

COVID-19

Considerations for the Reorganization of Cancer Services during the COVID-19 Pandemic

COVID-19

Considerations for the reorganization of cancer services during the COVID-19 pandemic

Since the onset of the COVID-19 pandemic, health systems around the world have focused on reorganizing healthcare services and prioritizing hospital beds and intensive care units to manage people with COVID-19. This has included the suspension or reduction of elective cancer care and clinical visits for assessment, diagnosis and management, except for high-risk cancer patients.¹ It has been noted that people who have COVID-19 and an underlying condition such as cancer have higher mortality² than those without cancer. In addition, people with cancer are more likely to have complications from COVID-19.³ Despite strategies to maintain health services such as hemodialysis, oncology, chemotherapy, and others,⁴ there has been a significant reduction in access to service for patients who were being diagnosed or treated for cancer, due to their high risk. Studies have demonstrated that delays in cancer diagnosis and treatment have an impact on the progression of cancer.^{5,6,7} This could lead to future peaks in mortality from potentially curable cancers, as a result of not receiving standard treatment. For this reason, cancer services should rapidly manage and avoid any cumulative delays in treatment and prevent an increase in avoidable deaths from cancer.

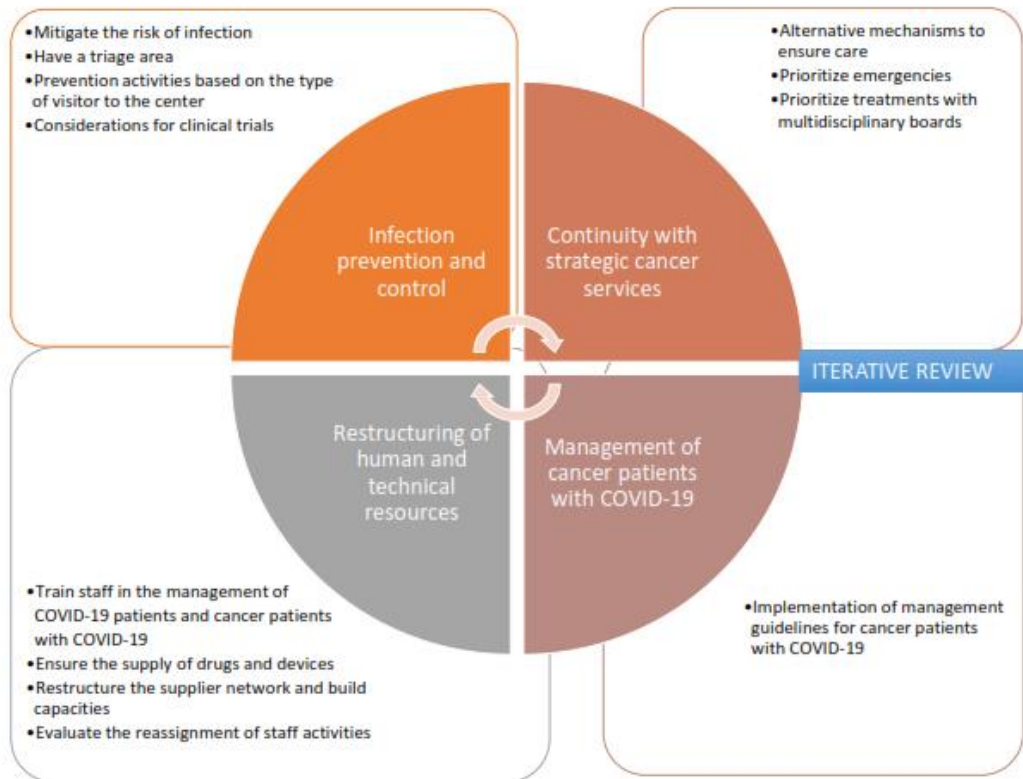
The organization of cancer treatment services (for children, adolescents, and adults) is crucial for providing a timely and quality response in the context of the COVID-19 pandemic.⁸ It is important to consider the impact on the availability of oncology drugs and other health technologies, and the workload of laboratories and radiology services, in order to provide accessible and equitable services to cancer patients.⁹

Depending on the capacity of health services and the context of local transmission, cancer services could be reorganized based on the following components:

1. Continuity with strategic cancer services
2. Infection prevention and control in cancer patients and health professionals
3. Restructuring of human and technical resources
4. Management of cancer patients with COVID-19
5. Iterative review of the reorganization of cancer services

COVID-19

Figure 1. Conceptual framework of the reorganization of cancer services during the COVID-19 pandemic



