

# A Collect of Recommendations and Guidelines for Management and Treatment of Underlying Malignancies During the COVID-19 Pandemic

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**Abstract-** The coronavirus disease 2019 (COVID-19) pandemic is the main challenges to public health systems worldwide now. Cancer patients are considered as a high risk group during the COVID-19 pandemic. Considering the evidence so far, cancer as underlying comorbidities might increase the risk of death in patients with COVID-19. Many cancer patients with increased risk of contracting COVID-19 than the general population regularly visit health facilities for treatment and disease surveillance. Thus, the COVID-19 pandemic has a profound impact on cancer care and treatment. Here, we attempted to summarize the current suggestions for handling of cancer patients during COVID-19 pandemic. We carried out a integrative literature review using several online bibliographies. A total of 113 papers were accessed for the time frame between October 05 2020 and October 10 2020. After screening of titles and full-texts, 10 publications were selected in this study. In this work some recommendations and guidelines that would help for management and treatment of cancer for the purpose of address the challenges during COVID-19 pandemic were collected. We hope that this collection recommendations and guidelines assist health care providers in management of individuals with underlying malignancy during the COVID-19 pandemic.

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## Introduction

In the end of 2019, the 2019 novel coronavirus (SARS-CoV-2), also known as COVID-19, was recognized as the cause of a series of pneumonia events in Wuhan, a city in the Hubei Province of Republic of China (1-3). It rapidly distribute globally, consequent in an epidemic across China, continued by an growing

number of patents has become a globally warning and the significant healthcare trouble of the year 2020 (4,5). As of October 01, 2020, the COVID-19 has been liable for more than 34 million cases and 1 million demises globally, but data in relation to the epidemiologic properties and clinical peculiarities of infected children are restricted (6-8). The disease clinically is very heterogeneous, its described symptoms is totally broad,

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differ from influenza-like symptoms to acute respiratory distress syndrome (ARDS), numerous organ failing and demise (9,10). It is well documented that patients with chronic or comorbid circumstances such as hypertension, diabetes mellitus (DM) and cancer are additional vulnerable to more serious problems of the viral complaint (9,11,12). Moreover, the available data indicated that infected patients with any secondary conditions endure poorer medical problems than those without comorbidity and number of comorbidities predicts clinical outcomes of COVID-19 (13-16). Some studies described that the COVID-19-related death rate in cancer patients is equivalent with risk of death from COVID-19 to those of other underlying disease, such as DM, progressive lung disease and hypertension (17,18).

The COVID-19 pandemic is unlike the previous great crisis seen before by evidence-based medicine and science-based medicine had a significant impact on patients with an underlying disease (19). During the outbreak, patients with underlying malignancy had increased risk of contracting COVID-19 than the overall population regularly visit health facilities for treatment and disease surveillance. Moreover, the first month's data on the pandemic showed that a higher proportion of individuals diagnosed with COVID-19 had an underlying cancer than those patients without underlying disease (20). Thus, this group of patients should not lose treatment opportunities (21). Because of the increased risk of infection with COVID-19 in cancer patients, health care providers have to offset the rivaling risks of the adverse consequences of the disease in hospitals and also the primary neoplasm (17). So far, several effective recommendations and guidelines on the diagnosis, management and treatment of cancer patients during the COVID-19 pandemic were published by many oncology societies and health systems globally (1,22-26). Attainability of endorsements and guidelines for underlying diseases can put together different management strategies for the COVID-19 pandemic. Here, we have collected some recommendations and guidelines for management and care of cancer clients in the course of the COVID-19 pandemic.

