

Full Report

Pediatric COVID-19 update: January 7, 2022

HOSPITAL ADMISSIONS – Key Takeaways

From the week of December 5-11, 2021 to the week of December 26, 2021-January 1, 2022, hospital admissions for or with COVID-19 among people aged ≤ 18 years increased more than 7-fold statewide (e.g. more than +700%, or an 8-times relative change), while those for all age groups combined increased only 2-fold statewide. Across the state, hospital admissions for or with COVID-19 increased approximately:

- 17-fold for those ≤ 18 years and 7-fold for all age groups in NYC,
- 8-fold for those ≤ 18 years and 3-fold for all age groups in mid-Hudson and Long Island,
- 1.1-fold for those ≤ 18 years and 0.1-fold for all age groups in other regions of New York.

The increase in hospital admissions for or with COVID-19 is greater for children than for the population overall. In the most recent week, 54% of children ≤ 18 years admitted had no comorbidities and 70% were symptomatic.

During December 26, 2021 – January 1, 2022, among the 41% of children admitted with but not primarily for COVID-19, the most common reasons for admission were acute and chronic medical conditions. COVID-19 may have been an exacerbating factor contributing to the need for hospitalization, but the significance of the COVID-19 diagnosis cannot be determined from these data. Statewide, injury or trauma represented 2.1% of admissions with COVID-19 (only 12 out of the 571 admissions that week).

The large increases over time have been observed for children admitted both for COVID-19 and for other reasons, but with a positive COVID-19 result. In this time-period, New York City saw an 18-fold increase in admissions for COVID-19 (227 vs. 12) and 15-fold increase in admissions with COVID-19, but primarily for other reasons (158 vs. 10).

Analyses suggest the relatively greater increases in hospitalizations for children may be due to reduced vaccine coverage combined with modestly reduced vaccine effectiveness against hospitalization for children 5-17 years, and the absence of vaccines for children 0-4 years. Likewise, preliminary analyses suggest potential increased severity of the Omicron variant may also play a role in increasing rates of hospitalizations for children ≤ 11 years, relative to adults and children 12-17 years.

Notably, among children admitted to the hospital for or with COVID-19 during the week of December 20-26, 2021,

- 4% of 5 to 11 year olds were vaccinated and 91% were unvaccinated
- 26% of 12 to 17 year olds were vaccinated and 65% were unvaccinated.

ACTION: These observed trends in hospital admissions for and with COVID-19 among those ≤ 18 years of age highlight the need to redouble efforts to protect the health of our youngest New Yorkers. Vaccination of children remains a critical, highly protective strategy and should be combined with other measures to reduce exposure, such as mask wearing. Children ≤ 4 years of age are not currently eligible for vaccination. Therefore, additional protective measures remain important to safeguard their health during the current winter wave, including vaccinating, boosting and masking by those around them.

HOSPITAL ADMISSIONS – Additional Details

As Table 2 shows, the highest rate of hospitalization is among persons ≥ 65 years. Older age is a risk-factor for severe COVID-19 and this group has been disproportionately affected by severe disease throughout the pandemic.

In contrast, despite lower absolute rates of hospitalization, the most rapid relative increases in hospitalizations have been observed for children ≤ 18 years (Table 2, Figure 3).

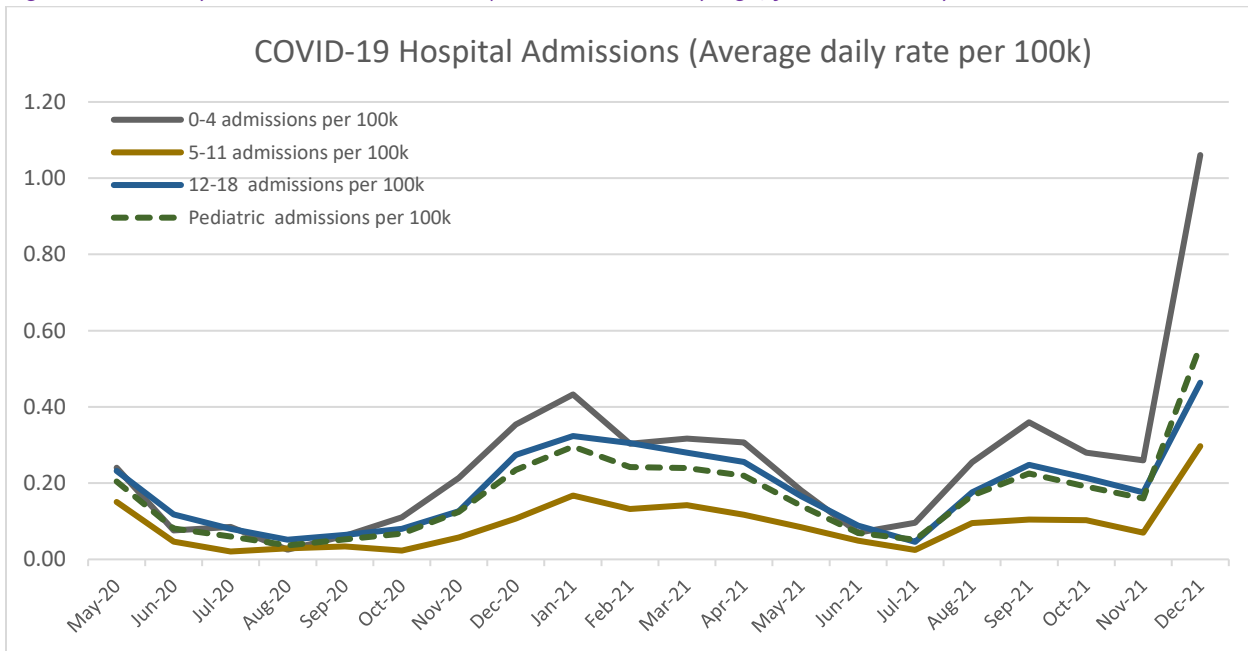
Among children, rates have grown fastest for ages 0-4 years, a group that remains ineligible for vaccination. The January 1, 2021 7-day average hospitalization rate for children 0-4 years of 3.9 per 100,000 exceeds statewide average rates observed for all ages in mid-November 2021, indicating a high burden of hospitalization for this age group.

