

Supplementary Table 1. Characteristics of participating VISION partner healthcare systems

VISION healthcare system	Number of contributing ED/UC sites	Date of first eligible ED/UC encounter	Date of last eligible ED/UC encounter	Influenza test manufacturer and product used (estimated test runtime) ^a	Influenza treatment data capture procedures
Partner 1	48 urgent cares, 95 emergency departments	October 1, 2023	April 30, 2024	Standard molecular: - Internal laboratories: Cepheid GeneXpert Xpress SARS-CoV-2/Flu/RSV (<40 minutes)^b - External laboratories: Various tests performed including the Cepheid GeneXpert Xpress SARS-CoV-2/Flu/RSV (<40 minutes)^b, Roche cobas SARS-CoV-2 & Influenza A/B, Luminex Verigene Respiratory Virus Nucleic Acid Test Plus (3.5 hours)^c	NDC code and text search performed of EHR/VDW
Partner 2	21 urgent cares, 8 emergency departments	October 8, 2023	April 30, 2024	Standard molecular: - ED: Cepheid GeneXpert CoV-2/Flu/RSV plus (<40 minutes)^b - UC: Hologic Fusion Flu A/B/RSV assay (2-4 hr)^c	NDC, RxNorm, GPI code and text search performed of ED MAR and UC clinic database
Partner 3	23 emergency departments	October 17, 2023	April 30, 2024	Standard molecular: Cepheid GeneXpert CoV-2/Flu/RSV plus (<40 minutes) ^b	NDC and RxNorm code and text search of EHR and pharmacy records
Partner 4	25 urgent cares, 16 emergency departments	October 1, 2023	April 30, 2024	- Standard molecular: Roche cobas SARS-CoV-2 & Influenza A/B (3-8 hours on Cobas 6800/8800 System)^b - Rapid molecular: Roche cobas SARS-CoV-2 & Influenza A/B (20 minutes on Cobas Liat Systems)^b - Rapid antigen: Becton Dickinson & Co. BD Veritor System for Rapid Detection of Flu A+B (10-15 minutes)^d	NDC code and text query of medication name fields from outpatient pharmacy, point-of-sale records, and ED MAR

Abbreviations: ED/UC = emergency department and urgent care; EHR = electronic health record; GPI = generic product identifier; MAR = medication administration record; NDC = National Drug Code; VDW = virtual data warehouse

^a Test runtime is the manufacturer estimated time for the diagnostic platform/instrument to perform the test and does not include time associated with other diagnostic activities including sample collection, handling, transportation, laboratory backlog, and results generation, interpretation, and communication. Standard molecular testing is associated with longer total test result turnaround time compared to onsite, point-of-care testing.

^b Source: <https://www.cdc.gov/flu/professionals/diagnosis/table-flu-covid19-detection.html>

^c Source: <https://www.cdc.gov/flu/professionals/diagnosis/table-nucleic-acid-detection.html>

^d Source: <https://www.cdc.gov/flu/professionals/diagnosis/table-ridt.html>

11 **Supplementary Table 2.** List of International Classification of Diseases, 10th Revision (ICD-
12 10) discharge diagnosis codes used for acute respiratory illness case definition

Description of Diagnosis	ICD-10 codes
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*
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
Respiratory arrest	R09.2
Abnormal sputum	R09.3
Other specified symptoms and signs involving the circulatory and respiratory systems	R09.8*

13 Abbreviations: COPD, Chronic Obstructive Pulmonary Disease; ICD-10, International Classification of Diseases, 10th Revision;

14 N/A, not applicable.

15 *Includes all sub-codes.

16 **Supplementary Table 3.** Criteria for adults at higher risk of complications from influenza recommended for antiviral treatment and
17 applicable International Classification of Diseases, 10th Revision (ICD-10) discharge diagnosis codes
18

