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Title: Evaluation of three categorical sputum colour charts: is less more?

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Body: Introduction: Sputum colour charts (SCC) are used in the follow-up of patients with bronchiectasis. The best known are the chart by Murray et al. (mSCC) with 3 categories and the one by Stockley et al. (sSCC) with 9 categories. (1,2) We compared these SCC with a new chart containing 17 categories (nSCC)(abstract n° 852384), comparing intra-rater reliability (IntraRR) and inter-rater reliability (InterRR). Methods: Twenty cystic fibrosis patients were asked to collect their morning sputum. All samples were scored 5 times in a random order by 2 blinded raters, scoring for the 3 SCC. IntraRR and InterRR was analyzed by calculating the kappa. Results: All 3 charts had significant IntraRR (all $p < 0.0001$). The highest IntraRR was seen for mSCC ($\kappa_{\text{rater1}} = 0.91$ and $\kappa_{\text{rater2}} = 0.78$). Similar IntraRR was seen for the other charts (sSCC $\kappa_{\text{rater1}} = 0.62$ and $\kappa_{\text{rater2}} = 0.63$; nSCC $\kappa_{\text{rater1}} = 0.72$ and $\kappa_{\text{rater2}} = 0.65$). The InterRR was high for the mSCC ($p < 0.0001$; $\kappa = 0.91$), lower but significant for the sSCC ($p = 0.037$; $\kappa = 0.59$) and not significant for the nSCC ($p = 0.15$; $\kappa = 0.26$). Plotting out number of categories and p-value, we estimate that the $p = 0.05$ threshold lies at ten categories.

Conclusion: Higher InterRR is seen when the SCC contains less categories. IntraRR reliability was independent of number of categories. SCC cannot contain more than 10 categories to remain reliable. 1 Murray MP et al. Eur Respir J 2009;34:361-4 2 Stockley RA et al. Thorax 2001;56:366-72.