Increasing Vaccine Uptake Among Atlanta Veterans

A modified clinical reminder did not increase patient vaccine uptake

Target a Priority Outcome The Department of Veterans Affairs (VA) National Center for Health Promotion and Disease Prevention promotes vaccinations for Veterans, as in line with the Centers for Disease Control recommendations.[1,2] Despite the availability of free flu vaccines at VA health care facilities, Veterans' rates of vaccination for flu and many other adult vaccinations fall below the Healthy People 2020 targets of 70%.[3]

Translate Evidence-Based Insights At the Atlanta VA Health Care System, primary care physicians, advanced practice providers, and nurses described experiencing high rates of vaccine refusal from patients, as well as difficulty viewing a patient's full vaccination history within the electronic health record (EHR); these providers also noted that responding to multiple clinical reminders in the EHR took up a significant amount of time. Notifications, alerts, or reminders presented to providers in EHR systems during patient appointments have been used successfully to improve uptake of health services, including vaccines.[4]

The Atlanta VA and OES worked together to develop a modified clinical reminder to bundle individual clinical reminders for three adult vaccinations (Influenza, Pneumococcal, and Tdap), which decreased the number of reminders to which clinicians were required to respond. This single reminder included a dashboard relaying patient vaccination history and status, as well as talking points providers could use to address patient refusal or vaccine hesitancy. OES and the VA designed the reminder with the aim to make it easier for providers to recommend and order vaccines, thereby increasing patient vaccination rates.

Embed Tests This evidence-based insight was tested with a cluster randomized controlled trial. The VA identified primary care team clusters consisting of physicians, advanced practice providers, and nurses. After randomly assigning clusters, 84 had enough patients to remain in the study: 44 were assigned to receive the treatment (modified clinical reminders in the EHR system, vaccination dashboard, and suggested talking points); 40 were assigned to the control condition (existing EHR reminders, no vaccination dashboard, and no talking points).[5] The Atlanta VA implemented the treatment to the selected primary care teams between October 2018 and April 2019, and these teams saw 28,941 unique patients during this test period.

Analyze Using Existing Data Existing data from the Atlanta VA EHR were used to measure vaccine receipt between October 1, 2018, and April 30, 2019.[6] The data included whether a patient received any of the three individual vaccines (Influenza, Pneumococcal, orTdap), the patient's associated primary care team, and the date the patient received each vaccine, as well as information that enabled inferences about whether the patient was due for each vaccine at each of their primary care visits. The data also included information about individual patient characteristics, such as age and rurality.

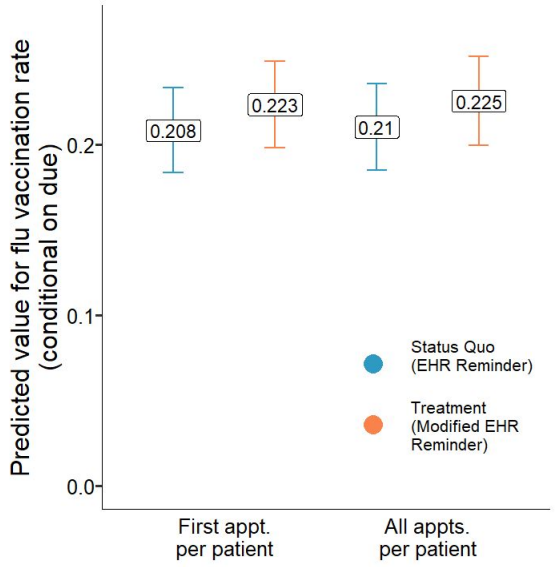
Results Researchers examined patient receipt of the flu vaccination, and of any of the three vaccinations (Influenza, Pneumococcal, or Tdap). For each, we analyzed for the first appointment when the patient was due (first appointment per patient) and across all the appointments where the

