# Consideration du vaccin antiméningococcique chez l'enfant : l'exemple de la Belgique

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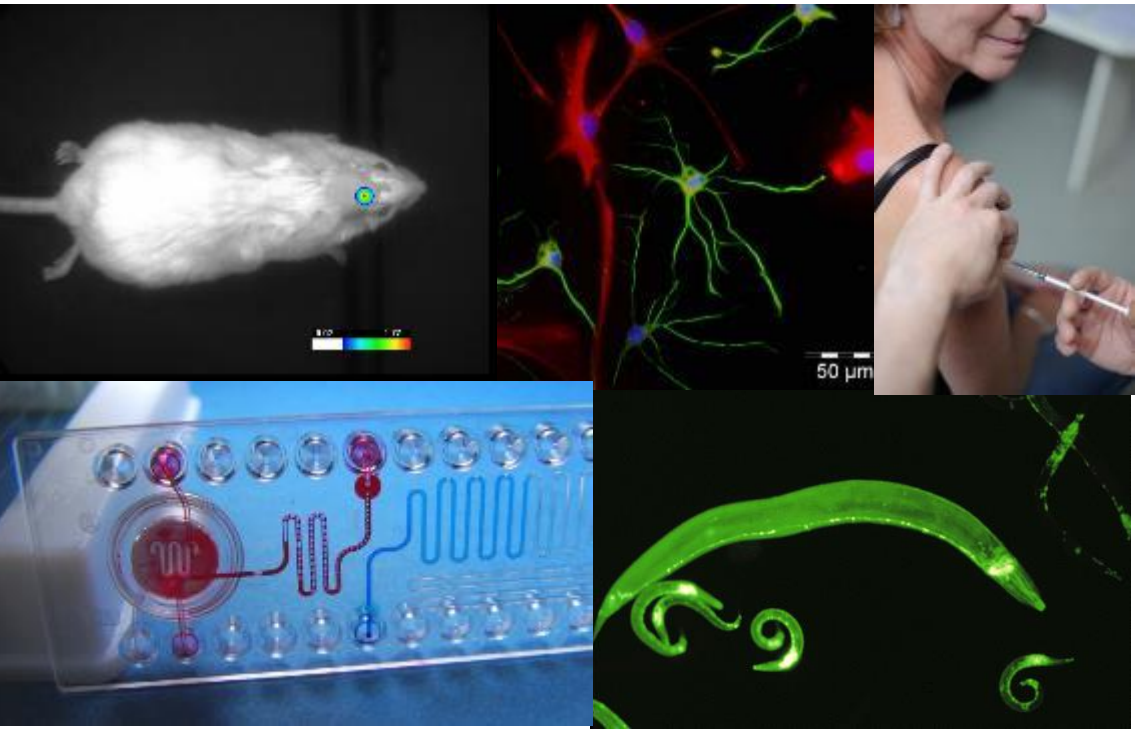
*Journée du Groupe Vaccination-Prévention de la SPILF*
*22 mai 2019*

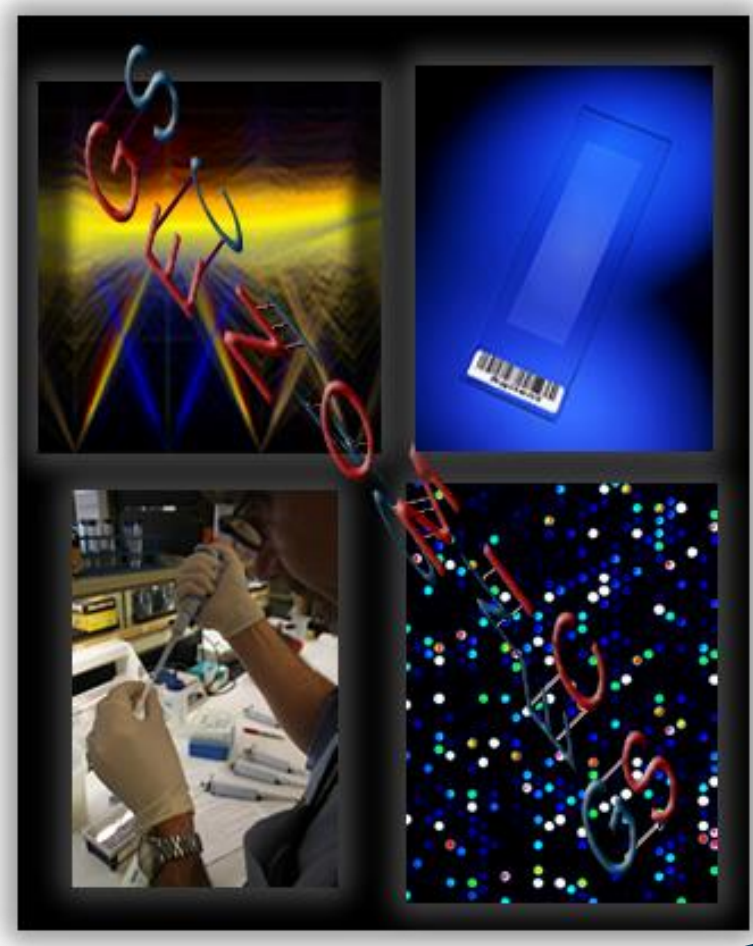


University of Antwerp

# Vaccine & Infectious Disease Institute

## VAXINFECTIO



Faculty of Medicine and Health Sciences

# Consortium

VAXINFECTIO

**Laboratory Medical Microbiology (LMM)**

**Laboratory Experimental Hematology (LEH)**

**Center for Evaluation of Vaccination (CEV)**
**Centre for Health Economics Research and Modelling Infectious Diseases (CHERMID)**

1. **LMM** – head
   *Prof Dr Herman Goossens*

2. **LEH** – head
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3. **CEV** – head
   *Prof Dr Pierre Van Damme*

# Faculty Disclosure

| | |
|---|---|
| | No, nothing to disclose |
| x | Yes, please specify: |

| *Company Name* | *Honoraria/ Expenses* | *Consulting/ Advisory Board* | *Funded Research* | *Royalties/ Patent* | *Stock Options* | *Ownership/ Equity Position* | *Employee* | *Other (please specify)* |
|---|---|---|---|---|---|---|---|---|
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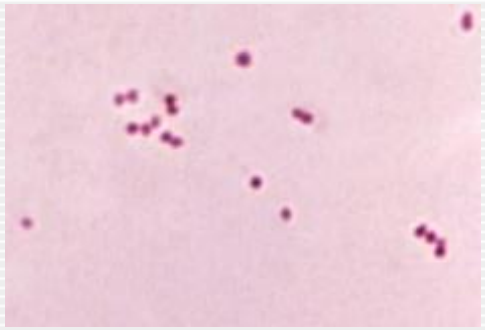
| MSD/AP | | x | | | | | | |
| GSK | | x | | | | | | |
| Flemish Ministry of Health | | | x | | | | | |
| National Health Counsil | | x | | | | | | |

# Questions actuelles en Belgique

1. Vaccination contre le méningocoque B
2. Booster contre le méningocoque C
3. Vaccin quadrivalent conjugué ACWY

# Le contexte

HUMAIN OBLIGATOIRE



Facteurs liés à hôte, au pathogène,
à l'environnement

**COLONISATION**
**Naso Pharynx**

10-40%
<5%nourrissons
30% ado

**Infection invasive**

**Anticorps spécifiques**

Un taux **d'anticorps fonctionnel** (SBA) ≥1/4 est considéré protecteur

- Epidémiologie: -dynamique
  -changement incidence des sérogroupes
  -émergences nouvelles souches
- Prévention: -vaccination : différents vaccins, différentes stratégies qui varient selon l'épidémiologie locale
  -importance de vacciner les groupes où le portage est élevé (si vaccin effet sur portage)
- Europe: -incidence basse
  -nouvelles stratégies (ACWY, B)

# Vaccins contre le méningocoque

- "1ère génération vaccin-1980":

  **Polysaccharide**

  -Men A,C,W,Y

- "2 ème génération vaccin-1990-2000" :

  **Vaccin conjugué (PS + protéine porteuse)**

  -Men C: 15 m (Neis Vac ® ONE-K&G)
  -Men A,C,W,Y: Nimenrix®, Menveo®

- "3 ème génération vaccin-2013": Men B

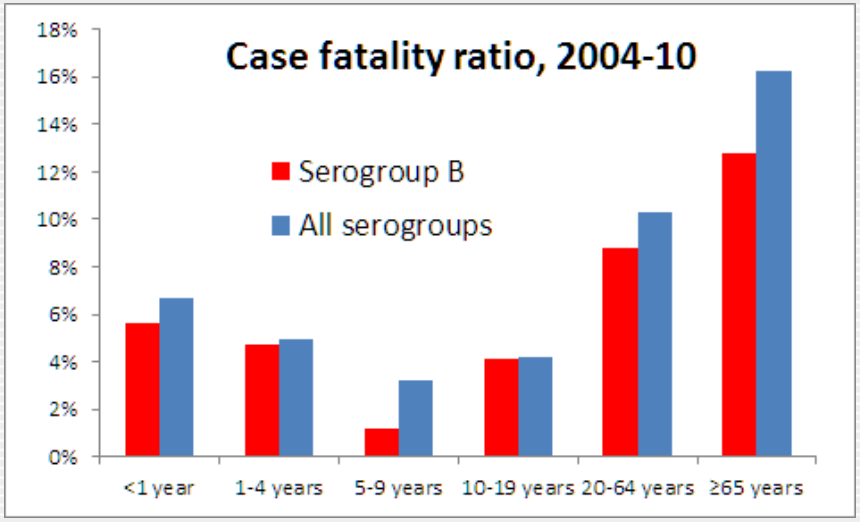
  **Reverse vaccinology-Antigène protéique**

  -Bexsero® EMA 2013

  -Trumenba® EMA 05 2017

# Belgique: mortalité-morbidité

•Mortalité globale=: 10-15%
•Varie selon sérogroupes, âge, facteurs de risques, prise en charge
•Men B: 3-10% (2004-10)