Criteria	Contributed by VISION partners	ICD-10 codes
Age ≥65 years	Yes	N/A
Cardiovascular disease (except hypertension alone)	Yes (heart failure, ischemic heart disease, pulmonary embolism, heart valve, atrial fibrillation, congenital heart disease, and other heart disease)	I50.*, I21.*, I22.*, I23.*, I24.*, I25.*, I01.*, I02.*, I09.*, I27.*, I28.*, I31.*, I42.*, I43.*, I44.*, I46.*, I51.0, I51.1, I51.2, I51.3, I51.5, I51.7, I51.8*, I51.9, I52.*, I97.0, I97.1*, M31.0, M31.1*, M31.2, M31.4, M31.6, M31.7, M31.8, M31.9, Z95.*, Z98.61, I71.*, I72.*, I73.*, I74.*, I75.*, I79.*, I26.*, I05.*, I06.*, I07.*, I08.*, I34.*, I35.*, I36.*, I37.*, I48.*, I50.9, I42.9, Q20*, Q21*, Q22*, Q23*, Q24*, Q25*, Q26*, Q27.0, Q27.3*, Q27.4, Q27.8, Q27.9, Q28*, Q33*, Q89.3, P29.30
Chronic pulmonary disease (including asthma)	Yes (asthma, chronic obstructive pulmonary disease, and other chronic lung disease conditions)	J45.*, J40*, J41.*, J42*, J43.*, J44.*, D86.0, E84.*, E88.01, J47.*, J60.*, J61.*, J62.*, J63.*, J64.*, J65.*, J66.*, J67.0, J67.1, J67.2, J67.3, J67.4, J67.5, J67.6, J67.7, J67.8, J68.*, J70.*, J81.1, J84.*, J95*, J96.1, J99.*, P26.*, P27.*, B39.*, B40.*, B41.*, B44.*, B45.*, B46.0, A15.*, A31.0
Hematologic disorders (including sickle cell disease)	Yes	D55.*, D56.0, D56.1, D56.2, D56.4, D56.5, D56.8, D56.9, D57.0*, D57.1, D57.2*, D57.4*, D57.8*, D58.*, D59.*, D60.*, D61.*, D64.0, D64.1, D64.2, D64.3, D64.4, D64.8*, D65.*, D66.*, D67.*, D68.*, D56.0, D56.1, D56.2, D56.4, D56.5, D56.9, D57.0*, D57.1, D57.2*, D57.4*, D57.8*
Hepatic disorders	Yes	B18.*, I81.*, I85.*, K70.*, K71.*, K72.*, K73.*, K74.*, K75.*, K76.*, K77.*
Immunosuppressing conditions	Yes (HIV, hematological Malignancy, other intrinsic immune condition or immunodeficiency, solid malignancy, transplant, Rheumatologic/inflammatory disorders, chronic steroid use)	B20.*, B21.*, B22.*, B23.*, B24.*, B97.35, O98.7*, Z21.* C81.*, C82.*, C83.*, C84.*, C85.*, C86.*, C88.*, C90.*, C91.*, C92.*, C93.*, C94.*, C95.*, C96.*, D46.*, D61.0*, D61.2, D61.9, D70.*, D71.*, D72.*, D73.0, D27.9, D47.4, D57.*, D72.81*, D73.0, D75.81, D75.89, D75.9, D80.*, D81.*, D82.*, D83.*, D84.*, D87.89, D89.*, D89.2, K70.3*, K70.4*, K72.*, K74.3, K74.4, K74.5, K74.6, N04.*, R18.*, R76.*, R83.4*, R84.4*, R85.4*, R86.4*, R87.4*, R89.4*, C00.*, C01.*, C02.*, C03.*, C04.*, C05.*, C06.*, C07.*, C08.*, C09.*, C10.*, C11.*, C12.*, C13.*, C14.*, C15.*, C16.*, C17.*, C18.*, C19.*, C20.*, C21.*, C22.*, C23.*, C24.*, C25.*, C26.*, C27.*, C28.*, C29.*, C30.*, C31.*, C32.*, C33.*, C34.*, C35.*, C36.*, C37.*, C38.*, C39.*, C40.*, C41.*, C42.*, C43.*, C44.*, C45.*, C46.*, C47.*, C48.*, C49.*, C50.*, C51.*, C52.*, C53.*, C54.*, C55.*, C56.*, C57.*, C58.*, C59.*, C60.*, C61.*, C62.*, C63.*, C64.*, C65.*, C66.*, C67.*, C68.*, C69.*, C70.*, C71.*, C72.*, C73.*, C74.*, C75.*, C76.*, C77.*, C78.*, C79.*, C7A.*, C7B.*, C80.*, D3A.* D00.*, D01.*, D02.*, D03.*, D04.*, D05.*, D06.*, D07.*, D08.*, D09.*, D10.*, D11.*, D12.*, D13.*, D14.*, D15.*, D16.*, D17.*, D18.*, D19.*, D20.*, D21.*, D22.*, D23.*, D24.*, D25.*, D26.*, D27.*, D28.*, D29.* D30.* D31.*, D32.*, D33.*, D34.*, D35.*, D36.*, D37.*, D38.*, D39.*, D40.*, D41.*, D42.*, D43.*, D44.*, D45.*, D46.*, D47.*, D48.*, D49.*, Z51.0, Z51.1*, Z51.89, C4A.*, T86.*, D47.Z1, Z48.2.*, Z94.*, Z98.85, D86.*, E85.*, G35.*, G36.*, G37.1*, G37.3*, G37.8*, G37.9.*, J67.9.*, J84.01, J84.02, J84.09, K50.*, K51.*, K52.*, L40.50, L40.54, L40.59, L93.0.*, L93.2.*, L94.*, M04.*, M05.*, M06.*, M07.*, M08.*, M12.*, M13.*, M14.*, M30.*, M31.3*, M31.5*, M32.*, M33.*, M34.*, M35.0*, M35.3*, M35.8*, M35.9*, M46.*, T78.40*, Z79.5*, Z79.52

