COVID-19 Literature Review Group
Prepared by The Ohio State University

COVID-19 Literature Review
Prepared by Eliana Burlotos, The Ohio State University
February 26, 2021

Topic: COVID-19 Vaccine Safety

Title: First Month of COVID-19 Vaccine Safety Monitoring – United States, December 14, 2020-January 13, 2021
Source: MMWR
Publication Date: February 19, 2021
Link: https://www.cdc.gov/mmwr/volumes/70/wr/mm7008e3.htm?s_cid=mm7008e3_w
Study Period: December 14, 2020 - January 13, 2021
Study Location: United States
Sample Size: 13,794,904 COVID-19 vaccine doses
Summary: This article discusses the safety monitoring response of the COVID-19 vaccine. Safety monitoring for the Pfizer-BioNTech COVID-19 vaccine and for the Moderna COVID-19 vaccine was performed using the Vaccine Adverse Event Reporting System (VAERS) and v-safe, an active surveillance system. During the period of December 14, 2020 - January 13, 2021 13,794,904 doses were administered, and VAERS received and analyzed 6,994 reports of adverse events after vaccination. Of those adverse events, 90.8% were classified as nonserious and 9.2% as serious. The most common reported symptoms to VAERS were headache (22.4%), fatigue (16.5%), and dizziness (16.5%). There were 113 deaths reported to VAERS, in which 78 of those were among long-term care facility residents; however, information did not suggest any causal relationship between COVID-19 vaccination and death. There were 4.5 reported cases of anaphylaxis after receipt of both vaccines per million doses administered. The postauthorization safety profiles of the two COVID-19 vaccines did not indicate evidence of unexpected serious adverse events. No unusual or unexpected reporting patterns were detected.

Key Findings Relevant to Ohio’s Response: It is important that the State of Ohio emphasize to vaccine recipients that the Pfizer BioNTech and Moderna COVID-19 vaccines are safe. Furthermore, counseling vaccine recipients to expect local reactions might ease vaccination completion concerns.

Title: Neutralization of SARS-CoV-2 lineage B.1.1.7 pseudovirus by BNT162b2 vaccine-elicited human sera
Source: Science
Publication Date: January 29, 2021
Link: https://science.sciencemag.org/content/early/2021/01/28/science.abg6105
Study Period: N/A
Study Location: N/A
Sample Size: 40 previously vaccinated participants
Summary: This article analyzes the BioNTech-Pfizer mRNA vaccine, BNT162b2, effectiveness against the B.1.1.7 SARS-CoV-2 variant. This variant has an unusually large number of mutations, including 10 amino acid changes in the spike protein. The large number of mutations raises concerns that the variant's recognition by neutralizing antibodies may be hindered. SARS-CoV-2-S pseudoviruses with either the Wuhan reference strain or the B.1.1.7 lineage spike protein were tested with sera of 40 participants who were vaccinated in a previously reported trial with the BioNTech-Pfizer mRNA vaccine. The immune sera possessed slightly reduced neutralizing titers against the B.1.1.7 lineage pseudovirus, but the titers were overall largely preserved. This data revealed that the BioNTech-Pfizer vaccine will be effective against the B.1.1.7 lineage.
Key Findings Relevant to Ohio’s Response: Preparation for potential COVID-19 vaccine strain change is still extremely important.

COVID-19 Literature Review
Prepared by Elena McGoey, The Ohio State University
February 25, 2021
Topic: Pregnancy and COVID-19

