Conclusion. The metrics and outcomes gathered in this assessment are a strong indicator that online patient/caregiver activities on WebMD Education improved knowledge and confidence and prompted intent to act related to COVID-19 vaccines. These findings highlight the potential for well-designed online education to overcome vaccine-related challenges of the COVID-19 pandemic.

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574. High Acceptance and Rapid Implementation of COVID-19 Vaccine in a Public HIV Clinic in Northern California: An Initial Analysis of Social Determinants
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Session: P-25. COVID-19 Vaccines

Background. Safety net HIV providers face operational challenges during the COVID pandemic with services often transformed to telehealth. HIV infected persons are a priority population for SARS CoV-2 vaccination. Medical mistrust of COVID vaccines has been cited as a contributor to vaccine hesitancy. Data on efficient and effective vaccination efforts of HIV infected persons in safety net health systems is needed. In San Mateo County, Latino persons comprised 42% of all COVID cases, Whites 16%, and African Americans 2%.

Methods. SARS CoV2 vaccination with BNT162b2 (Pfizer-BioNTech), mRNA-1273 (Moderna) or Ad26.COV2.S (Janssen) vaccine were offered beginning February 2, 2021 through May 28, 2021 in a northern California public County HIV clinic. Clinic patients were contacted by bilingual English/Spanish speaking HIV clinic staff and appointments scheduled at County affiliated vaccination sites. Clinic staff followed up by phone with patients who did not initially accept vaccine. We calculate the percentage of patients who completed vaccine series and use multivariable logistic regression analysis to estimate the odds of series completion by patient race/ethnicity, gender and age.

Results. Virtually all, 95% (349/365) of HIV patients in our County HIV clinic were offered vaccine during a 17 week period. Among those, 86% (313/365) accepted and received at least one dose and 80% completed the series (292/365) at time of this analysis. Janssen vaccine was given to only 2% (7/313) patients. Series completion was highest among Latinos and Asians. Latinos had the highest odds of vaccine series completion (OR = 4.12; 95% CI 1.71 - 9.93).

Conclusion. HIV patients offered SARS CoV2 vaccine by County HIV clinic staff with established patient care relationships had high vaccine acceptance (80%), comparable to 68% series completion in the county overall and 56% in the health equity quartile county census tracts. Latino HIV infected persons were most likely to complete the COVID vaccine series. Ryan White funded HIV clinics are ideal hubs to coordinate HIV patient COVID vaccination efforts. Adding COVID vaccine completion to HIV clinic performance measures would likely be beneficial.

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575. Local Experience of Breakthrough SARS-CoV-2 Infections After Full Vaccination
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Session: P-25. COVID-19 Vaccines

Background. SARS-CoV-2 the etiology of COVID-19 has caused more than 33 million cases and almost 600,000 deaths in the United States alone. Vaccination is a vital tool in controlling the pandemic. With accelerated infection rates in various parts of the world, the incidence of variants has risen and threatens to set back the long sought after immunity, provided by available vaccines. The objective of this study was to evaluate the breakthrough infection rate after complete vaccination, in Sangamon County, with a rural and urban population of 195,000 in Central Illinois.

Methods. Data regarding breakthrough infections collected from the Sangamon County Department of Public Health, included the total number of infections, time after vaccination, age range of those infected and the type of vaccine used. Complete vaccination was defined as 14 days after the single dose of Johnson & Johnson/Janssen or the second dose of Pfizer-BioNTech or Moderna Inc. vaccine. Complete vaccination was defined as 14 days after the single dose of Johnson & Johnson/Janssen or the second dose of Pfizer-BioNTech or Moderna Inc. vaccine.

Results. The number of fully vaccinated individuals at the time of writing of this study was 87,086 which corresponded to 44.58% of the total population. The breakthrough infection percentage was calculated as 0.036%. The mean time after vaccination to infection was 49.13 days with a standard deviation of 23.28.

