

1 **Supplemental Materials**

2 **Supplementary Table 1.** List of International Classification of Diseases, 10th Revision (ICD-10) discharge
 3 diagnosis codes used for acute respiratory illness (ARI) and COVID-like illness (CLI) definitions

Description of Diagnosis	ICD-10 codes	ARI	CLI
Influenza Pneumonia			
Influenza due to identified novel influenza A virus with pneumonia	J09.X1	✓	✓
Influenza due to other identified influenza virus with pneumonia	J10.0*	✓	✓
Influenza due to other identified influenza virus with unspecified type of pneumonia	J10.00	✓	✓
Influenza due to other identified influenza virus with the same other identified influenza virus pneumonia	J10.01	✓	✓
Influenza due to other identified influenza virus with other specified pneumonia	J10.08	✓	✓
Influenza due to unidentified influenza virus with pneumonia	J11.0*	✓	✓
Influenza due to unidentified influenza virus with unspecified type of pneumonia	J11.00	✓	✓
Influenza due to unidentified influenza virus with specified pneumonia	J11.08	✓	✓
Other Viral Pneumonia	J12*	✓	✓
Bacterial and Other Pneumonia			
Streptococcus pneumoniae pneumonia	J13	✓	✓
Hemophilus influenzae pneumonia	J14	✓	✓
Other bacterial pneumonia	J15*	✓	✓
Pneumonia due to other specified organism	J16*	✓	✓
Pneumonia in infectious diseases classified elsewhere	J17	✓	✓
Pneumonia, unspecified organism	J18*	✓	✓
Influenza Disease	J09.X2, J09.X3, J09.X9, J10.1, J10.2, J10.8*, J11.1, J11.2, J11.8*	✓	✓
Acute respiratory distress syndrome	J80	✓	✓
COPD with acute exacerbation	J44.1	✓	✓
Asthma acute exacerbation	J45.21, J45.22, J45.31, J45.32, J45.41, J45.42, J45.51, J45.52, J45.901, J45.902	✓	✓
Respiratory failure			
Acute respiratory failure	J96.0*	✓	✓
Acute and chronic respiratory failure	J96.2*	✓	✓

Description of Diagnosis	ICD-10 codes	ARI	CLI
Respiratory arrest	R09.2	✓	✓
Other acute lower respiratory tract infections			
Acute bronchitis	J20*	✓	✓
Acute bronchiolitis	J21*	✓	✓
Unspecified acute lower respiratory infection	J22	✓	✓
Bronchitis, not specified as acute or chronic	J40	✓	✓
COPD with acute lower respiratory infection	J44.0	✓	✓
Simple and mucopurulent chronic bronchitis	J41*	✓	✓
Unspecified chronic bronchitis	J42	✓	✓
Emphysema	J43*	✓	✓
Bronchiectasis	J47*	✓	✓
Abscess of lung and mediastinum	J85*	✓	✓
Gangrene and necrosis of lung	J85.0	✓	✓
Abscess of lung without pneumonia	J85.2	✓	✓
Abscess of mediastinum	J85.3	✓	✓
Abscess of lung with pneumonia	J85.1	✓	✓
Pyothorax	J86*	✓	✓
Acute and chronic sinusitis	J01* , J32*	✓	✓
Acute upper respiratory tract infections	J00* , J02* , J03* , J04* , J05* , J06*	✓	✓
Signs and symptoms of acute respiratory illness			
Hemoptysis	R04.2	✓	✓
Cough	R05 R05.1, R05.2, R05.4, R05.8, R05.9	✓	✓
Dyspnea unspecified	R06.00	✓	✓
Shortness of breath	R06.02	✓	✓
Acute respiratory distress	R06.03	✓	✓
Stridor	R06.1	✓	✓
Wheezing	R06.2	✓	✓
Other abnormalities of breathing	R06.8	✓	✓
Apnea, not elsewhere classified	R06.81	✓	✓
Tachypnea, not elsewhere classified	R06.82	✓	✓
Other abnormalities of breathing/ Other symptoms involving head & neck	R06.89	✓	✓
Chest pain on breathing/ painful respiration	R07.1	✓	✓
Asphyxia and hypoxemia	R09.0*	✓	✓
Asphyxia	R09.01	✓	✓
Hypoxemia	R09.02	✓	✓
Pleurisy	R09.1	✓	✓

Description of Diagnosis	ICD-10 codes	ARI	CLI
Respiratory arrest	R09.2	✓	✓
Abnormal sputum	R09.3	✓	✓
Other specified symptoms and signs involving the circulatory and respiratory systems	R09.8*	✓	✓
Signs and symptoms of acute febrile illness			
Fever	R50*		✓
Fever presenting with conditions classified elsewhere	R50.81		✓
Fever unspecified	R50.9		✓
Chills (without fever)	R68.83		✓
Signs and symptoms of acute non-respiratory illness			
Diarrhea	R19.7		✓
Disturbance of smell and taste	R43*		✓
Unspecified disturbances of smell and taste	R43.9		✓
Headache	R51.9		✓
Myalgia	M79.10, M79.18		✓
Sepsis - Symptoms and signs specifically associated with systemic inflammation and infection	R65*		✓
Other malaise	R53.81		✓
Other fatigue	R53.83		✓
Shock, unspecified	R57.9		✓
Altered level of consciousness / altered mental status	R41.82, R40.0, R40.1		✓
Weakness	R53.1		✓
Nausea and vomiting	R11.0, R11.10, R11.11, R11.15, R11.2		✓
Rash and other nonspecific skin eruption	R21*		✓
Abdominal pain	R10.0, R10.1*, R10.2, R10.3*, R10.81*, R10.84, R10.9		✓

- 4 Abbreviations: COPD, Chronic Obstructive Pulmonary Disease; ICD-10, International Classification of Diseases, 10th
5 Revision; N/A, not applicable.
6 *Includes all sub-codes.

7 **Supplementary Table 2.** 2022-2023 Influenza Season start and end dates by VISION partner site and
 8 setting

Partner Healthcare System	State	ED/UC		Hospitalizations	
		Start date	End date ^a	Start date	End date ^a
HealthPartners	Minnesota, Wisconsin	October 16, 2022	February 4, 2023	October 19, 2022	December 17, 2022
Intermountain Healthcare	Utah	October 16, 2022	March 4, 2023	November 6, 2022	February 4, 2023
Kaiser Permanente Northern California	California	October 16, 2022	January 21, 2023	October 23, 2022	February 18, 2023

9 Abbreviations: ED, emergency department; UC, urgent care.

10 ^a End date for the 2022-2023 was considered to be the week that percent positivity (i.e., percent of all influenza
 11 tests performed that were determined to be positive) fell below 2% at that VISION partner site setting. This
 12 excluded 17 ED/UC case-patients and 1 hospitalized case-patient from HealthPartners, 26 ED/UC case-patients and
 13 8 hospitalized case-patients from Intermountain Healthcare, and 71 ED/UC case-patients and 0 hospitalized case-
 14 patients from Kaiser Permanente Northern California.