Metabolic disorders (including diabetes mellitus)	Yes	E10.*, E11.*, E08.*, E09.* E13.*, E00.*, E01.*, E03.*, E05.*, E06.*, E15.*, E16.*, E20.*, E21.*, E22.*, E23.*, E24.*, E25.*, E26.*, E27.*, E28.*, E29.*, E31.*, E32.*, E34.*, Z68.4*, E70.*, E71.*, E72.*, E74.*, E75.2*, E76.*, E77.*, E78.*, E79.*, E80.*, E83.*, E85.*, E88.02, E88.09, E88.1, E88.2, E88.3, E88.4*, E88.8*, E88.9.
Neurologic and neurodevelopment conditions	Yes (neurological and musculoskeletal disease: dementia, Down's syndrome, other neurological and musculoskeletal disorders; cerebrovascular disease: stroke, other cerebrovascular disease; cerebral palsy, intellectual disabilities, epilepsy, spina bifida and other congenital anomalies of the nervous system, multiple sclerosis and transverse myelitis, muscular dystrophy, spinal cord injury)	F01.*, F02.*, F03.*, G30.*, H49.81*, M12.0*, M36.0, E75.02, E75.19, E75.4, F71.*, F72.*, F73.*, F84.2, G10.*, G11.*, G12.*, G13.*, G14.*, G20.*, G21.*, G23.*, G24.*, G25.*, G26.*, G31.*, G32.*, G35.*, G36.*, G37.*, G40.*, G45.*, G46.*, G60.*, G61.*, G62.*, G63.*, G64.*, G70.*, G71.*, G73.*, G80.*, G81.*, G82.*, G83.*, G90.3, G91.*, G93.*, G94.*, G95.*, G99.2, P91.*, Q00.*, Q01.*, Q02.*, Q03.*, Q04.*, Q05.*, Q06.*, Q07.*, Q76.*, Q77.*, Q78.*, Q79.*, Q85.*, Q87.4*, Q91.*, Q92.*, Q93.*, Q96.*, R41.*, R53.2, R54.*, Q90.*, I60.*, I61.*, I63.*, I62.*, I68.*, I69.*, G80.0, G80.1, G80.2, G80.3, G80.4, G80.8, G80.9, E78.71, E78.72, F70, F71, F72, F73, F78, F78.A1, F78.A9, F79, P04.3, Q86.0, Q87.1, Q87.11, Q87.19, Q87.2, Q87.3, Q87.5, Q87.81, Q87.89, Q89.7, Q89.8, Q90.0, Q90.1, Q90.2, Q90.9, Q91.0, Q91.1, Q91.2, Q91.3, Q91.4, Q91.5, Q91.6, Q91.7, Q92.0, Q92.1, Q92.2, Q92.5, Q92.61, Q92.62, Q92.7, Q92.8, Q92.9, Q93.0, Q93.1, Q93.2, Q93.3, Q93.4, Q93.5, Q93.51, Q93.59, Q93.7, Q93.81, Q93.88, Q93.89, Q93.9, Q95.2, Q95.3, Q99.2, G40.001, G40.009, G40.011, G40.019, G40.101, G40.109, G40.111, G40.119, G40.201, G40.209, G40.211, G40.219, G40.301, G40.309, G40.311, G40.319, G40.401, G40.409, G40.411, G40.419, G40.42, G40.501, G40.509, G40.801, G40.802, G40.803, G40.804, G40.811, G40.812, G40.813, G40.814, G40.821, G40.822, G40.823, G40.824, G40.833, G40.834, G40.89, G40.901, G40.909, G40.911, G40.919, G40.A01, G40.A09, G40.A11, G40.A19, G40.B01, G40.B09, G40.B11, G40.B19, G90.1, Q00.0, Q00.1, Q00.2, Q01.0, Q01.1, Q01.2, Q01.8, Q01.9, Q02, Q03.0, Q03.1, Q03.8, Q03.9, Q04.0, Q04.1, Q04.2, Q04.3, Q04.4, Q04.5, Q04.6, Q04.8, Q04.9, Q05.0, Q05.1, Q05.2, Q05.3, Q05.4, Q05.5, Q05.6, Q05.7, Q05.8, Q05.9, Q06.0, Q06.1, Q06.2, Q06.3, Q06.4, Q06.8, Q06.9, Q07.00, Q07.01, Q07.02, Q07.03, Q07.8, Q07.9, G35, G36.0, G36.1, G36.8, G36.9, G37.1, G37.2, G37.3, G37.4, G37.8, G37.9, G71.0, G71.00, G71.01, G71.02, G71.09, G71.11, G71.2, G71.20, G71.21, G71.220, G71.228, G71.29, G96.11, S12.000A, S12.001A, S12.100A, S12.101A, S12.200A, S12.201A, S12.300A, S12.301A, S12.400A, S12.401A, S12.500A, S12.501A, S12.600A, S12.601A, S12.9XXA, S12.000B, S12.001B, S12.100B, S12.101B, S12.200B, S12.201B, S12.300B, S12.301B, S12.400B, S12.401B, S12.500B, S12.501B, S12.600B, S12.601B, S14.0XXA, S14.0XXS, S14.101A, S14.102A, S14.103A, S14.104A, S14.105A, S14.106A, S14.107A, S14.108A, S14.109A, S14.111A, S14.112A, S14.113A, S14.114A, S14.115A, S14.116A, S14.117A, S14.118A, S14.119A, S14.121A, S14.122A, S14.123A, S14.124A, S14.125A, S14.126A, S14.127A, S14.128A, S14.129A, S14.131A, S14.132A, S14.133A, S14.134A, S14.135A, S14.136A, S14.137A, S14.138A, S14.139A, S14.141A, S14.142A, S14.143A, S14.144A, S14.145A, S14.146A, S14.147A, S14.148A, S14.149A, S14.151A, S14.152A, S14.153A, S14.154A, S14.155A, S14.156A, S14.157A, S14.158A, S14.159A, S14.101S, S14.102S, S14.103S, S14.104S, S14.105S, S14.106S, S14.107S, S14.108S, S14.109S, S14.111S, S14.112S, S14.113S, S14.114S, S14.115S, S14.116S, S14.117S, S14.118S, S14.119S, S14.121S, S14.122S, S14.123S, S14.124S, S14.125S, S14.126S, S14.127S, S14.128S, S14.129S, S14.131S, S14.132S, S14.133S, S14.134S, S14.135S, S14.136S, S14.137S, S14.138S, S14.139S, S14.141S, S14.142S, S14.143S, S14.144S, S14.145S, S14.146S, S14.147S, S14.148S, S14.149S, S14.151S, S14.152S, S14.153S, S14.154S, S14.155S, S14.156S, S14.157S,

		S14.158S, S14.159S, S22.009A, S22.019A, S22.029A, S22.039A, S22.049A, S22.059A, S22.069A, S22.079A, S22.089A, S22.009B, S22.019B, S22.029B, S22.039B, S22.049B, S22.059B, S22.069B, S22.079B, S22.089B, S24.0XXA, S24.101A, S24.102A, S24.103A, S24.104A, S24.109A, S24.111A, S24.112A, S24.113A, S24.114A, S24.119A, S24.131A, S24.132A, S24.133A, S24.134A, S24.139A, S24.141A, S24.142A, S24.143A, S24.144A, S24.149A, S24.151A, S24.152A, S24.153A, S24.154A, S24.159A, S24.0XXS, S24.101S, S24.102S, S24.103S, S24.104S, S24.109S, S24.111S, S24.112S, S24.113S, S24.114S, S24.119S, S24.131S, S24.132S, S24.133S, S24.134S, S24.139S, S24.141S, S24.142S, S24.143S, S24.144S, S24.149S, S24.151S, S24.152S, S24.153S, S24.154S, S24.159S, S32.009A, S32.019A, S32.029A, S32.039A, S32.049A, S32.059A, S32.009B, S32.019B, S32.029B, S32.039B, S32.049B, S32.059B, S32.10XA, S32.2XXA, S32.10XB, S32.2XXB, S34.01XA, S34.02XA, S34.101A, S34.102A, S34.103A, S34.104A, S34.105A, S34.109A, S34.111A, S34.112A, S34.113A, S34.114A, S34.115A, S34.119A, S34.121A, S34.122A, S34.123A, S34.124A, S34.125A, S34.129A, S34.131A, S34.132A, S34.139A, S34.3XXA, S34.01XS, S34.02XS, S34.101S, S34.102S, S34.103S, S34.104S, S34.105S, S34.109S, S34.111S, S34.112S, S34.113S, S34.114S, S34.115S, S34.119S, S34.121S, S34.122S, S34.123S, S34.124S, S34.125S, S34.129S, S34.131S, S34.132S, S34.139S
Renal disease	Yes	I12.*, I13.* N01.*, N02.*, N03.*, N04.*, N05.*, N06.*, N07.*, N08.*, N11.*, N14.*, N15.*, N16.*, N18.*, N25.*, N26.*, N28.*, Q27.1, Q27.2, Q60.*, Z49.*, Z91.15, Z94.0, Z99.2
Persons who are pregnant or postpartum (within 2 weeks after delivery)	Yes (pregnant only, postpartum not collected)	N/A
American Indian/Alaska Native people	Yes, but not considered as an exclusive criterion for being considered at higher risk of influenza complications	
Persons with extreme obesity (i.e., body mass index ≥ 40 kg/m ²)	Yes (BMI ≥ 40)	N/A
Residents of nursing homes and other chronic care facilities	No	N/A

