IRRESISTIBLE MEDICAL TECHNOLOGIES: WEIGHING THE COSTS AND BENEFITS*

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The new medical technology NMR (nuclear magnetic resonance) imaging holds promise of great private profit, as might investment in, say, sporting or tourist activities. But such gains need not be the best guide from a social point of view. The influential London weekly, *The Economist,* summed up the NMR debate recently: "For a hospital, an NMR scanner might not yet be money well spent". Similarly, organ transplants raise difficult questions about social benefits. To promote discussion of these issues, we obtained permission to reprint these comments by Dean Fineberg of the Harvard School of Public Health.

— The Editors

Once upon a time, doctors lived by two simple precepts. First, do no harm. Second, do all in your power to sustain the life of your patient. In their pure form, these rules no longer suffice. Science, new medical technology, and the economic realities of contemporary health care have overtaken them. Many powerful new drugs to combat dire diseases do indeed harm as the price of attaining hope for a better outcome. Life-support technology can sustain an insensate existence that most of us would not deem worth living. We need doctors today who know how to balance high-stakes risks and benefits, who know when to stop, and who realise that value-laden decisions about new technology are not theirs to make alone.

The most basic economic reality in medicine today is the fact that our resources — public and private funding, hospital space, professional time — are finite. Dollars spent for intensive hospital services, for example, cannot be used for primary medical care. Medical costs continue to soar, and our love affair with expensive new technologies is partly responsible for that upward spiral. A recent

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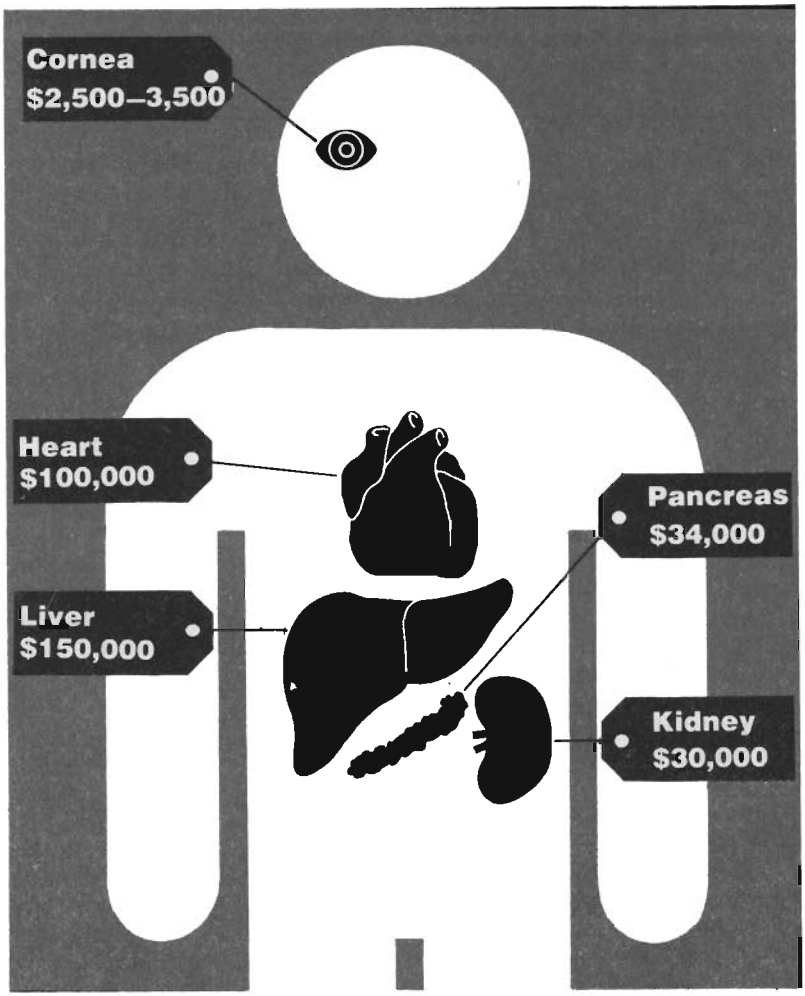
study by the congressional Office of Technology Assessment found that increased use of medical technology, such as new drugs, diagnostic devices, and surgical procedures, accounts for nearly one-



Organ replacement is an expensive way to save lives and may take resources away from more effective preventive services. For instance, we seem more willing to save babies whose livers do not work than to ensure adequate prenatal care for all pregnant women. We seem more eager to improve lung transplantation than to help people stop smoking.

third of the increase in Medicare costs over the past five years. As costs continue to escalate, we face increasingly difficult choices on how to spend our shrinking health-care dollar.

