Invasive meningococcal disease in France, 2009-2010

I. Parent du Châtelet[1], M.-K. Taha[2]
1/ French Institute for Public Health Surveillance (InVS), Saint-Maurice, France – 2/ National Reference centre for Meningococci (NRCM), Pasteur Institute, Paris, France

Background

For more than 20 years in France, incidence rates of invasive meningococcal disease (IMD) have been varying between 1 and 2 cases per 100,000 inhabitants. We describe the epidemiology of IMD in France in 2009 and 2010.

Methods

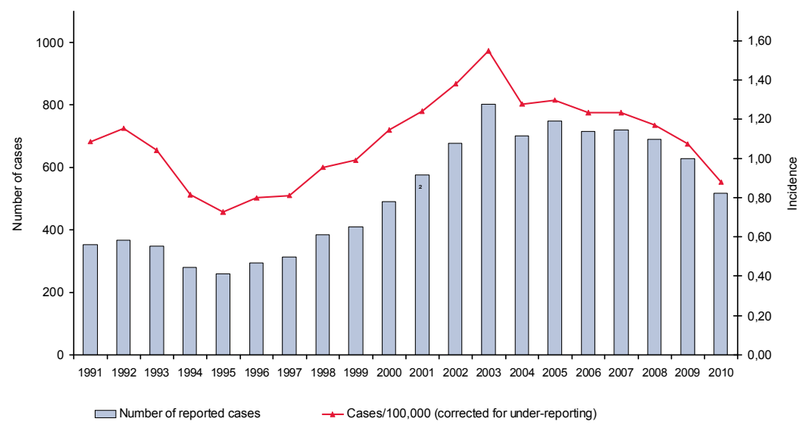
In France, epidemiological follow-up of IMD is based on mandatory notification of cases to the French Institute for Public Health Surveillance and microbiological characterization of invasive strains at the National Reference Centre for Meningococci.

The completeness of mandatory notification system has been regularly assessed with two or three sources capture-recapture analysis. It has been estimated at >90% since 2005.

IMD notification criteria
- *N.meningitidis* isolated or positive PCR from a normally sterile site;
- Detection of Gram-negative stained diplococci in CSF (microscopy);
- Purulent CSF associated to the detection of *N.meningitidis* antigens or presence of cutaneous petechiae;
- *Purpura fulminans* (Waterhouse-Friderichsen syndrome).

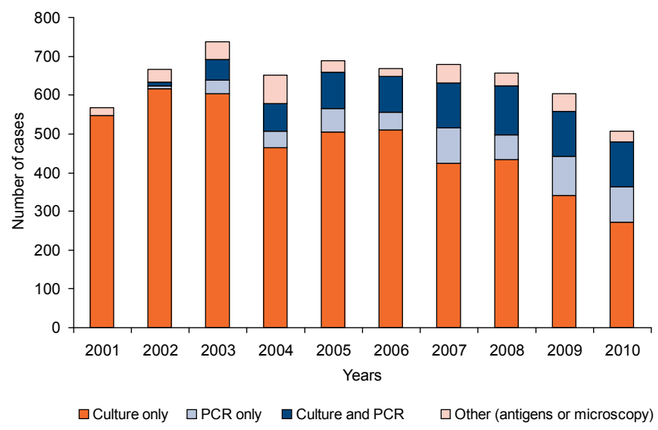
Results

Figure 1 Incidence rate of invasive meningococcal disease (per 100,000), France, 1985-2010



In 2009 and 2010, 628 and 518 IMD cases were notified respectively, corresponding to incidence rates, corrected for under-reporting, equal to 1.1 and 0.9 per 100,000.

Figure 2 Laboratory confirmed cases of invasive meningococcal disease, France, 2001-2010



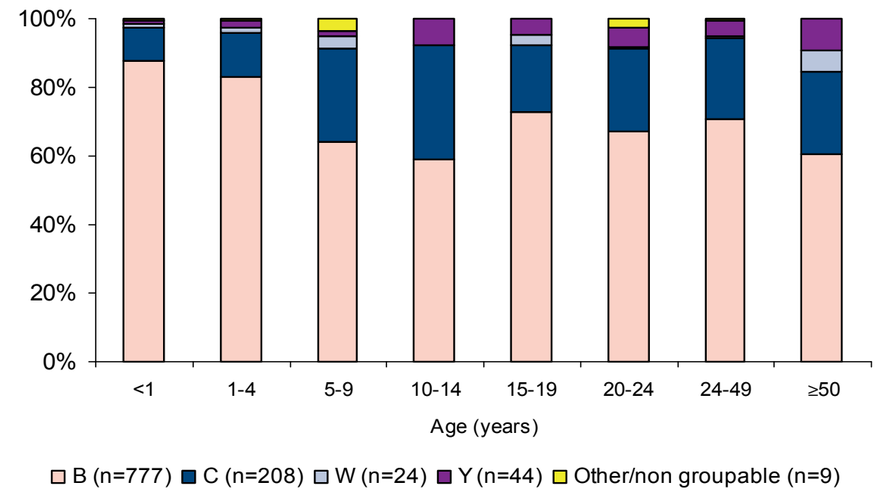
In 2009-2010, 1109 notified cases were lab-confirmed (98%). Among them, 1034 (90%) were reported using PCR and/or culture.

Figure 3 Serogroups B, C, W135 and Y invasive meningococcal disease France, 2001-2010

The distribution of the main B, C, W and Y serogroups has changed between 2009 and 2010 (p=0.05). The serogroup C decreased from 22% to 17% whereas the serogroup Y increased from 3% to 5.5%.

