#355; DEVELOPMENT OF AN INTERNATIONAL STANDARD PROCEDURE FOR DEFINING NEW SEROTYPES WITHIN THE SPECIES *STREPTOCOCCUS PNEUMONIAE*

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Background: The use of molecular serotyping methods has resulted in increased identification and reporting of new capsular variants of *Streptococcus pneumoniae* (pneumococcus). The PneumoNetwork was established to:

1. Harmonise serotyping methods
2. Accurately identify putatively new serotypes
3. Distinguish between non-encapsulated *S. pneumoniae*, non-typeable *S. pneumoniae* and genetically-similar Mitis group strains.

Methods: A survey was completed by 16 national pneumococcal reference laboratories and four research groups (**Figure 1**).

Data were collected regarding:

1. Serotype methods used to define a *S. pneumoniae* serotype:
   A. Phenotype based methods.
   B. Molecular based methods.
2. Criteria used to define atypical strains and putatively new serotypes.

Results: Twenty laboratories had standardised criteria for defining serotypes, with notable differences in the methods.

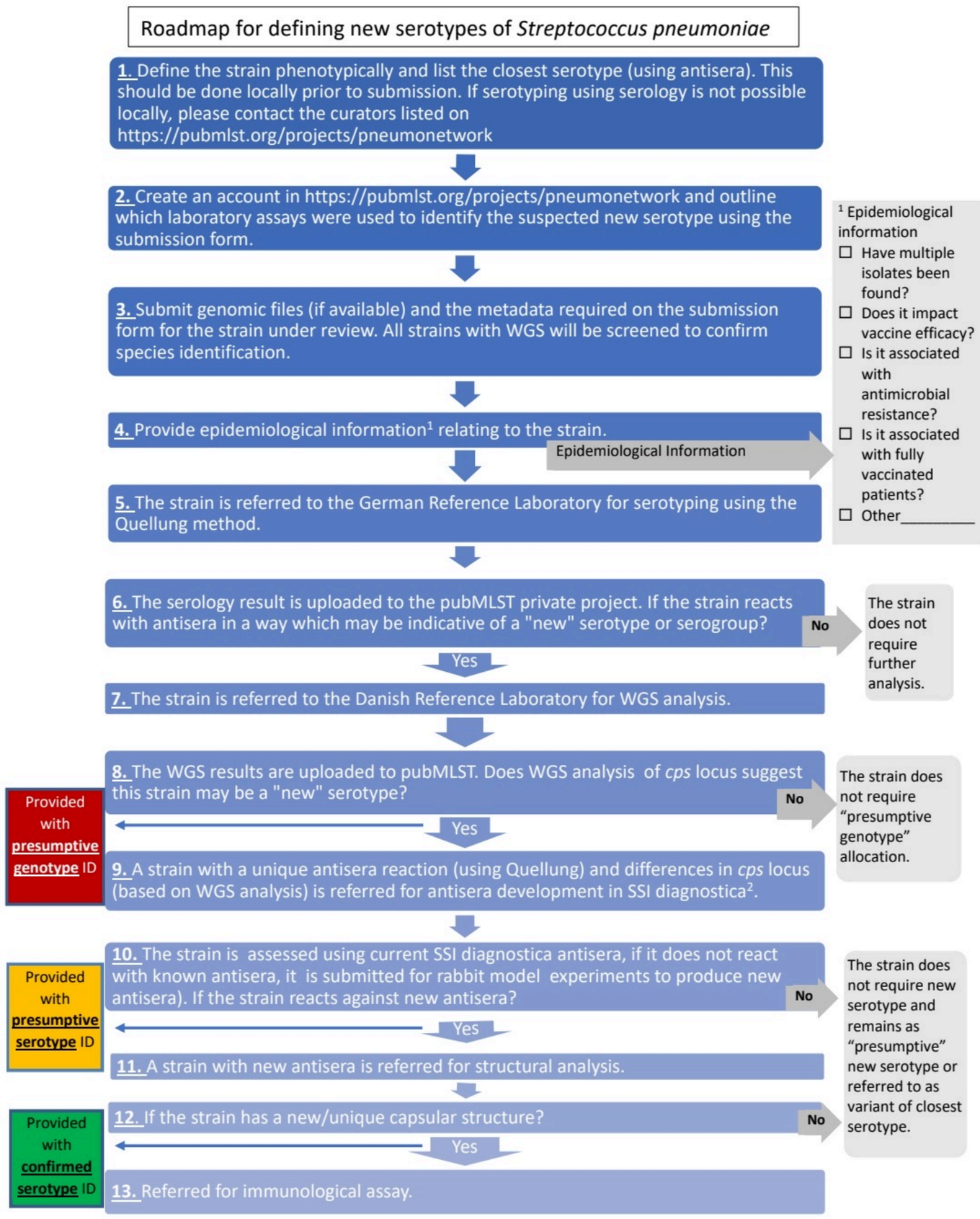
A roadmap was established to outline the essential criteria required to define a putative new serotype (**Figure 2**).

A database/repository was created on the PubMLST platform (https://pubmlst.org/projects/pneumonetwork) to facilitate the collection of data related to the putative new serotype strains.

Any laboratory can submit the characterisation details and relevant data of a pneumococcal strain with a putative new serotype to the working group for review (**Figure 3**).