Table 2. COVID-19 new hospital admission rates by age, December 5, 2021 – January 1, 2022

	0-4 years		5-11 years		12-18 years		19-64 years		65+ years	
	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11
December 5 - 11	0.44	--	0.18	--	0.13	--	1.87	--	7.62	--
December 12 - 18	0.56	+29%	0.19	+5%	0.34	+153%	2.17	+16%	7.94	+4%
December 19 - 25 (excl. 25 th)	1.43	+226%	0.42	+130%	0.60	+353%	2.78	+48%	8.70	+14%
December 26 – January 1	3.91	+791%	0.79	+335%	1.52	+1,047%	6.39	+241%	21.87	+187%

* Rates are 7-day average admissions per 100,000

Figure 3. Monthly trends in COVID-19 hospital admissions by age, focus on 0-18 years



FULL REPORT

**Office of Public Health
New York State Department of Health**

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Summary

On December 24, 2021, the New York State Department of Health [issued a health advisory](#) regarding a rise in COVID-19-associated hospital admissions for children due to and with COVID-19. This report contains a comprehensive update to the information in that advisory, through January 1, 2022.

Key findings include:

- Cases are proportionally rising for all age groups; however, hospitalizations continue to increase fastest for children ≤ 18 years, particularly those 0-4 years, who remain unvaccinated.
- Between the week of December 5-11, 2021 and December 26, 2021-January 1, 2022, there was:
 - A 17-fold increase in hospital admissions for persons 0-18 years in NYC, an 8-fold increase for mid-Hudson/Long Island, and a 1.1-fold increase in other regions. This yielded a statewide 7-fold increase in hospital admissions of people aged 0-18 years.
 - During this same time period, admissions for all age groups rose approximately 7-fold for NYC and 2-fold statewide, illustrating the greater increase for children relative to the general population.
 - During December 26, 2021 – January 1, 2022, among the 41% of children admitted with but not primarily for COVID-19, the most common reasons for admission were acute and chronic medical conditions. COVID-19 may have been an exacerbating factor contributing to the need for hospitalization and cannot be determined from these data. Statewide, injury or trauma represented 2.1% of admissions with COVID-19 (only 12 out of the 571 admissions that week).
 - The large increases over time have been observed for children admitted both for COVID-19 and for other reasons. In this time period, New York City saw an 18-fold increase in admissions for COVID-19 (227 vs. 12) and 15-fold increase in admissions for other reasons, but with COVID-19 (158 vs. 10).
- Across reasons for admission, COVID-19 symptoms were common, reported respectively for 71% and 70% of admissions in each of the previous 2 weeks statewide. About half of children had comorbidities.
- An analysis of breakthrough infections and vaccine effectiveness suggests that the relative increases in hospitalizations for children may be due to the combination of reduced vaccine coverage *and* modestly reduced vaccine effectiveness against hospitalization for children 5-17 years, relative to adults, and the absence of vaccine coverage for children 0-4 years.
- An analysis of hospital admission and case rates suggests that increased severity of the Omicron variant may also play a role in increasing rates of hospitalizations for children ≤ 11 years, relative to adults and children 12-17 years.

Together these findings suggest an important pattern of increasing severe COVID-19 disease in the pediatric population. This may be explained by a combination of lower full vaccination (and booster) coverage, changes in vaccine effectiveness, severity of the Omicron variant, and/or other factors. Nonetheless, these data support that to directly protect the health of our youngest New Yorkers, vaccination of children remains a critical, highly protective strategy and should be combined with other measures to reduce exposure, such as mask wearing. Children 0 to 4 years are not currently eligible for vaccination and such additional measures remain important to protecting their health during the current winter wave.