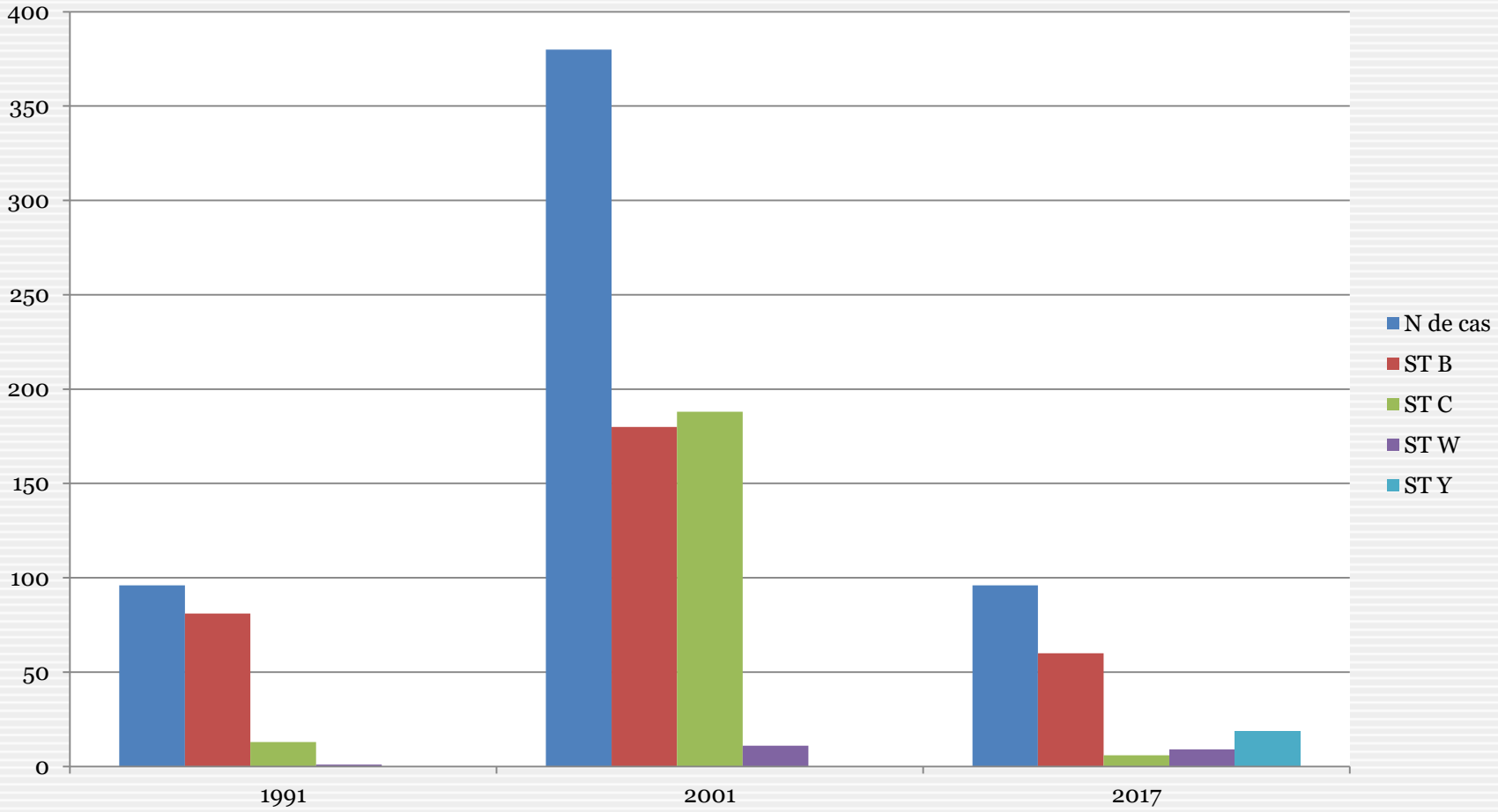



•Séquelles=10-20%: surdité, trouble développement neurologique, amputation…

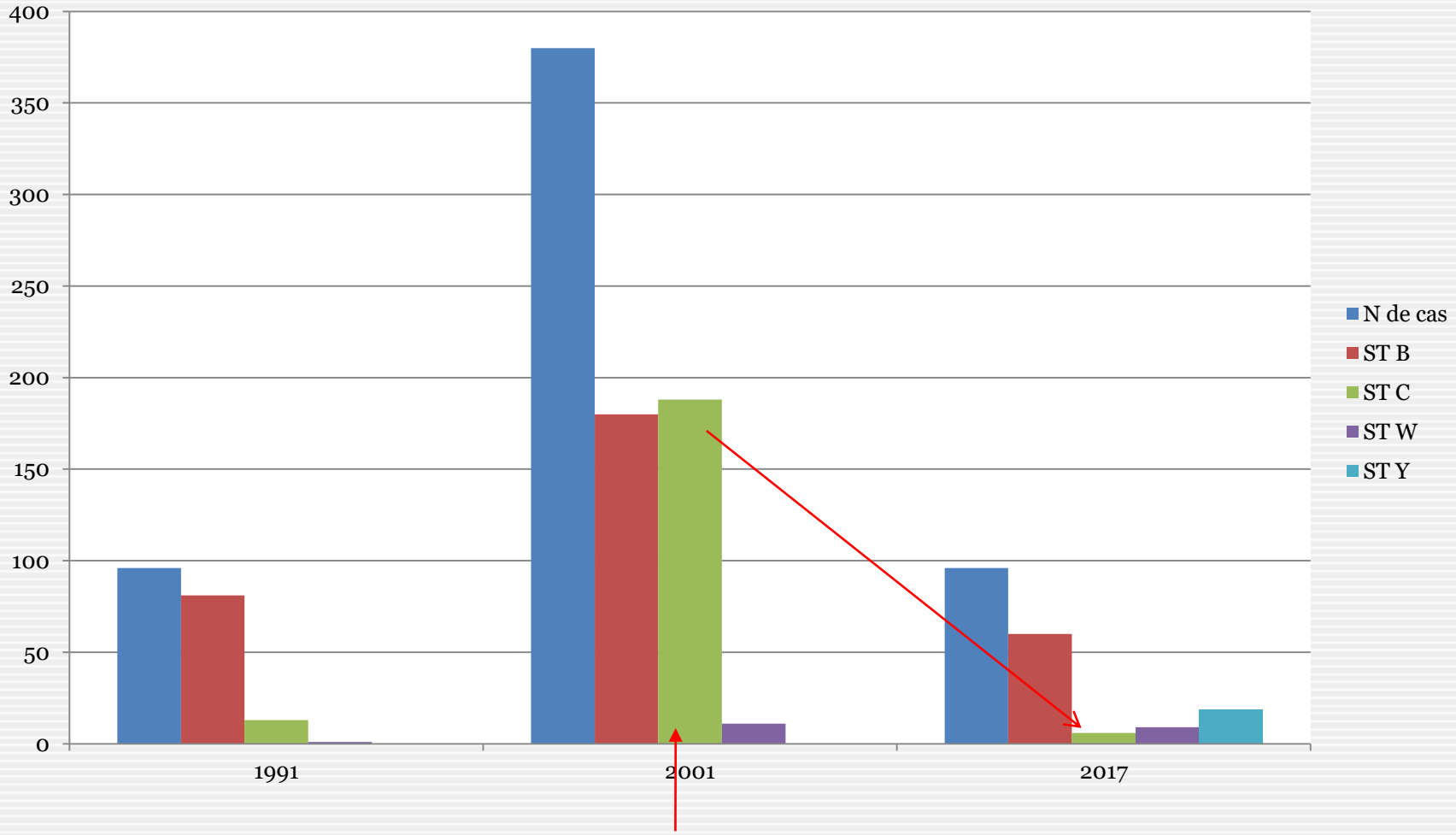
# Principales raisons de proposer un vaccin contre le méningocoque

1. **Sévérité de la maladie**
2. **Sensibilisation du public**
3. Epidémiologie
4. Coût-efficacité

# Belgique: donnée ISP-Sciensano NRC



# Belgique: donnée ISP-Sciensano NRC




W et Y= 1,1% Vaccin Men C W et Y = 29,6%

# Vaccination anti-méningocoque B

- Recommandation individuelle?
- Introduction dans le programme?

- Groupes à risque?

# AVIS DU CONSEIL SUPERIEUR DE LA SANTE N° 9125

## Vaccination de l'enfant, de l'adolescent et des personnes à risque contre le méningocoque du groupe B

04 2017 -4CMen B

*1/Le Conseil considère qu'il n'y a pas suffisamment d'arguments tant épidémiologiques qu' en terme d'impact du vaccin que pour recommander le vaccin en routine chez le nourrisson.*

- Néanmoins, vu les données encourageantes en terme d'efficacité obtenues au Royaume Uni avec le schéma 2+1 et vu les changements épidémiologiques imprévisibles, le Conseil s'engage à revoir régulièrement sa position sur base des données épidémiologique belges et des données d'efficacité vaccinales disponibles.

*2/Pour ces mêmes raisons et vu l'absence de données sur le portage (protection indirecte), le Conseil ne recommande pas non plus la vaccination systématique des adolescents.*

- Le Conseil s'engage également à évaluer régulièrement sa position en fonction des données épidémiologiques, des données d'efficacité et de portage disponibles et de revoir sa position lorsque le vaccin Trumenba® sera enregistré.

# Depuis 2017…

- Vaccine introduced in some immunization programs
- 2+1 schedule: v effectiveness and new RCP
- Free market: 25% coverage

SCIENTIFIC **ADVICE**

# Expert opinion on the introduction of the meningococcal B (4CMenB) vaccine in the EU/EEA

12 2017

www.ecdc.europa.eu

The epidemiology of SgB IMD across the EU/EEA varies between countries with regard to **incidence, serogroup distribution and case fatality.** All these factors and more were taken into account when countries considered the **introduction of the 4CMenB vaccine into their national immunisation schedule**.

The 4CMenB vaccine was introduced into the publicly funded national routine immunisation programme in the UK in September 2015 and in Ireland in October 2016. In Italy, the vaccine was introduced into the **publicly funded** national routine immunisation programme in January 2017.

Vaccination advisory boards in Austria, the Czech Republic and Germany (in the state of Saxony) have all recommended the vaccine, but **without funding**. In Belgium, France, Greece, Luxembourg and Norway, the vaccination advisory board has not recommended the inclusion of the vaccine in the publicly funded national routine immunisation programme.

Health economic assessments from the UK and Ireland showed the vaccine to be cost-effective because of the higher incidence of SgB IMD in these countries and by including costs such as cost of care, litigation costs and loss of quality of life from disease (including impacts on family and network members) and with a lower vaccine price than the manufacturer's list price

Other Member States (AT, BE, CZ, FR, GR, LU and NO) which have assessed the potential introduction of the 4CMenB vaccine, have reported a number of factors which led to the decision to not recommend the routine vaccination of infants, children or adolescents in the publicly funded national routine immunisation programmes at this point in time.

