

Good morning. I hope you survived election night, but this election is far from over!! For now, I am focused on what I can change and contribute such as the publication of the COVID-19 Daily Briefing. At the excellent suggestion of Mike Klompas, I have added the link to the article if available so if any of you who wish to take a deeper dive into the articles I review you can with a simple click.

Today I review several recent reports from CDC published in the last week in MMWR. The first is a follow-up on the impact of SARS-CoV-2 infection and pregnancy. The report clearly shows an increased risk for severe COVID-19 disease in pregnancy similar to influenza. The second report looks at SARS-CoV-2 infections among HCPs in Minnesota. Bottom line HCPs with household or social exposures are also more likely to test positive than HCPs with higher risk exposures within the healthcare setting. The third report looks at infections in household contacts in 2 states. This study found overall a secondary infection rate of 53% among household contacts of people with COVID-19. The next paper looks at the effect of age on transmission. This review suggests that younger adults (particularly those under 35) often had a high cumulative incidence of SARS-CoV-2 infection in the community. [this will be increasingly important when college age students return home] The last paper evaluates risk factors for SARS-CoV-2 transmission among close contacts of COVID-19 patients. Sharing a bedroom or a vehicle with a case or being spoken to by a case within 2 meters [6 feet] — particularly for 30 minutes or longer — were significant risk factors for transmission in non-household settings.

Ed

**Update: Characteristics of Symptomatic Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–October 3, 2020**

[https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e3.htm?s\\_cid=mm6944e3\\_w](https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e3.htm?s_cid=mm6944e3_w)

This is an update of a June 26 report, with the new study detailing the characteristics of 23,434 symptomatic pregnant women aged 15 to 44 years infected by COVID-19 from Jan 22 to Oct 3. After adjusting for age, race/ethnicity, and underlying illnesses, pregnant women in yesterday's study were significantly more likely than nonpregnant women to require ICU admission (3.9% vs 1.1%; adjusted risk ratio [aRR], 3.0), mechanical ventilation (2.9% vs 1.1%; aRR, 2.9), and ECMO (0.7% vs 0.3%; aRR, 2.4) and to die (1.5% vs 1.2%; aRR, 1.7).

While increased risk for ICU admission was seen in all pregnant women, it was particularly high among Asian (aRR, 6.6) and Native Hawaiian/Pacific Islanders (aRR, 3.7). Pregnant Hispanic women were at higher risk of both COVID-19 infection and death than their nonpregnant peers, and both pregnant and nonpregnant black women were at disproportionate risk of death relative to their distribution among infected women. Compared with their non-pregnant counterparts, pregnant women aged 15 to 24 years were at three times the risk of requiring mechanical ventilation, while those aged 35 to 44 had 3.6 times the risk.



**Comment:** Although the absolute risks of serious outcomes for pregnant women were low, they were clearly at increased risk for severe COVID-19 disease. This is similar to influenza. In addition, Hispanic and non-Hispanic black pregnant women appear disproportionately impacted by SARS-CoV-2 during pregnancy.

### **SARS-CoV-2 Exposure and Infection Among Health Care Personnel — Minnesota, March 6–July 11, 2020**

MMWR 69(43);1605–1610

<https://www.cdc.gov/mmwr/volumes/69/wr/mm6943a5.htm>

Between March 6 and July 11, 2020, researchers with the Minnesota Department of Health evaluated 21,406 incidences of HCP exposure to confirmed COVID-19 cases. Of those, 5374 (25%) were classified as higher-risk exposures, meaning the provider had close contact for 15 minutes or more, or during an aerosol-generating procedure. Two thirds (66%) of the higher-risk exposures occurred during direct patient care and 34% were related to nonpatient care interactions (e.g., coworkers, social and household contacts). Overall, 6.9% (373) of the HCPs with a higher-risk exposure tested positive for SARS-CoV-2 within 14 days of the exposure. Notably, HCPs with household or social exposure had the highest positivity rate across all exposure types at 13%.

When evaluating personal protective equipment (PPE) use among exposed HCPs, researchers found that 90% of providers in acute or ambulatory care were wearing a respirator or medical-grade face mask at time of exposure, compared with just 68% of HCPs working in congregate living or long-term care facilities. Further, investigators found that an HCP with a positive SARS-CoV-2 test working in a congregate living or long-term care facility resulted in exposure of a median of three additional HCPs (interquartile range [IQR], 1-6) compared with a median of one additional HCP exposure in acute or ambulatory care (IQR, 1-3).