[1] "Public Health: Influenza (Flu)." U.S. Department of Veterans Affairs, December 4, 2013. Retrieved from: https://www.publichealth.va.gov/flu/index.asp.
[2] "Vaccine Information for Adults." Centers for Disease Control and Prevention. Accessed October 22, 2019. Retrieved from: https://www.cdc.gov/vaccines/adults/index.html.
[3] "Immunization and Infectious Diseases." Healthy People 2020. Accessed October 25, 2019. https://www.healthypeople.gov/2020/topics-objectives/topic/immunization-and-infectious-diseases/objectives.
[4] Loretta Au, L., Ady Oster, G. Yeh, et al. "Utilizing an Electronic Health Record System to Improve Vaccination Coverage in Children." Appl Clin Inform 1, no. 3 (2010): 221–231. Retrieved from: https://www.ncbi.nlm.nih.gov/pubmed/23616838

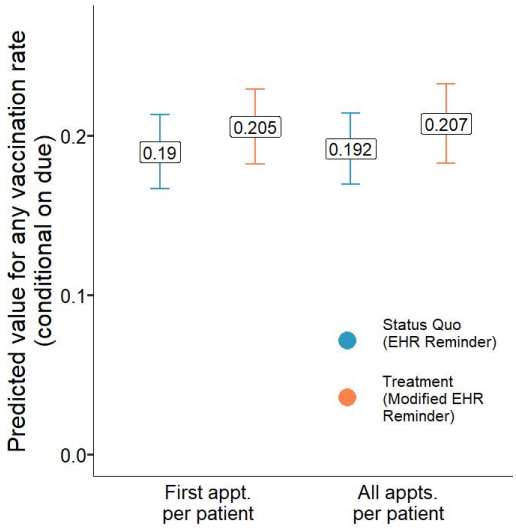
[5] Pompa Debroy, Russ Burnett, Vincent Marconi, Saad Omer, and Joseph Wallace. (2019). Increasing Vaccine Uptake Among Veterans at the Atlanta VA Health Care System. Identification No. NCT03950986. Retrieved from: https://clinicaltrials.gov/ct2/show/NCT03950986.
[6] Unless noted otherwise, all of the analysis reported in this abstract was prespecified in an analysis plan, which can be found at https://oes.gsa.gov.

patient was due (all appointments per patient).[7]

First, we examined whether the modified reminder increased flu vaccinations. For the analysis of the first appointment, we see that the raw proportion of vaccination was higher among patients who saw primary care teams in the treatment group than patients who saw teams in the control group (22.3% versus 20.8%). However, when accounting for demographic characteristics and the clustering of patients within respective care teams, we observed a statistically insignificant difference of 1.6 percentage points between the treatment and control groups on first appointment flu vaccination rates (p = .28, 95% CI [−0.013, 0.045]).[8] The original study design was powered to detect a difference of 5.5 percentage points or more. For the analysis of all appointments, we also saw a statistically insignificant difference (p = .29, 95% CI [−0.013, 0.045]) in flu vaccination rates.[9] The first figure depicts the predicted values for both results for flu.



Second, we examined whether the modified reminder increased vaccinations for any of the three target vaccines (Influenza, Pneumococcal, or Tdap). We defined this outcome as having received any of the three vaccines, among patients who were due for that vaccine. Similar to flu, unadjusted vaccination rates for any of the three vaccines were higher among patients who saw primary care teams in the treatment group than in the control group (20.5% compared to 19.0%). However, as with flu, these differences were not statistically significant after adjusting for demographic characteristics and patient clustering within care teams, when we analyze outcomes for either the first appointment when a patient was due (1.5 percentage points, p = .29, 95% CI [−0.01, 0.04]) nor for all appointments when they were due (1.6 percentage points, p = .26, 95% CI [-0.012, 0.044]).[10] The second figure depicts both results for any of the three vaccinations.



Build Evidence This project demonstrated the ability to execute and test a change to the Atlanta VA's EHR system, with an intervention that focuses on provider behavior as a means to increase patient vaccinations. The project builds on OES's portfolio of evidence to learn what works to increase vaccination rates. Future work will continue to build upon these findings and test additional promising interventions.

[7] The analysis of the first appointment when the patient was due for the vaccine was not pre-specified in the analysis plan.
[8] This analysis represents the coefficient, p-value, and confidence interval from the model that adjusts for covariates and clusters the standard errors at the PACT level.
[9] The figure depicts the predicted values from the model, with covariates set to their observed levels and then the final predicted values averaged within each group to produce the point estimate.
[10] As before, the analysis of each patient's first appointment when due for a vaccine was not pre-specified in the analysis plan.