growth charts for lung function

asthma UK

Recommendations for collection of sR_{aw} in children

Demographics: The following test details should be recorded whenever collecting normative data:

- Measured height (standing and sitting): Recorded to nearest 0.1cm
- Calculated age: Recorded as (date of test) – (date of birth), in years to 1 decimal place.
- Measured weight : Recorded to the nearest 0.1kg
- Sex: denoted as 1=male, 2 = female
- Gestational age: Recorded as completed weeks
- Birth weight: Recorded to nearest 0.1kg
- Ethnicity: Consensus required for definition

Equipment:

- Make, model and software version needs to be recorded.
  - A validation should be performed prior to upgrading software or equipment
- Use an appropriately sized mouthpiece and noseclip. *(a modified mask may also be used if that is current practice, though many centres now report equal success with a mouthpiece)*
- Always use a bacterial filter
  - Ensure calibrations are performed with filter *in situ*

Data Collection

- Ensure the child is sitting upright, with no leak between the lips and mouthpiece
- Cheek supported with child hands.
  - NB not strictly necessary if no occlusion manoeuvres are performed, but is good practice for when plethysmographic assessments include measures of FRC.
- Natural breathing pattern within the specified range of 30-45bpm, avoiding either shallow panting or hyperventilation.
  - NB More evidence is required regarding precise role of breathing frequency and flows on resultant values of sR_{aw}, which may be a major factor explaining inter-centre differences.
- Collect at least 3 sets of 'technically acceptable' data during regular breathing with no gross distortion

Quality Control:

- Use the automatic computer selected tangent.
- Use the sR_{aw} over-read sheet in the OLS to "grade" the quality of the measurement.

sR_{aw} Outcomes:

- Report sR_{tot} as the main outcome measure
  - sR_{eff} may be an equally useful measure and should be recorded at least until consensus is reached.
  - Breathing frequency, peak expiratory and inspiratory flow (PEF and PIF respectively) should be recorded as QC outcomes,
  - NB: Manufacturers need to facilitate automatic reporting of these parameters.
  - An automated method of measuring sR_{aw} over the central linear portion of the breath in a manner that, unlike $sR_{0.5}$, is independent of the child's age, by for example calculating sR_{aw} between zero flow and 50% PIF and/or PEF as has been reported in infants [19] would be a useful addition, but has yet to be implemented by manufacturers
- Report the Median of the median: Select the median (middle) trial of 3 technically acceptable sets of 5 or 10 breaths