Practicing Medicine without a License — The New Intrusions by Congress

SOMETHING new is happening in Washington: Congress is practicing medicine. In recent months, Congress overwhelmingly passed legislation forcing health plans to pay for 48-hour hospital stays for women delivering babies, passed a resolution promoting mammography for women in their forties, and passed a bill outlawing abortions by intact dilation and extraction ("partial-birth abortions").

On February 4, just weeks after a National Cancer Institute (NCI) Advisory Panel found the value of mammography for women in their forties equivocal, Senator Arlen Specter of Pennsylvania (an attorney), declared that "even though the evidence may be in doubt in the minds of some scientists, the practical-sense conclusion is that there is very, very substantial evidence to show that mammograms are helpful . . . ."[1] The next day the Senate passed a resolution strongly urging the Advisory Panel to consider reissuing an earlier guideline that recommended mammography for women in this age group.

And there was quite a spectacle on the Senate floor on May 14 when the junior senator from Pennsylvania, Rick Santorum (also an attorney), explained the clinical indications for partial-birth abortions and, using detailed drawings, described the technical aspects of the procedure. A resolution to ban the procedure had previously been passed by the House of Representatives. After the Senate debate, the bill to ban partial-birth abortions passed by 64 to 36.

How far should Congress go in intruding into specific medical practices? The era of physicians' monopoly of medical facts and practices is over, and well it should be. Medical imperialism is obsolete. Physicians should no more have exclusive dominion over medical information and decisions than attorneys should have control over the facts and practices of the law. In an era of abundantly available medical information, open discussion of medical issues is appropriate for all interested parties, and even promises to improve medical care.[2]

Obviously, the government already has a substantial role in regulating medical practice. The Food and Drug Administration is a prime example. With the exception of a small band of libertarians who advocate a laissez-faire approach to the use of drugs and devices, most of us believe that there is a legitimate role for government in this kind of regulation. But regulation by the FDA is based on carefully evaluated scientific judgments by experts and is shielded from direct intrusion by legislators. Similarly, NCI advisory panels base their decisions on hard scientific evidence.

The issue is neither the control of medical decisions by the medical profession nor the expanding role of patients; it is whether such decisions should be made by politicians. I believe that Congress is not the appropriate forum for making complex medical decisions. The data upon which many important medical decisions are based are often contradictory and still in evolution. Legislators do not have the context nor the capacity to weigh medical evidence adequately. Although Senator Spencer Abraham from Michigan (still another attorney) argued in one of the heated debates that without specific expertise, senators deal effectively with issues as diverse as agriculture, nuclear waste, and national security,[3] they do not do so at the level of microdetail involved in the medical practices that Congress has recently weighed in on. Not only are complexity, lack of context, and expertise an issue, but legislators frequently respond politically to the emotional appeals of their constituents. (How could health-maintenance organizations insist on sending tired-out moms home in 24 hours? How could insurance companies deny lifesaving mammography to women? How could a grisly abortion method be condoned?) This is decision making by emotional and opportunistic consensus, not by studied, thoughtful reasoning based on evidence.

In our current market-driven, for-profit, health care system, government has an important role in protecting its citizens. Ensuring health care for vulnerable people, access to emergency services, effective grievance procedures in health plans, and the availability of information about contracting physicians and banning gag rules in physicians' contracts are all appropriate issues for legislative intervention. But there is a fine line between this kind of involvement and unwarranted meddling by Congress in the practice of medicine. Requiring health plans to pay for up to 48 hours of hospital care makes little sense when there is meager evidence of actual benefit in prolonging the stay for the new mother and baby. Offering firm recommendations for mammography for women in their forties is irrational when the profession itself is conflicted and confused about the procedure's value. And the plan to outlaw partial-birth abortions would mandate one-size-fits-all medicine, usurp the right to make that decision from individual women and their doctors, and thus intrude into the doctor–patient relationship.

