Patient masking adherence at an academic neuromuscular center during the coronavirus disease 2019 (COVID-19) pandemic

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To the Editor—The coronavirus disease 2019 (COVID-19) pandemic has drastically affected healthcare worldwide. Severe acute respiratory coronavirus virus 2 (SARS-CoV-2) is primarily transmitted through close contacts via respiratory droplets, especially through aerosol transmission.[1] Appropriate mask use is important in the prevention of infection and spread.[2] For healthcare facilities in areas of high community transmission, the World Health Organization recommends universal masking.[2] The American Association of Neuromuscular and Electrodiagnostic Medicine also recommends a surgical mask for healthcare workers and patients.[3] The University of Vermont Medical Center (UVM) requires procedure masks for staff, patients, and visitors.[4] Proper mask use is particularly important in high-risk populations, including those who are elderly, immunocompromised, or have underlying illness. Severe outcomes have been described in patients with neuromuscular conditions, respiratory weakness, and/or immunosuppression.[5]

In this single-center, prospective, quality improvement project, we evaluated the rate of compliance with required patient masking at neuromuscular clinical visits during the COVID-19 pandemic. Data collection occurred between September 13, 2021, and November 8, 2021, at the UVM outpatient neuromuscular clinic and the electrodiagnostic laboratory. Medical providers documented whether face masks were worn appropriately by patients during their clinical visit. When data were collected, all patients in a half-day session were documented to prevent selection bias. Appropriate masking was defined as wearing a mask over the nose and mouth upon provider exam-room entrance and continued masking throughout the visit unless asked to remove it. Incorrectly masked patients were categorized as not wearing a mask upon staff room entry (who then masked), mask not fully covering the nose and mouth, taking off the mask without prompting, or not wearing a mask at all. These patients were asked to adjust their masks, and whether they made appropriate adjustments was recorded. Other collected data included contraindications to masking, age, sex, and visit duration. Study data were collected and managed using the REDCap database.[6,7] The study was considered exempt from UVM IRB review because no identifiable information was collected.

Bivariate analyses were conducted, and *P* values were reported from the χ^2 analyses. Bivariate logistical regressions were performed to calculate odds ratios and 95% confidence intervals to determine associations between sex and appropriate masking behavior (yes or no), as well as age and appropriate masking behavior. A categorical variable for age (<65 years or ≥65 years old) was created for analysis based on the Centers for Disease Control and Prevention COVID-19 prevention recommendations for older adults.[8]

In total, 107 patient encounters were recorded by medical providers at 2 locations (Table 1). Ages ranged from 18 to 86 years and 59.8% of the patients were female. Also, 81.3% of visits occurred at the neuromuscular clinic and 18.7% occurred at the EMG laboratory. Among these patients, 82.2% were appropriately masked for the entire visit. Of those who were inappropriately masked, 63.2% were not wearing a mask upon entry to the room, 47.7% wore a mask that was not fully covering their nose and mouth, 31.6% took off their mask without being asked, and 10.5% were not wearing a mask at all. In addition, 63.2% of inappropriately masked patients adjusted their mask when asked. None of the inappropriately masked patients had a medical contraindication. Younger patients (ie, <65 years old) had increased odds of demonstrating appropriate mask use. Mask use behaviors did not differ significantly between sexes or between clinic sites (Table 1).

The goal of universal masking is to reduce the likelihood of transmitting SARS-CoV-2 between patients and staff. Despite masking requirements, almost 20% of patients in our cohort were inappropriately masked. This is concerning because many neuromuscular patients are at high risk for COVID-19 due to their neuromuscular illness or immunosuppression. Despite high rates of vaccination in Vermont, fully vaccinated immunosuppressed neuromuscular patients, especially those on cell-based immunosuppressants like mycophenolate mofetil and rituximab, may not mount an effective immune response to the vaccine.[9] Other mitigation strategies may be needed to prevent infection. One limitation of our study is that we did not record patient vaccination status, neuromuscular condition, or medications. Because data were recorded prospectively without identifiers, we were unable to obtain this information retrospectively.

Patients 65 years and older are more likely to have severe COVID-19 infection, even when fully vaccinated.[8] Accordingly, vaccination rates are higher in older adults in Vermont compared to those aged 18–64 years.[10] Interestingly, our older patients were less likely to be masked appropriately. This finding may be explained by their comfort level based on vaccination status or generational differences in mask compliance.

The observed rate of mask adherence (80%) mirrors the vaccination rate among eligible adults in Vermont.[10] We expect that the primary motivation for both is similar—to protect themselves and others. We hypothesized that the high-risk neuromuscular population would have high rates of masking; this was not observed. One possible explanation is incomplete understanding of infection sequelae risk by neuromuscular patients.

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Table 1. Patient Characteristics Associated With Adherence to Mask Wearing Guidelines in Neuromuscular Clinics in Vermont

Variable	Appropriate Masking (n = 88)	Inappropriate Masking[a] (n = 19)	Odds Ratio	95% ConfidenceInterval	*P* Value
Sex, female, no. (%)	62.5 (55)	47.4 (9)			.22[b]
Age at visit, mean y ±SD	61.03 ± 13.430	67.11 ± 17.036			.09[c]
Clinic site, no. (%)					
Neuromuscular clinic	79.5 (70)	89.5 (17)			.52[d]
EMG laboratory, % (n)	20.5 (18)	10.5 (2)			
Duration of visit, mean min ±SD	40.36 ± 15.22	41.05 ± 15.24			.86[c]
Univariable regression					
Age group, no. (%)					
<65 y	55.7 (49)	26.3 (5)	3.52	1.12–10.62	.02[b]
≥65 y	44.3 (39)	73.7 (14)			
Sex, no. (%)					
Female	62.5 (55)	47.4 (9)	1.85	0.68–5.03	.22[b]
Male	37.5 (33)	52.6 (10)			

Note. SD, standard deviation; EMG, electromyography.
[a]Inappropriate masking includes no mask on entry to the room, mask not covering nose and mouth for more than a few seconds, mask taken off without being asked, and no mask present.
[b]χ^2 test.
[c]Two-tailed *t* test.
[d]Fisher exact test.

Our review was limited by the small cohort from a single specialty clinic. Future multicenter studies may provide more insight into neuromuscular patient perception of infection risk. Furthermore, our results may not be generalizable to other public settings without universal masking policies.

In a state with an already high vaccination rate, further measures are needed to mitigate the spread of COVID-19, particularly in healthcare settings. More specific patient-facing guidance, such as posters or pamphlets, may clarify expectations for proper mask use. Additionally, improper masking can serve as a teachable moment to review individualized risk with patients.

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