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The Shortage of Human Organs: Causes, Consequences and Remedies*

Abstract: There is an ever increasing shortage of human organ transplants in Germany. This paper aims at understanding the reasons for that shortage better and then discusses various ways to overcome it. After estimating the *potential* supply of donor organs it is discussed why actual supply remains far below potential supply. Insufficient reimbursement for hospitals, a lack of incentives to donate, and mistaken donation rules are diagnosed to cause the shortage. Thus, organ shortage is due not to natural constraints but to inappropriate social institutions. Introducing a presumed consent rule, reciprocity in organ allocation, better payments for hospitals and for donors seem potential remedies.

0. Introduction

The dramatic scarcity of human organ transplants has tragic consequences. Though in case of ESRD—End State Renal Disease—dialysis can prevent imminent death, this kind of treatment affects quality of life as well as life expectancy negatively. In case of organs like liver, lung or heart no substitute therapy like dialysis is available and therefore survival and health prospects of potential recipients are even more negatively affected than in case of ESRD.

Since ESRD is by far the most common and important disease that can be treated by means of transplantation, it seems reasonable to put special emphasis on this case. It is certainly helpful to discuss organ shortage not only in the abstract but to illustrate the dimensions of the problem by a specific real world example. In case of Germany the specific figures are as follows:

- Each year, some 400 German patients die on the waiting list for kidneys (and 600 more on the waiting lists for other organs).
- The quality of life for patients with ESRD who receive continuous renal dialysis treatment is in general far lower than after transplantation.
- In addition, long-term dialysis treatment is considerably more expensive than transplantation (including all monetary costs)
- Moreover, the success probability of a kidney transplantation and the expected survival time of the graft decline with the duration of dialysis.

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The shortage of organs in Germany would be even more severe if Germany were not a net-importer of cadaveric organs within the Eurotransplant network, which is formed by Germany, the Benelux countries, Austria and, more recently, Slovenia. But there is a cap on organ imports. The so called Wujciak-Opelz algorithm for kidney allocation in the Eurotransplant zone contains a special dimension securing a rough balance between nations as far as export and import of organs are concerned (for a detailed discussion of the algorithm see the contributions in Ahlert and Kliemt 2001). In particular Austria and Belgium, which have a far greater supply of cadaveric organs due to their specific organ procurement laws, understandably insist on such a rule of international reciprocity.

In principle, organs can be procured from brain-dead persons (post-mortem donation) or—in the case of kidneys and liver parts—from living donors. At least in Germany—as opposed for instance to Norway—there is widespread consent to treat living donations as a measure of last resort since it implies a surgical intervention that puts the donor’s health at risk and is not justified by a higher order benefit for the donor’s health. In line with this prevailing view the so-called “subsidiarity of living donations” was endorsed by the German Transplantation Act (TPG) of 1997. At that time it was expected that increasing legal certainty concerning transplantation would help to reduce the shortage of organs. However, while the law has improved legal certainty to some extent¹, it has failed to make any progress towards the latter goal.

In this paper, we explore the reasons for the shortage of organ transplants and discuss ways to alleviate it by changing the rules of donation and procurement. In particular we consider creating adequate incentives for hospitals and individual donors to participate in the process. In Section 1 we provide a stylized account of the nature and extent of organ shortage in Germany in terms of some key data. Then, in Section 2 we will turn to the incentives of hospitals and their employees, in particular those of intensive care units, ICUs. When they intend to participate in the process of procuring cadaveric human organ transplants, they may face some rather severe obstacles. In Section 3 we turn to the role of potential organ donors and their families. We discuss different strategies to increase consent to a donation of organs after brain-death has been diagnosed. We particularly consider monetary and other incentives as well as the introduction of the presumed-consent rule. Section 4 concludes by way of a list of possible reform proposals ordered by the ease of implementation.

¹ One may have second thoughts even along this dimension, though. Instead of faithful application of the law, sometimes the rules are quite arbitrarily bent when “necessary”. For instance, in January 2006 a man from Berlin became brain-dead and was considered by the hospital a potential organ donor. His relatives were willing to consent under the condition that one of his kidneys be given to his wife, who suffered from ESRD and whose name was on the waiting list for kidneys. Going strictly by the law, TPG, and the prevailing organ allocation rules, there was no way to grant preferential access to the wife. However, DSO officials decided that the wife should nevertheless receive one of the kidneys in order to procure the other organs for waiting patients. Although many would agree that this was ethically defensible, it was clearly a breach of the law. In our view, this was just another instance of the fatal German proclivity to break the law in the name of allegedly higher moral principles when the exigencies of specific situations seem to require it. This is a dangerous habit because it tends to undermine the rule of law.

1. Demand for and Potential Supply of Cadaveric Organs

1.1 Organ Demand

In Germany, 12,000 patients are currently registered on one of the waiting lists for a transplant. On the other hand, the annual number of organ transplantations has been relatively stable at 4,000 (see Figure 1). Almost 90 percent of all transplants were procured from cadaveric donors although the share of living donations has been increasing considerably over the last ten years (see Figure 2).