22 **Supplementary Table 4.** Characteristics of encounters among adult patients at higher risk of influenza complications presenting with
23 acute respiratory illness to urgent cares or emergency departments and with positive influenza virus test results, stratified by VISION
24 partner, VISION Network, October 1, 2023 through April 30, 2024

Characteristic	Total, N (col. %)	VISION partner, N (column %)				p-value ^a
		Partner 1	Partner 2	Partner 3	Partner 4	
All ED/UC encounters	N=10,700 (100%)	N=573 (100%)	N=1,191 (100%)	N=2,794 (100%)	N=6,142 (100%)	--
Urban facility setting ^b	10,412 (97%)	510 (89%)	1,053 (88%)	2,794 (100%)	6,055 (99%)	<0.001
Month of encounter						<0.001
October-November	1,292 (12%)	29 (5%)	46 (4%)	315 (11%)	902 (15%)	
December-January	6,809 (64%)	332 (58%)	550 (46%)	1,771 (63%)	4,156 (68%)	
February-March	2,021 (19%)	166 (29%)	509 (43%)	524 (19%)	822 (13%)	
April	578 (5%)	46 (8%)	86 (7%)	184 (7%)	262 (4%)	
Encounter setting						<0.001
Urgent care	3,661 (34%)	214 (37%)	435 (37%)	0 (0%)	3,012 (49%)	
Emergency department	6,482 (61%)	309 (54%)	671 (56%)	2,794 (100%)	2,708 (44%)	
Combined ED/UC	557 (5%)	50 (9%)	85 (7%)	0 (0%)	422 (7%)	
Influenza test type						<0.001
Rapid antigen	1,155 (11%)	0 (0%)	0 (0%)	0 (0%)	1,155 (19%)	
Rapid molecular	4,314 (40%)	0 (0%)	0 (0%)	0 (0%)	4,314 (70%)	
Standard molecular	5,231 (49%)	573 (100%)	1,191 (100%)	2,794 (100%)	673 (11%)	
Same-day positive influenza test	10,126 (95%)	543 (95%)	1,141 (96%)	2,633 (94%)	5,809 (95%)	0.25
Age, median years (IQR)	65 (41–74)	61 (44–74)	66 (40–75)	68 (47–77)	62 (40–72)	<0.001
Age group						<0.001
18–49 years	3,582 (33%)	189 (33%)	402 (34%)	747 (27%)	2,244 (37%)	
50–64 years	1,650 (15%)	128 (22%)	151 (13%)	362 (13%)	1,009 (16%)	
≥65 years	5,468 (51%)	256 (45%)	638 (54%)	1,685 (60%)	2,889 (47%)	
Sex ^c						<0.001
Female	6,271 (59%)	325 (57%)	741 (62%)	1,671 (60%)	3,534 (58%)	
Male	4,427 (41%)	247 (43%)	450 (38%)	1,123 (40%)	2,607 (42%)	
Race and ethnicity						<0.001
American Indian or Alaska Native, Non-Hispanic	28 (0%)	2 (0%)	5 (0%)	14 (1%)	7 (0%)	
Asian, Non-Hispanic	1,062 (10%)	30 (5%)	39 (3%)	415 (15%)	578 (9%)	
Black, Non-Hispanic	1,276 (12%)	38 (7%)	195 (16%)	366 (13%)	677 (11%)	
Hawaiian or Pacific Islander, Non-Hispanic	108 (1%)	10 (2%)	0 (0%)	46 (2%)	52 (1%)	
Hispanic	3,839 (36%)	57 (10%)	73 (6%)	689 (25%)	3,020 (49%)	