## Materials and Methods

### Academics search strategy

The ethical endorsement was not imperative for this study, as this was a systematic review (27-29). We carried out a comprehensive and effective literature search on computerized databases including PubMed/MEDLINE, Web of Science, Google Scholar, Cochrane Library, Elsevier, CAOD, BAIDU, SciELO,

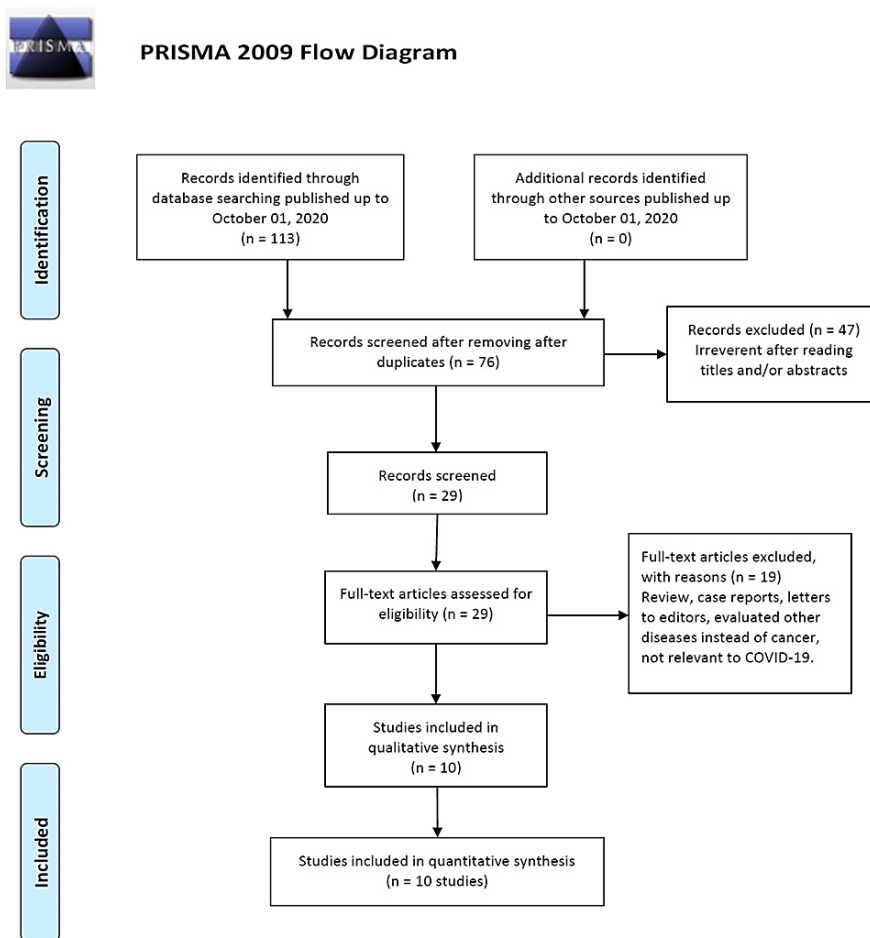
WanFang, VIP, Chinese Biomedical Database (CBD), Scientific Information Database (SID) and Chinese National Knowledge Infrastructure (CNKI) to determine all appropriate papers released up to October 01, 2020. The succeeding medical terminology and keywords were exploited: ("Severe Acute Respiratory Syndrome Coronavirus 2" OR "COVID-19" OR "COVID19" OR "Coronavirus Disease 2019 Virus" OR "SARS-CoV-2" OR "2019-nCoV" OR "2019 Novel Coronavirus") AND ("Comorbidity" OR "Complications" OR "Mortalities" OR "Demises" OR "Death" OR "Cancer" OR "Malignancy" OR "Cancer" OR "Lung Cancer" OR "Gastric cancer" OR "Gynecological Cancer" OR "Breast Cancer" OR "Ovarian Cancer" OR "Colorectal Cancer" OR "Head and Neck Cancer" OR "Oral malignancy" OR "Thyroid Cancer" OR "Gliomas" OR "Urological Cancer" OR "Childhood Cancer"). All published suggestions and guidelines, irrespective to language, geography and publication status were included in the study. The search was restricted to studies on human being. Further, we accessed the available suggestions in the world health organization (WHO) and United States Centers for Disease Control and Prevention (CDC) websites.

### Including criteria

In this review, we included all issued papers that met the following inclusion criteria: 1) recommendations and guidelines for cancer clients infected with the COVID-19; 2) publications on cancer research in during the pandemic and impacts of cancer therapy in patients with COVID-19; 3) published policies for risk decline and supervision of cancer patients in the course of the pandemic; and 4) clinical and radiographic studies reported outcomes of infected cancer patients treatment.

