

## CORRECTION

### LUNG TRANSPLANTATION AND SURVIVAL IN CHILDREN WITH CYSTIC FIBROSIS

November 22, 2007;357:2143-52.

In the Results section of the Abstract (page 2143), the third sentence, “*Burkholderia cepacia* infection decreased survival, regardless of whether the patient underwent transplantation,” should have read, “*Burkholderia cepacia* infection was associated with a trend toward decreased survival, regardless of whether the patient underwent transplantation.” The last sentence of the Results section of the Abstract, “Five patients had a significant estimated benefit, 315 patients had a significant risk of harm, 76 patients had an insignificant benefit, and 118 patients had an insignificant risk of harm associated with lung transplantation,” should have read, “Five patients had a significant estimated benefit, 283 patients had a significant risk of harm, 102 patients had an insignificant benefit, and 124 patients had an insignificant risk of harm associated with lung transplantation.”

In the Results section of the text, under “Patients” (page 2145), the last sentence, “The median survival after transplantation was 1037 days (Fig. 1),” should have read, “The median survival after transplantation was 1260 days (Fig. 1).” Figure 1 (page 2145) should be replaced by the new Figure 1, which is available in the revised version of the article. The second, third, and fourth sentences of the legend to the figure, which read, “The median survival of these patients was 2.84 years (1037 days). The upper confidence limit shown here roughly matches the post-transplantation Kaplan–Meier survival curve in the report by Aurora et al.<sup>6</sup> The rate of survival at 5 years was 32.9% — somewhat less than the 46.9% reported by the Organ Procurement and Transplantation Network for all recipients of lung transplants for cystic fibrosis” should have read, “The median survival of these patients was 3.45 years (1260 days). The confidence limits shown here match those reported by Aurora et al.<sup>6</sup> The rate of survival at 5 years was 39.5% — insignificantly less than the 46.9% reported by the Organ Procurement and Transplantation Network for all recipients of lung transplants for cystic fibrosis.”

The first complete sentence on page 2146, “*Burkholderia cepacia* infection did not modify the effect of transplantation, but it was associated with decreased survival for all affected pa-

**Original Table 2. Hazard Factors for Covariates Affecting Survival before and after Lung Transplantation.\***

Variable	No. of Patients	Hazard Factor	Coefficient	Robust Standard Error†	P Value
<b>All patients</b>	514				
<i>Burkholderia cepacia</i> infection		1.60	0.47	0.20	0.02
<b>Patients before transplantation</b>	514				
Age (per yr)		0.97	−0.03	0.03	0.25
Diabetes		1.94	0.66	0.27	0.01
<i>Staphylococcus aureus</i> infection		0.69	−0.38	0.19	0.05
<b>Patients after transplantation</b>	248				
Age (per yr)		1.14	0.14	0.03	<0.001
Diabetes		0.80	−0.22	0.38	0.51
<i>S. aureus</i> infection		1.53	0.43	0.18	0.02

\* Hazard factors for covariates were used to calculate the proportional hazard for death associated with lung transplantation. Because the effects of age, diabetes, and *S. aureus* infection depend on transplantation status, a single hazard factor for lung transplantation that applies to every patient cannot be calculated. However, a hazard factor for lung transplantation can be calculated with the use of the covariate values for each patient with the following formula:

$$HF = \frac{e^{0.136Age - 0.224d + 0.428s + 0.159}}{e^{-0.0333Age + 0.665d - 0.375s}}$$

In this equation, HF denotes the estimated hazard factor for death after lung transplantation and is derived by dividing the hazard factor for death after transplantation (the top term in the fraction) by the hazard factor before transplantation (the bottom term in the fraction). Because of the absence of interactions with transplantation, terms for *B. cepacia* infection cancel out. In the equation, age is the age of the patient at the time of the last clinic visit before placement on the waiting list for transplantation, d equals 1 for patients with diabetes and 0 otherwise, and s equals 1 for patients with *S. aureus* infection and 0 otherwise. The final term in the numerator reflects the baseline hazard associated with post-transplantation status. Results apply only to children with cystic fibrosis. We excluded adults with cystic fibrosis from the present study, and we included no patients with end-stage lung disease that was not due to cystic fibrosis.

† The calculation of the robust standard error for each coefficient uses an approximate jackknife estimate of the variance.