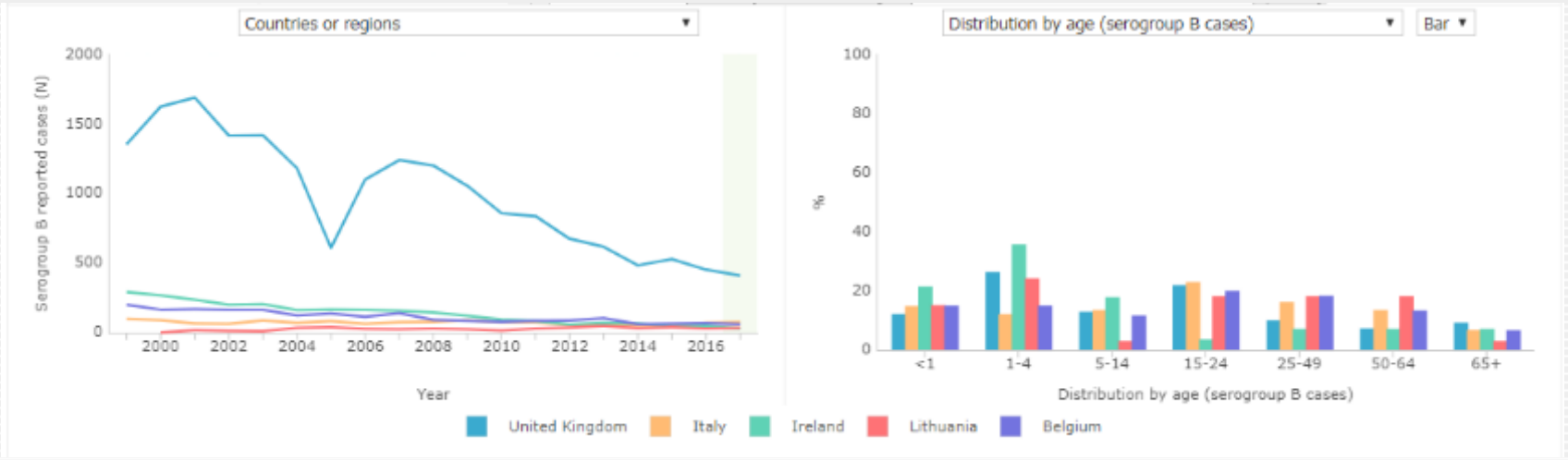
Reasons cited by these Member States were **the low incidence** of SgB IMD in their country, the **difficulties of integrating a three-dose series** into the infant vaccination schedule, the **increased likelihood of fever**, the unfavourable cost-effectiveness in the country's epidemiological context, and **a lack of data** (on efficacy, duration of protection, and the effect of the vaccine on meningococcal carriage).

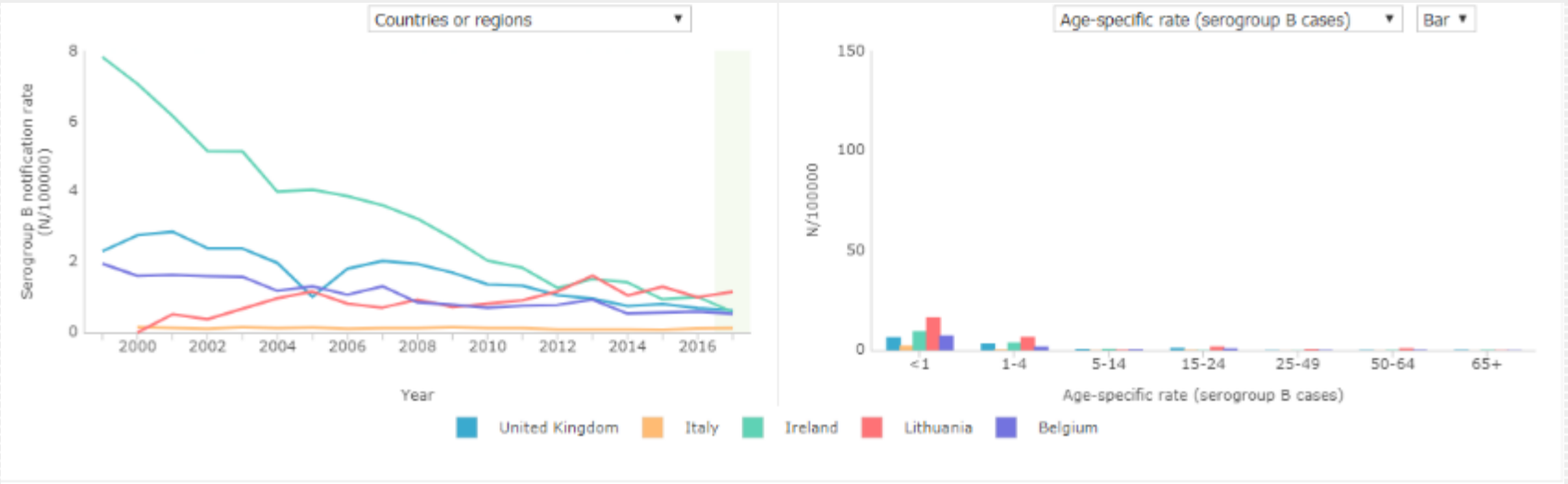
# NIP

**Table 2. Decision-making status of 4CMenB vaccine introduction in the national immunisation programme in EU/EEA countries**

| Country | Decision on introduction of 4CMenB vaccine | Target age groups and schedule | SgB IMD notification rate, 2015 (n/100 000) | SgB IMD notification rate among <1-year-olds, 2015 (n/100,000) | MATS strain coverage |
|---|---|---|---|---|---|
| Belgium | Not recommended in NIP; risk groups | -- | - | - | . |
| Ireland | Introduced into NIP Oct 2016; risk groups | 2,4 and 12 months (2+1) | 0.95 | 16.40 | 68% (95% CI:61–83%) |
| Italy | Introduced into the NIP Jan 2017; risk groups | 3,4,6 and 13 months (3+1) | 0.08 | 2.01 | 87% (95% CI:70–93%) |
| UK | Introduced in NIP Sept 2015; risk groups | 2,4 and 12 months (2+1) | 0.81 | 16.09 | 73% (95% CI: 57–87%) |
| Lithuania | Plan to assess in the near future* | In children | 1.30 | 13.18 | . |

# Men B- NIP

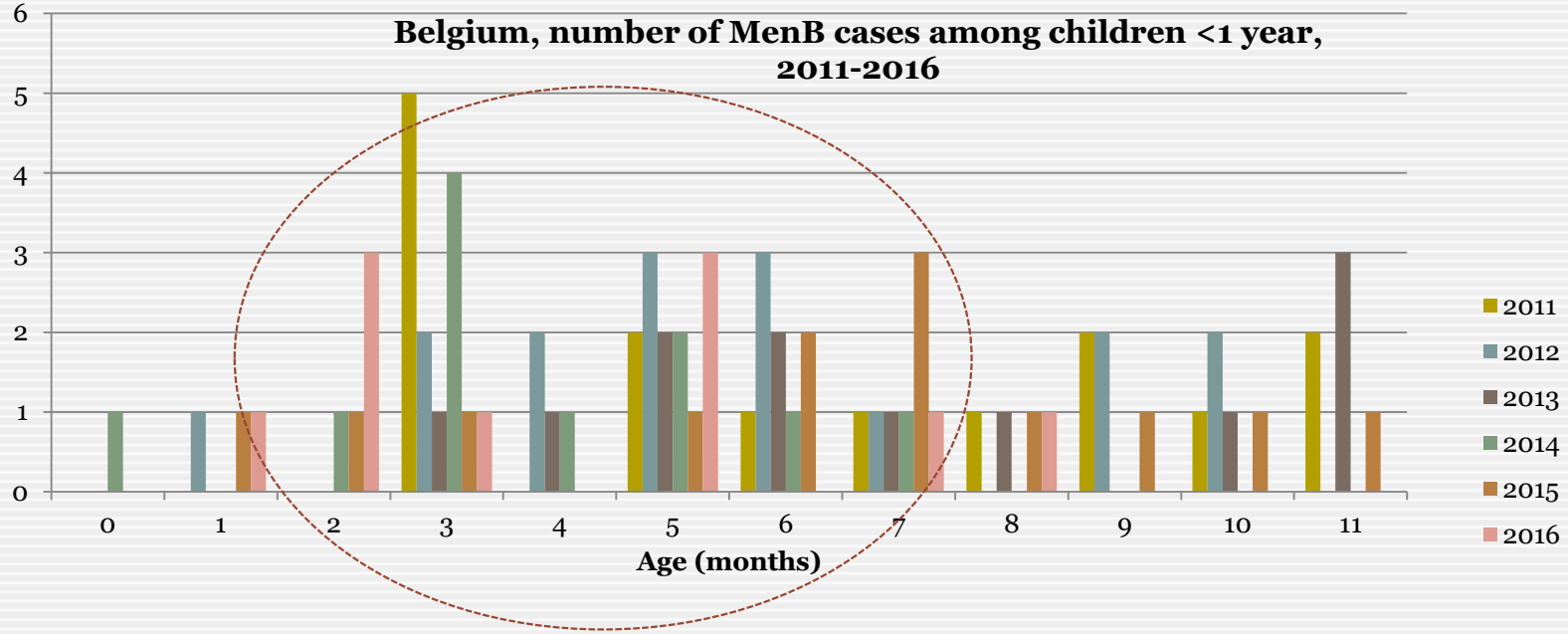

Countries or regions
Serogroup B reported cases (N)
2000
1500
1000
500
0
2000 2002 2004 2006 2008 2010 2012 2014 2016
Year
Distribution by age (serogroup B cases)
Bar
%
100
80
60
40
20
0
<1 1-4 5-14 15-24 25-49 50-64 65+
Distribution by age (serogroup B cases)
United Kingdom
Italy
Ireland
Lithuania
Belgium


Countries or regions
Serogroup B notification rate (N/100000)
8
6
4
2
0
2000 2002 2004 2006 2008 2010 2012 2014 2016
Year
Age-specific rate (serogroup B cases)
Bar
N/100000
150
100
50
0
<1 1-4 5-14 15-24 25-49 50-64 65+
Age-specific rate (serogroup B cases)
United Kingdom
Italy
Ireland
Lithuania
Belgium

# Belgique

| Year | Age | MenB | Incidence |
|---|---|---|---|
| 2016 | <1 year | 10 cases | 8,3/100.000 |
| 2015 | < 1 year | 12 cases | 10/100.000 |
| 2014 | < 1 year | 11 cases | 9,1/100.000 |
| 2013 | < 1 year | 11 cases | 9,1/100.000 |
| 2012 | < 1 year | 16 cases | 13,3/100.000 |

# Men B: age group distribution-Belgium




2016: 8/10 below 7 months of age

**W Matteus- NRC- Sciensano**

# Men B : vaccine effectiveness

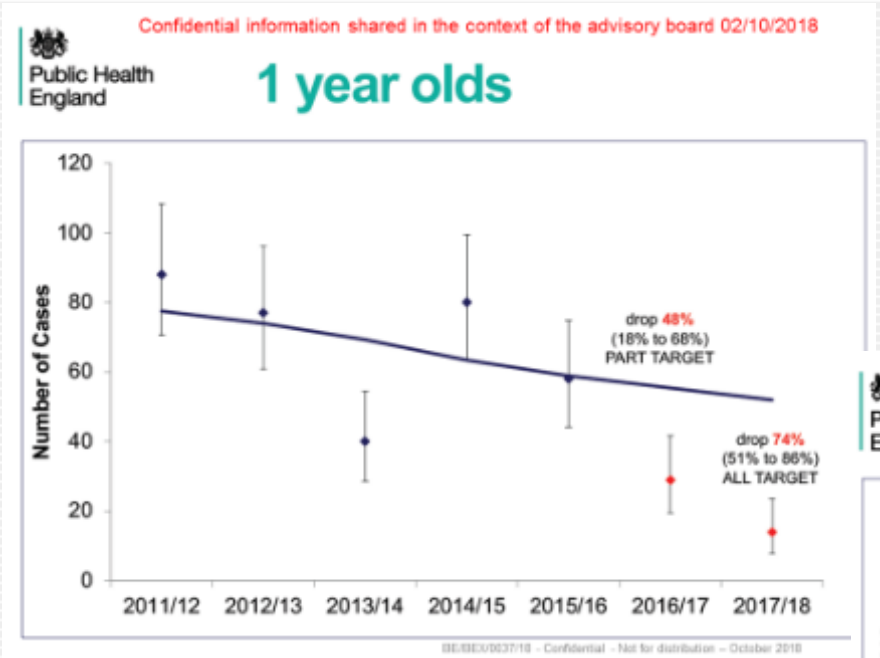
- UK experience (2+1 schedule)

