

Impact of the COVID-19 pandemic on time to diagnosis and treatment in children with cancer at tertiary care level

The UK NHS responded to the COVID-19 pandemic from early 2020 by focusing all, bar indispensable services, on pandemic management. There are numerous reports of the adverse impact this diversion of resources has had on various health services, including cancer care. The degree to which childhood cancer services have been affected, including diagnostic delay, are less well documented. Such delays have been observed at presentation to primary and secondary care.^{1 2} Further delays may occur at any stage of a child's diagnostic journey, including assessment and investigation by primary or secondary care, and delays to diagnostic work-up at tertiary level. The latter would seem to be particularly susceptible to the diversion of resources, as the initial management of children with cancer relies on the very services required for acute pandemic management, including access to, for example, anaesthetics, theatres and surgery. Here, we assessed the impact of the COVID-19 pandemic on the initial management of children with cancer who presented to our regional tertiary service by auditing (against nationally defined standards^{3 4}) the time to achieving key milestones.

We reviewed electronic patient records of children diagnosed with leukaemia, lymphoma or malignant tumours managed by our service (Cambridge University Hospitals NHS Foundation Trust) during the period from 1 February 2019 to 31 November 2020 (n=136 individuals <16 years old at presentation; 66 girls and 70 boys). To assess the impact of the COVID-19 pandemic, the cohort was subdivided into 73 pre-pandemic (31 girls and 42 boys) and 63 pandemic (35 girls and 28 boys) patients, using the start of the first 'lockdown' (23/03/2020) as the cut-off. Taking the date of the referral as start point, we recorded the time to achieve the following targets: review by Consultant; first MDT discussion; diagnostic biopsy and central line insertion (where necessary for treatment).

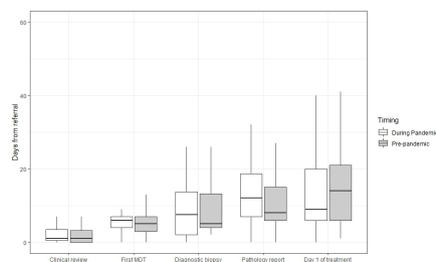


Figure 1 Time to key milestones in tertiary care-level diagnostic journey. Number of days from referral to achievement (y-axis) per milestone (categories on x-axis) is shown, subdivided by pre-COVID-19 pandemic (grey boxes) and pandemic (white boxes) times. Each box summarises the distribution of data. There were no significant differences (Mann-Whitney U test; significance 0.05) between time periods.

Overall, there were no delays in the initial management of children with cancer during the COVID-19 pandemic at our institution (figure 1). There was no significant difference in the auditable parameters recorded comparing pre-pandemic and pandemic times, with key milestones achieved within 14 days for most children (>66%). The national standard of commencing treatment within 28 days of diagnosis⁴ was not achieved for two children (1.5%). These patients underwent surgery with our immediate service (n=1) or another institution (n=1); the delay in their treatment was related to the nature of their surgeries rather than the COVID-19 pandemic.

Our service maintained the timely initial management of children diagnosed with cancer during the first 8 months of the COVID-19 pandemic at a time when hospital services we rely on had been curtailed.

There was no explicit directive to maintain our service, but there was a tacit understanding of the multidisciplinary team to protect children's cancer care from resource-related delays. Notably, initiatives were taken (such as dedicated messenger groups) to improve communication around bottlenecks of the diagnostic journey, such as surgery slots. Our experience may be representative of tertiary paediatric oncology services across the UK. It will, however, be important to assess the impact of

the COVID-19 pandemic on the entire journey of children with cancer to inform future pandemic management.

Lionel Dufour¹, Ashly Simon,² Matthew J Murray^{1,2,3}, Sam Behjati^{2,4}

¹Department of Paediatrics, Barking Havering and Redbridge Hospitals NHS Trust, Romford, UK

²Cambridge University Hospital NHS Foundation Trust, Cambridge, UK

³Department of Pathology, University of Cambridge, Cambridge, UK

⁴Wellcome Sanger Institute, Hinxton, UK

Correspondence to Dr Sam Behjati, Department of Paediatrics, Cambridge University Hospitals NHS Foundation Trust, Cambridge, Cambridgeshire, UK; sb31@sanger.ac.uk

Contributors LD was project lead and main author; MJM contributed to data analysis and manuscript writing; SB contributed to project planning and manuscript writing; AS contributed to data gathering.

Funding This study was funded by Wellcome Trust (grant number 206194).

Competing interests None declared.

Patient consent for publication Not applicable.

Ethics approval Not applicable.

Provenance and peer review Not commissioned; internally peer reviewed.

© Author(s) (or their employer(s)) 2022. No commercial re-use. See rights and permissions. Published by BMJ.



To cite Dufour L, Simon A, Murray MJ, et al. *Arch Dis Child* Epub ahead of print: [please include Day Month Year]. doi:10.1136/archdischild-2022-324246

Accepted 13 May 2022

Arch Dis Child 2022;0:1.
doi:10.1136/archdischild-2022-324246

ORCID iDs

Lionel Dufour <http://orcid.org/0000-0001-5768-6777>
Matthew J Murray <http://orcid.org/0000-0002-4480-1147>

REFERENCES

- Roland D, Harwood R, Bishop N, et al. Children's emergency presentations during the COVID-19 pandemic. *Lancet Child Adolesc Health* 2020;4:e32–3.
- Lynn RM, Avis JL, Lenton S, et al. Delayed access to care and late presentations in children during the COVID-19 pandemic: a snapshot survey of 4075 paediatricians in the UK and Ireland. *Arch Dis Child* 2021;106:e8.
- NICE. Blood and bone marrow cancers | topic. Available: <https://www.nice.org.uk/guidance/conditions-and-diseases/cancer/blood-and-bone-marrow-cancers> [Accessed 16 Jul 2021].
- National Collaborating Centre for Cancer, National Institute for Health and Clinical Excellence. *Improving outcomes in children and young people with cancer: the manual*. London: National Institute for Health and Clinical Excellence, 2005.