

Scientific Workshop

Prevention and control of meningococcal disease: public health challenges

Prevenció i control de la enfermedad meningocócica: retos de salud pública

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Main Conclusions

Epidemiology of meningococcal disease in Catalonia, 2005-2016

Ana Martinez

- **Meningococcal disease (MD) is an important public health problem with great social and health impact**
- **Significant decrease in the global incidence rate**
- **Decrease to 0 serogroup C cases in vaccinated age groups**
- **Simultaneous decrease serogroup B cases in all age groups**
- **The improvement in laboratory tests allow to increase confirmation cases**
- **Predominance of cases in winter and spring**
- **Lower frequency of associated cases in recent years**
- **First description in Spain of two cases of MD produced by the hypervirulent clone of serogroup C detected in MSM in other areas of Europe**
- **Relevance of genotyping *N. meningitidis* strains**

Meningococcal Disease outbreaks in Barcelona (1999 to 2017), *Sandra Manzanares*

- **No MD outbreaks have taken place in the school setting in the city of Barcelona since 2003**
- **Clusters in occupational centers for intellectually disabled people have taken place → higher risk?**
- **Two apparently unrelated fatal cases of MD disease in MSM who were HIV+, with the same hypervirulent strain of serogroup C. USA, Europe → new prevention strategies could be explored in this group**

- **Rare type of outbreak nowadays**
- **Still cause of great alarm for their social environment and great pain for the affected patients and their families**
- **Whenever possible, vaccination should be encouraged and facilitated in higher risk groups**

Evolution and characteristics of outbreaks from the territorial perspective in Catalonia, *Nuria Follia*

- **Control of outbreaks of IMD is a challenge for epidemiologists**
- **Even though there are agreed protocols of action against IMD it is sometimes difficult to detect contacts at risk**
- **When contacts at risk are detected but new cases appear the introduction of new drugs for CP may be an efficacious strategy**
- **The future control of outbreaks of IMD lies in the introduction of efficacious vaccines**

Sensitivity analysis of two surveillance systems about meningococcal disease in Catalonia, *Pilar Ciruela*

- Estimated real incidence of meningococcal disease was 0.83/100,000 h-year
- Sensitivity of enhanced surveillance with two sources: Statutory reporting (EDO) and Microbiological reporting (SNMC) was 88.5%, greater than individual sensitivity: 67.9% and 64.7%
- Sensitivity of EDO was higher than SNMC, mainly in period 2014-15 (80.6% vs 73.4%)
- The greater difference between sensitivity of both systems was for serogroup C (76.7% vs 62.0%)
- The sensitivity for meningitis was higher for SNMC than for EDO (72.5% vs 64.2%)
- In multinomial model, period of reporting (2014-15) and private centers showed statistically significant differences in the sensitivity (higher for EDO)
- Estimated number of cases using Chapman's formula was similar to adjusted calculation (313; 295-330 vs 379; 135-623), indicating robustness of results
- With the same probability of reporting in the two sources (excluding private centers) SNMC showed higher sensitivity than EDO (74% vs 68%)
- MDO and SNMC are basic systems of epidemiological surveillance, which are complementary and constitute the basic sources of information necessary to launch actions of public health against meningococcal disease

Neisseria meningitidis: the role of microbiological surveillance, Julio Vázquez

- **Some specific characteristics of meningococcal disease, such as the potential to produce outbreaks, the unpredictable epidemiology and the form of transmission, mean that the characterization of isolates has been complex and highly specialized**
- **Thanks to the application of increasingly-sophisticated microbiological markers, we now have deeper knowledge of the composition of clones of the meningococcal population and their epidemic potential**
- **The information provided by microbiological markers has been fundamental in the development of vaccines and in the analysis of the evolution after interventions with vaccine preparations.**
- **The introduction of vaccines with increasingly-complex formulations means it is necessary to include a large number of genes/proteins in the routine analysis of isolates.**
- **The evolution of microbiological markers has affected all levels, from the phenotype to the analysis of the complete genome, which is currently recommended by the European Centre for Disease Control (ECDC)**
- **Microbiological information plays a fundamental, irreplaceable role in the epidemiology, control and prevention of meningococcal disease**

The UK meningococcal immunization program. Invasive Meningococcal Disease - prevention through vaccination, *Shamez Ladhani (I)*

- **The UK introduced 4CMenB for infants (2, 4, 12 months) in Sept 2015**
- **MenB cases declined from 349 in 2015/16 to 277 in 2016/17**
- **After 10 months, MenB cases declined by 50% in vaccine-eligible infants, irrespective of**
 - **Vaccine coverage in the population**
 - **Number of vaccines doses received by the infants**
 - **MATS coverage of the men B strains causing IMD cases**
 - **Vaccine effectiveness against invasive MenB disease**
- **VE for 2-dose infant priming Schedule was 83%**
- **In 2016/17, significant reductions were also seen in 1 year-olds who were eligible for the 12-month booster**
- **Surveillance on-going....3 million doses...No safety concerns so far....**

The UK meningococcal immunization program. Invasive Meningococcal Disease - prevention through vaccination, *Shamez Ladhani (II)*

- **The UK has been experiencing a national MenW outbreak since 2009**
- **Cases increases initially in older adults all age groups, including teenagers, toddlers and infant**
- **MenACWY vaccine programme started August 2015: plan to vaccinate all 13-18 year-olds over 24 months + university entrants**
- **Impact in school leavers (17-18 year-olds) seen within 12 months, despite 36% vaccine coverage**
- **Herd protection likely to take several years – 4 x faster because of catch-up programme for 13-18 year-olds**

The Meningococcal Serogroup C (MCC) Vaccination Program in Catalonia, *Luis Urbiztondo*

- **2000: MCC at 2, 4 and 6 months**
- **2000-2002: Catch up in persons aged <20 years**
- **2007: MCC at 2, 6 and 15 months**
- **Vaccination of persons aged <20 years not vaccinated after 12 months of age**
- **2014: MCC at 2, 6, 15 months and 11/12 years**
- **2016: MCC at 4 and 12 months and 11/12 years**

Effectiveness and impact of serogroup C meningococcal disease vaccination programme in Catalonia, *Eva Borràs*

- The incidence of MCD has declined more than 93% in Catalonia 14 years after the introduction of universal MCC
- Vaccine has been well accepted, by the population. The proportion of individuals protected by the vaccination programme was higher: 85-99%
- The VE in targeted population was 95.6%
- Cases among vaccinated were due probably to waning immunity over time, being higher for those older than 1 year (45% of vaccine failures present in children below 3 years of age).
- Further studies are needed to attain knowledge on how immunization schedule changes impact on adolescents and how long term protection evolves, especially in children and adolescents that are systematically vaccinated

Post-exposure prophylaxis for the prevention of cases and outbreaks of meningococcal disease, *Irene Barrabeig*

- **MCC vaccine for contacts of a confirmed case of MD by serogroup C:**
 - Close contacts of any age previously unimmunized
 - Close contacts partially immunized with MCC should complete MCC vaccination
 - Close contacts vaccinated more than 1 year previously with MCC
- **Quadrivalent conjugate vaccine (A, C, W, Y):**
 - Close immunized contacts of MD caused by A, W or Y serogroup
- **Men B vaccine:**
 - Sporadic case: close contact with risk factors
 - Clusters/outbreaks: same people receiving antibiotic prophylaxis