# Efficacité vaccinale : données UK après 10 mois

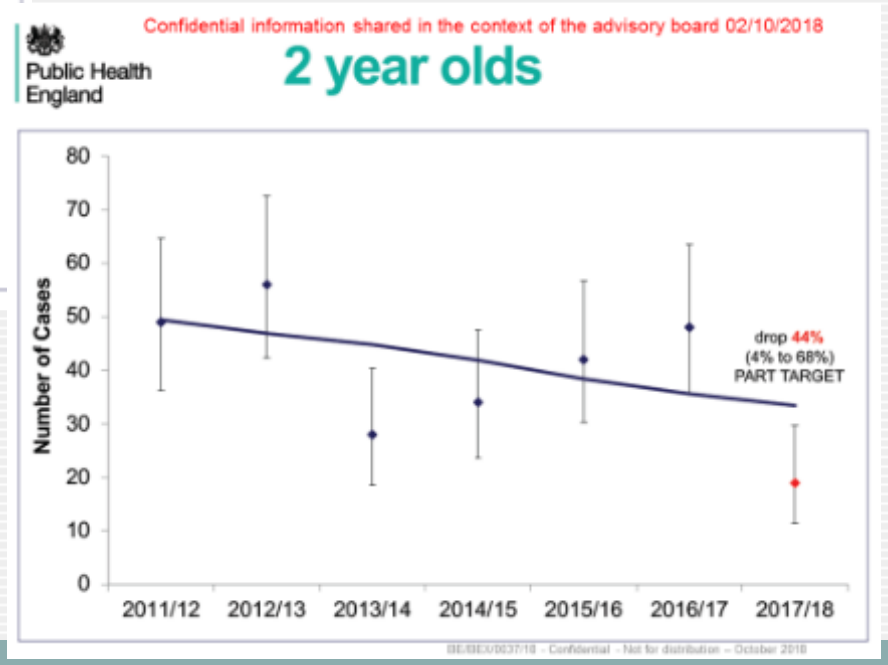
- 09 2015: 2-4 mois (avec paracétamol)+ booster 12 m = 2+1
- Couverture vaccinale: 2 doses 84,8-88,6%
- Efficacité Men B: 2 doses = 82,9 % (95%CI 24,1-95,2)
- Impact: 50% réduction comparé à période prévaccinale

Parikh et al Lancet 2016

# Données préliminaires UK-
# 3 ans post implémentation

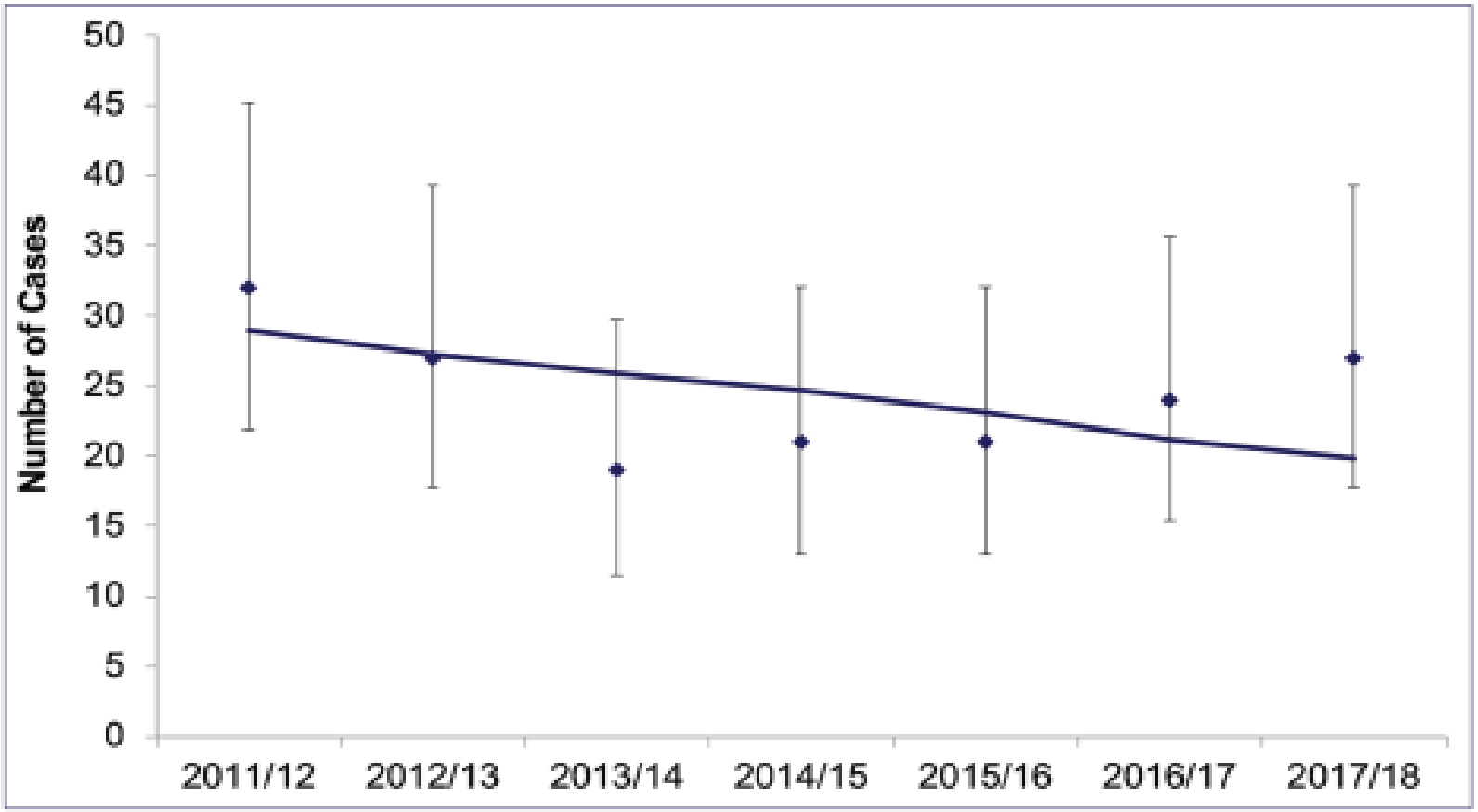



S.Ladhani- confidentiel



Public Health England

# 3 year olds



# Effets secondaires UK

Consultations médecin généraliste pour fièvre de toute origine dans l'année qui a suivi l'introduction du vaccin vs 2 années précédentes:

- ✓ 7-10 semaines: 1,65 x plus
- ✓ 15-18 semaines: 1,5 x plus
- ✓ 0-6 et 11-14 semaines: pas de différence

Vaccine 2018

# Schéma 2+1

## Reduced schedules of 4CMenB vaccine in infants and catch-up series in children: Immunogenicity and safety results from a randomised open-label phase 3b trial

Federico Martinón-Torres [a,*], Marco Aurelio P. Safadi [b], Alfonso Carmona Martinez [c], Pilar Infante Marquez [d], Juan Carlos Tejedor Torres [e], Lily Yin Weckx [f], Edson Duarte Moreira Junior [g], Ilhem Mensi [h], Marco Calabresi [i,1], Daniela Toneatto [i]

*Background:* This study evaluated the immunogenicity and safety of a licensed meningococcal serogroup B vaccine (4CMenB) administered alone according to reduced schedules in infants or catch-up series in children.

*Methods:* In this open-label, multicentre, phase 3b study (NCT01339923), infants randomised 1:1:1 received 4CMenB: 2 + 1 doses at 3½–5–11 months or 6–8–11 months of age, 3 + 1 doses at ages 2½–3½–5–11 months. Children aged 2–10 years received 2 catch-up doses administered 2 months apart. Immune responses were measured by hSBA assays against 4 strains specific for vaccine components fHbp, NadA, PorA and NHBA. Sufficiency of immune responses was defined in groups with 2 + 1 doses schedules as a lower limit ≥70% for the 97.5% confidence interval of the percentage of infants with hSBA titres ≥4, 1 month post-dose 2 for fHbp, NadA, PorA. Adverse events were collected for 7 days post-vaccination; serious adverse events (SAEs) throughout the study.

*Results:* 754 infants and 404 children were enrolled. Post-primary vaccination, 98–100% of infants across all groups developed hSBA titres ≥4 for fHbp, NadA, PorA, and 48–77% for NHBA. Sufficiency of immune responses in infants receiving 2 + 1 schedules was demonstrated for fHbp, NadA, PorA after 2 doses of 4CMenB, as pre-specified criteria were met. Following receipt of 2 catch-up doses, 95–99% of children developed hSBA titres ≥4 for 4CMenB components. Similar safety profiles were observed across groups. A total of 45 SAEs were reported, 3 of which were related to vaccination.

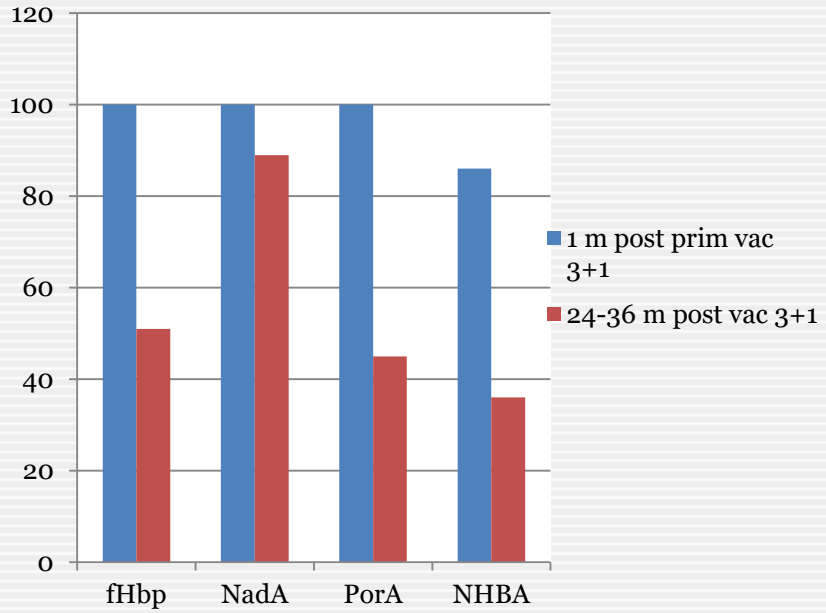
*Conclusion:* Reduced infant schedules and catch-up series in children were immunogenic and safe, having the potential to widen 4CMenB vaccine coverage.

*Funding:* GlaxoSmithKline Biologicals SA.

