University Hospital Southampton NHS
NHS Foundation Trust

From research lab to patient care: The role of nursing in whole genome sequencing across Wessex

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Introduction and aims

The field of genomic medicine is rapidly growing and it is part of the NHS' strategy to embed genomics into mainstream medicine over the next five years [1]. The role of the genomics clinical nurse specialist at UHS and of nurses more broadly within genomics remains relatively new but aims to aid the roll out of whole genome sequencing (WGS) into routine NHS clinical care across the Wessex region following the success of the 100,000 genomes project. Requesting WGS can be a complex process for a variety of reasons such as requirement for multiple people's samples (Trio analysis for rare disease WGS) or multiple samples being required (tumour and germline for cancer WGS) with multiple labs involved in the pathway. The involvement of nurses in WGS has helped to streamline WGS testing and offer a better patient service while allowing for increasing demand for this test.

Methods

The varied role of nursing in WGS at UHS

Nurses have played various roles around WGS which have helped to ensure that patients get the information and care they need.

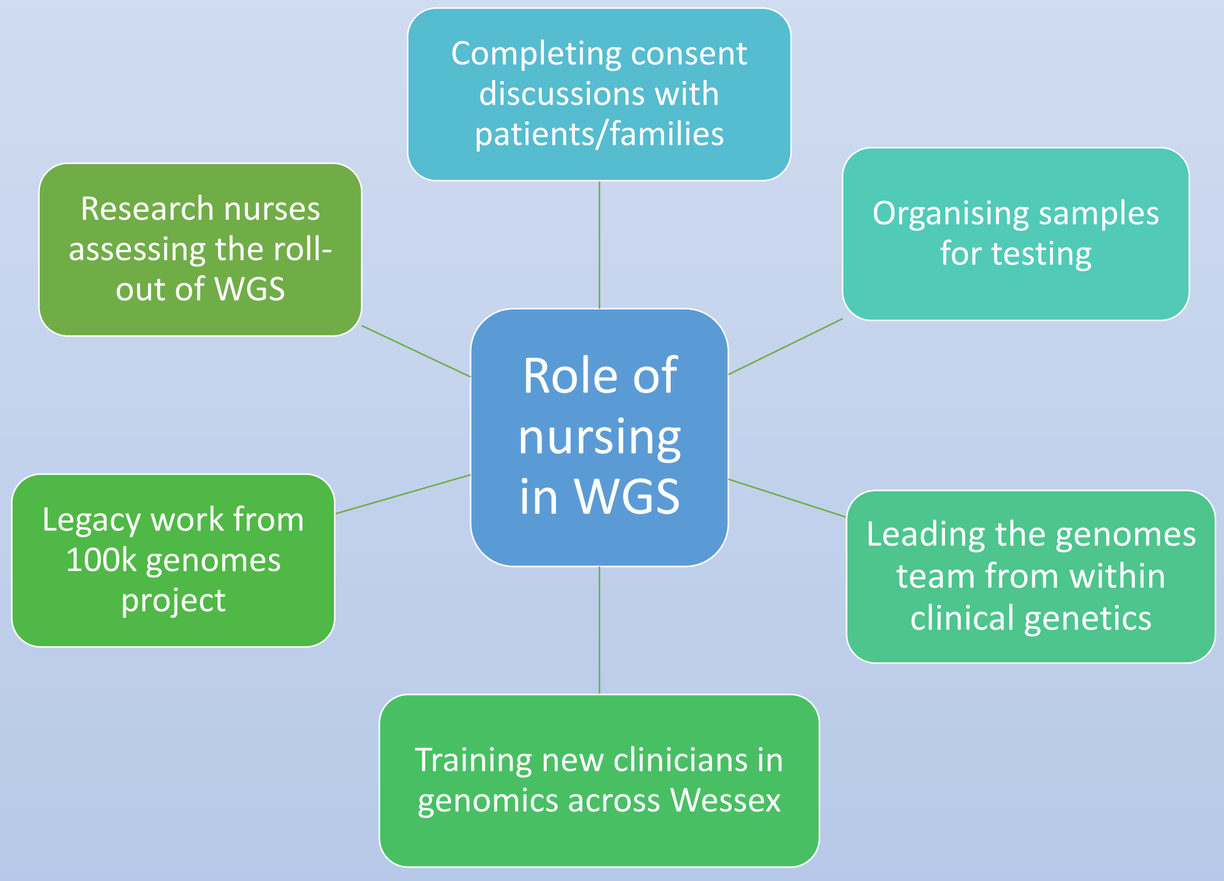

Figure 1. A Diagram detailing the varied nursing roles within WGS testing

The Genomes team

The genomes team, lead by the Genomics Clinical Nurse Specialist, is a small team of genomic associates and administerial staff. Their role includes