I believe that the decision of the American Medical Association to back the bill to ban partial-birth abortions[4] was a serious mistake. In supporting legislation that deals with a single medical practice, they have invited more tampering by legislators with the practice of medicine in the future. Congress should stay out of the examining rooms, the maternity wards, and the operating rooms.

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Preventing Coronary Restenosis and Complications

INTERVENTIONS aimed at opening occluded coronary arteries continue to evolve. Two fundamental problems that limit the clinical efficacy of coronary interventions are restenosis after coronary angioplasty or atherectomy,[1-3] reported since the early days of interventional cardiology, and acute complications from the intervention, such as coronary-artery dissection, acute or threatened vessel closure, and distal embolization.[4,5] Both problems are the result of injury to the arterial wall. Attempts at solving these problems have involved the development of new devices and drugs. Two of the most promising solutions are described in this issue of the *Journal*.[6,7]

PREVENTING RESTENOSIS

Despite the use of new devices, coronary restenosis remains a problem. Although stents substantially reduce the risk of restenosis in selected patients, they are associated with greater neointimal hyperplasia than is angioplasty alone.[8-10] The neointimal hyperplasia may be discrete or diffuse and may or may not result in myocardial ischemia. Although it generally responds favorably to treatment, neointimal hyperplasia may be associated with subsequent restenosis. Teirstein et al. describe the use of an old therapy to treat a new clinical problem.[6] Radiotherapy has been used to treat nonmalignant disease since the early 1900s.[11] Given the effect of radiation on other clinical disorders resulting from the benign proliferation of fibroblasts, there has recently been strong interest in the use of radiotherapy for restenosis. Despite some conflicting results, the effect of radiation has, in general, been positive in animal models.[12-14] This positive effect has now been reported in humans. Teirstein et al. evaluated the safety and efficacy of catheter-based gamma radiation and stenting in a small, randomized study.[6] Fifty-five patients with prior restenosis were randomly assigned to receive either iridium-192 or placebo after stenting. Despite some differences in base-line characteristics, such as a lower frequency of diabetes in the iridium-192 group, both groups were at high risk for subsequent restenosis.

The striking finding in the study was the concordance of the angiographic and clinical end points and the findings on intravascular ultrasonographic studies in each patient. Angiographic indexes — late loss of luminal diameter, late-loss index, minimal luminal diameter at follow-up, and restenosis expressed as a dichotomous variable — were all markedly more favorable by 60 to 80 percent in the iridium-192 group than in the placebo group. Similarly, an independent analysis of findings on intravascular ultrasonographic studies showed a significant decrease in the growth of tissue within the stent in the iridium-192 group. Most important, even in this small series, there was a marked improvement in the clinical outcome at six months in the patients treated with iridium-192.

These findings have evoked great enthusiasm in the cardiology community. However, there are still many issues to be addressed. First, the period during which the iridium-192 ribbon was in place (36 ± 7 minutes) may be too long for some patients to tolerate if severe ischemia is present. Shielding is another important issue, because lead aprons worn by catheterization personnel and the lead-lined walls in many catheterization laboratories are not completely effective against high-energy gamma photons. In addition, the effect of radiation on coronary-artery remodeling and the long-term vascular effects of the dose of gamma radiation used in the study are unknown. Ongoing studies are examining the use of alternative isotopes, delivery systems, and doses, which will be the focus of larger, multicenter, randomized trials in the future. Nonetheless, at the present time, a radiation device looks very promising as a potential solution to the problem of restenosis.

PREVENTING COMPLICATIONS

Acute complications, such as abrupt closure of a coronary artery after angioplasty, are a large problem in interventional cardiology and are associated with increased mortality, morbidity, and costs.[4,5] New strategies for preventing such ischemic complications have focused on the platelet surface-membrane glycoprotein IIb/IIIa receptor. In a previous large-scale trial, the Evaluation of 7E3 for the Prevention of Ischemic Complications (EPIC) trial,[15] blockade of this receptor by a human–murine chimeric monoclonal-antibody Fab fragment (abciximab) reduced acute ischemic events by 35 percent in patients undergoing high-risk interventions. Despite the significant decrease in ischemic events, there was a marked increase in major bleeding complications. Had major bleeding been included in the primary end point, the trial might have been terminated early not because of the efficacy of the treatment but because of concern about its safety.

