

I hope everyone's week is going well.

Under COVID-19 News, I report on 2 CDC documents – one on safety of vaccination in pregnancy and of course the other is the relaxing of mask mandates when outside.

Under Journal Review I found 2 articles looking at saliva – the first on comparison of NP, throat, and saliva to detect SARS-CoV-2 and the second is a very interesting article exploring the infection of the oral cavity and saliva in patients infected with SARS-CoV-2. The last article is a genomic study during the initial wave of SARS-CoV-2 in Cleveland, OH.

Have a wonderful day and stay safe!

Ed

COVID-19 News

CDC Vaccination in Pregnancy

April 23, 2021

The CDC is now recommending Covid-19 shots for pregnant women after preliminary data from the largest study of coronavirus vaccine use among expectant mothers showed that mRNA vaccines were safe for the women as well as their babies.

The researchers found no “obvious safety signals” among any of the 35,691 women who were followed in the peer-reviewed study published Wednesday by N Engl J Meds [reviewed in the Daily Briefing]. Data used in the research was self-reported, and the participants' ages ranged from 16 to 54 years old. Pregnant women are more likely to be hospitalized and run a higher risk of death when infected with Covid-19, making vaccination especially important to this demographic, according to the science.

Comment: I hope CDC endorsement will encourage reluctant pregnant women to get vaccinated especially with this recent data and now CDC endorsement.

CDC Mask Update

April 27, 2021

People who are fully vaccinated against the Covid-19 virus do not need to wear face masks when walking, hiking, biking, running alone or at small outdoor gatherings [not defined]. The same applies to dining at a restaurant outside, and to small outdoor gatherings [not defined] that include some unvaccinated people. However, vaccinated people should still wear masks in public settings indoors and outdoors where there is a substantial risk of Covid-19 transmission, such as concerts, sporting events and other crowded gatherings. The fully vaccinated should also wear masks at indoor gatherings with unvaccinated people, visits to a barber, hair salon, shopping mall, museum, movie theater or crowded house of worship. Vaccinated people should also wear masks if singing in an indoor chorus. Unvaccinated Americans may also now safely resume exercising outdoors without a mask, the CDC said, and socialize with fully vaccinated friends and family members in small outdoor gatherings.

Choosing Safer Activities

	Unvaccinated People	Your Activity	Fully Vaccinated People
		Outdoor	
Safest		Walk, run, or bike outdoors with members of your household	
		Attend a small, outdoor gathering with fully vaccinated family and friends	
		Attend a small, outdoor gathering with fully vaccinated and unvaccinated people	
Less Safe		Dine at an outdoor restaurant with friends from multiple households	
Least Safe		Attend a crowded, outdoor event, like a live performance, parade, or sports event	
		Indoor	
Less Safe		Visit a barber or hair salon	
		Go to an uncrowded, indoor shopping center or museum	
		Ride public transport with limited occupancy	
		Attend a small, indoor gathering of fully vaccinated and unvaccinated people from multiple households	
Least Safe		Go to an indoor movie theater	
		Attend a full-capacity worship service	
		Sing in an indoor chorus	
		Eat at an indoor restaurant or bar	
		Participate in an indoor, high intensity exercise class	

Comment: Although I am glad the CDC has updated its guidance on masks, I do not find this as significant as reported in the news media. Most people already do not wear masks when walking, hiking, biking, or running alone now. [In fact, cities like Houston which had a mask mandate exempted people exercising outside already] CDC has already said if you are in a small group of fully immunized people, you do not need to wear masks or social distance. So, although I am grateful to see this in writing, I do not think this changes much. However, I should point out transmission outdoors is not impossible,

especially in more crowded conditions, or where people may be breathing heavily, shouting, or even just talking while near others for extended periods without a mask.

