Supplemental Table 1: Characteristics of children <2 years of age hospitalized with respiratory syncytial virus-associated acute respiratory illness by prematurity subgroup, New Vaccine Surveillance Network, December 1, 2016–July 31, 2023, N=5,844

	All Children		Term Children (≥37 wGA[1])		Moderate to Late Premature Children (32 to <37 wGA[1])		Very Premature Children (28 to <32 wGA[1])		Extremely Premature Children (22 to <28 wGA[1])	
Total	**5,844**		**4,626**		**941**		**158**		**119**	
Characteristics	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**	**N**	**%**
Age at visitation/admission										
<1 month	510	8.7	465	10.1	43	4.6	1	0.6	1	0.8
1–2 months	884	15.1	743	16.1	135	14.3	5	3.2	1	0.8
2–5 months	1,862	31.9	1,480	32.0	312	33.2	52	32.9	18	15.1
6–11 months	1,280	21.9	963	20.8	237	25.2	46	29.1	34	28.6
12–17 months	804	13.8	608	13.1	135	14.3	31	19.6	30	25.2
18–23 months	504	8.6	367	7.9	79	8.4	23	14.6	35	29.4
Median, months (IQR)[2]	4.0 (2.0, 11.0)		4.0 (1.0, 10.0)		5.0 (2.0, 11.0)		8.0 (4.0, 14.0)		13.0 (7.0, 18.0)	
Sex										
Male	3,304	56.5	2,621	56.7	542	57.6	83	52.5	58	48.7
Female	2,539	43.4	2,004	43.3	399	42.4	75	47.5	61	51.3
Race/Ethnicity										
WhiteNH[3]	2,766	47.3	2,256	48.8	416	44.2	57	36.1	37	31.1
BlackNH[3]	955	16.3	687	14.9	191	20.3	44	27.8	33	27.7
Hispanic	1,497	25.6	1,179	25.5	243	25.8	41	25.9	34	28.6
Native Hawaiian/ Other Pacific Islander	36	0.6	30	0.6	5	0.5	0	0.0	1	0.8
American Indian/ Alaska Native, NH[3]	51	0.9	44	1.0	5	0.5	1	0.6	1	0.8
Asian, NH[3]	214	3.7	173	3.7	32	3.4	5	3.2	4	3.4
Multiple Race or OtherNH[3]	279	4.8	219	4.7	44	4.7	8	5.1	8	6.7
Unknown	46	0.8	38	0.8	5	0.5	2	1.3	1	0.8
Palivizumab Receipt										
Yes	117	2.0	26	0.6	20	2.1	16	10.1	55	46.2
No	4,587	78.5	3,700	80.0	723	76.8	114	72.2	50	42.0
Missing[4]	1,140	19.5	900	19.5	198	21.0	28	17.7	14	11.8
Underlying Conditions										
≥1 condition[5]	285	4.9	136	2.9	58	6.2	26	16.5	65	54.6

Congenital heart disease[6]	195	3.3	118	2.6	48	5.1	13	8.2	16	13.4
Down syndrome	43	0.7	30	0.6	13	1.4	0	0.0	0	0.0
BPD[7]	82	1.4	2	0.0	4	0.4	16	10.1	60	50.4
Other lung condition[8]	5	0.1	3	0.1	0	0.0	1	0.6	1	0.8
Viral co-infections[9]										
Yes	1,451	24.8	1,172	25.3	199	21.1	45	28.5	35	29.4
No	4,393	75.2	3,454	74.7	742	78.9	113	71.5	84	70.6

