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## Challenges posed by COVID-19 to children with cancer

The coronavirus disease 2019 (COVID-19) pandemic has rapidly escalated into a global crisis. Although children are less likely to develop severe illness than adults, a study<sup>1</sup> has now highlighted that infants and younger children (ie,  $\leq 5$  years) are more likely to develop severe clinical manifestations than older children (ie,  $\geq 6$  years), with immaturity of the immune system cited as a potential explanation. In turn, it is known that viral infections, including with other human coronaviruses, are associated with increased morbidity and mortality in immunocompromised children.<sup>2</sup> Although data on the clinical features and outcome of immunocompromised children with cancer infected with severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) are scarce, Liang and colleagues<sup>3</sup> suggested an increased risk of COVID-19 in adults with cancer. Despite the limitations of this analysis, as highlighted by Wang and colleagues<sup>4</sup> and Xia and colleagues,<sup>5</sup> experience from previous pandemics, such as influenza A H1N1, suggests that the vulnerability of immunosuppressed patients to infection is likely to manifest as an increased number of cases are described with time. Most childhood cancers behave aggressively and need immediate treatment, often requiring prolonged periods of intensive multiagent chemotherapy. As such, postponement of therapy, which Liang and colleagues<sup>3</sup> proposed could be considered on a case-by-case basis for adults with cancer, is not an option for children.

Despite global acceleration of research to identify strategies to prevent and treat COVID-19, minimising the risk of exposure to SARS-CoV-2 currently remains the only measure to reduce the risk of infection. Although extreme,

isolation is one of the best available measures to limit spread. Although isolation as an inpatient is common practice for children who are receiving intensive chemotherapy or stem cell transplant, most children with cancer are treated in the outpatient setting, and hospital visits or intermittent hospital admission is unavoidable for appropriate delivery of therapy.

Risk of exposure to SARS-CoV-2, either in the hospital or community setting, has resulted in widespread anxiety among families of children with cancer. This has led to the development of standardised guidance by national and regional authorities for reducing the risk of SARS-CoV-2 transmission to children with cancer, which are readily adaptable based on the evolving local climate, and provide a uniform resource for both paediatric oncologists and caregivers. Such recommendations include emphasising the importance of families adhering to standard precautions for basic and respiratory hygiene and avoidance of sick contacts to reduce the risk of transmission.

Social distancing is recommended to limit potential exposure. Minimising the number of people visiting oncology departments by limiting visitor numbers and postponement of or use of telehealth for non-critical outpatient visits, such as for children in follow-up or survivorship clinics, should be implemented to protect children who require hospital visits.

The coming months will pose many further challenges, which might include accessibility to scarce resources, effects on drug manufacture and supply, and the effect on care of children with cancer from low-income and middle-income countries. Continued collaboration among the international paediatric oncology community is required to get through such uncertain times.

I declare no competing interests.

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- 1 Dong Y, Mo X, Hu Y, et al. Epidemiological characteristics of 2143 pediatric patients with 2019 coronavirus disease in China. *Pediatrics* 2020; published online March 16. DOI:10.1542/peds.2020-0702.
- 2 Ogimi C, Englund JA, Bradford MC, Qin X, Boeckh M, Waghmare A. Characteristics and outcomes of coronavirus infection in children: the role of viral factors and an immunocompromised state. *J Pediatric Infect Dis Soc* 2019; **8**: 21–28.
- 3 Liang W, Guan W, Chen R, et al. Cancer patients in SARS-CoV-2 infection: a nationwide analysis in China. *Lancet Oncol* 2020; **21**: 335–37.
- 4 Wang H, Zhang L. Risk of COVID-19 for patients with cancer. *Lancet Oncol* 2020; published online March 3. [https://doi.org/10.1016/S1470-2045\(20\)30149-2](https://doi.org/10.1016/S1470-2045(20)30149-2).
- 5 Xia Y, Jin R, Zhao J, Li W, Shen H. Risk of COVID-19 for cancer patients. *Lancet Oncol* 2020; published online March 3. [https://doi.org/10.1016/S1470-2045\(20\)30150-9](https://doi.org/10.1016/S1470-2045(20)30150-9).

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