Lincoff et al.[7] report on a new trial of abciximab designed to determine whether bleeding complications can be reduced without a loss of efficacy by reducing the dose of heparin or adjusting it to the patient's weight in a lower-risk group of patients undergoing coronary interventions. The Evaluation in PTCA to Improve Long-Term Outcome with Abciximab GP IIb/IIIa Blockade (EPILOG) study was carried out at 69 clinical sites with the intention of enrolling 4800 patients. Careful consideration was given to ensuring safety as well as efficacy, since the heparin dose was substantially lower than that used

in the EPIC trial. The ground rules for termination of the trial were prospectively defined, with an interim analysis of 1500 patients.

The main finding of the study was the goal of every principal investigator and sponsor — a home run. The trial was terminated early, after the enrollment of 2792 patients, because of an overall 56 percent decrease in the composite end point at 30 days; this reduction was achieved without an attendant increase in major bleeding. At 30 days, the frequency of the composite end point of death, infarction, or urgent revascularization was 11.7 percent in the placebo group and 5.2 percent in the group receiving abciximab with low-dose heparin (hazard ratio for the abciximab group, 0.43; 95 percent confidence interval, 0.30 to 0.60); a similar reduction was seen in the group receiving abciximab with standard-dose heparin. Although there was a treatment effect for each of the components of the composite end point, the greatest improvement was the reduction in non–Q-wave infarction and need for urgent revascularization. Major bleeding was markedly less frequent than in the EPIC trial: 2.0 percent in patients treated with abciximab plus low-dose heparin, 3.5 percent in patients treated with abciximab plus standard-dose heparin, and 3.1 percent in patients receiving placebo plus standard-dose heparin; in the EPIC trial, major bleeding was reported in 7 percent of the patients receiving placebo and 14 percent of those receiving abciximab and heparin. The lower frequency of bleeding in the EPILOG trial is believed to be the result of a reduced dose of heparin, although adjustment of the infusion dose of abciximab according to the patient's weight may also have played a part.

Even though the primary end point was evaluated at 30 days, patients were followed for 6 months. The effect of abciximab on the frequency of adverse events at 6 months was less dramatic than the effect at 30 days. At six months, there were no differences in the frequency of death, infarction, or revascularization between the group assigned to placebo and standard-dose heparin and the group assigned to abciximab and low-dose heparin; there was a small reduction in the composite end point with abciximab and standard-dose heparin. The reduction in non–Q-wave infarction in both abciximab groups persisted at 6 months, although the majority of events in all three groups occurred during the first 30 days. Finally, the rates of repeated revascularization did not differ significantly among the three groups at six months. The fact that abciximab was not associated with a reduced rate of repeated revascularization, as it was in the EPIC trial, remains unexplained.

The use of agents that block platelet glycoprotein IIb/IIIa receptors is the most important advance in adjunctive pharmacologic treatment during coronary interventions since the discovery of the central role of aspirin. One might only wish that abciximab were not so much more expensive than aspirin (the cost of abciximab therapy is $1,407 per dose, on average). There are still gaps in our understanding of the proper use of agents that block the platelet glycoprotein IIb/IIIa receptor, including their role in stenting and criteria to ensure that only patients who need the agents receive them. These gaps have spurred the EPILOG investigators to plan additional studies.

The studies by Teirstein et al. and the EPILOG investigators illustrate the dynamically changing frontier of interventional cardiology, with the application of scientific methods to analyze problems, identify potential solutions, and test their value. This frontier is a wonderful place.

