Reaction to the manuscript: An economic evaluation of lung transplantation by Anyanwu et al. The Journal of Thoracic and Cardiovascular Surgery Volume 123; Number 3: page 411-420.


Submitted as letter to the editor: The Journal of Thoracic and Cardiovascular Surgery
In the March issue of this journal, Anyanwu et al reported a prospective multicenter study about the cost-effectiveness and cost-utility for the different types of lung transplantation. Although the study is an important addition to the existing literature, the method by which survival gain was calculated and the impact on their sensitivity analyses should be further discussed.

First, in the presented study Anyanwu et al. calculated survival for the first four years based on actual data and from year 4 to 15 by using a parametric Weibull model, in accordance with a previous analysis by our group\(^1\). At 15 years, the survival curve after transplantation was cut off despite a survival of at least 25\%, depending on the type of transplantation. Survival on the waiting list declined to zero percent after 11 years. For a valid comparison of costs and effects of both conditions from a lifetime perspective, a survival curve after transplantation should be constructed with further extrapolation until a survival of zero percent\(^2\). Therefore, the survival after lung transplantation in the present study was underestimated, since prolonged survival beyond 15 years was neglected. A rough estimate indicates that extrapolation to zero percent survival amounts to an additional survival gain after transplantation of estimated 2 years. This is why, in contrast to others\(^4\), Anyanwu et al. did not find survival as a principal determinant of cost-effectiveness in their sensitivity analyses.

Secondly, the survival curve for the waiting list, to which the survival after lung transplantation was compared, was not constructed in accordance with previously reported methods\(^2\)\(^3\). In these studies, the transplantation date was chosen as the starting point of this comparison, because it would be unrealistic to assume that differences in survival occur prior to transplantation. For the situation on the waiting list, no real transplantation date exists, and a fictitious transplantation moment should be created (figure 1). This moment should be based on the average stay of patients on the waiting list before they were transplanted (about 12 months in the study by Anyanwu et al). However, day zero was used on the waiting list as the starting point. Applied to our own data, these two methods result in a difference in the cumulative number of life years on the waiting list of 0.5 years (17\%).

Obviously, changing the method for the calculation of survival gain will also influence the number of QALYs gained. It is possible that this would affect the results of the sensitivity analyses with respect to the effects of varying utility values and post-transplantation maintenance costs as well and thereby the conclusions formulated by Anyanwu et al.
Figure 1: Actual waiting list survival, fictitious waiting list survival and survival after lung transplantation in the Groningen lung transplant program 1990-1995.

References: