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.

the application of novel artificial intelligence algorithms to single tumour genomics data. Such precision cancer chronotherapy is inspired by the discovery of the molecular mechanism of the genetic clock and their pervasive role in mammalian biology.

Qian and colleagues' research on the effect of timing of infusions of immune checkpoint inhibitors is challenging and clinically driven, and could change clinical practice at no additional cost. Prospective randomised trials should identify optimal timing of infusions of immune checkpoint inhibitors, which might be sex specific and tailored to individual patients' circadian biomarkers. The further development of circadian rhythm-based immunochemotherapy would indeed shift cancer medicine into true precision oncology.

I declare no competing interests

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Educational attainment in displaced children with cancer

See **Perspectives** pages 1163, 1665, and 1667

Supporting the health of displaced people is a challenge shared by the health system in the location to which they are displaced, non-governmental organisations, and the international community. This challenge is magnified when the host country is struggling with violence, poverty, and an unstable government. The COVID-19 pandemic has added further strain to an already difficult situation, restricting movement both within and between countries. Since 2014, the UN High Commissioner for Refugees has rolled out capacity-building projects in countries hosting displaced people, with the aim of providing access to health care for non-communicable diseases. Notwithstanding this effort, the availability and quality of the support available is suboptimal and potentially unsustainable given costs.

The UN estimates that, in 2020, approximately 82·4 million people were forcibly displaced worldwide, including 35 million children, the majority from Syria, Venezuela, Afghanistan, South Sudan, and Myanmar. Most (86%) of these displaced people are hosted in low-income and middle-income countries, awaiting onward transit, with many living in formal and informal refugee camps where they might receive local, national, and international governmental and non-governmental support, normally at a level far below that what is required to sustain good physical and mental health. The UN reported that 300 000 child refugees were unaccompanied in 2015–16. These child refugees are five times more likely to be out of school than non-refugee children.[1]

Non-governmental agencies working with displaced people report a high prevalence of mental health problems and emotional distress. The problem is no less severe for displaced children; recent data from German refugee centres indicate that this group is at a substantially heightened risk for neuropsychiatric disorders.[2] Moreover, the UN High Commissioner for Refugees Education Report in 2021, showed that approximately 48% of child refugees have no access to schooling, subsequently affecting their social, emotional, and educational development.

For the **UN High Commissioner for Refugees Education Report 2021** see https://www.unhcr.org/publications/education/612f85d64/unhcr-education-report-2021-staying-course-challenges-facing-refugee-education.html

Studies that have examined the educational attainment of displaced children have produced mixed results depending on the circumstances of displacement. The 2021 UN High Commissioner for Refugees Education Report compared how the educational attainment of children displaced from Burundi to neighbouring countries varied from those who stayed in Burundi and concluded that displaced children were actually 4–6% more likely to complete primary school than those who stayed. By contrast, displaced children relocated to Lebanon from Syria did not have any access to education and most were required to work to help support their family, thereby affecting their educational attainment.[3] Outcomes of displacement seem to at least partly depend on the country in which the child is hosted and the resources available there. Encouragingly, a review of studies of educational attainment among primary school-aged displaced children (ie, aged 5–12 years) indicated that early school academic difficulties resolved over time, although psychosocial problems persisted.[4]

The educational, mental, emotional, and physical challenges faced by displaced children are greatly exacerbated by a diagnosis of a life-threatening disease such as cancer. Estimating the prevalence of childhood cancer around the world is difficult given the paucity of adequate registry data in many low-income and middle-income countries. This paucity covers many of the countries from which people are currently being displaced or fleeing, including those in Latin America and the Middle East. Consequently, a model has been developed that uses sex-specific and age-specific cancer rates derived from the US Surveillance, Epidemiology and End Results (SEER) programme, the International Classification of Childhood Cancers 3rd edition, and information on a known risk factor for endemic Burkitt's lymphoma and Kaposi's sarcoma to estimate the global and regional incidence of childhood cancer.[5] Results from this model estimated more than 360 000 cases of cancer in children worldwide in 2015 (with children being defined as individuals younger than 15 years), with most of these cases being in regions characterised by high rates of poverty and political instability. In total, 54% of all childhood cancers were estimated to occur in Asia and 28% in Africa. Age-standardised rates based on the model ranged from approximately 178 cases per million children in Europe and North America, to approximately 218 cases per million children in western and central Africa. Estimates of prevalence of childhood cancer in displaced children are unavailable; although, given the lower-income countries from which they are fleeing, the prevalence of unrecognised and advanced disease is probably higher in all age groups than that in high-income countries.