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Cost Sharing in the Emergency Department — Is It Safe? Is It Needed?

THE use of cost-sharing strategies such as copayments, deductibles, and coinsurance by health insurance plans is controversial. In shifting a portion of health care expenses from the insurance purchaser or provider to the patient, cost sharing invariably reduces the demand for services.[1-8] Proponents suggest that attention to costs leads patients to reduce inappropriate use of services selectively, without curtailing needed care. However, distinguishing appropriate from inappropriate visits on the basis of symptoms is not always straightforward, even for health professionals.[9] Unless cost sharing can be directed solely at inappropriate care, there is concern that some patients will delay seeking needed attention, possibly with adverse consequences for their health. This concern is heightened in the emergency department by the urgent, sometimes life-threatening nature of presenting problems.

Critics point out further that cost sharing is inherently unfair to those with lower incomes or chronic illness.[10] Fixed fees represent a greater burden to persons with fewer financial resources. Fees levied per service disproportionately affect the sick, who must use more services. Not surprisingly, the poor are more sensitive than others to cost sharing, with greater reductions in the use of emergency services[7] and elsewhere.[2,8] Several adverse effects of cost sharing were demonstrated in the Health Insurance Experiment,[2] and each was shown to occur more frequently among low-income participants.

The absence of cost-sharing requirements was a principal distinction between the early health maintenance organizations (HMOs) and fee-for-service, indemnity insurance. In recent years, under pressure from employers and other purchasers of health insurance to control or reduce premiums, managed-care companies have been adopting increasing levels of cost sharing, in the emergency department and elsewhere.[11] Against this backdrop, studies such as that of Magid et al., reported in this issue of the *Journal*,[12] are needed to determine whether harm is being done by the increased use of cost-sharing provisions.

Previous studies of insured patients show that patients respond to remarkably small degrees of cost sharing.[3,4] At low levels, middle-income patients appear able to distinguish necessary from inappropriate medical care and to reduce their use of less appropriate services selectively. Larger cost-sharing burdens lead to further decreases in the use of services but begin to affect the patient's ability to make selective reductions.

At the Group Health Cooperative of Puget Sound, the introduction of a $5 copayment for an office visit in the mid-1980s reduced visits by 11 percent and physical examinations by 14 percent, but it had no effect on the immunization of children, screening for cancer in women, or the use of cardiovascular medications.[3] In response to the requirement of a copayment of $1.50 for prescriptions, patients selectively decreased their use of discretionary drugs more than their use of drugs deemed essential.[4] However, a $20 copayment for visits for mental health care led to similar reductions in visits regardless of the severity of disease.[5]

In the Health Insurance Experiment,[2] larger degrees of cost sharing — typical of fee-for-service insurance — decreased office visits judged to be appropriate as much as they did inappropriate visits. Preventive care was particularly affected, and adverse effects were noted in terms of visual acuity, detection and control of high blood pressure, and survival (in a high-risk subgroup). A negative effect of copayments on the use of effective preventive measures has also been observed among Medicare recipients.[13]

The study by Magid et al. is one of three[6,7,12] that have specifically examined cost sharing in the emergency department. Linking HMO membership files with clinical data from a registry of patients with myocardial infarction, these authors found no association between a required copayment of $25 to $50 and delays in seeking emergency care after the onset of symptoms of myocardial infarction, a greater likelihood of out-of-hospital cardiac arrest, or higher in-hospital mortality.

In the Health Insurance Experiment, the results for emergency care differed slightly from those for office visits and preventive care.[6] The patients with the smallest degree of cost sharing (a 25 percent coinsurance requirement) selectively reduced their visits to the emergency department for less serious conditions. With greater coinsurance, however, visits for more serious problems also declined.

