Doença Meningocócica e outras meningites bacterianas
Epidemiologia, Prevenção e Controle

IMT – 2005

Mecanismos de Transmissão, Modos de Controle e Prevenção de Patógenos Aplicados à Saúde Pública

Prof. Expedito Luna
Profa. Gerusa Figueiredo
Instituto de Medicina Tropical
Faculdade de Medicina
Universidade de São Paulo
Agosto, 2020

Doença Meningocócica e outras meningites bacterianas

- **Objetivos da apresentação:**

✓ **Conhecer as características epidemiológicas das principais meningites bacterianas.**

✓ **Conhecer a situação atual das meningites *por Haemophilus influenzae tipo B, Streptococcus pneumoniae e Neisseria meningitidis* no Brasil.**

✓ **Conhecer as estratégias de vigilância, prevenção e controle das meningites bacterianas.**

✓ **Identificar o papel dos profissionais de saúde na vigilância e controle das meningites.**

Meningites

- **Meningite:**
  - ➢ **Processo inflamatório que envolve as meninges.**
- **Agentes etiológicos:**
  - ➢ **As meningites podem ser infecciosas e não infecciosas. As meningites infecciosas podem ter como agentes vírus, bactérias, fungos, protozoários* e helmintos**.**
- **As meningites bacterianas são as mais importantes em saúde pública.**

* *Trypanosoma cruzi, Plasmodium sp, etc.*

***Cysticercus cellulosae,* infecção larvária por *Taenia solium, Angiostrongylus cantonensis, etc.*

Meningites bacterianas

- **Os 4 principais agentes bacterianos das meningites, do ponto de vista epidemiológico são:**

➢ ***Neisseria meningitidis*** **(meningococo)**

➢ ***Haemophilus influenzae*** **tipo B**

➢ ***Streptococcus pneumoniae*** **(pneumococo)**

➢ ***Mycobacterium tuberculosis***

Casos confirmados de meningite no Brasil, número de óbitos e letalidade, 2018

15.364 (100%) confirmados
1.272 óbitos (8,3%)

3.541 (23,0%)
Bacterianas
785 óbitos (22,2%)

8.578 (55,8%)
Virais
104 óbitos (1,2%)

2.537 (16,5%)
não especificadas
241 óbitos (9,5%)

708 (4,6%)
outras etiologias
142 óbitos (20,1%)

Fonte: SINAN/SVS/MS; Dados atualizados em: 04/2019

Distribuição de casos e óbitos por Meningites Bacterianas, segundo agente etiológico. Brasil, 2018*

Etiologia Bacteriana	Casos	%	Óbitos	Letalidade
Neisseria meningitidis	1.117	31,5	225	20,1%
Streptococcus pneumoniae	1.016	28,7	315	31,0%
Haemophilus influenzae	145	4,1	28	19,3%
Mycobacterium tuberculosis	345	9,7	64	18,6%
Outras etiologias bacterianas	918	25,9	153	16,7%
Total	3.541	100	785	22,2%

Fonte: SINAN/SVS/MS; Dados atualizados em: 04/2019

Distribuição de casos e óbitos de Meningites por *Neisseria meningitidis* segundo sorogrupo. Brasil, 2018*

Sorogrupo	Casos	%	Óbitos	Letalidade
B	167	15,0	23	13,8%
C	304	27,2	59	19,4%
W	50	4,5	19	38,0%
Y	17	1,5	3	17,6%
Casos não sorogrupados	578	51,8	120	20,8%
Total	1.116	100	224	20,1%

Fonte: SINAN/SVS/MS; Dados atualizados em: 04/2019

Meningite por *Haemophilus influenzae*

Meningite por *Haemophilus influenzae* tipo B

- *Haemophilus influenzae* – bactéria identificada em 1892.
- A exposição aos *Haemophilus influenzae* não tipificados se inicia logo após o nascimento. Cerca de 80% da população saudável é portadora da bactéria.
- A infecção por *Haemophilus influenzae* não tipificados no 1º ano de vida associa-se a ocorrência de otite média.

✓ *Haemophilus influenzae* tipo B tem um fator de virulência (sua cápsula é composta por PRP – polyribitol ribose phospate) que confere a capacidade de invadir a corrente sanguínea e causar doença invasiva: pneumonia, epiglotite, meningite, artrite séptica.

Meningite por *Haemophilus influenzae* tipo B

Reservatório:

- homem, especialmente as crianças menores de dois anos.

Modo de transmissão:

- pessoa a pessoa, por intermédio das secreções respiratórias.

Período de incubação:

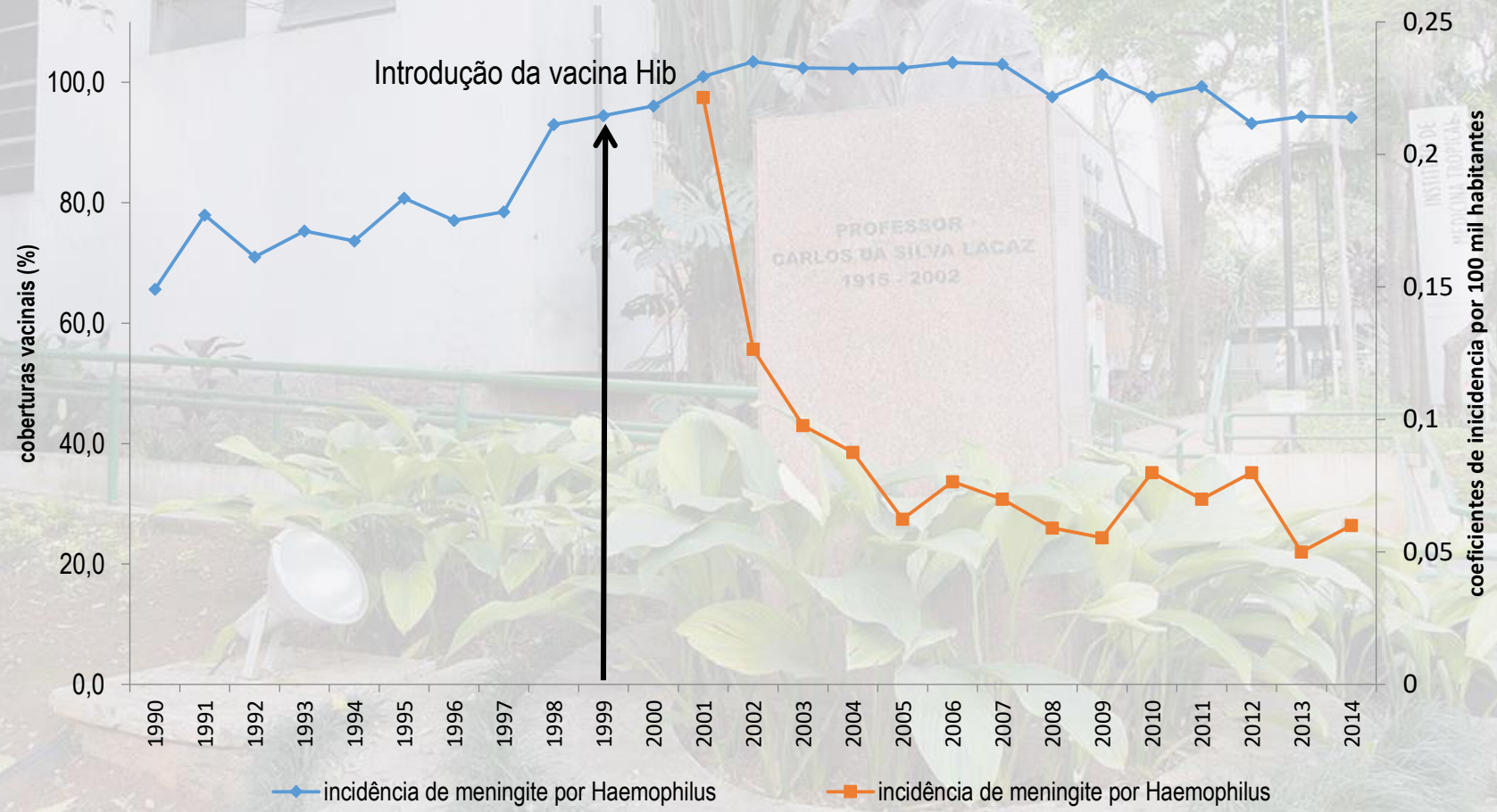
- desconhecido.

Fatores de risco:

- anemia falciforme, asplenia, infecção pelo HIV e outras condições que levam à imunodeficiência, como neoplasias. Nos EUA a doença invasiva era mais comum em meninos, minorias étnicas e em crianças que não foram alimentadas com leite materno.

