

SARS CoV2, Influenza and Other Respiratory Viruses Test Options: 2022-23 Season

During the first year after onset of the COVID-19 pandemic, 2020-21, due to universal masking, social distancing, and avoidance of social gatherings, seasonal respiratory virus infections dropped to low levels. Once vaccination was available and restrictions loosened, non-COVID respiratory viruses were again diagnosed, but with somewhat atypical seasonality. [See Tables page 2]

Now that most people are resuming normal activities and masking has been abandoned by many, the 2022-23 season is expected to be very active for respiratory viruses, including influenza (1). In the Southern hemisphere, a resurgence of influenza was observed in 2022. So far this fall, the YNH Pediatric emergency department has seen unprecedented numbers of respiratory virus infections and many admissions. In addition, rhinoviruses and enterovirus D68 have been reported to cause severe disease in children (2). With reduced viral circulation for the past two seasons, immunity to respiratory viruses likely has either not developed or has waned, and more frequent and potentially more symptomatic infections can be anticipated.

Test Options: Multiple test options available at YNH for respiratory viruses are shown in **Table 1**. Note that tests for influenza and RSV are available only in combination with other viruses, and not as single pathogens. Enterovirus PCR must be ordered separately.

Time to result: For Outpatient testing, a TAT of ~24-36 hours is anticipated but may be longer during periods of high demand. For pre-procedure testing, samples should be collected 2-3 days prior to the procedure to ensure results are received in time. For new admissions to the hospital, more rapid results are available. Inpatient test results on nasopharyngeal swab samples are usually available within 2-6 hrs of receipt in the laboratory.

Table 1. Respiratory virus test options, 2022-2023 season

Outpatient Test Options	Sample Type	Time to result	YNHH COVID Collection sites
COVID Only PCR	Nasopharynx*, Mid-Turbinate, Nasal	36 Hours	Yes
COVID + Flu ^a PCR	Nasopharynx*, Mid-Turbinate, Nasal	36 Hours	Yes
COVID + Flu ^a + RSV PCR	Nasopharynx*, Mid-Turbinate, Nasal	36 Hours	Yes
Flu ^a + RSV PCR	Nasopharynx*, Mid-Turbinate, Nasal	36 Hours	No
Respiratory Virus PCR Panel ^b	Nasopharynx*, Mid-Turbinate, Nasal	36 Hours	No
Inpatient Test Options			
COVID + Flu ^a + RSV PCR (<i>ED orderable</i>)	Nasopharynx*, Mid-Turbinate, Nasal	2 Hours	N/A
COVID Only PCR	Nasopharynx*, Mid-Turbinate, Nasal	2-6 Hours	N/A
Respiratory Virus PCR Panel ^b	Nasopharynx*, Mid-Turbinate, Nasal	6 Hours	N/A
Respiratory Virus PCR Panel (LDT) ^c	BAL*, sputum, tissue	12-30 Hours	N/A
COVID Only PCR (LDT)	BAL*, sputum, saliva	12-30 Hours	N/A

LDT, Lab developed test. Not FDA-cleared commercial kit. *Most sensitive sample option

a, Flu PCR includes Influenza A + Influenza B

b, RVP Panel includes Flu A+B, RSV, Adenovirus, Parainfluenza 1-4, hMPV, Rhinovirus.

Four human coronaviruses (HCoV 229E, OC43, NL63 and HKU1) will be added to RVP during the season, IT resources permitting. Order Enterovirus PCR separately. if indicated (e.g. for EV-D68)

c, Lab developed (LDT) Respiratory Virus Panel (RVP) includes the viruses above plus the 4 human coronaviruses.

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Respiratory Virus Positive results are updated weekly on the Clinical Virology Laboratory website:

<https://medicine.yale.edu/labmed/sections/virology/seasonaltests.aspx> See Table 2 below for the total positive results for the past 3 seasons. See Table 3 for monthly positives over the past year.

Table 2. Respiratory Virus Positives Reported over the past 3 seasons at YNHH

Respiratory Virus Positive Samples at YNHH Total Number per Season, from October -September			
Virus	2019-2020	2020-2021 ^a	2021-2022
RSV	632	503	637
Influenza A	1,358	0	969
Influenza B	2,002	0	0
SARS CoV-2	6,958	36,846	70,472
Parainfluenza types 1-4	197	232	360
Adenovirus	211	81	183
Human metapneumovirus	207	25	344
Rhinovirus	1,083	751	1,418
Coronavirus 229E/OC43 NL63/HKU1	430	23 ^b	42 ^b

a, Seasonal variation suppressed in 2020-2021 season due to social distancing and masking.

b, Low HCoV detection is due to transition from LDT to Panther Fusion RVP, which does not include the 4 HCoV.

Table 3. Positive virus detections by month, for Oct 2021- Sept 2022

Month	RSV ^a	Flu A ^a	Flu B	SARS CoV-2	Paraflu 1-4	Adeno	HMPV	Rhino	HCoV ^b
Oct 2021	155	1	0	1,614	30	8	7	203	0
Nov	110	7	0	2,500	27	13	28	206	0
Dec	82	153	0	23,074	39	28	59	190	2
Jan 2022	25	29	0	17,200	2	11	26	31	3
Feb	9	10	0	2,684	1	8	16	36	3
Mar	3	81	0	1,294	1	14	12	64	12
April	18	231	0	3,632	23	17	35	80	10
May	12	368	0	6,250	68	16	51	119	7
June	30	59	0	3,771	100	19	56	178	3
July	56	10	0	2,705	41	18	31	84	2
Aug	59	9	0	3,128	16	21	16	112	0
Sept	78	11	0	2,620	12	10	7	115	0
Total	637	969	0	70,472	360	183	344	1,418	42

a, In 2021-22, seasonal distribution of RSV and influenza was atypical.

b, Low HCoV detection is due to transition from LDT to Panther Fusion RVP, which does not include the 4 HCoV.

References:

1. Grohskopf LA, et al. Prevention and Control of Seasonal Influenza with Vaccines: Recommendations of the Advisory Committee on Immunization Practices — United States, 2022–23 Influenza Season. MMWR Recomm Rep 2022;71(No. RR-1):1–28. DOI: <http://dx.doi.org/10.15585/mmwr.rr7101a1>.

2. Ma KC, et al. New Vaccine Surveillance Network Collaborators, Hall AJ. Increase in Acute Respiratory Illnesses Among Children and Adolescents Associated with Rhinoviruses and Enteroviruses, Including Enterovirus D68 - United States, July-September 2022. MMWR Morb Mortal Wkly Rep. 2022 Oct 7;71(40):1265-1270. doi: 10.15585/mmwr.mm7140e1. PMID: 36201400.