The challenge of diagnosing, treating, and providing continuous care to displaced children with cancer needs to be address. An interview study with Afghan refugee mothers who were each caring for a child with cancer while displaced to Iran suggested a level of passive acceptance and powerlessness that was likely to affect their access to the resources needed to minimise the impact of the diagnosis on the child.[6] This research highlights the need for proactive support from the international community.

Cancer care is a neglected area of support for displaced people because it might be both less acute and obvious than other health needs such as malnutrition and injury. Displaced children generally have little access to health services and, where they do have access, the provision of cancer care is further complicated by a scarcity of information about past medical history, diagnosis, and previous treatment, resulting in an absence of continuity of care. Even when access to cancer care is good, the quality of the services in many of the host countries is likely to be compromised and the costs prohibitive, as made clear in the Reportages by Zeena Salman and colleagues[7] and Monika Metzger and colleagues[8] in this issue of *The Lancet Oncology*. There is a need to provide displaced people in official and unofficial refugee settlements with information about, and access to, available health services and for increased funding to support services to accommodate both acute and chronic medical expenses following humanitarian crises.

Internationally, the most prevalent cancer diagnoses in children are cancers of the CNS and blood. These cancers, and indeed all cancers in children, need to be identified and treated early to improve mortality, morbidity, and quality of life in adulthood. A 2020 review that examined the association between age at diagnosis and educational attainment in children with cancer highlighted the impact of diagnosis, treatment, and age at diagnosis on later success at school.[9] A meta-analysis of 11 studies[9] indicated that children who survived childhood CNS cancer were less likely to graduate from high school or obtain an undergraduate

degree than their healthy peers. Interestingly, diagnosis before age 10 years negatively affected high school completion but not university graduation rates.[9] These results suggest that a childhood cancer diagnosis does not inevitably affect educational attainment, at least in high-income countries, because of access to effective treatments, ongoing monitoring, and the availability of educational and psychological support.

Although research documents educational challenges after a childhood cancer diagnosis, particularly in contexts characterised by poverty and disadvantage, causation and amelioration remain open questions. The diagnosis in a high-income country will be associated with depression, anxiety, and fatigue in the child, and time missed from school for treatment and recovery. The same diagnosis in a displaced child will inevitably be associated with even more severe challenges, including potential malnutrition and post-traumatic stress disorder associated with displacement.

In this issue of *The Lancet Oncology,* Raya Saab and colleagues[10] describe the work of the Children's Cancer Institute at the American University of Beirut Medical Center (Beirut, Lebanon), a collaboration between American and Lebanese health services, to expand cancer services rapidly and provide effective treatment for displaced people in Lebanon. Services were restricted to first-line therapies and palliative care because of a scarcity of resources and reliance on support from non-governmental organisations. Access to appropriate therapies was improved; however, sustainability can be questioned because the programme depends on funding and support from non-governmental organisations, academia, and not-for-profit health-care institutions.

Without ongoing funding to support displaced children diagnosed with cancer, the possibility of good short-term and long-term outcomes is compromised. These children have poor access to timely health care, restricted educational opportunities, and probably trauma and emotional difficulties. Successful treatment is possible but requires financial support and an expansion of services in host countries. Given the high poverty rates in many of these locations, there is a need to relocate displaced children and their carers to safe environments to prevent further trauma and distress, and to provide host countries with resources to meet their ongoing treatment and educational needs. It is particularly important that displaced children with cancer receive timely cancer treatment and psychological support, continuity of care, and educational opportunities. To meet the acute and long-term needs of this group, and to provide the foundation for a successful and healthy future, displaced communities require coordinated financial support for health services from both governmental and non-governmental organisations, and international cooperation.

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Global cancer research in the post-pandemic world

The COVID-19 pandemic has dramatically altered the global landscape for cancer prevention, diagnosis, and treatment.[1] Whether or not this change will ultimately be a force for good for driving progress towards universal health coverage for cancer control is unknown. What is certain is that delivering better, more affordable,