

# HOSPITAL BASED SURVEILLANCE OF VACCINE PREVENTABLE PNEUMOCOCCAL MENINGITIS AMONG CHILDREN ≤ 59 MONTHS IN WEST AND CENTRAL AFRICA, 2010 TO 2016

**Bola-Lawal QN<sup>1</sup>**, Kwambana-Adams BA<sup>1</sup>, Senghore M<sup>1</sup>, Worwui A<sup>1</sup>, Ndow PS<sup>1</sup>, Tientcheu PE<sup>1</sup>, Okoi C<sup>1</sup>, Lessa F<sup>2</sup>, Schwartz S<sup>2</sup>, Lo SW<sup>3</sup>, Gladstone RA<sup>3</sup>, McGee L<sup>2</sup>, Breiman RF<sup>4</sup>, Bentley SD<sup>3</sup>, Cohen AL<sup>5</sup>, Serhan F<sup>5</sup>, Biey JNM<sup>6</sup>, Mwenda JM<sup>6</sup>, Martin Antonio<sup>1</sup> for African Paediatric Bacterial Meningitis Surveillance Network

<sup>1</sup> Medical Research Council Unit, The Gambia at The London School of Hygiene and Tropical Medicine, Atlantic Road, Fajara, The Gambia <sup>2</sup> Respiratory Diseases Branch, Centres for Disease Control and Prevention, Atlanta GA, USA, <sup>3</sup>The Wellcome Trust Sanger Institute, Wellcome Trust Genome Campus, Hinxton, Cambridge, CB10 1SA, UK <sup>4</sup>Global Health Institute, Emory University, Atlanta GA, USA, <sup>5</sup>World Health Organisation, Headquarters <sup>6</sup>World Health Organisation, Regional Office for Africa, BP 6, Brazzaville, Congo

## Surveillance network

- ❖ Meningitis is an acute inflammation of the meninges, primarily caused by pneumococcus (Spn), meningococcus (Nm) and *Haemophilus influenza* type b (Hib)
- ❖ The WHO Collaborating Centre (CC) for New Vaccines Surveillance supports countries in West and Central Africa to conduct hospital-based surveillance of vaccine preventable meningitis (Figure 1 inserted)
- ❖ The pneumococcal conjugate vaccine (PCV) has been introduced in all participating countries (Table 1)
- ❖ Lumbar puncture was performed on suspected meningitis cases and laboratory tests were performed (Figure 2)

## Study sites & methods



Figure 1: West & Central African countries involved in the surveillance

Table 1: Year of PCV and Hib vaccine introduction in the participating countries

Country	Hib vaccine introduction	PCV introduction
Benin	2005	2011
Burkina Faso	2006	2013
Cameroon	2009	2011
Cote d'Ivoire	2009	2014
The Gambia	1997	2009
Ghana	2002	2012
Mali	2007	2011
Niger	2008	2014
Nigeria	2012	2014
Senegal	2005	2013
Sierra Leone	2007	2011
Togo	2008	2014

