From the Authors:

The history of spirometry standards over the past 45 years has included recommendations based on expert opinion when peer-reviewed evidence was not available. For the 2019 update of the American Thoracic Society/European Respiratory Society (ATS/ERS) spirometry standards (1), the task force did an extensive literature review searching for studies that examined the effects of recommendations in past technical standards and either validated or invalidated such recommendations.

The 2005 ATS/ERS spirometry standards (2) recommended that if a filter was used with a spirometer, it also must be used when the spirometer was tested. No published evidence to the contrary was found up to 2019, and the recommendation was continued in the 2019 standards. Haynes and colleagues found that including the filter in calibration verifications produced differences up to ±0.7%, which they considered to be not clinically meaningful.

The 2005 standards (2) also recommended that the calibration syringe should “maintain the same temperature and humidity of the testing site,” and this recommendation was continued in the 2019 standards. Haynes and colleagues reported that a 1-minute “bear hug” of the calibration syringe produced an increase in measured volume of 0.7% at low flows, which they believed does not appear to have a significant impact.

Although small amounts of error may not be clinically significant on their own, it is the accumulation of errors from all sources that needs to be considered and kept as low as reasonably and realistically possible. This is a prime role in setting technical standards.

Haynes and colleagues have shown that the use of a filter for spirometer calibration and syringe temperature changes can each have an effect on accuracy of up to 0.7%. Thus, if both errors are in the same direction, the cumulative effect of these two factors is up to 1.4%. Considering that the accuracy of the calibration syringe itself is ±0.5% and for the spirometer is ±2.5%, the additional combined degree of error from these two factors could result in recalibrations and calibration verifications having an error up to 4.4%—an increase of 47% from the recommended level in the 2019 spirometry standards.

Are these steps to improve accuracy in spirometry reasonable? The use of a filter in recalibration and calibration verification is generally not onerous, and for many spirometers, the filter is used as the adapter to connect the calibration syringe to the spirometer. However, some filters with newer oval and/or flared mouthpieces may not be as easy to connect to the calibration syringe. In addition, the statement regarding body contact with the syringe was not a “directive” of the 2019 standards but rather a caution to the operator to be aware of this potential source of error and to avoid extensive or prolonged bodily contact with the calibration syringe.

We thank Haynes and colleagues for their diligence in reviewing the 2019 update of the ATS/ERS spirometry standards and for contributing evidence for future revisions of the spirometry standards.

Author disclosures are available with the text of this letter at www.atsjournals.org.

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Trials of Tuberculosis-Preventive Therapy in People with HIV Infection

To the Editor:

Stout and colleagues have developed an interesting and potentially useful mathematical model addressing some important issues in noninferiority trials of tuberculosis (TB)-preventive therapy (1).

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The authors are the co-chairs of the task force that developed the official American Thoracic Society Document entitled “Standardization of Spirometry 2019 Update. An Official American Thoracic Society and European Respiratory Society Technical Statement.”

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