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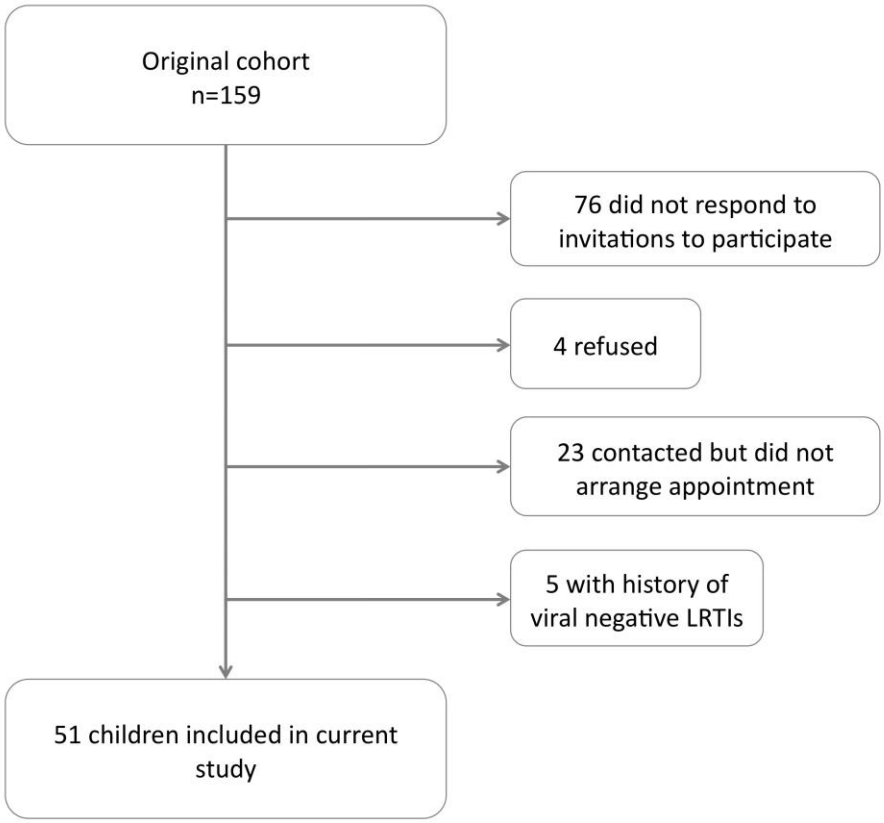
Methods

Participants



Flow chart showing subject attrition from original cohort to current study

Parasternal intercostal electromyography

The parasternal intercostal electromyogram was recorded during ten minutes of tidal breathing using surface silver-silver-chloride electrodes (Kendall Arbo, Tyco Healthcare, Neustadt, Germany) placed over the second intercostal space directly adjacent to the sternal border bilaterally. Subjects were seated comfortably in a chair with trunk, arms and legs supported to minimise cross-talk from postural or upper limb musculature. Signals were amplified (gain 1,000) and band-pass filtered between 10-2,000Hz (1902 Biomedical amplifier, Cambridge Electronic Design, Cambridge, UK) and digitised with an analogue-to-digital sampling frequency of

4,000Hz (PowerLab 8/35, AD Instruments, Sydney, Australia). An additional adaptive mains frequency filter was applied by the acquisition hardware to minimise mains frequency interference. Signals were displayed on a laptop computer running LabChart version 7.2 (AD Instruments Pty, Colorado Springs, USA) and post-acquisition digital filtering applied between 20-1,000Hz to isolate the frequencies of interest. The raw EMGpara signal was converted to root-mean-square (RMS) with a moving average of 50ms. The mean peak RMS EMGpara per breath over the final stable minute of the recording period was reported. EMGpara was log-transformed and expressed relative to predicted based on previously published data [12].

Results

Table 1: Demographics according to LRTI status

The data are presented as median (interquartile) range or n (%).

	No LRTI	**Any LRTI**	**p value**
n	21	30	
Sex (male : female)	10 : 11	15 : 15	1.00
Gestational age at birth (weeks)	34 (33 – 35)	33 (29 – 35)	0.069
Very low birth weight (n (%))	3 (14.3)	5 (16.7)	0.137
Extremely low birth weight	1 (4.8)	7 (23.3)	0.119
Birth weight (g)	2260	1773	***0.021***

	(1576 – 2620)	(1110 – 2151)	
Days ventilated	0 (0 – 1)	1 (0 – 16)	0.176
Bronchopulmonary dysplasia (oxygen dependency at 28 days) (n (%))	2 (9.5)	8 (26.7)	0.167
At assessment:			
Age at study (years)	6.56 (6.30 – 7.25)	7.03 (6.53 – 7.23)	0.405
Height (cm)	118.3 (115.8 – 126.2)	120.5 (117.3 – 124.8)	0.739
Weight (kg)	22.70 (20.63 – 25.18)	21.60 (20.00 – 24.50)	0.576
BMI (kg/m^2)	16.1 (14.7 – 16.7)	14.9 (13.9 – 16.7)	0.366

Table 2: Lung function results according to LRTI status

Data are presented as mean (95% confidence intervals) and as z scores unless otherwise stated.

	No LRTI	**Any LRTI**	p value
FEV_1	0.03	-0.54	***0.040***
(z scores)	(-0.74 – 0.46)	(-1.03 – 0.81)	
FVC	0.53	0.10	***0.022***
(z scores)	(0.15 – 1.29)	(-0.94 – 1.16)	
FEV_1/FVC	-1.18	-0.74	0.791
(z scores)	(-1.80 – -0.55)	(-1.63 – 0.08)	
Change in FEV_1 with salbutamol (%)	5.03 (-0.71 – 10.48)	5.88 (-0.87 – 9.02)	0.857
R5	0.60	0.74	0.813
(z scores)	(-0.09 – 1.26)	(-0.12 – 1.29)	
R20	0.16	0.05	0.694
(z scores)	(-0.39 – 0.64)	(-0.89 – 0.73)	
EMGpara	1.36	1.09	0.928
(z scores)	(0.48 – 1.89)	(0.46 – 1.85)	

Table 3 Healthcare utilisation costs according to virus status

Data are presented as mean (95% confidence intervals)

	No LRTI	**LRTI**	**p value**
	n=21	**n=30**	
Overall respiratory healthcare costs (£/year)	55.87 (4.27 to 107.46)	166.24 (47.98 to 284.50)	0.134
Overall non-respiratory healthcare costs (£/year)	314.47 (89.95 to 539.00)	539.19 (93.37 to 985.01)	0.174
Respiratory related GP attendances (number/year)	0.57 (0.31 to 0.83)	1.28 (0.69 to 1.86)	0.098
Non-respiratory related GP attendances (number/year)	1.26 (0.72 to 1.79)	1.48 (1.05 to 1.92)	0.259
Respiratory medication costs (£/year)	2.50 (0.83 to 4.18)	11.63 (4.81 to 18.44)	0.062
Non-respiratory medication costs (£/year)	6.04 (0.72 to 11.36)	209.35 (-150.31 to 569.01)	0.009
Respiratory related hospital costs (£/year)	28.21 (-13.17 to 69.59)	98.42 (3.74 to 193.09)	0.551
Non-respiratory related hospital costs (£/year)	253.19 (42.79 to 463.60)	264.50 (97.27 to 431.73)	0.347