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Graft 2001; 4; 154

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Understanding Xenophobia Induced by Economics

Roger W. Evans

For over two decades, the economics of organ transplantation has been both an obvious and a troublesome topic.¹ Analysts have left little doubt—relatively speaking, all transplant procedures are expensive. Moreover, in some cases, it has been unclear as to whether the end has justified the means. In other words, the results of cost-effectiveness analyses have not always cast transplantation in a favorable light.¹ This, in turn, has provoked a fairly intense public policy dispute that has, at times, vilified transplantation as a gross “misallocation” of scarce health care resources. I am afraid, in the years to come, the outcome of this smoldering debate will have all the makings of a Sherlock Holmes mystery.

“Xenophobia” is a term I will use to characterize the scientific and public policy fears that have shrouded xenotransplantation.² Like genes, these fears are expressed in many different ways. For example, zoonoses requires more serious treatment than idle speculation. Likewise, the alleged “rights” of animals often seem to be more profound than those of humans. And, finally, in my opinion, the exorbitant cost of living, as reflected by enormous health care costs, may offer sufficient justification for choosing death as an alternative preferable to life.

Thus, in the remainder of this short paper, I would like to provocatively comment on xenophobia to the extent it is etiologically related to economics.

Transplantation Is Less Expensive Than People Realize. . . Really?

In 1998, nearly \$6.0 billion dollars were spent on approximately 200,000-organ transplant recipients in the United States. Each of these figures includes

patients who received an actual transplant, as well as those patients who were surviving with a functioning graft. Although seemingly large, \$6.0 billion dollars is admittedly fractionally small in comparison to the \$1.2 trillion dollars spent in the U.S. in 1998 attempting to meet the health care needs of approximately 271 million persons.³

In the aggregate, the foregoing statistics provide us with a snapshot of the “programmatic” expenditures associated with transplantation. While sometimes mentioned, they have rarely been accurately quantified. Size has often been left to the imagination of the critics who are typically intent on making doom out of gloom.

Alternatively, data on “procedure-specific” transplant “costs” have been far more accessible.⁴ As a result, these figures, in varying degrees of accuracy, have been cited in the professional literature, as well as the lay press. The numbers are often staggering, as is apparent from a recent actuarial report.⁵ The following figures are quoted as first-year transplant procedure-specific “costs”: intestine, \$473,900; heart, \$303,400; heart-lung, \$301,200; lung, \$257,200; liver, \$244,600; kidney-pancreas, \$138,300; pancreas, \$113,700; and kidney, \$111,400. Clearly, regardless of how knowledgeable a person is about health care “costs,” transplantation must be perceived as extremely expensive, considering that, in many instances, procedure-specific “costs” exceed median single family housing prices in many areas of the U.S.

In reality, the figures cited here are overstated. Managed care, as reflected operationally in transplant center of excellence contracting, has reduced by as much as 60 percent, what insurers are actually paying for organ transplant procedures in the U.S.⁶

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However, as patients and payers have benefited, transplant centers have become financially vulnerable. Many centers now struggle to maintain a favorable bottom line. The heyday of yesterday is but a gray day today.

At this time, it is virtually impossible to realistically estimate the procedure-specific “costs” of any clinically applied xenotransplant procedure. Speculative analyses are of no value and may, in fact, be detrimental to research and development efforts, as well as public policy formulation. However, in very early clinical applications, it is certain that xenotransplantation will be more expensive than human allotransplantation. Costly precautions will be necessary, complications will be significant, and hospital stays will be long.

There Is a Considerable Unmet Need for Transplantation. . . Are You Serious?

From a programmatic point of view, the concepts of need, demand, and supply are central to our understanding of the economic implications of xenotransplantation.⁷ Unfortunately, not every patient who might benefit from a transplant is placed on the waiting list and, thus, becomes a demand statistic. In this regard, the size of the waiting list is an unacceptable indicator of the need for xenotransplantation. While demand already exceeds the supply of donor organs, the need for transplantation actually dwarfs demand.