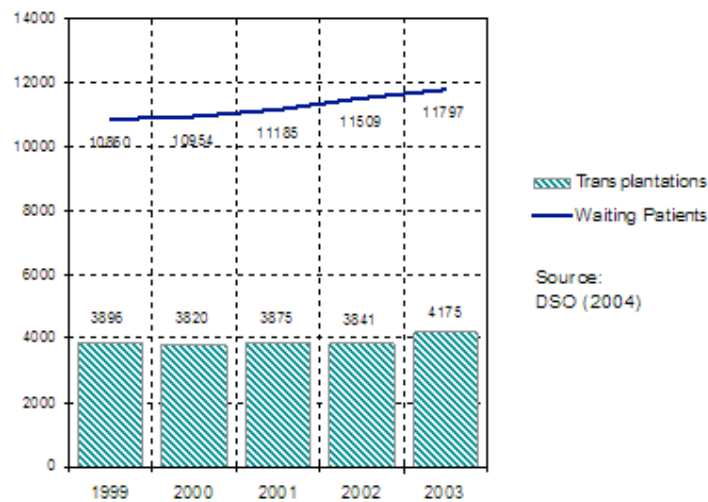


Figure 1: Waiting List and Transplantations in Germany

Kidneys have the largest share both of organ demand and transplantations. While in 2003 almost 9,500 patients were waiting for a kidney, only 2,515 kidneys were transplanted (2,111 from cadaveric and 404 from living donors). Moreover, the number of patients on the waiting list is not a suitable measure of the true demand for kidney transplants, as becomes clear from the number of persons with ESRD in Germany (Figure 3). As for a number of years kidney allocation no longer depends on the date of entry in a waiting list but on the duration of dialysis, there is no necessity to register early on a waiting list² and thus the waiting list systematically underestimates the true demand. In 2003, more than 58,000 patients were in renal dialysis therapy, and this number has been growing at an annual rate of 5 percent over the last decade. Each year, some 15,000 new patients are admitted to kidney replacement therapy, of whom, according to

² Furthermore, it is not completely implausible that nephrologists who provide dialysis treatment are rather hesitant to put easy to treat and thus more profitable patients on waiting lists for transplantation “prematurely” even though the best transplantation results would be realized with pre-emptive transplantation before final failure, see on the latter in particular Meier-Kriesche and Kaplan 2002.

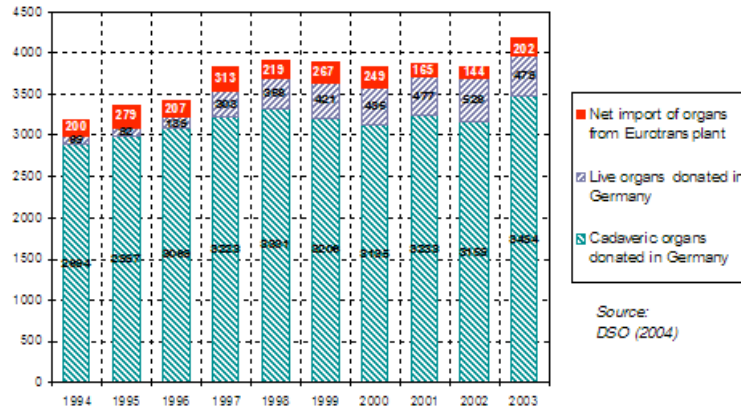


Figure 2: Organ Transplantations in Germany

plausible estimates, about 50 per cent would benefit from a kidney transplant. Accordingly the true demand is currently around 7,500 kidneys per year. If it is considered desirable to eliminate the current waiting list within the next five years or so, this would increase annual demand to 9,500.

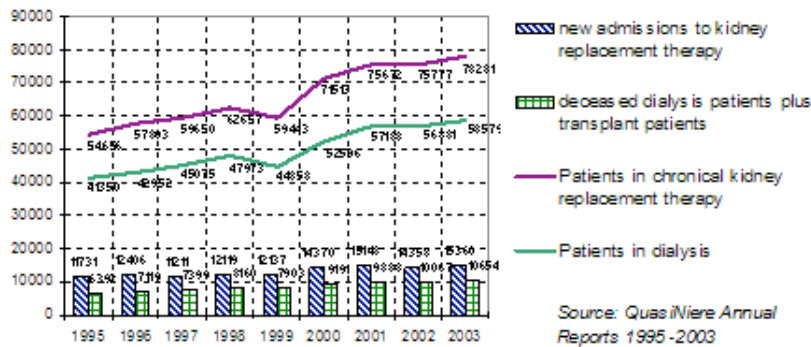


Figure 3: ESRD and Dialysis in Germany

Figure 4 describes the development of the waiting lists for hearts, livers, lungs and pancreases over the period 1996–2003 in Germany. While the number of patients waiting for a liver has drastically increased, the respective number has been rising only moderately in the case of lungs and remained stable for the other organs.

Table 1 shows the number of patients who have died in Germany while waiting for an organ transplant. Even if only those patients are counted who made it on the official waiting lists, this number has risen by more than 25 percent between 1996 and 2003.

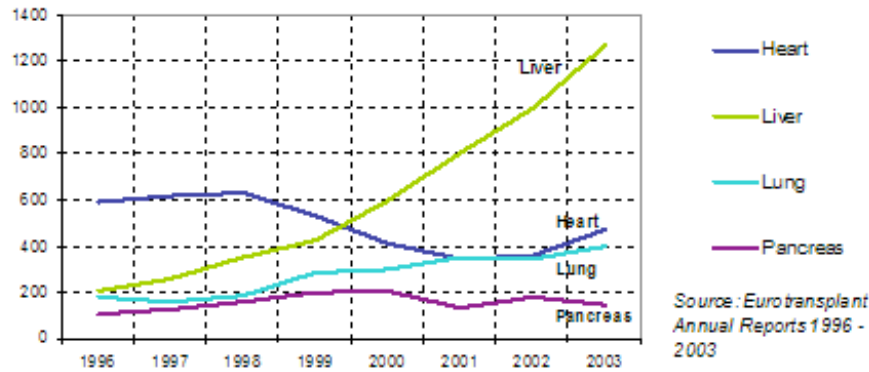


Figure 4: Active Waiting Lists (except Kidney) in Germany

	1996	1997	1998	1999	2000	2001	2002	2003
Kidney	351	363	374	397	419	421	418	437
Heart	249	243	238	212	145	151	131	149
Liver	137	151	142	151	197	214	277	307
Lung	59	81	68	81	84	99	86	85
Pancreas	0	4	15	21	25	23	22	14
Sum	796	742	837	862	870	908	934	1002