Multiracial, Non-Hispanic	154 (1%)	27 (5%)	53 (4%)	46 (2%)	28 (0%)	
Other race, Non-Hispanic	70 (1%)	3 (1%)	6 (1%)	0 (0%)	61 (1%)	
Unknown race, Non-Hispanic	6 (0%)	0 (0%)	4 (0%)	1 (0%)	1 (0%)	
White, Non-Hispanic	3,935 (37%)	391 (68%)	805 (68%)	1,121 (40%)	1,618 (26%)	
Unknown race and ethnicity	222 (2%)	15 (3%)	11 (1%)	96 (3%)	100 (2%)	
Medicaid recipient ^d	1,704 (16%)	99 (19%)	230 (19%)	229 (8%)	1,146 (19%)	<0.001
SVI 2020 ^e						<0.001
Quartile 1 (low vulnerability)	1,672 (16%)	113 (20%)	443 (38%)	541 (19%)	575 (9%)	
Quartile 2	2,413 (23%)	179 (31%)	371 (32%)	738 (26%)	1,125 (18%)	
Quartile 3	2,883 (27%)	174 (30%)	180 (16%)	859 (31%)	1,670 (27%)	
Quartile 4 (high vulnerability)	3,690 (35%)	106 (19%)	164 (14%)	656 (23%)	2,764 (45%)	
Received 2023–2024 seasonal influenza vaccination	4,461 (42%)	211 (37%)	462 (39%)	1,088 (39%)	2,700 (44%)	<0.001
BMI, median kg/m ² ^f (IQR)	32 (26–42)	34 (28–46)	32 (26–42)	30 (25–38)	33 (27–44)	<0.001
BMI category, kg/m ² ^f						<0.001
<18.5	143 (2%)	11 (2%)	24 (2%)	56 (2%)	52 (1%)	
18.5 to <25	1,816 (19%)	72 (15%)	216 (20%)	607 (23%)	921 (18%)	
25 to <30	2,570 (27%)	115 (25%)	283 (26%)	721 (27%)	1,451 (28%)	
30 to <40	2,674 (28%)	168 (36%)	290 (27%)	702 (26%)	1,514 (29%)	
≥40	2,218 (24%)	101 (22%)	273 (25%)	609 (23%)	1,235 (24%)	
≥1 categories of HR-UMCs	5,537 (52%)	453 (79%)	437 (37%)	1,053 (38%)	3,594 (59%)	<0.001
Cardiovascular ^g	1,070 (10%)	129 (23%)	55 (5%)	207 (7%)	679 (11%)	<0.001
Chronic pulmonary ^h	2,871 (27%)	243 (42%)	246 (21%)	650 (23%)	1,732 (28%)	<0.001
Hematologic ⁱ	64 (1%)	11 (2%)	4 (0%)	2 (0%)	47 (1%)	<0.001
Hepatic	150 (1%)	18 (3%)	5 (0%)	12 (0%)	115 (2%)	<0.001
Immunosuppressing ^j	778 (7%)	67 (12%)	55 (5%)	73 (3%)	583 (9%)	<0.001
Metabolic ^k	2,142 (20%)	182 (32%)	48 (4%)	146 (5%)	1,766 (29%)	<0.001
Neurologic and neurodevelopment conditions ^l	524 (5%)	75 (13%)	42 (4%)	78 (3%)	329 (5%)	<0.001
Renal	612 (6%)	64 (11%)	24 (2%)	67 (2%)	457 (7%)	<0.001
Pregnant	620 (6%)	24 (4%)	100 (8%)	136 (5%)	360 (6%)	<0.001
Prescribed influenza antiviral ^m	7,138 (67%)	332 (58%)	554 (47%)	1,776 (64%)	4,476 (73%)	<0.001
Baloxavir	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Oseltamivir	7,135 (100%)	332 (100%)	554 (100%)	1,775 (100%)	4,474 (100%)	
Peramivir	0 (0%)	0 (0%)	0 (0%)	0 (0%)	0 (0%)	
Zanamivir	3 (0%)	0 (0%)	0 (0%)	1 (0%)	2 (0%)	

Abbreviations: BMI = body mass index; ED/UC = emergency department and urgent care; HR-UMCs = underlying medical conditions considered to increase risk of influenza complications; IQR = interquartile range; SVI = Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Social Vulnerability Index (2020)

^a Chi-square test performed for categorical and binary variables, Kruskal-Wallis test used for continuous variables.

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28 ^b Urbanicity defined using the 2013 National Center for Health Statistics Urban-Rural Classification Scheme. Rural is defined as a health facility located in a county with a
29 population of <50,000, urban is defined as a health facility located in a county with a population of ≥50,000. N=150 encounters had an unknown urbanicity.
30 ^c Sex missing for N=2 encounters.
31 ^d Medicaid status missing for N=39 encounters.
32 ^e SVI was missing for N=42 encounters.
33 ^f BMI was missing for N=1,279 encounters.
34 ^g Cardiovascular diseases include heart failure, ischemic heart disease, pulmonary embolism, heart valve, atrial fibrillation, congenital heart disease, and other heart disease, and
35 does not include hypertension alone.
36 ^h Chronic pulmonary disease includes asthma, chronic obstructive pulmonary disease, and other chronic lung disease conditions.
37 ⁱ Hematologic disorders include sickle cell disease and other blood disorders.
38 ^j Immunosuppressing conditions include human immunodeficiency virus (HIV), hematological malignancy, other intrinsic immune condition or immunodeficiency, solid
39 malignancy, transplant, rheumatologic/inflammatory disorders, and chronic steroid use.
40 ^k Metabolic disorders include diabetes mellitus and other endocrine disorders.
41 ^l Neurologic and neurodevelopment conditions include dementia, Down's syndrome, other neurological and musculoskeletal disorders, stroke, and other cerebrovascular disease.
42 ^m Includes neuraminidase inhibitors (oseltamivir, zanamivir, peramivir) and baloxavir marboxil.

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Characteristics	Total encounters	Prescribed				Dispensed				
		Prescribed among all encounters (%)	Adjusted ^a odds ratio of prescribed (95% CIs)	Prescribed same day among all prescribed (%)	Adjusted ^a odds ratio of prescribed same day (95% CIs)	Dispensed among all encounters (%)	Dispensed among all prescribed (%)	Adjusted ^a odds ratio of dispensed (95% CIs)	Dispensed same day as prescribed among all dispensed (%)	Adjusted ^a odds ratio of dispensed same day (95% CIs)
Unvaccinated	3,150	1,744 (55%)	Ref.	1,204 (69%)	Ref.	1,339 (43%)	1,339 (77%)	Ref.	870 (65%)	Ref.
Vaccinated	2,081	1,306 (63%)	1.28 (1.07–1.54)	839 (64%)	0.83 (0.64–1.08)	1,095 (53%)	1,095 (84%)	1.84 (1.30–2.60)	703 (64%)	1.12 (0.76–1.63)

Abbreviations: AI/AN = American Indian or Alaska Native; BMI = body mass index; CI = confidence interval; HR-UMCs = underlying medical conditions considered to increase risk of influenza complications; NH = Non-Hispanic; PI = Pacific Islander; SVI = Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Social Vulnerability Index (2020)

