

Frequency and Severity of COVID-19 Acute Symptoms Among Symptomatic US Adults Testing Positive for SARS-CoV-2: Early 2024-2025 Respiratory Season Results of a Nationwide Study

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INTRODUCTION

- The burden of COVID-19 in the United States remains significant for the 2024-2025 season [1].
- COVID-19 symptoms and severity have evolved over time [2-5].
- Evidence assessing COVID-19 symptom burden in the post-pandemic period is limited.

OBJECTIVE

- This study characterized the burden of acute COVID-19 symptoms among test-confirmed symptomatic US adults for the post-pandemic 2024-2025 respiratory season.

METHODS

- Symptomatic US adults testing positive for SARS-CoV-2 within 5 days since symptom onset at CVS Health from 10/24/2024-4/15/2025 (CT.gov: NCT05160636) were included.
- Self-reported socio-demographics, clinical characteristics and vaccination status were collected via an online survey.
- Participants self-reported the presence of 14 CDC-based acute symptoms [6] via recall for the presence of symptoms prior to infection (pre-infection period) and on the day of study enrollment for current symptom (Day 1).
- Symptom severity was measured by patients using FDA-based scales. [7]
 - Stuffy or runny nose, sore throat, cough, headache, fatigue or tiredness, nausea, and difficulty breathing or shortness of breath were measured using 4-point scale (0=none, 1=mild, 2=moderate, 3=severe).
 - Vomiting and diarrhea were measured using the frequency (0, 1-2, 3-4 and ≥5 times) in the last 24 hours.
 - Change in smell and change in taste were measured using 'no change', 'change', and 'cannot'.
- Prevalence of any symptoms and of individual symptoms measured by patients as moderate/severe and total symptom counts were described and compared across time points using a paired t-test.

RESULTS

- Of 347 participants, 290 (83.6%) participants were unvaccinated and 57 (16.4%) were vaccinated with 2024-2025 KP.2 BNT162b2 COVID-19 vaccine. Mean (SD) age was 45.6 years (14.2), 77.0% were female, and 64.6% had at least one comorbidity.
 - Among those vaccinated, mean (SD) time since vaccination was 104.8 (45.8) days. (Table 1)
- At enrollment, the mean (SD) number of any acute symptoms was 9.5 (2.2). The most prevalent symptoms reported at enrollment were stuffy/runny nose (97.7%), cough (95.1%), and fatigue (92.2%). The most common symptom that patients reported as moderate/severe was stuffy or runny nose (74.8%). Fatigue was the most frequent symptom that patients reported as severe (33.6%). Vomiting (7.8%) was less often reported at enrollment. (Figure 1)
- There was a significant increase of +8.1 in the mean number of symptoms reported at enrollment relative to pre-infection ($p<0.001$). The mean (SD) number of symptoms measured as moderate or severe by patients reported at enrollment was 6.6 (2.6), showing an increase of +6.5 from pre-infection ($p<0.001$). The mean (SD) number of symptoms measured as severe by patients reported at enrollment was 3.2 (2.6), showing an increase of +3.2 from pre-infection ($p<0.001$) (Table 2)

Table 1. Patient Characteristics

	Statistics
Total n	347
Age, years, mean (SD)	45.6 (14.2)
Gender, n (%)	
Male	78 (22.5%)
Female	267 (77.0%)
Unknown	2 (0.6%)
Race / Ethnicity, n (%)	
White or Caucasian	266 (76.7%)
Black or African American	22 (6.3%)
Hispanic	36 (10.4%)
Other	23 (6.6%)
US Geographic Region, n (%)	
Northeast	40 (11.5%)
South	193 (55.6%)
Midwest	98 (28.2%)
West	15 (4.3%)
Other/Unknown	1 (0.3%)
Social Vulnerability Index ^a , mean (SD)	0.36 (0.21)
≥1 comorbid condition ^b , n (%)	224 (64.6%)
Vaccination Status, n (%)	
2024-2025 KP.2 BNT162b2 COVID-19 vaccine	57 (16.4%)
Unvaccinated or not up-to-date	290 (83.6%)
Time since 2024-2025 KP.2 BNT162b2 COVID-19 vaccine, days, mean (SD)	104.8 (45.8)
Time from onset of COVID-19 symptom to Day 1, days, mean (SD)	4.2 (3.6)
Antiviral Use (Nirmatrelvir/Ritonavir, Molnupiravir and other), n (%)	186 (53.6%)

^a Social Vulnerability Index is a score that ranges from 0 to 1. Higher values correspond to higher vulnerability [8].
^b Comorbid conditions include cancers or malignancies (other than skin cancer), cerebrovascular disease, chronic kidney disease, chronic lung conditions, chronic liver disease, endocrine disorders, heart conditions, mental health conditions, obesity (BMI >30), weakened immune system/ immunocompromised, blood disorders, smoker, or active tuberculosis.

Figure 1. Symptoms at Enrollment in Patients with COVID-19, %

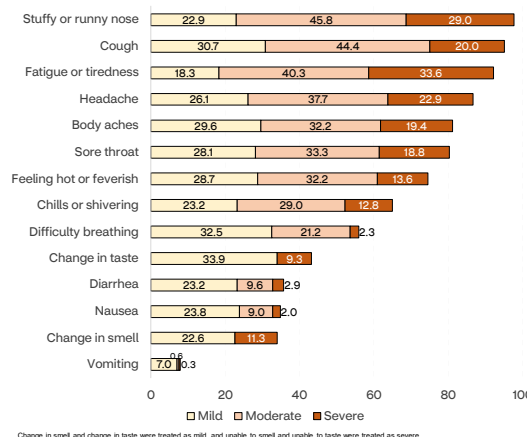


Table 2. ARI Symptom Summary over Time

	Pre-infection	Day 1	Change ^a
Number of symptoms of any severity	1.4 (1.7)	9.5 (2.2)	+8.1 (2.4)
Number of symptoms measured by patients as moderate or severe	0.1 (0.5)	6.6 (2.6)	+6.5 (2.6)
Number of symptoms measured by patients as severe	0.0 (0.2)	3.2 (2.6)	+3.2 (2.6)

^a All P values of paired t-test less than 0.001.

DISCUSSION & CONCLUSIONS

- These 2024-2025 respiratory season results show that the burden of symptomatic COVID-19 in the US remains high in the post-pandemic period.
- The most frequently reported symptoms were cough, stuffy nose, and fatigue experienced by >90% patients. On average, patients reported >3 symptoms as severe.
- Our current study population was predominantly female and white, and all data collected were self-reported. Generalizing findings to a different season or a different population may be limited.
- The findings of this study highlight the importance of implementing and promoting effective preventative strategies, including updated COVID-19 vaccination, to mitigate both individual and public health impacts.

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Disclosures

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