COVID-19

1. Continuity with strategic cancer services

- Preventing COVID-19 infection in centers where cancer services are delivered is crucial for protecting patients and health center workers. Efforts should be made to maintain treatment objectives and control symptoms and complications.
- Cancer patients should minimize the number of in-person visits to health centers, especially in critical areas where there may be more patients with suspected COVID-19. The purpose of this reorganization is to prevent the risk of infection in cancer patients and health professionals, and to continue cancer services for patients with COVID-19, if necessary. Therefore, reducing in-person use of cancer services is recommended in order to increase the capacity of the Region's health systems during the pandemic, but without compromising the care of cancer patients.^{10, 11}
- It is important to set priorities for treating cancer patients, safely continue services and clinical trials either at alternate sites (other health care facilities) or virtually (telehealth), modify the provision of services (e.g., follow-up, counseling, and psychological support or palliative care provided by telephone or remotely by a multi-disciplinary care team; moving the practitioner's office to another location with lower risk of exposure; home delivery of drugs, in-home testing and sampling, etc.), and maximize the use of virtual consultations. Delaying personalized follow-up visits for several months may be feasible, for example with patients who have completed treatment, have a good prognosis, and can be seen in telehealth consultations.^{10, 11, 12, 13}
- Temporary suspension of cancer screening programs is suggested, but patients should be encouraged to promptly request a consultation if they have any symptoms that indicate suspected cancer. The center's team of health professionals will check each patient to determine whether treatment needs to be adjusted based on risk, considering the use of oral rather than intravenous therapies, selecting less myelosuppressive therapies, administering shorter treatment cycles, or temporarily stopping treatment.¹⁴
- Cancer services often serve low-income patients or patients living in remote areas. These patients may be traveling with a companion and could therefore require more days of hospitalization for examinations or aftercare, or they may be discharged early. For this reason, it is important to consider how to house them somewhere they can safely recover.


COVID-19

Prioritization of treatments

- When COVID-19 cases start to increase, limitations in human resources and the ability to provide services becomes evident. Prioritization of treatments will ensure that cancer patients (children, adolescents, and adults) with the most urgent treatment needs are served, while reducing the demand for cancer services.
- In situations where resources are extremely scarce or if the pandemic has affected a large percentage of the population and cancer centers must be used to treat them, only cancer patients with emergencies may receive treatment. If the capacity of the center so allows, treatments will be prioritized for each cancer patient, considering the safest and most effective interventions, the speed at which the cancer is progressing (identifying curative versus palliative intent), the effects of delayed treatment on clinical outcomes and quality of life, and the capacity of health workers to administer the priority interventions.^{10, 13, 14}
- The prioritization of treatments for cancer patients may be decided virtually by multidisciplinary boards,¹⁵ where the treatment of each patient is prioritized based on the level of complexity according to Table 1 below.¹¹
- With prioritization, cancer services will not be overwhelmed by the pandemic, and the risk of infection to cancer patients and healthcare providers will be minimized. Services will be reorganized so that patients receive the treatment at the appropriate time. It is important to stress that all cancer patients (children, adolescents, and adults) should receive their prescribed treatment according to the prioritization schedule, or sooner if possible. Treatment should not be postponed indefinitely.
- The health team must ensure ongoing communication (by telephone, text message, or e-mail) with each patient in order to inform patients about their case and monitor them.

COVID-19

Table 1. Criteria for the prioritization of cancer treatments

Treatment priority	Types of cancer, complications, and treatments
<p style="text-align: center;">High</p>  <p style="text-align: center;">Low</p>	Rapidly evolving and lethal cancer Imminent risk of death (acute leukemias, aggressive lymphomas, metastatic germ cell tumors)
	Potential high morbidity and/or impaired quality of life (refractory pain crisis, radiation therapy for soft tissue spinal cord compression), oncological emergencies.
	Definitive curative treatments (concurrent chemotherapy for head and neck, cervical, or rectal cancer. Categorically prioritize Hodgkin's disease, diffuse large B-cell lymphoma, acute promyelocytic leukemia.
	Neoadjuvant or adjuvant treatment indications with substantial benefits in terms of overall disease-free survival (adjuvant chemotherapy for stage III colon cancer, chemotherapy or radiation therapy for high-risk breast cancer)
	Neoadjuvant or adjuvant treatment indications with modest survival benefits (adjuvant chemotherapy for bladder cancer)
	Palliative indications with substantial survival benefits (immunotherapy for melanoma, systemic therapy for metastatic breast cancer)
	Palliative indications with modest survival benefits and/or symptom control (palliative chemotherapy for gastrointestinal cancer, radiation therapy for metastatic bone cancer that is unresponsive to other treatments)
	Palliative indications with no benefits in terms of overall survival or symptom control (second- and third-line chemotherapy for solid tumors)
	Alternative treatments that do not affect the principal health outcomes

Adapted from Hanna, 2020.¹¹

- It is important that the patient's prognosis be considered at this stage of prioritization, as should the preliminary decisions stated by the patients (which should be confirmed at the beginning of treatment following institutional protocols and be recorded in the clinical history), in order to implement an individualized management strategy for each cancer patient during the pandemic.

