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%)	73% confident in talking to their HCP 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 (76% vs 85%)	69% confident in talking to their HCP about the vaccine and where to get it	63% 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%)	71% 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
Herd immunity and COVID-19	20% absolute improvement (76% vs 96%)	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. 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 successful 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).

COVID-19 Vaccine Series Completion in a California Public HIV Clinic by Race/Ethnicity, Age and Sexual Orientation, n=364

	OR	95% CI
Race/Ethnicity		
White	1	
Black	1.01	(0.39, 2.61)
Latino	4.12	(1.71, 9.93)
Other	3.92	(0.99, 15.52)
Age	1.02	(0.99, 1.05)
Sexual Orientation		
Heterosexual	1	
Homosexual	1.54	(0.74, 3.21)
Bisexual	1.10	(0.37, 3.31)

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.

Results.

Age	Infections	% of Breakthrough
70 and over	10	31.3
60-69	4	12.5
50-59	5	15.6
40-49	5	15.6
30-39	2	6.3
20-29	5	15.6
10-19	1	3.1
Total	32	100

Vaccine	Infections	% of Breakthrough
Pfizer-BioNTech	14	43.75
Moderna, Inc.	10	31.25
Johnson & Johnson/Janssen	8	25
Total	32	100

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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Background. The ongoing COVID-19 pandemic has thus far resulted in substantial worldwide mortality. As of November 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 ($\geq$18 years old) across 3 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 vaccination 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	aOR	95% CI	p-value
Age	0.67	0.56-0.80	< 0.001
Education	0.73	0.63-0.85	< 0.001
Smoking	1.37	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	0.44-0.58	< 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 DNA"	1.54	1.13-2.11	0.007
"The COVID-19 vaccine can sometimes lead to infertility"	1.45	1.00-2.09	0.05
"I believe that the COVID-19 vaccine development was rushed"	3.69	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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577. COVI-VAC™, a Live Attenuated COVID-19 Vaccine, Provides Single Dose Protection Against Heterologous Challenge with SARS-CoV-2 Beta (B.1.351) in the Syrian Golden Hamster Model

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Session: P-25. COVID-19 Vaccines

Background. Although multiple COVID-19 vaccines are currently in use, emergence of novel SARS-CoV-2 variants with reduced neutralization raises concern of future vaccine escape. COVI-VAC™ is a live attenuated SARS-CoV-2 strain based on WA/1 being developed as an intranasal COVID-19 vaccine. COVI-VAC is attenuated through removal of the furin cleavage site and introduction of 283 silent, deoptimizing mutations that maintain viral amino acid sequence but slow viral replication in vivo by up to 5 logs. Notably, COVI-VAC presents all viral antigens in their native conformation and is not limited to spike. COVI-VAC demonstrated attenuation, immunogenicity and single dose protection in both the Syrian golden hamster and non-human primate models and currently in Phase 1 clinical trials. In this study, we evaluated efficacy of COVI-VAC against challenge with the Beta/B.1.351 variant in Syrian golden hamsters.

Methods. Syrian golden hamsters, 7-10 weeks of age were, vaccinated intranasally with 8.25×10^4 PFU COVI-VAC (n=28) or vehicle control (n=16). Twenty seven days post-vaccination, animals were challenged intranasally with 3×10^4 PFU of wildtype (WT) SARS-CoV-2 Beta. Animals were weighed daily. Further analysis is being conducted with serum and key tissues from pre and post challenge timepoints to include neutralizing antibody, biodistribution (subgenomic qPCR) and histopathology.

Results. COVI-VAC prevented weight loss following challenge with the heterologous variant of SARS-CoV-2, B.1.351/Beta (Figure). Results of additional analyses will be available before the IDWeek meeting.

Change in Weight following SARS-CoV-2 Beta Challenge
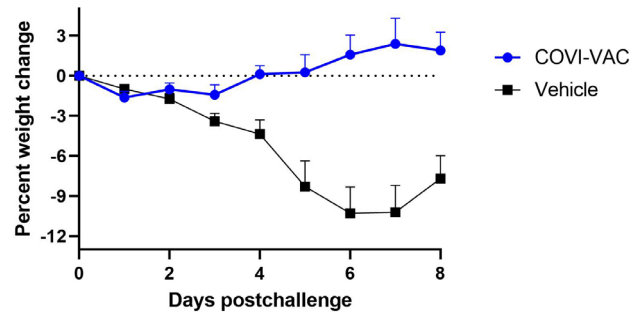
Conclusion. COVI-VAC is protective against heterologous challenge with SARS-CoV-2 Beta. By presenting all viral antigens, COVI-VAC may be less affected by viral evolution than spike-based vaccines.

Disclosures. **Anna Kushnir, PHD, Codagenix Inc** (Employee) **Steffen Mueller, PhD, Codagenix Inc** (Board Member, Employee, Shareholder) **Sybil Tasker, MD, MPH, FIDSA, Codagenix Inc** (Employee, Shareholder) **J. Robert Coleman, PhD, Codagenix Inc.** (Board Member, Employee, Shareholder)

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 P.1 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 ID_{50} titers for the WT, B.1.1.7, B.1.351 and P.1. 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 P.1 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 P.1 (78.3, IQR = 53.1-177.8) Spike peptides (Figure 2).