

Towards unified reporting of genome sequencing results in clinical microbiology

This study explores the diverse needs of key stakeholders in healthcare, including clinical management, laboratory work, public surveillance and epidemiology, infection prevention and control, and academic research, regarding WGS-based reporting of clinically relevant bacterial species.

INTRODUCTION

Whole Genome Sequencing (WGS) has become a vital tool in clinical microbiology, playing an important role in outbreak investigations, molecular surveillance, and identification of bacterial species, resistance mechanisms and virulence factors. However, the complexity of WGS data presents challenges in interpretation and reporting, requiring tailored strategies to enhance efficiency and impact.

METHODS

1

Study design

This study aimed to develop optimized WGS-based reporting templates for various healthcare stakeholder groups, focusing on the structure and informational content. We adopted a human-centered design approach, engaging directly with stakeholders firstly through an online survey, followed by a workshop to discuss and adapt the recommendations.

2

Participant selection

Participants for the online-survey were recruited through snowball- and convenience-sampling via email using the ESGMD/ESGEM-network. At the end of the survey, interested participants were invited to share their contact details to join the following workshop.

3

The Survey

Using the platform soscisurvey.de, we adapted our online survey from a previously published framework. The survey is available in the supplementary materials.

4

Workshop

The workshop's objective was to refine the report templates based on direct stakeholder feedback. The workshop was held remotely, and the key findings of the survey were discussed.

RESULTS

Our findings indicate important but subtle variations in needs for WGS-based reporting among different stakeholder groups, concerning both the structure and the depth of information within defined report sections. Specifying the content for each block is a key step, but will also depend on individual requests, and the requirements of accreditation. The emergence of digital solutions introduces new possibilities and challenges in presenting and securely transmitting WGS results, calling for research into larger and more diverse stakeholder populations, including those with less WGS knowledge. Adapting WGS reports according to the recipient's familiarity with WGS-related topics is important to enhance their understanding of the results. Therefore, we recommend further research into the specific needs of individuals with different levels of expertise in WGS-related fields.

