Design of a custom NGS panel for Lymphoid Malignancies

Louise Gilroy, NHS Lothian, Molecular Pathology Department

Aim

To implement Next Generation Sequencing (NGS) of lymphoid malignances in Scotland, using a custom designed panel, to aid diagnosis, streamline therapy stratification and improve the patient care pathway (Figure 1).

Background

Approximately 1150 patients are diagnosed with lymphoid malignancies in Scotland each year.[1] The European Leukaemia Net (ELN) and World Health Organisation (WHO) recommend the analysis of many molecular markers in lymphoid malignancies to aid diagnosis, prognosis and therapy stratification.[2,3] Currently, laboratories in Scotland do not analyse all the recommended molecular markers.

NGS technology enables the analysis of several molecular targets within a single test. The use of NGS technology to analyse multiple genes involved in lymphoid malignancies is expected to:

• assist with the diagnosis of lymphoid malignancies.
• improve therapy stratification to ensure patients receive the best possible treatment.
• improve the patient pathway by providing more targeted prognostic information.

Progress

A short life working group (SLWG) was established within the Molecular Pathology Consortium (MPC), comprised of pathologists, haematologists and scientific staff, to design a clinically relevant lymphoid NGS panel.

Following several meetings, the SLWG agreed on 68 target genes (Figure 2). Scientific staff from the MPC have since completed the technical design of a custom NGS panel. Reagents have been ordered with the aim to start validation of the panel in early June 2019.

In order to fully test the NGS panel, a clinical audit will be performed using 50 patient samples. It is anticipated that data obtained from this audit will be used to support a funding application to introduce NGS testing for lymphoid malignancies into routine clinical service.

Figure 2. Clinically relevant genes included in the custom lymphoid NGS panel
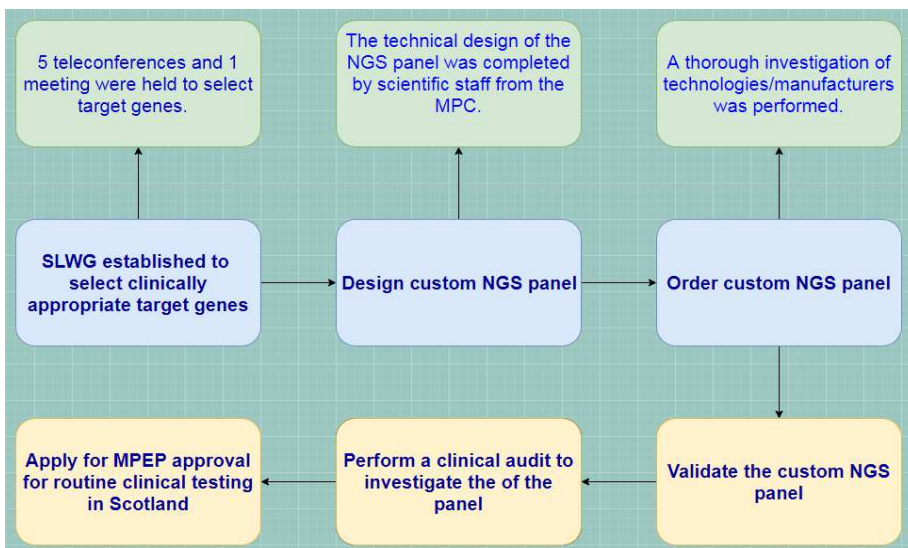

Figure 1. Flow chart showing the progress of the project

References

1. National Services Scotland, *Lymphoma Quality Performance Indicators*, 7th January 2019
2. https://www.leukemia-net.org/content/physicians/recommendations/index_eng.html
3 Swerdlow et al., 2017 *WHO Classification of Tumours of Haematopoietic and Lymphoid Tissues,* Revised 4th edition, IARC

Acknowledgements