

# Invasive meningococcal disease in France, 2007-2008

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## 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 2007 and 2008.

## 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 increased from 50% to about 90% between 1990 and 2005.

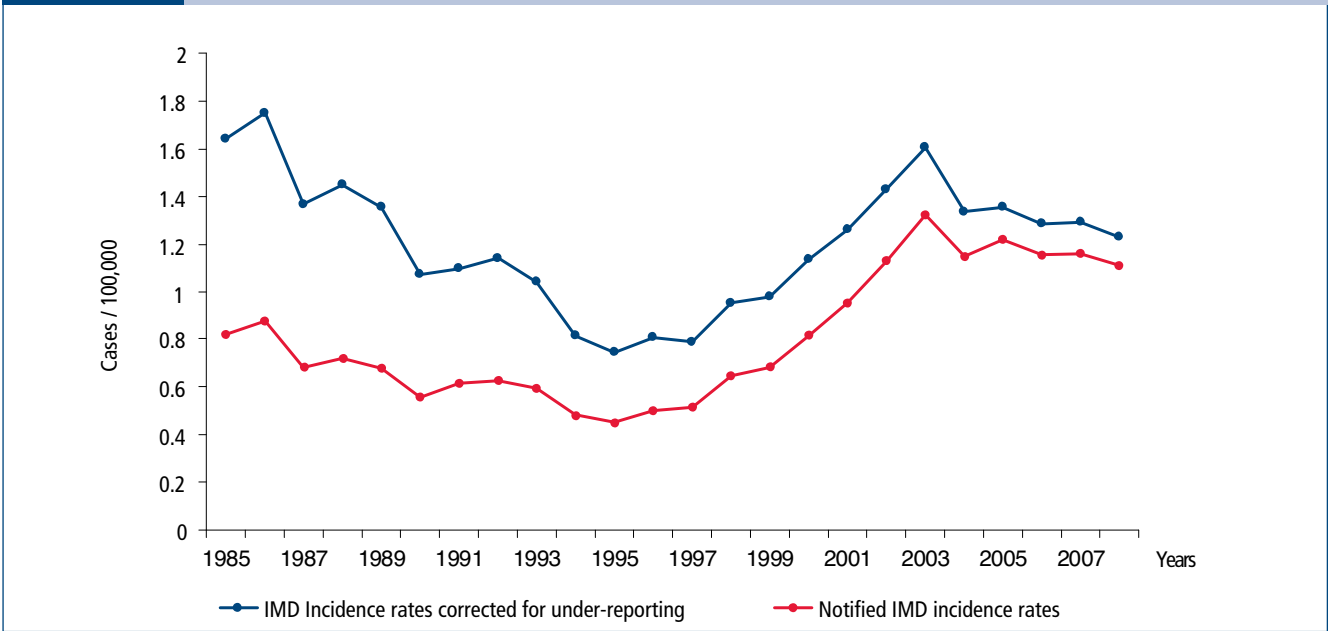
### IMD notification criteria:

- *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

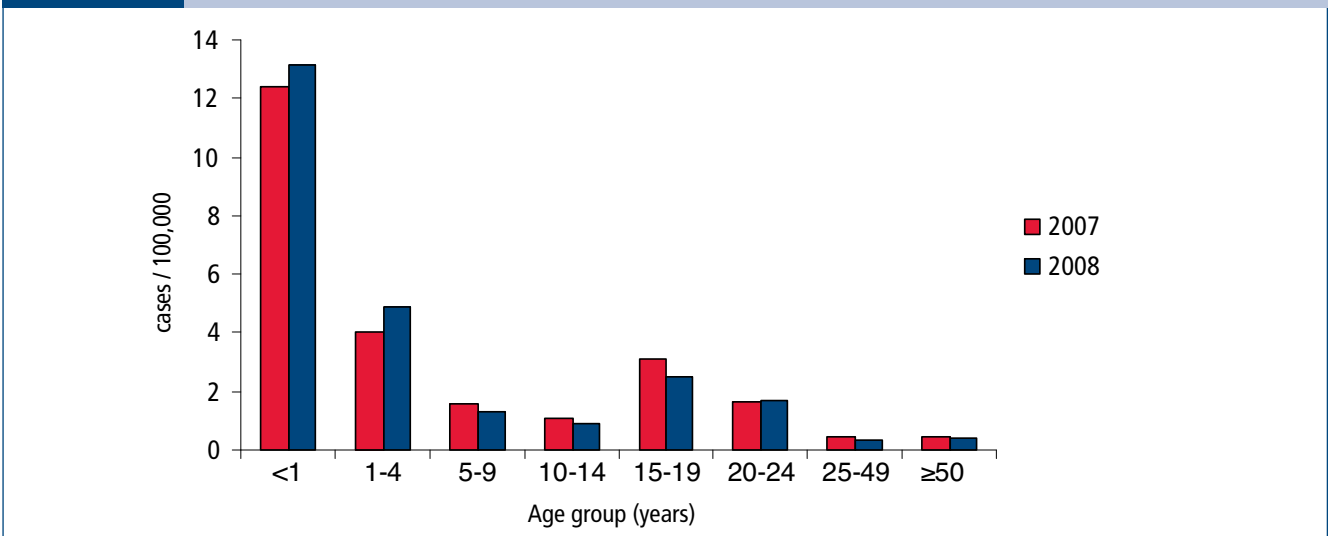
In 2007 and 2008, 721 and 688 IMD cases were notified respectively, corresponding to incidence rates, corrected for under-reporting, equal to 1.3 and 1.2 per 100,000.

FIGURE 1 INCIDENCE RATE OF INVASIVE MENINGOCOCCAL DISEASE (PER 100,000), FRANCE, 1985-2008



Compiled 2007-2008 analysis shows that 65% of the cases were aged 20 years or less. The highest mean incidence rates (per 100,000) were observed in the <1 year old (13.1), the 1-4 years old (4.9) and in the 14-19 years old (2.5).

FIGURE 2 AGE SPECIFIC INVASIVE MENINGOCOCCAL DISEASE INCIDENCE RATES, FRANCE, 2007-2008



Amongst the 1,252 IMD cases with known serogroup, 68% belonged to B, 24% to C, 3% to W135 and 4% to Y.

Case fatality ratio was 12% (10% for serogroup B and 18% for serogroup C).

FIGURE 3 EVOLUTION OF SEROGROUPS B, C, W135 AND Y INVASIVE MENINGOCOCCAL DISEASE INCIDENCE (PER 100,000) CORRECTED FOR UNDER-REPORTING, FRANCE, 1985-2006