Detail

Data sources

This report contains information from 3 statewide New York State databases, which have been used for ongoing public reporting and analyses since the outset of the COVID-19 pandemic:

- **Electronic Clinical Laboratory Reporting System (ECLRS).** This New York State Department of Health (NYS DOH) system collects all reportable COVID-19 test results (nucleic acid amplification test [NAAT] or antigen) in New York State.^{1,2}
- **Health Electronic Response Data System (HERDS).** This NYS DOH program includes a statewide, daily electronic survey of all inpatient facilities in New York. Data on new admissions and current hospitalizations with a laboratory-confirmed COVID-19 diagnosis are entered into HERDS daily by trained hospital staff members. Note, no information was reported to HERDS on December 25, 2021. Data for this day were reported on December 26.
- **New York State Immunization Information System (NYSIIS) and the Citywide Immunization Registry (CIR).** These two systems are respectively used by NYS DOH and NYC Department of Mental Health and Hygiene to collect and store all COVID-19 provider vaccination data for persons residing in New York State, outside of New York, and in New York City (excluding selected settings reporting only to the federal government).²⁻⁴

Laboratory-confirmed COVID-19 (e.g. positive test results, cases)

Key findings

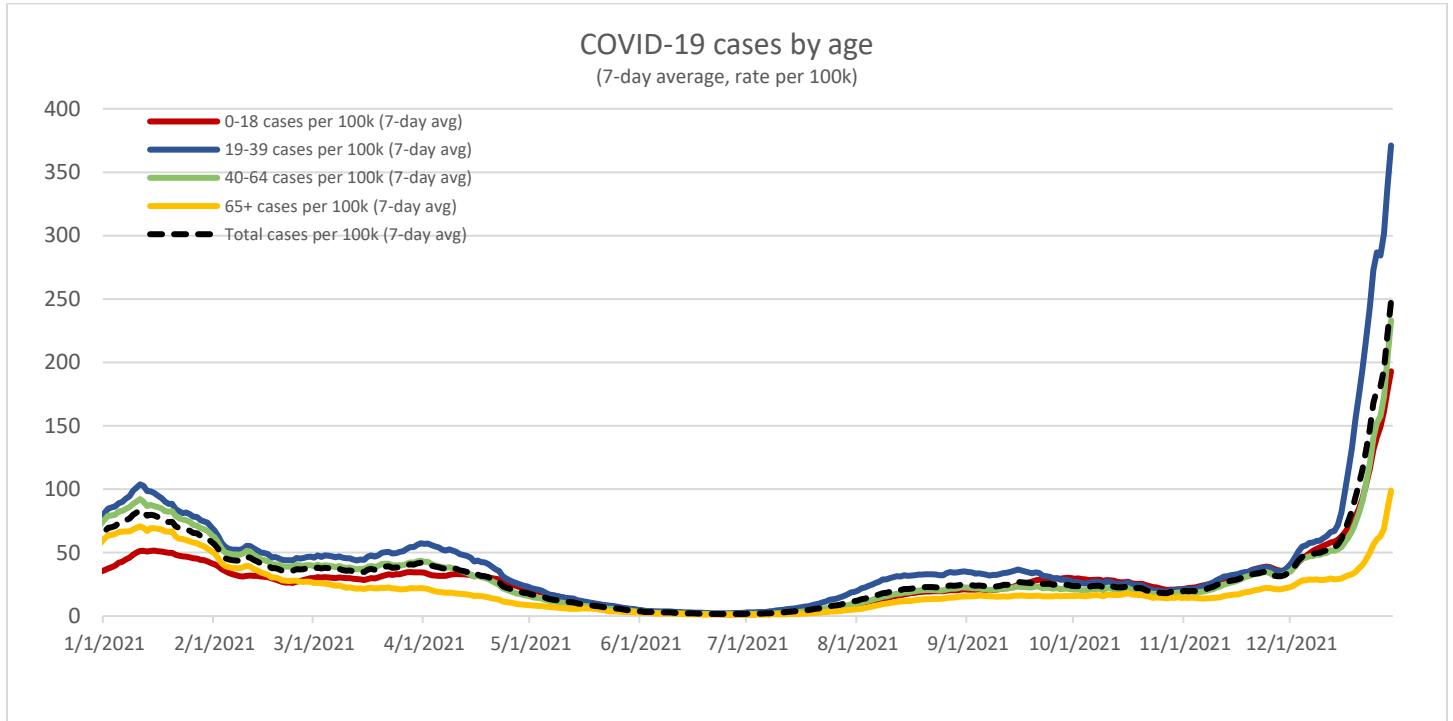
Trends in laboratory-confirmed COVID-19 are shown in Table 1 and Figures 1-2. Over the previous month, during the current winter wave, the numbers of reported cases and rates have reached all-time high levels in New York State. Before this wave, the largest single-day reported number of cases was 19,942 on January 14, 2021 (rate: 102/100,000 persons). Although rates have increased and are high for all groups, the highest rates are among those < 65 years, particularly those 18-64 years (370 per 100,000) and 12-17 years (307 per 100,000). Note these results include results reported to ECLRS only and do not include home tests that may not have been reported, nor undiagnosed infections.