### Suspected case

- Clinical examination
- Cerebrospinal fluid (CSF) collection

### Sentinel Laboratory

- CSF cytology and biochemical tests
- CSF culture, latex and/or Binax

### WHO Collaborating Center at MRCG

- qPCR species identification
- qPCR serotyping
- Pneumococcal genome sequencing

Figure 2: Laboratory characterisation of suspected meningitis cases

## Results

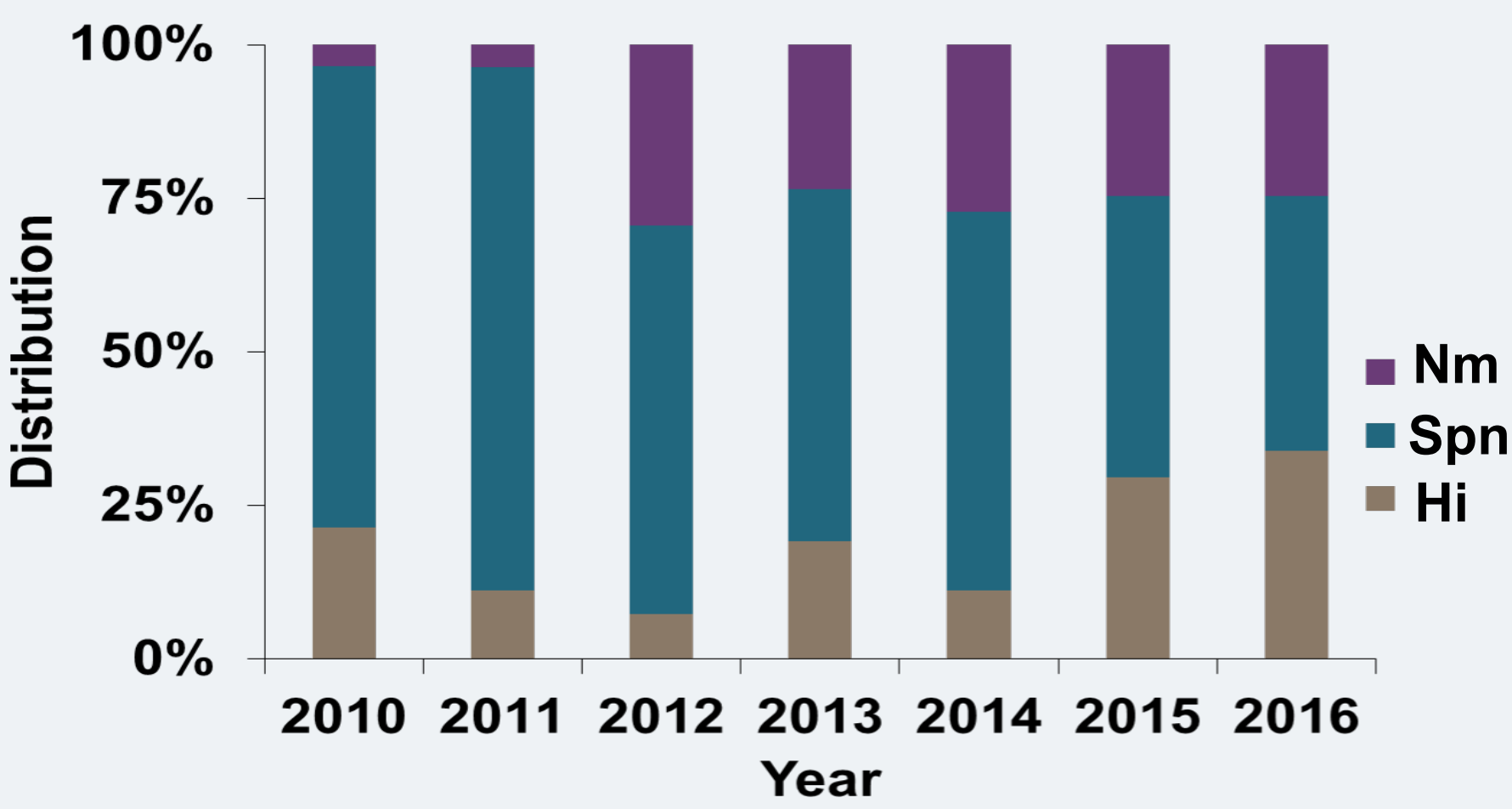


Figure 3: Distribution of the three main pathogens in all sites over time

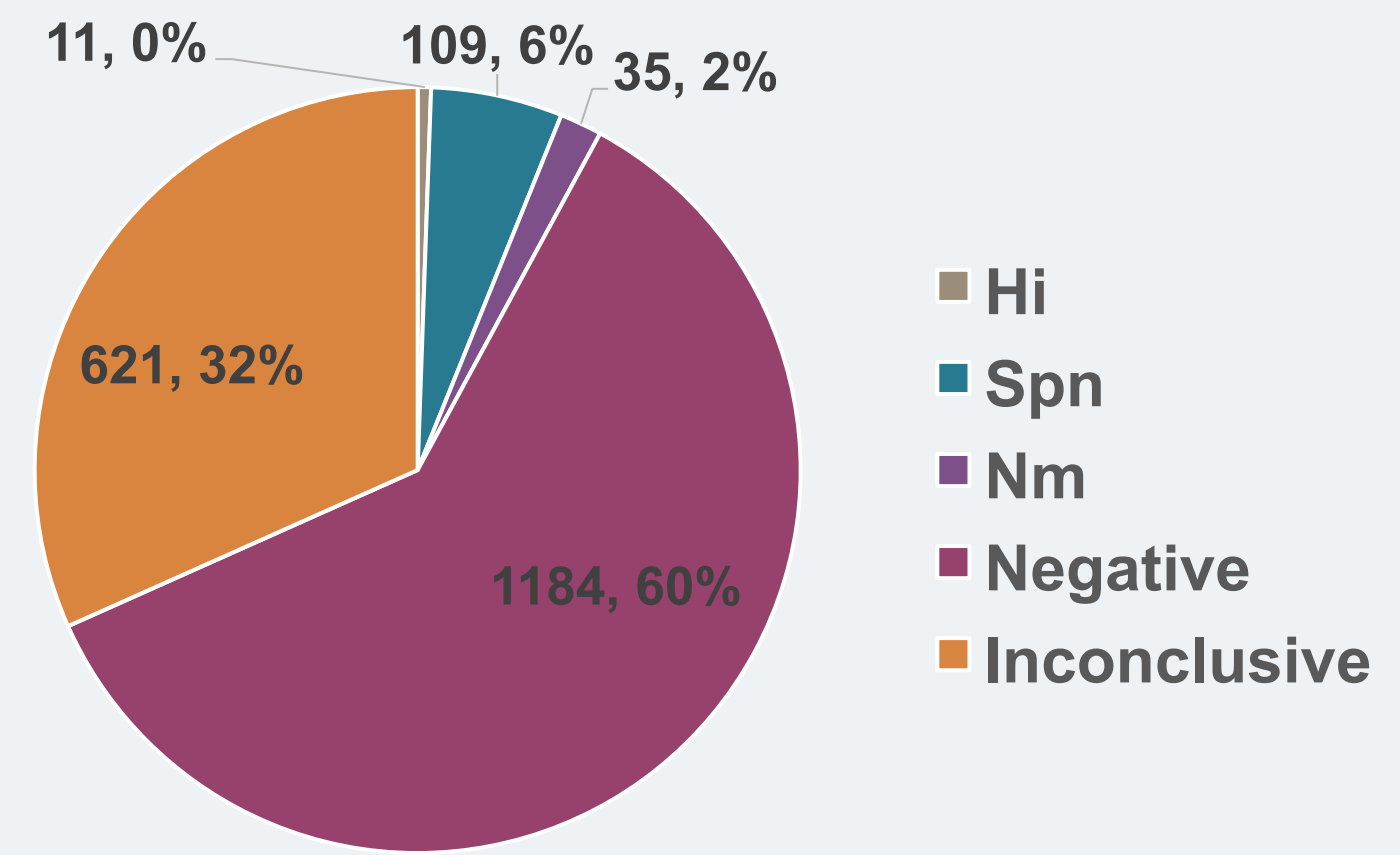


Figure 4: Proportions of pathogens detected among patients who died

- ❖ A total of 36,901 suspected meningitis cases and 1,960 deaths were reported
- ❖ There were 752 confirmed cases
- ❖ 55% males and 50% under 12 months
- ❖ Pneumococcus was the leading pathogen detected and leading cause of death (Figures 3 and 4)
- ❖ Prevalence of PCV13 serotypes declined during the surveillance period (Figure 5)
- ❖ Whole genome sequencing (WGS) showed phylogeographic clustering in core and accessory genome (Figure 6)

