# Managing COVID-19 in Patients With Cancer: A Double Blow for Oncologists

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Currently, the world is facing a medical emergency because of the current outbreak of the novel coronavirus (2019-nCoV, or COVID-19). Within the past few months, the outbreak has turned rapidly from an epidemic to a pandemic.[1] Researchers, scientists, and treating physicians are trying best to provide their patients with the best available treatment.[2] Given the severe immunosuppression caused by cancer and its therapy, patients with cancer are at a higher risk of COVID-19 infection.

Until now, the most consistent risk factors for poor outcome in COVID-19 patients have been age, especially age > 70 years; multiple comorbidities; and male sex. Other susceptible populations, for which we did not have any concrete data until today, include pregnant women and immunocompromised patients, like patients with cancer. However, the consensus is that patients with cancer, by virtue of being immunocompromised, should be considered a high-risk category. Most advanced oncology centers and cancer experts have issued their statements/advice that could be helpful for both the oncologists and patients with cancer along with their caregivers (Fig 1). In general, the highest risk group categories among patients with cancer, in which severe complications are more expected, are patients with hematologic malignancies, such as leukemia, lymphoma, and myeloma, patients who are actively receiving chemotherapy for any type of cancer, and patients who recently underwent bone marrow transplantation.

Dr. Gary Lyman, a medical oncologist and a public health researcher from the Fred Hutchinson Cancer Research Center, mentioned that after effects of cancer and the immunosuppressive consequences of chemotherapy can last longer than expected.[3] Liang et al[4] reported that 18 of 1,590 COVID-19 patient cases from 575 hospitals from China had a cancer history. They reported that patients with cancer had a higher risk of developing COVID-19 than individuals without cancer. Lung cancer was most reported, in 5 (28%) of 18 patients. Only 4 patients received surgery or chemotherapy within 1 month of acquiring viral infection. They also found that, compared with patients without cancer, those patients with cancer had a greater likelihood of having critical complications, like the requirement of intensive care unit, mechanical ventilation, or death (124 [8%] of 1,572 patients *v* 7 [39%] of 18 patients; Fisher's exact $P = .0003$). In this study, Liang et al[4] did not find any difference in the probability of developing severe events among the various types of cancers. However, the study was soon criticized for its small sample size and methodology, making it difficult to extrapolate any concrete results.[5,6]

There are many other practical challenges exist while managing cancer in patients with COVID-19. Yu et al[7] recently published a report with suggestions about operations for colorectal cancer in the current situation of the COVID-19 outbreak. Another practical challenge could be analyzing the pulmonary infiltrates in patients with cancer for the possible differentials, such as COVID-19 versus regular viral pneumonia versus malignant infiltrates[8]—not to forget about the complications such as immune pneumonitis or myocarditis secondary to immunotherapy, which can further mix up the approach to lung infiltrates.[9] A multidisciplinary team approach with a panel discussion that includes oncologists, pathologists, and radiologists might be helpful in such scenarios to come to a conclusion. Usually, patients with cancer are already on multiple medications, including antiemetics, opioid analgesics, and proton pump inhibitors, in addition to anticancer drugs. In that scenario, it becomes essential for the treating oncologist to be aware of the potential drug interactions between the chemotherapeutic drugs and COVID-19 antiviral agents, like lopinavir/ritonavir and remdesivir. For example, lopinavir is a strong inhibitor of cytochrome P450 (CYP) 3A4 and CYP2C8. Similarly, ritonavir is considered a strong inhibitor of CYP2C8, CYP3A4, CYP3A5, and CYP3A7. Hence, we encourage oncologists to closely monitor their patients for drug interactions to ensure anticancer drug effectiveness and patient safety.[10]

Considerable data suggest that smoking or tobacco use causes a substantial increase in the gene expression of ACE-2 receptors.[11] Similarly, studies show that the Asian population has a higher susceptibility than the white population of acquiring the COVID-19 virus.[12] It is yet to be determined how the genetic susceptibility and variation in ACE-2 gene expression in a patient with cancer would affect the outcome of COVID-19.