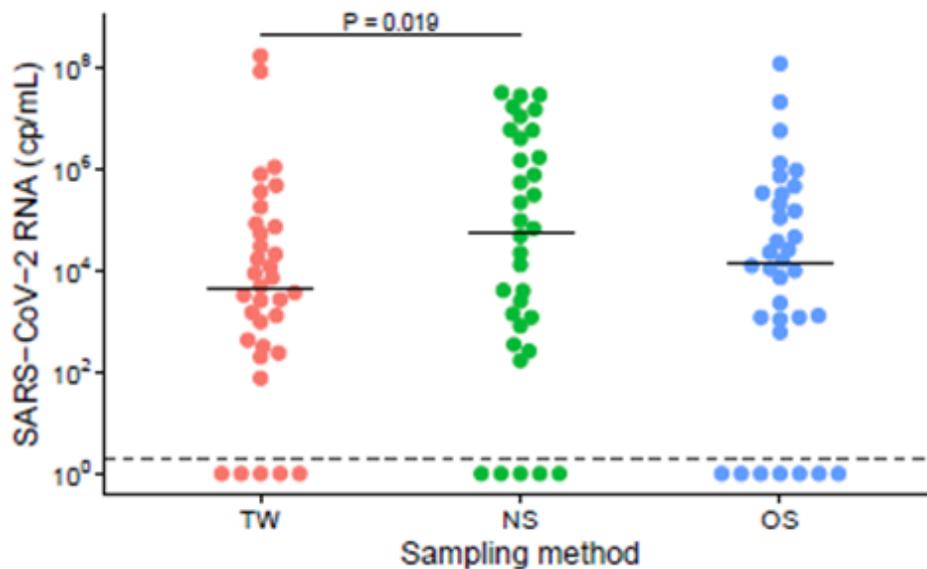
Journal Review

Comparison of Throat Washings, Nasopharyngeal Swabs and Oropharyngeal Swabs for Detection of SARS-CoV-2

Viruses published online April 10, 2021

<https://doi.org/10.3390/v13040653>

SARS-CoV-2 RNA is typically detected by reverse-transcription quantitative real-time PCR (RT-qPCR) from respiratory specimens. This study compares throat washings (TW), nasopharyngeal swabs (NS), and oropharyngeal swabs (OS). A total of 102 samples from 34 adult patients with confirmed SARS-CoV-2 infection were analyzed by RT-qPCR with absolute quantification. The median concentrations and diagnostic sensitivities were 5.8×10^4 copies/mL, 85% (NS), 1.4×10^4 , 79% (OS) and 4.3×10^3 , 85% (TW). Concentration differences were significant between NS and TW ($P = 0.019$). Saliva (SA) was available from 21 patients (median 3.4×10^3). OS and TW can be considered for SARS-CoV-2 diagnostics, although with slightly lower concentration.



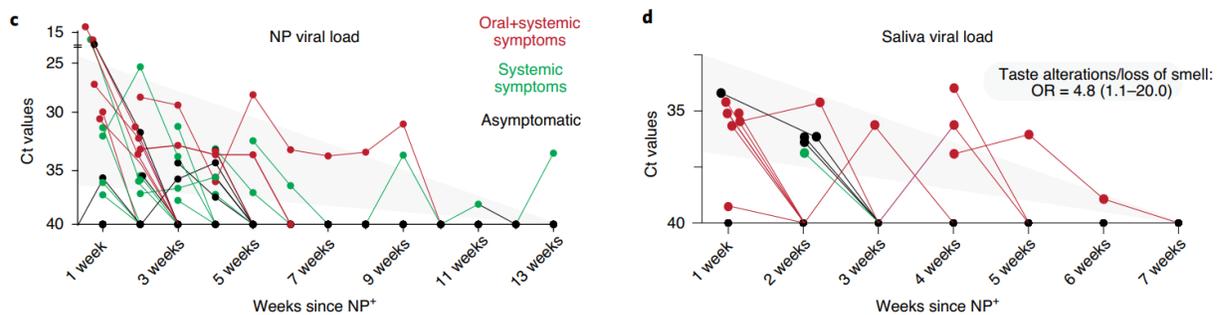
Comment: This study found the highest SARS-CoV-2 RNA concentrations in NS and comparable diagnostic sensitivities in all sampling groups. The demonstration of only moderately lower viral loads in OS and TW indicates that they can be considered as alternatives for SARS-CoV-2 diagnostics instead of NS—which are more difficult to obtain, and often not tolerated well by patients. This is similar to recent articles comparing saliva to NP swabs.

