Last Word on Viewpoint: Using the same cut-off for sulfur hexafluoride and nitrogen multiple-breath washout may not be appropriate

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TO THE EDITOR: We agree with all important points of the four commentaries (see Ref. 6): a) Both SF6- and N2-multiple-breath washout (MBW) seem to be useful in detecting ventilation inhomogeneity in patients with cystic fibrosis (CF) and primary ciliary dyskinesia (PCD). b) There are substantial differences between those two gases, both with regards to physiological effects and gas properties. c) In contrast to N2-MBW, SF6-MBW requires a wash-in phase before the wash-out with possible consequences on results. d) Subtracting 1% tissue nitrogen contribution is clearly an over-simplification. e) Many other aspects apart from the cut-off influence comparability between gases.

In this regard we like to point out that the last point (that aspects other than the cut-off also influence comparability between devices and gases) has been emphasized before by us in the Viewpoint and others (2). Most of these other aspects are independent of the underlying device, such as flow-gas misalignment or software algorithms. Recent work nicely illustrates that those inaccuracies even occur if SF6 as tracer gas and different MBW setups are used (1, 3). We therefore agree that those points urgently need to be clarified by any manufacturer of commercial MBW devices (5) or operators of in-house customized MBW setups (4).

Taken together, in our Viewpoint we aimed only to show in a proof-of-principle way that in addition to the other factors also the cut-off chosen can influence comparability between N2- and SF6-MBW measurements. We do not recommend accounting for tissue nitrogen by applying the simplified 1% correction. Our aim was to alert the scientific community and the manufacturers about this aspect to find acceptable solutions as soon as possible.

DISCLOSURES
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AUTHOR CONTRIBUTIONS

REFERENCES