17-20 March 2024 ISPPD-13 Cape Town South Africa

Santé publique France

CNRP

CENTRE HOSPITALIER INTERCOMMUNAL CRETEIL

ORP Observatoires régionaux du pneumocoque

French epidemiology of pneumococcal meningitis between 2009 and 2022

Céline Plainvert[a], Chrislène Laurens[b], Marie-Cécile Ploy[c,d], Delphine Viriot[e], Emmanuelle Varon[f], Marie Kempf[g,h] on behalf of the French Regional Pneumococcal Observatories (ORP) network

[a]Observatoire Régional du Pneumocoque Île-de-France Ouest, Assistance Publique – Hôpitaux de Paris, Hôpitaux Universitaires Paris Centre, Hôpital Cochin, Service de Bactériologie, Paris, France
[b]Observatoire Régional du Pneumocoque Languedoc-Roussillon, Centre Hospitalier Régional Universitaire de Montpellier, Département de Bactériologie - Virologie, Montpellier, France
[c]Observatoire Régional du Pneumocoque Limousin, Centre Hospitalier Universitaire de Limoges, Centre d'Epidémiologie, de Biostatistique et de Méthodologie de la Recherche, Limoges, France
[d]Observatoire Régional du Pneumocoque Limousin, Centre Hospitalier Universitaire de Limoges, Service de Bactériologie, Limoges, France
[e]Santé Publique France (SPF), Saint-Mandé, France
[f]Centre National de Référence des Pneumocoques (CNRP), Centre Hospitalier Intercommunal de Créteil, Créteil, France
[g]Observatoire Régional du Pneumocoque Pays de la Loire, Centre Hospitalier Universitaire d'Angers, Département de Biologie des Agents Infectieux, Laboratoire de Bactériologie, Angers, France
[h]Nantes Université, Angers Université, INSERM, CNRS, INCIT, UMR 1302/EMR6001, équipe ATOMycA, France

#538

Background

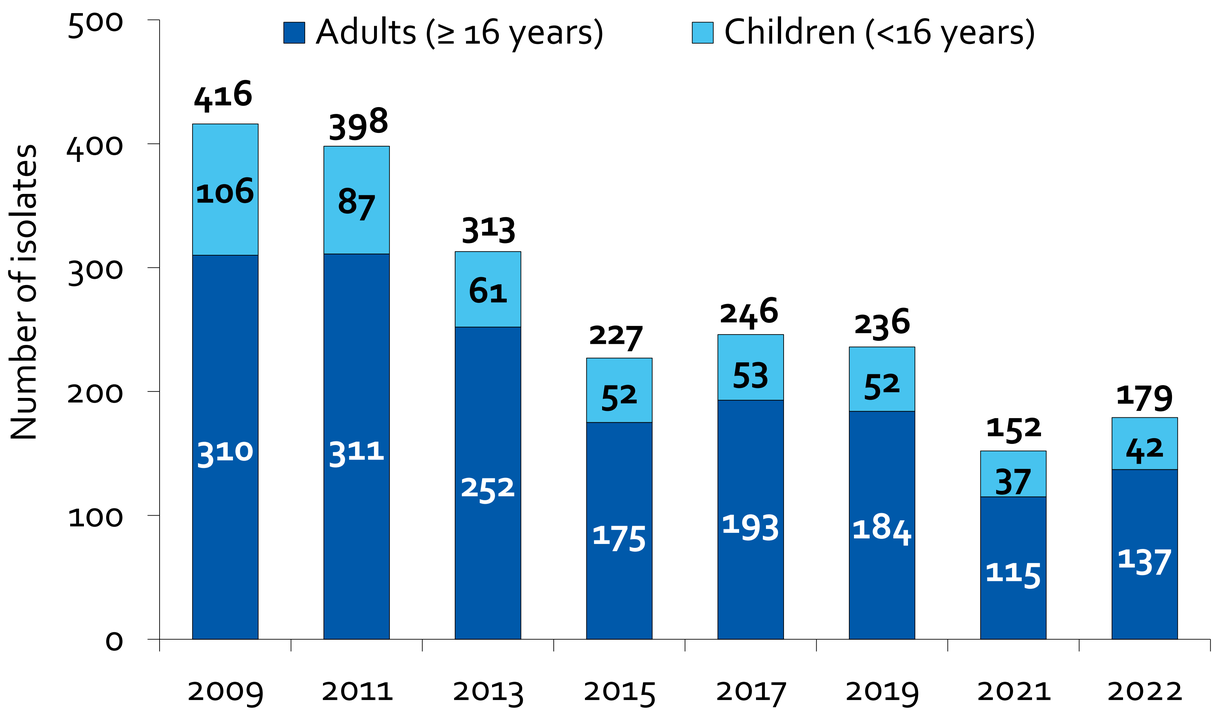
- **WHO ?** The Regional Pneumococcal Observatories (ORP) in collaboration with the National Reference Center for Pneumococci (NRCP).
- **TASK ?** They are responsible for the epidemiological surveillance of invasive pneumococcal infections at national level.
- **WHY ?** To assess the impact of pneumococcal vaccination on the distribution of serotypes and trends in pneumococcal resistance to antibiotics.
- **HOW ?** They are supported by a network of 323 biology laboratories (78% public laboratories and 22% private laboratories) serving 418 health establishments throughout France.