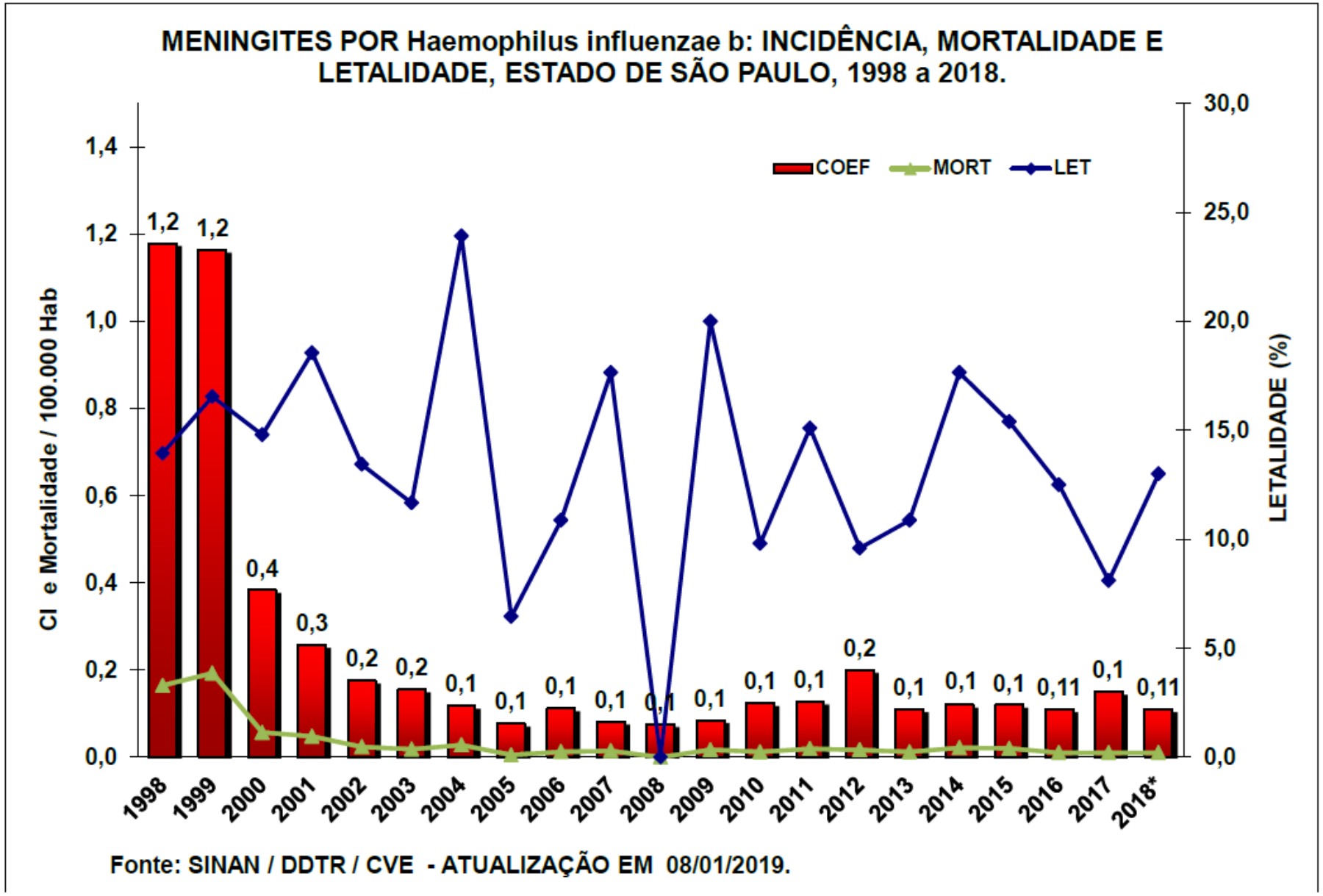
Antes da introdução das vacinas conjugadas era a principal causa de meningites nos EUA e a 2ª no Brasil. Com a vacinação, a incidência caiu em 99%.

Coberturas vacinais da vacina Hib* e DTP/Hib/HB e incidência de Meningite por *Haemophilus influenzae tipo B*, Brasil, 1999 a 2014



- Fonte: SVS/MS * Vacina Hib conjugada com a DTP em 2002 e hepatite B em 2012

Haemophilus influenzae / Estado de São Paulo, 1998 a 2018



Meningite por *Streptococcus pneumoniae*

Meningite por *Streptococcus pneumoniae*

- **Bactéria identificada por Pasteur, em 1880.**
  - ***S.pneumoniae* – diplococo Gram positivo. Identificados mais de 90 sorotipos, com base em sua cápsula polissacáride.**
    - **16 deles responsáveis por ~ 90% de doença invasiva e infecções pneumocócicas na infância.**
- **Antes da introdução das vacinas conjugadas, a proporção de portadores na população, principalmente entre as crianças era elevada: em torno de 20% nos países desenvolvidos, chegando a 90% nos países subdesenvolvidos.**

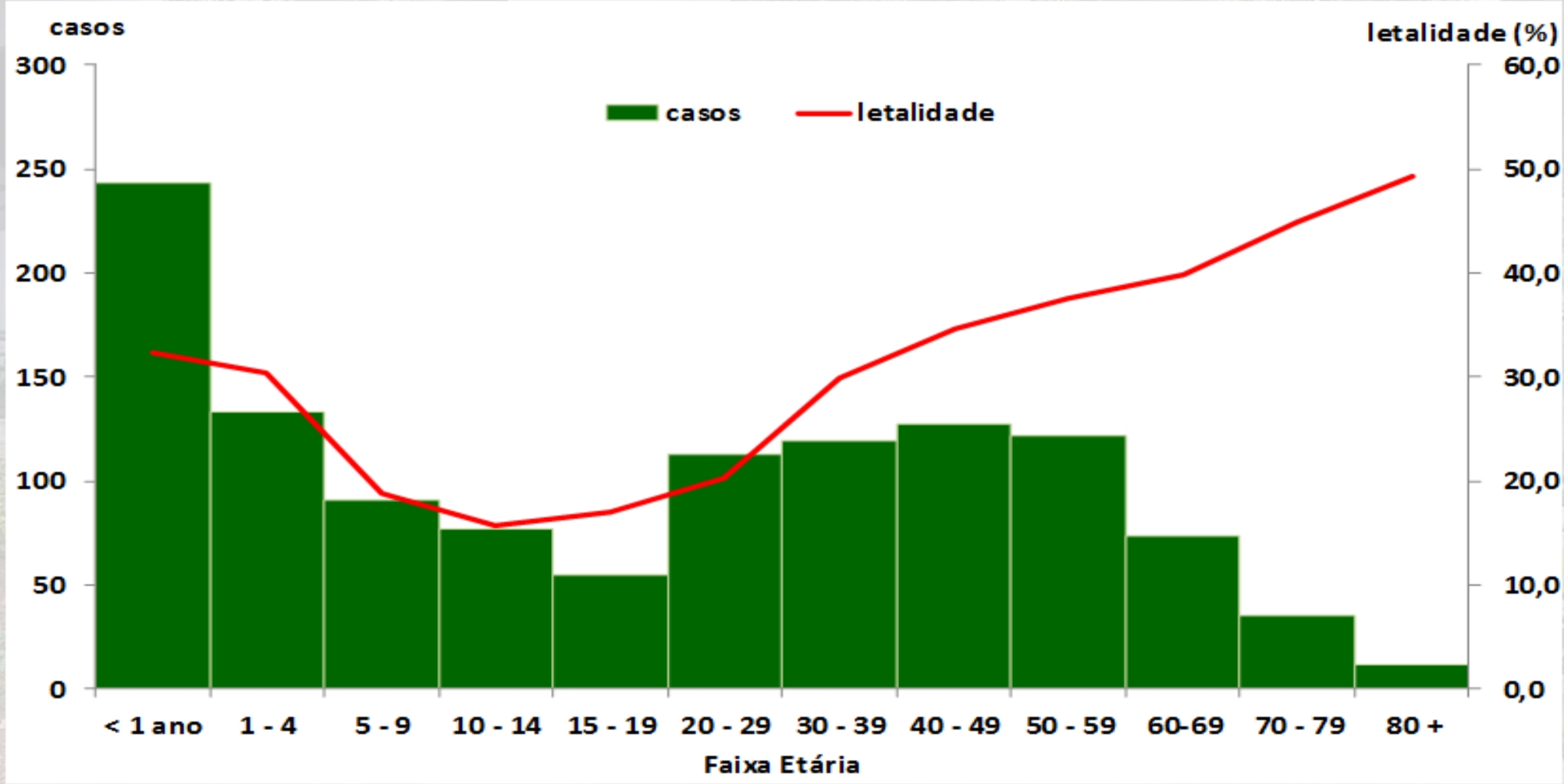
Meningite por *Streptococcus pneumoniae*

- Entre as crianças que se infectam com um novo sorotipo na nasofaringe, cerca de 15% desenvolvem doença (por exemplo, otite média).
- Infecções virais, como por exemplo, pelos vírus influenza, predispõem a transmissão e a infecção pelos pneumococos.
- Reservatório: o homem.
- Modo de transmissão: de pessoa a pessoa, por intermédio das secreções respiratórias.
- Período de incubação: depende da localização da infecção e do sorotipo, mas pode ser curto (1 a 3 dias).

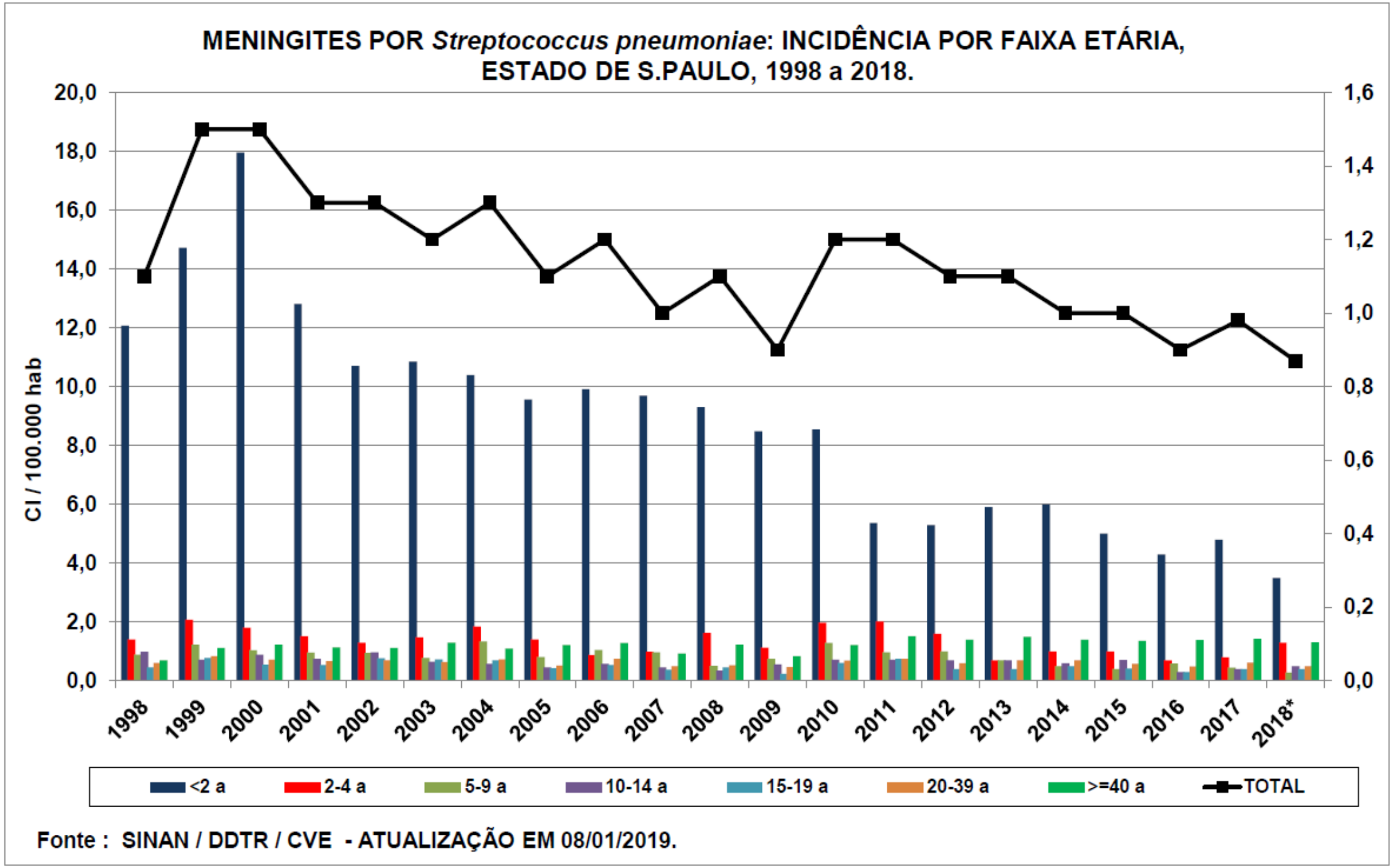
Meningite por *Streptococcus pneumoniae*

- Período de transmissibilidade: enquanto existir o agente na nasofaringe. Menos de 24 horas após o estabelecimento da antibioticoterapia.
- Sazonalidade: infecções são mais frequentes no inverno.
- Fatores de risco: idade (menores de um ano e idosos), asplenia, infecção pelo HIV e outras condições que levam à imunodeficiência, como neoplasias. Nos EUA a doença invasiva era mais comum minorias étnicas.
- Redução de 76% (99% pelos sorotipos vacinais) na incidência de doença invasiva após a introdução da vacina 7 valente nos EUA (em 2000).