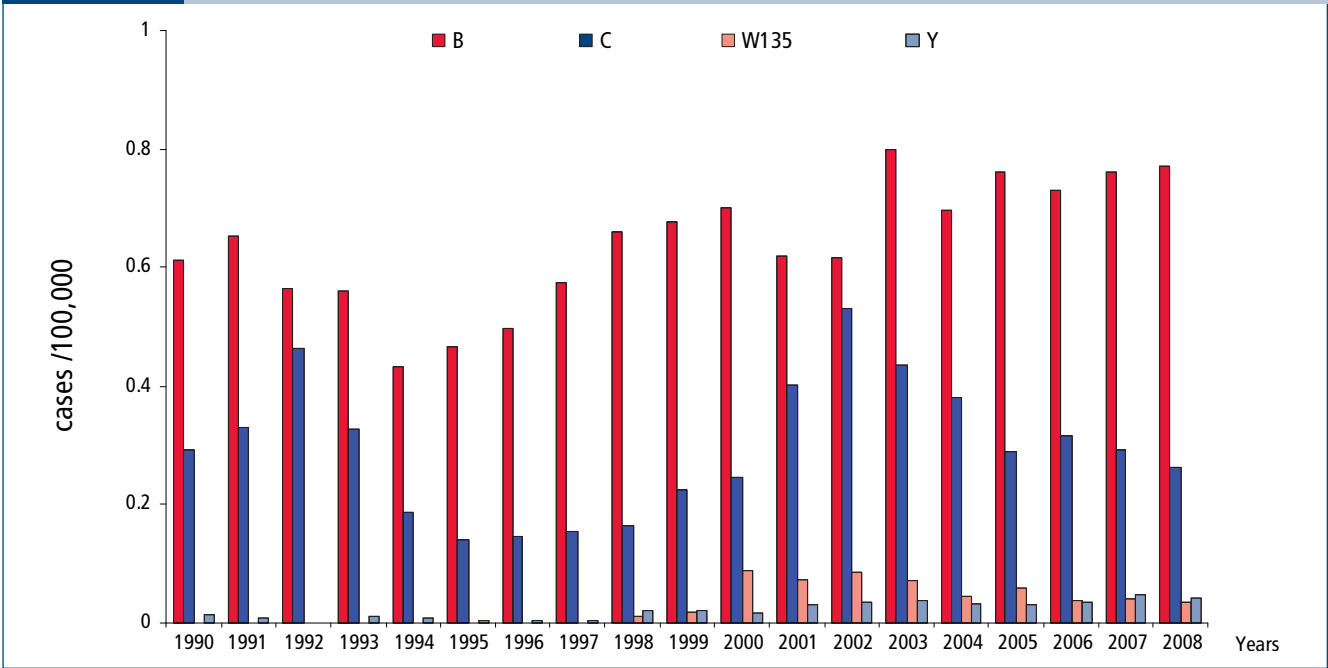
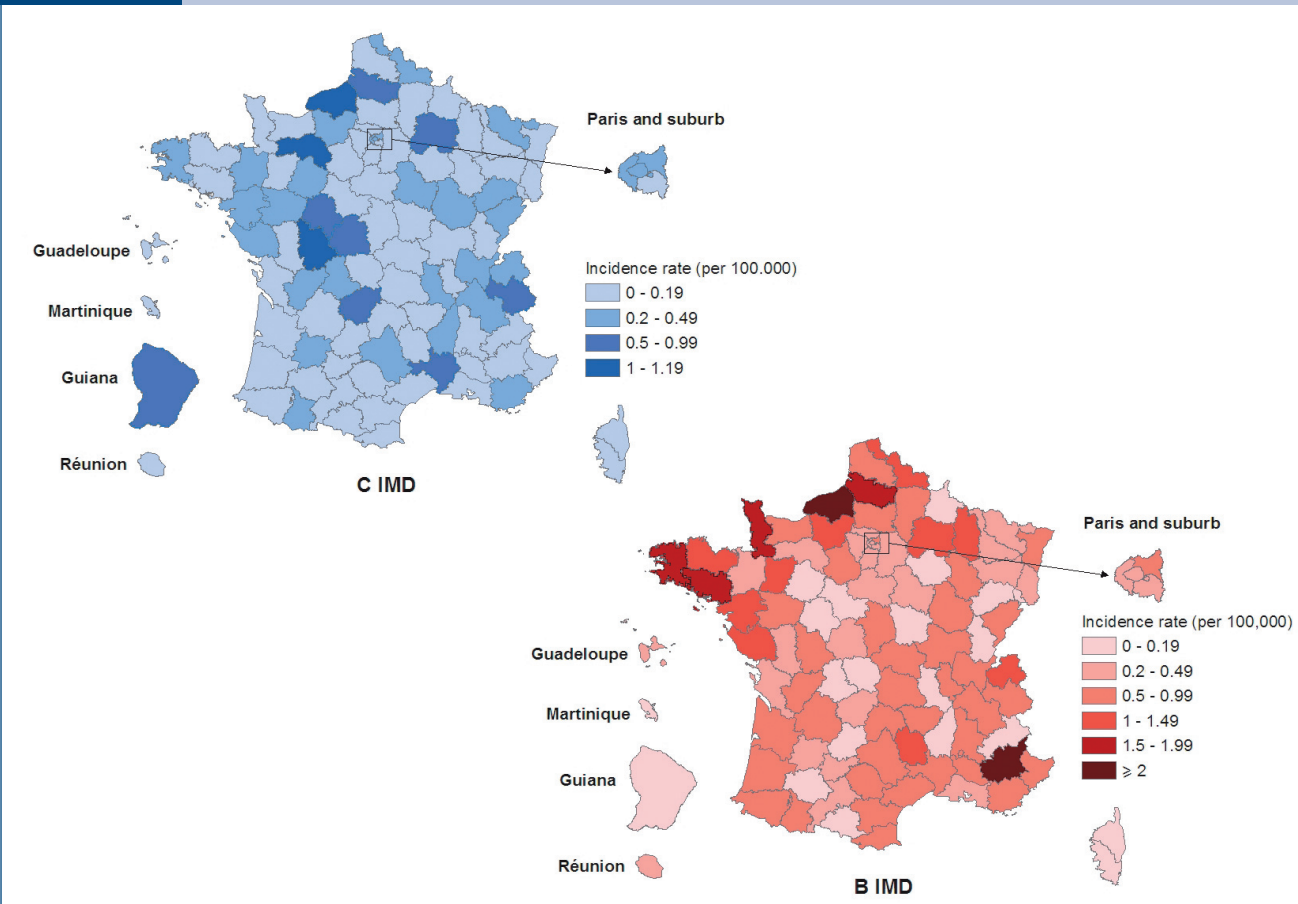