SARS-CoV-2 Infection of the Oral Cavity and Saliva

Nat Med published online March 26, 2021

<https://doi.org/10.1038/s41591-021-01296-8>

Involvement of the oral cavity in COVID-19 is poorly understood. The investigators generated and analyzed two single-cell RNA sequencing datasets of the human minor salivary glands and gingiva (9 samples, 13,824 cells), identifying 50 cell clusters. Using integrated cell normalization and annotation, they classified 34 unique cell subpopulations between glands and gingiva. SARS-CoV-2 viral entry factors such as ACE2 and TMPRSS members were broadly enriched in epithelial cells of the glands and oral mucosae. Using orthogonal RNA and protein expression assessments, they confirmed SARS-CoV-2 infection in the glands and mucosae. Saliva from SARS-CoV-2-infected individuals harbored epithelial cells exhibiting ACE2 and TMPRSS expression and sustained SARS-CoV-2 infection. Acellular and cellular salivary fractions from asymptomatic individuals were found to transmit SARS-CoV-2 *ex vivo*. Matched nasopharyngeal and saliva samples displayed distinct viral shedding dynamics, and salivary viral burden correlated with COVID-19 symptoms, including taste loss. Upon recovery, this asymptomatic cohort exhibited sustained salivary IgG antibodies against SARS-CoV-2.



Comment: Collectively, these data show that the oral cavity is an important site for SARS-CoV-2 infection and implicate saliva as a potential route of SARS-CoV-2 transmission. These results raise new questions about COVID-19 pathogenesis, including 1) whether this is primarily a ‘nasal-first’ infection that spreads to the oral cavity, 2) the possibility of an ‘oral-first’ infection via droplet/aerosol inoculation, and/or 3) whether the pattern of infection affects disease severity and host immunological responses. To test whether oral transmission can precede nasal infection and/or occur in the absence of nasal infection, it will be necessary to design studies that includes daily surveillance using NP and salivary tests. Considering oral SARS-CoV-2 infection and the ease of saliva for transmission, it remains critical to further understanding of the dominant modes of viral spread across the spectrum of asymptomatic, pre-symptomatic and symptomatic individuals.

Genomic Epidemiology of SARS-CoV-2 Infection During the Initial Pandemic Wave and Association with Disease Severity

JAMA Netw Open published online April 26, 2021
[doi:10.1001/jamanetworkopen.2021.7746](https://doi.org/10.1001/jamanetworkopen.2021.7746)

Cleveland Clinic researchers identified 484 unique mutations among six strains of SARS-CoV-2 isolates early in the COVID-19 pandemic from March 11 to April 22, 2020 and compared them with those of the original SARS-CoV-2 strain from Wuhan, China.