## Results

A total of 113 publications were retrieved after first search in the selected databases. Of these publications, after the first screening, 37 studies based on the title and abstract check, 29 studies by full-text evaluation, and 19 studies were excluded based on inclusion and exclusion benchmark. Ultimately, ten eligible publications were incorporated in this study. The four-phase process of study selection is presented in Figure 1.



**Figure 1.** Flow chart depicting exclusion/inclusion of individual studies

## Recommendations

Liang *et al.*, have published the first study on cancer patients with validated COVID-19 among Chinese patients. Their cohort included 1590 patients with confirmed COVID-19 from which 18 cases had a history of cancer. Their cohort demonstrated a higher occurrence of cancer than the whole Chinese residents and cancer patients had with median age of 63.1 years vs. 48.7 years in non-neoplastic patients. In their cohort lung cancer (5 of 18 patients) was the most prevalent primary neoplasm. Of them, four cases had admitted chemotherapy or operations within the preceding month, and twelve were in alleviation during the infection (two of the 18 patients had unknown treatment status). Their data revealed that patients with cancer were elderly, more presumably possess a tobacco usage history, be more polypnea, and more serious basic CT than non-neoplastic patients. However, there was no a major differences in gender, other baseline indications, other

coexisting conditions, or basic severity of X-Ray within cancer patients and non-neoplastic patients. The study uncovered that cancer patients with approved COVID-19 had a superior risk of severe situations, intensive care unit (ICU) demanding invasive ventilation, or demise than free cancer people (7 of 18 cancer patients vs. 124 of 1572 non-neoplastic patients;  $P=0.0003$ ). Moreover, cancer patients with approved COVID-19 undergone chemotherapy or surgery in the earlier had an increased hazard of clinically serious events than those patients which did not have. However, the cohort revealed that confirmed people with lung cancer have not a higher likelihood of serious events in contrast with patients with other cancer forms. They suggested three major policies for cancer patients within the pandemic or similar potential crisis: a) delaying of adjuvant chemotherapy or optional surgery in favor of stable cases; b) doing a better personal preservation viands for cancer patients or cancer remnants; c) attention of more

comprehensive surveillance or therapy of infected cancer patients with COVID-19, in particular in the elderly patients or those with additional comorbidities (18).

Akladios *et al.*, provided some advices for management of patients misery from gynecological carcinoma within the pandemic. Their recommendations were as: a) for cervical cancer patients the place of surgery ought examined again in connection with radiotherapy and radio-chemotherapy- attendant and the value of lymph node staging resections should be checked for each individual case; b) for metastatic ovarian cancer cases the neo-adjuvant chemotherapy must be prioritized, albeit primary cytoreduction surgery might be considered; c) for cancer patients underwent secondary surgery, it is capable of continuing the chemotherapy and to propose surgery following a six rounds of chemotherapy; d) in regard to early stage endometrial cancer, in case of low and intermediate pre surgical ESMO possibility, hysterectomy with mutual annexectomy associated with a sentinel lymph node procedure should be favored; e) in regard to precarious endometrial cancer, it is possible to favor the MSKCC algorithm for the purpose of leave out pelvic and lumbar-aortic lymphadenectomies. It seems that their recommendations not vary from the regular consideration for cancer patients and comparable with those hints which offered by Ramirez *et al.*, However, they emphasized on radio-chemotherapy in favor for cervical cancer in place of surgical operation, and on the neoadjuvant chemotherapy for metastatic ovarian cancer even though tumors that are deemed to be reputable arranged to diminish high risk resections and long ICU stays (21).

In study, 16 international experts as well as neurosurgeons, radiation therapists, neuro-oncologists, and radiation specialists in the medication of high grade gliomas (HGG) assisted to create extenuation approaches and treatment proposal for patient's misery from HGG within the pandemic. They presented exhaustive associative cure procedures for molecular subsets in two pandemic schemes, a scale-up phase and a crisis appearance. They advocated that handling of neuro-oncological clients should not be substantially overdue and initiating remedy did not be curtailed during the pandemic (30).