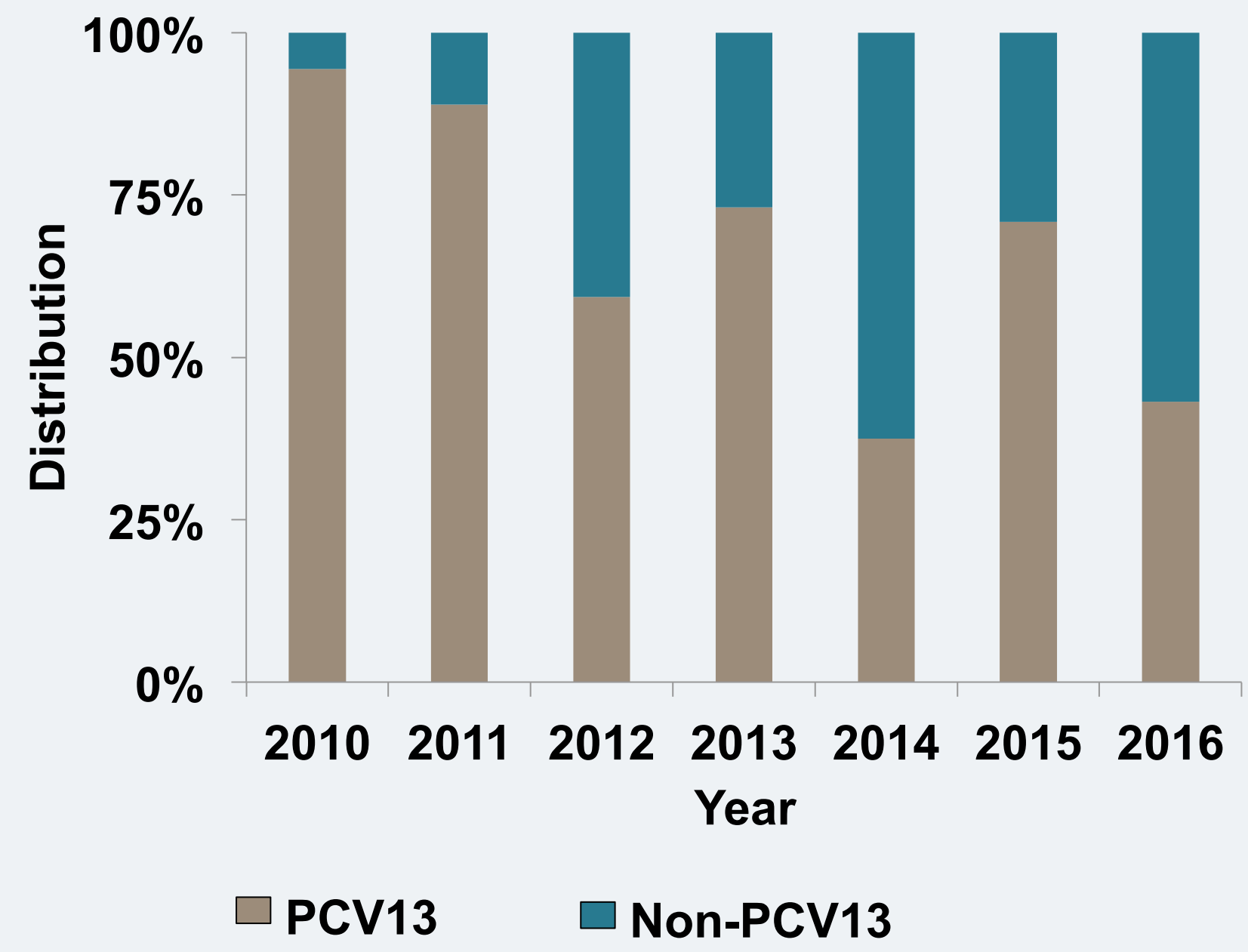


Figure 5: Percentage of PCV and non-PCV serotypes among pneumococci serotyped each year