COVID-19

Considerations for prioritization in children and adolescents

- The timely diagnosis and treatment of children and adolescents with a cancer diagnosis has high priority, due to the high curability of most types of cancer and the small number of cases compared to the adult cancer population. Current evidence shows that the pediatric population infected with COVID-19 (including children with cancer) have a lower risk of acute disease and death compared to adults. As a result, cancer services where children and adolescents are treated would not need to use prioritization criteria and could continue with the scheduled treatment for each patient.^{16, 17, 18}

2. Prevention and control of Infections in cancer patients and health professionals

- Cancer patients have a greater risk of becoming critically ill if they contract COVID-19 since they are immunosuppressed and vulnerable to infections, and may have comorbid conditions.^{19, 20} The disinfection and cleaning of cancer treatment rooms and equipment is of utmost importance. The risk of transmission may be decreased by implementing the infection prevention and control practices designed for COVID-19 by the Pan American Health Organization and the World Health Organization. These can be found in the following reports: [Guidelines for local preparation: WHO-recommended handrub formulations²¹](#); [Recommendations for Preparing Disinfecting Solution in Health Establishments²²](#); [Dead body management in the context of the novel coronavirus \(COVID-19\)²³](#); and [Infection Prevention and Control Guidance for long-term care facilities in the context of COVID-19²⁴](#).
- Cancer patients with respiratory symptoms should be rapidly evaluated to identify suspected cases of COVID-19 and reduce exposure to other patients and health professionals.²⁵ PAHO has [technical recommendations for configuration of a triage area for patients with respiratory symptoms²⁶](#) that should be implemented based on the health facility's needs and context. Patients with suspected coronavirus should follow institutional protocols for their isolation, hospitalization, or referral to other health providers. The [guidelines for the management of suspected cases of COVID-19^{25, 27}](#) are recommended.
- Oncology centers provide patients with diagnostic and treatment services (such as surgery, chemotherapy, and radiation therapy), follow-up, and palliative care, who tend to be accompanied by their caregivers. Tables 2, 3, 4, and 5 list the activities that may be provided in these facilities for the prevention and control of coronavirus infection. They

COVID-19

are intended to provide a safe environment for cancer patients, their caregivers, and health workers.¹⁰

Table 2. Infection prevention activities during the admission process

<p>Admission of patients and caregivers to the centers</p>	<ul style="list-style-type: none"> • Before being admitted to the centers, the patient should have undergone a telephone triage process. • Caregivers are not allowed at outpatient consultations for treatment unless the patient needs constant support to move. • Only one caregiver may accompany the patient after triage, unless the patient cannot move by him or herself. • The clinical situation should be quickly assessed before the patient enters the center; access is not allowed if the patient has a fever or respiratory symptoms (initial COVID-19 alert should be implemented for the patient based on the established protocol). • Provide surgical masks and hand sanitizer gel to patients and their caregivers upon entry to the center. • Limit the points of entry to the hospital, with separate entries for patients and health workers. • Maintain a distance of at least 2 meters between people in the centers.
---	--

Table 3. Infection prevention activities for cancer patients in treatment

<p>Patients who received or need to begin treatment</p>	<ul style="list-style-type: none"> • Replace scheduled visits that do not involve the prescription or administration of therapy with telehealth. • Perform individual assessment of the risks and benefits of delaying treatment, considering the prioritization of therapeutic interventions. • Supply drugs for multiple cycles, including home delivery. • Delay diagnostic imaging procedures to monitor response. • Reduce visits to high-risk sites such as bone marrow transplantation and hematology units.
--	--

Table 4. Infection prevention activities for cancer patients in follow-up

<p>Patients in follow-up</p>	<ul style="list-style-type: none"> • Clinicians or an interdisciplinary primary care team calls patients to quickly monitor their clinical condition and evaluate the urgency of conducting laboratory tests and imaging. • Allow access to the center for regular consultations only in the following cases: <ul style="list-style-type: none"> ○ Suspected disease progression. ○ Need for new active treatment prescriptions (such as adjuvant hormone therapy for breast cancer).
-------------------------------------	--