Casos e letalidade de meningite por pneumococo por faixa etária. Brasil, 2002 – 2013*

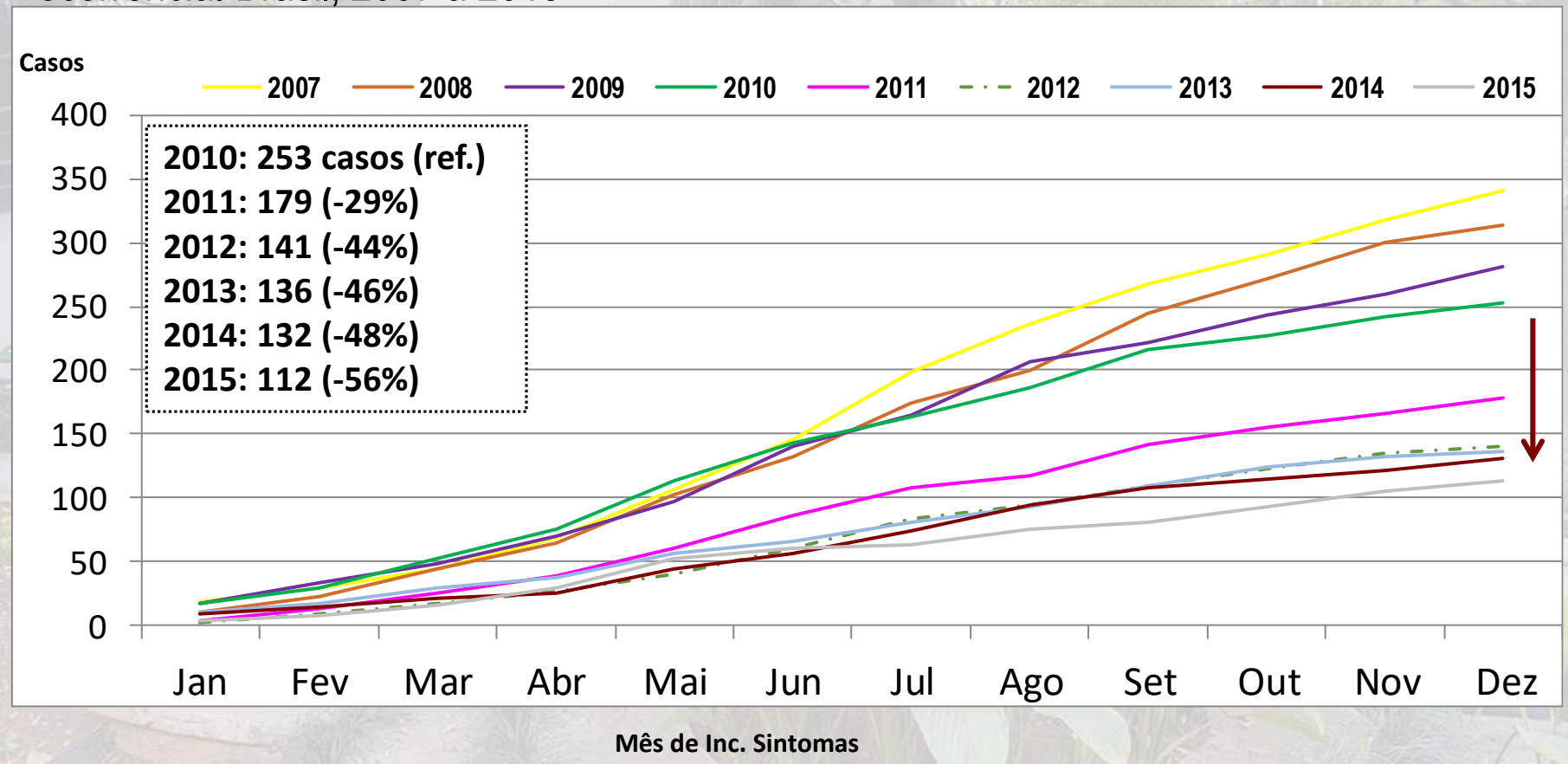


Fonte: SINAN/SVS/MS; *Dados atualizados em: 07/05/2014


MENINGITES POR *Streptococcus pneumoniae*: INCIDÊNCIA POR FAIXA ETÁRIA, ESTADO DE S.PAULO, 1998 a 2018.
CI / 100.000 hab
20,0
18,0
16,0
14,0
12,0
10,0
8,0
6,0
4,0
2,0
0,0
1,6
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018*
<2 a
2-4 a
5-9 a
10-14 a
15-19 a
20-39 a
>=40 a
TOTAL
Fonte : SINAN / DDTR / CVE - ATUALIZAÇÃO EM 08/01/2019.

Impacto da vacinação na ocorrência de meningite pneumocócica

Número de casos acumulados de Meningite por Pneumococo em < 2 anos por mês de ocorrência. Brasil, 2007 a 2015*



Fonte: SINAN/MS; *Dado preliminar atualizado em: Julho/2016

- **Vacina pneumo 10 implantada a partir de março de 2010**

Doença meningocócica

Doença meningocócica – *Neisseria meningitidis*

Doença meningocócica

Infecção bacteriana aguda, quando se apresenta na forma invasiva caracteriza-se por uma ou mais síndromes clínicas.

Síndromes clínicas associadas à DM

- ✓ Bacteremia (37.5%) - Meningococcemia
- ✓ Meningite (50%)
- ✓ Pneumonia (9%)
- ✓ Conjuntivite artrite, pericardite, uretrite

Complicações	Frequência
Comprometimento neurológico	7%
Comprometimento auditivo	4%
Perda auditiva	2,6%
Perda auditiva grave	2,1%
Convulsões	0,5%
Comprometimento visual	1,6%
Déficit motor	0,6%
Amputações	3%

Doença meningocócica (DM)

- Quadro clínico descrito pela 1ª vez em 1805, durante uma epidemia em Genebra, Suíça.
- Agente etiológico identificado em 1887.
- Estado de portador assintomático identificado em 1896.
- Agente etiológico:
  - ✓ *Neisseria meningitidis* (meningococo).
  - ✓ Bactéria Gram negativa em forma de coco. Existem pelo menos 13 sorogrupos, caracterizados pelos antígenos polissacarídeos de sua cápsula.
  - ✓ Os de ocorrência mais frequente, com características endemo-epidêmicas são: A, B, C, Y e W.

DM – Aspectos epidemiológicos e clínicos

Reservatório:

- O homem. Não existem reservatórios animais.

Modo de transmissão:

- De pessoa a pessoa, por gotículas de secreção respiratória.

Período de incubação:

- De 2 a 10 dias, em média de 3 a 4 dias.

Apresentação clínica:

✓ Meningite, Meningite com meningococcemia, Meningococcemia.

DM – Aspectos epidemiológicos

Período de Transmissibilidade:

- **Persiste enquanto existe o agente etiológico na nasofaringe, em geral até 24 horas após o início da antibioticoterapia.**
- **Entre 5 e 10% da população pode ser portadora assintomática da *N. meningitidis* em um dado momento.**
- **Menos de 1% dos infectados desenvolvem a doença clínica.**
- **A transmissão é predominantemente intradomiciliar. Contatos domiciliares apresentam risco de 500 a 800 vezes maior de infecção do que a população em geral.**

Meningococcal carriage by age: a systematic review and meta-analysis

Hannah Christensen, Margaret May, Leah Bowen, Matthew Hickman, Caroline L Trotter

Summary

Background *Neisseria meningitidis* is an important cause of meningitis and septicaemia, but most infected individuals experience a period of asymptomatic carriage rather than disease. Previous studies have shown that carriage rates vary by age and setting; however, few have assessed carriage across all ages. We aimed to estimate the age-specific prevalence of meningococcal carriage.

Methods We searched Embase, Medline, Web of Science, the Cochrane Library, and grey literature for papers reporting carriage of *N meningitidis* in defined age groups in European countries or in countries with a similar epidemiological pattern (where disease caused by serogroups B and C predominates). We used mixed-effects logistic regression with a natural cubic spline to model carriage prevalence as a function of age for studies that were cross-sectional or serial cross-sectional. The model assessed population type, type of swab used, when swabs were plated, use of preheated plates, and time period (decade of study) as fixed effects, with country and study as nested random effects (random intercept).

Findings Carriage prevalence increased through childhood from 4·5% in infants to a peak of 23·7% in 19-year olds and subsequently decreased in adulthood to 7·8% in 50-year olds. The odds of testing positive for carriage decreased if swabs were not plated immediately after being taken compared with if swabs were plated immediately (odds ratio 0·46, 95% CI 0·31–0·68; p=0·0001).

Interpretation This study provides estimates of carriage prevalence across all ages, which is important for understanding the epidemiology and transmission dynamics of meningococcal infection.

Funding None.

Lancet Infect Dis 2010; 10: 853–61

Published Online November 12, 2010 DOI:10.1016/S1473-3099(10)70251-6

School of Social and Community Medicine, University of Bristol, Bristol, UK (H Christensen BSc, M May PhD, L Bowen MSc, M Hickman PhD, C L Trotter PhD)

Correspondence to: Hannah Christensen, School of Social and Community Medicine, University of Bristol, Canynge Hall, 39 Whatley Road, Bristol, BS8 2PS, UK **hannah.christensen@bristol.ac.uk**

Christensen H et al.
The Lancet 2010

Metanálise – prevalência de portadores de *N.meningitidis* na população, segundo faixa etária.