Wahidi *et al.*, in a study advised a number of guideline to consider the contemporary data on the function of bronchoscopy within the COVID-19 pandemic and the ideal cover of patients and health providers. Their suggestions were being as: a) the

territorial convenience of diagnostic and health interventions for cancer clients must be taken into account. exclusively for hospitals with insufficient resources, cancer clients without approved COVID-19 had to be brought to other medical centers, reserve resources for infected patients and enhancing safety, opportune and implied care for the cancer patient; 2) when bronchoscopy is suggested to diagnose, stage, or distinguish a known or indicated lung cancer in a region with the infection, it is suggested that bronchoscopy must be carried out in a timely and safe way (31).

Ribal *et al.*, described guidance according to expert views and agreements over the European Association of Urology (EAU) with charity from all 250 membership of the EAU Guidelines Office and with contributions from the 130 principal view commanders building the membership of the EAU Section Offices. The guidance were as follow: 1) Diagnosis (Imaging and/or exams and aggressive approaches); 2) surgical intervention and appropriate supportive treatment; and 3) patients follow-up/ e-health (give renovated suggestions on follow-up customized for the period, with the purpose of restricting as far as possible care delivery resource without forfeiture the ability of opportune to diagnose disease relapses/advancements) (19).

To date, a few cases of children with cancer infected by the COVID-19 have been described as yet within the pandemic, and most of them reported that the disease course were generally mild among those children (32-34). Thus, there is currently unsatisfactory data to support suggestions pertinent to all domestic cases and circumstances during the care of the infected children. The most proficient pediatric oncologists advised that the children and their relatives must be skilled to evade events of infectious risk, unceasing hand washing, utilizing of face masks, and the avoidance of jammed spaces or contact with people with acute respiratory illnesses (35). Moreover, it was recommended to commenced or maintained, or identifies those in whom a postpone is practicable, depending on clinical and malignancy type item-by-item (36).

During COVID-19 pandemic, patients with an underlying malignancy should not lose life and treatment opportunities. We collected some recommendation, guidelines and treatment strategies for patients with an underlying malignancy during the COVID-19 pandemic. We hope that these recommendations will assist health care staffs in management and treatment of patients with an underlying cancer during the COVID-19 pandemic.

