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Title:

PRE-TRANSPLANT FACTORS ASSOCIATED WITH MORTALITY AFTER LUNG TRANSPLANTATION IN CYSTIC FIBROSIS: A SYSTEMATIC REVIEW AND META-ANALYSIS

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What was your research question?

To identify which factors that are present before transplantation may increase the risk of death after lung transplantation in people with cystic fibrosis.

Why is this important?

During listing for lung transplantation, it is very important to identify those individuals who are at increased risk of death. Knowing which factors are associated with a higher risk of death, allows clinicians to plan how to remove problems where possible, to optimize follow-up, and also helps informed decision making.

What did you do?

We searched the literature extensively and identified all articles having information about cystic fibrosis, lung transplantation and risk factors for death after lung transplantation. We recorded all the factors which were described and focused on those which were studied the

most (in at least two different populations). In many cases, we contacted the authors of the articles to obtain unpublished information. We then performed a meta-analysis which is a statistical analysis to combine results from different studies.

What did you find?

We identified a large number of factors studied in the literature but there was only sufficient information for a meta-analysis of 10 different factors. These were infection with *Burkholderia cepacia* complex (a difficult-to-treat group of bacteria), *Pseudomonas aeruginosa*, patient age, gender, pulmonary function, pulmonary hypertension, body mass index, pancreatic insufficiency, diabetes and year of transplantation. Among those factors only infection with *Burkholderia cepacia* complex was consistently associated with a higher risk of death after lung transplantation. The risk of death was lower when transplantation was done in recent years reflecting the progress made in the areas of lung transplantation and cystic fibrosis care.

What does this mean and reasons for caution?

These results show that risk factors of death observed in other diseases may not necessarily also apply in cystic fibrosis. Some factors currently considered may not be helpful enough to identify those individuals with cystic fibrosis at an increased risk of death. Interpretation of the literature has many limitations and further research is needed on this subject.

What's next?

Future research should focus on more detailed information and new factors (e.g. whether diabetes is well controlled, malnutrition measures other than the body mass index, specific bacteria within the family of *Burkholderia cepacia* complex, psychosocial factors etc). A better understanding of these aspects may help to further improve lung transplant outcomes.

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