- ✓ Revisão da literatura de 1950 a 2010. Incluiu na análise 89 estudos.
- ✓ Prevalência mais baixa entre os menores de um ano: 4,5%
- ✓ Pico de prevalência em adultos jovens: 23,7% aos 19 anos de idade.
- ✓ Diminui com o avançar da idade: 7,8% aos 50 anos de idade.

DM – Aspectos epidemiológicos

Suscetibilidade e imunidade:

- A suscetibilidade à infecção é geral.
- A proporção de doença clínica é baixa (patogenicidade baixa) e diminui com a idade.
- O grupo etário dos menores de 5 anos é o mais vulnerável e de maior risco. Os neonatos raramente adoecem, por conta da proteção conferida pelos anticorpos maternos. A suscetibilidade aumenta a partir dos 3 meses de idade.
- A doença confere imunidade sorogrupo específica de duração desconhecida.

DM – Aspectos epidemiológicos

Fatores de risco:

- **Idade; imunodeficiência (infecção pelo HIV; uso de medicação imunossupressora; etc.).**
- **Aglomeração populacional, pobreza, precariedade de condições de vida .**
- **Sazonalidade – maior frequência no inverno, no Brasil. Na África, na estação seca.**

DM – Aspectos epidemiológicos

Distribuição:

- ✓ Mundial. Maior frequência nos países subdesenvolvidos.
- ✓ Ocorrência endêmica, com picos epidêmicos periódicos.
- ✓ Na Europa e América do Norte – casos esporádicos em crianças; surtos eventuais, estudantes de "colleges" vivendo em dormitórios estudantis, recrutas das forças armadas, etc. Nas Américas e Europa predominam os sorogrupos B e C. Registro de vários surtos nos EUA, Canadá, Reino Unido pelo sorogrupo B.
- ✓ Espanha, sorogrupo C.
- ✓ Noruega e Nova Zelândia, sorogrupo B.

DM – Aspectos epidemiológicos

Distribuição (cont.):

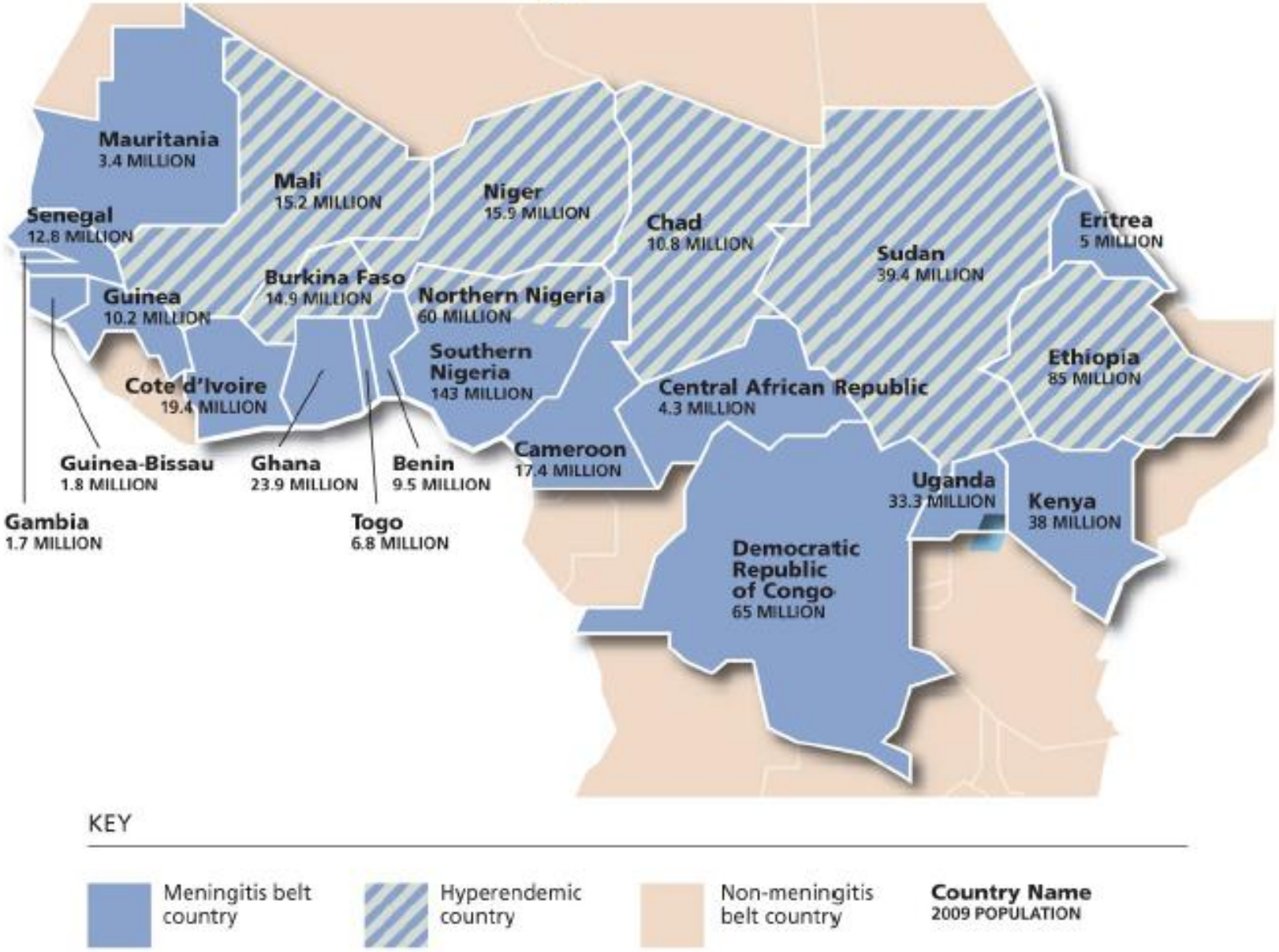
- ✓ Na **África**, os **sorogrupos A e C** são responsáveis pelas epidemias. Desde o início da década passada vem-se observando um aumento da frequência do sorogrupo W.
- ✓ Ciclos epidêmicos pelo sorogrupo A ocorrem a cada 8 – 10 anos.
- ✓ Entre 2008 e 2018, registro de epidemias no Chade, na Nigéria, no Níger, em Uganda, na República Centro-Africana, no Burkina Faso, no Mali, na Costa do Marfim, em Gana, no Sudão, no Sudão do Sul, e no Congo.

DM – Aspectos epidemiológicos

Distribuição (cont.):

- ✓ "Cinturão Africano" das meningites, abrange áreas de 26 países, com população de aproximadamente 500 milhões de habitantes, com alta endemicidade e picos epidêmicos frequentes.
- ✓ Epidemias na estação seca (Dez – Jun).
- ✓ Fatores de risco: ambientais, clima desértico, com grande variação de temperatura, ventos e tempestades de areia, grande aglomeração populacional, condições de vida precárias, migrações e deslocamentos populacionais.
- ✓ Peregrinação anual a Meca (o Hajj) iniciou epidemia na Arábia Saudita que se disseminou para os países de maioria muçulmana no Oriente Médio, Ásia e África = Epidemia 2000/2003 – sorogrupo W.

« Meningitis Belt »



DM no Brasil/Aspectos epidemiológicos

- 3 epidemias importantes: 1945 – 1951 (A)

  1971 – 1976 (C e A)

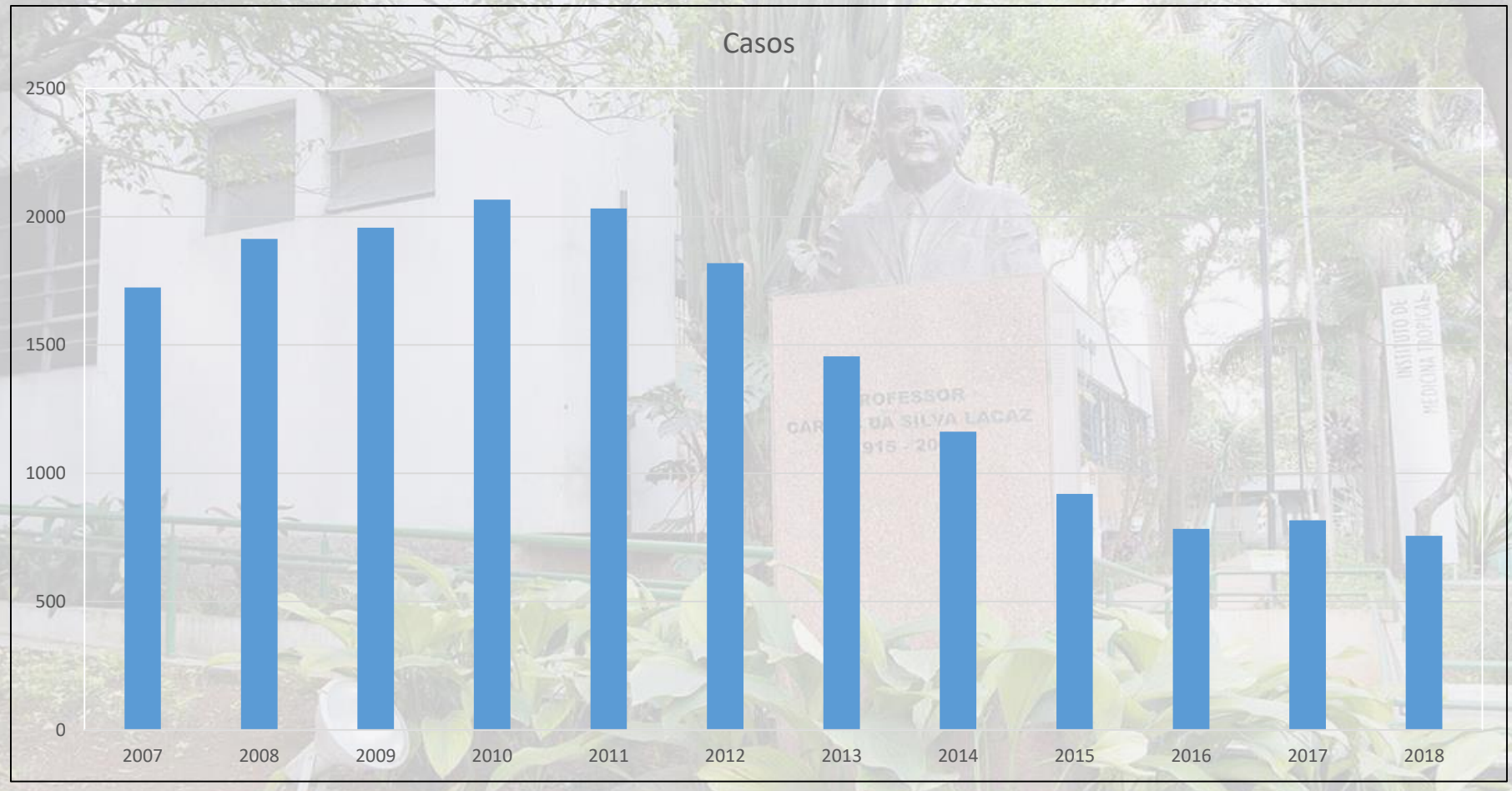
  1988 – 2003 (B)

- Incidência média anual: em torno de 2 por 100.000

  (na epidemia dos anos 70 chegou a 170/100.000).