Title: Association between the COVID-19 pandemic and the risk for adverse pregnancy outcomes: a cohort study
Source: PubMed
Publication: 23 February 2021
Link: https://pubmed.ncbi.nlm.nih.gov/33622959/
Study Period: 20 May 2019 to 30 November 2019 (pre-COVID cohort), 20 January 2020 to 31 July 2020 (COVID cohort)
Study Location: Beijing, China
Sample Size: 7699 pregnant women
Summary: This study analyzed factors that influence adverse pregnancy outcomes in two cohorts of pregnant women, pre-COVID-19 and COVID-19. Pregnant women in the COVID-19 cohort were more likely to be of advanced age, show either insufficient or excessive gestational weight gain, have a family history of chronic disease, and have higher number of prenatal visits (over 8) compared to the pre-COVID-19 cohort. These factors all increase the risk of adverse pregnancy outcomes. As for pregnancy outcomes, the COVID-19 cohort had higher prevalence of Caesarean sections and premature rupture of membranes. The risk for premature rupture of membranes and fetal distress increased by 11% during the COVID-19 pandemic when compared to the pre-COVID-19 cohort.

Key findings most relevant to Ohio’s response: Premature rupture of membranes may be associated with increased maternal anxiety during the pandemic. As such, healthcare systems should take extra steps to support mental health and reduce the indirect impact of COVID-19 on vulnerable pregnant women. There is a lack of published research on increased fetal distress during the pandemic.

Title: Maternal and perinatal outcomes in high vs low risk-pregnancies affected by SARS-CoV-2 infection (Phase-2): The WAPM (World Association of Perinatal Medicine) working group on COVID-19
Source: PubMed
Publication: 20 February 2021
Link: https://pubmed.ncbi.nlm.nih.gov/33621713/
Study Period: 04 April 2020 to 28 October 2020
Study Location: 76 centers from 25 countries in Europe, United States, South America, Asia, and Australia
Sample Size: 887 singleton pregnancies
Summary: This study evaluated maternal and perinatal outcomes in high-risk compared to low-risk pregnancies for 887 pregnancies tested positive for SARS-CoV-2. Pregnancies were considered “high-risk” due to either pre-existing chronic medical conditions or obstetric disorders occurring during pregnancy. For maternal outcomes, the risk for adverse outcomes was higher overall for high-risk pregnancies, at higher risk of hospital admission, severe respiratory symptoms, admission to ICU, and invasive ventilation. For perinatal outcomes, high-risk pregnancies were at high risk of adverse perinatal outcome, but this association seemed to be due to higher rates of miscarriage in high-risk pregnancies (not an association due to COVID-19).
**Key findings most relevant to Ohio’s response:** High-risk pregnancies, compared to low-risk pregnancies, are at a higher risk of adverse maternal outcomes when complicated by COVID-19. Healthcare systems and obstetricians should be aware of this finding when determining methods for patient care, and providers should make women with high-risk pregnancies aware of increased risks due to complications from SARS-CoV-2 infection.

