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Introduction

Patrick A. Flume*

Departments of Medicine and Pediatrics, Medical University of South Carolina, Charleston, SC, USA

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A cardinal manifestation of cystic fibrosis (CF) lung disease is chronic infection. It is believed that this chronic infection contributes significantly to the progressive loss of lung function and eventual respiratory failure, resulting in premature death. Antibiotics are a common part of the treatment of CF lung disease, and it can be argued that the increased use of antibiotics over time has played a major role in the improved health and survival of patients with CF.

Antibiotics are commonly used to treat exacerbations of CF lung disease, but it is becoming increasingly clear that exacerbations are associated with worse lung disease, and recovery of lost lung function associated with exacerbations may not be achievable. Therefore, chronic use of antibiotics to suppress lung infection has become common practice and is recommended in CF treatment guidelines.

Aerosolization is the most common method of chronic treatment with antibiotics. Aerosol antibiotics have been used for many years, and we now have formulations that have been approved for use in patients with CF. The treatment strategy used to develop these inhaled antibiotics is one of intermittent therapy; i.e., month on–month off. This strategy was chosen for the study of aerosolized antibiotics, taking into account what was known at the time about efficacy and toxicity, as well as other potential perceived adverse events such as selection of resistant pathogens.

Since the approval of aerosol antibiotics using the regimen of intermittent therapy, we have come to challenge this strategy and ask whether it might be preferable to consider continuous treatment with antibiotics. Continuous therapy is not novel; similar treatment strategies have been reported in Europe for some time, and many CF clinicians have adopted this strategy when their patients do not thrive on an intermittent treatment regimen.

This supplement provides a historical perspective on the development of aerosol antibiotics and the treatment strategies used in clinical trials. We then challenge this strategy and offer compelling evidence to support continuous treatment, but we must address whether this is best accomplished using one drug or a rotation of antibiotics. If we were to compare such strategies, we must have measurable clinical outcomes, and such study paradigms are presented here.

Finally, we accept that aerosolization of antibiotics adds treatment burden, and patients may not be fully adherent to this strategy. Methods to improve adherence, either by technological advances or by behavioral modification, are also addressed here.

We hope readers will appreciate how we have come to the current treatment paradigms using aerosolized antibiotics and assess whether this strategy is accomplishing our goals for our patients. If the answer is no, then we hope we have addressed opportunities to improve on these outcomes.

Conflict of interest statement

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* Patrick A. Flume, MD, Medical University of South Carolina, 96 Jonathan Lucas Street, 812-CSB, Charleston, SC 29425, USA. Tel.: +1 843 792 9219.
E-mail: flumepa@musc.edu (P.A. Flume).