COVID-19

Table 5. Infection prevention activities for other personal interactions

Other personal interactions	<ul style="list-style-type: none">• Do not admit COVID-19-positive patients or suspected cases to centers with cancer services. Refer them to the designated sites in each country based on established protocols.• Avoid all meetings (including multidisciplinary board meetings that can be held virtually), conferences, seminars for residents and visiting doctors.• Cancel any group activity for patients that is conducted in-person (group therapy, recreational activities, etc.); instead, conduct them virtually.• Recommend that cancer patients do not visit health provider institutions
------------------------------------	---

Adapted from: Recommendations of the Italian Medical Oncology Association with the support of the Board of Academic Oncologists and Oncology Facility Directors of Italy, translated in Lambertini, 2020.¹⁰

- The challenges faced during this stage of preventing the spread of the COVID-19 infection in healthcare facilities include: the need to refer and manage patients to other centers, coordinating with all facilities and the health network they belong to, the need for telephone or virtual contact to replace follow-up visits, online consultations between caregivers and the general practitioner, family doctor, or specialist, and delays in follow-up¹⁵ visits.
- Cancer referral centers normally conduct clinical trials. It is important that any decisions to continue or interrupt these studies consider the structure and organization of the oncology center, the ability to conduct procedures safely or virtually, the type of intervention, the sample size, ethical considerations, issues related to follow-up, and the risk-benefit assessment of patients that participate in the trial.^{15, 28}
- Cancer patients are treated at specialized oncology centers and services and frequently come from different cities or provinces, which means that they need local lodging (which should be recommended by the centers if they have agreements with places specialized in providing temporary housing to cancer patients) during treatment or recovery. It is important to provide recommendations to patients, their caregivers, and the managers of lodging facilities regarding prevention of coronavirus infection outside of oncology centers.²⁴

3. Restructuring of human and technical resources

- It must be ensured that the health team that treat cancer patients are trained in the prevention, diagnosis and management of COVID-19, that they have the required personal protective equipment, and that they can provide quality, equitable services to all patients. A PAHO report that lists priority medical devices in the context of COVID-19²⁷

COVID-19

should be used to help protect health workers. Access to testing for symptomatic health workers is key for limiting exposure and isolating contacts. All centers need a comprehensive policy to evaluate staff.³⁰

- Supplies for treating cancer patients may be affected by the implementation of quarantines and the rapid spread of COVID-19, potentially overwhelming hospital capacity. Therefore, an uninterrupted supply network must be ensured so that patients can receive proper treatment.^{12, 14, 15}
- If necessary, given the impact of the pandemic and available resources, the network of health care providers may be restructured in order to maximize the available resources for patients with COVID-19, cancer patients receiving priority treatment, and patients with both cancer and COVID-19. It may also be necessary to retrain staff. PAHO has a series of [recommendations for medical surge capacities and deployment of emergency medical teams](#) to ensure country response in the event of a high number of COVID-19 patients that could overwhelm the integrated health services network of a community or area affected by the pandemic.³¹
- The emotional and physical well-being of healthcare staff (especially frontline workers) should be monitored, and interventions aimed at improving their emotional health should be implemented. Measures such as these can prevent the need for reassignment, or keep psychological conditions from having a negative impact on routine activities in facilities. It may also be necessary to reassign activities for health workers who are immunocompromised or who have significant comorbidities putting them at higher risk of COVID-19²⁸.
- PAHO has prepared [recommendations for the reorganization and progressive expansion of health services](#) for the response to the COVID-19 pandemic.³² These recommendations are aimed at strengthening response capacity at the first level of care³³; establishing mechanisms for centralized bed management in order to integrate the capacity of intensive care units at the national level, including beds in oncology centers; retrofitting, certification, and added complexity for beds, according to clinical risk and nursing care needs; strengthening of home care with telehealth; networked clinical management for continuity of care and efficient use of hospital resources; reorganization, recruitment, and training of health workers; and ensuring supply chain management for the different facilities and units in the Region.³²
- Oncology patients (children, adolescents, and adults) may be hospitalized over long periods of time and visits must be reduced during the pandemic. Health care providers should encourage and help hospitalized patients to communicate virtually with their

COVID-19

families, friends, and support groups to improve their quality of life and continue with group therapy. Psychological support for patients should also continue to be provided.

