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Title: Relationship between age and online nasal nitric oxide measured using different techniques in children with suspected primary ciliary dyskinesia

Dr. Nicole 8491 Beydon nicole.beydon@trs.aphp.fr MD [1], Prof. Arnaud 8492 Chambellan Arnaud.Chambellan@univ-nantes.fr MD [2], Dr. Véronique 8493 Nève v-neve@chru-lille.fr MD [3], Dr. Estelle 8515 Escudier estelle.escudier@psl.ap-hop-paris.fr MD [4], Prof. Alberti 8519 Corinne corinne.alberti@rdb.aphp.fr MD [5] and Dr. Muriel 8531 Le Bourgeois muriel.lebourgeois@nck.aphp.fr MD [6]. [1] Physiologie Respiratoire, APHP Hôpital Armand Trousseau - LRG, Paris, France ; [2] Physiologie Respiratoire, Institut Du Thorax, CHU, Nantes, France ; [3] Physiologie Respiratoire, Hôpital Jeanne De Flandre, Lille, France ; [4] Service De Génétique, Cytogénétique Et Embryologie Medicales, APHP Hôpital Armand Trousseau - LRG, Paris, France ; [5] Unité D'épidémiologie Clinique, APHP Hôpital Robert Debré, Paris, France and [6] Service De Pneumologie Et D'allergologie Infantile, APHP Hôpital Necker - Enfants Malades, Paris, France .

Body: Background Variable thresholds of nasal nitric oxide (nNO) are proposed to screen children for primary ciliary dyskinesia (PCD) without taking age into account. But very few young children have been studied in whom false positive were tests were found. Objectives 1) to study the relationship between age and nNO measured using apnea (AP) or expiration against resistance (ExRe), and the tidal breathing (VT) techniques in non PCD children. Methods Multicentre online nNO measurements study (chemiluminescence, Seres, France, Aerocrine, Sweden, flow sample $0.3L.min^{-1}$) in children with suspected PCD. Values recorded were the best value of AP or ExRe, and means of 5 maximal peaks, 10s during controlled regular VT, and last 30s during VT measurement. Results 79 children with complete diagnosis procedure (47 with PCD, age, median [range] 11.0 [3.2-17.8]y) were studied. In non PCD children, nNO measurement was correlated with age (AR or ExRe p=0.0002, $r^2 = 0.38$; 5 peaks p<0.03, $r^2 = 0.17$; 10s p<0.02, $r^2 = 0.22$) (Figure). nNO values according to techniques are shown in table.

Median (IQR) ppb	nNO 5 peaks	nNO 10s	nNO 30s	AP or ExRe
non PCD	308 (233;406)	243 (191;345)	254 (184;317)	492 (308;721)
PCD	34 (18;56)	23 (14;47)	27 (15;53)	48 (33;106)

Conclusion nNO thresholds value to discriminate for PCD cannot be independent of age in children whichever the nNO technique of measure used.