COVID-19 Evidence Digest 01/18/21

Emergence of SARS-CoV-2 B.1.1.7 Lineage — United States, December 29, 2020–January 12, 2021 (MMWR)

Bottom Line: Modeling data from the CDC suggests that the B.1.1.7 variant of SARS-CoV-2 may further increase COVID-19 cases in the US in the coming months.

Details: This report describes what is known about the B.1.1.7 SARS-CoV-2 variant, first reported on 12/14 in the UK, and its proliferation globally and in the US. It is estimated that B.1.1.7 emerged in September 2020; to date it has been detected in over 30 countries. In the US, 76 cases have been detected in 10 states as of 1/13/21. Data support the increased transmissibility of B.1.1.7 relative to other SARS-CoV-2 variants. CDC modeling suggests that B.1.1.7 will increase rapidly in the US and become the dominant variant by March, thereby requiring adoption of longer and more stringent mitigation measures so as not to overburden health care systems/resources. Modeling also suggests that a higher percentage of the population would need to be vaccinated against SARS-CoV-2 to achieve control of the pandemic. Of note, modeling indicated that the impact of vaccination on reducing transmission in the coming weeks was largest when transmission was already decreasing. Several recommendations are noted, including: 1) implementation of and increased compliance with transmission mitigation measures such as physical distancing, universal masking, hand hygiene, isolation and quarantine, and strategic testing of asymptomatic individuals with higher risk of infection to blunt the impact of B.1.1.7 and allow time for vaccination coverage to increase; and 2) enhanced genomic surveillance to detect SARS-CoV-2 variants of concern in the US.

Key Takeaways:

- Universal and increased compliance with prevention measures, including social distancing and masking, is needed to mitigate against the increased transmissibility of B.1.1.7., and higher vaccination coverage may be needed to protect the public.
- Targeted genomic sequence analysis will be key to identifying SARS-CoV-2 variants of concern in the US.

Clinical Characteristics and Outcomes of Hospitalized Women Giving Birth With and Without COVID-19 (JAMA Internal Med)

Bottom Line: In this large study of clinical features and outcomes among pregnant people with and without COVID-19 hospitalized for childbirth, in-hospital death, blood clots in the veins, and preeclampsia were much higher in patients with COVID-19.

Details: This study looked at clinical features and outcomes in hospitalized pregnant people with and without COVID-19 who gave birth and were discharged between 4/1 and 11/23/20. ICD-10 and billing codes for COVID-19 status, comorbidities, and in-hospital outcomes were used to identify patients within an all-payer database that covers about 20% of US hospitalizations. Of 406,446 people hospitalized for labor and delivery over the study period, 1.6% (n=6,380) had COVID-19. Patients with COVID-19 tended to be younger and have diabetes and obesity, and were more often Black and/or Latinx. The vast majority of pregnant patients with COVID-19 were discharged home (98.9%); 3.3% (n=212), 1.3% (n=86), and 0.1% (n=9) needed intensive care, mechanical ventilation, and

died in the hospital, respectively. Though low overall, in-hospital mortality was significantly higher among COVID-19 versus non-COVID-19 patients (141 vs 5 deaths per 100,000 women). Myocardial infarction (heart attack) and venous thromboembolism (blood clots in the veins) were higher in pregnant COVID-19 versus non-COVID-19 patients (0.1% vs 0.004% and 0.2% vs 0.1%, respectively). Having COVID-19 was associated with a significantly higher odds of preeclampsia and pre-term birth, but not stillbirth. Higher odds of mechanical ventilation or in-hospital death among COVID-19 patients was associated with various clinical and demographic factors, including age (OR, 1.91), comorbidities (morbid obesity, diabetes, kidney disease, OR ranging from 3.85-21.57), eclampsia (OR, 116.1), thrombotic events (OR, 45.10), and still birth (OR, 7.88).

Key Takeaways:

- While overall morbidity and mortality rates among pregnant people diagnosed with COVID-19 and hospitalized for childbirth were low, pregnant people with COVID-19 were at much higher risk for particular outcomes than pregnant people without COVID-19.
- Findings highlight the need to include pregnant persons in clinical trials for COVID-19 therapies, including vaccines.

Gut Microbiota Composition Reflects Disease Severity and Dysfunctional Immune Responses in Patients with COVID-19 (BMJ Gut)

Bottom Line: This study found that the composition of gut flora in the gastrointestinal tract was significantly altered in patients with versus without COVID-19, and may play a role in disease severity.

Details: This study obtained blood, stool, and patient records from 100 patients with mainly mild or moderate COVID-19 disease at two Hong Kong hospitals; ongoing stool samples were collected from 27/100 patients for up to 30 days after no longer testing positive for SARS-CoV-2. DNA extracted from stools were sequenced to ascertain gut microbiome (gut flora) composition, and levels of inflammatory cytokines and blood markers were measured from blood plasma. The composition of gut microbiome was significantly altered in patients with COVID-19 compared to adult control participants without COVID-19, regardless of medication use. Some types of commensal bacteria that act on the host's immune system to induce protective responses against pathogens were lower and remained low in COVID-19 patients even after disease had resolved. Higher levels of inflammatory cytokines and blood markers (e.g., C reactive protein, gamma-glutamyl transferase) corresponded with disease severity.

Key Takeaways:

- Findings suggest that gut flora may be involved in the extent of COVID-19 disease severity, perhaps through the host's inflammatory immune response.
- Continued gut microbe imbalance may contribute to long-term symptoms experienced by some recovered COVID-19 patients, highlighting the need to better understand the role of gut flora in COVID-19-related inflammation.