4. Management of cancer patients with COVID-19

- Before beginning chemotherapy, radiation therapy, or a surgical or invasive intervention in cancer patients, some guidelines recommend pre-screening for COVID-19 using the RT-PCR test, along with any additional tests that may be prescribed based on the patient profile, donor, and type of procedure, ideally 24 hours before the intervention is performed.^{34,35} If the patient tests negative for COVID-19, the recommendation is to continue with the proposed treatment. If the patient tests positive, the recommendation is to follow the [guidelines for management of suspected cases of COVID-19^{25 27}](#) and postpone the intervention, if possible. It has been further suggested that transplant donors follow the same indications.^{34, 35} These strategies to minimize risks have limitations: for example, a patient may have contracted the virus but it cannot yet be detected (a negative result does not necessarily rule out an asymptomatic infection with an undetectable viral load); molecular tests may not be available or the results may not be provided quickly enough; or a patient may contract the virus immediately before the intervention (and after the test) or immediately after the intervention. These limitations, as well as the specific epidemiological context, should be considered when assessing adherence to these recommendations. Moreover, there may be exceptional cases where proceeding with the therapeutic intervention should be considered, even if the patient is infected with COVID-19, since the risk to the patient is greater if the intervention is not immediately performed. That decision should be made by a multidisciplinary medical board.
- There is little evidence on the management of cancer patients with COVID-19. However, several guidelines have been published by key agencies, based on expert consensus.^{8, 12, 13, 36, 37, 38, 39, 40, 41, 42}
- These guidelines include information for cancer patients on how COVID-19 can affect them,³⁹ the severity and potential complications of contracting COVID-19, how it is contracted, and precautions for avoiding it.^{12, 13} The guidelines recommend explaining to patients the need to adapt treatment regimens or shorten the duration of treatment, if possible, to reduce the number of visits, as well as considerations for postponing treatment.⁴⁰
- The guidelines address clinical management, home management, and special considerations for high-risk groups. Guidelines need to be developed for home care and disease prevention in chronic or immunosuppressed patients.

COVID-19

- With regard to the clinical management of oncology patients with COVID-19, guidelines have been developed by specialized scientific associations for each type of cancer, covering basic aspects of care for patients with moderate symptoms, as well as recommendations on immunosuppressive therapy, transplantation, blood transfusion, antiviral therapy, impact of concomitant drugs, immune compromise, management of febrile neutropenia, cancer-related anemia, and palliative care.^{8, 13, 14, 36, 38}
- There are triage recommendations related to elective surgery for the following cancer types: breast, colorectal, thoracic, and gynecological cancer.³⁶ Guidelines have also been prepared for the management of radiation therapy during the pandemic: emergency radiation therapy, radiation therapy for head and neck cancer adapted to risk, lung cancer, breast cancer, prostate cancer,³⁷ gastrointestinal cancer,⁴¹ and radiosurgery.³⁷ Recommendations were developed for evaluating patients undergoing transplantation treatment or cell therapy and their donors.⁴²
- Several institutions and countries have reached consensus that can also be used. It is important to assess whether the guidelines were developed using the available evidence, and if they reflect the views of all stakeholders involved in the management of cancer patients.
- There are several repositories where guidelines for the management of COVID-19 can be consulted, including the [BIGG \(international database of GRADE guidelines\)](#) of PAHO and BIREME; [GIN database \(International Network Guidelines\)](#); and [PAHO guidelines](#).

5. Iterative review of the reorganization of cancer services

- Policies should be implemented in the healthcare network to be able to develop a regulatory framework for restructuring services during the pandemic and monitoring the performance of a center's reorganization in an iterative manner, in order to make any necessary adjustments and reassign resources.
- Patient treatments should be continuously prioritized since they may change as a result of:
 - Local changes in the curve of the pandemic (if the area is at the peak or at the end of the curve, for example).
 - Public health interventions (beginning or end of quarantine/isolation, for example).
 - Available supplies and human and technical resources.

COVID-19

- The wait times assigned to patients for treatment.
- The number of cancer and COVID-19 patients at the center.
- Given the vulnerability of cancer patients, it is recommended that services continue the reorganization process until there is reduced risk of COVID-19 infection during the pandemic. It is important to rapidly make up for any cumulative treatment delays and prevent an increase in avoidable deaths from cancer.
- Depending on their resources and policies, each institution will formulate an institutional preparedness and rapid response plan for the COVID-19 pandemic, which will be periodically reviewed. This plan should have a list of prioritized patients, the prioritization criteria, a progressive implementation plan, the resources actually available, and refurbished environments and spaces, among other items.