15 **Supplementary Table 3.** Acute respiratory illness (ARI) and COVID-like illness (CLI) distribution among influenza-positive case and influenza-
 16 negative encounters

	Flu positive (N = 13810)	% of positives	Flu negative (N = 32839)	% of negatives	Total (N = 46649)	% of total
ARI criteria^a						
Acute Respiratory Signs and Symptoms	1981	14.3	8744	26.6	10725	23.0
Upper Respiratory Tract Infection	4450	32.2	17322	52.7	21772	46.7
Respiratory Failure	214	1.5	1410	4.3	1624	3.5
Bacterial Pneumonia	317	2.3	1751	5.3	2068	4.4
Other Lower Respiratory Tract Infection	299	2.2	6575	20.0	6874	14.7
Sinusitis	45	0.3	133	0.4	178	0.4
Influenza Disease	8701	63.0	0	0.0	8701	18.7
Asthma Exacerbation	132	1.0	1276	3.9	1408	3.0
Other Viral Pneumonia	64	0.5	1083	3.3	1147	2.5
Influenza Pneumonia	172	1.2	0	0.0	172	0.4
Acute respiratory distress syndrome	5	0.0	6	0.0	11	0.0
Viral illness not otherwise specified	1463	10.6	3919	11.9	5382	11.5
CLI criteria						
Febrile Signs and Symptoms	2308	16.7	4721	14.4	7029	15.1
Acute Non-Respiratory Signs and Symptoms	1204	8.7	2703	8.2	3907	8.4

17 ^a A single encounter could have multiple criteria.

18 **Supplementary Table 4.** Proportion receiving seasonal influenza vaccine among influenza ARI-associated emergency department or urgent care
 19 visits for children and adolescents 6 months–17 years of age, by influenza status, study site, and across study months (October 2022–March
 20 2023)^a

N (Col %)	All study months	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023
Influenza negative							
All sites							
All pediatric ED/UC encounters	39584	4339	12129	7781	4907	5228	5200
Unvaccinated	27642 (69.8)	3701 (85.3)	9224 (76.0)	5263 (67.6)	3114 (63.5)	3229 (61.8)	3111 (59.8)
Vaccinated	11942 (30.2)	638 (14.7)	2905 (24.0)	2518 (32.4)	1793 (36.5)	1999 (38.2)	2089 (40.2)
Age 6 months–4 years	24372	2748	7873	4937	2951	2926	2937
Unvaccinated	16183 (66.4)	2296 (83.6)	5795 (73.6)	3164 (64.1)	1708 (57.9)	1640 (56.0)	1580 (53.8)
Vaccinated	8189 (33.6)	452 (16.4)	2078 (26.4)	1773 (35.9)	1243 (42.1)	1286 (44.0)	1357 (46.2)
Age 5–17 years	15212	1591	4256	2844	1956	2302	2263
Unvaccinated	11459 (75.3)	1405 (88.3)	3429 (80.6)	2099 (73.8)	1406 (71.9)	1589 (69.0)	1531 (67.7)
Vaccinated	3753 (24.7)	186 (11.7)	827 (19.4)	745 (26.2)	550 (28.1)	713 (31.0)	732 (32.3)
Site 1							
All pediatric ED/UC encounters	2813	384	871	500	344	349	365
Unvaccinated	1965 (69.9)	324 (84.4)	643 (73.8)	323 (64.6)	221 (64.2)	226 (64.8)	228 (62.5)
Vaccinated	848 (30.1)	60 (15.6)	228 (26.2)	177 (35.4)	123 (35.8)	123 (35.2)	137 (37.5)
Age 6 months–4 years	1683	267	548	300	188	171	209
Unvaccinated	1089 (64.7)	218 (81.6)	380 (69.3)	182 (60.7)	100 (53.2)	97 (56.7)	112 (53.6)
Vaccinated	594 (35.3)	49 (18.4)	168 (30.7)	118 (39.3)	88 (46.8)	74 (43.3)	97 (46.4)
Age 5–17 years	1130	117	323	200	156	178	156
Unvaccinated	876 (77.5)	106 (90.6)	263 (81.4)	141 (70.5)	121 (77.6)	129 (72.5)	116 (74.4)
Vaccinated	254 (22.5)	11 (9.4)	60 (18.6)	59 (29.5)	35 (22.4)	49 (27.5)	40 (25.6)
Site 2							
All pediatric ED/UC encounters	19876	1661	6236	4468	2466	2547	2498
Unvaccinated	14501 (73.0)	1449 (87.2)	4861 (78.0)	3161 (70.7)	1691 (68.6)	1700 (66.7)	1639 (65.6)
Vaccinated	5375 (27.0)	212 (12.8)	1375 (22.0)	1307 (29.3)	775 (31.4)	847 (33.3)	859 (34.4)
Age 6 months–4 years	11937	968	3948	2812	1410	1391	1408
Unvaccinated	8448 (70.8)	851 (87.9)	3023 (76.6)	1925 (68.5)	913 (64.8)	869 (62.5)	867 (61.6)

