



# Diversity of pneumococcal carriage in the Upper River Region of The Gambia in 2009 prior to the introduction of pneumococcal conjugate vaccines

Cham MA<sup>1</sup>, Kwambana-Adams BA<sup>1</sup>, Senghore M<sup>1</sup>, Usuf E<sup>1</sup>, Worwui A<sup>1</sup>, Salaudeen R<sup>1</sup>, McGee L<sup>2</sup>, Bentley SD<sup>3</sup>, Breiman RF<sup>4</sup>, Roca A<sup>1</sup>, Mackenzie G<sup>1</sup>, Antonio M<sup>1</sup>

1 Medical Research Council Unit The Gambia at The London School of Hygiene and Tropical Medicine, Atlantic Road, Fajara, The Gambia 2 Respiratory Diseases Branch, Centre for Disease Control and Prevention, Atlanta, GA, USA 2 Centre for Respiratory Diseases and Meningitis, National Institute for Communicable Diseases of the National Health Laboratory Service Johannesburg, South Africa; 3The Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge CB10 1SA, UK 4 Global Health Institute, Emory University, Atlanta GA, USA

## Introduction

- The nasopharynx serves as a reservoir for the carriage of *Streptococcus pneumoniae* (the pneumococcus), a leading cause of invasive disease in The Gambia
- Pneumococcal conjugate vaccines (PCV) are known to alter the ecology of the pneumococcal population in the nasopharynx
- Here we present baseline genomic data on the epidemiology of pneumococcal carriage in rural Gambia prior to PCV7 introduction

## Methods and workflow

Whole genome sequencing was performed on isolates recovered from the 2009 pneumococcal carriage study (Figure 1)

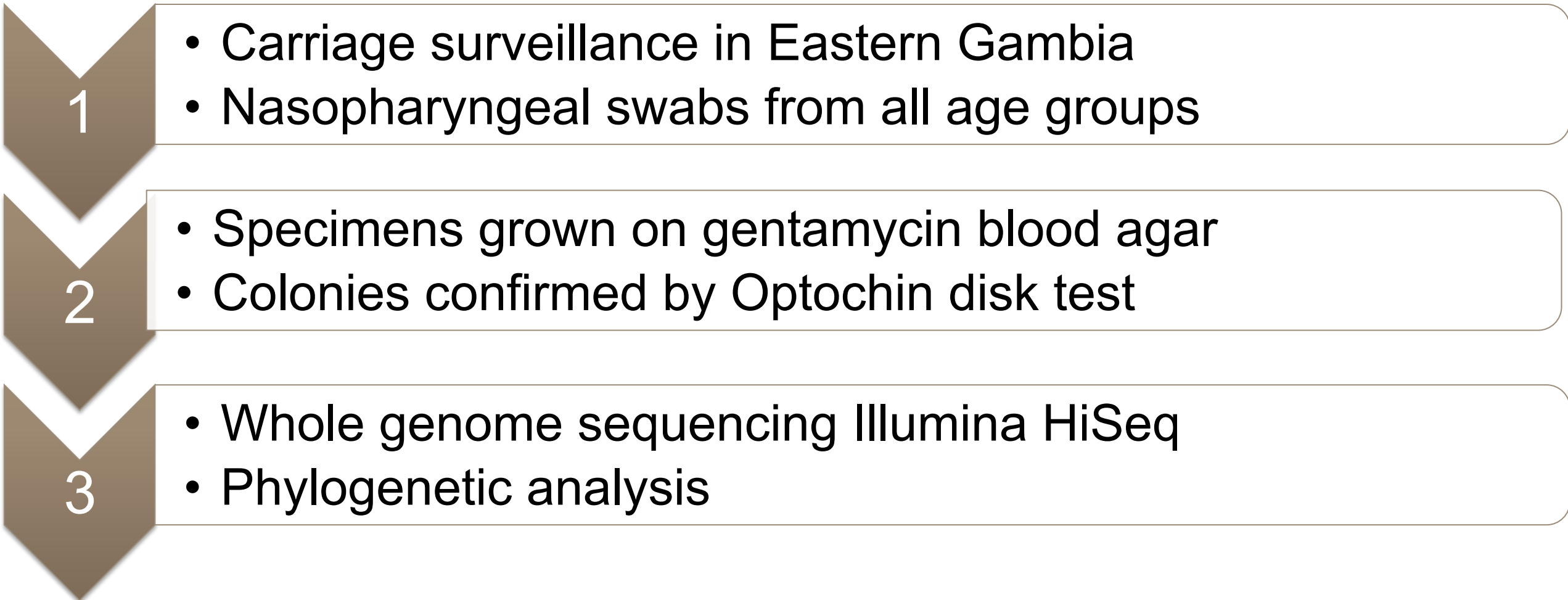


Figure 1: Flowchart summarising the workflow specimen collection, laboratory testing and whole genome sequencing analysis for the study