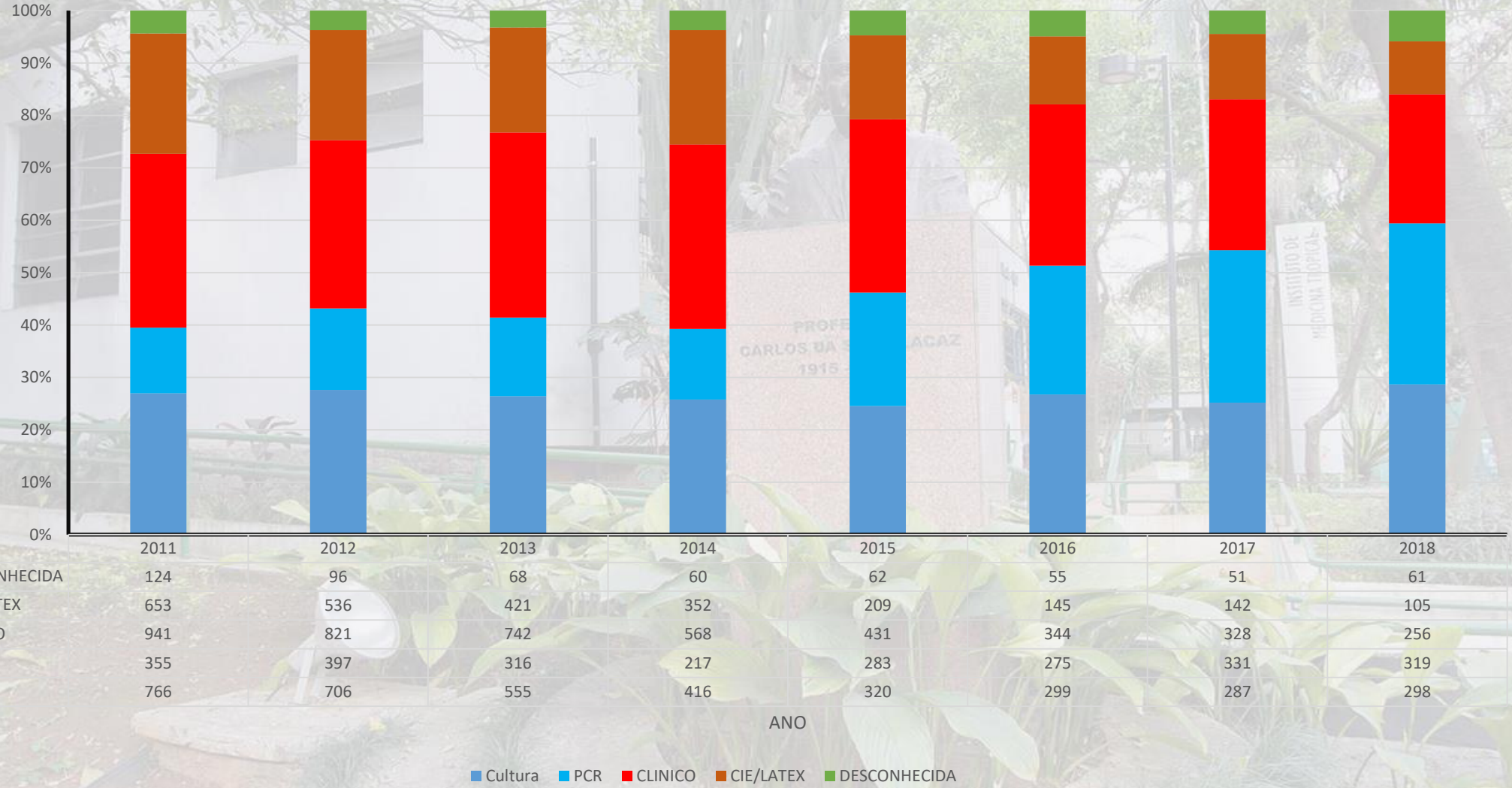
- Letalidade: 17-20%.

- São Paulo – tendências semelhantes. Epidemias dos anos 70 (A e C) e 80/2000 (B) – epicentro na Região Metropolitana de São Paulo.