**ASSOCIATED CONTENT**

Author affiliations and support information (if applicable) appear at the end of this article.

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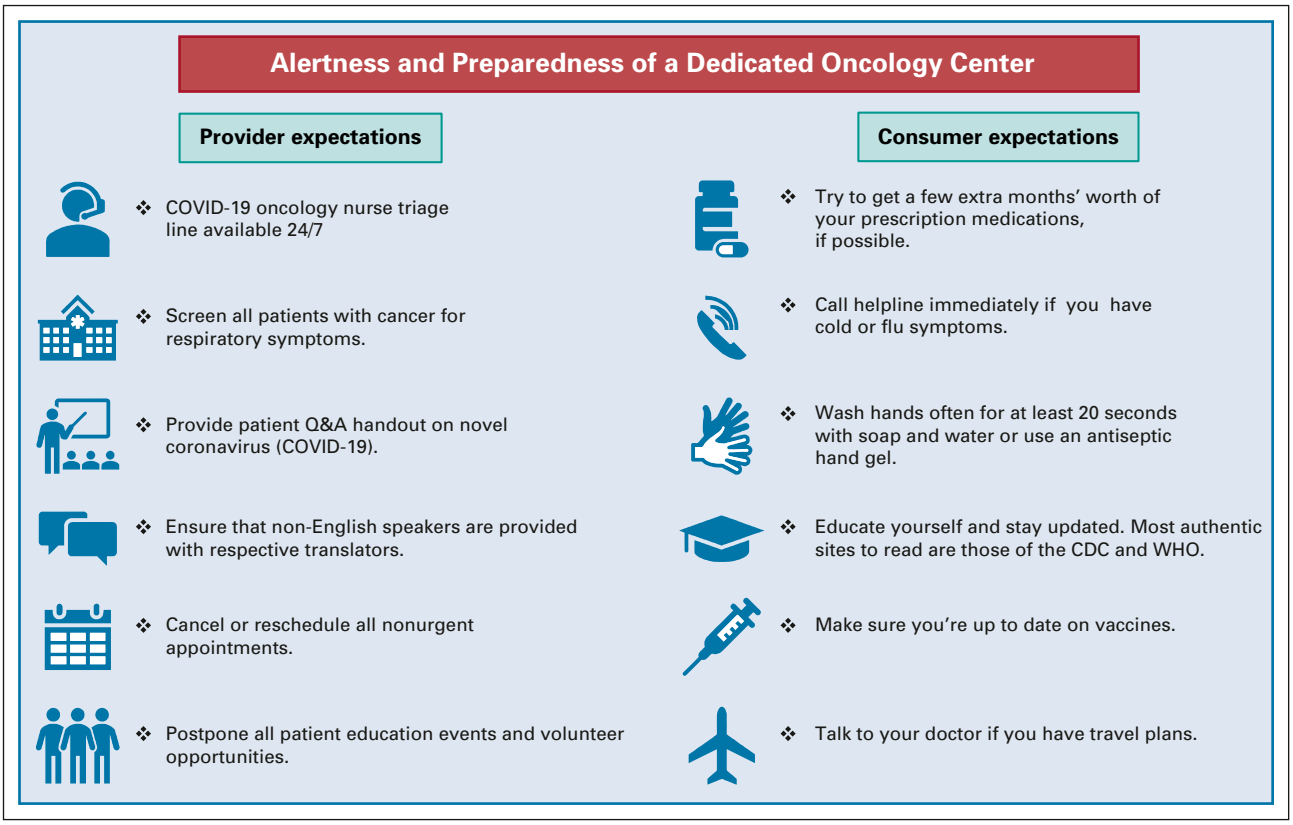


**FIG 1.** Alertness and preparedness of a dedicated oncology center.

In conclusion, many questions remain unanswered with regard to COVID-19 in patients with cancer. We appreciate the attempt by various researchers, like Liang et al,[4] to study COVID-19 in patients with cancer; such studies provide a platform for conducting more studies.


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## AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST AND DATA AVAILABILITY STATEMENT

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## AUTHORS' DISCLOSURES OF POTENTIAL CONFLICTS OF INTEREST

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