



Global LUNGS INITIATIVE

ERS Task Force (TF-2009-03) to establish improved
Lung Function Reference Values

Chairs: J Stocks, X. Baur, G. Hall, B. Culver

www.lungfunction.org

Global Lungs Initiative Summary of the Interim Results Meeting: Monday 16th May 2011 ATS Denver USA

Despite severe clashes of timetables and the venue being at some distance from the main conference centre, this meeting was enthusiastically supported, with 38 members of the GLI network attending, including numerous representatives from the main PFT manufacturers.

The steering group was represented by (Left to right below) Paul Enright, Janet Stocks, Graham Hall, Sanja Stanojevic, John Hankinson and Bruce Culver. Full details can be viewed by downloading a copy of the slide presentations from www.lungfunction.org



After initial welcomes and introductions, **Janet Stocks** presented an overview of progress to date, including current membership, recent publications, steps taken to facilitate implementation of reference equations based on LMS modelling (look up tables etc) in commercially available equipment and the extent to which the Stanojevic 'all-age' equations had been incorporated by the manufacturers as of May 2011. Although the Stanojevic equations are restricted to Caucasian populations, they are based on exactly the same format as now being used for the GLI equations. Consequently any manufacturer who has now implemented the Stanojevic equations will easily be able to upgrade to the GLI equations as soon as these have been

approved by the main respiratory societies and peer-reviewed for publication (which will hopefully be within the next 9 months).

A case study showing the potential dangers with respect to misdiagnosis when a subject transitions between paediatric to adult equations was presented. Worryingly most manufacturers 'stitch together' different equations in order to cover the entire age range, but users are not necessarily alerted when such switches occur, nor is the magnitude of error encountered fully appreciated. Widespread adoption of equations such as the Stanojevic 'all -age' or GLI equations will overcome this problem.

Sanja Stanojevic then provided an update on progress with the development of the GLI equations (Phase 1 of the ERS Task Force) (see handouts on www.lungfunction.org) Based on data from >95,000 healthy subjects, reference equations have been derived for healthy individuals from 3-95 years for white (Caucasians) , black (African Americans) and East Asians (China/Korea/Thailand). The 'Caucasian' group included healthy individuals from Europe, Australia, USA, Canada, Mexican Americans, Brazil, Chile, Mexico, Uruguay, Venezuela, Algeria and Tunisia. Differences in FEV₁ and FVC between different ethnic groups appear to be proportional to the Caucasian group, with minimal differences in FEV₁/FVC between groups. Insufficient data from the Indian sub-continent has currently precluded equations for this group, a deficit which we hope to rectify in the near future. Sanja also explained some of the myths regarding the use of GAMLSS and the steps taken to simplify implementation into commercial devices.

John Hankinson then presented a summary of the work he has undertaken for Phase 2 of the GLI Task force, the aim of which is to establish the extent to which quality of spirometry data may impinge on the mean and lower limit of normal for predicted values derived from reference equations. He elegantly demonstrated that

- 1) using computer grading to strictly apply the ATS/ERS-2005 end of test criteria will reject many tests judged acceptable by an experienced reviewer.
- 2) strict adherence to the ATS 2005 guidelines, especially with respect to achieving a forced expiratory time of at least 6 seconds and a plateau appears to have minimal effect on predicted values, but results in far fewer subjects being included in the study.

He also suggested that strict application of quality criteria may not improve the clinical interpretation and emphasised that ATS guidelines were establish to GUIDE investigators during data collection, rather than to exclude data post-hoc during analysis and that an experienced human eye was far superior to computerised over-reads which may be misleading.

Graham Hall discussed some of the future plans of the group to find a safe repository for the valuable database of spirometric values that has now been established and **Paul Enright** described plan to submit a further application to the ERS and ATS for a new but related Task Force to undertake a similar exercise for DLco measurements and invited those who would like to assist with this process or contribute data to contact him directly (LungGuy@aol.com).

The presentations were followed by general questions and informal discussions.

The next GLI meeting will be held at the ERS in Amsterdam, September 2011. Time and venue yet to be ascertained