**COVID-19 Literature Review**  
*Prepared by Anjali Prabhakaran, The Ohio State University*  
*February 26, 2020*

**Topic: COVID Precautions and Messaging**

<table>
<thead>
<tr>
<th><strong>Title</strong></th>
<th>Attitudes, current behaviours and barriers to public health measures that reduce COVID-19 transmission: A qualitative study to inform public health messaging</th>
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<tbody>
<tr>
<td><strong>Source</strong></td>
<td>PLOS ONE</td>
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<tr>
<td><strong>Publication Date</strong></td>
<td>2/19/2021</td>
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<tr>
<td><strong>Link</strong></td>
<td><a href="https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0246941">https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0246941</a></td>
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<tr>
<td><strong>Study Period</strong></td>
<td>August – September 2020</td>
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<tr>
<td><strong>Study Location</strong></td>
<td>Alberta, Canada</td>
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<tr>
<td><strong>Sample Size</strong></td>
<td>3000</td>
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<tr>
<td><strong>Summary</strong></td>
<td>The aim of this study was to increase adoption of COVID precautionary behaviors by determining attitudes towards current public health messaging. Researchers recruited participants from 3000 phone numbers across Atlanta to determine attitudes towards public health measures, identifying barriers to following these measures, and identifying public health communication strategies. Based on the results of the survey, physical distancing and masking were seen as more important than using a contact tracing app. Participants felt that consistent messaging would be more effective, as well as using social media to target younger populations.</td>
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<td><strong>Key Findings Relevant to Ohio’s Response</strong></td>
<td>Adherence to COVID precautionary measures will continue to be integral even as vaccine rollout continues. This will shorten the time span needed to reach herd immunity and reduce COVID mortality and morbidity rates. The results of this study can help Ohio policymakers develop better messaging strategies to encourage Ohioans to continue practicing COVID safe behaviors to reduce viral transmission.</td>
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Title: Covid-19 Vaccination Intent, Perceptions, and Reasons for Not Vaccinating Among Groups Prioritized for Early Vaccination - United States, September and December 2020
Source: CDC Morbidity and Mortality Weekly Report
Publication Date: 02/12/2021
Link: https://www.cdc.gov/mmwr/volumes/70/wr/mm7006e3.htm?s_cid=mm7006e3_w
Study Period: September 2020 and December 2020
Study Location: United States
Sample Size: 5,551
Summary: In September and December 2020, the CDC conducted household surveys among adults in the United States investigating intent to get vaccinated. Intent to vaccinate was defined as being absolutely certain or very likely to get vaccinated. From September to December, researchers found that the proportion of adults intending to vaccinate increased from 39.4% to 49.1%. Likewise, non-intent decreased from 38.1% in September to 32.1% in December. Certain demographic groups were more likely to report non-intent, including younger adults, women, African Americans, adults with lower education, those living in non-metropolitan areas, people with lower-income, and adults without health insurance. Researchers also adopted a specific focus on vulnerable groups, including adults aged 65+, essential workers, and adults aged 18-34 with underlying health conditions. Intent increased 17.1 percentage points among those aged 65 and older, 8.8 percentage points among essential workers, and 5.3 percentage points among adults aged 18-34 with underlying conditions. Likewise, non-intent decreased across nearly all sociodemographic groups, including those with the highest original non-intent rates. The leading causes of vaccine hesitancy among adults reporting non-intent in December were concerns over vaccine side effects/safety, lack of trust in the government, and concerns over the rapid pace of Covid-19 vaccine production.

Key Findings Relevant to Ohio’s Response: Researchers conclude that there is still a need for tailored messages and strategies aimed at increasing public acceptance, especially within certain subgroups. The CDC also holds that healthcare providers are generally trusted sources of information for the public. Moreover, they recommend that healthcare providers initiate conversations with patients about vaccine safety and emphasize vaccine acceptance. Such a recommendation should be considered by Ohio healthcare staff in order to increase intent to vaccinate among the public.

Title: Influence of a Covid-19 Vaccine’s Effectiveness and Safety Profile on Vaccine Acceptance
Source: PNAS
Publication Date: 01/21/2021
Link: https://www.pnas.org/content/118/10/e2021726118
Study Period: August 2020 and December 2020
Study Location: United States
Sample Size: 1,000
Summary: Researchers conducted a national survey in August 2020 and again in December 2020 to investigate Covid-19 vaccine acceptance. Moreover, they explored the impact of 3 factors on vaccine acceptance: probability of the vaccine’s protection against Covid-19, probability of minor side effects, and probability of serious adverse reactions. They concluded that probability of vaccine efficacy was the most influential
determinant, significantly increasing acceptance when above 70%. It was also found that the probability of minor side effects, such as fever or sore arm, did not greatly impact vaccine acceptance. Researchers also concluded that likelihood of extreme adverse reactions had a small yet significant effect on vaccine acceptance. Moreover, acceptance was significantly lower when there was a 1/100,000 chance of an extreme adverse reaction. However, acceptance increased with a probability of 1 in 1 million or 1 in 100 million. Additionally, following the declaration that Covid-19 vaccines are 95% effective, respondents reported a small but significant increase in acceptance. Researchers also concluded that expected benefits are more influential on vaccine attitudes than potential side effects.

**Key Findings Relevant to Ohio’s Response:** Researchers hold that the Covid-19 vaccine will only bring the U.S. out of the pandemic if it is widely used and accepted by the public. This study indicates that the public must believe that the vaccine is effective while only inducing minor side effects. The safety and effectiveness of the vaccine should be emphasized by public health officials and other leaders in order to increase vaccine acceptance in Ohio.