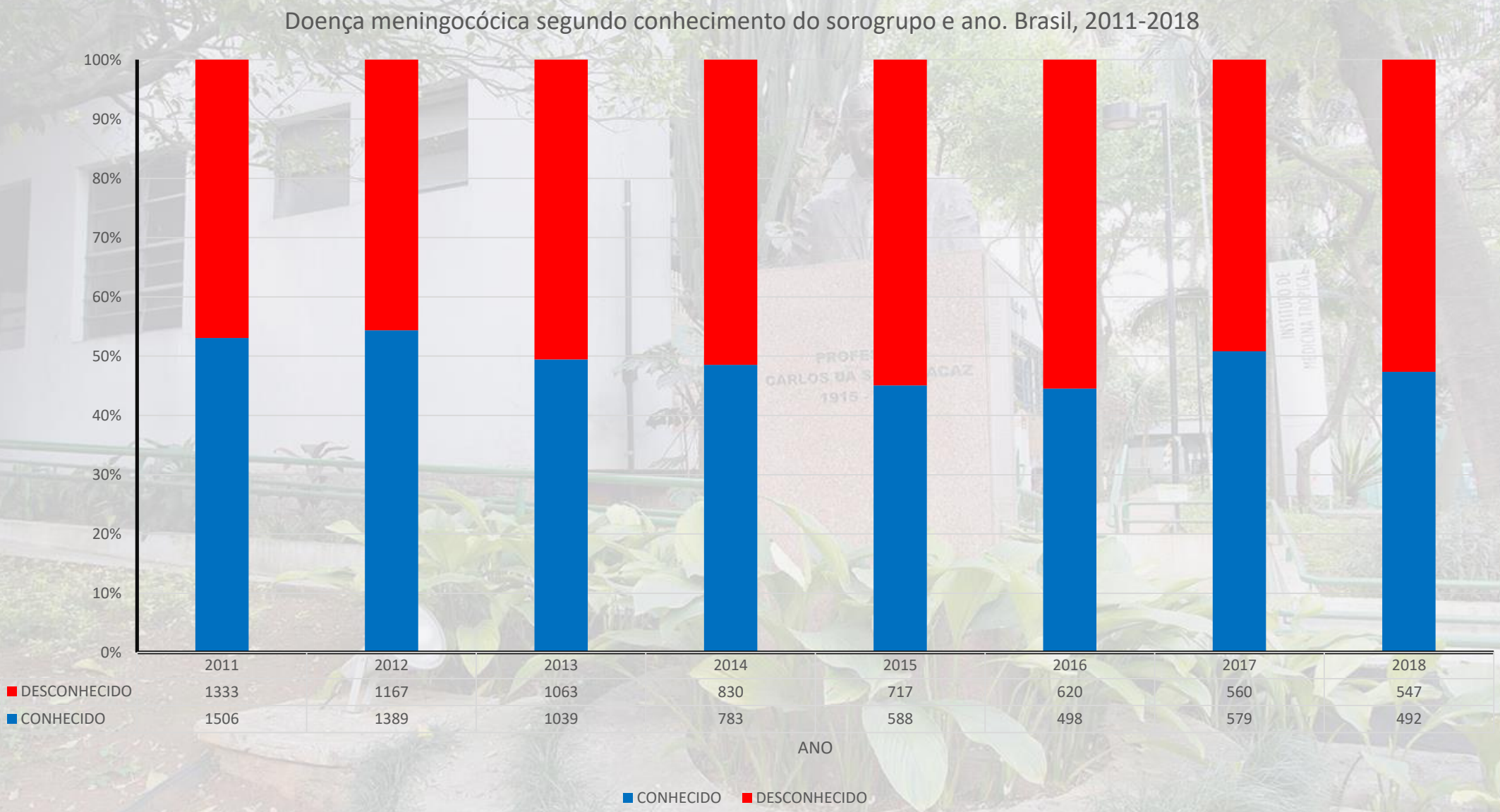


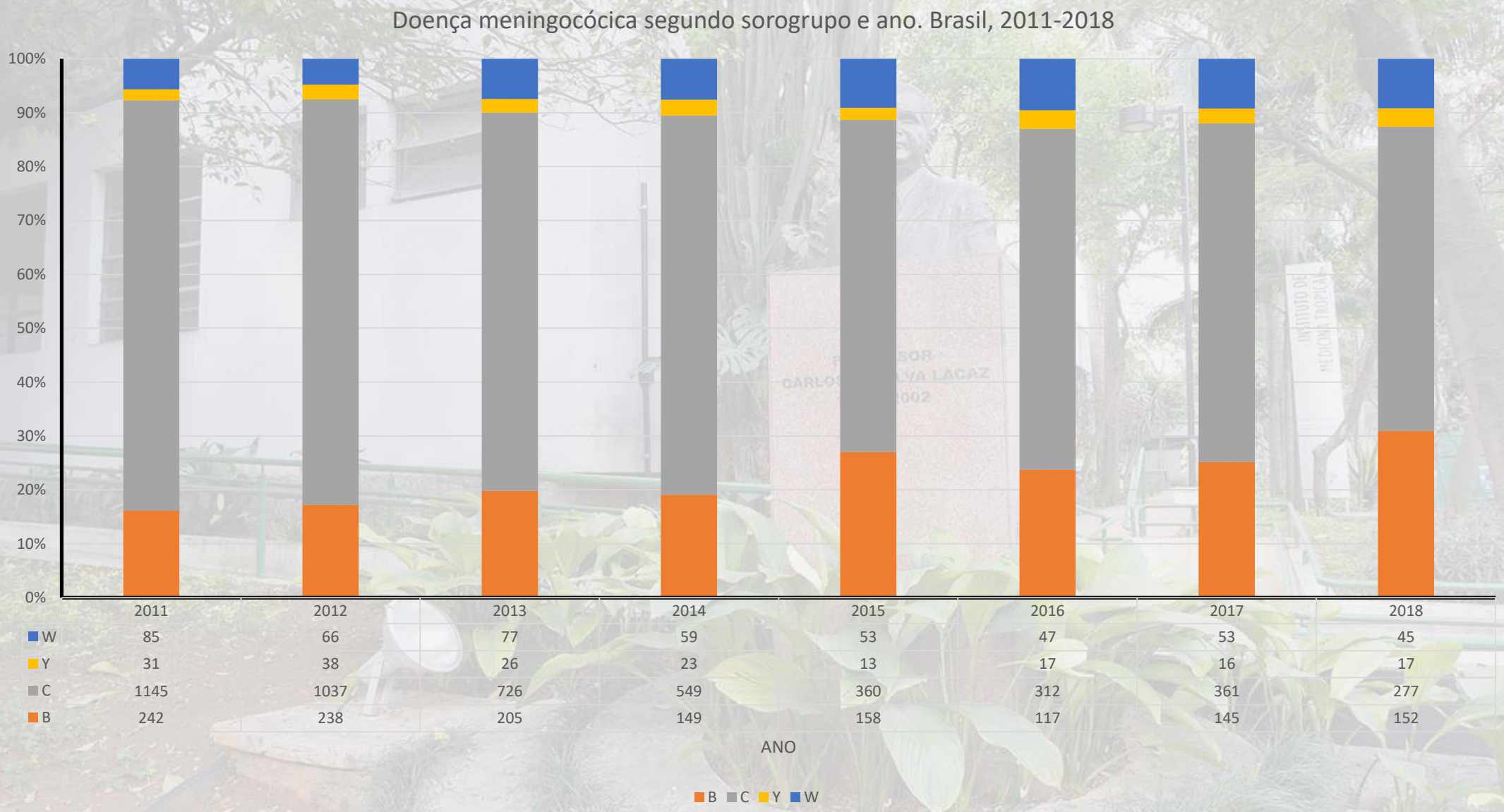
Distribuição anual dos casos confirmados de doença meningocócica, Brasil, 2007 – 2018

Doença meningocócica segundo critério de confirmação. Brasil, 2011-2018



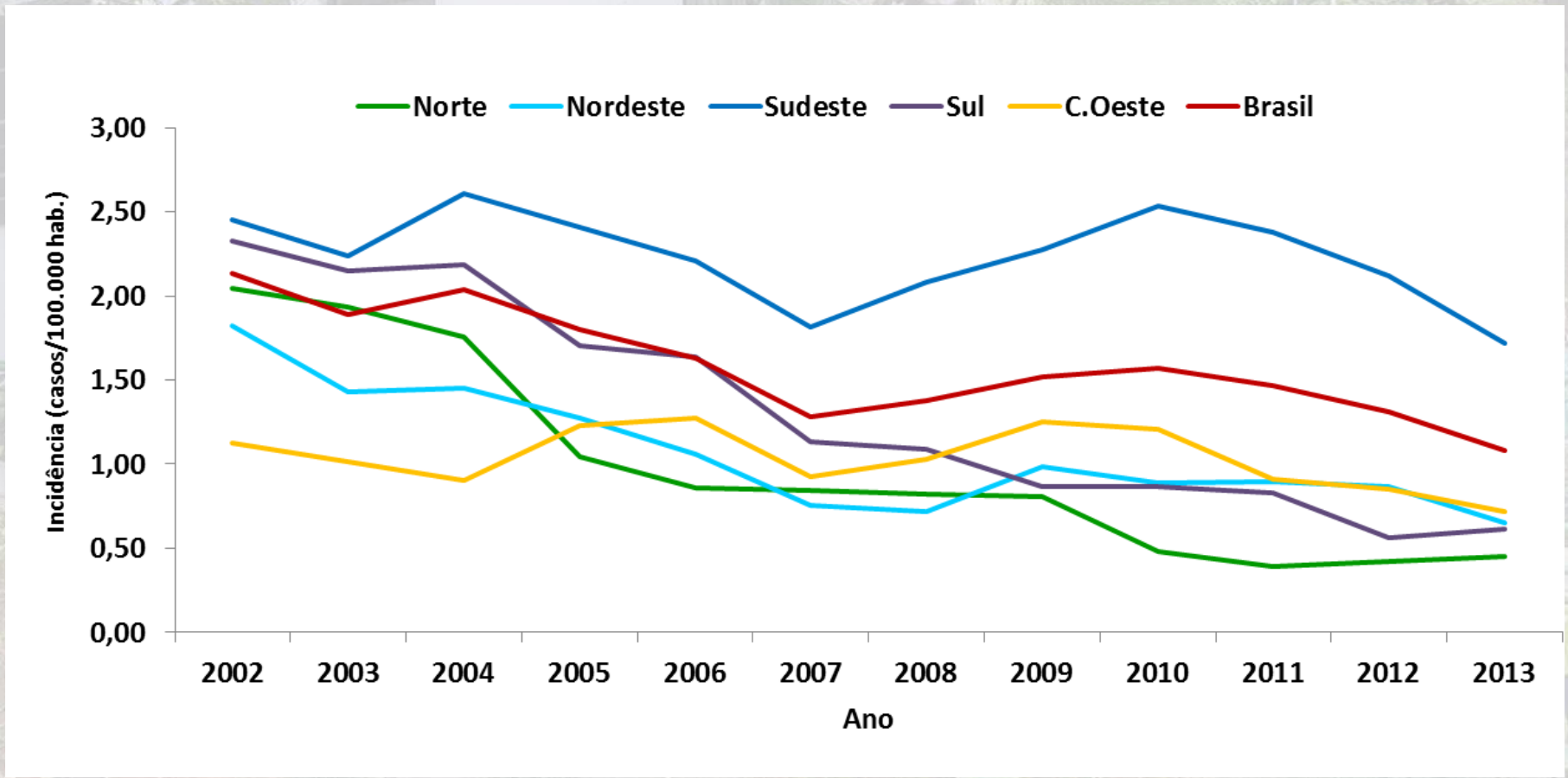
	2011	2012	2013	2014	2015	2016	2017	2018
DESCONHECIDA	124	96	68	60	62	55	51	61
CIE/LATEX	653	536	421	352	209	145	142	105
CLINICO	941	821	742	568	431	344	328	256
PCR	355	397	316	217	283	275	331	319
Cultura	766	706	555	416	320	299	287	298


Doença meningocócica segundo conhecimento do sorogrupo e ano. Brasil, 2011-2018
100%
90%
80%
70%
60%
50%
40%
30%
20%
10%
0%
2011 2012 2013 2014 2015 2016 2017 2018
DESCONHECIDO 1333 1167 1063 830 717 620 560 547
CONHECIDO 1506 1389 1039 783 588 498 579 492
ANO
CONHECIDO
DESCONHECIDO



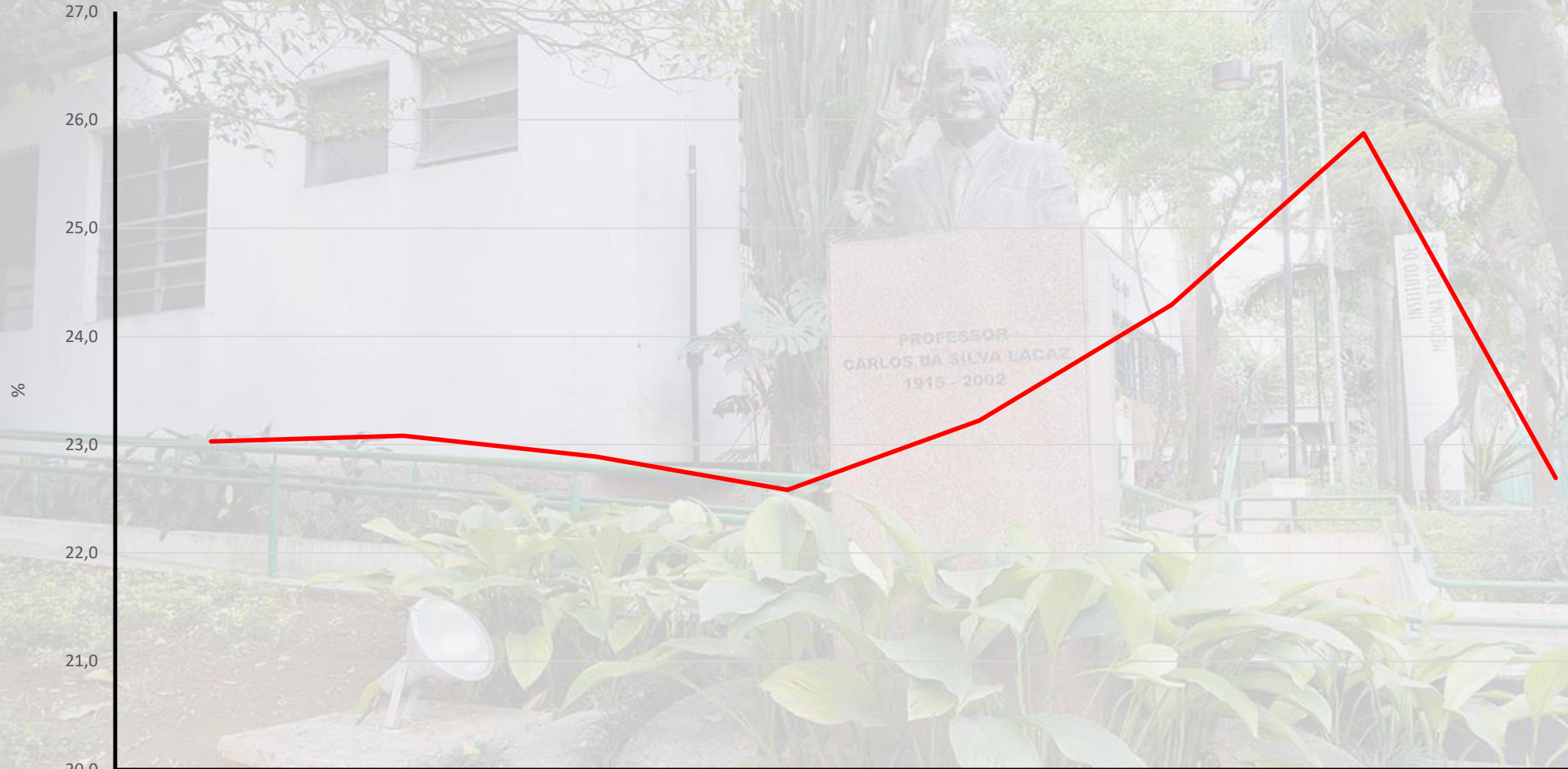
	2011	2012	2013	2014	2015	2016	2017	2018
W	85	66	77	59	53	47	53	45
Y	31	38	26	23	13	17	16	17
C	1145	1037	726	549	360	312	361	277
B	242	238	205	149	158	117	145	152