Kaiser Permanente members in northern California had nearly 15 percent fewer visits to the emergency department during the first year after a copayment of $25 to $35 for emergency services was introduced at the request of their employers.[7] The reduction was quite selective, ranging from no change for the most serious conditions to nearly 30 percent for the least severe problems, which accounted for almost one third of all visits. No adverse effects, such as increased hospital-admission rates or greater mortality, were detected, but the study's power was limited for this purpose. It is important to note that alternative sources of care and assistance with decision making were readily available, with triage to an urgent care clinic available 12 hours a day and telephone triage 24 hours a day.

It has been suggested that emergency care represents such a small proportion of total health care

costs that efforts to control inappropriate use are unnecessary.[14] This argument overlooks the magnitude of health care costs and the absolute dollar amounts represented by even small proportions of the total. In our 2.5-million-member group-model HMO, emergency department care accounted for at least 3.2 percent of total expenditures in 1996, or $140 million. In an HMO with a fixed, prepaid budget, a savings of even 5 percent of these costs would provide a large amount of funding for other services.

The marginal cost of treating nonurgent health problems in emergency departments has been said to differ little from the cost of care in office settings.[15] However, emergency department care is more costly for several reasons. Emergency physicians are more highly paid than primary care providers and use more resources for similar nonurgent problems.[16] Furthermore, most patients seeking nonurgent care arrive during the same busy early-evening hours as patients with true emergencies, thus contributing to crowding and creating additional costs that may not be attributed to the emergency department. Other departments incur costs if physicians or nurses are reassigned to help relieve the crowding in the emergency department. Patients incur additional costs if they are forced to wait for a long time to receive care.

If care delivered in the emergency department is more costly than primary care and if a sizable proportion of this care is considered inappropriate, might cost sharing represent a safe way to redirect inappropriate visits? The three available studies suggest that it may be safe in insured populations, so long as the cost-sharing burden is kept low and alternative sources of care are available. Financial considerations may present less of a barrier to patients in emergency situations than to those contemplating visits for preventive care. Moreover, because repeated visits to the emergency department are seldom considered appropriate, even for patients with chronic illnesses, modest copayments for emergency care penalize the sicker patients less than do copayments for office visits or prescriptions.

However, as Magid et al. note, the safety of cost sharing with respect to emergency department care is not yet established when the presenting symptoms are less familiar than chest pain. Additional studies with sufficient power to detect adverse events in patients with a range of conditions will be needed. Direct interviews of insured persons and emergency department patients will help us understand how patients perceive and respond to cost-sharing requirements.

Assumptions of safety cannot be extended to larger cost-sharing burdens. There are currently no data suggesting that emergency department copayments greater than $50 are safe. Most important, there are no data supporting the safety of any degree of cost sharing for care received in the emergency department among uninsured or low-income patients. For these patients, cost sharing presents greater financial barriers to care, which may be compounded by their poorer access to alternative sources of prompt outpatient care.[17]

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Sounding Board

Ethics of a Paired-Kidney-Exchange Program

ALTHOUGH transplantation is the best treatment for many people with end-stage renal disease, the gap between the number of organ donors and the number of potential recipients continues to widen.[1] Patients are often treated with dialysis for years while awaiting transplants, and many die.[1] At the University of Chicago, between 10 and 20 percent of patients with available living donors cannot receive transplants from them because of ABO incompatibility. We propose to increase the supply of organs by using kidneys from living donors who are ABO-incompatible with the intended recipients but are ABO-compatible with other recipients. Through an exchange arrangement between two donor–recipient pairs, Donor A provides a kidney to (ABO-compatible) Recipient B, and Donor B provides a kidney to (ABO-compatible) Recipient A.

In 1989, we described a process of research-ethics consultation for surgical innovations that we used to evaluate the clinical and ethical acceptability of a transplantation program involving living liver donors.[2] Research-ethics consultation entails a more extensive ethical analysis of a research protocol than that usually provided in a standard review by an institutional review board. The process involves ongoing and open discussions of the protocol within the institution and publication, following peer review, of a paper that describes the research proposal, examines its clinical justifications and ethical considerations, and elicits professional and public criticism. Such discussions should occur before the pilot study begins.

