2021 ESMO congress

# 1562MO
# Effectiveness of COVID-19 vaccination in cancer patients: A nationwide Veterans Affairs study

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## Background

Data is lacking about SARS-CoV-2 vaccination effectiveness in patients with cancer, particularly those on systemic therapy. This retrospective cohort study in the US national Veterans Affairs (VA) healthcare system reports the effectiveness of SARS-CoV-2 vaccination in cancer patients on and off active therapy during the first 140 days following administration.

## Methods

This is a multicenter study of SARS-CoV-2 infection among vaccinated and unvaccinated Veterans vaccinated during the period from 12/15/2020 to 5/4/2021. Veterans with solid or hematologic malignancy who received systemic cancer-directed therapy at the VA at least one time between 8/15/2010 to 5/4/2021 were included. Vaccinated patients were exactly matched 1:1 to an unvaccinated control on race, VA facility, rurality of home address, cancer type, and treatment timing and modality with minimum distance matching on age. The primary exposure was receipt of a SARS-CoV-2 vaccine. The primary outcome was laboratory-confirmed SARS-CoV-2 infection. Vaccination effectiveness was defined as 1 minus the risk ratio of SARS-CoV-2 infection for vaccinated individuals compared to unvaccinated controls.

## Results

184,485 patients met eligibility criteria and 113,796 were vaccinated during the study period. Of these, 29,152 vaccinated patients were matched 1:1 to 29,152 unvaccinated or not yet vaccinated controls. As of a median 47 days of follow-up, overall vaccine effectiveness in the matched cohort was 58% (95% CI, 39 to 72%) starting 14 days after the second dose. Patients on chemotherapy within three months prior to first vaccination dose exhibited a 14-day post-second dose effectiveness of 57% (95% CI -23 to 90%), versus 76% (95% CI 50 to 91%) for those on endocrine therapy and 85% (95% CI 29 to 100%) for those off systemic therapy for at least six months prior.

## Conclusions

Vaccination is an effective strategy for preventing COVID-19 in cancer patients. However, effectiveness may be reduced in patients actively receiving immunosuppressive systemic therapy. Future study is needed to determine if these patients would benefit from post-vaccination serologies and/or a booster vaccination following completion of therapy.

## Legal entity responsible for the study

Nathanael Fillmore.

## Funding

Has not received any funding.

## Disclosure

W. Branch-Elliman: Financial Interests, Institutional, Funding: Gilead. G. Parmigiani: Financial Interests, Personal, Leadership Role: Phaeno Biotechnology. M. Brophy: Financial Interests, Personal, Research Grant: Novartis. N. Munshi: Financial Interests, Personal, Advisory Role: Celgene; Financial Interests, Personal, Advisory Role: Janssen; Financial Interests, Personal, Advisory Role: AbbVie; Financial Interests, Personal, Advisory Role: Takeda; Financial Interests, Personal, Member of the Board of Directors: OncoPep. All other authors have declared no conflicts of interest.