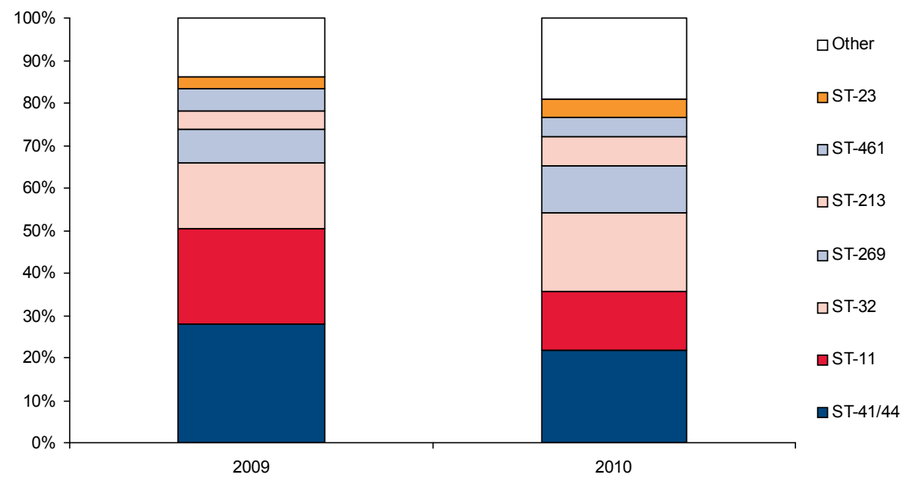
Fatality rates were 10% for serogroup B cases, 9% for C cases, 9% for W135 cases et 18% for Y cases.

Figure 4 Proportion of serogroups for different ages in France in 2009-2010



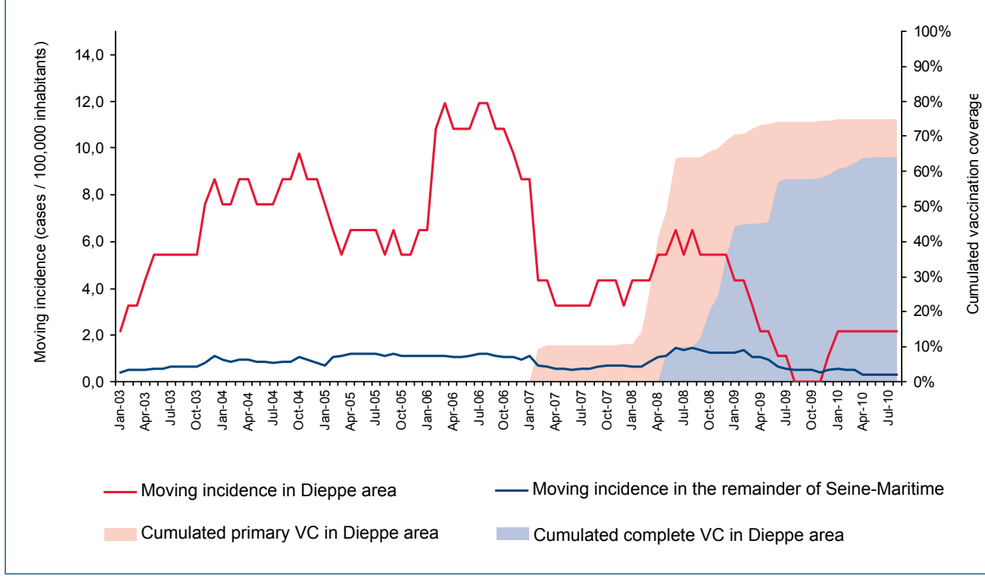
The proportion of serogroup B varies between 88% in children aged <1 year and 61% in adults aged >=50 years. Serogroup C and Y represent 33% and 8% respectively among the 10-14 year olds.

Figure 5 Proportions of MLST clonal complexes of 2009-2010 cases, France



In 2009, the predominant clonal complexes (CC) were ST-41/44 (29%), ST-11 (24%), ST-32 (16%) and ST-269 (8%). In 2010, these percentages were 22%, 15%, 18% and 10% respectively. Other CCs also continued to increase such as ST-213, ST-461 and ST-23 that accounted together 13% and 15% in 2009 and 2010 respectively (<5% for the period 2006-2008).

Figure 6 Moving incidence (past 12 months period) of confirmed B:14:P1.7,16 cases (per 100 000 inhabitants) and cumulated vaccination coverage, Dieppe area versus the remainder of Seine-Maritime



Source: ARS and Cire Haute-Normandie.

The control of the prolonged outbreak in Normandy (Dieppe) continues using MenBvac® with a positive impact of the vaccination on the epidemiological situation.

Conclusions

IMD is predominated by several serogroup B isolates, the incidence has slightly decreased for serogroup C and increased for serogroup Y that were mainly CC ST-23.

The decrease in IMD C incidence has been observed since 2003. With the introduction of the conjugate C in the French immunization schedule in April 2010 (one dose for toddlers between 1 and 2 years old and a 1-dose catch-up for the 2-24 years old), this trend should be confirmed.

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InVS
FRENCH INSTITUTE FOR PUBLIC HEALTH SURVEILLANCE

Contact : Isabelle Parent du Châtelet (i.parent@invs.sante.fr) - Institut de veille sanitaire - 12, rue du Val d'Osne 94415 Saint-Maurice Cedex France - Tél. : +33 (0)1 41 79 68 03 - Fax : +33 (0)1 41 79 68 72

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