^a Age group models were adjusted for VISION healthcare system, encounter setting, week of the season, number of categories of higher risk underlying medical conditions considered to increase risk of influenza complications (cardiovascular disease except hypertension alone, chronic pulmonary disease including asthma, hematologic disorders including sickle cell, hepatic disorders, immunosuppressing conditions, metabolic disorders including diabetes mellitus, neurologic and neurodevelopment conditions including stroke and other cerebrovascular diseases, and renal disease), race and ethnicity, BMI (continuous), sex, and seasonal influenza vaccination status. Models for race and ethnicity were adjusted for VISION healthcare system, encounter setting, week of the season, number of categories of underlying medical conditions considered to increase risk of influenza complications, age (continuous), BMI (continuous), sex, and seasonal influenza vaccination status. Models for BMI were adjusted for VISION healthcare system, encounter setting, week of the season, number of categories of underlying medical conditions considered to increase risk of influenza complications, race and ethnicity, age (continuous), sex, and seasonal influenza vaccination status. Models for HR-UMCs were adjusted for VISION healthcare system, encounter setting, week of the season, race and ethnicity, age (continuous), BMI (continuous), sex, and seasonal influenza vaccination status. Vaccination models were adjusted for VISION healthcare system, encounter setting, week of the season, number of categories of higher risk underlying medical conditions considered to increase risk of influenza complications, race and ethnicity, age (continuous), BMI (continuous), and sex.

^b BMI missing for N=457 encounters.

Supplementary Table 6. Characteristics of encounters among adult patients at higher risk of influenza complications presenting with acute respiratory illness to urgent cares or emergency departments and with positive influenza virus test results, restricted to the VISION partner performing multiple types of influenza testing and stratified by influenza test type, VISION Network, October 1, 2023 through April 30, 2024

Characteristic	Total, N (col. %)	Type of influenza test, N (column %)			p-value ^a
		Rapid antigen	Rapid molecular	Standard molecular	
All VISION Partner 4 ED/UC encounters	6,142 (100%)	1,155 (100%)	4,314 (100%)	673 (100%)	--
Urban facility setting ^b	6,055 (99%)	1,148 (99%)	4,269 (99%)	638 (95%)	<0.001
Month of encounter					0.00
October-November	902 (15%)	177 (15%)	653 (15%)	72 (11%)	
December-January	4,156 (68%)	742 (64%)	2,922 (68%)	492 (73%)	
February-March	822 (13%)	174 (15%)	564 (13%)	84 (12%)	
April	262 (4%)	62 (5%)	175 (4%)	25 (4%)	
Encounter setting					<0.001
Urgent care	3,012 (49%)	1,100 (95%)	1,400 (32%)	512 (76%)	
Emergency department	2,708 (44%)	9 (1%)	2,579 (60%)	120 (18%)	
Combined ED/UC	422 (7%)	46 (4%)	335 (8%)	41 (6%)	
Same-day positive influenza test	5,809 (95%)	1,123 (97%)	4,104 (95%)	582 (86%)	<0.001
Age, median years (IQR)	62 (40–72)	58 (35–70)	62 (41–73)	63 (41–72)	<0.001
Sex ^c					0.12
Female	3,534 (58%)	647 (56%)	2,513 (58%)	374 (56%)	
Male	2,607 (42%)	507 (44%)	1,801 (42%)	299 (44%)	
Race and ethnicity					<0.001
American Indian or Alaska Native, Non-Hispanic	7 (0%)	2 (0%)	5 (0%)	0 (0%)	
Asian, Non-Hispanic	578 (9%)	107 (9%)	411 (10%)	60 (9%)	
Black, Non-Hispanic	677 (11%)	78 (7%)	534 (12%)	65 (10%)	
Hawaiian or Pacific Islander, Non-Hispanic	52 (1%)	6 (1%)	40 (1%)	6 (1%)	
Hispanic	3,020 (49%)	672 (58%)	2,015 (47%)	333 (49%)	
Multiracial, Non-Hispanic	28 (0%)	3 (0%)	23 (1%)	2 (0%)	
Other race, Non-Hispanic	61 (1%)	13 (1%)	40 (1%)	8 (1%)	
Unknown race, Non-Hispanic	1 (0%)	0 (0%)	1 (0%)	0 (0%)	
White, Non-Hispanic	1,618 (26%)	246 (21%)	1,191 (28%)	181 (27%)	
Unknown race and ethnicity	100 (2%)	28 (2%)	54 (1%)	18 (3%)	
Medicaid recipient	1,146 (19%)	178 (15%)	837 (19%)	131 (19%)	0.01
SVI 2020 ^d					0.06

Quartile 1 (low vulnerability)	575 (9%)	115 (10%)	396 (9%)	64 (10%)	
Quartile 2	1,125 (18%)	193 (17%)	802 (19%)	130 (19%)	
Quartile 3	1,670 (27%)	324 (28%)	1,184 (27%)	162 (24%)	
Quartile 4 (high vulnerability)	2,764 (45%)	520 (45%)	1,930 (45%)	314 (47%)	
Received 2023–2024 seasonal influenza vaccination	2,700 (44%)	487 (42%)	1,893 (44%)	320 (48%)	0.08
BMI, median kg/m ² ^e (IQR)	33 (27–44)	39 (28–100)	32 (26–43)	35 (28–50)	<0.001
≥1 categories of HR-UMCs ^f	3,594 (59%)	530 (46%)	2,674 (62%)	390 (58%)	<0.001
Pregnant	360 (6%)	82 (7%)	249 (6%)	29 (4%)	0.05

Abbreviations: BMI = body mass index; ED/UC = emergency department and urgent care; HR-UMCs = underlying medical conditions considered to increase risk of influenza complications; IQR = interquartile range; SVI = Centers for Disease Control and Prevention/Agency for Toxic Substances and Disease Social Vulnerability Index (2020)

^a Chi-square test performed for categorical and binary variables, Kruskal-Wallis test used for continuous variables.

^b Urbanicity defined using the 2013 National Center for Health Statistics Urban-Rural Classification Scheme. Rural is defined as a health facility located in a county with a population of <50,000, urban is defined as a health facility located in a county with a population of ≥50,000. N=85 encounters from VISION partner 4 had an unknown urbanicity.

^c Sex missing for N=1 encounters.