1 wGA: weeks gestational age
2 IQR: Inter Quartile range
3 NH: Non-Hispanic
4 Data for palivizumab receipt were considered missing if complete medical records were unavailable to verify palivizumab receipt status
5 At least 1 underlying condition of interest defined as congenital heart malformation, Down syndrome, BPD, or other lung condition besides BPD
6 Atrial septal defect (ASD), ventricular septal defect (VSD), atrioventricular septal defect (AVSD) or atrioventricular canal, abnormalities of aortic arch (coarctation of aorta, double aortic arch, interrupted aortic arch, hypoplastic aortic arch, right sided aortic arch, truncus arteriosus), hypoplastic left heart syndrome (HLHS), pulmonary atresia, tricuspid atresia or tetralogy of Fallot (TOF), transposition of the great arteries, partial or total anomalous pulmonary venous return (PAPVR or TAPVR), Other abnormalities of heart valves including: Aortic valve stenosis, dysplasia, or insufficiency; Ebstein anomaly of tricuspid valve or tricuspid stenosis, dysplasia, or insufficiency; mitral valve atresia, stenosis, dysplasia, or insufficiency; pulmonary valve stenosis, dysplasia, or insufficiency, dextrocardia, double outlet right ventricle (DORV), other congenital heart malformation
7 BPD: Bronchopulmonary dysplasia
8 Chronic respiratory failure with CPAP/BIPAP/ventilator dependence, chronic restrictive lung disease due to any cause (scoliosis, cerebral palsy, or autoimmune or neuromuscular disease, etc.), pulmonary hypertension (neonatal, primary or secondary), chronic aspiration pneumonia, interstitial lung disease (e.g. interstitial pneumonitis, or parenchymal disease), agenesis, hypoplasia, or other congenital lung deformity including congenital diaphragmatic hernia (CDH), chronic bronchiectasis from cystic fibrosis (CF) or other lung disease
9 In addition to respiratory syncytial virus, NVSN routinely conducts surveillance testing for influenza viruses, adenoviruses, SARS-CoV-2 (since 2020), human coronaviruses 229E, NL63, OC43, HKU1 (HCOV), enterovirus D68, human metapneumovirus, parainfluenza viruses 1–4, and rhinovirus/enterovirus.

Supplemental Table 2: Severe in-hospital outcomes among children <2 years of age hospitalized with respiratory syncytial virus-associated acute respiratory illness by prematurity subgroup status, New Vaccine Surveillance Network, December 1, 2016–July 31, 2023, N=5,844

	Term			Moderate to late premature						Very premature						Extremely premature					
	≥37 weeks			32 weeks to <37 weeks						29 weeks to <32 weeks						17 weeks to <28 weeks					
	Total	No. with outcome	row %	Total	No. with outcome	row %	aRR[1]	(95% CI)	p-value	Total	No. with outcome	row %	aRR[1]	(95% CI)	p-value	Total	No. with outcome	row %	aRR[1]	(95% CI)	p-value
Prolonged hospitalization (≥3 days)	4,626	1,816	39.3	941	435	46.2	1.2	(1.1, 1.3)	<0.001	158	96	60.8	1.5	(1.3, 1.7)	<0.001	119	80	67.2	1.4	(1.1, 1.7)	0.005
ICU admission	4,626	980	21.2	941	247	26.2	1.2	(1.0, 1.4)	0.012	158	48	30.4	1.3	(1.0, 1.7)	0.048	119	33	27.7	1.2	(0.8, 1.8)	0.50
Assisted ventilation[2]	4,626	198	4.3	941	64	6.8	1.6	(1.2, 2.2)	0.003	158	14	8.9	2.3	(1.3, 4.2)	0.004	119	9	7.6	0.8	(0.3, 1.8)	0.58

1 Adjusted relative risk for study site, age group, palivizumab receipt, and presence of underlying conditions (congenital heart disease, Down syndrome, BPD, or other lung condition).
2 Intubation or non-invasive ventilation with CPAP or BIPAP.

Supplemental Table 3: Severe in-hospital outcomes among children <2 years of age hospitalized with respiratory syncytial virus-associated acute respiratory illness by preterm status, New Vaccine Surveillance Network, December 1, 2016–July 31, 2023, N=5,844

		Total			Term			Premature					
					≥37 weeks			<37 weeks					
	Total	No. with outcome	row %	Total	No. with outcome	row %	Total	No. with outcome	row %	aRR[1]	(95% CI)	p-value
Prolonged hospitalization (≥3 days)												
All	5,844	2,427	41.5	4,626	1,816	39.3	1,218	611	50.2	1.3	(1.2, 1.4)	<0.001
Chronological age subgroup												
0–6 months	3,283	1,432	43.6	2,677	1,122	41.9	593	310	52.3	1.3	(1.2, 1.5)	<0.001
6–11 months	1,296	512	39.5	962	364	37.8	323	148	45.8	1.1	(0.9, 1.3)	0.29
12–23 months	1,345	483	35.9	979	330	33.7	344	153	44.5	1.2	(1.0, 1.4)	0.03
ICU admission												
All	5,844	1,308	22.4	4,626	980	21.2	1,218	328	26.9	1.2	(1.1, 1.4)	0.003
Chronological age subgroup												
0–6 months	3,283	841	25.6	2,677	639	23.9	593	202	34.1	1.4	(1.2, 1.6)	<0.001
6–11 months	1,296	230	17.7	962	165	17.2	323	65	20.1	0.9	(0.7, 1.2)	0.55
12–23 months	1,345	237	17.6	979	176	18.0	344	61	17.7	1.0	(0.8, 1.4)	0.94
Assisted ventilation[2,3]												
All	5,844	285	4.9	4,626	198	4.3	1,218	87	7.1	1.8	(1.3, 2.4)	<0.001
Chronological age subgroup												
0–6 months	3,280	202	6.2	2,677	142	5.3	593	60	10.1	2.0	(1.4, 2.8)	<0.001
6–11 months	1,296	44	3.4	962	30	3.1	323	14	4.3	0.9	(0.4, 2.0)	0.82
12–23 months[3]	1,345	39	2.9	979	26	2.7	344	13	3.8			