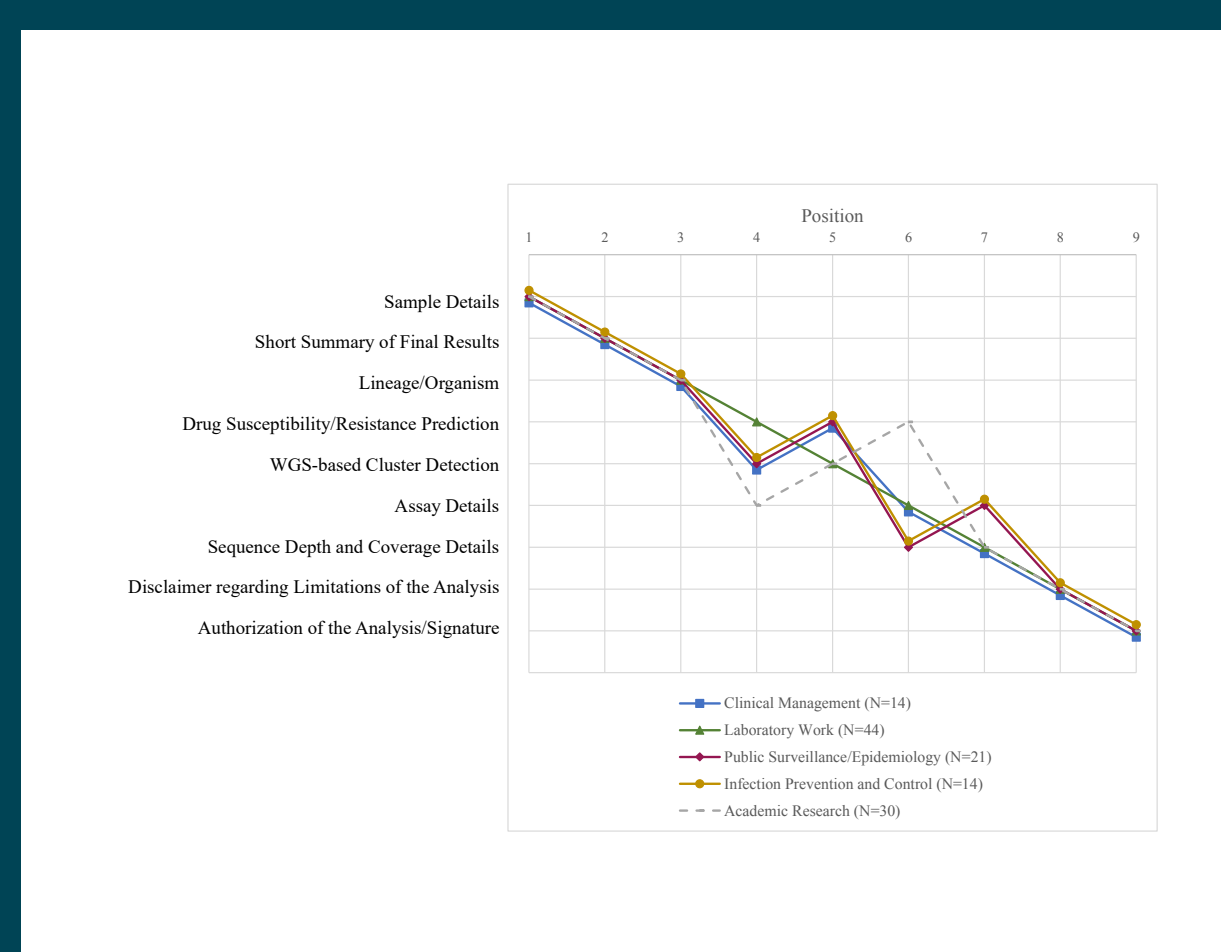


Figure 1 Ideal order of nine suggested blocks inside a WGS-report, classified by stakeholder. "1" corresponds to the beginning of the report, "9" to the end. Position by stakeholders (defined in the legend); modal opinions are represented (see methods).

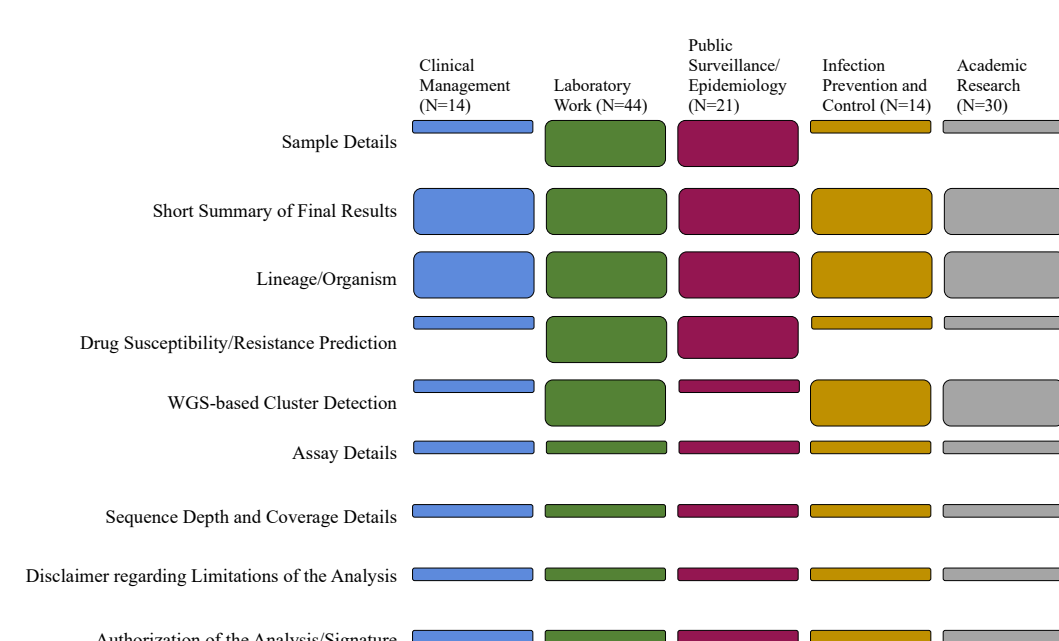


Figure 2 Desired amount of information inside each block depending on the stakeholder. A thinner block indicates "basic information", a thicker block indicates "detailed information needed".