## Results summary

- Study participants included 51% males and 46% females
- The most commonly carried serotypes in our dataset were 6E(6B), 6A, 3, 19F (Figure 2)
- PCV serotypes recovered from the same ethnic group clustered together on the phylogenetic tree respectively (Figure 3)
- There was a high level of diversity amongst 6A isolates forming divergent clades with distinct clustering
- Serotypes 3 and 23B were widespread across the villages (Figure 4)

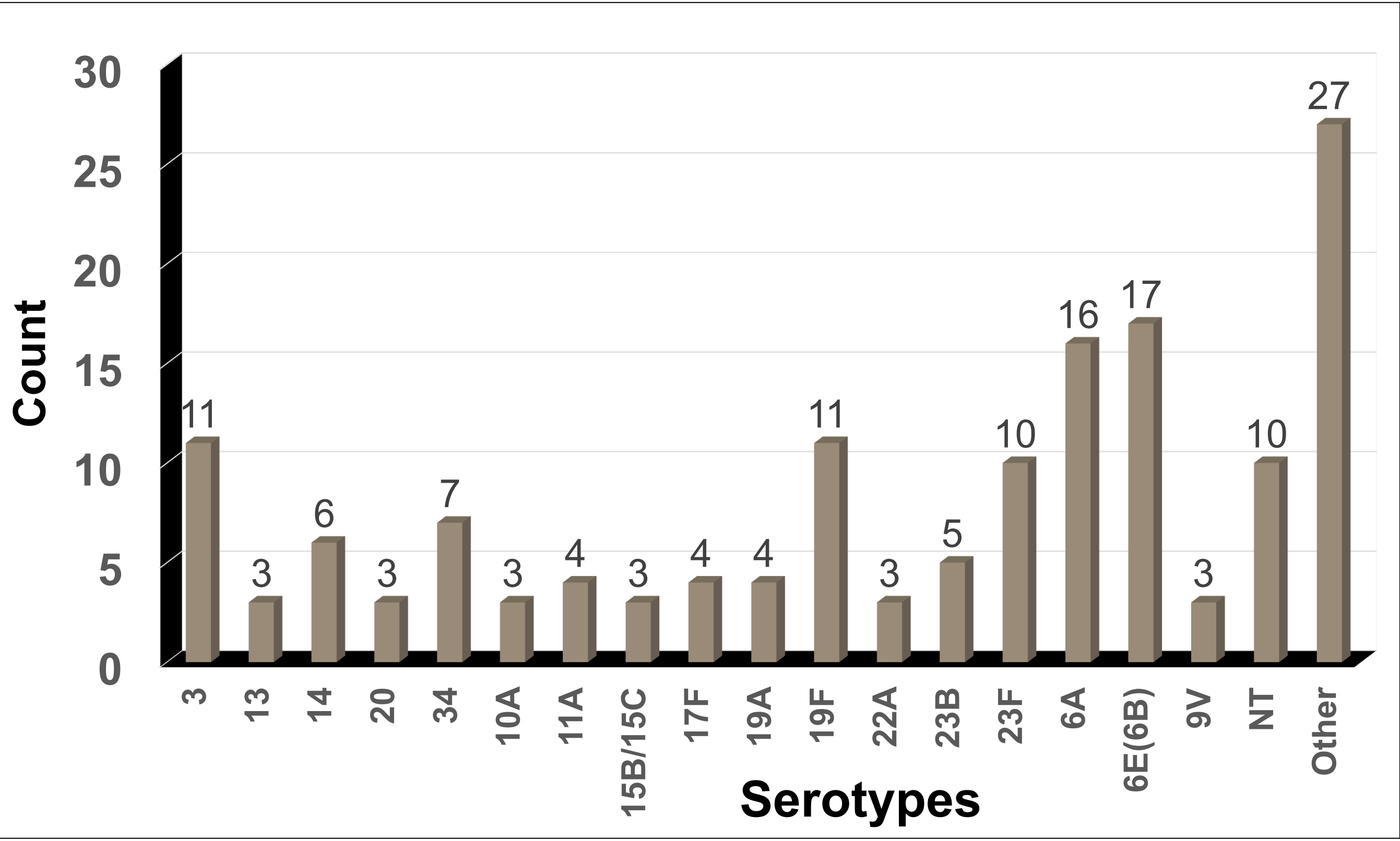


Figure 2: Bar chart showing the distribution of the most common serotypes detected in carriage among study participants