Objectives & Methods

- **GOAL ? To describe the evolution between 2009 (before the introduction of the PCV13 vaccine) and 2022 of beta-lactam resistance and serotype distribution in pneumococcal meningitis**.
- **HOW ?** For each strain isolated from cerebrospinal fluid (CSF)
  - → The resistance to penicillin G (PEN), amoxicillin (AMX) and cefotaxime (CTX) was assess by dilution in agar medium until 2015, and by broth microdilution (Sensititre - Thermo Fisher) thereafter.
  - → Serotypes were carried out at the National Reference Center for Pneumococci (NRCP).

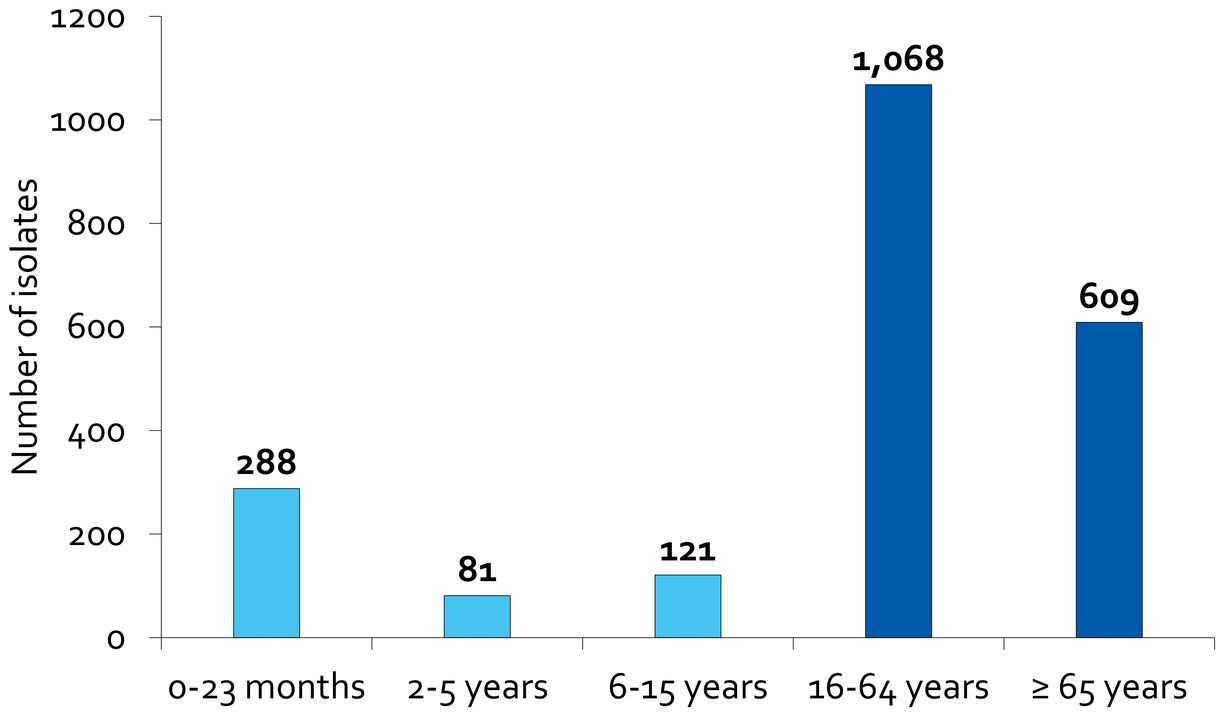
Results

1) Evolution in the number of *S. pneumoniae* strains isolated from CSF in children and adults from 2009 to 2022