Contributions

We would like to thank the following experts for their contributions to the preparation of this document: Ludovic Reveiz, Joao Toledo, Hernán Luque, Jairo Méndez, Pablo Jiménez, Luis de la Fuente, and Alex Camacho, PAHO Incident Management System for COVID-19; Marcela Torres, PAHO Department of Evidence and Intelligence for Action in Health; Carla Sáenz, Regional Program on Bioethics of the PAHO Department of Health Systems and Services ; Silvana Luciani, PAHO Department of Noncommunicable Diseases and Mental Health ; Liliana Vásquez Ponce and Vivian Pérez, PAHO/WHO Country Office in Peru; Lina María Trujillo Sanchez, Division of Medical Care and Education, National Cancer Institute of Colombia; Arn Migowski, Division of Early Detection, National Cancer Institute of Brazil; and Sílvia Neciosup, Division of Medicine, National Cancer Institute of Peru.

The Pan American Health Organization has taken all reasonable precautions to verify the information contained in this document. However, the published material is distributed without any kind of guarantee, either explicit or implicit. The reader is responsible for the interpretation and use of this material, and in no case shall the Pan American Health Organization be held liable for any harm caused by such use.

COVID-19

REFERENCES

- 1 Pan American Health Organization. Recommendations for the reorganization and progressive expansion of health services for the response to the COVID-19 pandemic. Available at <https://www.paho.org/en/documents/reorganization-and-progressive-expansion-health-services-response-covid-19-pandemic>. Date accessed: 27 April 2020.
- 2 World Health Organization. Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19). February 2020. Available at: [https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-\(covid-19\)](https://www.who.int/publications-detail/report-of-the-who-china-joint-mission-on-coronavirus-disease-2019-(covid-19)). Date accessed: 21 April 2020
- 3 Wang B, Li R, Lu Z, Huang Y. Does comorbidity increase the risk of patients with COVID-19: evidence from meta-analysis. *Aging (Albany NY)*. 2020; 12:6049-6057. <https://doi.org/10.18632/aging.103000>
- 4 Sud A, Jones ME, Broggio J, Loveday CH, Torr B, Garrett A et al. Collateral damage: the impact on cancer outcomes of the COVID-19 pandemic. *medRxiv* 2020.04.21.20073833; doi: <https://doi.org/10.1101/2020.04.21.20073833>
- 5 Schutte HW, Heutink F, Wellenstein DJ, van den Broek GB, van den Hoogen FJA, Marres HAM, van Herpen CML, Kaanders JHAM, Merks TMAW, Takes RP. Impact of time to diagnosis and treatment in head and neck cancer: a systematic review. *Otolaryngol Head Neck Surg*. 2020 Apr;162(4):446-457.
- 6 Qu LG, Brand NR, Chao A, Ilbawi AM. Interventions addressing barriers to delayed cancer diagnosis in low- and middle-income countries: a systematic review [published online ahead of print, 2020 Mar 3]. *Oncologist*. 2020;10.1634/theoncologist.2019-0804. doi:10.1634/theoncologist.2019-0804
- 7 Fernández-de Castro JD, Baiocchi Ureta F, Fernández González R, Pin Vieito N, Cubiella Fernández J. The effect of diagnostic delay attributable to the healthcare system on the prognosis of colorectal cancer. *Gastroenterol Hepatol*. 2019 Nov;42(9):527-533.
- 8 United Kingdom National Health Service. Clinical guide for the management of noncoronavirus patients requiring acute treatment: Cancer. Version 2. 30 March 2020. Available at: <https://www.england.nhs.uk/coronavirus/wp-content/uploads/sites/52/2020/03/specialty-guide-acute-treatment-cancer-23-march-2020.pdf>. Date accessed: 25 April 2020
- 9 Pan American Health Organization. Utilización de decisiones de otras autoridades regulatorias para autorizar el uso de emergencia de medicamentos y otras tecnologías sanitarias en una pandemia (por ejemplo, COVID-19) [Using the Decisions of Other Regulatory Authorities to Authorize the Emergency Use of Drugs and Other Health Technologies in a Pandemic (such as COVID-19)]. Available at:

COVID-19

- <https://www.paho.org/en/documents/utilizacion-decisiones-otras-autoridades-regulatorias-para-autorizar-uso-emergencia>. Date accessed: 6 May 2020
- 10 Lambertini M, Toss A, Passaro A, et al. Cancer care during the spread of coronavirus disease 2019 (COVID-19) in Italy. *ESMO Open*. 2020;5(2):e000759.
 - 11 Hanna TP, Evans GA, Booth CM. Cancer, COVID-19 and the precautionary principle: prioritizing treatment during a global pandemic. *Nat Rev Clin Oncol*. 2020;17(5):268–270.
 - 12 The National Institute for Health and Care Excellence (NICE). COVID-19 rapid guideline: delivery of systemic anticancer treatments. Available at: <https://www.nice.org.uk/guidance/ng161/chapter/7-Modifications-to-usual-service>. Date accessed: 22 April 2020
 - 13 American Society of Clinical Oncology (ASCO). COVID-19 patient care information. Available at: <https://www.asco.org/asco-coronavirus-information/care-individuals-cancer-during-covid-19>. Date accessed: 20 May 2020
 - 14 Bitar N, Kattan J, Kourie HR, Mukherji D, Saghir NE. The Lebanese Society of Medical Oncology (LSMO) statement on the care of patients with cancer during the COVID-19 pandemic [published online ahead of print, 2020 Apr 8]. *Future Oncol*. 2020;16(11):615–617. doi:10.2217/fon-2020-0252
 - 15 Rodler, Severin & Apfelbeck, Maria & Stief, Christian & Heinemann, Volker & Casuscelli, Jozefina. Lessons from the COVID-19 pandemic – will virtual patient management reshape uro-oncology in Germany? *European Journal of Cancer*. 2020; 10.1016/j.ejca.2020.04.003.
 - 16 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 Apr 20
 - 17 Boulad F, Kamboj M, Bouvier N, Mauguen A, Kung AL. COVID-19 in Children With Cancer in New York City. *JAMA Oncol*. Published online May 13, 2020. doi:10.1001/jamaoncol.2020.2028
 - 18 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 Apr 7;132:11-6.
 - 19 Desai A, Sachdeva S, Parekh T, Desai R. COVID-19 and cancer: lessons from a pooled meta-analysis. *JCO Glob Oncol* 2020; 6:557-559.
 - 20 Rogado J, Obispo B, Pangua C, Serrano-Montero G, Martín Marino A, Pérez-Pérez M, López-Alfonso A, Gullón P, Lara MÁ. Covid-19 transmission, outcome and associated risk factors in cancer patients at the first month of the pandemic in a Spanish hospital in Madrid. *Clin Transl Oncol*. 2020 May 25.

COVID-19

- 21 Pan American Health Organization. Guía para la elaboración a nivel local: Formulaciones recomendadas por la OMS para la desinfección de las manos [Guideline for local preparation: WHO-recommended handrub formulations]. Available at: <https://www.paho.org/en/documents/guia-para-elaboracion-nivel-local-formulaciones-recomendadas-por-oms-para-desinfeccion>. Date accessed: 25 April 2020
- 22 Pan American Health Organization. Recommendations for preparing disinfecting solution in health establishments. Available at: <https://www.paho.org/en/documents/recommendations-preparing-disinfecting-solution-health-establishments>. Date accessed: 25 April 2020
- 23 Pan American Health Organization. Dead body management in the context of the novel coronavirus (COVID-19). Available at: <https://www.paho.org/en/documents/dead-body-management-context-novel-coronavirus-covid-19>. Date accessed: 25 April 2020
- 24 World Health Organization. Infection prevention and control guidance for long-term care facilities in the context of COVID-19: interim guidance, 21 March 2020. Available at: <https://apps.who.int/iris/handle/10665/331508>. Date accessed: 25 April 2020
- 25 Pan American Health Organization. Initial care of persons with acute respiratory illness (ARI) in the context of coronavirus disease (COVID-19) in healthcare facilities: assess the risk, isolate, refer. Interim recommendations, version 1 (12 April 2020) Available at: <https://iris.paho.org/handle/10665.2/52031>. Date accessed: 19 April 2020
- 26 Pan American Health Organization. Technical recommendations for configuration of a triage area for patients with respiratory symptoms. Available at: <https://www.paho.org/en/documents/technical-recommendations-configuration-triage-area-patients-respiratory-symptoms>. Date accessed: 19 April 2020
- 27 World Health Organization. Infection prevention and control during health care when novel coronavirus (nCoV) infection is suspected. Available at: [https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-\(ncov\)-infection-is-suspected-20200125](https://www.who.int/publications-detail/infection-prevention-and-control-during-health-care-when-novel-coronavirus-(ncov)-infection-is-suspected-20200125). Date accessed: 25 April 2020.
- 28 Ueda M, Martins R, Hendrie PC, McDonnell T, Crews JR, Wong TL, McCreery B, Jagels B, Crane A, Byrd DR, Pergam SA, Davidson NE, Liu C, Stewart FM. Managing cancer care during the COVID-19 pandemic: agility and collaboration toward a common goal. J Natl Compr Canc Netw. 2020 Mar 20:1-4.
- 29 Pan American Health Organization. List of priority medical devices in the context of COVID-19. Available at: <https://www.paho.org/en/documents/list-priority-medical-devices-context-covid-19>. Date accessed: 19 April 2020
- 30 Pan American Health Organization. Requerimientos para uso de equipos de protección personal (EPP) para el nuevo coronavirus (2019-nCoV) en establecimientos de salud. [Requirements for the use of personal protection equipment (PPE) for the novel coronavirus