Incidência de DM por Região/Brasil, 2002 – 2013*



Fonte: SINAN/SVS/MS; Dados atualizados em: 12/05/2014

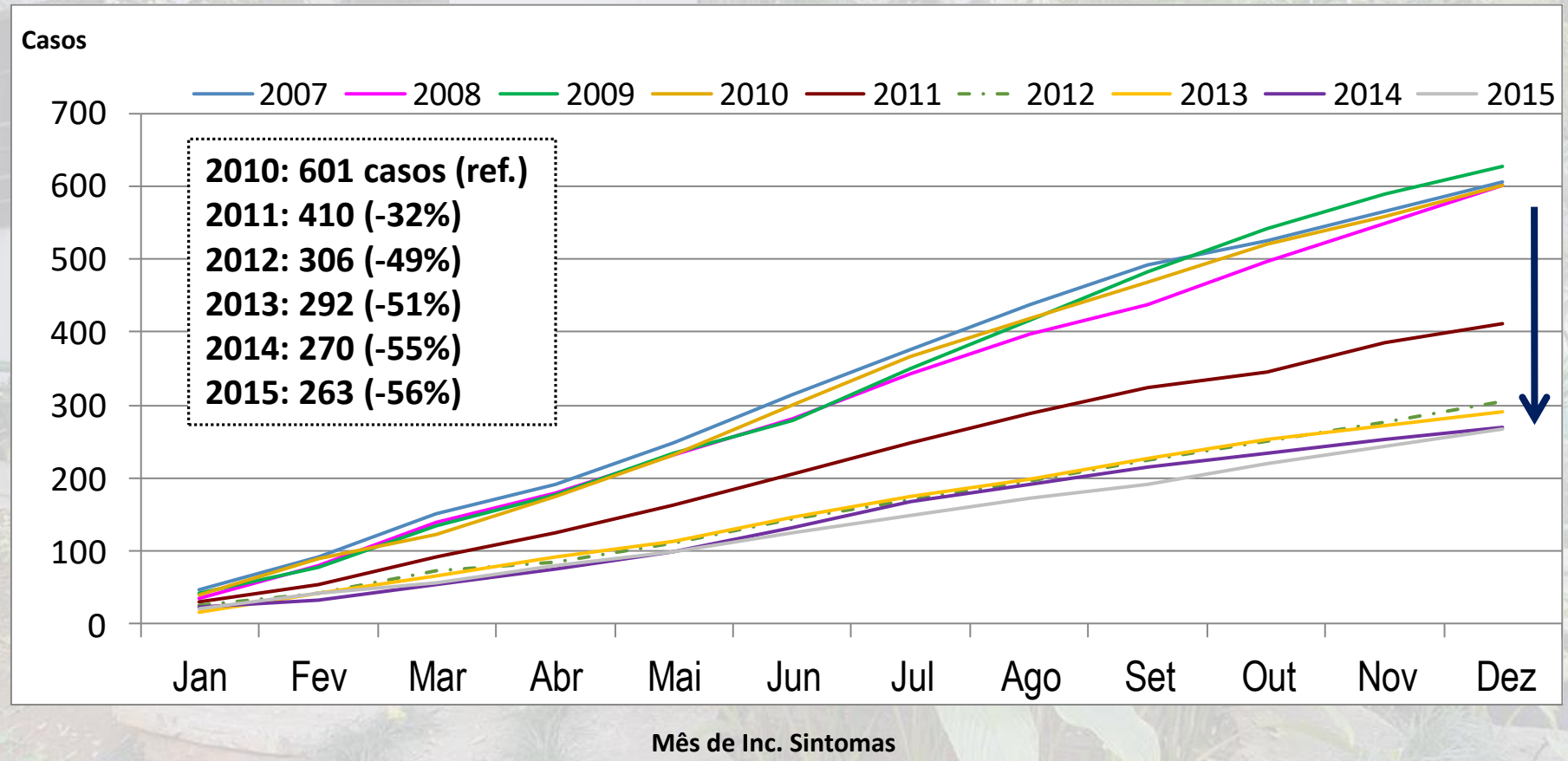
Doença meningocócica letalidade segundo ano. Brasil, 2011-2018



	2011	2012	2013	2014	2015	2016	2017	2018
LETALIDADE	23,0	23,1	22,9	22,6	23,2	24,3	25,9	22,7

Impacto da vacinação na ocorrência de doença meningocócica

Número de casos acumulados de Doença Meningocócica em < 2 anos por mês de ocorrência. Brasil, 2007 a 2015*



Fonte: SINAN/MS; *Dado preliminar atualizado em: Julho/2016
*Considerando todos os sorogrupos (A, B, C, W, Y, ignorados).

- **Vacina menigo C implantada a partir de agosto de 2010**

Table 1. Overall Incidence Rates of MD Before and After MCC Vaccination, Brazil*

	Incidence Rates (cases/100 000 habitants)				
Age Groups (years)	2008–2010 (prevaccine)	2011	Reduction (CI 95%)	2012	Reduction (CI 95%)
<1	13.5	10.8	20% (14–27)	7.9	42% (34–49)
1	7.2	4.2	42% (31–51)	2.9	60% (48–71)
2	5.8	5.1	12% (2–21)	2.5	57% (44–69)
3	5.5	5.6	-	4.0	27% (17–38)
4	4.2	5.1	-	4.5	-
5–9	2.7	2.9	-	2.7	-
10–14	1.9	1.8	-	1.8	-
15–19	1.4	1.7	-	1.6	-
20–29	0.8	0.9	-	0.8	-
30–39	0.6	0.6	-	0.7	-
40–49	0.6	0.7	-	0.8	-
50–59	0.5	0.7	-	0.6	-
≥60	0.4	0.6	-	0.5	-
Total	1.52	1.47	-	1.30	15% (12–17)

Abbreviations: CI, confidence interval; MCC, meningococcal C conjugate.
*Adapted from reference [4].

Meningococcal Disease: Epidemiology and Early Effects of Immunization Programs

Marco Aurelio P. Sáfadi,[1] Eitan N. Berezin,[1] and Luiza Helena F. Arlant[2,3]
[1]Faculdade de Ciências Médicas da Santa Casa de São Paulo, São Paulo, Brazil, [2]Faculdade de Medicina da Universidade Metropolitana de Santos, São Paulo, Brazil, and [3]Faculdade de Medicina de Marília, São Paulo, Brazil

Corresponding Author: Marco Aurélio P. Sáfadi, MD, PhD, Faculdade de Ciências Médicas da Santa Casa de São Paulo, Rua Afonso Braz, 579, cj 45, 04511-011, São Paulo, Brazil. E-mail: masafadi@uol.com.br.

Received March 19, 2014; accepted March 20, 2014.

Journal of the Pediatric Infectious Diseases Society, 2014

TABLE 1. Prevalence of *Neisseria meningitidis* Carriage Among Adolescents in Campinas, Brazil, 2012

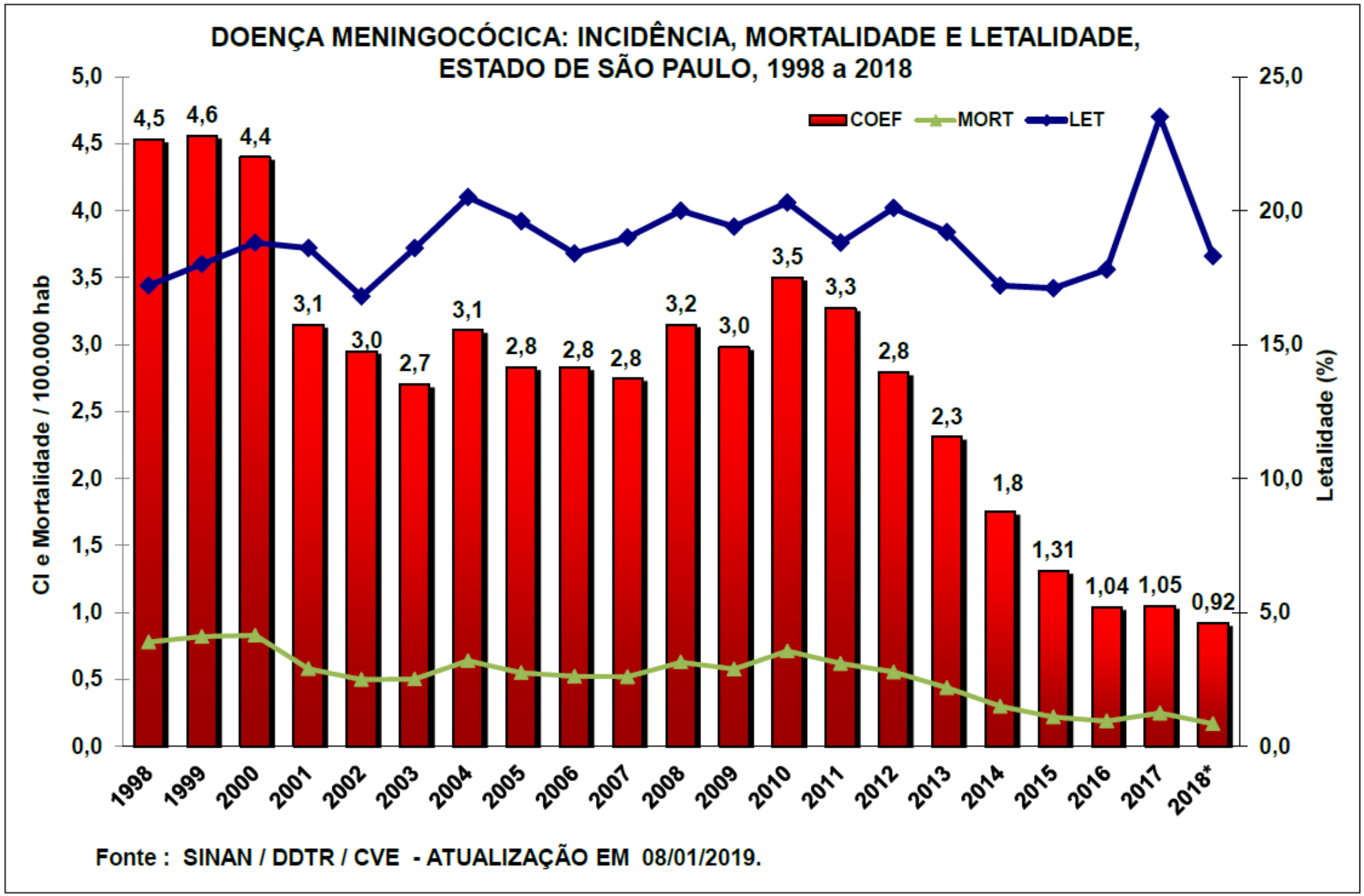
Variable	No. of Carriers/Total No. of Participants	Prevalence of Carriage (%)	Chi-Square Test	*P*
Age group				
A (11–13 yr)	45/487	9.2	3.502	0.173
B (14–16 yr)	40/450	8.9		
C (17–19 yr)	35/271	12.9		
Sex				
Male	63/643	9.8	0.028	0.866
Female	57/565	10.1		
School nature				
Public	102/899	11.3	7.834	0.005*
Private	18/309	5.8		
Level of education				
None	36/272	13.2	8.787	0.032*
Fundamental	29/282	10.3		
Basic	41/396	10.4		
High	14/252	5.6		
Crowding				
Yes	35/269	13.1	3.774	0.052
No	85/939	9.1		
Previous vaccination				
Yes	10/194	5.2	5.165	0.023*
No	76/723	10.5		
Passive smoking				
Yes	51/387	13.2	6.670	0.010*
No	69/821	8.4		
Attendance of nightclubs				
Yes	55/400	13.8	15.768	0.000*
No	28/491	5.8		
Influenza-like illness				
Yes	49/387	12.7	5.090	0.024*
No	70/821	8.5		