Table 1: Deaths on the Waiting List in Germany, 1996–2003

1.2 Organ Supply

Studies on the Potential Donor Pool

In recent years, several studies have tried to estimate the size of the pool of potential post-mortem organ donors. A potential donor is a patient who has been diagnosed as brain-dead and who meets all other criteria such as the absence of malignant tumors, HIV-infection etc. The common measure of maximum possible organ supply is the number of potential donors in a geographical area per million persons (pmp) per year. Moreover, several indicators have been developed which describe the extent to which potential donors have become actual donors. First of all, not every suitable brain-dead patient is identified by the hospital personnel and reported to the responsible organ procurement agency (reporting rate):

$$\text{reporting rate} = \frac{\text{number of brain-dead patients reported by the hospital}}{\text{number of potential donors}}$$

Furthermore, after a potential donor has been identified and reported, the consent to an organ donation by the donor himself (donor card as well as other

forms of expressing his own will in the matter) or by his family can be missing. This is expressed in the consent rate:

$$\text{consent rate} = \frac{\text{number of cases with consent to organ donation}}{\text{number of brain-dead patients reported by the hospital}}$$

In a very comprehensive recent study, Sheehy et al. (2004) scrutinized all deaths in ICUs in a part of the U.S. which contains 140 million population during the years 1997 to 1999. They estimate the potential donor pool at 41 pmp per year. Gortmaker et al. (1995) and Siminoff et al. (1995) analyzed smaller parts of the U. S. They arrive at 55 and 45 pmp per year, respectively.

Potential and Actual Organ Supply in Germany

On the basis of the aforementioned studies, the potential donor pool can be estimated at 45 pmp per year, which would result in a total number of 3,690 potential organ donors per year in Germany. In contrast, in 2003 only 1,928 brain-dead patients were reported to the coordinating agency (DSO, Deutsche Stiftung Organtransplantation, German foundation for organ transplantation), which amounts to a reporting rate of 52 percent. Moreover, the number of actual post-mortem organ donors in the same year was only 1,140 patients. According to DSO statistics, the consent rate in Germany was 65.2 percent in 2003 but only 61 percent one year later. As 65.2 percent of 1,928 are 1,257 rather than 1,140, in the remaining 117 there must have been either some other obstacle to organ removal or the organs were removed but not transplanted eventually.

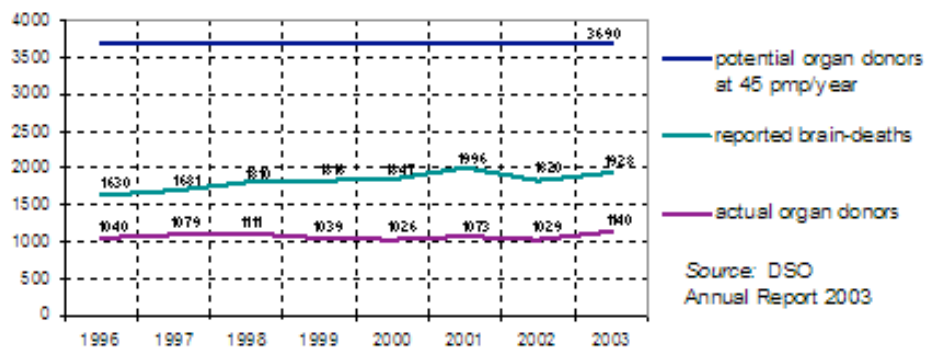


Figure 5: Potential and Actual Organ Donors in Germany

While the actual post-mortem organ donations in Germany amounted to 13.5 pmp in 2003, other European countries were more successful in the procurement of cadaveric organs, as Figure 6 shows. Among Eurotransplant member states, Austria and Belgium consistently had values of more than 20 pmp per year. Furthermore, outside Eurotransplant Spain achieved values of over 30 pmp per

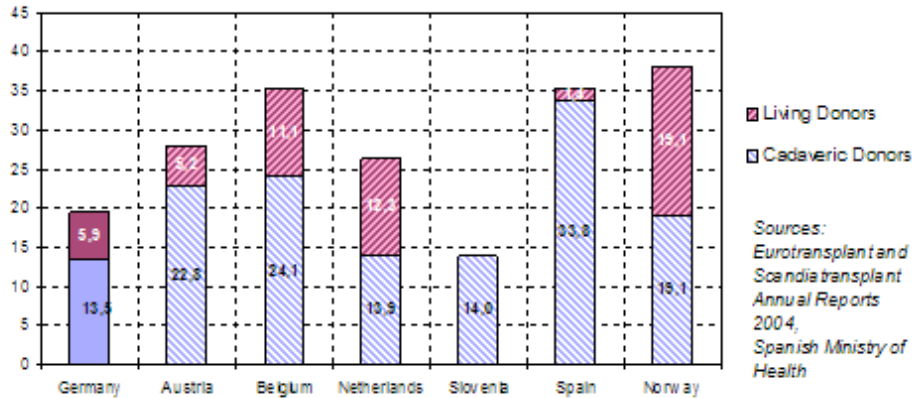


Figure 6: Organ Donors per Million Population (2003)

year (33.8 in 2003).³ In contrast, the five Nordic countries Denmark, Finland, Iceland, Norway and Sweden, which are members of the Scandiatransplant network, do not give priority to cadaveric over living donations as does Germany. They achieve higher living donation rates of kidneys and livers by seeking to realize those with priority.