^d SVI was missing for N=8 encounters.

^e BMI was missing for N=969 encounters.

^f Cardiovascular disease except hypertension alone, chronic pulmonary disease including asthma, hematologic disorders including sickle cell, hepatic disorders, immunosuppressing conditions, metabolic disorders including diabetes mellitus, neurologic and neurodevelopment conditions including stroke and other cerebrovascular diseases, and renal disease

Supplementary Table 7. Characteristics of encounters among patients at higher risk of influenza complications presenting with acute respiratory illness to urgent cares or emergency departments and with positive influenza virus test results, stratified by antiviral prescribing and dispensing group and restricted to the VISION partner performing multiple types of influenza testing, VISION Network, October 1, 2023 through April 30, 2024

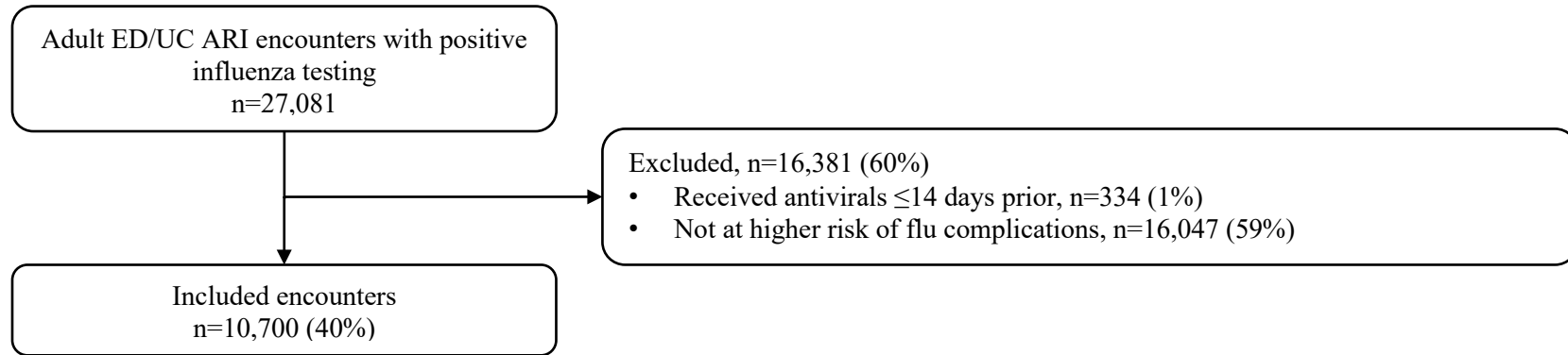
Characteristic	Antiviral group							
	Prescribing, N (row %)				Dispensing, N (row %)			
	Total encounters	Not prescribed	Prescribed ^a	p-value ^b	Total prescribed	Prescribed but not dispensed	Prescribed and dispensed ^a	p-value ^b
All VISION Partner 4 ED/UC encounters	6,142	1,666 (27%)	4,476 (73%)	--		244 (5%)	4,232 (95%)	--
By influenza test type				<0.001				<0.001
Rapid antigen	1,155	181 (16%)	974 (84%)		974	32 (3%)	942 (97%)	
Rapid molecular	4,314	1,200 (28%)	3,114 (72%)		3,114	178 (6%)	2,936 (94%)	
Standard molecular	673	285 (42%)	388 (58%)		388	34 (9%)	354 (91%)	

Abbreviations: BMI = body mass index; ED/UC = emergency department and urgent care; HR-UMCs = underlying medical conditions considered to increase risk of influenza complications

^a Includes neuraminidase inhibitors (NAIs) (Oseltamivir [Tamiflu], Peramivir [Rapivab], and Zanamivir [Relenza]) and Baloxavir marboxil (Xofluza).

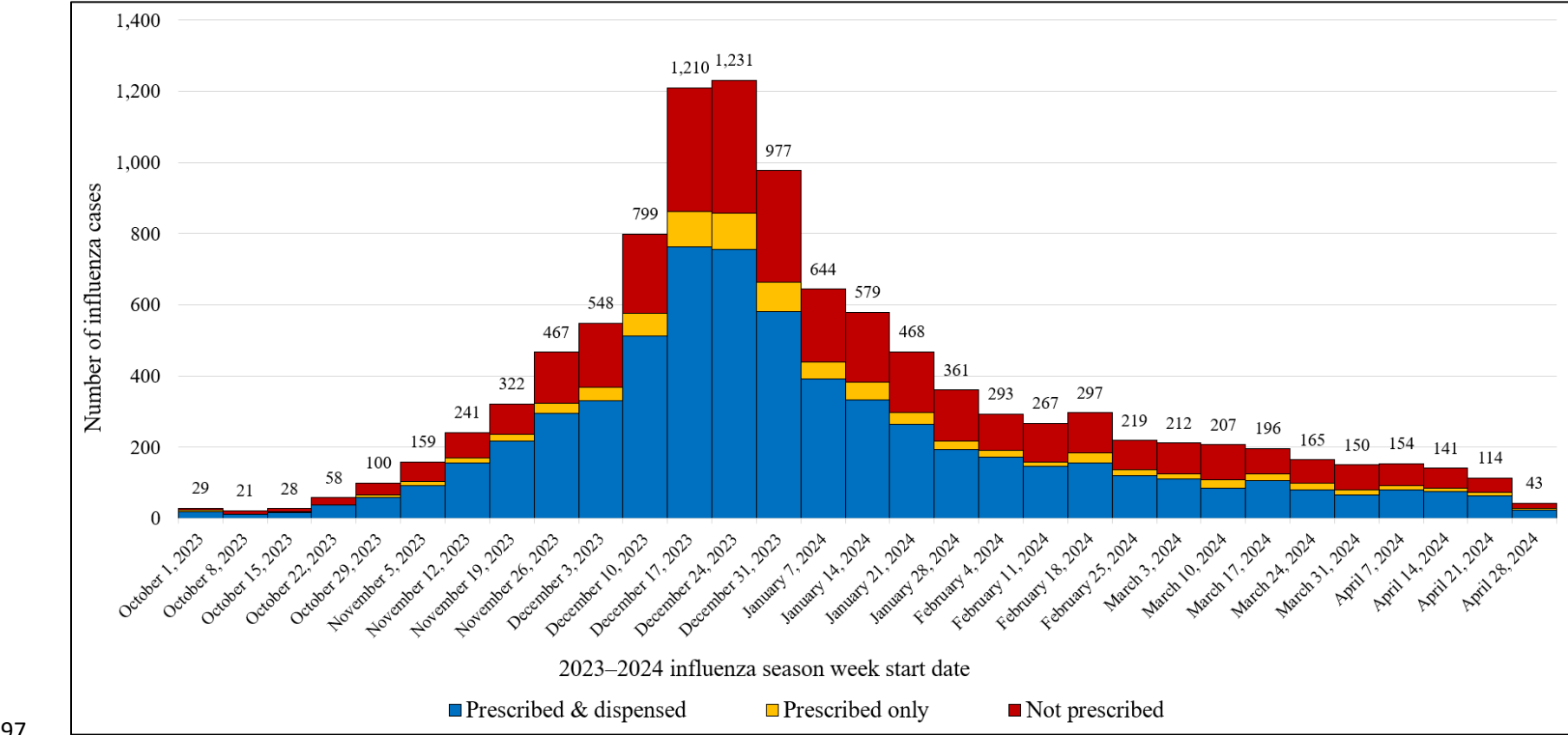
^b Chi-square test performed for categorical and binary variables.