Major-organ replacement is perhaps the most visible example of this conundrum. The capacity to transplant organs such as hearts, livers, and kidneys offers unprecedented hope for afflicted patients and their families. It is hard to resist such life-giving miracles of medical technology when the victims are visible — like the newborn baby dying of congenital liver disease. Yet these technologies are also extremely costly and, at this point, of uncertain long-term benefit. Furthermore, major-organ replacement has become available at a time when our health-care system is poorly equipped to decide who should benefit from these technologies and who should pay.

The most serious drawback of organ replacement is that it is an expensive way to save lives. American taxpayers now pay several billion dollars each year for the treatment of end-stage kidney disease, much more than anticipated when the federal Medicare program started covering kidney dialysis and transplantation in 1972. And though expensive, a $30,000 kidney transplant is much less costly than a heart transplant at $100,000 or a liver transplant at more than $150,000. Although these costs will fall with technical advances and experience, substantial sums are ultimately at stake because the pool of potential recipients is large.

Perhaps an affluent society can afford to support organ replacement for all patients who might benefit from it. But the same health-care resources could be used in less dramatic ways with greater benefit. Resources that a hospital devotes to heart transplants, for example, are unavailable for other services such as replacement of heart valves that are clearly more beneficial to more patients.

Furthermore, money spent on exciting new procedures becomes unavailable for even more effective preventive services. According to the Centers for Disease Control, more than 20 percent of American children have not yet been fully immunized against polio by age two. Tens of thousands of Americans perish each year in automobile and other accidents — the leading cause of death among teenagers and young adults aged 15 to 34. But we have yet to insist on safety seats and restraints for all infants and adults riding in automobiles. As a society we seem more willing to save babies whose livers do not work than to ensure adequate prenatal care for all pregnant women. We seem more eager to improve lung transplantation than to invest in better programs to help people stop smoking.

This tendency to support visible "wonders" of health care and ignore the invisible efforts of prevention is a regrettable part of human nature. But there is a great deal more that our society should do to evaluate each new technology before we fully embrace it.

PROMOTING PUBLIC DEBATE

What do I specifically propose? To begin with, health professionals must explain publicly what is known and unknown about the benefits, risks, and costs of new technologies. The public, health professionals, and policymakers should air their views on the worth of these technologies and the trade-offs inherent in spending money on them. Such a public debate could be held through open conferences, lectures, talk shows, and extensive media coverage — much the way nuclear arms control became an issue of widespread concern.

The way we pose questions about medical expenditures is all-important. If asked "what is it worth paying to save a life?" we are tempted to respond "whatever it takes." A more pertinent question is "where will additional dollars produce the greatest health benefits?" That question forces us to confront trade-offs in health investments. In making these investments, we should keep in mind the health of unidentified individuals as well as the visible victims of disease.

Policymakers in each state or region can also limit the number of hospitals that have access to costly and not-yet-perfected devices and procedures. This would be a particularly effective approach in the case of organ transplantation. Such restrictions not only assure that hospitals have the needed array of clinical, laboratory, and support services for optimal care of transplant patients. They would also help our health-care system match its capability for transplantation with the number of procedures society is willing to pay for. The availability of new technology, the current fee-for-service system, and the medical bias toward action all conspire to raise costs and promote an aggressive approach that occasionally provides more care than a patient actually needs.

A consortium of hospitals interested in doing a particular transplant procedure may be a workable arrangement. The idea is to share surgical expertise, take better advantage of slack resources, and limit the number of institutions offering the procedure. Not every hospital can or should be a leader in every technology, and hospitals already in a consortium have an interest in limiting the number of other hospitals that offer the same procedure. In Boston, four hospitals — Massachusetts General, New England Deaconess, Children's Hospital, and the New England Medical Center — are currently members of a liver-transplant consortium.