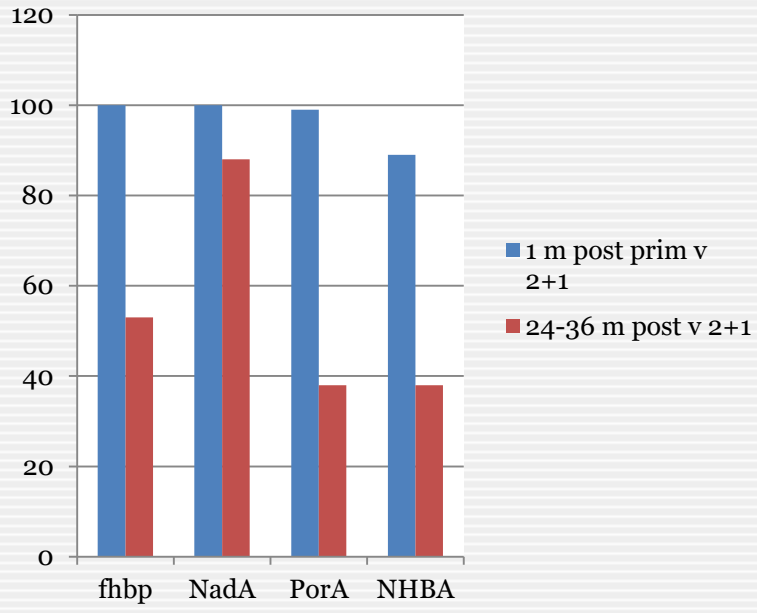
# Antibody persistence and booster responses 24–36 months after different 4CMenB vaccination schedules in infants and children: A randomised trial

Federico Martinón-Torres [a,b,*], Alfonso Carmona Martinez [c], Róbert Simkó [d], Pilar Infante Marquez [e], Josep-Lluis Arimany [f], Francisco Gimenez-Sanchez [g], José Antonio Couceiro Gianzo [h], Éva Kovács [i], Pablo Rojo [j,k], Huajun Wang [l], Chiranjiwi Bhusal [m], Daniela Toneatto [m]

3+1




2+1



# 2+1: RCP 06/2018

Version 5

**Tableau 1. Résumé de la posologie**

| Age lors de la première dose | Primovaccination | Intervalles entre les doses de primovaccination | Rappel |
|---|---|---|---|
| **Nourrissons de 2 à 5 mois** | Trois doses de 0,5 ml chacune, | 1 mois minimum | Oui, une dose entre l'âge de 12 et 15 mois avec un intervalle d'au moins 6 mois entre la primovaccination et la dose de rappel [b, c] |
| **Nourrissons de 3 à 5 mois** | Deux doses de 0,5 ml chacune | 2 mois minimum | |
| **Nourrissons de 6 à 11 mois** | Deux doses de 0,5 ml chacune | 2 mois minimum | Oui, une dose au cours de la deuxième année avec un intervalle d'au moins 2 mois entre la primovaccination et la dose de rappel [c] |
| **Enfants de 12 à 23 mois** | Deux doses de 0,5 ml chacune | 2 mois minimum | Oui, une dose avec un intervalle de 12 à 23 mois entre la primovaccination et la dose de rappel [c] |
| **Enfants de 2 à 10 ans** | Deux doses de 0,5 ml chacune | 1 mois minimum | Besoin non établi [d] |
| **Adolescents (à partir de 11 ans) et adultes*** | Deux doses de 0,5 ml chacune | 1 mois minimum | Besoin non établi [d] |

[a] La première dose ne doit pas être administrée avant l'âge de 2 mois. La sécurité et l'efficacité de Bexsero chez les nourrissons de moins de 8 semaines n'ont pas encore été établies. Aucune donnée n'est disponible.

[b] En cas de retard, la dose de rappel ne doit pas être administrée au-delà de l'âge de 24 mois.

[c] Voir rubrique 5.1. La nécessité et le moment d'administration d'une dose de rappel n'ont pas encore été déterminés.

# Schéma nourrisson

- Vacciner tôt (< 6 mois)
- 2+1: préférence 2-4 mois (UK) rappel 11-15 mois
- Protection long terme > 2ans?
- Si avec autres vaccins (surtout < 1an):

**+ paracétamol** en prophylaxie vu risque de température

avis 9125 CSS

En ce qui concerne la vaccination du nourrisson, il est important de prévenir les parents des effets secondaires, de considérer l'administration systématique de paracétamol en cas de primovaccination avant l'âge de 1 an avec les vaccins de routine, de préférer le schéma 2-4-6 mois et de s'assurer que l'administration du vaccin 4CMenB n'entrainera pas de baisse de la couverture des vaccins de routine. Le vaccin peut donc être administré en même temps que les vaccins de routine à 8 et 16 semaines (avec hexavalent, pneumocoque conjugué et rotavirus) avec administration de paracétamol prophylactique (1° dose de paracétamol de 15 mg/kg lors de l'administration du vaccin puis 2 doses ultérieures après 4 à 6 h d'intervalle)

# Adolescent 15-19 ans?

En ce qui concerne la vaccination de l'adolescent, il est recommandé d'administrer le vaccin séparément vu l'absence de données de co-administration.

**Actuellement seul Bexséro® :** 2 doses à 1 mois min

**Trumenba®:** 2 doses à 6 mois
co administration
(Tetanus Toxoid, diphtheria Toxoid, TdaP-IPV, HPV4, MenACWY conjugate,Tdap)

Mais: pas d'effet sur portage montré jusqu'à maintenant (Bpart of it, Australia)

# Groupes à risque



## Recommendations for risk groups

Twelve Member States have recommended the 4CMenB vaccine for use in risk groups (Table 3). These 12 countries recommended the vaccine for complement disorders and asplenia, due to the higher incidence of disease following colonisation in these groups. On the other hand, there are limited data available about the impact of 4CMenB vaccine in the elderly, in immunosuppressed individuals or in those with other chronic medical conditions. Data are equally limited on whether the vaccine mounts a protective antibody response or whether there are safety differences in the risk groups mentioned above.

The majority of countries also recommend the vaccine for those who are at increased risk of infection due to their profession, such as laboratory workers, for use during outbreaks, clusters and in close contacts. One country recommends the vaccine for adolescents and young people, in particular for those in environments with a high degree of social contact, such as universities or boarding schools and for persons travelling to hyperendemic areas.

The ECDC expert consultation meeting also discussed the relevance of temporary recommendations of the 4CMenB vaccine for certain groups. For example, as of 2016, Norway recommends 4CMenB vaccination for men who have sex with men after an individual evaluation and in line with the ACWY conjugate vaccine recommendations. However, this is not a permanent recommendation and will be reviewed after a review of the epidemiological data.

Some Member States, such as Sweden [34], which has not assessed the introduction of the 4CMenB vaccine to its NIP, may have included vaccination with the 4CMenB vaccine in their recommendations for the prevention of IMD for special risk groups.

# Men B advice

- Introduction du 4CMen B dans programme infant exige:
- ✓ Information (parents, doctors, …) sur le vaccin, schema, effets secondaires, prophylaxie paracetamol
- ✓ 3 injections dans la meme visite
- ✓ Maintenir la couverture vaccination routine
- ✓ Prix bas
- ✓ Signal epidemiologique

- Chez l'adolescent: pas d'effet de portage
- Chez groupes de risque: ID+professionels labo raisonable

# Méningocoque C

EXPERT REVIEW OF VACCINES, 2016
http://dx.doi.org/10.1080/14760584.2017.1258308

Taylor & Francis

REVIEW

# The Global Meningococcal Initiative: global epidemiology, the impact of vaccines on meningococcal disease and the importance of herd protection

Ray Borrow[a], Pedro Alarcón[b], Josefina Carlos[c], Dominique A. Caugant[d], Hannah Christensen[e], Roberto Debbag[f], Philippe De Wals[g], Gabriela Echániz-Aviles[h], Jamie Findlow[a], Chris Head[i], Daphne Holt[j], Hajime Kamiya[k], Samir K Saha[l], Sergey Sidorenko[m], Muhamed-Kheir Taha[n], Caroline Trotter[o], Julio A. Vázquez Moreno[p], Anne von Gottberg[q], and Marco A. P. Sáfadi[r], on behalf of the Global Meningococcal Initiative

Effet direct et indirect vaccin contre Men C



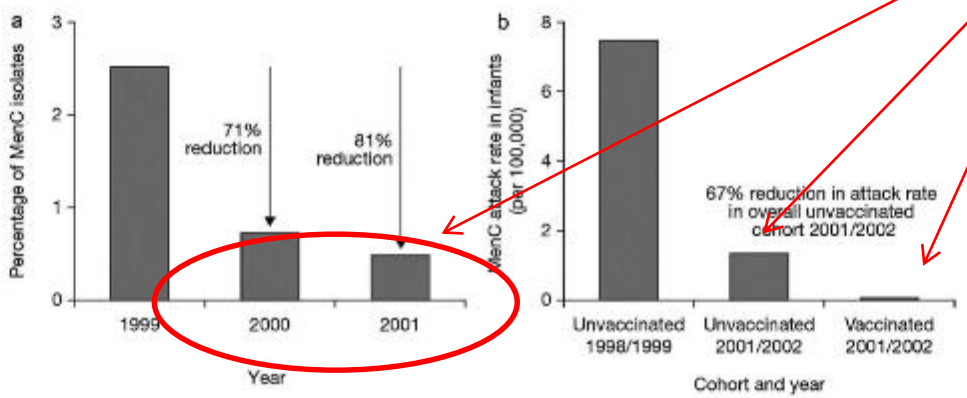
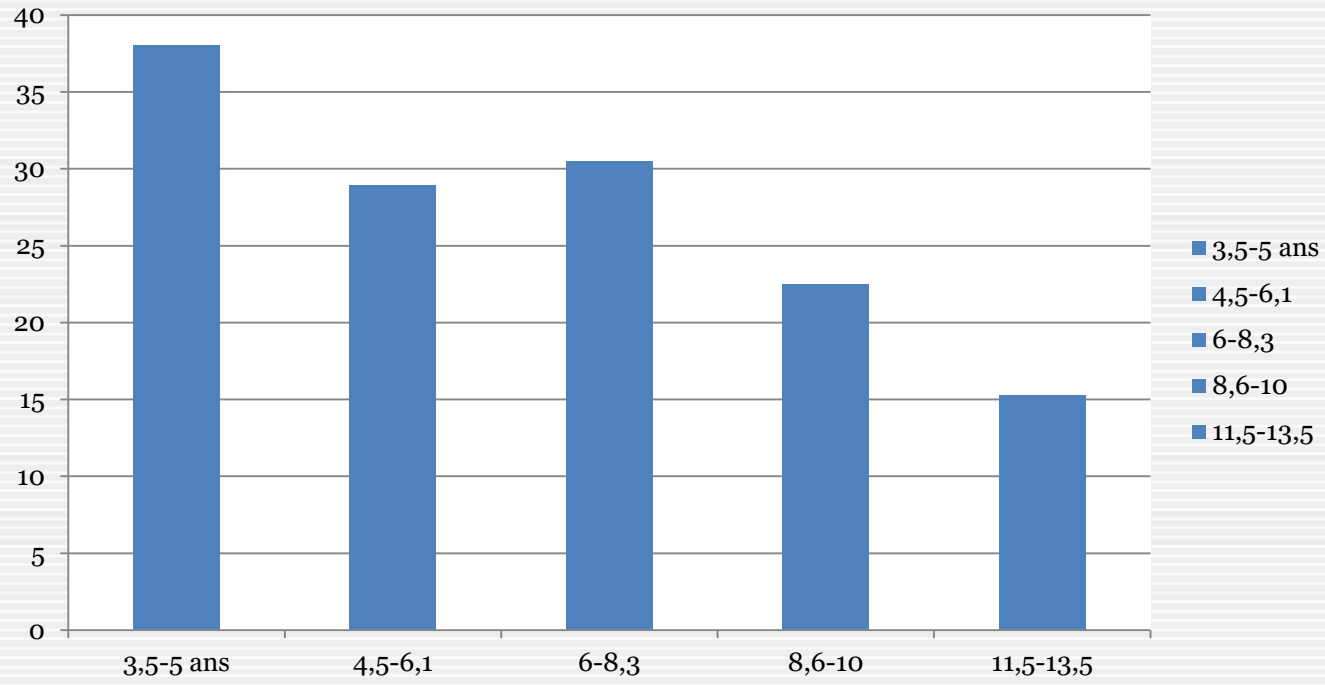



