# COVID-19 Vaccine and Patients with Cancer

## The Philippine Society of Medical Oncology (PSMO) Position Statement

Prepared by the Philippine Society of Medical Oncology Clinical Consensus Committee

*Frederic Ivan Ting, MD, Crizel Denise Uy, MD, Katrina Gaelic Bebero, MD, Danielle Benedict Sacdalan, MD, Dennis Lee Sacdalan MD, Honey Sarita Abarquez, MD, Arnold John Uson, MD, Grace Nilo, MD, and Buenaventura Ramos, Jr., MD*

**The Philippine Society of Medical Oncology strongly recommends that patients with cancer be vaccinated against SARS-CoV-2, the causative agent behind COVID-19.**

This recommendation aligns with guidance from international and national professional organizations and government agencies that have a stake in the care of people living with cancer.[1-6]

The COVID-19 situation in the Philippines continues to escalate. Thus, it is imperative that high-risk individuals with cancer receive protection. Currently available data show worse COVID-19 outcomes in patients with a history of cancer (1.35 to 2.31-times higher risk of COVID19-related death compared to individuals without cancer).[7-10]

Although vaccine effectiveness may be lower among patients who may be immunocompromised because of cancer or its therapy, vaccination can still reduce hospitalizations and deaths from COVID 19. COVID-19 vaccination therefore should be discussed and offered by medical oncologists to patients with cancer as long as the components of the vaccine are not contraindicated.

### General Statements

Evidence on the efficacy of vaccination for COVID-19 among cancer patients is currently limited. However, the susceptibility of this group to develop severe COVID-19 remains high. Thus, vaccination is recommended. Each cancer patient is encouraged to have an enlightened discussion with their medical oncologists and health care team regarding vaccination to arrive at a shared decision and informed consent.

- The various COVID-19 vaccines have different efficacies but most of the persons who are vaccinated will be protected in developing severe COVID-19 infection. However, this does not guarantee that they will not transmit the virus if they get infected and remain asymptomatic.
- Vaccinated patients with cancer and their close contacts should continue to practice public health recommendations for COVID-19 prevention such as wearing of face masks, face shields, observing physical distancing, and frequent and proper hand washing.
- Caregivers and household / close contacts of patients with cancer should also be encouraged to be vaccinated unless there are contraindications.
- Cancer patients actively receiving cytotoxic chemotherapy may have lower antibody responses to vaccines than healthy individuals or cancer patients who are not actively receiving treatment.[11-14] However, there are no definite contraindications to receiving the COVID-19 vaccine in patients with cancer undergoing treatment such as cytotoxic chemotherapy, radiation therapy, hormonal therapy, targeted treatments, immunotherapy, corticosteroids, and surgery.
- The Philippine Society of Microbiology and Infectious Diseases (PSMID) does not recommend live or live-attenuated vaccines for immunocompromised persons such as those with cancer.[1] Live attenuated vaccines have a risk of viral replication after administration, unlike the inactivated ones. Thus, physicians should carefully evaluate and discuss the vaccines' risk-benefit profiles with their patients before recommending their use. Currently, none of the available COVID-19 vaccines involve live or live-

attenuated technology.

**When is the best time for a patient with cancer to get vaccinated?**

There is no definite recommendation regarding timing of vaccination among cancer patients. Physicians are advised not to interrupt cancer treatment to give way to vaccination. The following are considerations related to the scheduling of vaccination:[4,5,15,16]

- **For patients about to start cytotoxic chemotherapy**: if feasible, give the first dose of the vaccine 2 or more weeks before initiation of therapy.
- **For patients already on cytotoxic chemotherapy**: give the first dose of the vaccine in between chemotherapy cycles. To increase the patient's immune system potential to mount a response, consider vaccinating following recovery from the hematologic nadir of the cytotoxic chemotherapy (eg. 1-2 weeks before or 1-2 weeks after a chemotherapy cycle).
- **For patients about to complete cytotoxic therapy**: give the first dose of vaccine 1-2 weeks after completion of treatment.
- **For patients about to start lymphodepleting (anti-CD20) therapies:** the first dose of vaccine at least 2 weeks before lymphodepleting therapy.[13]
- **For patients already on lymphodepleting (anti-CD20) therapies:** give the the first dose of vaccine in between cycles. To increase the patient's immune system potential to mount a response, consider vaccinating following recovery from the hematologic nadir of the anti-CD20 therapy (eg. 1-2 weeks before or 1-2 weeks after a cycle). [13]
- **For patients about to complete lymphodepleting (anti-CD20) therapies**: give the first dose of vaccine at least 2 weeks after completion of treatment. [13]
- **For patients on Immune Checkpoint Inhibitors (ICI)**: there is no specific recommendation for vaccination timing. Side effects from the COVID-19 vaccine usually occur within two to three days after vaccination. If possible, avoid scheduling ICI therapy when vaccine side effects are expected.[17-20] Although there is a theoretical concern that vaccination may stimulate an exaggerated immune response and increase immune-related adverse events in patients with ICIs, large studies did not support this.[17,21,22,37]
- **For patients undergoing cancer-related surgery**: there is no specific timing recommendation on the timing of surgery and vaccination in relation to vaccine efficacy. During the peri-operative period, it may be difficult to determine if symptoms like fever are due to a vaccine side effect or a post-surgical complication. An interval of not more than two weeks between vaccination and major surgery may be considered, or when the patient is already assessed to have recovered from surgery by his / her physician.