Conclusion. Breakthrough infections among fully vaccinated individuals in our county, have been quite rare, which points to the high efficacy of the vaccines. A complex number of factors likely contribute to this including virus-related factors i.e. variant forms and specific patient-related factors which are not a part of this study. The afore-mentioned high efficacy rate of the vaccines provides further justification, to continue to pursue a persistent vaccination strategy to mitigate the effects of the SARS-CoV-2 virus.

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576. Determinants of COVID-19 Vaccine Hesitancy: A Cross-Sectional Study in 3 Communities in the United States and Lebanon
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Table: Assessment of Educational Effectiveness

| Area of Patient Assessment | Change in Knowledge from Pre-to-Post | Confidence | Intent to Act |
|---------------------------|--------------------------------------|------------|--------------|
| Getting the COVID-19 vaccine | 2% absolute improvement (80% to 82%) | 75% confident in talking to their HC about the COVID-19 vaccine | 70% plan to ask HCP about the COVID-19 vaccine |
| Why, Who and When of COVID-19 vaccines | 9% absolute improvement (75% to 84%) | 65% confident in talking to their HCP about the vaccine and where to get it | 62% plan to talk to HCP about why getting the vaccine is important |
| What to Expect when you get the COVID-19 vaccine | 5% absolute improvement (80% to 85%) | 73% confident in talking to their HCP about where I can get the COVID-19 vaccine | 77% plan to talk to HCP about what to expect during and after the COVID-19 vaccine |
| High immuno deficiency and COVID-19 | 10% absolute improvement (75% to 86%) | 67% confident in talking to their HCP about building immunity to COVID-19 | 63% plan to talk to HCP about getting vaccinated to protect self and others |

Conclusion. HIV patients offered SARS CoV2 vaccine by County HIV clinic staff with established patient care relationships had high vaccine acceptance (80%), comparable to 68% series completion in the county overall and 56% in the health equity quartile county census tracts. Latino HIV infected persons were most likely to complete the COVID vaccine series. Ryan White funded HIV clinics are ideal hubs to coordinate HIV patient COVID vaccination efforts. Adding COVID vaccine completion to HIV clinic performance measures would likely be beneficial.

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Session: P-25. COVID-19 Vaccines

Background. The ongoing COVID-19 pandemic has thus far resulted in substantial worldwide mortality. As of December 2020, COVID-19 vaccines became available following Emergency Use Authorization (EUA) issued by the FDA. Recent longitudinal studies published as of March 2021 demonstrated that vaccine hesitancy remains high despite improvements compared to 2020. This study sought to explore the perceptions, beliefs, attitudes, and knowledge surrounding COVID-19 and identify determinants uniquely associated with vaccine hesitancy.

Methods. A cross-sectional electronic survey was created based on CDC & IDSA recommendations. The survey was distributed from March 2021 until June 2021 randomly to faculty members, healthcare workers, and students (≥18 years old) across three major academic centers (Case Western Reserve University, Spectrum Health, and the American University of Beirut Medical Center [AUBMC]). Data collected included socio-economic characteristics, demographics, knowledge, and attitudes pertaining to COVID-19 and vaccination. A multivariable regression model was utilized to evaluate for independent associations between variables and vaccine willingness/hesitancy as the primary outcome.

Results. In total, 7,197 participants completed the survey with an overall response rate of 94%. Females constituted 75.7% of the study population. Overall, 87.8% of the study cohort indicated willingness to get vaccinated. Factors associated independently with vaccination hesitancy included: younger age, lower attained education, lower knowledge score, physician recommendation against vaccination, not receiving the influenza vaccine annually, and other beliefs and attitudes as reported in Table 1.

