NORTH WEST CHILDREN'S CANCER ODN AUDIT AND TRENDS OF WHOLE GENOME SEQUENCING TESTING

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Introduction

ODNs are now established across the UK and charged with delivering regional children's cancer care according to the Service Specification (SS) for children and young people with cancer. One of the stated aims of the SS is to embed Genomics as standard of care for patients. The NHS Long Term Plan also states that from 2019, Whole Genome Sequencing (WGS) should be offered to all children with cancer. The NWCCODN incorporates 2 children's cancer PTCs and 3 cancer alliances. To foster joint working to achieve the stated aims, the NWCCODN is undertaking a mapping project of genomics pathways. This retrospective audit of Whole Genome Sequencing (WGS) practice in solid tumours, will contribute to the ongoing work of the ODN's Genomics Task & Finish Group. This audit was led by the ODN team with support of the PTC lead clinicians, the regional Genomics Laboratory Hub (GLH) and local paediatric geneticist. By reviewing current practice and trends we now have further understanding of relevant areas to target for improvement. ODN initiated projects provide valuable resource for service development and patient benefit and enable multi-professional collaboration.

Method

We carried out a retrospective audit of all WGS testing carried out in the region. We reviewed the usage, trends and turn around times over the 3 years of 2021-2023. A questionnaire was circulated to a selection of clinicians to understand the barriers with WGS.

Objectives of this project were:

- To understand and review the regional data with respect to WGS
- To look at patient related factors for patients who had WGS carried out
- To identify any areas of challenge within provider pathways and improve efficiency in the process (focusing on clinical time, laboratory time, and sample flow)
- To present the audit as a baseline data for future work within the network
- Maintain and foster collaboration across PTC providers, the Genomics Hub and Genomic Medicine Service Alliance (GMSA) in understanding the benefits of embedding genomics into Children's Cancer Services

Further work is to be undertaken to understand factors involved in tests that failed quality control and provide greater visibility of the usage and trends of the referrals and tests completed within the region.

Results

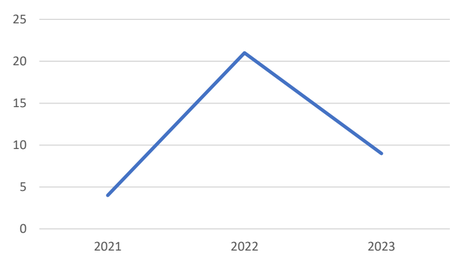
34 solid tumour patients had WGS in the NW over the 3 year period. This equates to about 6% of solid tumour patients.

Barriers to Requesting WGS

*Clinician questionnaire

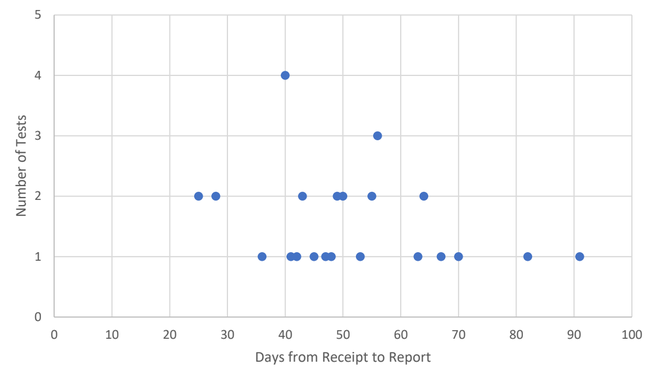
- 50%: Lack of staffing resource to arrange/consent and send
- 33%: Suspect result will be of little or no relevance/impact
- 17%: Other
- 0%: Time taken to obtain result
- 0%: Don't know how to

WGS Tests By Year



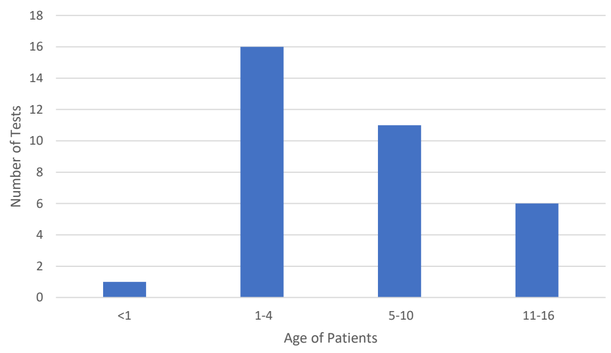
The graph shows that WGS tests increased in 2022 but more years would be needed to identify a trend

Turnaround Times



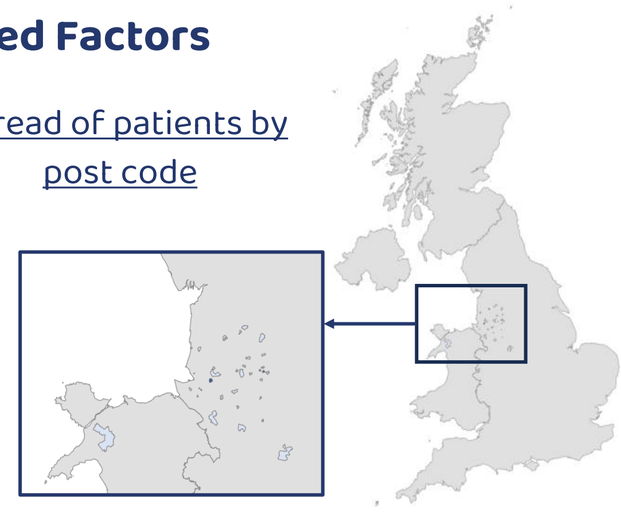
Average of 50 days from receipt of the test (in the genomics lab) to reporting the test results

Patient Related Factors



The graph suggests that WGS is more common with younger children

Spread of patients by post code



Current data shows that patients receiving WGS is random across the region.

If trends were identified, post code data could potentially indicate correlation of WGS between affluent and deprived areas.

Discussion

Overall the number of solid patients who had WGS performed was low. Reasons for this include clinician related choice, patient choice, patient related factors, turnaround times and quality control/failed tests. It is hoped that WGS for children with cancer will provide valuable information relevant for treatment and future risk of malignancy. Although not the topic of this project we recognise the numbers for leukaemia patients are usually higher due to different pathways. National genomics leads are working together to understand the place for WGS and ensure consistency of practice across the country. Several clinical trials available for patients with relapse disease now rely on WGS results being available to direct therapy. We anticipate the results and discussion from this audit will improve the number of patients offered WGS. With increased numbers, trends can then be identified, and relevance of patient related factors will then become more meaningful. We recognise that WGS is only a part of genomics testing within the field of CYP Cancer. Establishing a region wide, multi-professional genomics group will enable evaluation of wider genomic pathways and practice within this field. This audit was facilitated by the NWCCODN staff and is further evidence of the value of this resource in service development across the region.

NHS North West NHS Genomic Laboratory Hub
NHS Manchester University NHS Foundation Trust
NHS Alder Hey Children's NHS Foundation Trust
North West Children's Cancer Operational Delivery Network