Vaccinated	3489 (29.2)	117 (12.1)	925 (23.4)	887 (31.5)	497 (35.2)	522 (37.5)	541 (38.4)
Age 5–17 years	7939	693	2288	1656	1056	1156	1090
Unvaccinated	6053 (76.2)	598 (86.3)	1838 (80.3)	1236 (74.6)	778 (73.7)	831 (71.9)	772 (70.8)
Vaccinated	1886 (23.8)	95 (13.7)	450 (19.7)	420 (25.4)	278 (26.3)	325 (28.1)	318 (29.2)
Site 3							
All pediatric ED/UC encounters	16895	2294	5022	2813	2097	2332	2337
Unvaccinated	11176 (66.1)	1928 (84.0)	3720 (74.1)	1779 (63.2)	1202 (57.3)	1303 (55.9)	1244 (53.2)
Vaccinated	5719 (33.9)	366 (16.0)	1302 (25.9)	1034 (36.8)	895 (42.7)	1029 (44.1)	1093 (46.8)
Age 6 months–4 years	10752	1513	3377	1825	1353	1364	1320
Unvaccinated	6646 (61.8)	1227 (81.1)	2392 (70.8)	1057 (57.9)	695 (51.4)	674 (49.4)	601 (45.5)
Vaccinated	4106 (38.2)	286 (18.9)	985 (29.2)	768 (42.1)	658 (48.6)	690 (50.6)	719 (54.5)
Age 5–17 years	6143	781	1645	988	744	968	1017
Unvaccinated	4530 (73.7)	701 (89.8)	1328 (80.7)	722 (73.1)	507 (68.1)	629 (65.0)	643 (63.2)
Vaccinated	1613 (26.3)	80 (10.2)	317 (19.3)	266 (26.9)	237 (31.9)	339 (35.0)	374 (36.8)
Influenza positive							
All sites							
All pediatric ED/UC encounters	13653	374	5264	7156	666	126	67
Unvaccinated	11556 (84.6)	352 (94.1)	4663 (88.6)	5882 (82.2)	525 (78.8)	90 (71.4)	44 (65.7)
Vaccinated	2097 (15.4)	22 (5.9)	601 (11.4)	1274 (17.8)	141 (21.2)	36 (28.6)	23 (34.3)
Age 6 months–4 years	3995	66	1324	2243	314	33	15
Unvaccinated	3286 (82.3)	59 (89.4)	1138 (86.0)	1799 (80.2)	257 (81.8)	21 (63.6)	12 (80.0)
Vaccinated	709 (17.7)	7 (10.6)	186 (14.0)	444 (19.8)	57 (18.2)	12 (36.4)	3 (20.0)
Age 5–17 years	9658	308	3940	4913	352	93	52
Unvaccinated	8270 (85.6)	293 (95.1)	3525 (89.5)	4083 (83.1)	268 (76.1)	69 (74.2)	32 (61.5)
Vaccinated	1388 (14.4)	15 (4.9)	415 (10.5)	830 (16.9)	84 (23.9)	24 (25.8)	20 (38.5)
Site 1							
All pediatric ED/UC encounters	1640	87	1188	323	33	6	3
Unvaccinated	1393 (84.9)	83 (95.4)	1030 (86.7)	250 (77.4)	26 (78.8)	2 (33.3)	2 (66.7)
Vaccinated	247 (15.1)	4 (4.6)	158 (13.3)	73 (22.6)	7 (21.2)	4 (66.7)	1 (33.3)
Age 6 months–4 years	442	15	284	123	18	1	1
Unvaccinated	345 (78.1)	14 (93.3)	232 (81.7)	85 (69.1)	13 (72.2)	0 (0.0)	1 (100.0)
Vaccinated	97 (21.9)	1 (6.7)	52 (18.3)	38 (30.9)	5 (27.8)	1 (100.0)	0 (0.0)

Age 5–17 years	1198	72	904	200	15	5	2
Unvaccinated	1048 (87.5)	69 (95.8)	798 (88.3)	165 (82.5)	13 (86.7)	2 (40.0)	1 (50.0)
Vaccinated	150 (12.5)	3 (4.2)	106 (11.7)	35 (17.5)	2 (13.3)	3 (60.0)	1 (50.0)
Site 2							
All pediatric ED/UC encounters	6084	85	1730	3700	440	94	35
Unvaccinated	5146 (84.6)	82 (96.5)	1548 (89.5)	3074 (83.1)	348 (79.1)	69 (73.4)	25 (71.4)
Vaccinated	938 (15.4)	3 (3.5)	182 (10.5)	626 (16.9)	92 (20.9)	25 (26.6)	10 (28.6)
Age 6 months–4 years	1871	19	442	1173	200	26	11
Unvaccinated	1580 (84.4)	19 (100.0)	390 (88.2)	979 (83.5)	166 (83.0)	18 (69.2)	8 (72.7)
Vaccinated	291 (15.6)	0 (0.0)	52 (11.8)	194 (16.5)	34 (17.0)	8 (30.8)	3 (27.3)
Age 5–17 years	4213	66	1288	2527	240	68	24
Unvaccinated	3566 (84.6)	63 (95.5)	1158 (89.9)	2095 (82.9)	182 (75.8)	51 (75.0)	17 (70.8)
Vaccinated	647 (15.4)	3 (4.5)	130 (10.1)	432 (17.1)	58 (24.2)	17 (25.0)	7 (29.2)
Site 3							
All pediatric ED/UC encounters	5929	202	2346	3133	193	26	29
Unvaccinated	5017 (84.6)	187 (92.6)	2085 (88.9)	2558 (81.6)	151 (78.2)	19 (73.1)	17 (58.6)
Vaccinated	912 (15.4)	15 (7.4)	261 (11.1)	575 (18.4)	42 (21.8)	7 (26.9)	12 (41.4)
Age 6 months–4 years	1682	32	598	947	96	6	3
Unvaccinated	1361 (80.9)	26 (81.3)	516 (86.3)	735 (77.6)	78 (81.3)	3 (50.0)	3 (100.0)
Vaccinated	321 (19.1)	6 (18.8)	82 (13.7)	212 (22.4)	18 (18.8)	3 (50.0)	0 (0.0)
Age 5–17 years	4247	170	1748	2186	97	20	26
Unvaccinated	3656 (86.1)	161 (94.7)	1569 (89.8)	1823 (83.4)	73 (75.3)	16 (80.0)	14 (53.8)
Vaccinated	591 (13.9)	9 (5.3)	179 (10.2)	363 (16.6)	24 (24.7)	4 (20.0)	12 (46.2)

21 Abbreviations: ARI, acute respiratory illness.

22 ^a See Supplementary Table 2 for site and setting-specific analytic start and end dates. Vaccination status presented in the table was based on the date of the
23 encounter (i.e., date of the visit).

