ticed for days with a laryngeal mirror until he was able to tolerate the examination without a topical anesthetic. Indeed, using a lightbulb, head mirror, wall mirror and laryngeal mirror, he learned how to visualize his own larynx. When the next opportunity arose, Mr. Brubaker again volunteered to sit for the photography session, this time without a topical anesthetic. The result was the photograph which appears on page 500, volume 86 of Chest. I would encourage interested readers to see the full color reproduction in the first edition of the Atlas.^[1]

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REFERENCES

To the Editor:

We deeply regret having inadvertently sent this photograph in for publication with our article on upper airway obstruction. The intent of the picture was simply to demonstrate the location of obstruction in a visible way as it was difficult to describe verbally. We appreciate Dr. Holinger's history behind this photograph, telling of the extreme care, patience and expertise that was required to produce such excellent work.

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The Determination of Static Lung Volumes

To the Editor:

There are several statements in the "Static lung volumes" report (Chest 1984; 86:471-74) and recommendations which may be in error.

"Because of increased airway resistance, the transmission of pressure changes from the alveoli to the mouth may be incomplete and mouth pressure changes may underestimate alveolar pressure changes during the panting maneuver against the closed airway" (p. 472, 1st paragraph). It is very unlikely that airway resistance can effect the "transmission of pressure" in the absence of airflow. The flow associated with compression of the gas is too small to create a meaningful pressure drop.

"The variable pressure plethysmograph is fitted with a pneumotachograph . . . ." (p. 472, 2nd paragraph). I suspect this is a typographical error—should be either constant pressure or variable volume plethysmograph.

The paragraph starting "The convention of setting normal limits of all lung volumes . . . " (p. 473, last paragraph, 1st column) does not clearly compare the three conventional alternative choices. The three choices are: 1) reference value = 20 percent of the reference value, 2) reference value - x percent of the reference value (x = 95 percent confidence interval = 1.96 x coefficient of variation), or 3) reference value - y (y = 95 percent confidence interval = 1.96 x SEE).

I agree that choice 1 is arbitrary and clearly not the best. Methods 2 and 3 are based on setting limits of normal such that there should be only a 5 percent false positive rate. This is reasonable and usual, although the clinical significance of the 5 percent versus any other false positive rate is unknown. The difference between 2 and 3 is that in 2, a fixed percentage of the reference is subtracted and in 3, a fixed amount is subtracted from the reference. The Recommendations prefer method 3 but states as the reason contrasts between methods 3 and 1. I believe method 2 is more convenient than 3, and that neither is absolutely more correct than the other. Moreover, the clinical interpretative difference between one or the other is insignificant. Consider, for example, that the difference in the limit of normal between methods 2 and 3 is 300 ml in an extreme case (190cm tall male, 40 y/o). In order to assess the importance of this difference, we can compare the 300 ml to potential sources of uncertainty.

A) For clinical assessment of an individual subject, the 95 percent interval for reproducibility on the same subject tested repeatedly on the same day (CV is 7.2 percent) is 581 ml.
B) The difference in reference value between Boren et al^2 and Goldman et al^3 1.25 L.
C) Although the Recommendations suggest a two tailed test, it is not unreasonable to ask separately what is the likelihood that this subject has increased or, independently, reduced FRC, in which case a one sided test is more meaningful. The difference in limits between these two approaches is 530 ml.

Thus the difference in limits determined from a percentage versus constant subtraction algorithm are comparable to other potential discrepancies. In view of the fact that experimental verification of either of the latter 2 choices is not certain, convenience should be just as a good reason as any for choosing one method of determining limits over the other as long as one recognizes the implications of each choice.

"The plethysmograph and the associated transducers, amplifiers, and recording equipment are expensive, and repairs are costly." (p. 472, 3rd paragraph, 2nd column) It is my personal opinion that commercial plethysmographs seem to have been overdeveloped, making them unnecessarily complicated and costly. The fundamental operation as described originally by DuBois, et al^4 has not been substantially improved. The plethysmograph system is inherently simpler than the alternate techniques. We routinely use the plethysmograph method in our laboratory. We find it is all effective, reducing routine measurement time from 30 minutes with alternate techniques to less than 5 minutes. There is greater patient and technician acceptance of this method. The superiority of the method is amplified with measurements on obstructed patients.

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REFERENCES