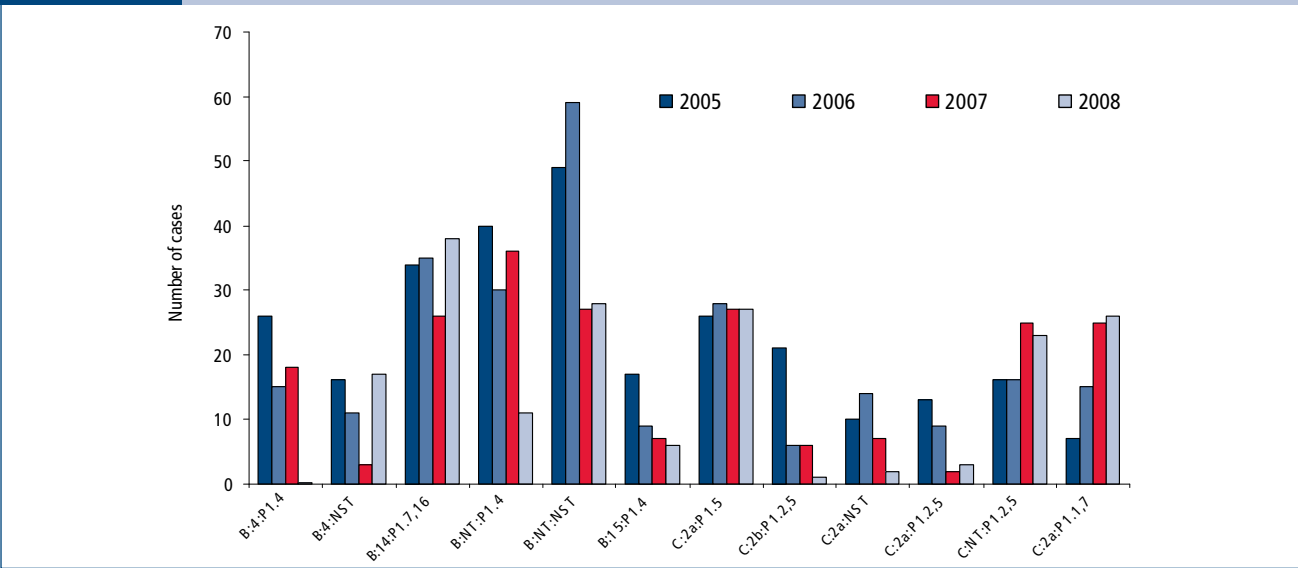
FIGURE 4 INCIDENCE RATES (PER 100,000) OF SEROGROUPS B AND C INVASIVE MENINGOCOCCAL DISEASE BY DISTRICT, FRANCE, 2008



The serogroup B phenotypes varied over the years. In 2007 and 2008, the most common strains were B:NT:NT. For serogroup C, the most common phenotype was C:2a:P1.5 and C:2a:P1.7,1.

The major invasive clonal complexes (ST-8, ST-11, ST-32, ST-41/44 and ST-269) represented 2%, 22%, 25%, 24% and 4% in 2007 respectively. These percentages were respectively 1%, 23%, 19%, 27% and 8% in 2008.