The investigators also found that, compared with HCPs in acute or ambulatory settings, HCPs working in long-term care or congregate living settings were more likely to return to work following a high-risk exposure (57% vs 37%) and work while symptomatic (4.8% vs 1.3%).

**Comment:** HCPs with household or social exposures are also more likely to test positive than HCPs with higher risk exposures within the healthcare setting, which is an important message for both HCPs and the community at large that more COVID-19 spreading in our communities poses a greater risk to our HCPs and then in turn our health care institutions. In addition, the risk of contracting COVID-19 is higher for front-line health care workers in long-term care facilities and nursing homes than acute care. This highlights that infection prevention practices in these settings may not be as rigorous, and together these factors are probably contributing to higher risks of infection.

### **Transmission of SARS-CoV-2 Infections in Households — Tennessee and Wisconsin, April–September 2020**

MMWR published online October 30, 2020

[https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e1.htm?s\\_cid=mm6944e1\\_x](https://www.cdc.gov/mmwr/volumes/69/wr/mm6944e1.htm?s_cid=mm6944e1_x)

Researchers studied transmission in roughly 100 households in which someone had COVID-19 in Tennessee and Wisconsin from April through September. Household members completed symptom diaries and provided regular nasal and saliva samples for testing. Significant transmission occurred in households regardless of whether the index patient was an adult or child. Three quarters of the household members who tested positive for SARS-CoV-2 did so within 5 days of the index patient becoming sick. This study found overall a secondary infection rate of 53% among household contacts of people with COVID-19.

**Comment:** Based on the findings of this study, they feel because household transmission of SARS-CoV-2 is so common and can occur rapidly after the index patient's illness onset, persons should self-isolate immediately at the onset of COVID-like symptoms, at the time of testing as a result of a high risk exposure, or at the time of a positive test result, whichever comes first. In addition to self-isolation, they recommend all members of the household should wear a mask when in shared spaces in the household. This sounds logical but may be impractical and unrealistic in many households. Another important finding of this study is that fewer than one half of household members with confirmed SARS-CoV-2 infections reported symptoms at the time infection was first detected, and many reported no symptoms throughout 7 days of follow-up, underscoring the potential for transmission from asymptomatic secondary contacts and the importance of quarantine. Persons aware of recent close contact with an infected person, such as a household member, should quarantine in their homes and get tested for SARS-CoV-2.

### **On the Effect of Age on the Transmission of SARS-CoV-2 in Households, Schools and the Community**

J Infect Dis published online October 29, 2020

<https://doi.org/10.1093/infdis/jiaa691>

In a literature review of published studies and data on detection of SARS-CoV-2 infection in contacts of COVID-19 cases, the authors estimated the effect of age on transmission in different settings. Susceptibility to infection was estimated to be lowest for children under 10 and highest for adults over 60. Additionally, serological studies suggested that younger adults (particularly those under 35) often had a high cumulative incidence of SARS-CoV-2 infection in the community. With regards to transmission in schools (in settings with limited control measures), transmission was estimated to be

higher in secondary/high schools than in primary schools, [confirming prior studies] with class size possibly affecting the spread.

**Comment:** These findings emphasize the need for implementing effective mitigation measures before opening schools, particularly in secondary/high schools. Additionally, social distancing among younger adults was considered important in order to limit the spread of the pandemic in the community. Efforts must be undertaken to diminish mixing in younger adults, particularly individuals aged 18-35y to mitigate the spread in the community. [see below] As Thanksgiving approaches and college students return, we must be proactive to limit the spread in our community especially to our most vulnerable. The authors do point out the biases of current studies and potential for future studies.