RATIONALE FOR A PAIRED-KIDNEY-EXCHANGE PROGRAM

In the early period of transplantation of kidneys from living donors, all donors and recipients were genetically related. Kidneys from genetically unrelated but emotionally involved donors (e.g., spouses, common-law partners, or close friends) were discouraged because of poor results and fear of commercialization.[3,4] Now, however, there is greater acceptance of transplants from such donors,[5,6] and the long-term results are good. Graft survival at five years is 73 percent for kidneys from unrelated living donors,[7] which is similar to the five-year survival of transplants from genetically related donors who are not HLA-identical (69 percent)[7] and better than that of transplants from cadavers (58 percent).[8] Nevertheless, ABO incompatibility and other problems with histocompatibility (e.g., positive T-cell crossmatches) make some donations unacceptable under current standards of care. Although several trials of renal transplantation between ABO-incompatible donors and recipients have had good results,[9-11] these trials were small, and such transplantations are not routinely performed in the United States.[12-14]

In 1986, Rapaport set forth the idea of paired kidney exchanges.[15] He envisioned a process in which the two donor–recipient pairs would be treated at their separate transplantation centers, and the procedures would be performed simultaneously, with an immediate exchange of the two kidneys by special courier.

A PROPOSAL FOR A PILOT STUDY

To increase the number of successful kidney transplantations, we propose a pilot study of the clinical and ethical aspects of paired kidney exchanges, with all the procedures to be performed at a single hospital. The study will work as follows. If all a recipient's potential living donors are determined to be unsuitable, a potential donor rejected solely on the basis of ABO incompatibility will be offered the opportunity to participate in a research protocol in which a kidney is donated to a different recipient whose potential donors also cannot make a direct donation because of ABO incompatibility. Through this exchange, two voluntary living donors will donate their kidneys to ABO-compatible recipients who do not have suitable living donors among their family members or close friends.

In our pilot study, candidates for kidney transplantation who express an interest in living-donor transplantation will be informed about the research protocol. They will be told that a paired exchange of kidneys will be offered only if all potential donors are unable to serve directly as donors and at least one potential donor is excluded only because of ABO incompatibility. When the protocol is first described, recipients will not be asked to give informed consent but only to indicate in a general way whether they are willing to consider this option. If a recipient decides not to consider it, his or her potential donors will not be questioned further. If the recipient is willing to consider participating in the study, all the potential donors will be informed about the protocol and asked at the first stage of testing whether they are willing to consider an indirect donation if they are unable to make a direct donation.

Some potential donors are relieved to learn they are ineligible because of ABO incompatibility. Since the exchange program eliminates this basis for disqualification, potential donors must be given an opportunity at each stage in the process to disqualify themselves on unspecified medical grounds without disclosure to the potential recipients. Although psychiatric consultations are not routinely performed for our living kidney donors, we propose requiring such consultations

for potential donors as another opportunity to determine their commitment to the donation process. A psychiatric evaluation performed during the experimental stage of our liver-transplantation program with living related donors showed that parents of small children, when asked about donation, were able to say no even when the lives of their children were at risk and no alternative therapies (such as dialysis) were available (unpublished data). This experience suggests that potential kidney-exchange donors will be able to say no despite the potential coerciveness of being asked to be a donor.

To evaluate the process of recruiting donors for the paired-kidney-exchange program, we plan to interview potential donors and recipients both before transplantation and afterward (at one month, six months, and one year). We will determine how acceptable the protocol is to potential recipients and donors, whether potential donors believe that their participation has been voluntary or coerced, and whether there are any psychological risks for recipients and donors over and above those associated with traditional (direct) donation from living donors. We hypothesize that a paired exchange of kidneys will be as ethically acceptable to donors and recipients as direct donations are. We also hypothesize that data on graft and patient survival will be similar to those for direct donation from unrelated living donors.