**New Table 2. Hazard Factors for Covariates Affecting Survival before and after Lung Transplantation.\***

Variable	No. of Patients	Hazard Factor	Coefficient	Robust Standard Error†	P Value
<b>All patients</b>	514				
<i>Burkholderia cepacia</i> infection		1.43	0.36	0.23	0.12
<b>Patients before transplantation</b>	514				
Age (per yr)		0.97	-0.03	0.03	0.26
Diabetes		1.93	0.66	0.26	0.01
<i>Staphylococcus aureus</i> infection		0.69	-0.38	0.19	0.05
<b>Patients after transplantation</b>	248				
Age (per yr)		1.13	0.12	0.03	<0.001
Diabetes		0.73	-0.31	0.42	0.46
<i>S. aureus</i> infection		1.51	0.41	0.20	0.04

\* Red type indicates values that have been changed. Hazard factors for covariates were used to calculate the proportional hazard for death associated with lung transplantation. Because the effects of age, diabetes, and *S. aureus* infection depend on transplantation status, a single hazard factor for lung transplantation that applies to every patient cannot be calculated. However, a hazard factor for lung transplantation can be calculated with the use of the covariate values for each patient with the following formula:

$$HF = \frac{e^{0.119Age - 0.312d + 0.410s - 1.728}}{e^{-0.0323Age + 0.657d - 0.376s}}$$

In this equation, HF denotes the estimated hazard factor for death after lung transplantation and is derived by dividing the hazard factor for death after transplantation (the top term in the fraction) by the hazard factor before transplantation (the bottom term in the fraction). Because of the absence of interactions with transplantation, terms for *B. cepacia* infection cancel out. In the equation, age is the age of the patient at the time of the last clinic visit before placement on the waiting list for transplantation, d equals 1 for patients with diabetes and 0 otherwise, and s equals 1 for patients with *S. aureus* infection and 0 otherwise. The final term in the numerator reflects the baseline hazard associated with post-transplantation status. Results apply only to children with cystic fibrosis. We excluded adults with cystic fibrosis from the present study, and we included no patients with end-stage lung disease that was not due to cystic fibrosis.

† The calculation of the robust standard error for each coefficient uses an approximate jackknife estimate of the variance.

tients,” should have read, “*Burkholderia cepacia* infection did not modify the effect of transplantation, but it has previously been associated with decreased survival for affected patients<sup>4,5</sup> and is associated with a trend toward decreased survival in this population.”

The second and third sentences in “Model Interpretation” (page 2147), which read, “Calculation of transplantation hazard factors according to age, diabetes status, and *S. aureus* infection status at the time of placement on the waiting list for each of the 514 children in the study showed hazard factors in four categories: significant estimated benefit (5 patients), significant risk of harm (315 patients), insignificant benefit (76 patients), and insignificant risk of harm (118 patients) (Fig. 2A). The distribution of estimated effects was similar for the 248 patients who underwent transplantation: 1 patient for whom transplantation was estimated to be beneficial, 162 for whom it was estimated to be harmful, and 85 for whom benefit was indeterminate (Fig. 2B),” should have read, “Calculation of transplantation hazard factors according to age, diabetes status, and *S. aureus* infection status at the time of placement on the waiting list for each of the 514 children in the study showed hazard factors in four categories: significant estimated benefit (5 patients), significant risk of harm (283 patients), insignificant benefit (102 patients), and insignificant risk of harm (124 patients) (Fig. 2A). The distribution of estimated effects was similar for the 248 patients who underwent transplantation: 1

patient for whom transplantation was estimated to be beneficial, 145 for whom it was estimated to be harmful, and 102 for whom benefit was indeterminate (Fig. 2B).”

Table 2 (page 2147) should be amended as shown. Values that have been changed are shown in red.

In the Discussion section (page 2148), the second sentence, which read, “Although the majority of patients (315) were at significant risk for harm, for 194 patients, the procedure was not clearly harmful or beneficial,” should have read, “Although the majority of patients (283) were at significant risk for harm, for 226 patients, the procedure was not clearly harmful or beneficial.” The last sentence of the fifth paragraph, which read, “Of the 15 children with both *S. aureus* infection and diabetes, none had a significant benefit from transplantation, but 2 had a significant risk of harm,” should have read, “Of the 15 children with both *S. aureus* infection and diabetes, none had a significant benefit from transplantation.” The first sentence of the sixth paragraph, which read, “Among 318 children with neither *S. aureus* infection nor diabetes, 192 were at risk for decreased survival, 3 appeared to have had a significant survival benefit, and the remainder had an uncertain effect of lung transplantation,” should have read, “Among 318 children with neither *S. aureus* infection nor diabetes, 165 were at risk for decreased survival, 3 appeared to have had a significant survival benefit, and the remainder had an uncertain effect of lung transplantation.”