Figure 2. Impact of MenC conjugate vaccines in reducing carriage, leading to herd protection in the UK. (a) Reduction in MenC carriage [61] (immunized individuals aged 15–19 years). (b) Direct and herd protection [62] against MenC (attack rates in infants and overall attack rate reduction in age group 2 months to 18 years).

Maintenir succès vaccination sur portage-maladies invasives
Anticiper perte anticorps protecteurs
Couverture élevée adolescents

# Protection long terme?




**UK: 10 ans après primo vaccination réalisée entre 1 à 3 ans seul 15% des vaccinés ont taux protecteurs**

Khatami 2011

# Méningocoques ACWY

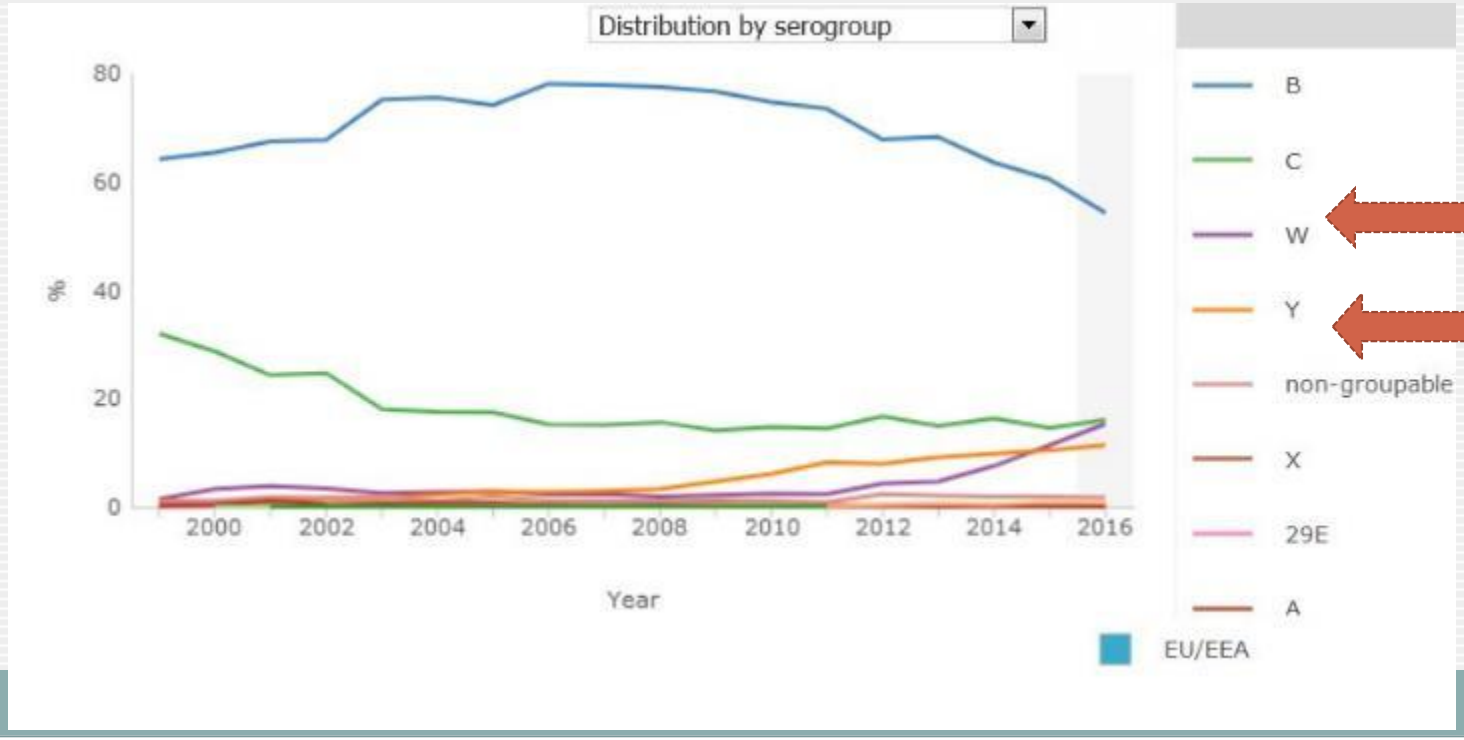
# En Europe

All topics: A to Z | News & events | Publications & data | Tools | Abou

Home > All topics: A to Z > Meningococcal disease > Surveillance and disease data > Disease data from ECDC Surveillance Atlas