24 **Supplementary Table 5.** Proportion receiving seasonal influenza vaccine among influenza ARI-associated hospitalizations for children and
 25 adolescents 6 months–17 years of age, by influenza status, study site, and across study months (October 2022–March 2023)^a

	All study months	October 2022	November 2022	December 2022	January 2023	February 2023	March 2023
Influenza negative							
All sites							
All pediatric hospitalizations	2417	255	717	456	305	355	329
Unvaccinated	1617 (66.9)	211 (82.7)	534 (74.5)	283 (62.1)	189 (62.0)	210 (59.2)	190 (57.8)
Vaccinated	800 (33.1)	44 (17.3)	183 (25.5)	173 (37.9)	116 (38.0)	145 (40.8)	139 (42.2)
Age 6 months–4 years	1797	199	581	362	220	225	210
Unvaccinated	1180 (65.7)	162 (81.4)	428 (73.7)	218 (60.2)	125 (56.8)	128 (56.9)	119 (56.7)
Vaccinated	617 (34.3)	37 (18.6)	153 (26.3)	144 (39.8)	95 (43.2)	97 (43.1)	91 (43.3)
Age 5–17 years	620	56	136	94	85	130	119
Unvaccinated	437 (70.5)	49 (87.5)	106 (77.9)	65 (69.1)	64 (75.3)	82 (63.1)	71 (59.7)
Vaccinated	183 (29.5)	7 (12.5)	30 (22.1)	29 (30.9)	21 (24.7)	48 (36.9)	48 (40.3)
Site 1							
All pediatric hospitalizations	36	5	10	6	2	3	10
Unvaccinated	27 (75.0)	4 (80.0)	9 (90.0)	4 (66.7)	2 (100.0)	1 (33.3)	7 (70.0)
Vaccinated	9 (25.0)	1 (20.0)	1 (10.0)	2 (33.3)	0 (0.0)	2 (66.7)	3 (30.0)
Age 6 months–4 years	23	4	6	4	0	2	7
Unvaccinated	15 (65.2)	4 (100.0)	5 (83.3)	2 (50.0)	0 (–)	0 (0.0)	4 (57.1)
Vaccinated	8 (34.8)	0 (0.00)	1 (16.7)	2 (50.0)	0 (–)	2 (100.0)	3 (42.9)
Age 5–17 years	13	1	4	2	2	1	3
Unvaccinated	12 (92.3)	0 (0.0)	4 (100.0)	2 (100.0)	2 (100.0)	1 (100.0)	3 (100.0)
Vaccinated	1 (7.7)	1 (100.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
Site 2							
All pediatric hospitalizations	1537	120	478	313	182	231	213
Unvaccinated	1075 (69.9)	106 (88.3)	366 (76.6)	209 (66.8)	117 (64.3)	147 (63.6)	130 (61.0)
Vaccinated	462 (30.1)	14 (11.7)	112 (23.4)	104 (33.2)	65 (35.7)	84 (36.4)	83 (39.0)
Age 6 months–4 years	1152	96	390	253	134	137	142
Unvaccinated	803 (69.7)	84 (87.5)	300 (76.9)	168 (66.4)	81 (60.4)	85 (62.0)	85 (59.9)