ETHICAL ISSUES

The ethical issues in a paired-kidney-exchange program include the general issues that pertain to any program involving living donors, as well as issues specific to a paired exchange of kidneys.

Benefits and Risks for Donors

The primary benefit for living donors is psychological. Even if the transplantations fail, donors know that they did everything possible to help their loved ones. Since the donation is indirect in a paired exchange, the psychological benefit may be more diffuse than that of a direct donation.

The main medical risk is that entailed by the operative procedure, and this risk is not affected by whether the donor is related or unrelated to the recipient. Recent surveys show a perioperative mortality rate of 3 deaths per 10,000 donors.[16,17] Other major complications (such as pulmonary embolus) occur in less than 2 percent of cases.[18]

Several studies have examined long-term morbidity after kidney donation; one found an increased risk of hypertension,[19] and another did not.[20] No risk of progressive renal failure has been reported, although some donors have nonprogressive mild proteinuria.[16,18] Some donors experience depression or conflict with family members.[21,22] In general, these problems are unrelated to the success of the transplantation,[21] and virtually all donors state that if asked again, they would make the same decision.[21,23] Nevertheless, donors may feel angry or guilty, particularly if there is an adverse outcome, and such feelings may be exacerbated by the fact that they do not know the results of their own donations.

Benefits and Risks for Recipients

The primary benefit for the recipient is the timely receipt of a healthy kidney, which may reduce or obviate the need for dialysis and may minimize suffering before transplantation.

The main risks for the recipient are those inherent in kidney transplantation. Although long-term survival is improved in most groups of patients with end-stage renal disease who receive transplants, as compared with those treated with dialysis, the mortality rate associated with transplantation may be higher in the short term, particularly among blacks.[24] There are also the psychological costs of asking a close friend or relative to donate a kidney. With a paired kidney exchange, the imposition on the donor may be perceived as greater, because the donor gives a kidney to a stranger rather than directly to a loved one. The recipient may feel burdened by a debt that he or she can never repay.

Coercion and Informed Consent

The decision to donate a kidney is encouraged because a loved one is seriously ill and needs a healthy kidney, although this need is tempered by the availability of dialysis, which makes it possible for patients with end-stage renal disease to live for many years without a transplant. In a study of the informed-consent process in living-donor organ programs, Fellner and Marshall found that most donors made immediate decisions to donate their kidneys, and additional information did not change their decisions.[25] Others, however, have found that family members can refuse.[26] Research has also shown that although some families pressure members to donate an organ,[26,27] others oppose a family member's willingness to donate.[26-28]

Concern about coercion has led a few organ centers to reject all living donors.[29] A potential donor may feel a strong obligation to donate a kidney because of guilt, love, duty, or loyalty. The views of other family members may intensify these feelings, but familial influence is not necessarily tantamount to coercion. The need to balance selfishness and altruism is a universal feature of family relationships — indeed, of all human interactions — and is surely not unique to organ transplantation; conflicts between selfishness and altruism thus do not invalidate voluntary consent.[30]

The hesitant donor is usually given many opportunities to withdraw consent. Concern about coercion may be heightened with paired kidney exchang-

es, because a reluctant donor cannot invoke ABO incompatibility as the reason for not proceeding with the donation. The psychiatric evaluation in the exchange protocol should help ensure that coercion is minimized and that the donor's decision is made voluntarily. Although we acknowledge the complex dynamics of donation, we hope that repeated interactions with the transplantation team will allow a reluctant donor the opportunity to decline.

Some recipients may decide that they cannot ask a potential donor to donate a kidney to a stranger, even though the risks of donation are unchanged and the donation permits the kidney exchange to occur. For this reason, the potential recipient needs to give informed consent before the potential donor undergoes screening for the exchange protocol.