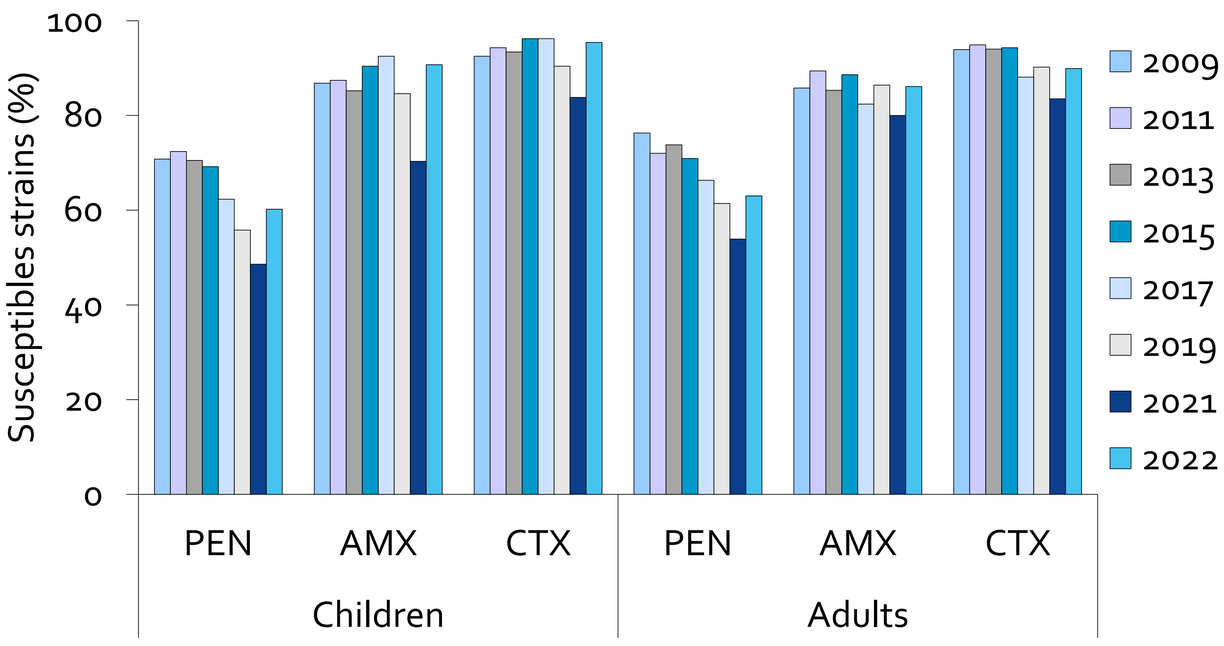
- A total of 2,167 *S. pneumoniae* strains isolated from CSF were collected, including 490 from children (<16 years, 22.6%) and 1,677 from adults (73.4%).
- Between 2009 and 2015, the number of isolates decreased by 45%, followed by a further reduction in 2021 (-36%), then an increase..

2) Age distribution of the 2,167 *S. pneumoniae* strains isolated from CSF



- The age distribution of *S. pneumoniae* strains isolated from CSF was as follows: 0-23 months 13.7%, 2-5 years 3.8%, 6-15 years 6.3%, 16-64 years 48.2% and 65 years and over 28.0%.

3) Changes in the frequency of beta-lactam susceptibility of *S. pneumoniae* strains isolated from CSF (2009-2022)



- According to CA-SFM/EUCAST recommendations, in 2022 the frequency of resistant CSF strains amounted to 38% for PEN (MIC > 0.06mg/L) , 13% for AMX (MIC > 0.5 mg/L) and 9% for CTX (MIC > 0.5 mg/L).
- The proportion of PDSP isolated in CSF increased between 2009 and 2022 both in children (29.2 vs 39.8%) and in adults (23.7 vs 37.0%).

4) Changes in the frequency of *S. pneumoniae* strains isolated from CSF according to vaccine serotypes (2009-2022)

	2009	2011	2013	2015	2017	2019	2021	2022
PCV13	51.3	33.2	26.0	23.4	23.9	16.6	20.5	22.5
PCV15	57.1	39.9	32.4	32.2	29.8	23.8	26.5	28.3
PCV20	68.8	67.3	56.4	57.0	54.6	48.5	54.3	56.9
Other	26.6	28.8	37.5	33.6	37.4	43.8	41.7	43.1

PCV13 (4, 6B, 9V, 14, 18C, 19F et 23F, 1, 3, 5, 6A, 7F , 19A); PCV15 (PCV13 + 22F, 33F); PCV20 (PCV15 + 8, 10A, 11A, 12F, 15B/C)

- PCV13 vaccine serotypes accounted for 51% of meningitis cases in 2009, decreasing to 23% in 2022, compared with 28% and 57% for PCV15 and PCV20 respectively.
- The most frequent non-PCV13 serotypes in meningitis in 2022 were serotypes 8 (12%), 24F and 8 (9% each).
- In 2022, serotypes 11A, 19F, 15B/C and 15A accounted for 86% of CTX-non susceptible strains.

Conclusions

These results underline the importance of ongoing surveillance to detect changes in serotype circulation. as well as to monitor trends in antibiotic resistance. Such monitoring is essential for adapting the composition of future vaccines and therapeutic recommendations.

Sponsors Pfizer, MSD, Sanofi & bioMérieux