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Title: Microbiological yield of oropharyngeal swab compared to induced sputum in children with cystic fibrosis (CF) < 5 years of age

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Body: Background: Oropharyngeal (OP) swab is a common sputum sampling technique in young children with CF. Sputum induction (IS) with hypertonic saline has not been investigated in this population. Objective: To compare the bacteriological yield of OP swabs and IS samples in children < 5 years of age with CF. Methods: paired OP swab and IS samples were collected in children < 5 years of age attending a CF clinic in Cape Town, South Africa. OP swabs were taken prior to sputum induction with 5% hypertonic saline. Results: 76 paired OP swab and IS samples from 90 sampling opportunities were obtained in 27 children (mean age 21 months; range 1-44 months). Culture results were concordant in 39 (51%) paired samples of which 27 were negative cultures. The culture yield from IS for all bacteria was significantly higher compared to OP swabs (47/76 (62%) vs. 28/90 (31 %); p<0.001). Staphylococcus aureus (OP swab 17/90 (18.9%); IS 28/76 (36.8%); p=0.015) and non-CF bacteria (OP swab 10/90 (11.1%); IS 23/76 (30.3%); p=0.003) were the commonest isolates. The sensitivity, specificity, PPV and NPV of an OP swab compared to IS for CF-pathogens was 55%, 95%, 89% and 74% respectively. Minor nose bleeds after nasopharyngeal suctioning occurred on 13 occasions. Conclusion: Sputum induction is safe and superior to an OP swab in young children with CF. The role of OP swabs during routine sputum sampling needs further investigation. Sponsorship: Astra Zeneca Respiratory Research Grant; SATS; National Research Foundation of Southern Africa.