Traditional indications for SLT procedures include the following: COPD due to tobacco use or α1-antitrypsin deficiency, interstitial lung disease due to pulmonary fibrosis, and sarcoidosis among others and, at a few centers, pulmonary hypertension. Indications for BLT include septic or suppurrative lung diseases such as cystic fibrosis or bronchiectasis, and at some centers, pulmonary hypertension and younger patients with COPD.

If the findings of the study in this issue of CHEST are confirmed, then the ethical and moral implications are significant. SLT has several advantages over BLT. It is thought by some surgeons to be technically easier than BLT, the procedure time is shorter, there is less frequent need for cardiopulmonary bypass, and, most importantly, one donor can provide single lungs to two recipients, alleviating the serious shortage of donor organs, which remains the rate-limiting step to the number of transplant procedures performed annually. This has to be weighed against BLT characteristics such as improved pulmonary function, better survival, the ability to use marginal lung donors, and as raised in the current article, the decreased risk of BOS in BLT recipients, which are raised in the current article. Until the current shortages of donor lungs abate (a national problem) or until these questions are clearly answered in future studies, I would recommend continuing the performance of BLT procedures in those groups of patients with septic lung disease that require a BLT procedure and continuing to perform SLT procedures in those groups traditionally treated with SLTs.

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Telesupport
Just Reach Out and Touch Someone

Lung transplantation is an accepted therapeutic option for patients who have a number of end-stage pulmonary diseases. In calendar year 1999, the United Network for Organ Sharing reported that 877 lung transplants and 49 heart-lung transplants had been performed in the United States alone, with a waiting list of 3,491 persons. During the same time period, >2,000 transplants were performed worldwide. About 76% of lung transplant recipients will survive through the first year, and 56% make it to 3 years. When assessing the efficacy of a given intervention on outcomes for any end-stage organ disease, there is a growing emphasis not only on improvements in survival, but also on the associated health-related quality of life (HRQOL). Incorporat-
ing HRQOL and survival has resulted in the generation of quality-adjusted life years (QALY) as a measure of transplantation outcomes.

In the area of lung transplantation, there is a growing body of literature attesting to improvements in patients’ posttransplant HRQOL. To illustrate this growing research effort, we performed a MEDLINE search for the years 1990 through March 2002 using the key words “quality of life” and “lung transplantation,” and we received 197 citations. In 27 of these citations, quality of life (QOL) was the major focus of the study, but in only 11 of the studies was QOL in the pretransplant candidates assessed. In only one of these articles was an intervention implemented to improve a patient’s pretransplant QOL.3 So, while there is an increasing focus on HRQOL posttransplant, there is a relative paucity of data on the pretransplant population, with one lone article looking at an intervention directed at optimizing QOL before lung transplantation. This apparent lack of research into this specific area is likely due to the commonly accepted notion that pulmonary rehabilitation does improve HRQOL. There are many studies attesting to this, specifically in the COPD population. There is, however, a lack of data attesting to the utility of pulmonary rehabilitation in other patient groups.4 Nonetheless, it is likely that most patients who are lung transplant candidates will derive some measure of benefit from pulmonary rehabilitation.

The issue of HRQOL is of particular importance in lung transplant candidates for a number of reasons. First, when subjecting patients to a procedure with a potential 1-year mortality rate of approximately 24%, it is incumbent on the clinician to present this option in the context of the impact on posttransplant survival as well as on HRQOL. Indeed, there already has been a controversial report5 showing that transplantation did not improve longevity in the COPD population. However, if these data were analyzed with respect to QALY, there is little doubt that the conclusions would have favored transplantation.

An essential aspect of posttransplant care is the optimization of the patient’s HRQOL. Aside from routine medical care, this is usually further facilitated through pulmonary rehabilitation, continued education, and participation in support groups. However, the listed patients often are not fully ensconced within the transplant center’s system and do not, therefore, have access to the same level of support services prior to undergoing transplantation. Whereas posttransplant patients are seen very frequently at the respective transplant centers, pretransplant patients tend to be seen less frequently, with the responsibility for their medical care falling on their primary pulmonologists. Although many programs offer pretransplant support groups, listed patients often are unable to attend them owing to logistical issues.