## Disease data from ECDC Surveillance Atlas for meningococcal disease

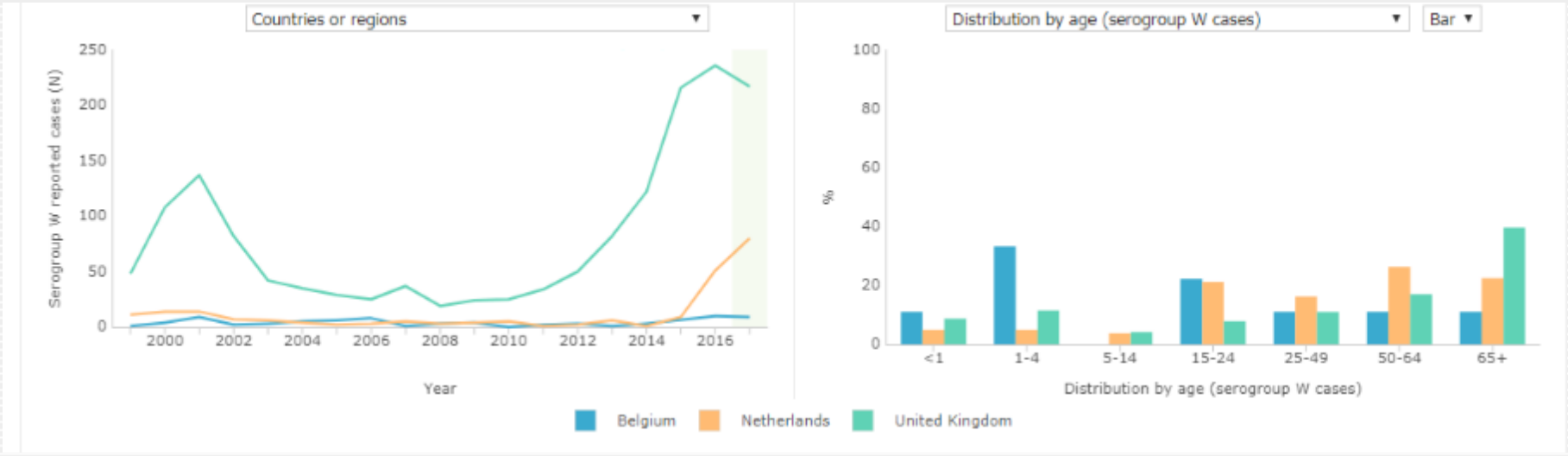
tool

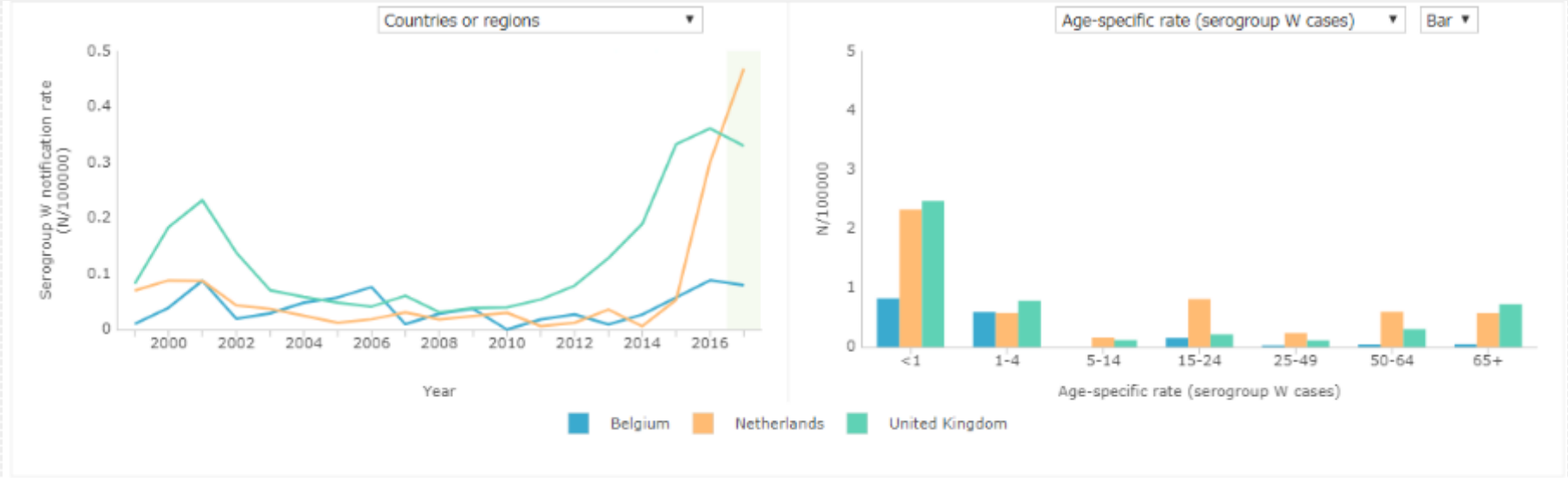



Pays Bas et UK

8 pays

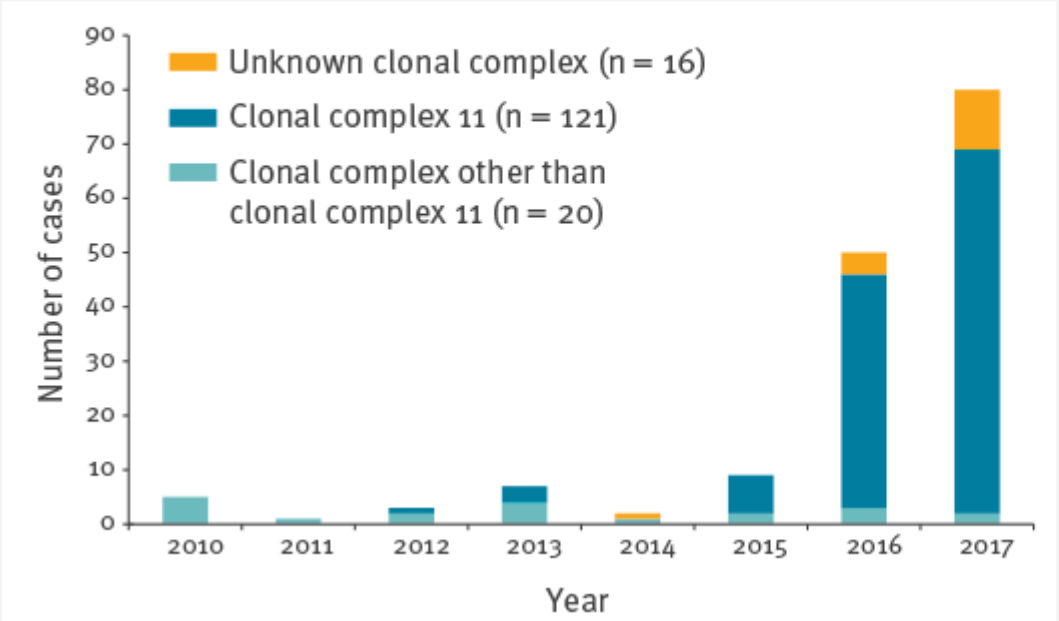
# Sérogroupe W 2017 NIP



# Pays-bas CC11

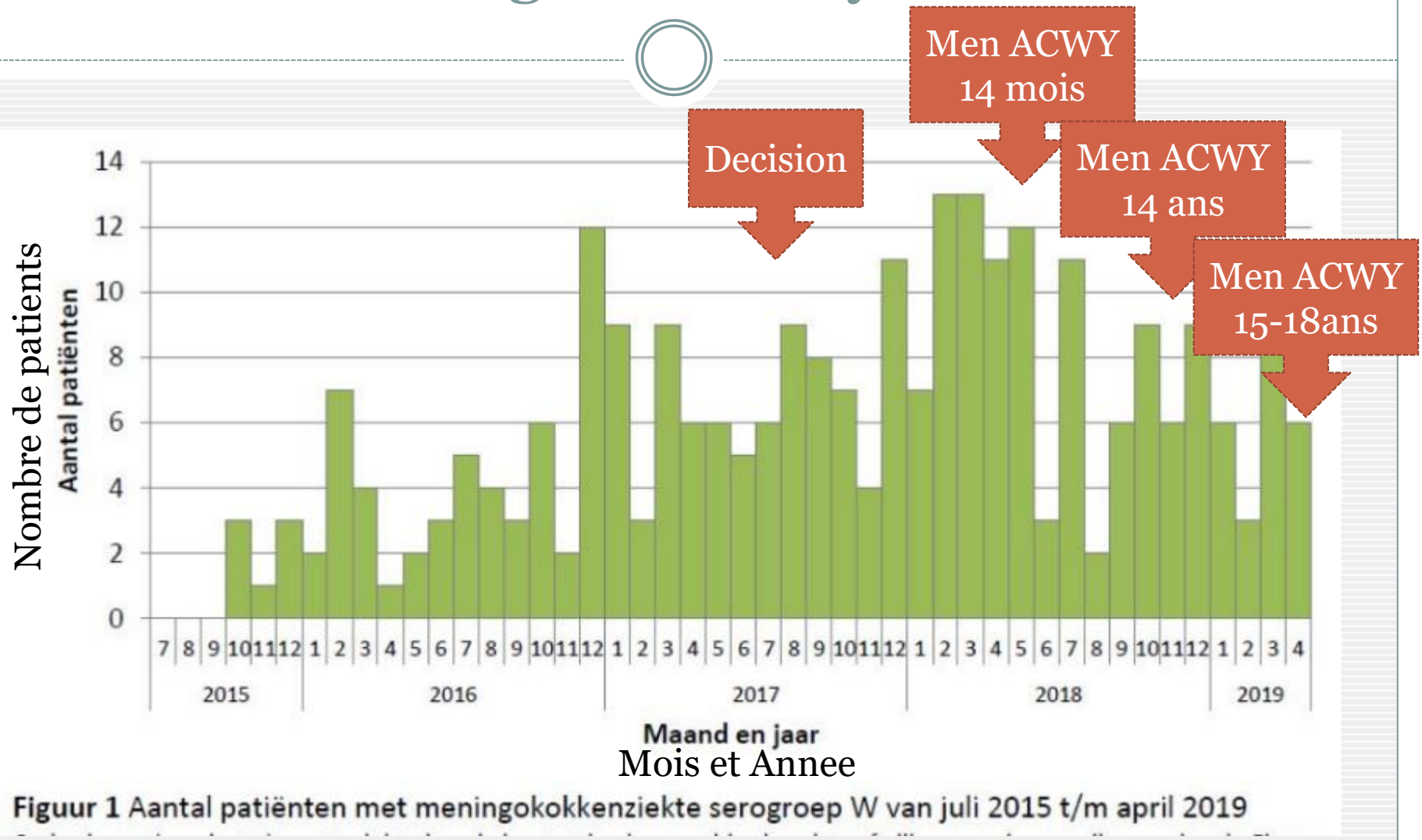
**Figure 1** Number of cases of serogroup W invasive meningococcal disease by clonal complex in the Netherlands, 2010–2017 (n = 157)




Souche UK 2013

Eurosurveillance 2018

# Meningo W au Pays Bas




**Figuur 1** Aantal patiënten met meningokokkenziekte serogroep W van juli 2015 t/m april 2019

Soiurce: https://www.rivm.nl/meningokokken/toename-meningokokkenziekte-serogroep-w-sinds-oktober-2015

# Vaccination against meningococcal disease

No. 2018/28, The Hague, December 19, 2018

## Executive summary

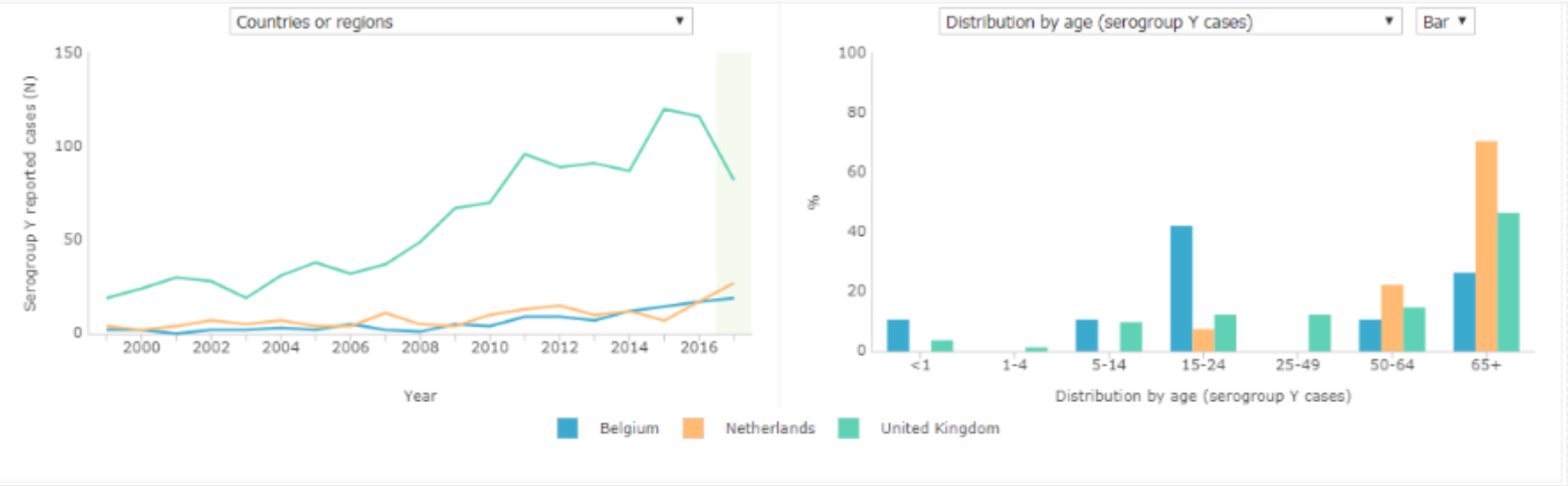
Health Council of the Netherlands

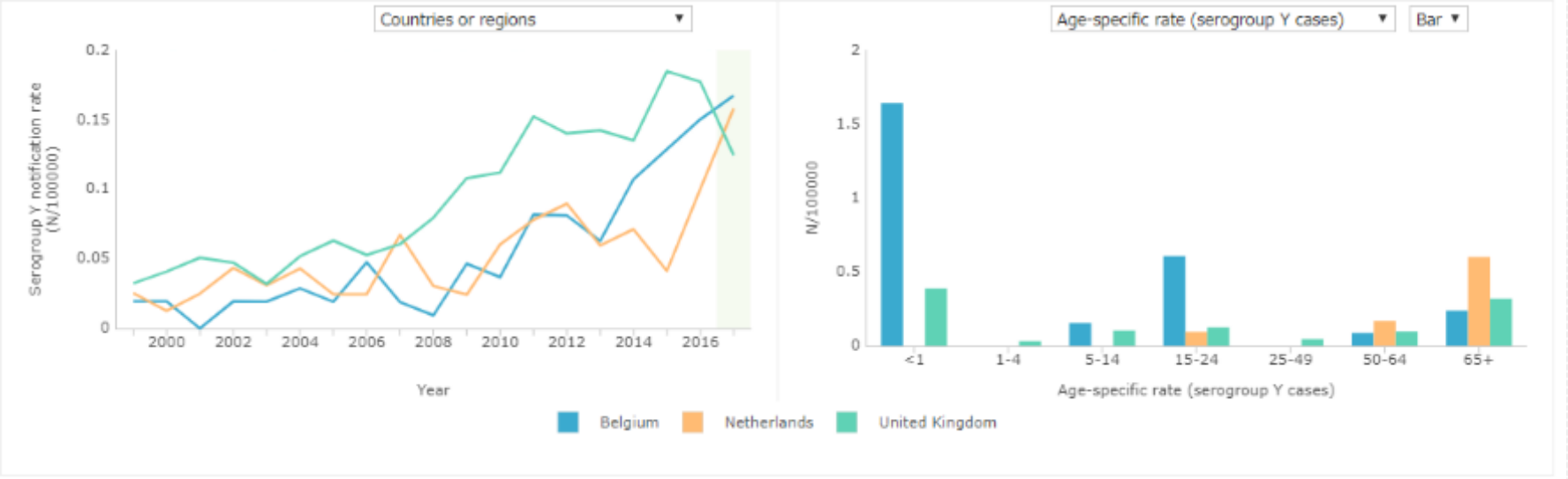
- The Committee recommends continuation of MenC and MenW vaccination for children aged **14 months with a MenACWY** vaccine in the NIP, at least for as long as the outbreak of MenW persists.
- The Committee recommends **adding MenC and MenW vaccination** of **14-year-old adolescents** with a MenACWY vaccine to the NIP
- In addition to individual protection against MenW, adolescent vaccination probably leads to a **certain degree of herd immunity** against this serogroup. In addition, adolescent vaccination with a MenACWY vaccine ensures that **herd immunity against MenC is maintained**, which keeps the incidence of MenC cases low .
- The Committee does **not** recommend the introduction of a MenW vaccination programme **for older adults**, because there is not enough scientific data available on the efficacy, duration of protection, effectiveness
- Due to the uncertainty regarding the effectiveness of MenB vaccination, the Committee is unable to evaluate the risk-benefit ratio. Therefore, acceptability of vaccination could not be evaluated.