FIGURE 5 MAIN PHENOTYPES OF SEROGROUP B AND C STRAINS ISOLATED FROM 2005 TO 2008, FRANCE

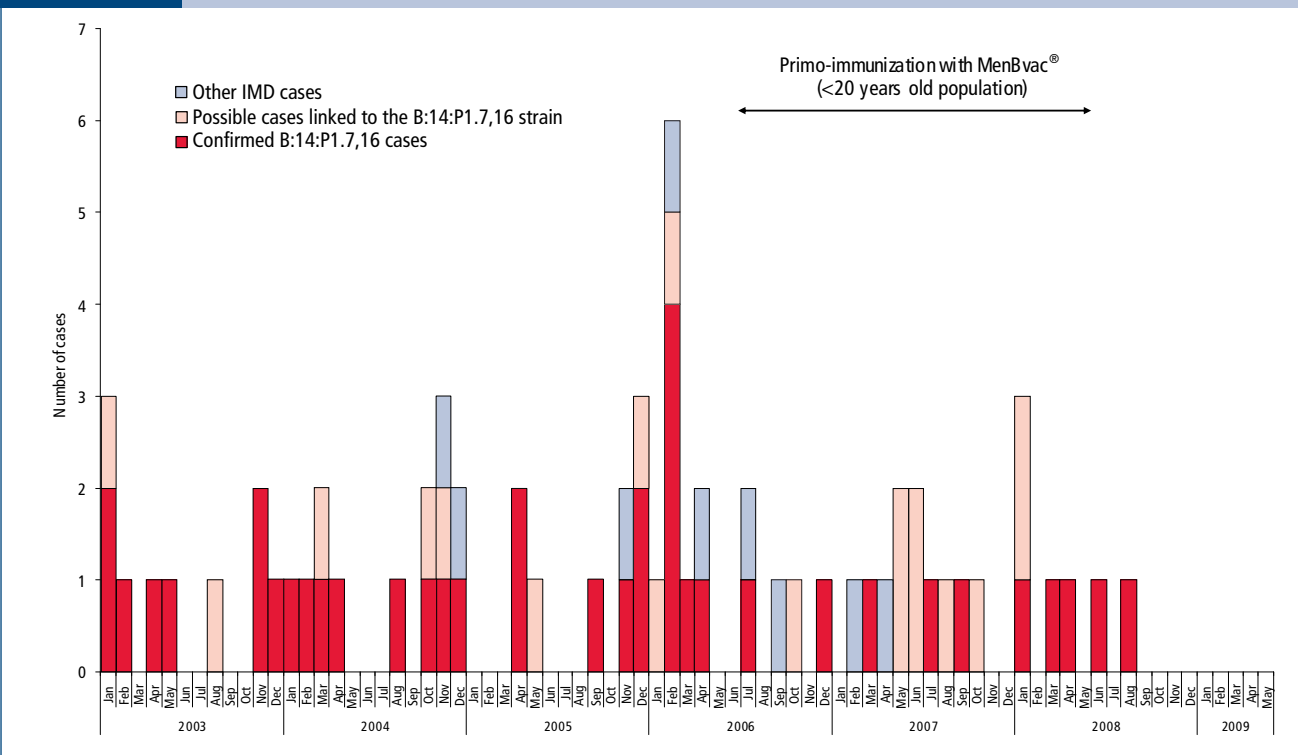


In 2007, incidence of C IMD increased in two districts ( $\geq 2/100,000$ ) leading to vaccination campaigns with a Men C conjugate vaccine.

A new clone C:2a:P1.7,1, ST-11 clonal complex, emerging since 2005, was involved in 1 community and 3 school setting clusters in 2007 and 2008.

To control a prolonged outbreak in the town of Dieppe and its surroundings (92,000 inhabitants, Normandy region, north-western part of France), due to the B:14:P1.7,16 strain, ST-32 clonal complex, a vaccination campaign with MenBvac<sup>®</sup>, an OMV vaccine produced by the Norwegian Institute of Public Health, started in June 2006. To date, more than 23,000 children aged between 2 months and 19 years have been targeted by the campaign (3 or 4 doses schedule according to age). Vaccination coverage is estimated at 80% for the 1<sup>st</sup> dose and 79% for the 2<sup>nd</sup> dose (provisional data).

FIGURE 6 EPIDEMIC CURVE OF INVASIVE MENINGOCOCCAL DISEASE IN DIEPPE, NORMANDY REGION, FRANCE



Source: Ddass 76, Cire Haute-Normandie.

## Conclusions

In France, IMD incidence is stable with a predominance of serogroup B disease.

The C IMD outbreaks/clusters observed in the past few years led the Health authorities to re-assess the relevance of Men-C routine vaccination. A cost-effectiveness analysis is currently being performed.