

Is the Clinical Application of Specific Airway Resistance in Young Children Limited by inter-centre differences?

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Background

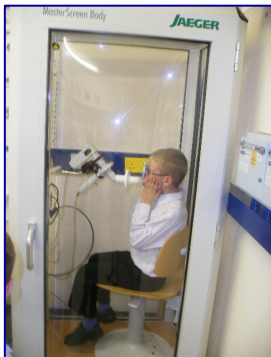
Plethysmographic Specific Airway Resistance (sRaw) is a feasible research method for discriminating lung disease in young children.^{1,2}

However, the lack of consensus in methodology and limited reference equations may limit its clinical usefulness.

Aims

1. To collate available reference data for sRaw and document any differences between the collaborating centres
2. To explore the impact of these differences
3. To ascertain if reference equations could be constructed from the collated data.

Methods



- The Asthma UK initiative collated sRaw data from healthy children aged 2-11 years
- A random selection of pressure-flow plots were assessed for quality
- Site visits elucidated methodological differences.



Results

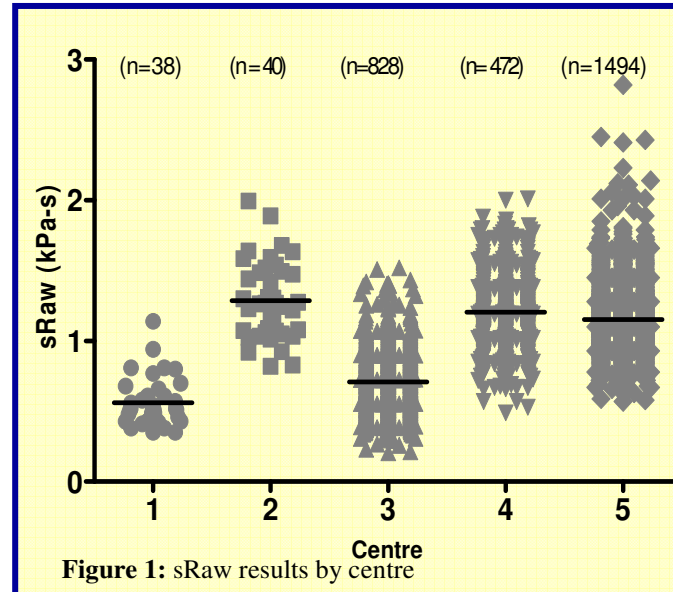


Figure 1: sRaw results by centre

- 5 centres contributed 2,872 sRaw measurements.
- **Significant inter-centre differences** were observed ($p < 0.0001$). The difference between the highest and the lowest centre was 0.74 kPa-s.
- Summarising within-subject data as mean or median had no significant impact on results
- sRaw was significantly higher when filters were used
- sRaw was significantly lower when calculated over the central linear portion of the curve after manual adjustment of the tangent.

Marked differences in methodology and analysis precluded pooling of these retrospective data to create reference ranges.

An **over-read sheet** and a **list of recommendations** were developed to facilitate more standardised data collection and analysis in future. This can be found at:

- Due to methodological differences, normative **sRaw data collected from a single centre may be misleading.**

Conclusion

➤ Given the potential clinical usefulness of sRaw, **methodological guidelines must be established**, and **prospective data collection** from healthy children is required to develop appropriate reference equations.

References

1. Aurora P, et al AJRCCM 2005;171:249-256.
2. Lowe L, et al AJRCCM 2005;171:231-237.