To determine the supply of organs, the number of donors must be multiplied by the average number of the respective organs, which can be procured from each donor. This amounted to 1.9 kidneys, .63 livers, .31 hearts, .17 lungs and .16 pancreases in the year 2003. These numbers allow calculating the potential supply of organs under the assumption that the number of 45 donors pmp per year would be achieved. In the ideal case of a reporting rate of 100 percent of the 3,690 potential donors and an unchanged consent rate of 65 percent, this would yield a supply of 4,485 kidneys, 744 hearts, 1,511 livers, 408 lungs and 384 pancreases per year. In Figure 7, these numbers are compared with the demand as measured by the annual number of entries in the waiting lists. The figure shows that, except in the case of hearts and livers, the annual demand could be met with the annual supply of cadaveric organs if all potential organ donors were reported.

However, as argued above, the annual demand for kidneys is drastically underestimated by the number of new entrants to the waiting list so that kidneys are the third organ for which even a 100 percent reporting rate would not suffice as long as the consent rate is not increased beyond its present value.

The preceding calculations show that in Germany there is a large reservoir of cadaveric organs that might be tapped under appropriate institutional arrangements and consensual participation of the population at large. Provided that present practices of putting patients on waiting lists are not altered, utilizing the reservoir of potential cadaveric donations to 100 percent could be sufficient to

³Spain, however, uses a broader concept of organs, which includes cornea.

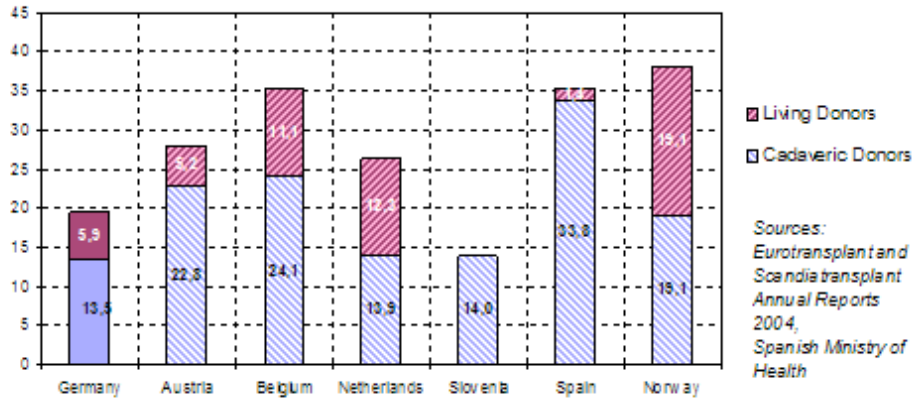


Figure 7: Potential Organ Supply and Organ Demand in Germany

meet the annual demand for human organ transplants. This holds good except for kidneys for which living donations could fill the gap.

Though the preceding results were derived for the German case in particular, they should in principle generalize to civilized nations around the world. As far as institutional arrangements and reforms are concerned, our argument will be directed more specifically to the German case. Here strategies for increasing organ supply must be aimed at raising both the reporting rate and the consent rate and thus should be directed both at hospitals and at potential organ donors.

2. The Role of Hospitals in the Organ Procurement Process

The low reporting rate shows that the scarcity of organ transplants in Germany is caused to a considerable extent by insufficient cooperation of hospitals in the procurement of cadaveric organs. The causes for this are financial as well as psychological. They concern aspects of extrinsic—in particular pecuniary—as well as intrinsic—in particular medical-ethical—motivation. To improve the situation we must work both sides of the “motivational street”. But the “middle of the road” or the rather delicate interplay between the two sides must be taken into account as well.

2.1 Financial Issues

On the financial side there are obvious obstacles to participation in the process of identifying potential organ donors. In particular fees for the resource-intensive diagnosis of brain-death—though considerably enhanced recently—are still insufficient to cover all costs involved, especially for cases which do not result in

the removal of organs. Moreover, small hospitals which cannot afford to invest in the necessary personnel and machinery for brain-death diagnosis are insufficiently supported by the coordinating agency, the DSO. One of the reasons of the failure of the DSO to deliver the necessary services is probably its status as a monopolistic agency, which it acquired by contract with the government. Furthermore, since the contract does not contain a clause measuring performance according to the objective criterion of numbers of organs harvested, the DSO can re-direct resources from pursuing its proper aim rather easily. It becomes a natural target of rent-seeking activities sponsored by insiders as well as outsiders.

A scheme in which—as in conventional DRG based reimbursement—hospitals with ICUs would get reimbursed for the services they render in supporting organ transplantation and then would pay for services they themselves received from external providers can be expected to work much better. To make such a scheme workable, the reimbursement for participation of a reporting hospital with ICU needs to cover the full costs—including efficient measures of brain death diagnosis, of providing the operating theatre, the personnel assisting in the process of organ removal etc.⁴ As far as the reporting hospital cannot provide such services as brain death diagnosis itself, the services of specialised external providers can be contracted. Hospitals willing to participate in the process of organ procurement, could and should have a choice of competing providers of these support services since in such matters trust is of crucial importance.