Table 1. COVID-19 Cases by age, 1/01/21 and change from previous week

Age group	# new cases	Rate per 100,000		
	1/01/22	1/01/22	7-day average	Change vs. prior 7 days
0-4	2,777	243.5	225.8	(+120.0%)
5-11	4,463	285.3	265.4	(+61.2%)
12-17	4,188	307.1	318.8	(+55.0%)
18-64	45,416	370.4	374.8	(+74.3%)
65+	5,681	176.8	151.8	(+151.3%)
Total	62,526	320.0	316.8	(+77.6%)

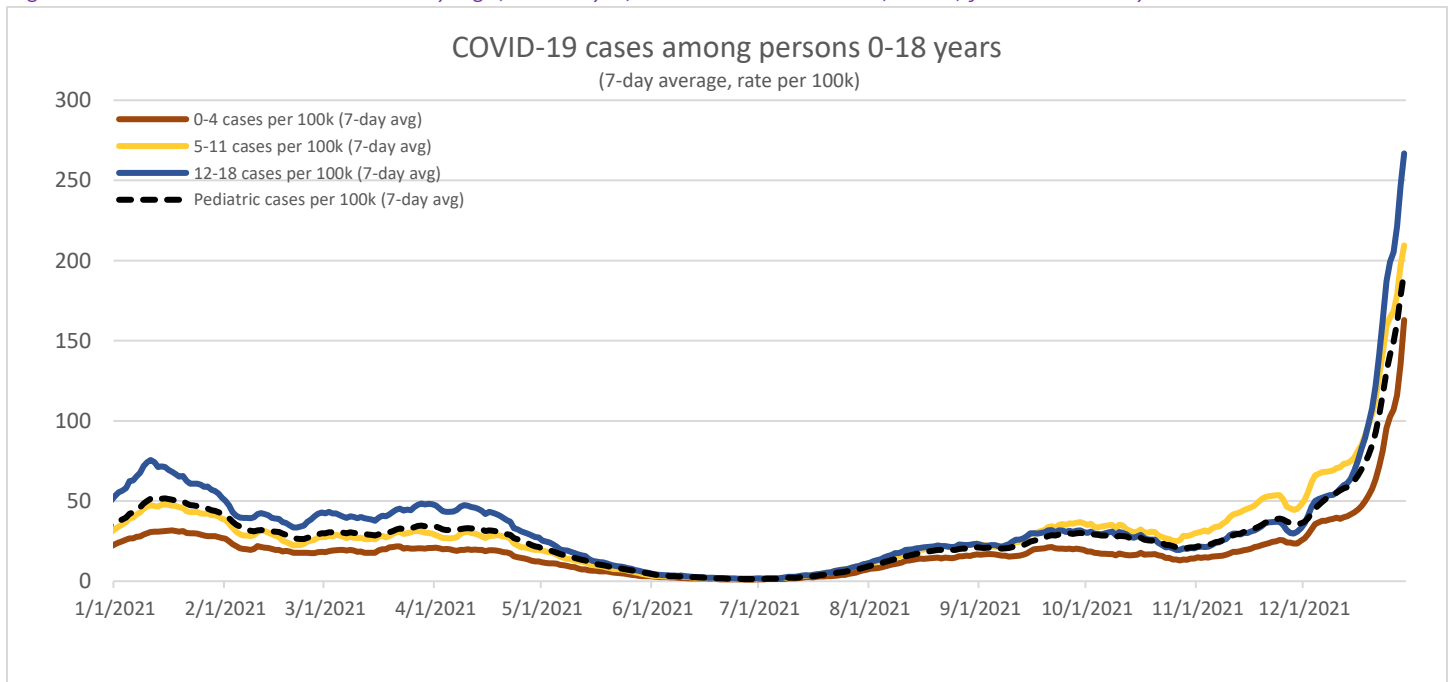
Source: ECLRS

Figure 1. Trends in COVID-19 Cases by age, all age groups, January 1, 2021 – December 29, 2021



Source: ECLRS

Figure 2. Trends in COVID-19 Cases by age, January 1, 2021 – December 29, 2021, focus on 0-18 years



Source: ECLRS

New hospital admissions and current hospitalizations

Overall trends by age

Key findings

- New admissions represent persons newly hospitalized with laboratory-confirmed COVID-19. Persons seen in an emergency department for illness or injuries, but not admitted to the hospital, are not included in these data. In comparison to positive test data above, which represent asymptomatic and symptomatic cases confirmed with a reported result, these data represent severe disease associated with COVID-19.
- Per Table 2, the highest rates of new admissions are seen among persons ≥ 65 years. Older age is a risk-factor for severe COVID-19 and this group has been proportionally most affected by severe disease throughout the pandemic.
- In contrast, despite lower absolute rates of hospitalization, the most rapid relative rises in hospitalizations have been observed for children ≤ 18 years (Table 2, Figure 3).
- Per Figure 3, among children, rates have grown fastest for ages 0-4 years, a group that remains unvaccinated. The current 7-day average hospitalization rate for children 0-4 years of 3.9 per 100,000 exceeds statewide average rates observed for *all ages* in mid-November 2021, indicating a high admissions burden for this age group in particular.
- The next sections of this report describe this greater hospitalization risk for children in greater detail. These increases may be a function of lower coverage of a full vaccine series (full vaccination), changes in vaccine effectiveness (possibly associated with lower booster dose coverage), intrinsic severity of the Omicron variant for children, or other factors. Data are additionally presented on these issues.