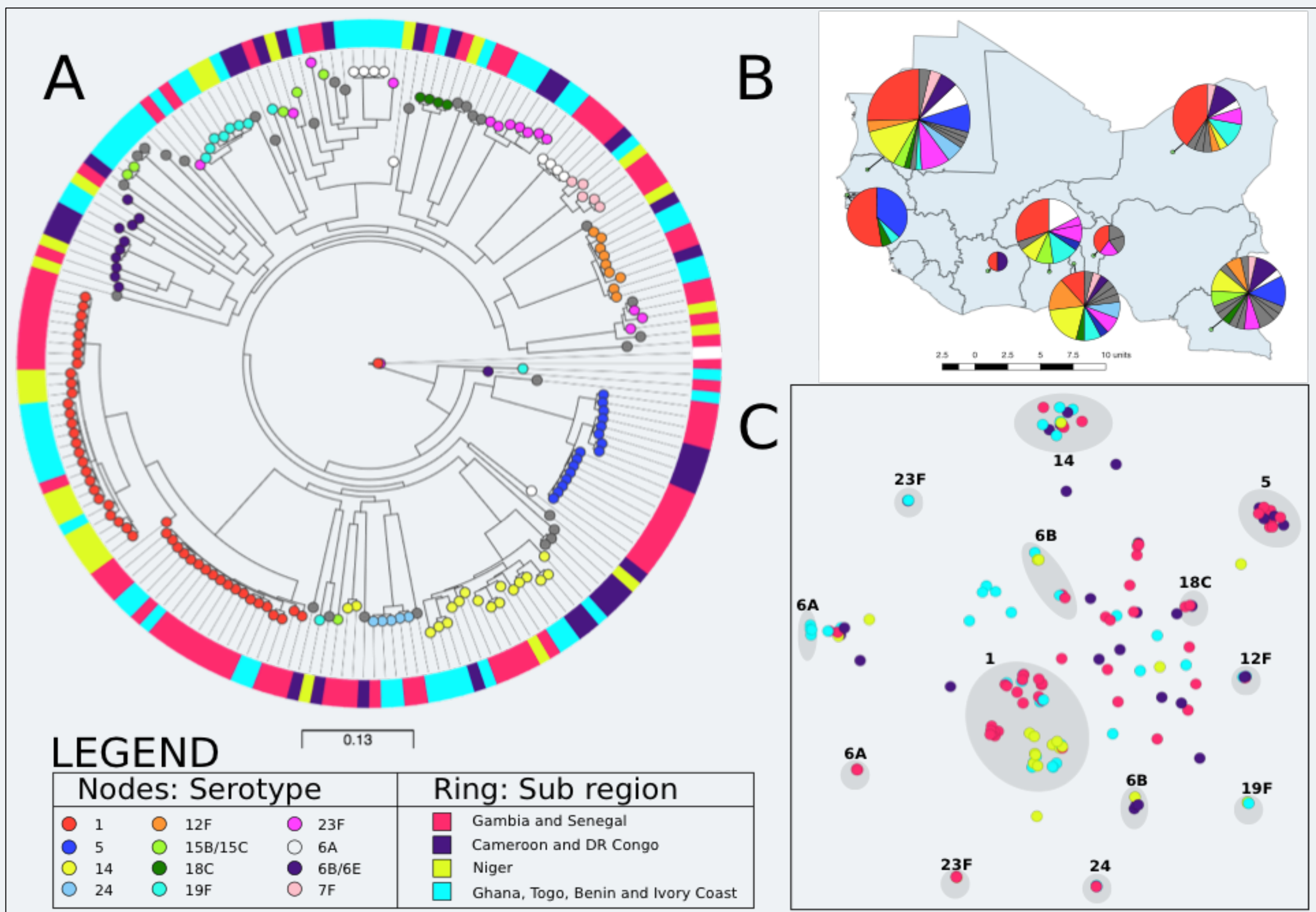


Figure 6: Phylogeny of pneumococcal meningitis in the context of geographic distribution (B) and shared accessory genome content (C).

## Conclusions

- There is a reduction in the number of PCV13 serotypes meningitis cases among children less than 5 years old
- However, disease caused by serotypes covered by PCV13 still persists

## Acknowledgements

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