Vaccinated	349 (30.3)	12 (12.5)	90 (23.1)	85 (33.6)	53 (39.6)	52 (38.0)	57 (40.1)

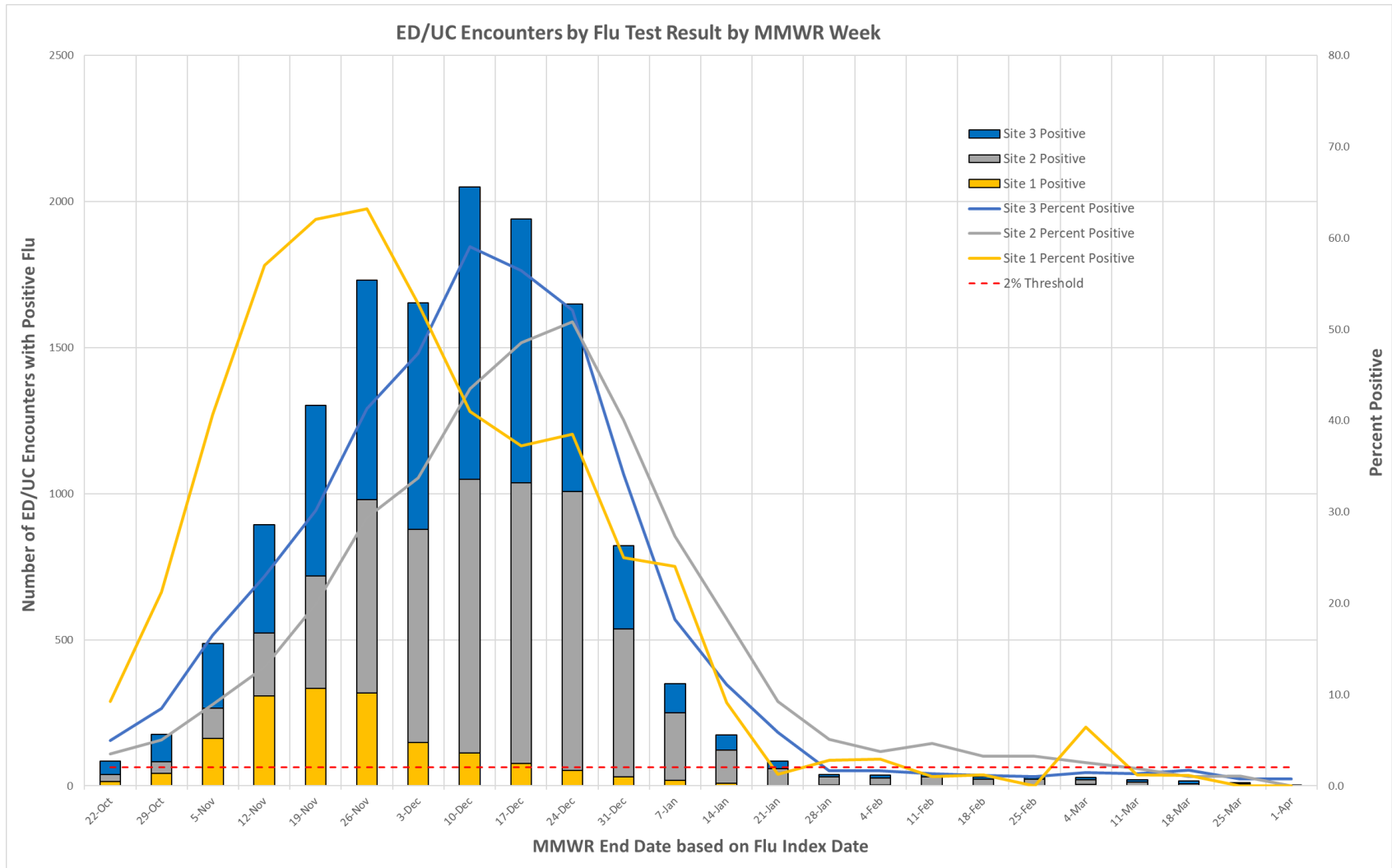
Age 5–17 years	385	24	88	60	48	94	71
Unvaccinated	272 (70.6)	22 (91.7)	66 (75.0)	41 (68.3)	36 (75.0)	62 (66.0)	45 (63.4)
Vaccinated	113 (29.4)	2 (8.3)	22 (25.0)	19 (31.7)	12 (25.0)	32 (34.0)	26 (36.6)
Site 3							
All pediatric hospitalizations	844	130	229	137	121	121	106
Unvaccinated	515 (61.0)	101 (77.7)	159 (69.4)	70 (51.1)	70 (57.9)	62 (51.2)	53 (50.0)
Vaccinated	329 (39.0)	29 (22.3)	70 (30.6)	67 (48.9)	51 (42.1)	59 (48.8)	53 (50.0)
Age 6 months–4 years	622	99	185	105	86	86	61
Unvaccinated	362 (58.2)	74 (74.7)	123 (66.5)	48 (45.7)	44 (51.2)	43 (50.0)	30 (49.2)
Vaccinated	260 (41.8)	25 (25.3)	62 (33.5)	57 (54.3)	42 (48.8)	43 (50.0)	31 (50.8)
Age 5–17 years	222	31	44	32	35	35	45
Unvaccinated	153 (68.9)	27 (87.1)	36 (81.8)	22 (68.8)	26 (74.3)	19 (54.3)	23 (51.1)
Vaccinated	69 (31.1)	4 (12.9)	8 (18.2)	10 (31.2)	9 (25.7)	16 (45.7)	22 (48.9)
Influenza positive							
All sites							
All pediatric hospitalizations	268	5	81	154	21	4	3
Unvaccinated	221 (82.5)	5 (100.0)	68 (84.0)	128 (83.1)	16 (76.2)	2 (50.0)	2 (66.7)
Vaccinated	47 (17.5)	0 (0.0)	13 (16.0)	26 (16.9)	5 (23.8)	2 (50.0)	1 (33.3)
Age 6 months–4 years	122	0	38	69	11	1	3
Unvaccinated	96 (78.7)	0 (–)	33 (86.8)	53 (76.8)	7 (63.6)	1 (100.0)	2 (66.7)
Vaccinated	26 (21.3)	0 (–)	5 (13.2)	16 (23.2)	4 (36.4)	0 (0.0)	1 (33.3)
Age 5–17 years	146	5	43	85	10	3	0
Unvaccinated	121 (82.9)	1 (20.0)	35 (81.4)	75 (88.2)	9 (90.0)	1 (33.3)	0 (–)
Vaccinated	25 (17.1)	4 (80.0)	8 (18.6)	10 (11.8)	1 (10.0)	2 (66.7)	0 (–)
Site 1							
All pediatric hospitalizations	6	1	4	1	N/A	N/A	N/A
Unvaccinated	4 (66.7)	1 (100.0)	3 (75.0)	0 (0.0)	N/A	N/A	N/A
Vaccinated	2 (33.3)	0 (0.0)	1 (25.0)	1 (100.0)	N/A	N/A	N/A
Age 6 months–4 years	1	0	1	0	N/A	N/A	N/A
Unvaccinated	1 (100.0)	0 (–)	1 (100.0)	0 (–)	N/A	N/A	N/A
Vaccinated	0 (0.0)	0 (–)	0 (0.0)	0 (–)	N/A	N/A	N/A
Age 5–17 years	5	1	3	1	N/A	N/A	N/A