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## References

- Jafari M, Dastgheib SA, Ferdosian F, Mirjalili H, Aarafi H, Noorishadkam M, et al. Proportion of hematological cancer patients with SARS-CoV-2 infection during the COVID-19 pandemic: A systematic review and meta-analysis. *Hematol Transfus Cell Ther* 2022;44:225-34.
- Karimi-Zarchi M, Neamatzadeh H, Dastgheib SA, Abbasi H, Mirjalili SR, Behforouz A, et al. Vertical Transmission of Coronavirus Disease 19 (COVID-19) from Infected Pregnant Mothers to Neonates: A Review. *Fetal Pediatr Pathol* 2020;39:246-50.
- Karimi-Zarchi M, Schwartz DA, Bahrami R, Dastgheib SA, Javaheri A, Tabatabaiee RS, Ferdosian F, Asadian F, Neamatzadeh H. A meta-analysis for the risk and prevalence of preeclampsia among pregnant women with COVID-19. *Turk J Obstet Gynecol* 2021;18:224-35.
- Bahrami R, Schwartz DA, Karimi-Zarchi M, Javaheri A, Dastgheib SA, Ferdosian F, et al. Meta-analysis of the frequency of intrauterine growth restriction and preterm premature rupture of the membranes in pregnant women with COVID-19. *Turk J Obstet Gynecol* 2021;18:236-44.
- Mirjalili H, Dastgheib SA, Shaker SH, Bahrami R, Mazaheri M, Sadr-Bafghi SMH, et al. Proportion and mortality of Iranian diabetes mellitus, chronic kidney disease, hypertension and cardiovascular disease patients with COVID-19: a meta-analysis. *J Diabetes Metab Disord* 2021;20:905-17.
- Jaradzadeh MH, Asadian F, Farbod M, Meibodi B, Abbasi H, Jafari M, et al. Cancer and Coronavirus Disease (COVID-19): Comorbidity, Mechanical Ventilation, and Death Risk. *J Gastrointest Cancer* 2021;52:80-4.
- Antikchi MH, Neamatzadeh H, Ghelmani Y, Jafari-Nedooshan J, Dastgheib SA, Kargar S, et al. The Risk and Prevalence of COVID-19 Infection in Colorectal Cancer Patients: a Systematic Review and Meta-analysis. *J Gastrointest Cancer* 2021;52:73-9.
- Noorishadkam M, Lookzadeh MH, Mazaheri M, Mirjalili SR, Bahrami R, Asadian F, et al. Coronavirus Disease 2019 (COVID-19) and late Pregnancy Loss in Infected Pregnant Women: A Mini Review. *World J Peri Neonatol* 2020;2:67-70.
- Gholi-Nataj M, Rafeian S, Barahman M, Shirinzadeh-Dastgiri A, Vakili M, Ershadi R, et al. A Meta-analysis for Prevalence of Lung Cancer Patients with SARS-CoV-2 Infection during the COVID-19 Pandemic. *Eurasian J Med Oncol* 2022;6:73-82.
- Tian S, Xiong Y, Liu H, Niu L, Guo J, Liao M, et al. Pathological study of the 2019 novel coronavirus disease (COVID-19) through postmortem core biopsies. *Clin Infect Dis* 2021;73:S454-64.
- Merrill JT, Erkan D, Winakur J, James JA. Emerging evidence of a COVID-19 thrombotic syndrome has treatment implications. *Nat Rev Rheumatol* 2020;16:581-9.
- Zaim S, Chong JH, Sankaranarayanan V, Harky A. COVID-19 and Multiorgan Response. *Curr Probl Cardiol* 2020;45:100618.
- Guan W, Liang W, Zhao Y, Liang H, Chen Z, Li Y, et al. Comorbidity and its impact on 1590 patients with Covid-19 in China: A Nationwide Analysis. *Eur Respir J* 2020;55:2000547.
- Yuan B, Liu HQ, Yang ZR, Chen YX, Liu ZY, Zhang K, et al. Recurrence of positive SARS-CoV-2 viral RNA in recovered COVID-19 patients during medical isolation observation. *Sci Rep* 2020;10:11887.
- Rastad H, Karim H, Ejtahed HS, Tajbakhsh R, Noorisepehr M, Babaei M, et al. Risk and predictors of in-hospital mortality from COVID-19 in patients with diabetes and cardiovascular disease. *Diabetol Metab Syndr* 2020;12:57.
- Qin C, Zhou L, Hu Z, Yang S, Zhang S, Chen M, et al. Clinical Characteristics and Outcomes of COVID-19 Patients with a History of Stroke in Wuhan, China. *Stroke* 2020;51:2219-23.
- Spicer J, Chamberlain C, Papa S. Provision of cancer care during the COVID-19 pandemic. *Nature Reviews Clinical Oncology*. *Nat Rev Clin Oncol* 2020;17:329-31.
- Liang W, Guan W, Chen R, Wang W, Li J, Xu K, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020;21:335-7.
- Ribal MJ, Cornford P, Briganti A, Knoll T, Gravas S, Babjuk M, et al. European Association of Urology Guidelines Office Rapid Reaction Group: An Organisation-wide Collaborative Effort to Adapt the European Association of Urology Guidelines Recommendations to the Coronavirus Disease 2019 Era. *Eur Urol* 2020;78:21-8.
- Ordooei M, Behniafard N, Soheilipour F, Akbarian E. New onset of diabetes in a child infected with COVID-19: a case report. *J Diabetes Metab Disord* 2021;20:2129-32.
- Akladios C, Azais H, Ballester M, Bendifallah S, Bolze PA, Bourdel N, et al. Guidelines for surgical management