If the data meet the essential criteria for investigation, the laboratory will be invited to send the strain for further characterisation.

A new serotype will be proposed if significant phenotypic differences are identified and assigned after consideration of all the relevant data.



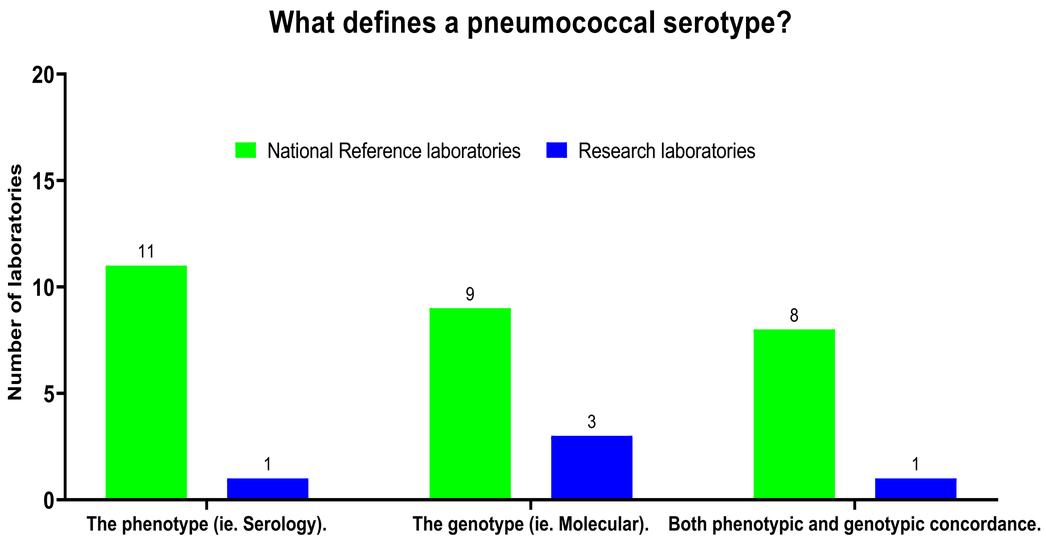


Figure 1. Responses from 16 national pneumococcal reference laboratories and four research groups on "What defines a new pneumococcal serotype?"

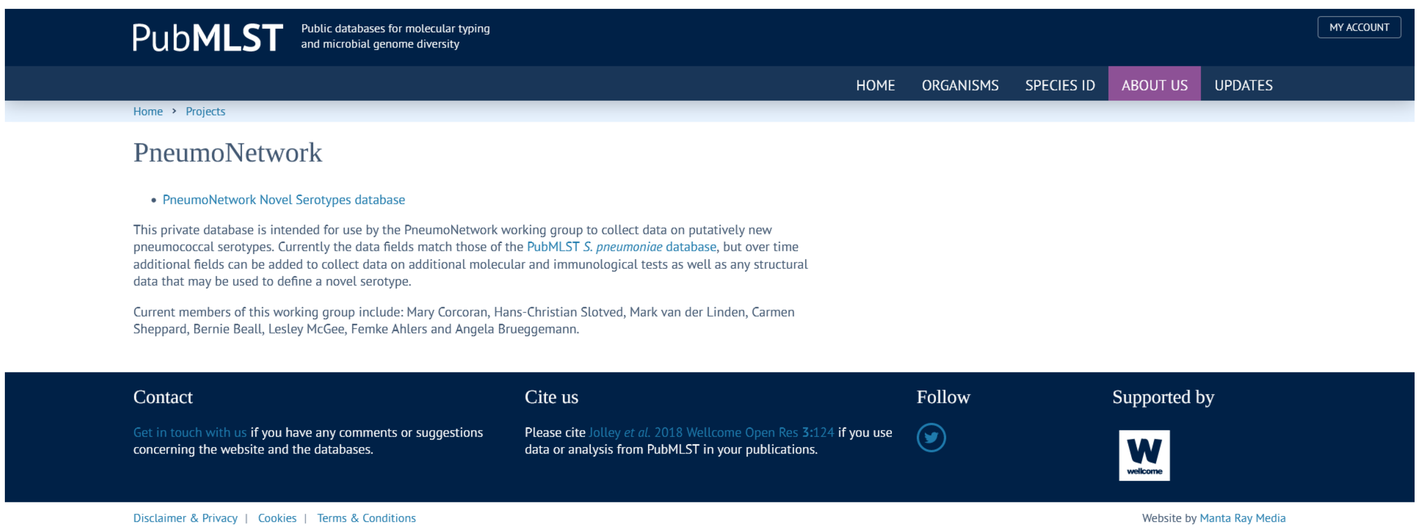


Figure 3. Homepage for submission of new pneumococcal serotypes.

Conclusions: Whole genome sequencing and other molecular typing methods alone can not definitively confirm the identification of new *S. pneumoniae* serotypes. The PneumoNetwork intends to provide a collaborative and harmonised approach for laboratories to define new pneumococcal serotypes based on the use of both phenotypic and molecular typing methods. It is imperative to use a standardised approach for defining new serotypes, particularly with the expansion of non-vaccine serotypes, non-capsular and atypical streptococcal species in the post-vaccine era.

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