Quite generally, it is a bad idea to organize medical services without an appropriate role for competition among service providers. And there is no compelling reason to do that in the case of organ procurement. Moreover, if hospitals that have to report the potential donors get reimbursed for the whole process they will be more willing to participate not only for financial reasons but also since they have control over who is going to provide which kinds of services in which ways. In sum, even if we insist on central allocation of cadaveric human organs to specific patients according to general ethical and medical criteria, there is no need to organize the procurement process monopolistically and there are good reasons to do it in ways which allow hospitals a free choice of a provider of supporting services.

2.2 Motivational Issues

The psychological problems that may form obstacles to participation in the process of organ procurement in hospitals and ICUs are of a rather general nature. Doctors working in an ICU will be naturally hesitant to switch from fighting for the patient's life to considering him as a potential organ donor. In general they will be prepared to acknowledge that their efforts to rescue the patient's life have failed, at least eventually. Then performing preliminary brain death diagnosis may not be such a great step or effort. However, in performing

⁴ It should also cover the income forgone if the operation theatre cannot be used for elective surgery since some intervening explantation activity prevents the planned use.

these steps doctors will anticipate its consequences. And this has potential disincentive effects.

For instance, the doctor knows that she will be required to treat an officially dead patient in intensive care for a while. This will create conflicts along several dimensions. Since ICU capacities are often extremely scarce, a dead patient may occupy a bed that could be used to rescue a patient still living. Within the process of treatment in the ICU there will be situations in which the brain-dead patient requires attention at the opportunity cost of not being able to provide that attention at the same moment to a living patient in a critical condition.

Moreover, and presumably most importantly, the interests of patients waiting for an organ will be abstract while the lives at risk in a specific ICU are concrete lives to the medical staff of that unit. We all insist on treating identified lives differently from abstract or statistical lives. The relationship of trust between the doctor and the patient requires partiality rather than impartiality for the specific or concrete patient. The patient wants the doctor on his side rather than that of some abstract principle of morality or ethics. A doctor working within an ICU is subject to the general role-obligations imposed by standards of so-called medical ethics and therefore will have to give priority to her living concrete patients under her own care rather than to the interests of abstract patients waiting for an organ.

On top of this a doctor in an ICU whose patient suffered brain death but is otherwise seemingly alive will also anticipate that she will have to talk to relatives of the deceased not only about the death of the patient but possibly also about removal of organs. In particular in German discussions of alternative explantation rules it has been unduly neglected that receiving permission for organ removal from the closest relative of a brain-dead patient tends to be extremely burdensome for the physicians involved in the treatment process. The necessary interview must take place under narrow time constraints after a tragic and often shocking loss. Moreover, it is in general terrible for those who mourn for the deceased patient that they have to make decisions about additional medical interventions concerning a corpse of which they still naturally think as a person.

All this represents a high psychological barrier for the staff in ICUs in particular if not specially trained in such matters. Even medical staff who is generally intrinsically motivated to support transplantation medicine may be put off by such obstacles as described. Unless there is a general climate of mutual reinforcement and support of intrinsic motivations at the hospital at large and the ICU in particular we should expect intrinsic motivations to be gradually washed out by extrinsic adverse incentives.

It is exactly here where extrinsic pecuniary incentives can in fact influence intrinsic motivations positively, if in an indirect way. If it is for instance good business for a hospital to participate in detecting and reporting potential organ donors, this will further a generally supportive climate in the clinic. To finance at least in part the position of a staff member of an ICU who is specially trained to accompany the whole process may be very helpful as well. Notoriously understaffed ICUs will appreciate that this staff member will devote most of her time to normal tasks of intensive care. At the same time everybody will know

that the position depends in part on the participation in organ transplantation. In an extension of generalized fair wages theory (see Akerlof 1982) we have good reason to expect that such measures will further the upholding of a suitable intrinsic motivation to support organ transplantation in ICUs. It is presumably not by chance that Spain with its extraordinarily high rates of detecting potential organ donors seems to rely on financing specific positions in clinics. We think that other countries and in particular Germany should adopt the same policy on top of decent reimbursement of costs for participating hospitals with ICUs.

3. Increasing the Consent of Potential Organ Donors

According to a representative survey, 67 percent of all Germans are in principle willing to donate their organs after death, but very few possess a donor card. Of all post-mortem organ extractions in Germany in 2002, only 5 percent were based on written and 12 percent on oral consent by the donor (as reported by relatives), whereas in the remaining cases the relatives had to decide on the basis of the presumed will of the patient (75 percent) or their own opinion.⁵ The wide discrepancy between survey results and actual behaviour can be explained with the strong reluctance of most people to make provisions for their own death and to think about the event. Any attempt at increasing the supply of cadaveric organs must take this reluctance into account and try to side-step this obstacle.

This suggests reforms of the German Transplantation Act along two conceivable dimensions:

- a) First, the right to extract organs for transplantation could be given to the community of waiting patients as the principal with some state organization as its general and the hospital as its special agent. Organs then could be extracted without the explicit consent by the donor or his relatives. This could be done by introducing either the “mandatory donation rule” or the “presumed-consent rule”,
- b) Secondly, potential organ donors or their relatives could be given additional (financial or non-financial) incentives to donate.⁶

⁵ Data according to Deutsche Stiftung Organtransplantation 2002. It may be noted that the original intention of German law was to give the will of the donor priority over other considerations. However, in the bulk of cases in which no donor card can be found, this amounts to granting a kind of attenuated property right (veto right) to the relatives of the deceased.

