Methods. The synthetic consensus (SynCon®) sequence for INO-4802 SARS-CoV-2 spike with focused RBD changes and dual proline mutations was codon-optimized (Figure 1). Sequences for wild-type (pWT) and B.1.351 (pB.1.351) were similarly optimized. Immunogenicity was evaluated in the Syrian Hamster model.

Figure 1. Design Strategy for INO-4802

Results. INO-4802 induced potent neutralizing antibody responses against WT, B.1.1.7, P.1, and B.1.351 VOCs in a murine model. pWT vaccinated animals showed a 3-fold reduction in mean neutralizing ID50 for the B.1.351 pseudotyped virus. INO-4802 immunized animals had significantly higher \( (p = 0.0408) \) neutralizing capacity (mean ID50 816.16). ID50 of pB.1.351 serum was reduced 7-fold for B.1.1.7 and significantly lower \( (p = 0.0068) \) than INO-4802 (317.44). INO-4802 neutralized WT (548.28) comparable to pWT. INO-4802 also neutralized P1 (1026.6) (Figure 2): pWT, pB.1.351 or INO-4802 induced similar T-cell responses against all variants. INO-4802 skewed towards a TH1 response. All hamsters vaccinated with INO-4802 or pB.1.351 were protected from weight loss after B.1.351 live virus challenge. 4/6 pWT immunized hamsters were completely protected. pWT immunized hamsters neutralized WT (1090) but not B.1.351 (39.16). INO-4802 neutralized both WT (672.2) and B.1.351 (1121) (Figure 3). We observed higher increase of binding titers following heterologous boost with INO-4802 (3.6 – 4.4 log2-fold change) than homologous boost with pWT (2.0 – 2.4 log2 fold change) (Figure 4).

Figure 2. INO-4802 Induces Functional Humoral Immune Response Against SARS-CoV-2 Variants of Concern

Figure 3. INO-4802 Protects Hamsters Against Challenge With B.1.351 Live Virus
Conclusion. Vaccines matching single VOCs, like pB.1.351 and pWT, elicit responses against the matched antigen but have reduced cross-reactivity. Presenting a pan-SARS-CoV-2 approach, INO-4802 may offer substantial advantages in terms of cross-strain protection, reduced susceptibility to escape mutants and non-restricted geographical use.

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580. Hesitancy in Uptake and Recommendation of COVID-19 Vaccines by US Healthcare Workers

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Session: P-25. COVID-19 Vaccines

Background. The COVID-19 pandemic has brought vaccination to the forefront of discourse on public health. The rapid speed of COVID-19 vaccine development, utilization of novel technology, and an atmosphere of politicized misinformation have created a perfect storm for vaccine hesitancy. As early adopters of vaccination, HCWs set an example for the general population; as trusted sources of medical information, they educate and inform. However, comparatively little work has investigated HCWs’ attitudes toward vaccination and how those attitudes drive their recommendation behavior.

Methods. We surveyed hospital employees about their personal reasons for hesitancy and beliefs about patient hesitancies and randomly assigned them to see one of three messages aimed at increasing vaccine confidence. Message themes included an attitude toward vaccination and how those attitudes drive their recommendation behavior. They were asked to rate the passages on a scale from 1 to 7 with 1 = Strongly Disagree and 7 = Strongly Agree. This chart shows the average message ratings across the board when answering whether they thought the passages were understandable, helpful, correct, believable, and trustworthy. (Error bars are 95% CI) There was no significant difference across the messages. The Process message is seen as most helpful and is most likely to be shared with patient than the other messages.

On a scale from 1 to 7 with 1 = Strongly disagree and 7 = Strongly Agree, HCWs’ high uptake and minimal hesitancy in recommending the COVID-19 vaccine is encouraging and merits further exploration for how to increase confidence in HCW who are hesitant to discuss and recommend vaccines to patients, as several highlighted the importance of respecting patient autonomy.

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581. COVID-19 Vaccine Perceptions in Adults from Greater Nashville Tennessee

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Session: P-25. COVID-19 Vaccines

Background. In December 2020, SARS-CoV-2 vaccines were made available to healthcare workers and soon thereafter offered to the general public according to age and risk of severe illness. Despite widespread access, vaccination rates vary by region, with Tennessee ranking lower than the national average. Therefore, we aimed to survey adults in greater Nashville, TN regarding SARS-CoV-2 vaccine perceptions.

Methods. We conducted a cross-sectional study of an ongoing longitudinal cohort of individuals with confirmed and/or suspected SARS-CoV-2 infection and their household contacts with enrollment onset in March 2020. For this analysis, individuals were included if they were ≥ 18 years and available for a one-year follow-up visit. At the one-year visit individuals completed a survey about vaccine preferences, beliefs and acceptance of vaccination, and overall health status.

On left, the average answer on a scale from 1 to 5 for "Do you think the passage you just read would help your patients feel more comfortable about getting the vaccine?" and on right, the average answer for "Would you share this passage with your patients?" On a scale from 1 to 7 with 1 = Strongly disagree and 7 = Strongly agree.