**COVID-19 Literature Review**
**Prepared by Greta Warmbier, The Ohio State University**
**February 24, 2021**
**Topic: Schools/Kids**

**Title:** *COVID-19 Stats:* Percentage of Middle and High School Students Aged 13–21 Years Attending In-Person Classes Who Reported Observing Fellow Students Wearing a Mask All the Time,* by School Setting and Activity — United States, October 2020

**Source:** CDC

**Publication Date:** February 12, 2021

**Link:** [https://www.cdc.gov/mmwr/volumes/70/wr/mm7006a5.htm?s_cid=mm7006a5_w](https://www.cdc.gov/mmwr/volumes/70/wr/mm7006a5.htm?s_cid=mm7006a5_w)

**Study Period:** October 1 – 24, 2020

**Study Location:** United States

**Sample Size:** 3,953 students

**Summary:**

October 2020: 3,953 middle and high school students aged 13-21 years who were attending in-person classes were asked about mask use by fellow students in different settings. 65% of students reported that fellow students wore a mask “all the time” in the classroom, hallways, and/or stairwells. Reported use of masks “all the time” was lower in outdoor locations. Masks were used “all the time” by 42% of students in school buses, 40% in restrooms, and 36% in the cafeteria (when not eating). Reported mask use was lowest, 28%, during sports or extracurricular activities and 25% when outside on school property.

**Relevance to Ohio’s COVID-19 Response:**

It is important that schools remain vigilant in enforcing mask use “all the time,” especially around teachers who are at a greater risk due to advanced age. Even when masks are mandated, most students do not wear them “all the time,” and this is something to consider.
From December 1, 2020–January 22, 2021, Cobb and Douglas Public Health (CDPH), the Georgia Department of Public Health (GDPH), and CDC investigated COVID-19 transmission in 8 public elementary schools in 1 school district. 9 clusters of 3 or more epidemiologically linked COVID-19 cases were identified involving 13 educators and 32 students at 6 of the 8 elementary schools. 2 clusters involved probable educator-to-educator transmission that was followed by educator-to-student transmission and resulted in 50% of school-associated cases. 69 household members of persons with school-associated cases were tested, and 26% tested positive. All 9 transmission clusters involved “less than ideal” physical distancing, and 5 involved inadequate mask use by students. Educators were central to in-school transmission networks. During the investigation period, which included 24 in-person school days, 2,600 students (80% of the district’s elementary school students) and 700 staff members attended elementary school in-person. During this period, COVID-19 incidence in Cobb County, Georgia, increased 300%. The median cluster size, including household members, was 6. An educator was the index patient in 4 clusters, a student was the index patient in 1 cluster, and in 4 clusters the index patient(s) could not be determined. 8 clusters involved at least one educator and probable educator-to-student transmission. 4 clusters involved probable student-to-student transmission, and 3 involved probable student-to-educator transmission. 2 clusters involved probable educator-to-educator transmission during in-person meetings or lunches, which was followed by educator-to-student transmission in the classroom and resulted in 48% of school-associated cases. Although plastic dividers were placed on desks between students, students sat <3 ft apart. Physical distancing of >6 ft was not possible because of the high number of in-person students and classroom layouts. In seven clusters, transmission among educators and students might have occurred during small group instruction sessions in which educators worked near students. The school district mandated in-classroom mask use except while eating, and both reported and observed compliance during site visits was high. However, information obtained during interviews indicated that specific instances involving lack of or inadequate mask use by students likely contributed to spread in 5 clusters. Students ate lunch in their classrooms, which might have facilitated spread.

Relevance to Ohio’s COVID-19 Response:

Initial infections among educators played a substantial role in in-school COVID-19 transmission and subsequent chains of infection to other educators, students, and households, which highlights the importance of preventing infections among educators. This is something to consider when determining the timeframe of COVID-19 vaccination for educators.