## Results phylogeny and geographic diversity

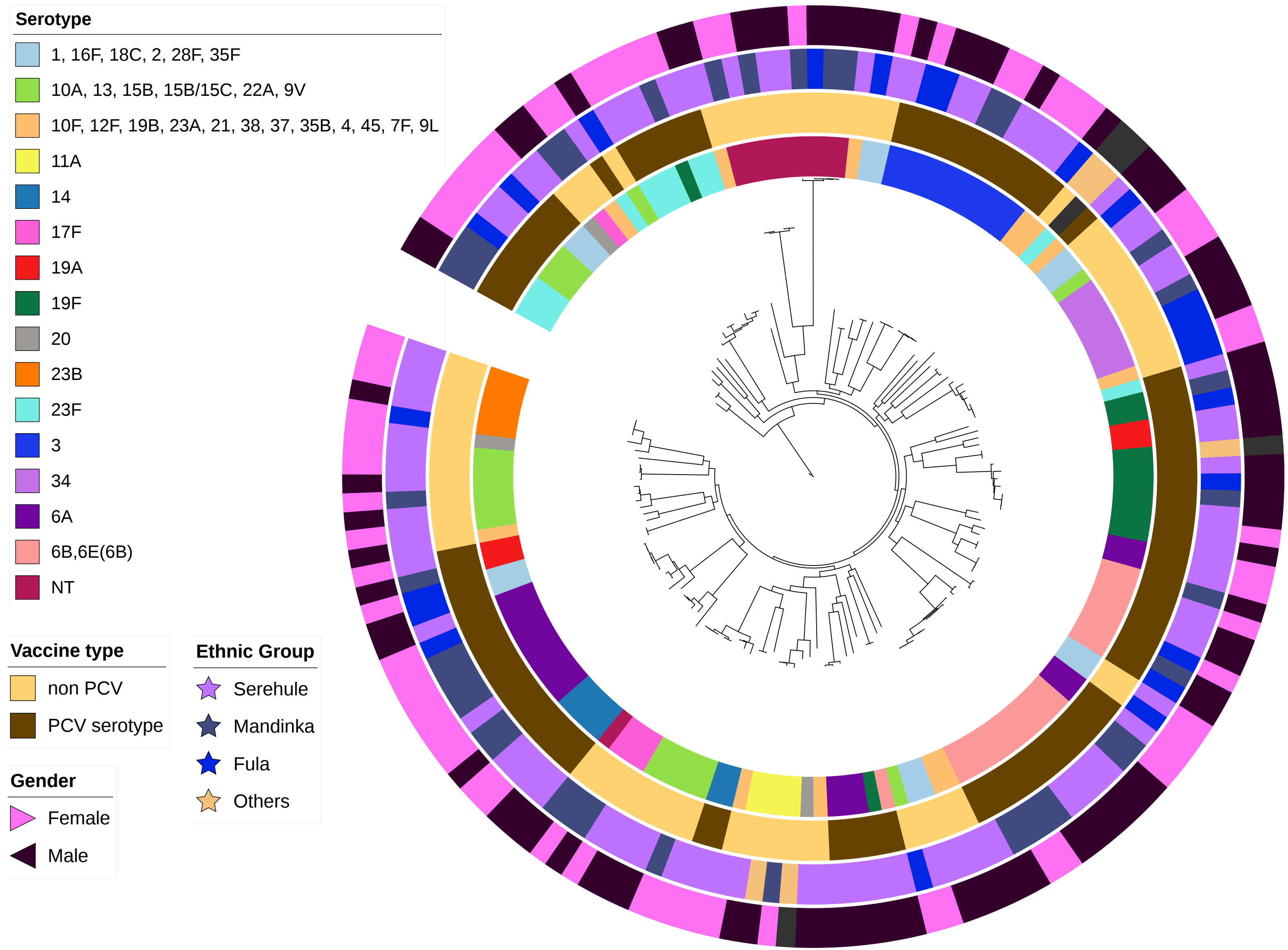


Figure 3: Whole genome phylogeny of pneumococcal carriage isolates reconstructed from core genome single nucleotide polymorphisms. Metadata rings show serotype, serotypes covered by PCV, subject ethnicity and gender.

