Table 1. Summary of Case Series to Date

Patient	Target Lobe	Chartis	StratX Inspiratory Volume (ml)	Drain Removal	Fit for Discharge
1	LLL	No C/V	1,935	Day 6 OPD	Day 1
2	LUL	No C/V	2,199	Day 6 OPD	Day 1
3	LLL	No C/V	1,203	Day 6 I/P	Day 10*
4	LLL	No C/V	2,059	Day 2 I/P	Day 1
5	RUL	No C/V	1,884	Day 7 OPD	Day 1
6	LUL	No C/V	1,963	Day 7 OPD	Day 1
7	LUL	No C/V	1,955	Day 8 OPD	Day 1
8	LUL	No C/V	1,640	Day 8 OPD	Day 1

Definition of abbreviations: C/V = collateral ventilation; I/P = inpatient; LLL = left lower lobe; LUL = left upper lobe; OPD = outpatient department; RUL = right upper lobe.

*Right heart dysfunction/lower respiratory tract infection.

in place. The patient is reviewed in the outpatient clinic 1 week after EBV placement. The drain is then removed if the patient has no evidence of an air leak on clinical examination or pneumothorax radiographically. To date, we have a case series of eight patients with no adverse events (Table 1). This new practice is protective for patients with EBVs given the potential mortality risk with a pneumothorax, and also enables an earlier discharge date than the currently advised minimum of 3 days. We believe that this additional measure may become standard practice from a patient safety perspective to reduce the incidence of clinically significant pneumothoraces with EBV placement and reduce the length of inpatient stays, with associated cost savings. We would recommend wider adoption. ■

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Reply to Fitzmaurice *et al.*

From the Authors:

We appreciate Fitzmaurice and colleagues's acknowledgment of the excellent design, execution, and findings of the LIBERATE (Lung Function Improvement after Bronchoscopic Lung Volume Reduction with Pulmonx Endobronchial Valves Used in Treatment of Emphysema) study, which showed very meaningful benefits of Zephyr valves in patients with severe emphysema (1). Successful occlusion and reduction of target lobar volume allows healthier tissue to expand and better function, and these volume shifts can lead to pneumothorax in some patients. There are various ways to address this reality. Fitzmaurice and colleagues report their limited single-center experience in placing prophylactic chest tubes in all eight patients they treated with Zephyr valves for advanced emphysema. Although 34.4% of the 128 patients treated with Zephyr valves in LIBERATE developed a pneumothorax, not all patients required a chest tube; 17% of those who developed a pneumothorax did not require chest tube placement (1). Subjecting all patients who undergo Zephyr valve placement to chest tube placement may not be advisable, because chest tube placement is not without risks of morbidity and mortality. Chest tube placement has been reported to have early and late complication rates of 3% and 8%, respectively, with complications including pleural and chest wall bleeding, infection, patient discomfort, perforation of major intrathoracic organs, and unintentional intraparenchymal lung placement (2). Additionally, in patients with chronic obstructive pulmonary disease, errant anterior mediastinal placement in a hyperinflated chest has been reported to cause contralateral pneumothorax (3). We have identified and reported patients who are most likely to present with significant challenges should they experience a pneumothorax—specifically, patients in whom the most diseased lobe is not treated and the nontreated contralateral lung destruction score is >60% (1). It may be most appropriate to consider prophylactic placement of a chest tube in these “high-risk” patients, as the benefit-to-risk ratio would be more attractive versus placing one in every patient. Maximizing the benefit-to-risk profile for Zephyr valve treatment begins with proper patient selection, that is, those with little to no collateral ventilation (determined via StratX quantitative computed tomography and/or Chartis), and physician assessment for post-procedure management ranging from prophylactic chest tube placement versus the need for closer observation and duration of hospital stay. Future work and investigation as illustrated by Fitzmaurice and colleagues promise to improve the safety profile and patient benefit of this procedure. ■

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Use of Masks in Patients with Cystic Fibrosis

To the Editor:

We read with great interest the study by Wood and colleagues (1), wherein the authors described the relative utility of surgical and N95 masks in reducing aerosols containing *Pseudomonas aeruginosa* from 25 participants with cystic fibrosis (CF). The study used methodology previously described by this study team that aims to capture viable microorganisms in droplet nuclei at specific distances (2). Thus, the data in this study provide CF care teams with important, clinically meaningful information that can be used in healthcare settings. It is reassuring that commercially available surgical masks appear to reduce aerosolization of viable *P. aeruginosa* during vigorous coughing. However, we provide the following comments.

First, as pointed out in the accompanying editorial, the cough maneuvers were performed under tightly controlled conditions that likely do not reflect what happens during typical office visits. Patients rarely execute maximum-effort coughs in the clinic, especially in public areas. The volume of air in a typical exam room is much larger than that in the chamber used in the study to collect aerosols. Room

volume and standard air exchange rates serve to dilute the density of expelled aerosols over time, which likely explains why the detection rate in our study (which was conducted in clinic exam rooms with 303 CF participants randomly assigned to wear or not wear surgical masks) (3) was lower than that reported by Wood and colleagues.

Second, we found that the most likely time for infected aerosols to be generated during an office visit is during performance of spirometry, a time when masks cannot be worn and patients are often coughing. This is important because many clinics now use mobile spirometers that are used in exam rooms. We found that 30 minutes after performance of spirometry, contamination by patient-derived pathogens was extremely low. This suggests that larger droplets rather than droplet nuclei dominated the aerosols produced by patients with CF during outpatient encounters, as the former fall to surfaces more rapidly than the latter.

Third, typical office visits for patients with CF, particularly those that involve a full multidisciplinary team, are lengthy, often lasting more than an hour. As pointed out by Wood and colleagues, patients report being more uncomfortable while wearing a mask. In our study we noted frequent touching and removal of masks during office visits. Surgical masks may also lose protective effectiveness over time, becoming “wicks” for contaminated droplets as the fabric becomes damp (4).

Finally, we cannot overstate how important it is to have effective face-to-face interactions with our patients during clinic visits. Masks are not only uncomfortable but also obscure facial expressions that represent nonverbal communications and can be the primary clue to the patient’s emotional state.

As the authors suggest based on their findings, it is rational to use masks in waiting rooms and during times that inpatients may be outside of their hospital room; mask use can protect other patients and the mask wearer as well. Their conclusions are in agreement with the recommendations contained in the most recent CF infection prevention and control guidelines (5). However, for the reasons outlined above, we do not believe that there is ample evidence to recommend that CF patients don masks in examination rooms, at least with respect to those harboring *P. aeruginosa*. ■

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