1 Adjusted relative risk comparing the risk among preterm children to term children. The "All" model adjusts for study site, chronological age group, presence of underlying conditions, and palivizumab receipt. Each chronological age subgroup model adjusts for study site, presence of underlying conditions, and palivizumab receipt.
2 Intubation or non-invasive ventilation with CPAP or BIPAP.
3 The relative risk for assisted ventilation could not be estimated for children hospitalized at 12–23 months old due to small sample size.

Supplemental Table 4: Severe in-hospital outcomes among children <2 years of age hospitalized with respiratory syncytial virus by preterm and bronchopulmonary dysplasia (BPD) status, New Vaccine Surveillance Network, December 1, 2016–July 31, 2023 , N=5,844

		Total			Term[1]		Premature birth without BPD						Premature birth with BPD					
				≥37 weeks			<37 weeks						<37 weeks					
	Total	No. with outcome	row %	Total	No. with outcome	row %	Total	No. with outcome	row %	aRR[2]	(95% CI)	p-value	Total	No. with outcome	row %	aRR[2]	(95% CI)	p-value
Prolonged hospitalization																		
All	5,844	2,427	41.5	4,626	1,816	39.3	1,138	549	48.2	1.3	(1.2, 1.4)	<0.001	80	62	77.5	2.0	(1.7, 2.4)	<0.001
Chronological age																		
<6 months	3,283	1,432	43.6	2,688	1,122	41.7	559	304	54.4	1.3	(1.2, 1.5)	<0.001	9	6	66.7	1.8	(1.1, 3.1)	0.03
6–11 months	1,296	512	39.5	963	364	37.8	292	128	43.8	1.1	(0.9, 1.3)	0.21	25	20	80.0	1.7	(1.3, 2.3)	<0.001
12–23 months	1,345	483	35.9	975	330	33.8	287	117	40.8	1.2	(1.0, 1.5)	0.02	46	36	78.3	2.1	(1.6, 2.6)	<0.001
ICU admission																		
All	5,844	1,308	22.4	4,626	980	21.2	1,138	301	26.4	1.2	(1.1, 1.4)	0.003	80	27	33.8	1.7	(1.2, 2.3)	0.005
Chronological age																		
<6 months	3,283	841	25.6	2,688	639	23.8	559	198	35.4	1.4	(1.2, 1.6)	<0.001	9	4	44.4	1.3	(0.5, 3.3)	0.62
6–11 months	1,296	230	17.7	963	165	17.1	292	55	18.8	0.9	(0.7, 1.2)	0.56	25	10	40.0	1.4	(0.7, 2.6)	0.37
12–23 months	1,345	237	17.6	975	176	18.1	287	48	16.7	1.0	(0.7, 1.4)	0.89	46	13	28.3	1.7	(1.0, 2.9)	0.04
Assisted ventilation[3,4]																		
All	5,844	285	4.9	4,626	198	4.3	1,138	80	7.0	1.70	(1.3, 2.3)	<0.001	80	7	8.8	2.3	(1.0, 5.1)	0.04
Chronological age																		
<6 months	3,283	202	6.2	2,688	142	5.3	559	58	10.4	-	-	-	9	2	22.2	-	-	-

6–11 months	1,296	44	3.4	963	30	3.1	292	12	4.1	-	-	-	25	2	8.0	-	-	-
12–23 months	1,345	39	2.9	975	26	2.7	287	10	3.5	-	-	-	46	3	6.5	-	-	-

1 Term children with BPD were excluded (n=2).
2 Adjusted relative risk comparing the risk among each preterm category to term infants. All children category adjusts for study site, age in months, and palivizumab receipt. Chronological age subgroup models adjust for study site and palivizumab receipt.
3 Intubation or non-invasive ventilation with CPAP or BIPAP.
4 Relative risk of assisted ventilation could not be estimated separately among premature children with and without BPD because of small numbers.