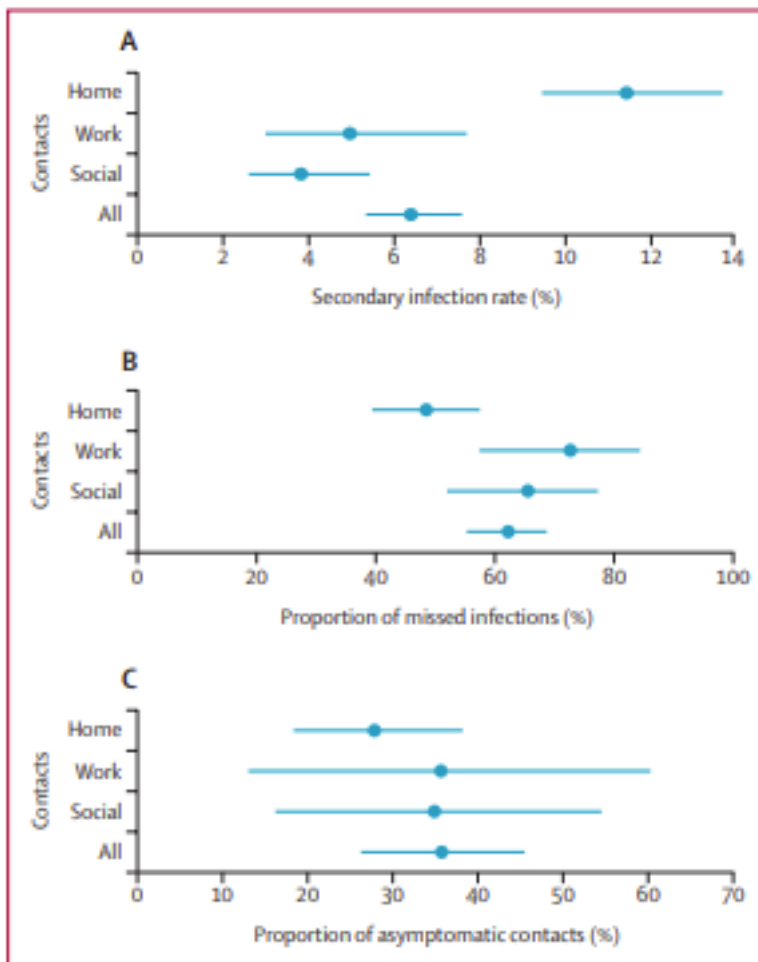
### **SARS-CoV-2 Seroprevalence and Transmission Risk Factors Among High-Risk Close Contacts: A Retrospective Cohort Study**

Lancet Infect Dis published online November 2, 2020

[https://doi.org/10.1016/S1473-3099\(20\)30833-1](https://doi.org/10.1016/S1473-3099(20)30833-1)

This is a retrospective study which evaluates risk factors for SARS-CoV-2 transmission among close contacts of COVID-19 patients. Researchers studied over 7500 close contacts (household, work, or social) of patients with confirmed COVID-19 in Singapore between January and April 2020. Contacts underwent PCR testing for SARS-CoV-2 if they developed symptoms. Bayesian modelling was used to estimate the prevalence of missed diagnoses and asymptomatic SARS-CoV-2-positive cases. Univariable and multivariable logistic regression models were used to determine SARS-CoV-2 transmission risk factors.

Overall, 6% of household contacts developed symptoms and tested positive, versus 1% of work or social contacts. Sharing a bedroom or a vehicle with a case or being spoken to by a case within 2 meters [6 feet] — particularly for 30 minutes or longer — were significant risk factors for transmission in non-household settings. In addition, using data from serology testing, the researchers calculated that symptom-based testing missed over half of contacts with SARS-CoV-2 infection. Among both household and non-household contacts, indirect contact, meal sharing, and lavatory co-usage were not independently associated with SARS-CoV-2 transmission.



**Figure 2: Bayesian modelling estimates of secondary infection rates, proportion of missed infections, and proportion of asymptomatic contacts, among all contacts**

(A) Overall secondary infection rate among 1779 home, 2231 work, and 3508 social contacts. (B) Proportion of infections missed by symptom-based PCR among estimated infected contacts. (C) Proportion of infected contacts estimated to be asymptomatic, among home, work, or social contacts of a case, or among all contacts. Dots are posterior means and lines are 95% credible intervals.

**Comment:** They conclude the available evidence supports social distancing and minimizing verbal interactions [this will be hard for some!] as part of community measures for prevention of SARS-CoV-2 transmission. In view of the substantial prevalence of asymptomatic infections, routine testing of close contacts regardless of symptoms will reduce missed cases. Household close contacts, who are at high risk of SARS-CoV-2 transmission, should be prioritized for routine testing. Detection of SARS-CoV-2-positive household close contacts should prompt either relocation of the person out of the household or implementation of physical distancing and other infection prevention measures within the household. [see above]