Home care equivalent to hospital care for some patients with cystic fibrosis

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Patients with cystic fibrosis (CF) recover from exacerbations equally well if they are treated at home or in a hospital, according to researchers from Johns Hopkins University. Furthermore, longer treatment with antibiotics does not appear to offer any additional benefit over shorter courses.

The study was published online ahead of the print edition of the American Thoracic Society's American Journal of Respiratory and Critical Care Medicine.

"We undertook this research owing to the lack of clinical information of best practices in treating CF exacerbations available to physicians," said J. Michael Collaco, M.D., assistant professor at Johns Hopkins.

In 2008 patients with CF had an average lifespan of only 37.4 years, and most died of the progressive pulmonary obstruction associated with the disease. The progression of the disease may be hastened by recurrent exacerbations.

"Traditional management includes aggressive airway clearance and antibiotics, the latter frequently administered intravenously, but despite effective symptomatic therapy, many patients may never completely recover their baseline lung function. Thus, it is crucial to determine the most effective means of therapy delivery for CF respiratory exacerbations," said Dr. Collaco. "Unfortunately, due to the difficulty of performing randomized controlled trials, existing evidence is insufficient

for many treatment issues, including the best site for delivery of care and the optimal duration of therapy."

Outpatient intravenous antibiotic therapy has gained widespread acceptance because of its advantages over hospitalization including: fewer absences from school or work, less disruption of family life, decreased costs per treatment course, and high patient satisfaction. However, long-term costs may not be reduced in the outpatient setting if it precipitates the need for longer and more frequent courses of antibiotics, and quality of life may not always be better.

Dr. Collaco and colleagues from Johns Hopkins University used data from 1535 individuals in 755 families from the U.S. Cystic Fibrosis Twin-Sibling Study, a large, multi-center study directed by Garry Cutting, M.D., professor of genetics at Johns Hopkins. This analysis of the Twin-Sibling Study data compared levels of baseline lung function (forced expiratory volume in one second, or FEV1) to lung function at the end of treatment and over the year after treatment.

Dr. Collaco and colleagues found that exacerbations were followed by long-term declines in lung function regardless of whether antibiotics were administered in the hospital or at home, and no difference in intervals between courses of antibiotics was observed between hospital and home.

"This research indicates that intravenous antibiotic therapy for CF respiratory exacerbations administered in the hospital and in the home may be equivalent in terms of long-term FEV1 change and interval between courses of antibiotics," said Dr. Collaco. "Furthermore, we found that, based on improvement of FEV1, optimal duration of therapy may be seven to 10 days, as opposed to between 10 and 21 days, as is seen in current practice."

Patients who had a greater decline in lung function prior to starting therapy experienced steeper long-term declines following that course of therapy, indicating that more severe exacerbations have long-lasting effects, regardless of short-term treatment success. "This finding implies that patients with drastic drops in lung function with an exacerbation should be monitored more closely following treatment, for even with recovery of lung function, they remain at higher risk for greater long-term decline," said Dr. Collaco.

Dr. Collaco acknowledged that subjects participating in the Twin-Sibling Study may be more motivated than the general CF population, and thus may have increased compliance with antibiotics and chest physiotherapy when treated at home. These subjects are also members of families where more than one sibling has CF, thus these families may be more adept with home care, which could have biased the outcome toward the benefit of home therapy.

"Ultimately," he said, "given the decline in baseline FEV1 after an exacerbation, preventing exacerbations may be more important than the approach taken to treat the exacerbation. Taken together, our findings underscore the CF community's need for determining an optimal approach to the treatment of pulmonary exacerbations. Large prospective studies are needed to answer these essential questions for CF respiratory management."

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