Table 2. COVID-19 new hospital admission rates by age, December 5, 2021 – January 1, 2022

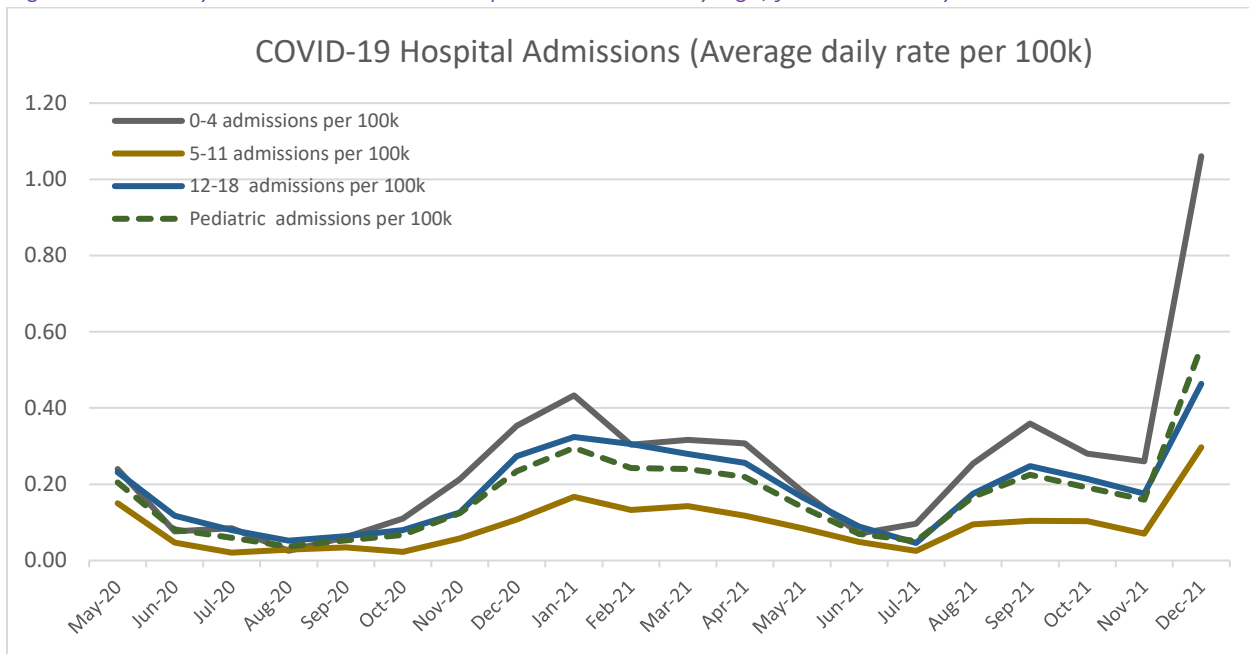
	0-4 years		5-11 years		12-18 years		19-64 years		65+ years	
	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11	Rate	Change since Dec. 5-11
December 5 - 11	0.44	--	0.18	--	0.13	--	1.87	--	7.62	--
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* Rates are 7-day average admissions per 100,000

Source: HERDS



Figure 3. Monthly trends in COVID-19 hospital admissions by age, focus on 0-18 years



Focus on new admissions among children 0-18 years

Key findings:

- Pediatric hospitalizations have been increasing fastest in NYC and mid-Hudson/Long Island regions (Table 3). Between the week of December 5-11, 2021 and December 26 2021-January 1, 2022:
 - There was a 17-fold increase in hospital admissions for persons 0-18 years in NYC (e.g. about +1700%, or an 18-times relative change), an 8-fold increase for mid-Hudson/Long Island, and a 1.1-fold increase in other regions. This yielded a statewide 7-fold increase in hospital admissions of people aged 0-18.
 - Admissions for all age groups rose approximately 7-fold for NYC and 2-fold statewide, illustrating the greater increase for children relative to the general population.
- Fifty-five percent of hospitalizations were in children 0-4 years, who comprise 26% of the 0-18 population and remain unvaccinated.
- Patients with reasons other than COVID-19 indicated may have had COVID-19 as a contributing cause for hospitalization and often have symptoms of COVID-19.⁵ The causal role of COVID-19 in hospital admissions is challenging to ascertain in real time, and often requires in-depth medical chart review after discharge. Because of this, all admissions “with COVID-19” are used to describe the total burden of hospitalizations associated with COVID-19. Details on the indicated reasons for admission are presented in Tables 4-7:
 - Per Tables 4-5, about 60% of admissions statewide were indicated with the reason “for COVID-19”; this has not changed since the Omicron-associated increase in cases and hospitalization began. This is consistent with adult trends, and those recorded months earlier.
 - The large increases noted above between the weeks of December 5-11, 2021 and December 26 2021-January 1, 2022, have been observed for children admitted both for COVID-19 and for other reasons (Table 4). For example, New York City saw an 18-fold increase in admissions for COVID-19 (227 vs. 12) and 15-fold increase in admissions for other reasons, but with COVID-19 (158 vs. 10).
 - Between December 26, 2021 – January 1, 2022, among children not primarily admitted for COVID-19, but with a COVID-19 diagnosis, the most common reasons for admission were acute and chronic medical conditions (Table 6). COVID-19 may have been an exacerbating factor contributing to the need for hospitalization and cannot be determined from these data. Injury or trauma represented 2% of admissions with COVID-19.
- Across reasons for admission, COVID-19 symptoms were common, reported respectively for 75% and 69% of admissions in the previous 2 weeks in New York City, and 71% and 70% statewide.
- In the previous 2 weeks, comorbidities were present in a little under one-half of COVID-19 admissions. This indicates both the degree to which the most vulnerable children are being impacted by severe COVID-19 outcomes and to which other children without pre-existing conditions are also being impacted.