The Right to Withdraw Consent

Obviously, donors must have the opportunity to change their minds.[31] The only way to ensure that both recipients in a paired exchange receive their grafts (i.e., that neither donor withdraws from the exchange agreement) is to perform the two transplantations simultaneously. This practice eliminates the possibility that Donor A gives Recipient B a kidney, only to have Donor B then decide not to give a kidney to Recipient A. Rapaport envisioned a coordinated program in which the participating hospitals remove the organs simultaneously and exchange them by special courier.[15] Our protocol involves only one hospital, which may simplify the timing of the procedure and communication between the surgical teams.

Privacy and Confidentiality

Strict privacy and confidentiality should be maintained for each donor–recipient pair. Although the recipients may want to express their gratitude to the donors, there is the possibility of anger or frustration if one recipient (or donor) does not fare as well as the other recipient (or donor). Breaches of confidentiality may have unanticipated repercussions for all parties involved in the exchange, even those with good medical results.

If four operations are performed at the same hospital at the same time, it may be difficult to maintain privacy and confidentiality. Nevertheless, we will attempt to do so. We intend to use different operating suites for the two pairs of donors and recipients and to house them in different units of the hospital. Many health care workers will be involved in the care of the two donor–recipient pairs, and everyone involved will be instructed about the importance of protecting patient confidentiality.

Commercialization and Exploitation

Most countries have signed a World Health Organization statement condemning the practice of buying and selling organs.[32] In the United States, only altruistic donations are permitted; federal law prohibits the commercial exchange of organs.[33,34] In developing this proposal, we considered whether an exchange of organs between two donor–recipient pairs might be regarded as a "transfer [of a] human organ for valuable consideration," which is prohibited by U.S. law.[33] In our view, this would be a misinterpretation of the intent of the law, which was to prevent the exploitation of living persons who might be willing to sell their body parts for profit. The law was not designed to proscribe altruistic donations of organs by family members or close friends. The exchange program enlists altruistic donors who, because of medical criteria (ABO incompatibility), cannot donate organs directly to the intended recipients but are willing to make donations that will benefit their loved ones indirectly.

Public Acceptance

A major concern with all novel transplantation proposals is the reaction of the public; much has been written about how different methods to increase the availability of organs (such as using cadavers without heartbeats or infants with anencephaly) would increase public distrust of transplantation in general.[35,36] This concern is expressed about transplants from living as well as cadaveric donors, even though several studies have found that public attitudes toward altruistic living donations are quite positive[4,37,38] and that physicians are more distrustful of the use of living unrelated donors than the public at large.[38,39] A survey has shown that many transplantation centers that are willing to accept organs from unrelated donors rarely suggest this option to patients.[40]

FUTURE POSSIBILITIES

If paired exchanges of kidney transplants become accepted, patients in dialysis centers or members of various support groups may seek to assemble their own foursomes. We can envision enterprising donor–recipient pairs advertising on electronic bulletin boards for partners. If this occurs, the possibility of commercialization, economic exploitation, coerced consent, and surgical complications or death must be thoroughly explored with each donor–recipient pair independently. Each person must be given the opportunity, free of coercion, to consent or not to consent to the proposed transplant exchange. Transplantation teams that accept such exchanges must take on the responsibility of ensuring that participation is voluntary and that the members of each donor–recipient pair have a personal and not a commercial relationship.

If our pilot study shows that paired kidney exchanges are both medically useful and ethically defensible, it may lead to a more serious consideration of Rapaport's proposal for a registry of unrelated kidney donors and recipients that would be similar

to a registry for bone marrow donors and recipients.[15] The danger of such a registry is that it would offer less protection to the donors in terms of ensuring voluntary participation and preventing economic exploitation. It would also complicate the timing of the procedures, since the donor–recipient pairs may be in different cities. At present, we do not support such an extension of our proposal. We believe that if our pilot study is successful, other major transplantation centers should initiate similar small-scale programs and continue to address the ethics and efficacy of paired kidney exchanges.

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