



Since January 2020 Elsevier has created a COVID-19 resource centre with free information in English and Mandarin on the novel coronavirus COVID-19. The COVID-19 resource centre is hosted on Elsevier Connect, the company's public news and information website.

Elsevier hereby grants permission to make all its COVID-19-related research that is available on the COVID-19 resource centre - including this research content - immediately available in PubMed Central and other publicly funded repositories, such as the WHO COVID database with rights for unrestricted research re-use and analyses in any form or by any means with acknowledgement of the original source. These permissions are granted for free by Elsevier for as long as the COVID-19 resource centre remains active.

COVID-19: global consequences for oncology

As the coronavirus disease 2019 (COVID-19) pandemic escalates and countries struggle to contain the virus, health-care systems are under increasing pressure. Emergency departments and intensive care units are nearing breaking point, and medical resources are being diverted to tackle the crisis. Moreover, conferences are being cancelled, and research trials are grinding to a halt. So what does COVID-19 mean for patients with cancer, their physicians, and the wider oncology discipline?

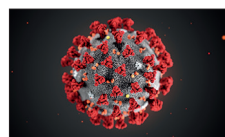
Patients with cancer are a high-risk group in the COVID-19 pandemic. They are already vulnerable to infection because of their underlying illness and often immunosuppressed status, and are at increased risk of developing severe complications from the virus, including intensive care unit admission or even death. Moreover, for those who develop COVID-19, treatment of the disease will be prioritised, and further cancer therapy could be delayed, although such decisions must be made on a patient-by-patient basis and not based only on the early small reports published in the first few weeks of the pandemic. Media reports have described patients with cancer in quarantined cities being unable to travel to appointments or struggling to obtain essential medicines; the risk of interruptions in drug supply chains and consequent shortages will exacerbate this issue. Scheduled operations, some types of cancer treatment, and appointments are being cancelled or postponed to prioritise hospital beds and care for those who are seriously ill with COVID-19. In England, UK, despite the 2020 budget promising several billion pounds of extra NHS funding to help tackle the outbreak, when cases of COVID-19 peak in the coming weeks the NHS will undoubtedly be forced to delay non-urgent treatments and surgeries as resources and personnel are repurposed.

Unfortunately, the effects of COVID-19 are not solely limited to the treatment of patients with cancer, but will also hit the wider oncology community, with inevitable consequences for research, education, and collaboration. University campuses in the worst hit countries have shut down, with many others expected to follow. Some of those affected, including the University of Bologna, Italy, have responded by digitising their teaching programmes, moving classes and exams online to alleviate the educational impact. However, such solutions cannot be used for practical laboratory work or field studies, and

ongoing research projects are being jeopardised. Limited resources and capacity will force institutions to decide which clinical trials to prioritise and which to suspend. Many institutions, including the Dana Farber Cancer Institute (Boston, MA, USA) are restricting employees' work-related travel, and others such as the Fred Hutchinson Cancer Research Center (Seattle, WA, USA—one of the worst-affected US cities) are implementing mandatory work from home policies. However, not all centres in affected regions have similar policies, and such heterogeneity might create imbalances in patient cohorts in multicentre trials, potentially biasing eventual results.

With some governments advising against or banning non-essential travel and large-scale events, at least eight major cancer meetings and conferences have been cancelled or postponed, with many more expected to follow. As a result, innumerable opportunities for discussion and collaboration will be lost, the latest research will not be presented, and patients will subsequently be affected by the delay in dissemination of information on the latest treatment to their doctors. Although some congresses are being reorganised to take place online, face-to-face meetings are a crucial aspect of team science and cannot be eliminated completely. Furthermore, societies and organisations postponing or cancelling meetings will probably face financial consequences that could have long-term effects on their ability to fund key activities in the future. The American Society of Clinical Oncology—which at the time of writing had not yet decided about their 2020 annual meeting—relied on a huge US\$43 million in revenue from education and meeting registration fees in 2018. For smaller societies that rely on their annual meetings financially, cancellations could threaten their existence.

With the situation constantly changing, all we can do for now is watch, wait, and adapt as best we can until the immediate and long-term effects of this pandemic fully materialise. Ultimately, the situation might lead to substantial changes in how research and medicine are practiced in the future, such as reduced international travel and increased remote networking and telemedicine. Until the COVID-19 pandemic is over, we can only hope that the consequences are not too devastating for patients and that the oncology community and beyond are able to weather this unprecedented storm. ■ *The Lancet Oncology*



CDC/Science Photo Library

For more on the **risks of COVID-19 for patients with cancer** see <https://www.fredhutch.org/en/news/center-news/2020/03/coronavirus-what-cancer-patients-need-to-know.html>

For an **early report of COVID-19 in patients with cancer in China** see **Comments** *Lancet Oncol* 2020; **21**: 335–37

For more on **difficulties in access to cancer appointments or treatments** see <https://www.nytimes.com/2020/03/03/world/asia/china-coronavirus-cancer.html> and <https://edition.cnn.com/2020/03/07/us/grand-princess-cancer-patient-stuck-trnd/index.html>

For more on the **2020 UK budget** see <https://www.gov.uk/government/news/budget-2020-what-you-need-to-know>

For more on **expected cancer treatment delays in England** see <https://www.telegraph.co.uk/news/2020/03/07/cancer-patients-face-delays-virus-peaks/>

For more on **distance learning at universities** see <https://sciencebusiness.net/news/italian-universities-scramble-move-teaching-and-research-online-during-coronavirus-lockdown>

For more on **travel restrictions and the financial consequences of conference cancellations** see https://cancerletter.com/articles/20200304_1/

For a list of **health-care conferences affected by the COVID-19 outbreak** see <https://www.medscape.com/viewarticle/926359>