

Anke Hüls<sup>1</sup>, Ursula Krämer<sup>1</sup>, Antje Schuster<sup>2</sup>, Monika Gappa<sup>3</sup>, Matthias Wisbauer<sup>2</sup>, Christine Müller-Brandes<sup>4</sup>, Tamara Schikowski<sup>1,5</sup>, Barbara Hoffmann<sup>1,6</sup>, Andrea von Berg<sup>3</sup> and Dietrich Berdel<sup>3</sup>

<sup>1</sup>IUF-Leibniz Research Institute for Environmental Medicine, Düsseldorf, Germany. <sup>2</sup>Heinrich-Heine University, University Children's Hospital, Düsseldorf, Germany. <sup>3</sup>Marien Hospital Wesel, Children's Hospital and Research Institute, Wesel, Germany. <sup>4</sup>Dept of Anaesthesiology and Intensive Care Medicine, Medical School of Hanover, Hanover, Germany. <sup>5</sup>Swiss Tropical and Public Health Institute, Basel, University of Basel, Basel, Switzerland. <sup>6</sup>Medical Faculty, Deanery of Medicine, Heinrich-Heine University of Düsseldorf, Düsseldorf, Germany.

Correspondence: Anke Hüls, IUF Leibniz Research Institute for Environmental Medicine, Auf'm Hennekamp 50, 40225 Düsseldorf, Germany. E-mail: Anke.Huels@IUF-Duesseldorf.de

Received: Sept 03 2015 | Accepted after revision: Nov 22 2015

Support statement: Funding for has been provided by GlaxoSmithKline GmbH & Co. KG, Munich, Germany; Aerocrine AB, Solna, Sweden; MSD Sharp & Dohme GmbH, Haar, Germany; AstraZeneca GmbH, Wedel, Germany; Novartis Pharma GmbH, Nuernberg, Germany; Astellas Pharma GmbH, Munich, Germany; Deutsche Atemwegsliga; Ndd Medizintechnik AG, Zürich, Switzerland. Funding information for this article has been deposited with FundRef.

Conflict of interest: None declared.

Acknowledgements: The authors would like to thank the children and their families for taking part in this study. The authors would also like to thank the following people for their technical assistance: Christina Beckmann, Julia Bienen, Cornelia Bisdorf, Irene Groß, Christina Müller, and Sandra Werth (Children's Hospital and Research Unit, Marien Hospital, Wesel, Germany); Heike Beermann and Marion Kliemt (Paediatric Pulmonology, Allergology and Neonatology, Hannover Medical School, Germany); Sabina Illi (University Childrens Hospital, LMU, Munich, Germany); Özgü Altin, Gisela Bartkowiak, Ursula Pfeiffer and Michaela Stempel (University Hospital, Heinrich-Heine University, Düsseldorf, Germany).

## References

- 1 Miller MR, Hankinson J, Brusasco V, *et al*. Standardisation of spirometry. *Eur Respir J* 2005; 26: 319–338.
- 2 Müller-Brandes C, Krämer U, Gappa M, *et al*. LUNOKID: Can numerical American Thoracic Society/European Respiratory Society quality criteria replace visual inspection of spirometry? *Eur Respir J* 2014; 43: 1347–1356.
- 3 Lum S, Bountziouka V, Sonnappa S, *et al*. How “healthy” should children be when selecting reference samples for spirometry? *Eur Respir J* 2015; 45: 1576–1581.
- 4 Hüls A, Krämer U, Gappa M, *et al*. Neue Spirometrische Referenzwerte für Kinder und Jugendliche in Deutschland unter Berücksichtigung der Größe und nichtlinearer Alterseffekte: tie LUNOKID-Studie [New spirometric reference values for children and adolescents in Germany considering height and non-linear age effects: the LUNOKID-Study]. *Pneumologie* 2014; 68: 393.
- 5 Berdel D, Beckmann C, von Berg A, *et al*. Erhebung von Lungenfunktionsnormalwerten (spirometrie) bei Kindern und Jugendlichen in Deutschland: die LUNOKID-Studie [Survey of lung function normal values (spirometry) in children and adolescents in Germany: the LUNOKID study]. *Atemw -Lungenkrkh* 2010; 395–404.
- 6 Quanjer PH, Stanojevic S, Cole TJ, *et al*. Multi-ethnic reference values for spirometry for the 3–95-yr age range: the global lung function 2012 equations. *Eur Respir J* 2012; 40: 1324–1343.
- 7 Hall GL, Thompson BR, Stanojevic S, *et al*. The Global Lung Initiative 2012 reference values reflect contemporary Australasian spirometry. *Respirology* 2012; 17: 1150–1151.
- 8 Thompson BR, Stanojevic S, Abramson MJ, *et al*. The all-age spirometry reference ranges reflect contemporary Australasian spirometry. *Respirology* 2011; 16: 912–917.