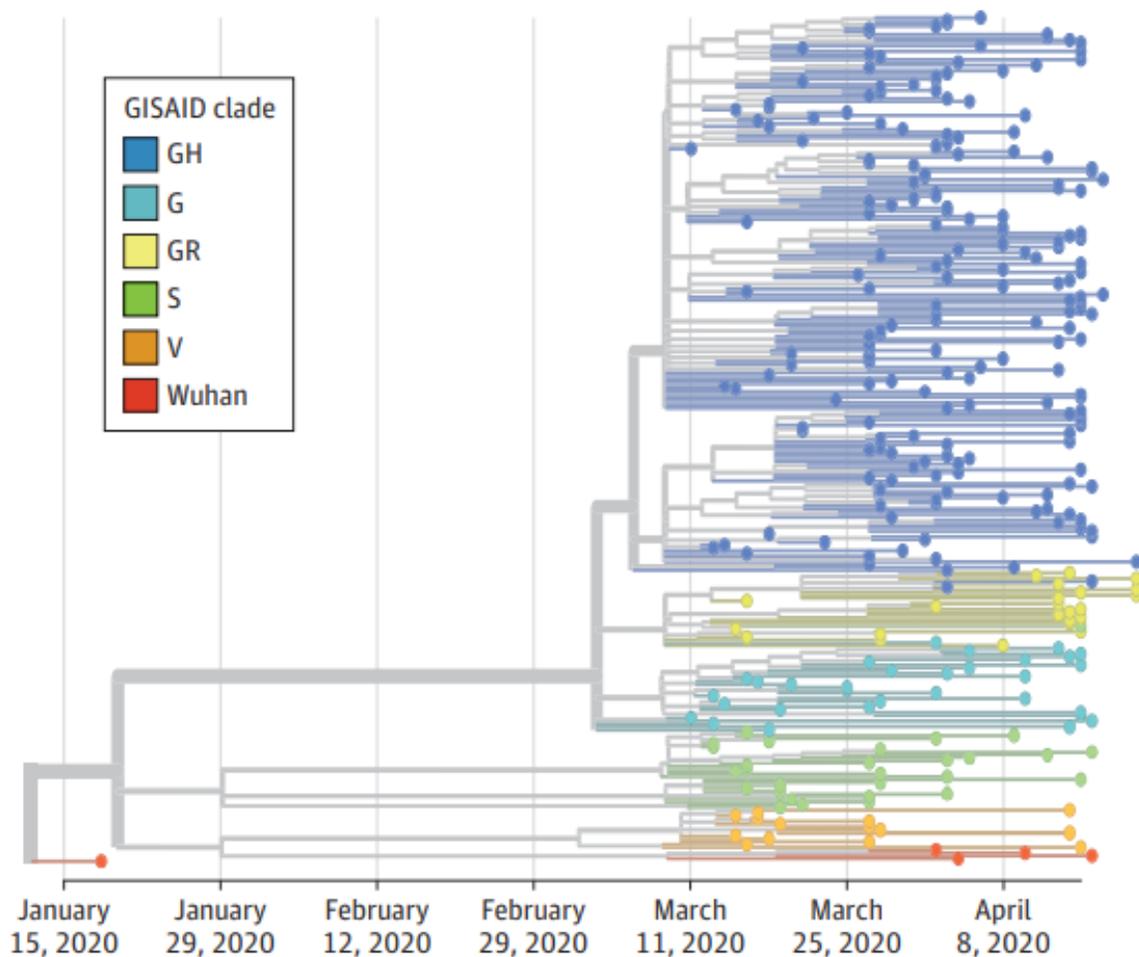
Infection with early virus subgroups, or clades, was associated with higher death rates than later strains (21.4% vs 5.6%). This may help explain persistent hospitalization yet decreasing mortality as the pandemic progresses. SARS-CoV-2 clade assignment is an important factor that may aid in estimating patient outcomes. The researchers identified six coronavirus clades (G, GR, and GH, which contain the D614G variant, and V, S, and Wuhan).

But the strains quickly became less diverse, and the once-dominant variants were outcompeted by the more-transmissible variants such as D614G, which were tied to improved survival in hospitalized patients (86.5% vs 58.8%). By this time, clades G, GR, and GH made up 84.4% of isolates, while the V, S, and Wuhan clades made up the remainder.

Of the 302 patients, 30.1% required hospital admission, 11.6% required intensive care, and 5.6% died. Viral loads were similar regardless of strain. Average patient age was 52.6 years, 41.7% were men, 64.6% were White, and 42.4% were healthcare workers.

Patients in different clades were of different ages, with the Wuhan clade associated with the oldest patients (median age, 67.8 years) and the GR clade with the youngest (median, 40.8 years). No racial or sex differences were observed among the clade groups or within individual clades.

B Phylogenetic tree constructed against the reference genome (NC_045512.2)



Comment: The linkage of viral clades to outcomes is quite important and highlights the importance of viral genome sequencing to gain a deeper understanding of new diseases. Reports show that strains containing D614G had higher viral loads in patient specimens, yet no difference in hospitalization

outcomes. More recent variants have shown increased transmissibility and higher viral loads [e.g., B.1.1.7]. Reports about virulence have been unclear.