# Men ACWY NIP

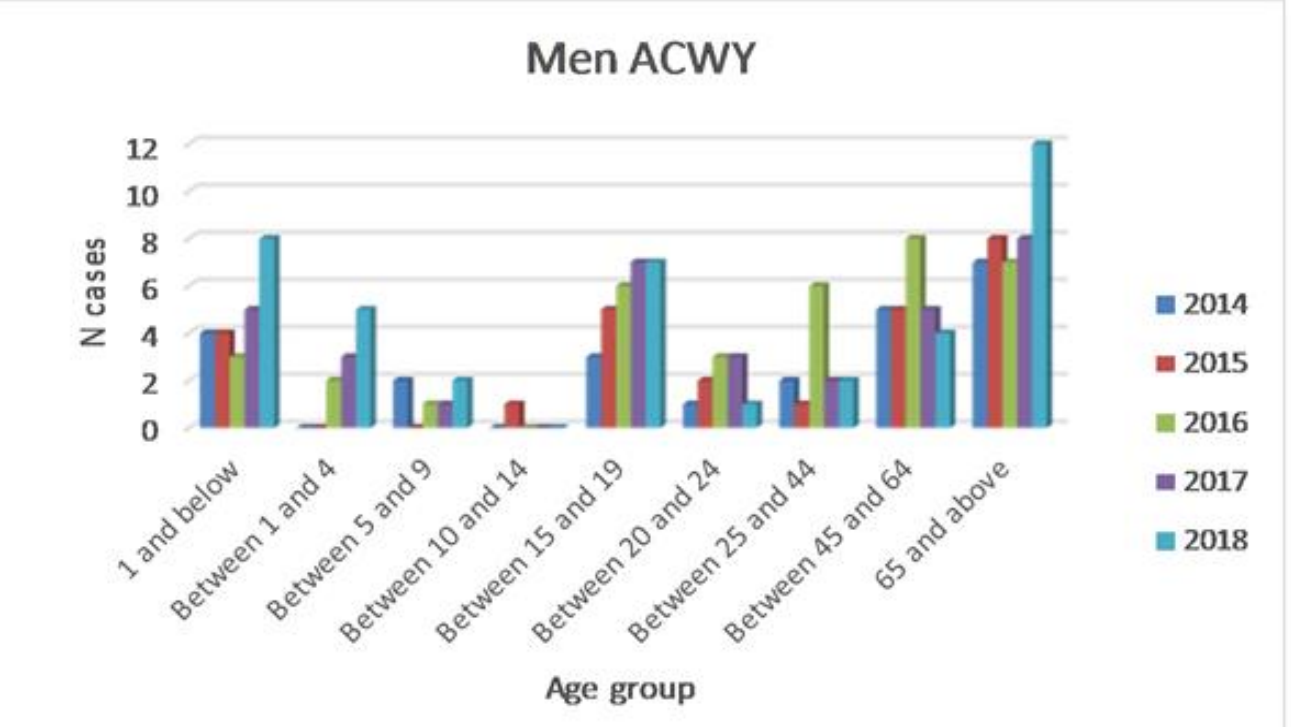
| MCV4 | | |
|---|---|---|
| Autriche | 10-12 ans | depuis ? |
| Grèce | 11-12 ans | depuis? |
| Italie | Menc ou MCV4 13-14 mois et MCV4 12-14 ans | depuis? |
| Hollande | 14 mois 05/2018 et 13-14 ans 10/2018 et 15-18 ans | |
| UK | 13-15 ans + 1° Univ 08 2015 + catch up 13-18 ans | 2015-2017 |

# Sérogroupe Y 2017 NIP



# Trends Neisseria 2014-2018 (Q1-3) Belgique




Wesley Mattheus
Sciensano

# Vaccins ACWY disponibles Belgique

- Menveo® (GSK-CRM 197) :

  > 2 ans

  pas de données > 65 ans (US enregistré < 2 ans)

- Nimenrix® (Pfizer-AT) : ≥ 6 semaines

- US (beaucoup d'études) : Menveo® et Menactra®(TD)

# US 2013

**TABLE 6. Recommended meningococcal vaccines for use in children and adults — Advisory Committee on Immunization Practices (ACIP), United States, 2012**

| Age group | Vaccine | Status |
|---|---|---|
| 2 mos–10 yrs | MenACWY-D (Menactra, Sanofi)* | Not routinely recommended; see Table 7 for persons at increased risk |
| | MenACWY-CRM (Menveo, Novartis)† | Not routinely recommended; see Table 7 for persons at increased risk |
| | HibMenCY-TT (MenHibrix, GSK)§ | Not routinely recommended; see Table 7 for persons at increased risk |
| 11–21 yrs | MenACWY-D or MenACWY-CRM | Primary:<br>• Age 11–12 yrs, 1 dose<br>• Age 13–18 yrs, 1 dose if not vaccinated previously<br>• Age 19–21 yrs, not routinely recommended but may be administered as catch-up vaccination for those who have not received a dose after their 16th birthday<br>Booster:<br>• 1 dose recommended if first dose administered before 16th birthday |
| 22–55 yrs | MenACWY-D or MenACWY-CRM | Not routinely recommended; see Table 7 for persons at increased risk |
| ≥56 yrs | MPSV4, MenACWY-D, or MenACWY-CRM | Not routinely recommended; see Table 7 for persons at increased risk |

**Source:** Adapted from American Academy of Pediatrics. Meningococcal infections. In: Pickering LK, Baker CJ, Kimberlin DW, Long SS, eds. Red book: 2012 report of the Committee on Infectious Diseases. 29th ed. Elk Grove, IL: American Academy of Pediatrics; 2012:500–9.

* Licensed only for persons aged 9 months–55 years.

† Licensed only for persons aged 2–55 years. Under investigation for use at ages 2, 4, 6, and 12–15 months.

§ Licensed only for children aged 6 weeks–18 months.

1° dose 11-12 ans pour meilleure couverture

Rappel si 1° dose < 16 ans pour protection long terme

# US: efficacité vaccinale

**TABLE 2** VE Estimates and Serogroup Specific Estimates, Using the GEE and Controlling for Underlying Medical Conditions and Smoking, ABCs and MeningNet Sites, 2006 to 2013

| | VE (95% CI) |
|---|---|
| All Serogroups (C, Y, and W)[a] | 69% (51% to 80%) |
| Serogroup C | 77% (57% to 88%) |
| Serogroup Y | 51% (1% to 76%) |

[a] Estimate for serogroup W could not be calculated because of low sample size.

**TABLE 3** VE, by Time Interval Since Vaccination, Using the GEE and Controlling for Underlying Medical Conditions and Smoking, ABCs and MeningNet Sites, 2006 to 2013

| | Serogroup C Cases | Serogroup Y Cases | VE (95% CI) |
|---|---|---|---|
| Vaccinated <1 y | 2 | 3 | 79% (49% to 91%) |
| Vaccinated 1 to <3 y | 7 | 8 | 69% (44% to 83%) |
| Vaccinated 3 to <8 y | 4 | 11 | 61% (25% to 79%) |

Sur base de ces données, décision ajout booster à âge de 16 ans

Pediatrics 2017

# Men ACWY advice

- Should be based on:

✓ Increased incidence of Men Y and Men W (especially Wcc11) observed in Belgium after UK and Holland

✓ Age distribution

✓ Waning SBA against Men C in adolescents

✓ Potential effect of Men ACWY on carriage and herd protection of unimmunised (< 1 year of age and adults)

# Calendrier vaccinale Belge

| Vaccins / Age[1] | Nourissons | | | | | Enfants et adolescents | | | | Adultes | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 8 SEMAINES 2 MOIS | 12 SEMAINES 3 MOIS | 16 SEMAINES 4 MOIS | 12 MOIS | 13 - 15 MOIS | 5 - 6 ANS | 7 - 9 ANS | 11 - 13 ANS | 15 - 16 ANS | Femme enceinte | ≥ 25 ans puis tous les dix ans | ≥ 65 ans |
| Poliomyélite[2] | IPV | IPV | IPV | | IPV | IPV | | | | | | |
| Diphtérie Tétanos Coqueluche[3] | DTPa | DTPa | DTPa | | DTPa | DTPa | | | dTpa | dTpa | dTpa | dTpa |
| *Haemophilus influenzae* type b[4] | Hib | Hib | Hib | | Hib | | | | | | | |
| Hépatite B[6] | VHB | VHB | VHB | | VHB | | | | | | | |
| Rougeole Rubéole Oreillons[8] | | | | $RRO_1$ | | | $RRO_2$ | x x x | | | | |
| Méningocoque C[7] | | | | | MenC | | | | | | | |
| Pneumocoque[9] | PCV13 | | PCV13 | PCV13 | | | | | | | | PCV13 + PCV23 |
| Rotavirus[9] | Rota | Rota | (Rota) | | | | | | | | | |
| Papillomavirus humain (HPV)[10] | | | | | | | | HPV 2 doses | | | | |
| Influenza[11] | | | | | | | | | | Influenza tétra | | Influenza tétra |

Vaccin combiné

Rattrapage

**N.B:** *par convention internationale, les lettres majuscules « D » et « P » sont utilisées pour désigner les dosages pédiatriques des vaccins diphtérique et coquelucheux, et les lettres minuscules « d » et « p » pour les dosages réduits des vaccins destinés aux adultes.*



VACCINATION DE L'ENFANT, DE L'ADOLESCENT ET DE L'ADULTE

CSS 9141 : Calendrier vaccinal de base recommandé par le CSS – mars 2019

# Conclusions

- Epidémiologie: dynamique-cyclique/ Wcc11
- Plusieurs stratégies possibles pour réduire incidence infections invasives à méningocoque :
  - Men B (nourrissons-ado)
  - Rappel Men C ado
  - Introduction ACWY (nourrissons-ado)
- Persistance anticorps protecteurs&effet portage= clé succès
- Introduction en NIP necessite une considération consciencieuse
  - effets secondaires/nombre de vaccins dans le NIP
  - autres vaccins-candidats: PCV13-varicelle-..