⁶ See, e.g. Blankart 2004.

3.1 The “Mandatory Donation Rule”

Under this rule, every citizen becomes automatically an organ donor in case of his brain-death and there is no way of avoiding this consequence.⁷ Such a rule can be defended on the grounds that in our health care system every citizen is a potential organ recipient. As most people would place a higher value on the chance to survive than on the integrity of their body after death, the right of society to appropriate the dead patient’s body for the purpose of enabling others to survive seems perfectly plausible and in the interest of the vast majority of the population.⁸ This is the more convincing as an opening of the corpse is allowed by law even for other (and arguably less urgent) purposes such as the desire to find out the exact circumstances of death (e.g. if there is the suspicion of a crime).

Moreover, making it mandatory to donate one’s organs after death is quite in line with other provisions of German law that make it mandatory to help others whose life is endangered. Under German law this obligation applies without requiring a special relation between the helper and the beneficiary and even if providing the required assistance implies a certain risk to the helping person. Besides fundamental legal-ethical reservations the strongest argument *against* such a rule is that its imposition may not be necessary to reach the aim of rescuing human lives. There exists a milder measure which would also suffice to solve the same problem (to alleviate organ shortage almost to the same extent). In fact, in all countries in which the presumed-consent rule has been enacted, the rate of vetoes is extremely low so that the additional infringement of the autonomy of citizens cannot be justified with large benefits in terms of lives rescued.

3.2 The Presumed-consent Rule

This rule assumes that everybody is a willing post-mortem donor unless she has explicitly declared the opposite. As most people do not want to think about their own death, it is safe to assume that a reversal of the burden of declaration, as compared to the variant of the “explicit-consent” rule presently in place in Germany, would lead to a considerable increase in the number of available donor organs. In fact, the experience of countries such like Austria, Belgium and Spain, which procure two to three times as many organs per million persons, confirms this assumption.⁹ Moreover, as argued in Section 2.2, removing the burden of decision from the next of kin of brain-dead patients would spare the next of kin the necessity to deal with the organ donation issue in their grief. This would enhance the willingness of doctors and hospitals to participate in the organ procurement process.

⁷ This rule was allegedly practiced for a while in Bulgaria, but does not seem to be found in the civilized world today.

⁸ See Hoerster 1997.

⁹ For detailed empirical analyses, see Abadie and Gay 2006, Johnson and Goldstein 2003.

Clearly, the presumed-consent (or “opting out”) rule exacts a higher degree of solidarity from the citizen than the “opting in” rule because initially every individual is assigned the status of an organ donor. Because of the reassignment of burdens this rule is met with wide-spread rejection in the political debate. In particular it is claimed that in such important matters as integrity of the body, the respect for the will of the potential donor must be treated as a supreme value and merely tacit or implied consent be regarded as insufficient. In our view, this criticism appears rather extreme since the presumed-consent rule does leave the principle of self-determination untouched: the individual may reject adopting the legal status of an organ donor at any time simply by making a declaration to that effect and without giving any reasons. Along with introducing a central registry for declarations of dissent this seems a sufficient safeguard for individual rights. As long as the population is suitably and sufficiently informed about the possibility of opting out of the system everybody can be assumed to be aware of this option at any time.

3.3 Reciprocity Provisions

The presumed consent rule may be characterized also as presumed solidarity. Its rejection may be more justifiable under institutions of Anglo-Saxon law according to which a more communitarian view of society is quite consequently rejected. But in the German tradition, in which there are obligations to assist others which are enforced by clauses of penal law, the rejection of the opting out rule for reasons of legal principle is quite absurd. Therefore within the German law context there is practically nothing that can be reasonably objected to the presumed consent (presumed solidarity) rule as such. But this is not to say that such a rule would be morally justified by this argument alone. For, besides considerations of efficient organ procurement there are concerns of justice and fairness which should be taken much more seriously than they usually are in such discussions. As matters stand, those who reject organ donation are eligible on a par with those who have not rejected organ donation or might even have declared their willingness to donate explicitly. This can have consequences that must be deemed rather outrageous by practically all conventional moral standards.

To see why, imagine that there are two equally suitable recipients for an available cadaveric organ of whom one had rejected organ donation for the case of his own death and the other had not before the own demand became apparent. How could it ever be fair to leave (un)willingness to donate completely out of account? If there is no way to avoid the exclusion of one from access to the organ—and as far as the specific organ is concerned obviously there is no way to assign it to both potential recipients simultaneously—why give the organ to the one who rejected organ donation in preference to the one who did not reject it?

As far as efficiency of organ procurement is concerned one might assume that introducing reciprocity alone might do the trick. Individuals when consider-

ing organ donation will then start to think about securing survival rather than death. They will have to ask themselves questions like “what if I want to live on but cannot receive a suitable organ transplant?” They might then come more naturally to the conclusion that they should declare their willingness to donate to further their own survival prospects.¹⁰

Clearly framing the problem in terms of survival rather than death is psychologically a powerful mechanism in a context like this. But it seems rather unlikely that such incentives will be strong enough to overcome the general reluctance to consider illness and death at all. Though for reasons of fairness reciprocity seems desirable in any case in combination with an opting-in rule it may not be sufficient to induce individuals to declare explicitly their intention to donate. It seems clear that the opting-out rule based on presumed consent and solidarity leads to a larger supply of organs.