Most programs require that their listed patients be actively engaged in a pulmonary rehabilitation program. One cannot understate the important role that pulmonary rehabilitation plays in optimizing the patient’s pretransplant status, including providing some measure of psychosocial support. However, not all pulmonary rehabilitation programs are created equal, and, indeed, it is not uncommon for patients in smaller metropolitan areas to undergo rehabilitation at a cardiac rehabilitation facility. Furthermore, patients in remote pulmonary rehabilitation programs may be the only patients listed for transplant and may feel isolated, thereby limiting their subjective sense of support. Although some transplant centers insist on their patients relocating closer as they move up the list, this may only be at a point when the patient already has been on list for many months. Therefore, the nature of the system of care before transplantation and the relative rarity of the procedure contribute to the lack of support that is available to listed patients for most of their time on the list. The burden of care for transplant centers is focused on the transplant recipients. With the close scrutiny on transplant outcomes, it is understandable that most resources are so directed.

A number of questions therefore arise. First, who should bear the onus for optimizing a patient’s QOL during the pretransplant waiting period? Can we do more than pulmonary rehabilitation alone? And last, what is the magnitude of this burden? With regard to the latter question, as of June 2000 there were 3,691 patients on the US waiting list for lung transplants.6 Most of these patients will have to wait up to 2 years before receiving an organ. Therefore, at any one time, there could be > 7,000 QALYs that could be impacted favorably by an additional effective support intervention. If QALY is to be the outcome measure by which the efficacy of lung transplantation is to be judged, then it is incumbent on us as physicians at transplant centers to raise the bar as high as possible with regard to pretransplant HRQOL. This is necessary to guarantee that any HRQOL improvements posttransplant are due to allograft function alone and not to a mechanism of support that could have been implemented in the pretransplant period.

The novel approach described in the article by Blumenthal et al in this issue of CHEST (see page 1176) involves a simple intervention, namely, telephone support. The authors demonstrate that the utilization of an existing simple technology can lead to improvements in the patient’s perceived level of support, general well-being, and general and disease-

specific QOL. For many programs, the advantage of the telephone is that they can reach patients and impact their conditions, irrespective of their location. There are additional potential ancillary benefits of such close contact with pretransplant patients including the possibility that this will facilitate the identification of potential issues that may be manifested posttransplant. Sometimes, relatively simple, inexpensive interventions can have the most profound impacts. Without minimizing the expertise of the psychologist responsible for the telephone support, this appears to an example in which, calling rates aside, telephone support provided a significant “bang for the buck.”

Frequently, patients on the transplant list are, to an extent, accepting of their lot, while pinning all their hopes on the promise of a transplant. While languishing on the list, they are in a sense in “limbo land.” Not only do they have to deal with the physical and psychological aspects of their end-stage lung disease, but there is the additional psychological overlay surrounding the uncertainty of their receiving a possible transplant. During this period, a significant number of candidates will drop off the list due to death or other reasons. This number might be as high as 24% per annum. This large percentage further underscores the need to focus on improvements in QOL prior to transplant, since there is no guarantee that any listed patients will receive a transplant. And, indeed, if they do, there is no assurance that a favorable outcome will result.

There are a number of issues that warrant further investigation. First, is there any subgroup of patients that benefits most or needs more support pretransplant? Who is best suited and what level of qualification is needed to provide such telephonic support? Do those patients who receive this method of support cope or do better posttransplant? And last, are there other techniques that can be utilized to provide support for these patients? Squier et al have shown that the quality of well-being in lung transplant candidates might be a predictor of survival for patients who are listed for transplantation. This held true for patient survival both before and after transplantation. Although the numbers from this study were relatively small (n = 74), the results serve to magnify the implications of the intervention described by Blumenthal and associates.

Viewed in this context, the article by Blumenthal et al should provide the impetus for lung transplant programs to accept a greater share of the burden for pretransplant support. To further add to this impetus, there should be a greater emphasis on outcomes after the patient is listed for transplantation. Such results would be of greater utility to patients and referring physicians as they encompass not only the uncertainty of transplant, but also the often-overlooked uncertainty of being on the list waiting for a transplant. There are obvious issues of time, personnel, and cost in implementing this strategy, especially for those transplant centers that maintain large waiting lists. However, lung transplantation is still lagging all other organ transplants in terms of outcomes, and any advantage that can be realized, especially one with little apparent downside, should be enthusiastically embraced.

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IV 2β or Not 2β, That Is the Question!

The increasing prevalence of asthma has paralleled an increase in acute asthma exacerbations and asthma morbidity. This is reflected by the occurrence of > 1.8 million emergency department (ED) visits for asthma in the United States annually, leading to nearly 500,000 hospitalizations. Because of the significant morbidity and economic costs,