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FeNO Variability When Using Different Analyzers at the Joint ATS/ERS Guideline Cutoff

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Dear Editor,

We refer to the article by Korn et al. [1]. With the increasing importance of FeNO measurement in supporting both the diagnosis and management of asthma, there is a critical question regarding the potential interchangeability of different devices. As is evident in the Passing Bablok regression analysis (Figure 2) in Korn et al., the Bosch Vivatmo (BV) reads higher than the other two tested devices, and the authors comment to this effect in the discussion: “In addition, in patients with higher FeNO values (>70 ppb) the BV device seems to result in higher FeNO readings than both the Ecomedics (EC) and the NIOX VERO (CN) devices.”

The authors conclude that the tendency of the BV device to read high is not clinically relevant based on an evaluation of the agreement of FeNO results with the tested devices based on NICE criteria for a positive FeNO test (Tables 2 and 3) and state that the overall agreement between the devices is in the range of 92–96%.

We note that the joint ATS/ERS guideline recommends a cutoff of 50 ppb. Given the tendency of the BV device to read higher at higher FeNO values, we consider that it is important to also evaluate the overall agreement between the devices at this cutoff [2]. Inspection of the Passing Bablok graphs shown in Figure 2 enables the number of subjects with discrepant values at the 50 ppb cutoff to be determined. Of the 31 subjects where one device reads a FeNO value >50 ppb, 8 values are discrepant between the BV and EC devices representing 25.8% of readings. Of the 30 subjects where one device reads a FeNO value >50 ppb, 6 values are discrepant between the BV and CN devices representing 20% of readings.

A 20–25% discrepancy rate between the BV device and the EC/CN device as to whether the 50 ppb threshold has been crossed is

clinically relevant and could lead to different patient management decisions in a higher proportion of patients than indicated by the authors in their original analysis.

An independent study from Molino et al. [3] also undertook a comparative study of three FeNO devices. They concluded that FeNO devices are not interchangeable and that most of the disagreement was at higher FeNO values. Critically, the authors concluded that using the ATS/ERS categories comparing NIOX VERO and BV devices, there was only a 65% agreement in asthma patients. Given that both the Korn et al. and Molino et al. studies demonstrate that the BV reads higher at higher values, clinicians should carefully consider the applicability of the ERS/ATS thresholds to the device being used to monitor FeNO.

Disclosure Statement

The named authors are fulltime employees of Circassia who manufacture NIOX VERO, a FeNO measurement device. R.H. owns shares in Circassia Pharmaceuticals plc.

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Author Contributions

All authors contributed to the concept of the letter and data analysis. The first draft was written by R.H. and revised by C.B. The final version was approved by all authors.

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