

Supplemental Table 1. Value for the top quartile (75<sup>th</sup> percentile) for frequency distributions of taxa stratified by subject age for sputum and nasopharyngeal/oropharyngeal (NP/OP) samples<sup>a</sup>.

OTU	Age < 5 years		Age ≥ 5 years	
	Sputum	NP/OP	Sputum	NP/OP
<i>Actinomyces</i> sp.	1.49	3.30	3.02	4.17
<i>Atopobium</i> sp.	0.17	0.93	0.58	1.70
<i>Bacteroidales</i> order	1.30	1.04	2.82	2.38
<i>Bacteroidetes</i> phylum	2.45	1.00	1.61	0.65
<i>Corynebacterium</i> sp.	0.49	1.18	0.59	1.34
<i>Dolosigranulum</i> sp.	0.55	1.14	0.00	0.96
<i>Fusobacterium</i> sp.	3.07	1.25	6.44	2.28
<i>Gemella</i> sp.	1.32	1.88	2.02	1.61
<i>Haemophilus</i> sp.	10.63	1.68	1.32	0.17
<i>Lactobacillales</i> order	0.74	2.33	1.91	2.03
<i>Leptotrichia</i> sp.	0.90	0.84	2.99	1.27
<i>Leptotrichiaceae</i> family	0.86	0.66	0.96	0.45
<i>Moraxella</i> sp.	27.89	5.77	0.19	1.07
<i>Mycoplasma</i> sp.	0.00	0.00	0.10	0.02
<i>Neisseria</i> sp.	3.06	2.03	4.50	1.28
<i>Pasteurellaceae</i> family	10.01	3.52	8.79	1.91
<i>Porphyromonadaceae</i> family	1.98	1.35	3.70	1.97
<i>Prevotella</i> sp.	9.57	13.50	21.04	21.69
<i>Rothia</i> sp.	1.78	8.75	3.32	4.17
<i>Streptococcus</i> sp.	38.65	46.89	27.32	30.69
<i>Veillonella</i> sp.	5.07	10.92	10.55	12.58
Other	12.10	12.04	18.92	23.19

<sup>a</sup>Table values represent a percent, e.g., the relative abundance of *Veillonella* sp. was at least 5.07% of the sample in approximately 25% of the sputum samples for children 6 months to <5 years of age.

Supplemental Table 2. Diagnostic tests for detection of respiratory viruses and bacteria [n (%)] in children (n=383) 6 months to <18 years of age hospitalized with community-acquired pneumonia by age group

Characteristic	N (%)	Age group		P value
		6 months to <5 years (%)	5 to <18 years (%)	
<b>Total</b>	383	263(68.7)	120(31.3)	
Respiratory viruses				
Rhinovirus	148 (38.6)	33.8	49.2	0.004
RSV	123 (32.1)	41.8	10.8	<0.0001
Adenovirus	61 (15.9)	21.3	4.2	<0.0001
Human metapneumovirus	26 (7.0)	9.1	1.7	0.007
Coronavirus	24 (6.3)	7.6	3.3	0.11
Parainfluenza types 1-3	27 (7.0)	8.4	4.2	0.14
Influenza A and B	17 (4.4)	3.8	5.8	0.37
Bacteria diagnostic tests				
<i>M. pneumoniae</i>	14 (3.7)	1.5	8.3	0.001
<i>S. pneumoniae</i>	9 (2.4)	3.4	0.0	0.06
<i>H. influenzae</i>	1 (0.3)	0.4	0.0	--
Bacteria sputum culture				
<i>S. pneumoniae</i>	64 (16.7)	22.4	4.2	<0.0001
<i>H. influenzae</i>	47 (12.3)	16.0	4.2	0.001
<i>M. cattharalis</i>	65 (17.0)	23.9	1.7	<0.0001
<i>S. aureus</i>	68 (17.8)	17.1	19.2	0.63

Supplemental Table 3. Adjusted associations between sputum culture results from children 6 months to <5 years (n=263) or 5 to <18 years (n=120), hospitalized with community-acquired pneumonia and length of stay (LOS) or intensive care unit (ICU) admission.

Characteristic	LOS $\geq$ 4 days OR (95% CI)	ICU admission OR (95% CI)
<b>6 months to &lt;5 years</b>		
<i>S. pneumoniae</i>	0.97 (0.49, 1.93)	0.56 (0.18, 1.74)
<i>H. influenzae</i>	1.97 (0.97, 4.02)	1.02 (0.11, 0.85)
<i>M. cattharalis</i>	1.09 (0.57, 2.11)	0.57 (0.15, 0.46)
<i>S. aureus</i>	2.48 (1.25, 4.90)	1.52 (0.56, 4.15)
<b>5 to &lt;18 years</b>		
<i>S. aureus</i>	1.28 (0.46, 3.56)	1.81 (0.63, 5.20)

Supplemental Table 4. Rotated factor patterns from principal components analysis (PCA) using proportions of taxa in nasopharyngeal/oropharyngeal (NP/OP) samples from children 6 months to <5 years (n=263) or 5 to <18 years (n=120). Taxa of interest for each factor are highlighted.

Taxa	Factor 1	Factor 2	Factor 3
<b>Age 6 months to &lt;5 years</b>			
<i>Prevotella</i> sp.	0.75	0.16	-0.14
<i>Veillonella</i> sp.	0.72	-0.20	-0.30
<i>Actinomyces</i> sp.	0.70	-0.18	-0.17
<i>Leptotrichiaceae</i> family	0.69	0.21	0.08
<i>Atopobium</i> sp.	0.59	-0.27	-0.16
<i>Bacteroidales</i> order	0.32	0.67	-0.09
<i>Bacteroidetes</i> phylum	-0.15	0.63	-0.15
<i>Fusobacterium</i> sp.	0.34	0.58	0.20
<i>Porphyromonadaceae</i> family	-0.13	0.47	-0.12
<i>Neisseria</i> sp.	-0.10	0.45	-0.06
<i>Corynebacterium</i> sp.	-0.09	-0.08	0.75
<i>Dolosigranulum</i> sp.	-0.09	-0.09	0.83
<i>Moraxella</i> sp.	-0.24	-0.12	0.53
<b>Age 5 to &lt;18 years</b>			
<i>Prevotella</i> sp.	0.74	-0.29	
<i>Veillonella</i> sp.	0.71	-0.16	
<i>Atopobium</i> sp.	0.65	-0.31	
<i>Actinomyces</i> sp.	0.52	-0.07	
<i>Bacteroidales</i> order	0.47	-0.18	
<i>Corynebacterium</i> sp.	-0.43	-0.24	
<i>Moraxella</i> sp.	-0.53	-0.29	
<i>Dolosigranulum</i> sp.	-0.61	-0.35	
<i>Pasteurellaceae</i> family	-0.13	0.76	
<i>Neisseria</i> sp.	-0.07	0.66	
<i>Gemella</i> sp.	0.03	0.54	
<i>Haemophilus</i> sp.	-0.07	0.53	