Table I. COVID-19 Vaccination Guide for Patients with Cancer

| Disease Setting | Vaccination Timing |
|---|---|
| On cytotoxic chemotherapy | Upon vaccine availability; consider administering the vaccine after the hematologic "nadir" that arises from chemotherapy (1-2 weeks before or 1-2 weeks after drug dose) |
| On targeted therapy (e.g., Tyrosine Kinase Inhibitors) | Upon vaccine availability |
| On hormonal therapy (e.g. anti-androgens, anti-estrogens) | Upon vaccine availability |
| On immunotherapy (e.g. ICIs) | Upon vaccine availability; consider administering ICI 3-5 days after vaccination since systemic side effects with the COVID-19 vaccine tend to occur within 2-3 days |
| On lymphodepleting treatments (e.g., anti-CD20) | Upon vaccine availability; time at least 2 weeks prior to lymphodepleting therapy |
| On screening, surveillance / monitoring, supportive / palliative care, without any active treatment | Upon vaccine availability |

- **For patients who are on monitoring / surveillance or are on remission without any active treatment**: give vaccine as soon as available if without contraindications to components of the vaccine (eg. allergies).

Table I shows a summary of the COVID-19 vaccination guide for patients with cancer.

**Is the COVID-19 vaccine safe for patients with cancer?**

**There is limited data on the safety of COVID-19 vaccination for cancer patients. Generally, though, the vaccines are safe.** Vaccines authorized by the Philippine Food and Drug Administration (FDA) with an emergency use authorization (EUA) have good tolerability profiles, associated with mild to moderate adverse events that are mostly self-limiting.

Table II shows the COVID-19 vaccines that are currently approved by the Philippine FDA as well as upcoming vaccines and their safety profiles.

- There are currently no available data reporting the increased risk of adverse events from vaccines among cancer patients compared to the general population. Therefore, vaccination should be strongly recommended for patients with cancer, considering their higher risk for morbidity and mortality from COVID-19. [3, 13]
- There is agreement that the benefit of the vaccines against the threat of COVID-19 infection still outweighs the risks of blood clotting events reported with the use of AstraZeneca COVID-19 vaccine.[33-34] Thromboembolic events and thrombocytopenia are considered rare and current available data do not