3.4 The Presumed-Consent Rule with Reciprocity in Organ Allocation

A combination of opting out and reciprocity is not only conceivable but obviously desirable. Under “presumed consent with reciprocity”, organ procurement would be governed by the presumed-consent rule, but in the allocation of scarce organs, persons who have explicitly refused to donate their own organs must accept a lower priority than persons who have remained silent. All this could be accomplished easily and smoothly. For instance in the case of kidneys the German allocation rule based on the Wujciak-Opelz algorithm as applied by Eurotransplant could easily be amended by a point scale including reciprocity (as has been proposed for the existing opting-in rule by Gubernatis and Kliemt 2000).

There are two different reasons for recommending the provision of disincentives for free-rider behavior. First, it is a matter of justice that free riders are treated somewhat differently than people who behave according to the principle of solidarity. Secondly, it can serve as a safeguard against a possible mass-movement towards free riding. The experience in Austria seems to show that very few people want to provide for their own death so that under the presumed-consent rule, the percentage of vetoes against organ extraction turns out to be very low (around one-tenth of one percent). If this were also true in a country which introduces the presumed-consent rule as a new legislation, then one could think that it is unnecessary to use sanctions against free riders for reasons of efficiency. On the other hand, if the introduction of presumed consent is so successful as to eliminate the shortage of organs, then getting a lower rank on the waiting list does no great harm because everybody on the waiting list will receive a suitable organ anyway.

As far as the shortage is reduced the negative effect of decreasing priority in organ access on the individual is still reduced as well. Fairness will not exact

¹⁰ This consideration lies at the heart of the “rule of reciprocity” first proposed by Lederberg 1967. On the history of this proposal see Nadel and Nadel 2005.

too high a price in terms of beneficence. But it would at least exact some as is desirable for the sake of fairness.

Those who insist on an unconditional solidarity principle as opposed to one amended by reciprocity should be reminded that even the „communist“ principle of equal access to basic goods (to each according to his need) has always been considered as the siamese twin of the principle that everybody has to contribute to supplying these basic goods (each according to his ability), and this is in fact the rule which underlies the financing of the welfare state (see Mill 1848/2006, 203, who refers to Louis Blanc, and Vlastos 1975 for additional history of thought background of the principle). In the case of organs, every citizen (except for a small number of chronically sick ones) can make his contribution, and the act of vetoing is an explicit declaration of an unwillingness to contribute. Thus, the crucial question seems to be whether the principle of solidarity requires unconditional solidarity with the free riders. If this question is answered in the negative, then the principle of reciprocity seems to be appropriate.

It seems that—except for the mandatory donation case—no rule that disentangles organ allocation from willingness to participate in organ donation can be fair or just. Thus *all* rules that would allocate organs exclusively according to medical standards seem seriously flawed. The standard argument that we should not open the flood gates of ethical disputes in such cases like organ allocation and rather than entering the alleged slippery slope of non-medical allocation criteria better leave it to the medical criteria is mistaken. For, criteria like the international balance as well as regional balances (camouflaged as length of expected time of cold ischemia measured by distance in space rather than expected transport time) already enter the allocation algorithm in particular for kidneys.

Moreover, the criterion of waiting time, though medical in a sense, is used inversely to an adequate measure of its medical impact. Longer waiting times are a clear predictor of decreasing medical success (see again Meier-Kriesche and Kaplan 2002). If higher priority is assigned to patients who waited longer, then this is clearly a non-medical decision that is motivated by considerations of fairness.¹¹ However, if so, then it does not imply transgression of some principal border line if we allow for the fairness criterion of reciprocity in allocation as well.

The only remaining obstacle to implementing the presumed-consent rule in combination with reciprocity is that a veto against organ donation must not be revocable without negative consequences. There must be a period of delay because otherwise people might have an incentive to revoke their veto once one of their own organs fails and only then. A waiting time before the sanction in terms of lower priority in organ allocation is lifted would be a sufficient remedy here and, for that matter, a fair one.

¹¹ Surprisingly this practice, which clearly contradicts the clause of German law that organs have to be assigned exclusively according to medical criteria, is apparently upheld in court without difficulty.

4. Conclusions: Priorities in Reforming Institutions of Organ Transplantation

In summarizing the preceding discussion, we can identify five reform options which would greatly reduce the present shortage of transplantable cadaveric organs. In the German case the first two can be implemented within the existing legislative framework, while the latter three require an amendment of the law:

1. Removal of financial obstacles for reporting hospitals

The scarcity of organ transplants in Germany is caused to a considerable extent by insufficient cooperation of hospitals in the procurement of cadaveric organs. This factor can be directly influenced by political institutions. All obstacles standing in the way of hospitals participating in the procurement of organs should be removed. In the first place fees for the removal of organs and all associated preparatory measures, such as the diagnosis of brain-death, must be fixed such that the costs of these procedures are fully covered. Payments should be effected directly to the hospital initially responsible for reporting. The latter can then decide, according to considerations of quality and cost-effectiveness, whether to conduct diagnostic and other measures related to the organ removal process in-house or by outsourcing. The remuneration for such cases must not be counted towards the respective hospital budget.

2. Establishment of a nationwide organ donor registry

The organ donors registry already provided for in the German Transplantation Act (TPG) should be implemented. It would keep track of declarations of intent made by potential organ donors. In this way, the will of the potential donor can be reliably verified prior to organ removal, which would apply especially to objections in the case of a presumed consent rule.