COVID-19

- (2019-nCoV) in healthcare facilities.] Available at: <https://www.paho.org/es/documentos/requerimientos-para-uso-equipos-proteccion-personal-epp-para-nuevo-coronavirus-2019-ncov>. Date accessed: 19 April 2020
- 31 Pan American Health Organization. Recommendations for medical surge capacity and deployment of emergency medical teams. Available at: <https://www.paho.org/en/documents/recommendations-medical-surge-capacity-and-deployment-emergency-medical-teams>. Date accessed: 19 April 2020
- 32 Pan American Health Organization. Recommendations for the reorganization and progressive expansion of health services for the response to the COVID-19 pandemic. Available at: <https://www.paho.org/en/documents/reorganization-and-progressive-expansion-health-services-response-covid-19-pandemic>. Date accessed: 19 April 2020
- 33 Pan American Health Organization. Technical note: adapting the first level of care in the context of the COVID-19 pandemic: interventions, modalities, and scope. Available at: <https://www.paho.org/en/documents/technical-note-adapting-first-level-care-context-covid-19-pandemic-interventions>. Date accessed: 5 May 2020
- 34 Sociedad Latinoamericana de Nefrología e Hipertensión, Sociedad de Trasplantes de América Latina y el Caribe, Asociación Panamericana de Infectología. Recomendaciones para el manejo de pacientes portadores de enfermedad renal frente a la epidemia de coronavirus (covid-19). 2020. Available at: <https://slanh.net/recomendaciones-para-el-manejo-de-pacientes-portadores-de-enfermedad-renal-frente-a-la-epidemia-de-coronavirus-covid-19/>. Date accessed: 18 May 2020
- 35 Ministry of Health of Spain. National Transplant Organization. Infección asociada al nuevo coronavirus. 2020. Available at: <http://www.ont.es/infesp/RecomendacionesParaProfesionales/Recomendaciones%20Donaci%C3%B3n%20y%20Trasplante%20frente%20al%20COVID-19%20ONT.pdf>. Date accessed: 18 May 2020
- 36 American College of Surgeons. COVID-19: elective case triage guidelines for surgical care. March 2020. Available at: <https://www.facs.org/covid-19/clinical-guidance/elective-case>. Date accessed: 21 April 2020
- 37 American Society for Radiation Oncology (ASTRO). COVID-19 clinical guidance. March 2020. Available at: <https://www.astro.org/Daily-Practice/COVID-19-Recommendations-and-Information/Clinical-Guidance>. Date accessed: 21 April 2020
- 38 Weinkove, et al. Managing haematology and oncology patients during the COVID-19 pandemic: interim consensus guidance. The Medical Journal of Australia.2020; <https://www.mja.com.au/journal/2020/212/10/managing-haematology-and-oncology-patients-during-covid-19-pandemic-interim>. Date accessed: 21 April 2020

COVID-19

- 39 Dai, Meng-Yuan & Liu, Dianbo & Liu, Miao & Zhou, Fu-Xiang & Li, Gui-Ling & Chen, Zhen & Zhang, Zhi-An & You, et al. Patients with cancer appear more vulnerable to SARS-CoV-2: a multi-center study during the COVID-19 outbreak. SSRN Electronic Journal. 2020;10.2139/ssrn.3558017
- 40 Waisberg F, Enrico D, Angel M, Chacón M. Cancer treatment adaptations in the COVID-19 era [published online ahead of print, 2020 Apr 23]. JCO Oncol Pract. 2020;OP2000218. doi:10.1200/OP.20.00218
- 41 Tchelebi LT, Haustermans K, Scorsetti M, et al. Recommendations on the use of radiation therapy in managing patients with gastrointestinal malignancies in the era of COVID-19 [published online ahead of print, 2020 Apr 13]. Radiother Oncol. 2020;S0167-8140(20)30191-2. doi:10.1016/j.radonc.2020.04.010
- 42 American Society for Transplantation and Cellular Therapy. Interim guidelines for COVID-19 management in hematopoietic cell transplant and cellular therapy patients. 2020. Available at: <https://www.astct.org/HigherLogic/System/DownloadDocumentFile.ashx?DocumentFileKey=14e0554d-9fae-7c8a-dee1-4cf2bd089e03&forceDialog=0>

PAHO/EIH/HA/COVID-19/20-0004

© Pan American Health Organization, 2020 Some rights reserved. This work is available under license [CC BY-NC-SA 3.0 IGO](https://creativecommons.org/licenses/by-nc-sa/3.0/).