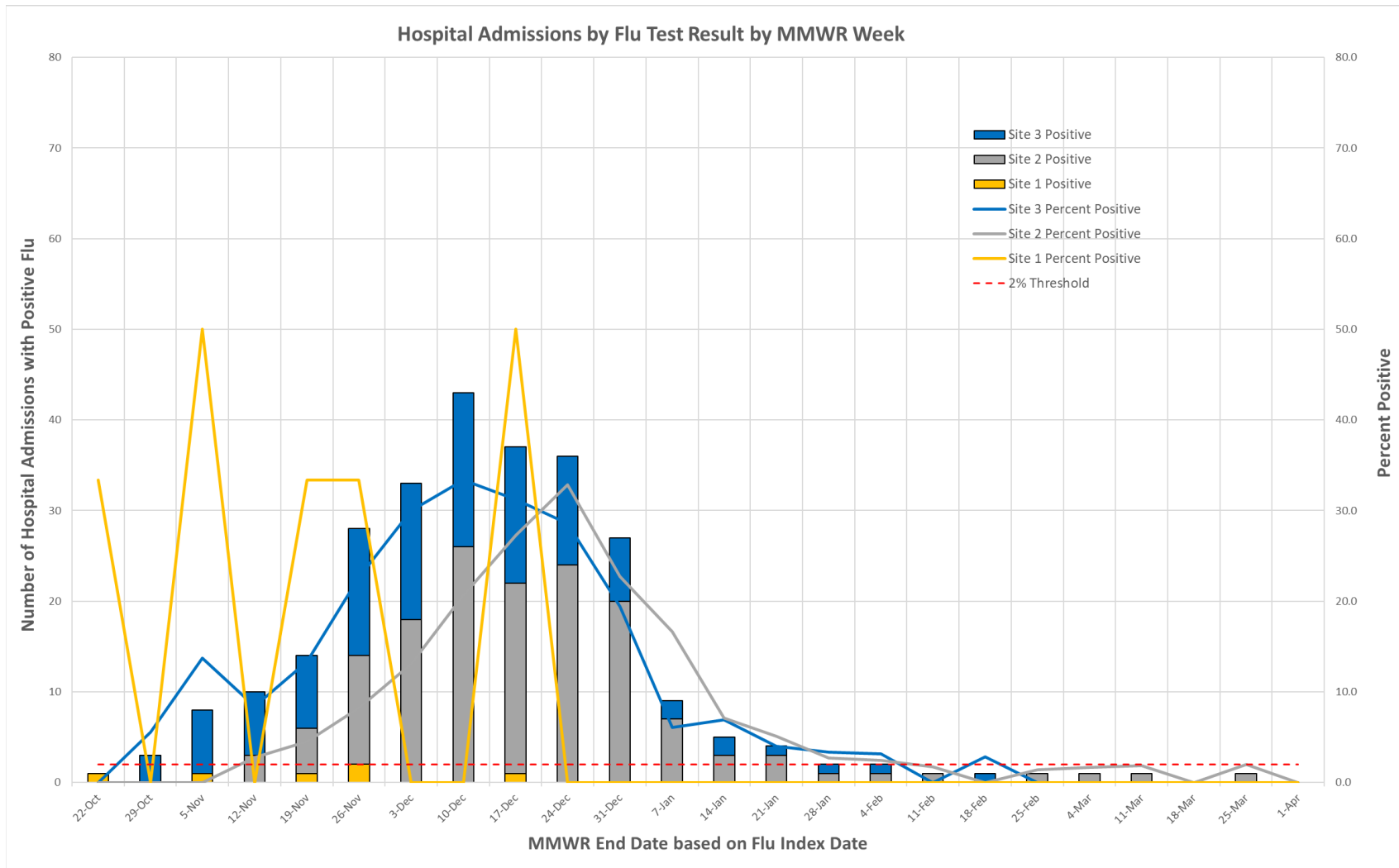
Unvaccinated	3 (60.0)	1 (100.0)	2 (66.7)	0 (0.0)	N/A	N/A	N/A
Vaccinated	2 (40.0)	0 (0.0)	1 (33.3)	1 (100.0)	N/A	N/A	N/A
Site 2							
All pediatric hospitalizations	149	N/A	30	99	14	3	3
Unvaccinated	129 (86.6)	N/A	28 (93.3)	85 (85.9)	12 (85.7)	2 (66.7)	2 (66.7)
Vaccinated	20 (13.4)	N/A	2 (6.7)	14 (14.1)	2 (14.3)	1 (33.3)	1 (33.3)
Age 6 months–4 years	67	N/A	12	44	7	1	3
Unvaccinated	55 (82.1)	N/A	11 (91.7)	35 (79.5)	6 (85.7)	1 (100.0)	2 (66.7)
Vaccinated	12 (17.9)	N/A	1 (8.3)	9 (20.5)	1 (14.3)	0 (0.0)	1 (33.3)
Age 5–17 years	82	N/A	18	55	7	2	0
Unvaccinated	74 (90.2)	N/A	17 (94.4)	50 (90.9)	6 (85.7)	1 (50.0)	0 (--)
Vaccinated	8 (9.8)	N/A	1 (5.6)	5 (9.1)	1 (14.3)	1 (50.0)	0 (--)
Site 3							
All pediatric hospitalizations	113	4	47	54	7	1	N/A
Unvaccinated	88 (77.9)	4 (100.0)	37 (78.7)	43 (79.6)	4 (57.1)	0 (0.0)	N/A
Vaccinated	25 (22.1)	0 (0.0)	10 (21.3)	11 (20.4)	3 (42.9)	1 (100.0)	N/A
Age 6 months–4 years	54	0	25	25	4	0	N/A
Unvaccinated	40 (74.1)	0 (0.0)	21 (84.0)	18 (72.0)	1 (25.0)	0 (0.0)	N/A
Vaccinated	14 (25.9)	0 (0.0)	4 (16.0)	7 (28.0)	3 (75.0)	0 (0.0)	N/A
Age 5–17 years	59	4	22	29	3	1	N/A
Unvaccinated	44 (74.6)	0 (0.0)	16 (72.7)	25 (86.2)	3 (100.0)	0 (0.0)	N/A
Vaccinated	15 (25.4)	4 (100.0)	6 (27.3)	4 (13.8)	0 (0.0)	1 (100.0)	N/A