Table 3. New admissions with laboratory-confirmed COVID-19, ages 0-18 years, by region and week

Week	New York City				Mid-Hudson & Long Island				Other Regions				Statewide Total
	0-4y	5-11y	12-18y	Total	0-4y	5-11y	12-18y	Total	0-4y	5-11y	12-18y	Total	
November 28 – December 4	11	3	9	23	2	2	5	9	25	11	17	53	85
December 5 - 11	8	8	6	22	6	4	2	12	21	8	7	36	70
December 12 - 18	20	11	12	43	6	5	5	16	19	5	21	45	104
December 19 - 25 (excl. 25 th)	74	32	31	137	21	6	18	45	19	8	19	46	228
December 26 – January 1	224	60	101	385	54	16	42	112	34	11	29	74	571

Source: HERDS



Table 4. Indicated reason for admission, among new admissions with COVID-19, previous 4 reporting weeks

Week	New York City			Statewide		
	Reason for admission indicated as for COVID-19	Admission indicated for other reason, but with positive COVID-19 results	Total with COVID-19	Reason for admission indicated as for COVID-19	Admission indicated for other reason, but with positive COVID-19 results	Total with COVID-19
November 28 – December 4	14	9	23	49	36	85
December 5 - 11	12	10	22	44	26	70
December 12 - 18	26	17	43	58	46	104
December 19 - 25 (excl. 25 th)	88	49	137	137	91	228
December 26 – January 1	227	158	385	339	232	571

Source: HERDS

Table 5. Indicated reason for admission, among new admissions with COVID-19, previous 2 reporting weeks*

Region	Reason for admission*	Dec 19 - 25 (excl. 25 th)		Dec 26 – Jan 1	
		n	%	n	%
New York City	COVID-19	88	64%	227	59%
	Other reason, but with COVID-19	49	36%	158	41%
Mid-Hudson & Long Island	COVID-19	24	53%	66	59%
	Other reason, but with COVID-19	21	47%	46	41%
Other Regions	COVID-19	25	54%	46	62%
	Other reason, but with COVID-19	21	46%	28	38%
Statewide	COVID-19	137	60%	339	59%
	Other reason, but with COVID-19	91	40%	232	41%

Source: HERDS

* Patients with reasons other than COVID-19 indicated may have had COVID-19 as a contributing cause for hospitalization and often have indicated symptoms for COVID-19

Table 6. Indicated reason for admission, most recent week of December 26, 2021 – January 1, 2022*

Reason for Admission	New York City	Mid-Hudson & Long Island	Other Regions	Statewide
COVID-19	227	66	46	339
Acute Medical Condition	70	20	15	105
Chronic Medical Condition	21	6	4	31
Gynecology / Obstetrics	6	5	5	16
Injury / Trauma	10	2	0	12
Mental Health / Substance Abuse	13	6	1	20
Newborn Care	12	3	2	17
Surgical / Procedures	8	4	0	12
Other	18	0	1	19

Source: HERDS

* Patients with reasons other than COVID-19 indicated may have had COVID-19 as a contributing cause for hospitalization and often have indicated symptoms for COVID-19

Table 7. COVID-19 symptoms among new COVID-19 admissions, previous 2 reporting weeks

Region	Symptomatic for COVID-19	Dec 19 - 25 (excl. 25 th)		Dec 26 – Jan 1	
		<i>n</i>	%	<i>n</i>	%
New York City	No	34	25%	120	31%
	Yes	103	75%	265	69%
Mid-Hudson & Long Island	No	20	44%	35	31%
	Yes	25	56%	77	69%
Other Regions	No	12	26%	15	20%
	Yes	34	74%	59	80%
Statewide	No	66	29%	170	30%
	Yes	162	71%	401	70%

Source: HERDS

Table 8. Comorbidities indicated, among new admissions with COVID-19, previous 2 reporting weeks*

Region	Comorbidities	Dec 19 - 25 (excl. 25 th)		Dec 26 – Jan 1	
		<i>n</i>	%	<i>n</i>	%
New York City	No	64	47%	204	53%
	Yes	73	53%	181	47%
Mid-Hudson & Long Island	No	30	67%	71	63%
	Yes	15	33%	41	37%
Other Regions	No	23	50%	32	43%
	Yes	23	50%	42	57%
Statewide	No	117	51%	307	54%
	Yes	111	49%	264	46%

Source: HERDS

* Only presence/absence of comorbidities, not details, available in HERDS reporting

Current hospitalizations among children 0-18 years

Key findings

- Current hospitalizations provide a different perspective from new admissions, describing the current burden in the hospitals, rather than the occurrence of new severe disease.
- The pediatric bed census on the days in Table 9 continues to rise, in accordance with new admissions, to 243 children hospitalized on December 31, 2021. Although length of stay data are not currently available, the lower levels of currently-hospitalized patients, relative to new admissions, suggests average lengths of stay < 1 week.