3. Reorganisation of the coordination process

The monopoly of the DSO should be abolished and provisions should be made to pave the way for competitive organisations to act as coordination centres in the provision of support to hospitals in the organ procurement process. Regional coordination centres must be permitted to operate in the same way as organisations operating on a nationwide basis. Exploiting the donor potential should be the organisational objective of all coordination centres: the aim to increase the number of donors must be explicitly stated and the re-imburement of the coordination centres must depend on the number of donations actually made. In this way, the supreme principle of present health care policy and reform could also apply to the organisation of organ donation: competing service providers could be admitted, and payments could be allocated according to services rendered.

4. Introduction of the presumed-consent rule

Looking at the experience of countries such as Austria and Spain, it can be inferred that the introduction of the opting-out (“presumed-consent”) rule would lead to a considerable increase in the number of available donor organs. Removing the burden of decision from the next of kin of brain-dead patients and the

necessity to ask for their consent after a tragic loss could also lift an important psychological barrier for hospital staff.

5. *Willingness to donate as a criterion of organ allocation*

A system under which a claim to receive a donated organ is linked to the willingness of an individual to donate himself may conflict with the normative expectation that scarce, life-saving, medical resources should be allocated exclusively according to need. However, giving moderate priority to persons who are themselves willing to donate by putting them up a step on the waiting list—and/or correspondingly relegating those who have refused donation to a lower position—would express widely shared principles of fairness. It would at the same time provide an incentive to donate and thereby increase the number of available organs. Such a solution would simultaneously enhance equity and efficiency of the system and could despite initial resistance be expected to meet with wide acceptance eventually.

Moreover it would be possible and—in view of scarcity—desirable to expand the realm of living donations. In that case one could also consider payments for living donations (see for cautious proposals in this direction Aumann and Gaertner 2004 and Breyer et al. 2006). But this certainly raises many other issues and, for that matter, eyebrows.

Bibliography

- Abadie, A./S. Gay (2006), The Impact of Presumed Consent Legislation on Cadaveric Organ Donation: A Cross Country Study, in: *Journal of Health Economics* 25, 599–620
- Ahlert, M./H. Kliemt (eds.) (2001), *Making Choices in Organ Allocation*, Stuttgart
- Akerlof, G. A. (1982), Labor Contracts as Partial Gift Exchange, in: *Quarterly Journal of Economics* 97, 543–569
- Aumann, C./W. Gaertner (2004), Die Organknappheit: Ein Plädoyer für eine Marktlösung, *Ethik in der Medizin* 16, 105–111
- Blankart, C. B. (2004), *Donors Without Rights—The Tragedy of Organ Transplantation*, unpubl. manuscript, Humboldt University Berlin
- Breyer, F./W. v.d. Daele/M. Engelhard/G. Gubernatis/H. Kliemt/ C. Kopetzki/H. Schlitt/J. Taupitz (2006), *Organmangel. Ist der Tod auf der Warteliste unvermeidbar?*, Berlin
- Deutsche Stiftung Organtransplantation (2002), *Organspende und Transplantation in Deutschland*, Neu-Isenburg
- (2003), *Organspende und Transplantation in Deutschland*, Neu-Isenburg
- (2004), *Organspende und Transplantation in Deutschland*, Neu-Isenburg
- Eurotransplant International Foundation, Annual Reports 1996–2003, www.euro-transplant.org
- Gortmaker, S. L. et al. (1996), Organ Donor Potential and Performance: Size and Nature of the Organ Donor Shortfall, in: *Critical Care Medicine* 24(3), 432–439
- Gubernatis, G./H. Kliemt (2000), Solidarity Model: A Way to Cope with Rationing Problems in Organ Transplantation, in: *Transplantation International* 13 [Suppl. 1], 607–608
- Hoerster, N. (1997), Definition des Todes und Organtransplantation, in: *Universitas* 52, 42–52

- Johnson, E. J./D. Goldstein (2003), Do Defaults Save Lives?, in: *Science* 302, 1338–1339
- Lederberg, J. (1967), Heart Transfer Poses Grim Decisions. Moribund Patient's Trust is at Stake, in: *Washington Post* 10.12.1967, Section B1
- Meier-Kriesche, H.-U./B. Kaplan (2002), Waiting Time on Dialysis as the Strongest Modifiable Risk Factor for Renal Transplant Outcomes: A Paired Donor Kidney Analysis, in: *Transplantation* 74, 1377–1381
- Mill, J. S. (1848/2006): *Principles of Political Economy*, Indianapolis
- Nadel, M. S./C. A. Nadel (2005), Using Reciprocity to Motivate Organ Donation, in: *Yale Journal of Health Policy, Law, and Ethics* 5, 293–325
- QuaSi-Niere GmbH, *Bericht über Dialysebehandlung und Nierentransplantation in Deutschland 1995–2004*
- Scandiatransplant Foundation (2004), *Annual Report*, www.scandiatransplant.org
- Sheehy, E. et al. (2003), Estimating the Number of Potential Organ Donors in the US, in: *New England Journal of Medicine* 349, 667–674
- Siminoff, L. A. et al. (1995), Public Policy Governing Organ and Tissue Procurement in the US, in: *Annals of Internal Medicine* 123, 10–17
- Vlastos, G. (1975), Human Worth, Merit, and Equality, in: J. Feinberg (ed.), *Moral Concepts*, London, 141–152