Supplementary Figure 1. Flow diagram for ED/UC encounters, October 1, 2023 through April 30, 2024

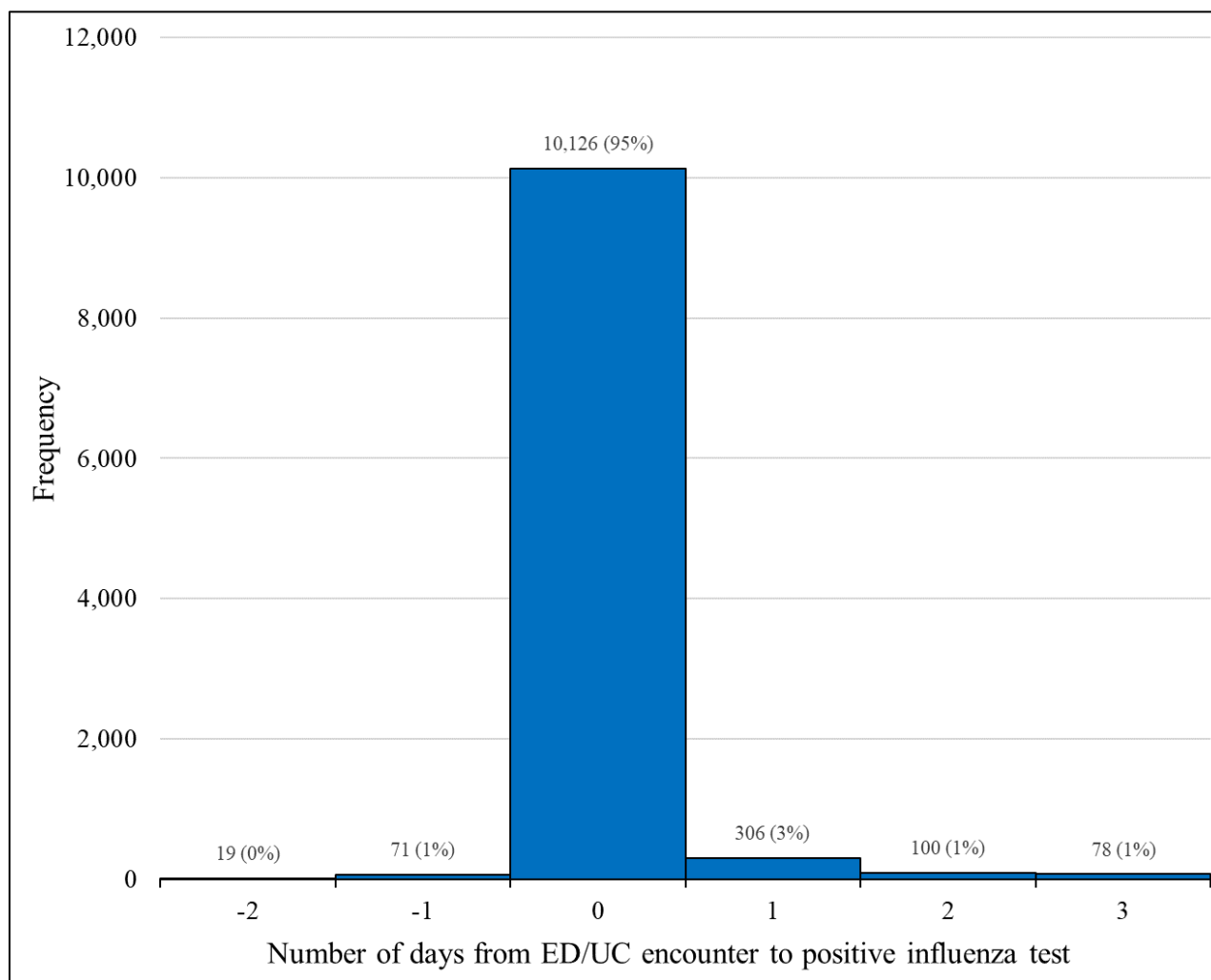


Abbreviations: ARI = acute respiratory illness; ED/UC = emergency department and urgent care

94 **Supplementary Figure 2.** Encounters among patients at higher risk of influenza complications presenting with acute respiratory
 95 illness to urgent cares or emergency departments and with positive influenza virus test results, across influenza season week and
 96 stratified by influenza antiviral status, VISION Network, October 1, 2023 through April 30, 2024



98 **Supplementary Figure 3.** Days from date of encounter to influenza test among adult patients at higher risk of influenza complications
99 presenting with acute respiratory illness to urgent cares or emergency departments and with positive influenza virus test results,
100 VISION Network, October 1, 2023 through April 30, 2024



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