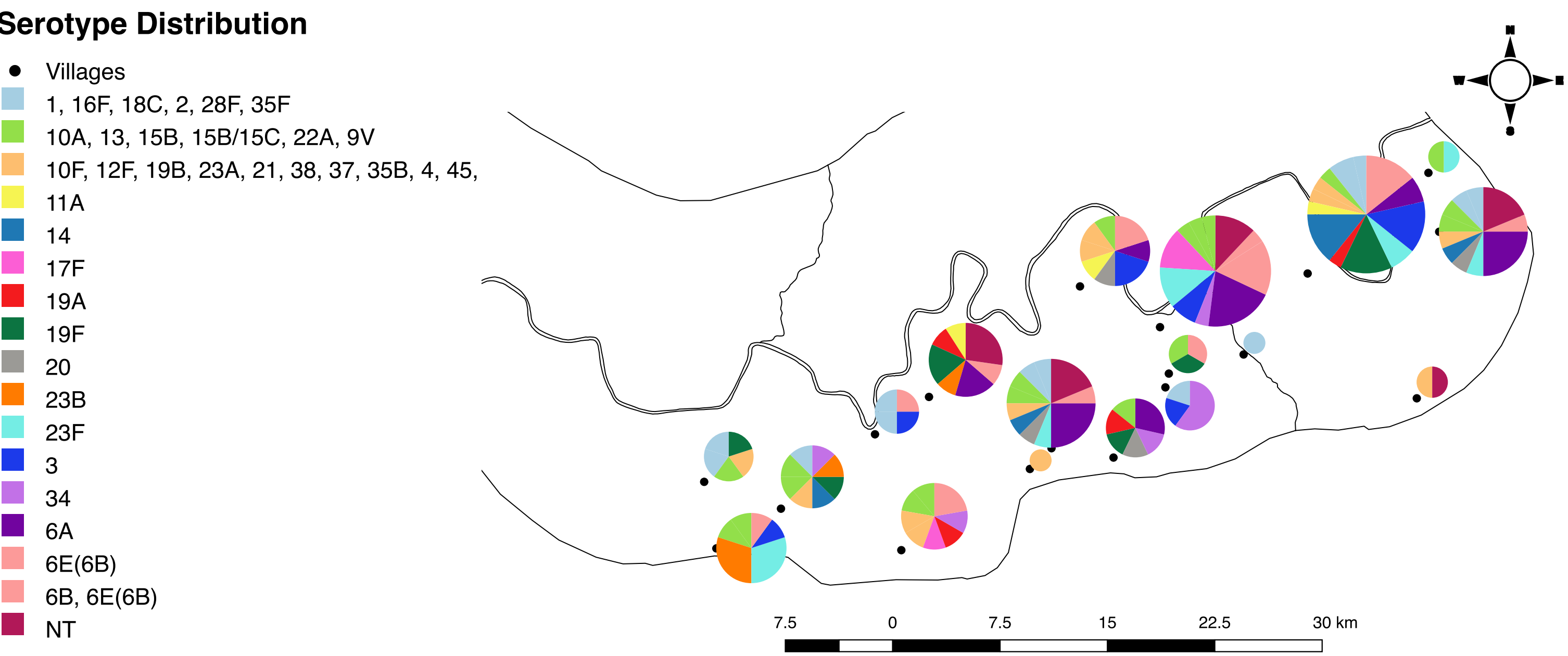


Figure 4: A map of the surveillance region with pie charts showing serotype distribution across the villages in the south bank of the upper river region.

## Discussion

- There was high level of diversity between and within serotypes
- The impact of PCV13 on the evolution of pneumococcal carriage in Basse can be determined based on this data and on-going carriage surveillance
- This baseline data is crucial in understanding how PCV13 has affected the nasopharyngeal pneumococcal ecology in rural Gambia

## Acknowledgements

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