26 Abbreviations: ARI, acute respiratory illness; N/A, not applicable.

27 ^a See Supplementary Table 2 for site and setting-specific analytic start and end dates. Vaccination status presented in the table was based on the date of the
28 encounter (i.e., date of admission).

29 **Supplementary Figure 1A & 1B.** Epidemiological curves of total number of positive influenza encounters and percent positivity by VISION
 30 partner site across Morbidity and Mortality Weekly Report (MMWR) weeks during the 2022-2023 influenza season. A) ED/UC encounters; B)
 31 hospitalizations. The dashed horizontal red line indicates the 2% percent positive threshold used to determine cutoff dates by VISION partner
 32 site and setting (ED/UC or hospital).

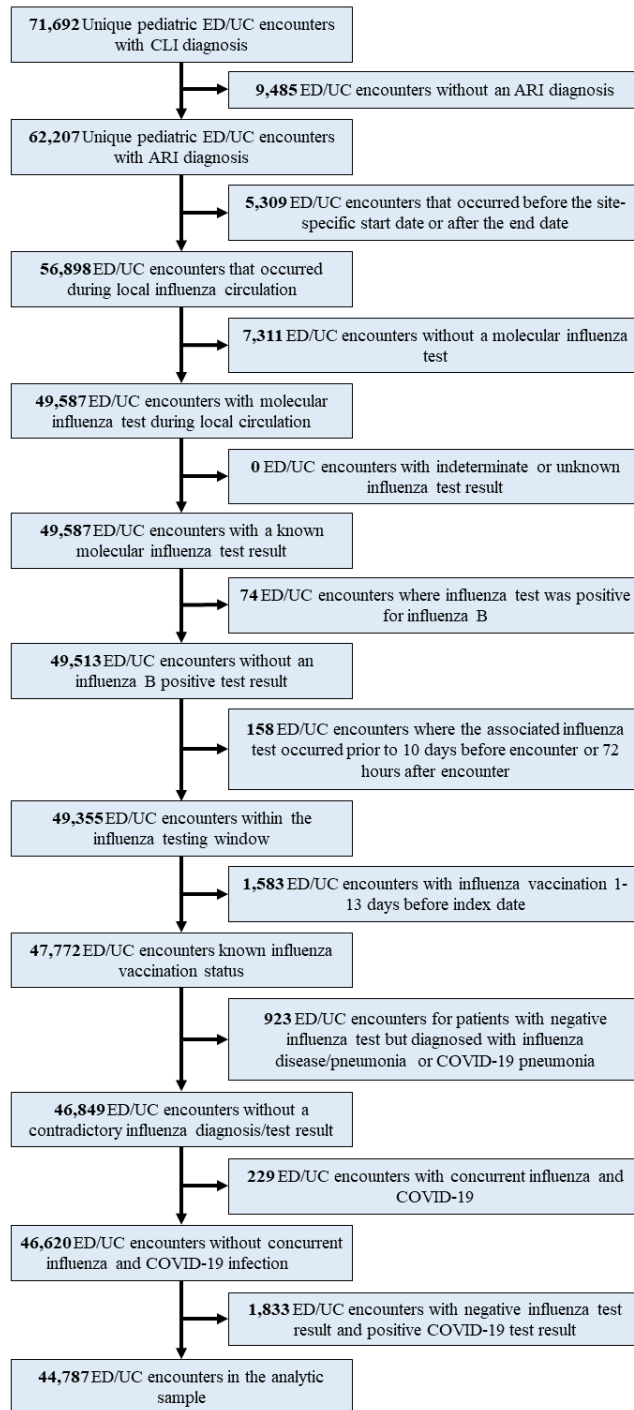




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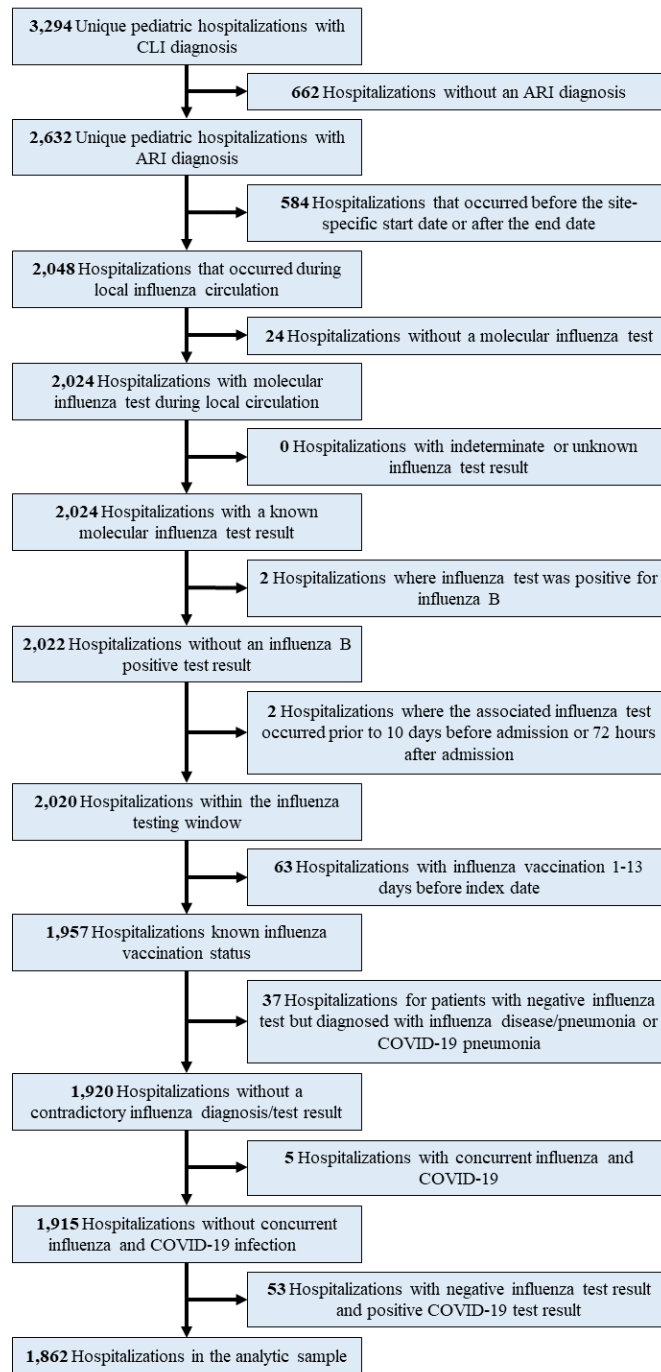
Abbreviations: ED, emergency department; MMWR, Morbidity and Mortality Weekly Report; UC, urgent care.

36 **Supplementary Figure 2.** Flowchart for pediatric emergency department and urgent care encounters



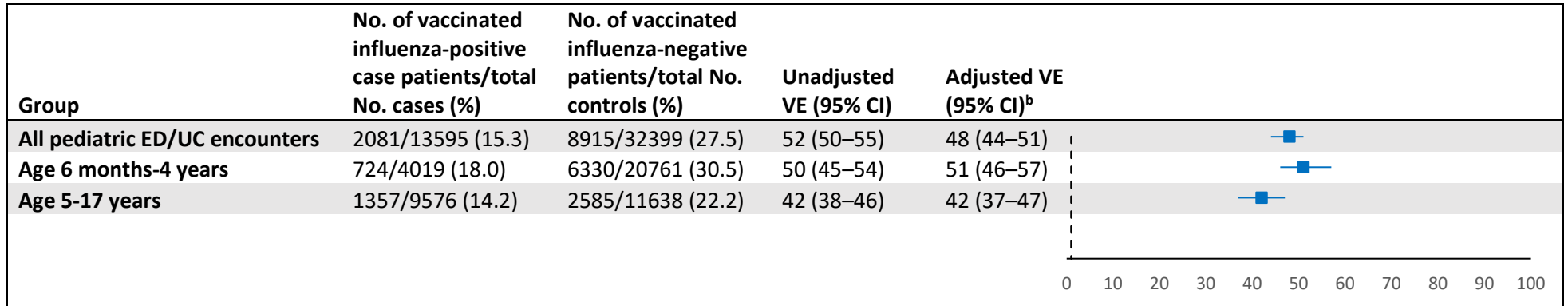
Abbreviations: CLI, COVID-19-like illness; ARI, acute respiratory illness

38 **Supplementary Figure 3. Flowchart for pediatric hospitalizations**



Abbreviations: CLI, COVID-19-like illness; ARI, acute respiratory illness

40 **Supplementary Figure 4.** Influenza vaccine effectiveness against pediatric emergency department- or urgent care-associated influenza illness among patients
 41 aged 6 months to under 2 years with COVID-like illness diagnosis^a and patients aged 2 to 17 years with acute respiratory illness, October 2022–March 2023