Table II. Profile of Vaccines available against SARS-CoV-2

| Vaccine (Manufacturer) | Vaccine type | Clinical trial patients | Efficacy | Adverse events |
|---|---|---|---|---|
| CoronaVac (SinoVac Biotech) | inactivated virus | Healthy adults aged 18-59 years | • 50.38% (mild), 78% (mild to severe) in Brazil, 65% in Indonesia, 91.25% in Turkey<br>• Phase 3 data not published [40] | • Pain at the injection site (most common), fatigue, diarrhea, muscle pain, headache, fever<br>• Mild and resolved within 48 hours[23] |
| AZD1222/ ChAdOx1 nCoV-19 (Oxford/ AstraZeneca) | viral vector | Aged 18 years and above, including patients with stable comorbidities [24] | • 64.1% after first dose, 70.4% at 14days after second dose;<br>• 100% against severe COVID-19 at 21 days after first dose[40] | • Fatigue, headache, muscle ache, malaise, chills, feeling feverish and fever<br>• Highest on day-1 post-vaccination<br>• Fewer reports of pain in those who received prophylactic paracetamol [24-25] |
| BNT162b2 (Pfizer-BioNTech) | mRNA | Aged 16 years or older, healthy or stable chronic medical condition, including HIV, Hepatitis B, Hepatitis C | • 52% after first dose, 94.6% at 7 days after second dose<br>• 88.9% against severe COVID-19 after 1 dose[40] | • Pain on injection site, fatigue, headache, fever (mostly after the second dose)<br>• Resolve after 1-2days post-vaccination<br>• Local and systemic reactions were observed less frequently in participants older than 55 years [26] |
| Sputnik V (Gamaleya) | viral vector | Healthy adults aged 18-60 years | • 87.6% 14days after first dose, 91.1% at 7days after second dose<br>• 100% against severe COVID-19 at 21 days after first dose[40] | • Injection site pain, hyperthemia, headache, asthenia, muscle and joint pains<br>• Mild and transient, mostly occurring after the second vaccination [27] |
| mRNA-1273 (Moderna) | mRNA | Aged 18 years or older, including those with co-morbidities | • 92.1% at 14days after first dose, 94.1% at 14days after second dose<br>• 100% against severe COVID-19 at 14days after second dose[40] | • Injection site reaction, fever, headache, fatigue, joint and muscle pain, nausea or vomiting, chills<br>• Mostly after 2nd dose and in aged <65years, lasting about 3 days post-vaccination [28] |
| Ad26.COV2.S (Janssen/ Johnson & Johnson) | viral vector | Healthy aged 18 years and above | • 72% in US, 66% in Latin America, 57% in South Africa<br>• Efficacy against severe COVID-19 is 85% after 28days and 100% after 49 days[40] | • Injection site pain, fatigue, headache, muscle pain, nausea, fever resolving in 1-2days [29] |
| Covaxin/ BBV152 (Bharat Biotech) | whole-virion inactivated | Healthy aged 12-65 years | • Announced interim efficacy of 81% in phase 3 trial[41] | • Injection site pain, body ache, fever, headache, malaise, weakness<br>• Mild and resolved within 24hours of onset [30] |
| NVX-CoV2373 (Novavax) | protein subunit | Healthy aged 18-59 years | • 89.3% after 2 doses in UK, 60% in South Africa[40] | • Injection site pain and tenderness, headache, fatigue, muscle and joint pains, malaise, nausea [31] |
| BBIBP-CorV/SARS-CoV-2 Vaccine, Inactivated (Sinopharm) | inactivated whole virus | Healthy aged 18-59 years | • Unpublished efficacy of 79% and 86%<br>• Phase 3 data not published[40] | • Injection site pain, fever, fatigue, nausea and vomiting, headache<br>• Mild, transient, self-limiting [32] |

suggest overall increase in such events with the use of the AstraZeneca COVID-19 vaccine.

**What is the preferred vaccine for patients with cancer?**

**Currently, there is no preferred brand or type of COVID-19 vaccine for patients with cancer. Patients with cancer should receive any vaccine available to them that has been approved by the FDA and has no contraindications after a thorough evaluation and discussion with their attending physicians**

Each of the vaccines were studied through clinical trials as shown in Table II and were noted to have generally decreased the risk of morbidity and mortality against COVID-19 infection. Thus, patients with cancer are highly encouraged to discuss available vaccine options with their attending physicians.

**What can a patient with cancer expect after getting vaccinated?**

There are no reports of increased side effects from cancer patients receiving COVID-19 vaccines as compared to the general population.[3] Anticipated side effects would include soreness in the injection site, fatigue, muscle aches, fever within 24-48 hours, and chills. If, however, the patient has a history of anaphylaxis to similar/comparable vaccine components, inoculation is contraindicated.[26, 28, 35]

Clinical trial sponsors, investigators, and treating physicians should also be guided on the COVID-19

vaccination for cancer patients who are currently participating or are contemplating to be enrolled in clinical trials. Unless vaccines are deemed unsafe for co-administration with the investigational drug, participation should not preclude him / her from inoculation given the commensurate benefits stated above.[15,36-38]

## Conclusion

Although vaccine effectiveness may be lower in immunocompromised patients because of cancer or its treatment compared to the general population, vaccination can still reduce morbidity and mortality against the COVID-19 infection. **Vaccination is thus highly recommended for cancer patients as it offers an additional layer of protection. Cancer patients are strongly advised to continue to practice minimum public health standards such as wearing of face masks, face shields, physical distancing, and frequent and proper washing of hands among others even after vaccination**. **A thorough discussion about vaccination after a comprehensive patient assessment by his / her attending physician is encouraged.**

## Disclaimer

Data presented here are based on the best current evidence as of this writing. However, information about COVID-19 vaccines is rapidly evolving, and new evidence may have emerged by the time this article is published. Information contained in this article does not substitute for the independent professional judgment of the medical oncologist or other physicians in the context of treating an individual patient. This document is for informational purposes only and does not constitute medical or legal advice.

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