- of gynaecological cancer during pandemic COVID-19 period – FRANCOGYN group for the CNGOF. *Gynecol Obstet Fertil Senol* 2020;48:444-7.
22. Tsamakis K, Gavriatopoulou M, Schizas D, Stravodimou A, Mougkou A, Tsiptsios D, et al. Oncology during the COVID-19 pandemic: Challenges, dilemmas and the psychosocial impact on cancer patients (Review). *Oncol Lett* 2020;20:441-7
  23. Polkowski WP, Sędlak K, Rawicz-Pruszyński K. Treatment of Gastric Cancer Patients During COVID-19 Pandemic: The West is More Vulnerable. *Cancer Manag Res* 2020;12:6467-76.
  24. Lee LYW, Cazier JB, Starkey T, Turnbull CD, Kerr R, Middleton G. COVID-19 mortality in patients with cancer on chemotherapy or other anticancer treatments: a prospective cohort study. *Lancet* 2020;395:1919-26.
  25. Alhalabi O, Subbiah V. Managing Cancer Care during the COVID-19 Pandemic and Beyond. *Trends Cancer* 2020;6:533-5.
  26. Curigliano G, Banerjee S, Cervantes A, Garassino MC, Garrido P, Girard N, et al. Managing cancer patients during the COVID-19 pandemic: an ESMO multidisciplinary expert consensus. *Ann Oncol* 2020;31:1320-35.
  27. Bruno W, Haar RJ. A systematic literature review of the ethics of conducting research in the humanitarian setting. *Confl Health* 2020;14:27.
  28. Nielsen MB, Pallesen S, Harris A, Einarsen SV. Protocol for a systematic review and meta-analysis of research on the associations between workplace bullying and sleep. *Syst Rev* 2018;7:232.
  29. Namazi A, Abedinzadeh M, Nourbaksh P, Neamatzadeh H. Association between the XRCC3 Thr241Met polymorphism and risk of colorectal cancer: A meta analysis of 5,193 cases and 6,645 controls. *Asian Pac J Cancer Prev* 2015;16:2263-8.
  30. Bernhardt D, Wick W, Weiss SE, Sahgal A, Lo SS, Suh JH, et al. Neuro-oncology Management During the COVID-19 Pandemic With a Focus on WHO Grade III and IV Gliomas. *Neuro Oncol* 2020;22:928-35.
  31. Wahidi MM, Lamb C, Murgu S, Musani A, Shojaaee S, Sachdeva A, et al. American Association for Bronchology and Interventional Pulmonology (AABIP) Statement on the Use of Bronchoscopy and Respiratory Specimen Collection in Patients with Suspected or Confirmed COVID-19 Infection. *J Bronchology Interv Pulmonol* 2020;27:e52-4.
  32. Hrusak O, Kalina T, Wolf J, Balduzzi A, Provenzi M, Rizzari C, et al. Flash survey on severe acute respiratory syndrome coronavirus-2 infections in paediatric patients on anticancer treatment. *Eur J Cancer* 2020;132:11-6.
  33. Balduzzi A, Brivio E, Rovelli A, Rizzari C, Gasperini S, Melzi ML, et al. Lessons after the early management of the COVID-19 outbreak in a pediatric transplant and hemato-oncology center embedded within a COVID-19 dedicated hospital in Lombardia, Italy. *Estote parati. Bone Marrow Transplant* 2020;55:1900-5.
  34. Lu X, Zhang L, Du H, Zhang J, Li YY, Qu J, et al. SARS-CoV-2 Infection in Children. *N Engl J Med* 2020;382:1663-5.
  35. Ruggiero A, Romano A, Attinà G. Facing the COVID-19 outbreak in children with cancer. *Drugs Context* 2020;9:2020-4-12.
  36. Baruchel A, Bertrand Y, Boissel N, Brethon B, Ducassou S, Gandemer V, et al. COVID-19 and acute lymphoblastic leukemias of children and adolescents: First recommendations of the Leukemia committee of the French Society for the fight against Cancers and Leukemias in children and adolescents (SFCE). *Bull Cancer* 2020;107:629-32.