I have recently quantified this problem in hopes that it will add perspective. I can offer the following incomplete summary.⁷ In 1997, at the very minimum, 171,000 persons could have benefited from a major solid organ transplant. Of these persons, only 61,126 actually made the waiting list and, thereby, became a demand statistic. Human donor organ supply will not be sufficient to eliminate this disparity. Under the very best of circumstances, somewhere between 47,000 and 72,000 cadaveric donor organs may potentially be available. Clearly, there will have to be an alternative to human donor organs if the need for transplantation is to be met.

Xenotransplantation Is the Answer ... or Is It Not?

Based on the data I have presented, the questionable should now be clear—successful xenotransplantation can only add fuel to what will inevitably become a towering public policy inferno. Historically, transplant activity has been seriously constrained due to a very

limited supply of donor organs. If xenotransplantation proves successful in the long-term, donor organ availability will no longer be an issue. All patients in need of an organ transplant will potentially get the procedure they require. As a result, the proportion of total health care expenditures associated with organ transplantation will increase substantially.

For what should now be obvious reasons, I have previously argued that the donor shortage has actually been the “saving grace” of organ transplantation. Critics, who have argued that transplantation represents a “misallocation” of limited resources, have made a statement with limited effect. The reason is simple—although the per procedure charges associated with transplantation are high, when compared with other more frequently performed high-cost surgical procedures, aggregate expenditures are proportionately small. Thus, total expenditures are a function of activity level and procedure price. When either one, or the other, or both increase, the implications can be significant. This will certainly be true of xenotransplantation.

But We’re Sparing Lives and, Thereby, Saving Money. . . Ummm?

In an effort to justify the expenditures associated with organ transplantation, proponents have argued that, by saving lives and rehabilitating patients, we are foregoing the considerable expense associated with dying. There is no doubt; many poorly designed studies, using questionable data, and faulty assumptions have “demonstrated” that the treatment of end-stage disease in the absence of a transplant is costly.⁸ Equally striking, however, is the fact that none of these studies has established the appropriateness of the treatment offered to patients who have dismal prospects for survival.

Therefore, in the final analysis, and in my opinion, the “saving lives” argument is an armchair economist’s “stairway to heaven,” absent Led Zeppelin. The background music is nothing more than the noise associated with feedback. Although appealing, the idea that we are somehow saving money by performing transplants is truly frivolous. Transplantation does not assure immortality, and many transplant recipients, at a later date, die extremely expensive deaths. Too often, heroic and futile efforts are made to reverse rejection, treat infection, and remedy complications in hopes of saving a dying patient’s life.

. . . the exorbitant cost of living, as reflected by enormous health care costs, may offer sufficient justification for choosing death as an alternative preferable to life.

In some cases, re-transplantation is a clinically indicated alternative but, in reality, it is a financially prohibitive proposition. Multiple procedures are not less expensive than a single transplant. Moreover, a true cynic wouldn't hesitate to point out that, given technology and inflation, it is typically less expensive to die now than later, with or without the alleged benefits of transplantation.

Making matters even worse is the fact that our track record for rehabilitating patients is dismal, even though the reasons are as much social and psychological as clinical. Nonetheless, we should not use anecdote as an acceptable antidote for the bitter pill we must sometimes swallow.

... successful xeno-transplantation can only add fuel to what will inevitably become a towering public policy inferno.

Where Does This Leave Us?

I am never sure where to stand when I can't find a seat at the bar. Xenotransplantation makes me thirsty but, in its current formulation, I see what I have offered as little more than a "taste test." I enjoy speculation, but I fear its consequences. The reasons are captured in a few lines, such as the following: Success has frequently been doomed by premature failure. Revisiting a barren landscape can sometimes yield a beautiful picture. Expecting too much may produce too little. Science often makes intelligent people foolhardy. And, in the words of Sherlock Holmes, "It is a capital mistake to theorize before one has data." But, even still, "We balance probabilities and choose the most likely. It is the scientific use of the imagination."

In conclusion, I have tried to develop a few ideas, given very few data. I don't pretend to have the answer but, like a good detective, I have considered what is known, speculated about what we have yet to observe, and concluded what we might predict based on the available evidence.

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