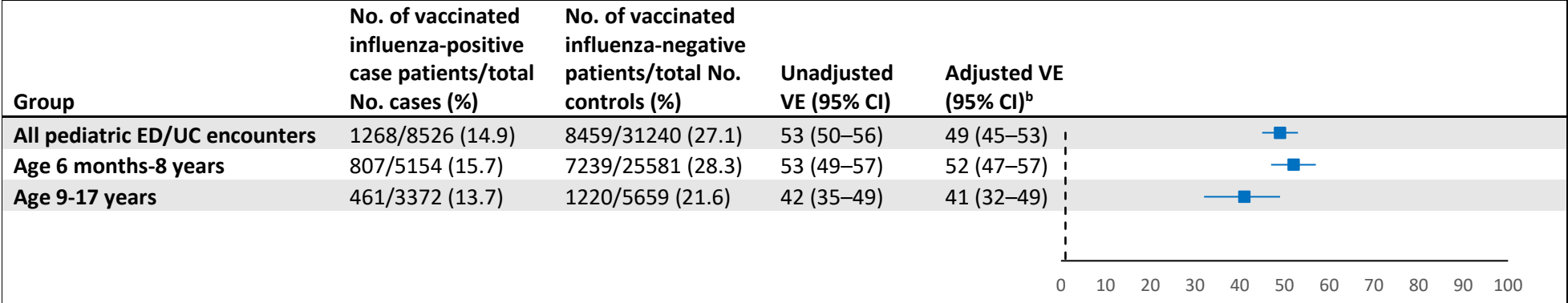


42 Abbreviations: ED, emergency department; ICD-10, International Classification of Diseases, 10th Revision; UC, urgent care; VE, vaccine effectiveness.

43 ^a COVID-19-like illness includes all ICD-10 codes indicating acute respiratory illness as well as those indicating signs and symptoms of acute febrile illness and acute non-
 44 respiratory illness.

45 ^b Adjusted for age (natural cubic spline), study site, and date of encounter (natural cubic splines) and applied inverse-probability-to-be-vaccinated weights.

46 **Supplementary Figure 5.** Influenza vaccine effectiveness against pediatric emergency department- or urgent care-associated influenza illness restricted to cases
 47 with influenza pneumonia or influenza disease discharge codes^a, October 2022–March 2023

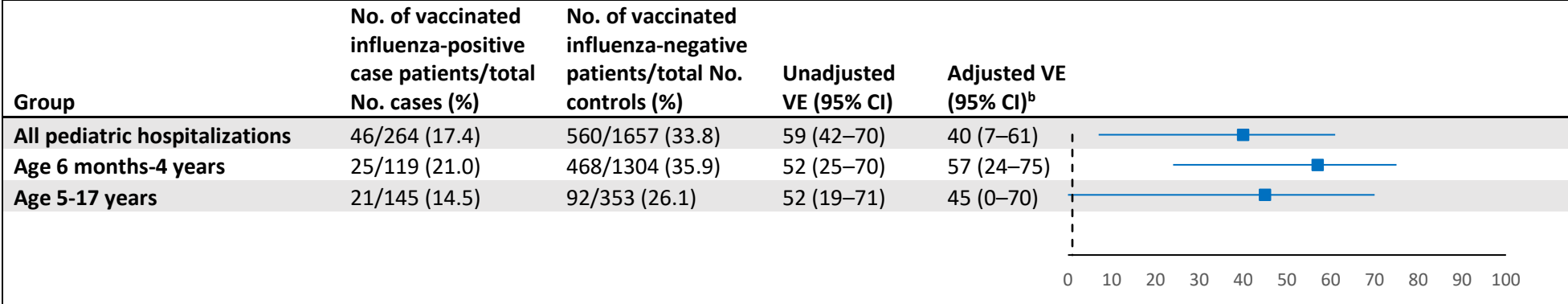


48 Abbreviations: ED, emergency department; ICD-10, International Classification of Diseases, 10th Revision; UC, urgent care; VE, vaccine effectiveness.

49 ^a ICD-10 discharge codes indicating influenza pneumonia or influenza disease.

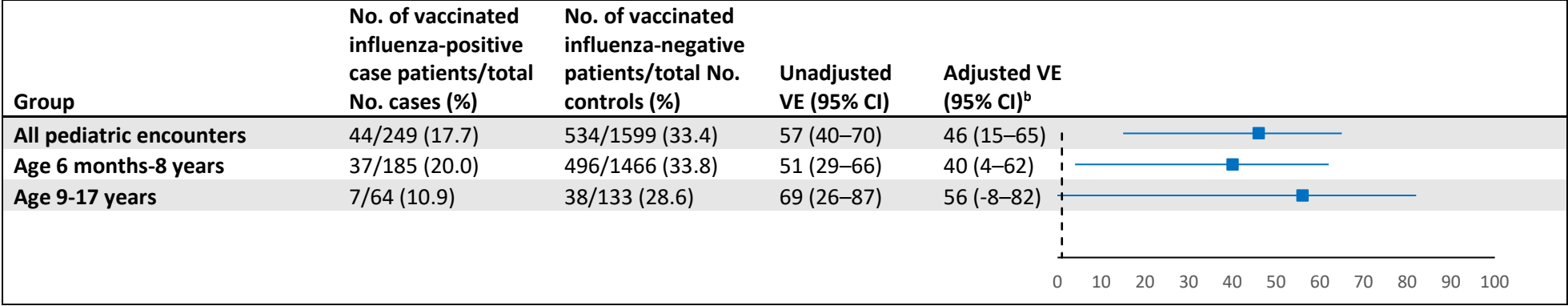
50 ^b Adjusted for age (natural cubic spline), study site, and date of encounter (natural cubic splines) and applied inverse-probability-to-be-vaccinated weights.

51 **Supplementary Figure 6.** Influenza vaccine effectiveness against pediatric hospitalized influenza illness among patients aged 6 months to under 2 years with
 52 COVID-like illness diagnosis^a and patients aged 2 to 17 years with acute respiratory illness, October 2022–February 2023



53 Abbreviations: ICD-10, International Classification of Diseases, 10th Revision; VE, vaccine effectiveness.
 54 ^a COVID-19-like illness includes all ICD-10 codes indicating acute respiratory illness as well as those indicating signs and symptoms of acute febrile illness and acute non-
 55 respiratory illness.
 56 ^b Adjusted for age (natural cubic spline), study site, and date of encounter (natural cubic splines) and applied inverse-probability-to-be-vaccinated weights.

57 **Supplementary Figure 7.** Influenza vaccine effectiveness against pediatric hospitalized influenza illness restricted to cases with influenza pneumonia or influenza
 58 disease discharge codes^a, October 2022–February 2023



59 Abbreviations: ICD-10, International Classification of Diseases, 10th Revision; VE, vaccine effectiveness

60 ^a ICD-10 discharge codes indicating influenza pneumonia or influenza disease.

61 ^b Adjusted for age (natural cubic spline), study site, and date of encounter (natural cubic splines) and applied inverse-probability-to-be-vaccinated weights.

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