- Taking referrals from clinicians across Wessex for WGS
- Contacting patients and families for consent discussions for WGS for both rare disease and cancer patients
- Organising samples for testing
- Arranging bespoke training sessions to clinicians both medical and nursing on requesting WGS to promote this test being utilised in mainstream areas of medicine

Results

Demand for WGS is increasing. Submissions for WGS across Wessex almost tripled in the financial year 2022/23, up from 2021/22 (Figure 2 and Table 1).

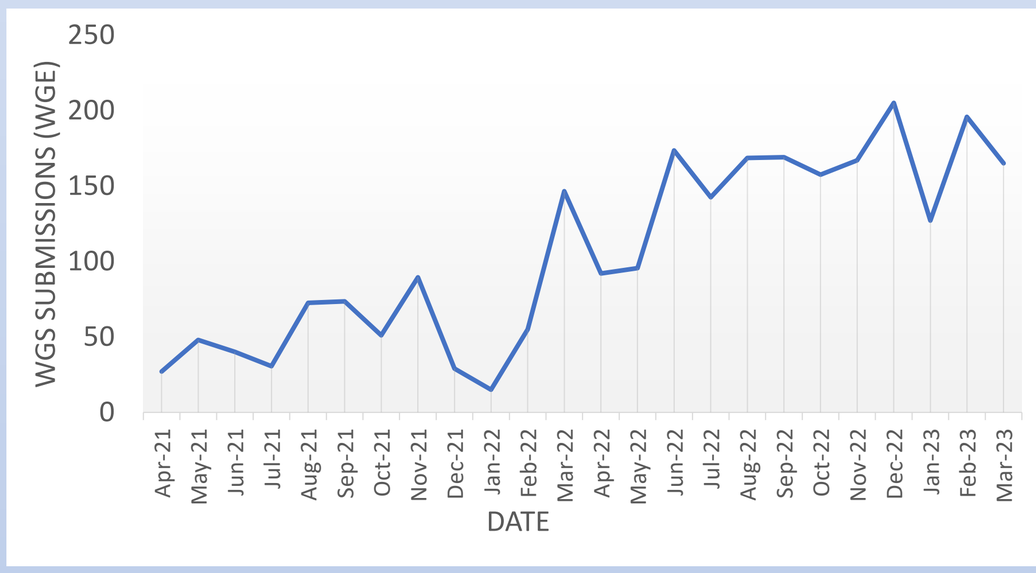

Figure 2. A line graph showing the increase of whole genome equivalents (both rare disease and cancer) submitted for sequencing by the Central and South Genomics Laboratory Hub from Wessex. Note: not all samples submitted have their origin region documented so these figures may be an underrepresentation.

	Cancer	Rare Disease	TOTAL
2021/22	52.5	625	677.5
2022/23	225.75	1632.5	1858.25

Table 1. Total number of whole genome equivalents submitted for sequencing by the Central and South Genomics Laboratory Hub from Wessex for the financial years 2021/22 and 2022/23. Note: not all samples submitted have their origin region documented so these figures may be an underrepresentation.

Conclusions

- WGS is rapidly expanding in Wessex as genomics becomes increasingly embedded into mainstream medicine
- Pathways for WGS are multifaceted and involve many individuals from within the MDT but nurses, both within clinical genetics and in mainstream areas, have played a significant role in its implementation and expansion

Future involvement of nurses in WGS

- More nurses in their respective specialist areas could receive training and facilitate WGS with support from the genomes team as more diseases become eligible for WGS
- Possibility for genomics CNS to work alongside intensive care units to play a role in the rapid WGS (R14) pathway for acutely unwell children/neonates

References

[1] NHS England, 2022, *Accelerating genomic medicine in the NHS.* [online] NHS England. Available at: <https://www.england.nhs.uk/wp-content/uploads/2022/10/B1627-Accelerating-Genomic-Medicine-October-2022.pdf>