Table 1. Independent predictors of COVID-19 vaccine hesitancy among study respondents.

| Variable                          | βOR     | 95% CI       | p-value |
|----------------------------------|---------|--------------|---------|
| Age                              | 0.67    | (0.56–0.80)  | <0.001  |
| Education                        | 1.73    | (0.69–0.85)  | <0.001  |
| Smoking                          | 1.17    | (1.06–1.76)  | 0.016   |
| Doctor advised against the vaccine | 5.02    | (2.50–10.07) | <0.001  |
| Previously received annual influenza vaccination | 0.51 | (0.54–0.58) | <0.001 |
| COVID-19 knowledge score         | 0.65    | (0.58–0.74)  | <0.001  |
| "COVID-19 vaccine is more dangerous than COVID-19 infection*" | 9.21 | (4.70–18.07) | <0.001 |
| "COVID-19 infection does not worry me*" | 2.30 | (1.78–2.99) | <0.001 |
| "The COVID-19 vaccine can change human health*" | 1.54 | (1.13–2.11) | 0.007 |
| "The COVID-19 vaccine can sometimes lead to adverse effects*" | 1.45 | (1.00–2.09) | 0.05 |
| "I believe that the COVID-19 vaccine development was rushed*" | 2.69 | (2.81–4.85) | <0.001 |
| "I would get the COVID-19 vaccine if my health care provider recommended it*" | 0.03 | (0.02–0.04) | <0.001 |

Conclusion. Most survey respondents indicated willingness to receive COVID-19 vaccination. The perception or belief that vaccination is more harmful than COVID-19 disease represented an especially robust barrier against vaccination. Since recommendations made by healthcare providers were strongly associated with either vaccination hesitancy or willingness to get vaccinated, developing educational strategies at this level could enhance vaccine acceptance in an effort to curb the pandemic.

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578. INO-4800 DNA Vaccine Induces Neutralizing Antibodies and T cell Activity Against Global SARS-CoV-2 Variants

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Session: P-25. COVID-19 Vaccines

Background. Global surveillance has identified emerging SARS-CoV-2 variants of concern (VOC) associated with increased transmissibility, disease severity, and resistance to neutralization by current vaccines under emergency use authorization (EUA). Here we assessed cross-immune responses of INO-4800 vaccinated subjects against SARS-CoV-2 VOCs.

Methods. We used a SARS-CoV-2 IgG ELISA and a pseudo neutralization assay to assess humoral responses, and an IFNγ ELISPOT to measure cellular responses against SARS-CoV-2 VOC in subjects immunized with the DNA vaccine, INO-4800.

Results. IgG binding titers were not impacted between wild type (WT) and B.1.1.7 or B.1.351 variants. An average 1.9-fold reduction was observed for the P1 variant in subjects tested at week 8 after receiving two doses of INO-4800 (Figure 1a). We performed a SARS-CoV-2 pseudovirus neutralization assay using sera collected from 13 subjects two weeks after administration of a third dose of either 0.5 mg, 1 mg, or 2 mg of INO-4800. Neutralization was detected against WT and the emerging variants in all samples tested. The mean ID50 titers for the WT, B.1.1.7, B.1.351 and P1 were 643 (range: 70–729), 295 (range: 46–886), 105 (range: 25–309), and 664 (range: 25–2087), respectively. Compared to WT, there was a 2.1 and 6.9-fold reduction for B.1.1.7 and B.1.351, respectively, while there was no difference between WT and the P1 variant (Figure 1b). Next, we compared cellular immune responses to WT and SARS-CoV-2 Spike variants elicited by INO-4800 vaccination. We observed similar cellular responses to WT (median = 82.2, IQR = 58.9–205.3), B.1.1.7 (79.4, IQR = 38.9–179.7), B.1.351 (80, IQR = 40.0–208.6) and P1 (78.3, IQR = 53.1–177.8) Spike peptides (Figure 2).

Conclusion. COVI-V AC is protective against heterologous challenge with SARS-CoV-2 Beta. By presenting all viral antigens, COVI-V AC may be less affected by viral evolution than spike-based vaccines.

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