Table 9. Patients currently hospitalized with laboratory-confirmed COVID-19, end of reporting weeks

Week end date	New York City	Mid-Hudson & Long Island	Other Regions	Statewide
Dec 4	11	3	25	39
Dec 11	16	6	13	35
Dec 18	35	4	19	58
Dec 24 (excl. 25 th)	85	28	29	142
Dec 31	165	50	28	243

Source: HERDS

Vaccination: coverage, breakthrough infections and hospitalizations, and vaccine effectiveness

Tables 10 and 11 provide data from analyses of linked immunization (NYSIIS/CIR), testing (ECLRS), and hospital admissions databases (HERDS). The methods utilized have been extensively described in our previous studies and online [NYS DOH dashboard](#).^{3,4,6} Analyses of the pediatric population were not presented separately in those works and are now displayed below, in-depth. Estimates are provisional and subject to change as new data are reported, particularly in more recent weeks.

Key Findings

- By the week of December 20-26 2021, the percent fully-vaccinated (series completion + 14 days) was low for children 12-17 years (62.1%) and particularly those 5-11 (12.0%), per Table 10. Children 0 – 4 years remain unvaccinated, and thus unprotected by vaccines, and are excluded from these tables. Full-vaccination is necessary to have the most protection from COVID-19 and insufficient coverage is likely a significant driver of increased COVID-19 risk for children.
- Examining new laboratory-confirmed infections (cases), per Table 10:
 - For children 5-11 years, in the week of December 20-26, rates were 3.2-fold higher for those unvaccinated relative to vaccinated, yielding an estimated vaccine-effectiveness (VE) of 69%. In conjunction with low 12% coverage, this yields 5% of cases occurring among vaccinated children.
 - For children 12-17 years
 - Daily case rates were very high for both unvaccinated (358/100,000 persons) and vaccinated children (140/100,000 persons), in the week of December 20-26. The 2.6-fold higher rates for unvaccinated children yields an estimated vaccine-effectiveness of 62%.
 - Over the 4 weeks shown, the rates of breakthrough infection have been steadily rising and faster than those for unvaccinated children, yielding a decline in VE from 87% to 61% in recent weeks (more than [for adults](#)). This may be due to the increasing [prevalence of the Omicron variant](#) in New York State (to estimated 89% by December 31, 2021), which has been associated with a reduced vaccine effectiveness, particularly for populations that have not received a booster dose.⁷ Eligibility for boosters during the period of this report was limited to children ≥ 16 years
 - In conjunction with 62.1% full-vaccination coverage, these declines in VE yield an increase of cases among vaccinated children (breakthrough infection) from 20% to 43% in recent weeks. Nonetheless, vaccinated children in New York remained less likely to become COVID-19 cases during the weeks analyzed, demonstrating the continued protection from vaccines.
- Examining new hospital admissions with laboratory-confirmed COVID-19, per Table 11:
 - Hospitalization rates were higher in unvaccinated (1.56/100,000 persons) versus vaccinated children (0.31/100,000 persons), in the week of December 20-26. The 5-fold higher rates for unvaccinated children yields an estimated vaccine-effectiveness of 81% against hospitalization.
 - Similar to cases, the rate of hospitalizations among fully-vaccinated children has been increasing more rapidly than the rate among unvaccinated children. This pattern yielded a decline in vaccine effectiveness VE for hospitalization, from 95% to 81% for children 12-17 years, in the weeks studied. This may be likewise a result of increasing Omicron variant prevalence, as described above.
 - Together with vaccine coverage, this has shifted the share of hospitalized 12-17 year old children from 9% to 26% in the observed weeks. Because of the small numbers, caution should be used in interpreting these and all estimates related to new admissions and vaccination.



- Despite these changes, vaccines strongly protected children from hospital admission, with 81% protection in the most recent week.
- These data suggest that the relative increases in hospitalizations for children may be due to: reduced vaccine coverage *and* modestly-reduced vaccine effectiveness against hospitalization for children 5-17 years, relative to adults, and the absence of vaccine coverage for children 0-4 years.

Table 10. COVID-19 Cases among children 5-17 years, by vaccine status

Week	Distribution of new cases by vaccine status						Rates and vaccine effectiveness			Full-vaccine Coverage
	Vaccinated		Partially-vaccinated		Unvaccinated		Vaccinated rate per 100k	Unvaccinated rate per 100k	VE	%
	Cases	% of cases	Cases	% of cases	Cases	% of cases				
5 -11 years *										
Dec. 13-19	196	2%	1,275	11%	9,902	87%	38	144	73%	5.4%
Dec. 20-26	777	5%	2,220	13%	14,249	83%	68	216	69%	12.0%
12 – 17 years										
Nov. 29-Dec. 5	947	20%	130	3%	3,727	78%	16	121	87%	60.7%
Dec. 6-12	1,218	23%	139	3%	4,008	74%	21	133	84%	61.1%
Dec. 13-19	4,038	37%	366	3%	6,515	62%	69	221	69%	61.6%
Dec. 20-26	8,321	43%	790	4%	10,326	53%	140	358	61%	62.1%