Policymakers can also limit the number of centers offering new technologies by changing the way hospitals are reimbursed for services. For example, under a new Medicare policy, hospitals in most states now receive a fixed sum for each patient in a particular diagnostic grouping, such as uncomplicated heart attacks. This system gives hospitals an incentive to avoid unneeded tests and shorten lengths of stay to keep their costs within the fixed payments.

Laboratory tests, x-rays and drugs, and other ancillary serices amount to more than half the costs of hospital care, and many economies in these areas would not compromise the quality of patient care.

In Massachusetts, hospitals can be reimbursed only up to a certain amount for all patients, according to a complicated formula. Currently, hospitals can raise the ceiling for each liver transplant they do by about 30 percent of the costs of the procedure. I believe hospsitals should receive less than that amount of additional funds to encourage them to cover the costs of transplantation from savings in other areas.

NEW APPROACHES TO PAYMENT

We must also change the ground rules for deciding how we pay for new medical practices. Insurance companies now base such decisions on whether a procedure is classified as established — and hence reimbursable — or as experimental — and hence nonreimbursable. However, we have no effective way of dealing with procedures, such as liver and heart transplants, that are not fully established as beneficial but that are not completely experimental since some have clearly saved lives.

Mired in this intellectually pointless debate about classification, policymakers cannot attend to more basic value judgments about whether the public can afford to pay for new procedures, whether current policies are fair to all patients, and whether other uses of the same resources might be more worthwhile. Insurance carriers now decide whether to pay for a procedure that is neither "established" nor "experimental" on an uneven, case-by-case basis, often under pressure from a particular family or community. That is not conducive to just social policy.

I propose that such procedures be included in a third category — investigational — and that decisions about insurance coverage be made by a national body of health professionals, policymakers, and consumers under the aegis of an organisation such as the Institute of Medicine, an arm of the National Academy of Sciences. State and local policymakers and the public can use these recommendations to decide which institution should use what new technologies.

Among the medical technologies, organ transplantation is unique in its dependence on human tissue obtained through consent. Transplantation should not be constrained by a lack of suitable donors. Public funds should be spent to improve our system of organ donation and retrieval, especially to support regional, nonprofit organ banks.

Some thoughful observers advocate a system of presumed consent: the organs of an individual who dies can be used unless he or she has explicitly forbidden that use. Such a system is in place in a number of

countries, including many in Europe. While this policy would obviate trying dicussions at the time of family grief, it places the burden of demurral on the individual, and policymakers and the public may resist it as overly presumptuous.

Short of presumed consent, we could do much more to promote organ donation. Our society has not supported this concept with anything like the vigor applied to convincing people to register their credit cards for an annual fee so that stolen cards can be easily cancelled, for example. Congress should fund programs to solicit healthy, voluntary donors whose commitments would be honored when they die.

We must also develop more uniform critera for selecting the beneficiaries of new transplant technologies. At present, patients with families who know how to attract publicity and can afford the steep price of transplantation are often the first chosen for available liver and heart donations. While total expenditures for organ replacement should be a matter of social policy, ability to pay should in no way affect the decision to replace a failing organ. The choice should be based strictly on medical need and the likelihood of beneficial results. This means taking into account the cause of organ failure, the age of the patient, the availability of a suitable donor, and the ability of the patient to recover. For example, a good candidate for a heart transplant would be a previously healthy young adult, with a supportive family, who has a terminal heart disease that is unresponsive to therapy. Hospitals' patient-selection committees should include representatives from various health professions and sectors of society, including educators, clergy, business leaders, labor leaders, and consumers.

Future decisions about organ replacement, or any new technology for that matter, will be better informed if we assess short-term and long-term clinical results as well as the costs to society. At present such studies are not being adequately funded, even though they offer the only prospect for reducing uncertainty about the new medical technologies.

Policymakers will also have to contend with conflicting health and social objectives: the desire to provide the most sophisticated type of care possible versus the obligation to contain costs; the tendency to support the visible and glamorous products of technology versus the need for a more preventive and widely beneficial approach. If consumers and policymakers can attain more flexible control over the allocation of health resources, they will be better able to balance these forces and perhaps provide higher-quality care for more Americans.