reject the organ. If he rejects it, he will remain first on the waiting list and the second patient will be offered the kidney, and so on. Hild has put forward arguments to the effect that, under reasonable assumptions, his proposal does not require one to cut back a lot on overall medical success.

[15] It should be stressed that graft survival rate (and average HLA mismatch) were not the only parameters related to medical success which they used. They were, however, the most important parameters used for assessing *overall* medical success.

balance, incentives to invest locally in the procurement of cadaver kidneys were created. (A similar incentive is provided by the distance factor).[16]

9. Conclusion

Wujciak's and Opelz's proposal for improving Eurotransplant's system of allocation of cadaveric donor kidneys was an exceptionally well-designed means for reconciling goals which previously had not been considered to be capable of reconciliation. Acknowledging the fact that pragmatic reasons are important in guiding our attempts to bring about consensus—on this point, there is much to be learned from Wujciak and Opelz—this should not, however, lead us to conclude that goals *have* to be taken as given without the possibility of further discussion.

With regard to the crucial question of how waiting time and medical success should figure in an acceptable system of allocation, the analysis provided in this paper has suggested that the common assumption that overall medical success—measured in terms of graft survival rate—is something which is, other things being equal, to be maximized is not unproblematic. Medical success of a transplantation—measured in terms of graft survival *chance*—is a good for the individual patient in the first place, and there is no doubt that medical success in this sense is of crucial importance in transplantation medicine. Distributing this good in such a way that overall medical success is maximized, which was shown to involve a commitment to utilitarianism, is one possibility for allocating it, but surely there are alternatives.

By calling into question the naturalness with which the maximization of overall medical success is typically taken to be something which, other things being equal, one should strive for, I am not suggesting that there are no reasons supporting this view. Simply pointing out that otherwise scarce resources would be 'wasted' does not do the job, since this would imply, that utilitarianism is an appropriate allocation rule almost accross the board. However, the idea that kidneys should not be 'wasted' is, of course, appealing and intuitive, and it is an important question whether and how this though can be transformed into a compelling argument.

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