Source: ECLRS, NYSIIS/CIR

* Full vaccination coverage < 1% in prior weeks

Table 11. New COVID-19 hospital admissions among children 5-17 years, by vaccine status

Week	Distribution of new hospitalizations by vaccine status						Rates and vaccine effectiveness			Full-vaccine Coverage
	Vaccinated		Partially-vaccinated		Unvaccinated		Vaccinated rate per 100k	Unvaccinated rate per 100k	VE	%
	Hosp	% of hosp	Hosp	% of hosp	Hosp	% of hosp				
5 -11 years *										
Dec. 13-19	0	0%	1	5%	19	95%	0	0.28	100%	5.4%
Dec. 20-26	2	4%	3	6%	49	91%	0.17	0.73	76%	12.0%
12 – 17 years										
Nov. 29-Dec. 5	2	9%	0	0%	20	91%	0.03	0.65	95%	60.7%
Dec. 6-12	1	8%	1	8%	11	74%	0.02	0.36	95%	61.1%
Dec. 13-19	7	23%	1	3%	22	62%	0.12	0.74	84%	61.6%
Dec. 20-26	18	26%	6	9%	45	65%	0.31	1.56	81%	62.1%

Source: HERDS, NYSIIS/CIR

* < 1% of this age group fully-vaccinated in previous weeks

Severity

The Omicron variant has been reported to be less severe, per infection, in studies from South Africa and the United Kingdom, although data on pediatric cases remain limited.^{7,8} Table 12 presents a preliminary assessment of the relative severity of cases by age group, using the ratio of new admissions per 100 cases (in aggregate) as the proxy measure of severity. This analysis compares two weeks in November just prior to the current surge, when the Delta variant was dominant, [comprising 99%](#) of specimens, to the week of December 20 to 26, when the Omicron variant became the majority variant. This table relates the number of hospitalizations relative to cases, for pediatric and adult age groups, and limited to unvaccinated individuals. This restriction removed the protective impact of vaccination. An admission is interpreted as indicative of serious illness. This analysis does not attempt to exclude children in whom SARS-CoV-2 infection was determined after admission. As noted above, trauma admissions accounted for a small share of admissions (2% in most recent week). While the impact of COVID on clinical presentation cannot be determined using admission data, however, this analysis suggests that children ≤ 11 years may not be at lower risk of hospitalization due to the Omicron variant, relative to the Delta variant.

Key findings

- Consistent with international reports, the new admissions per 100 cases for unvaccinated persons 18+ decreased by 62.2% between the predominantly Delta-variant and Omicron-variant periods studied, from 8.4 per 100 to 3.2 per 100, suggesting decreased severity of the Omicron variant. For unvaccinated children 12-17 years, this decline was 45%, with fewer than 1 admission per 100 cases in both time periods.
- For unvaccinated children 5-11 years, there was a 71.5% increase in new admissions per 100 cases between the two time periods, reflecting increases to 0.30 admissions per 100 cases. This suggests that among infected children (cases) the likelihood of hospitalization has increased as the Omicron variant became predominant. Changes in reason for admission are unlikely to explain this finding, given the consistency of the proportion of admissions indicated for COVID-19 in recent weeks (per Tables 4-5).
- Similarly, for children 0-4 years, who are all unvaccinated, there was a 48.2% increase in new admissions per 100 cases, with values between 1-2 admissions per 100, reflecting higher risk for hospitalization compared to older children.
- Taken together, these results suggest that greater inherent severity of the Omicron variant may also play a role in increasing rates of hospitalizations for children ≤ 11 years, relative to adults and children 12-17 years. More study of this issue is needed.

Table 12. Estimated severity of cases among unvaccinated persons, late November vs. late December, 2021

	Two-week period of: November 15 – 26 (predominantly Delta variant)			One-week period of: December 20 – 26 (predominantly Omicron variant)			Change in ratio
	Cases	New admissions	New admissions per 100 cases	Cases	New admissions	New admissions per 100 cases	
0 – 4 years (all unvaccinated)	3,776	47	1.24	8,130	150	1.85	+ 48.2%
5 – 11 years, unvaccinated	8,508	15	0.18	16,205	49	0.30	+71.5%
12 – 17 years, unvaccinated	5,013	35	0.70	11,736	45	0.38	- 45.1%
18+ years, unvaccinated	38,447	3,241	8.43	104,854	3,345	3.19	- 62.2%

Source: ECLRS, HERDS

Severity, continued

Limitations

This method represents a preliminary examination to provide a *comparative* assessment across the age span and comes with a number of caveats. Because hospitalizations are compared to cases in a given week in aggregate, this does not reflect a linked cohort approach or incorporate potential time lags between specimen collection and hospitalization. New admissions are based on admission date, whereas cases are based on report date (which may include a several days' lag from collection date). This analysis does not adjust for potential changes in testing and propensity for patients to be admitted to the hospital during the period studied. Estimates are provisional and subject to change as new data are reported. Nonetheless, these limitations are more likely to impact estimates for a given age group, but would be expected to have a lesser impact on conclusions regarding between-age comparisons of severity.

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