Eur Respir J 2016; 47: 1290–1292 | DOI: 10.1183/13993003.01465-2015 | Copyright ©ERS 2016

### From the authors:

We wish to thank A. Hüls and colleagues for their interest in our recent paper [1], and the opportunity to clarify the rationale behind the conclusions we reached, which differ from their own. Despite the title of their letter, it is important to emphasise that we did not recommend inclusion of symptomatic children, those with a prior history of adverse exposures, or those with a current respiratory illness such as asthma, when establishing spirometric reference equations, where international standards regarding definition of health may need to be adhered to. Indeed we state clearly in the discussion that under such circumstances the target sample size may have to be increased by at least 30% to account for such exclusions, a proportion not dissimilar to that reported by Hüls *et al*. [2] What was demonstrated by our results is that when carrying out epidemiological studies such as the SLIC study (Size and Lung function In Children)[3], the primary aim of which was to ascertain the extent to which ethnic differences in lung function can be attributed to differences in physique and socioeconomic factors, inclusion criteria can be broader without biasing results. This not only renders the results more generalisable but has considerable practical and economic benefits.

Although the authors compared their data from the LUNOKID study (Lung function Normal values for Kids in Germany), with our results, there are differences regarding the definition of “current asthma”



between the two studies. Thus, whereas “current asthma” was apparently categorised according to current medication in the LUNOKID study, within the SLIC study “current asthma” was defined as those with “either doctor diagnosis or asthma medication in the past 12 months, with or without current symptoms/wheeze”, ensuring that any child with a prior history of asthma was only included if asymptomatic and without treatment for at least 12 months. Despite these differences in asthma classification, it is reassuring to know that “no relevant mean differences were found for the other subgroups or for the total study population when all subgroups were included” within the LUNOKID study, thereby confirming our findings from the SLIC study. Both studies also agree on the higher failure rate due to technically unsatisfactory data when including children with respiratory symptoms. However, while the LUNOKID authors argue that due to potential difficulties in separating upper and lower respiratory tract infections, “strict criteria to define a healthy population should be adhered to”, our experience suggests that any naïve child (*i.e.* one unfamiliar with spirometric assessments) with significant respiratory symptoms is likely to be self-excluded provided strict quality control is applied, and that exclusion of a high proportion of the population on “health grounds” could result in the over estimation of abnormalities and potential mismanagement of lung disease.

In conclusion, while we completely agree that inclusion and exclusion criteria applied to subjects must vary according to the underlying question and study design, we would like to confirm that we excluded results from any children with current asthma or who were on asthma medication. For the purposes of data collection in population-based studies of lung function, such as the SLIC study, we stand by our conclusion that with exception of clear cut factors, such as current and chronic respiratory disease, paediatric reference samples for spirometry can be relatively inclusive and hence more generalisable to the general population.



@ERSpublications

**Excluding current/chronic lung disease, population samples for children’s lung function can be relatively inclusive** <http://ow.ly/X0enM>

**Sooky Lum and Janet Stocks**

Respiratory, Critical Care and Anaesthesia section (Portex Unit), UCL, Institute of Child Health, London, UK.

Correspondence: Sooky Lum, Respiratory, Critical Care and Anaesthesia section (Portex Unit), UCL, Institute of Child Health, 30 Guilford Street, London, WC1N 1EH, UK. E-mail: s.lum@ucl.ac.uk

Received: Dec 03 2015 | Accepted after revision: Dec 16 2015

Conflict of interest: None declared.

## References

- 1 Lum S, Bountziouka V, Sonnappa S, *et al.* How “healthy” should children be when selecting reference samples for spirometry? *Eur Respir J* 2015; 45: 1576–1581.
- 2 Hüls A, Krämer U, Gappa M, *et al.* Neue Spirometrische Referenzwerte für Kinder und Jugendliche in Deutschland unter Berücksichtigung der Größe und nichtlinearer Alterseffekte: tie LUNOKID-Studie [New spirometric reference values for children and adolescents in Germany considering height and non-linear age effects: the LUNOKID-Study]. *Pneumologie* 2014; 68: 393.
- 3 Lum S, Bountziouka V, Sonnappa S, *et al.* Lung function in children in relation to ethnicity, physique and socioeconomic factors. *Eur Respir J* 2015; 46: 1662–1671.

*Eur Respir J* 2016; 47: 1292–1293 | DOI: 10.1183/13993003.02028-2015 | Copyright ©ERS 2016



# Interstitial pneumonia with autoimmune features: the new consensus-based definition for this cohort of patients should be broadened

*To the Editor:*

We appreciate the research statement recently published by FISCHER *et al.* [1] proposing new terminology: “interstitial pneumonia with autoimmune features” (IPAF) to characterise the heterogeneous group of