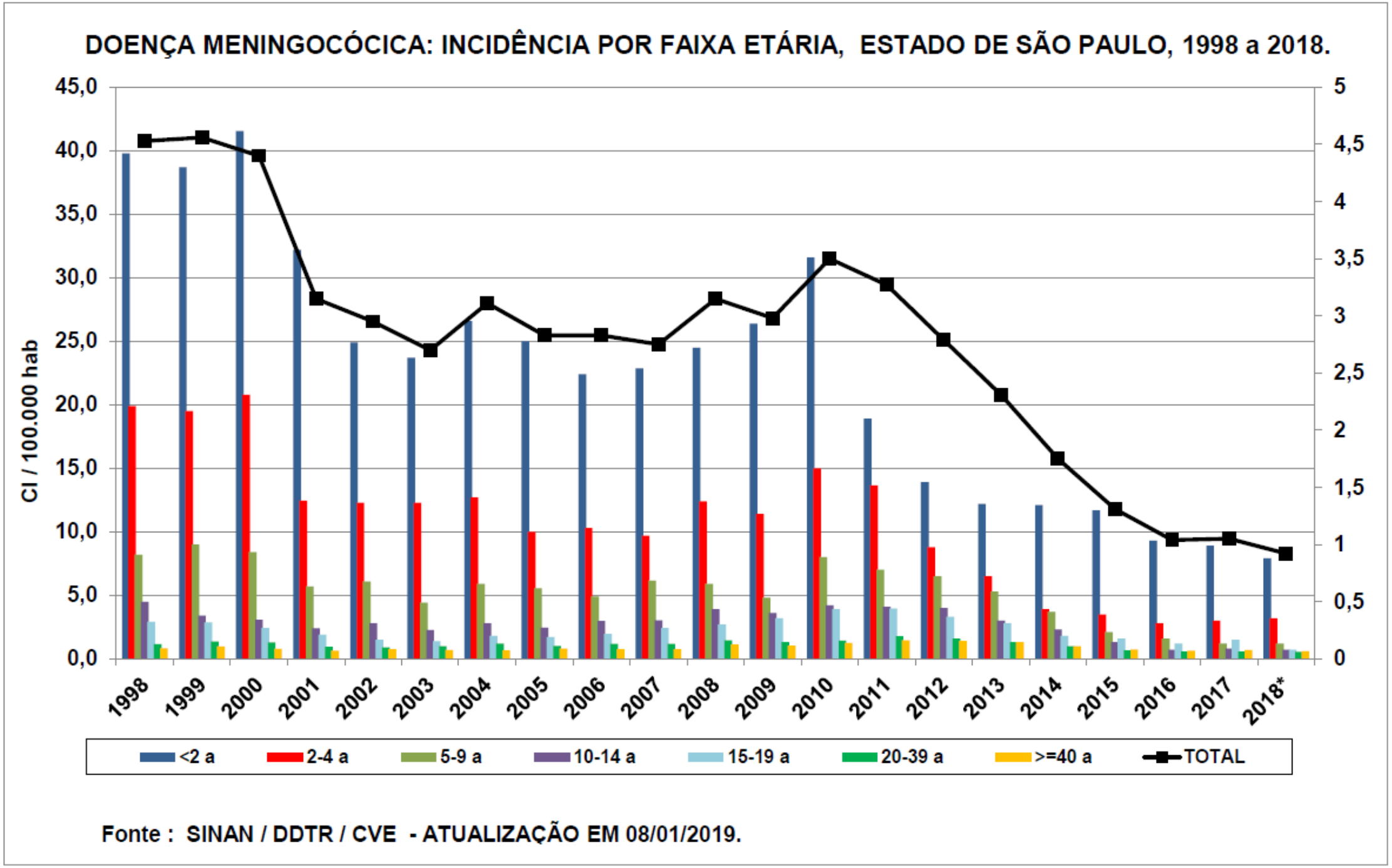
TABLE 2. Genogroup or Serogroup Distribution, Determined by Culture and/or Real-Time Polymerase Chain reaction, of *Neisseria meningitidis* Isolates from Oropharyngeal Swabs

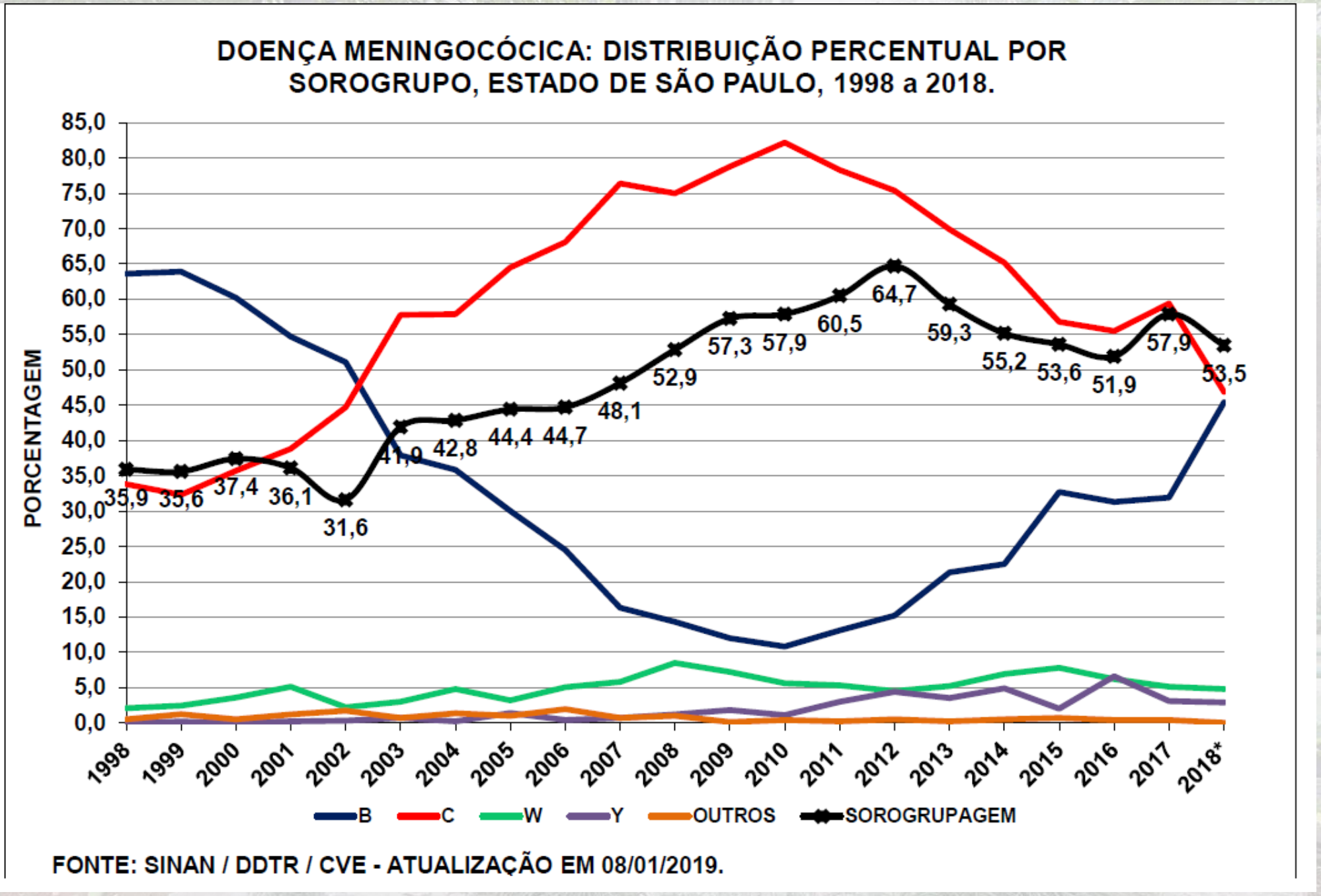
Genogroup/Serogroup	No. of Isolates	Rate of Carriage, % (95% CI)
NG	73	6.04 (4.8–7.6)
E	9	0.74 (0.4–1.5)
B	12	0.99 (0.5–1.8)
C	16	1.32 (0.8–2.2)
W	3	0.25 (0.1–0.8)
Y	6	0.49 (0.2–1.1)
Z	1	0.08 (0–0.5)
Positive	120	9.93 (8.3–11.8)
Negative	1088	90.07 (88.2–91.7)
Total	1208	100

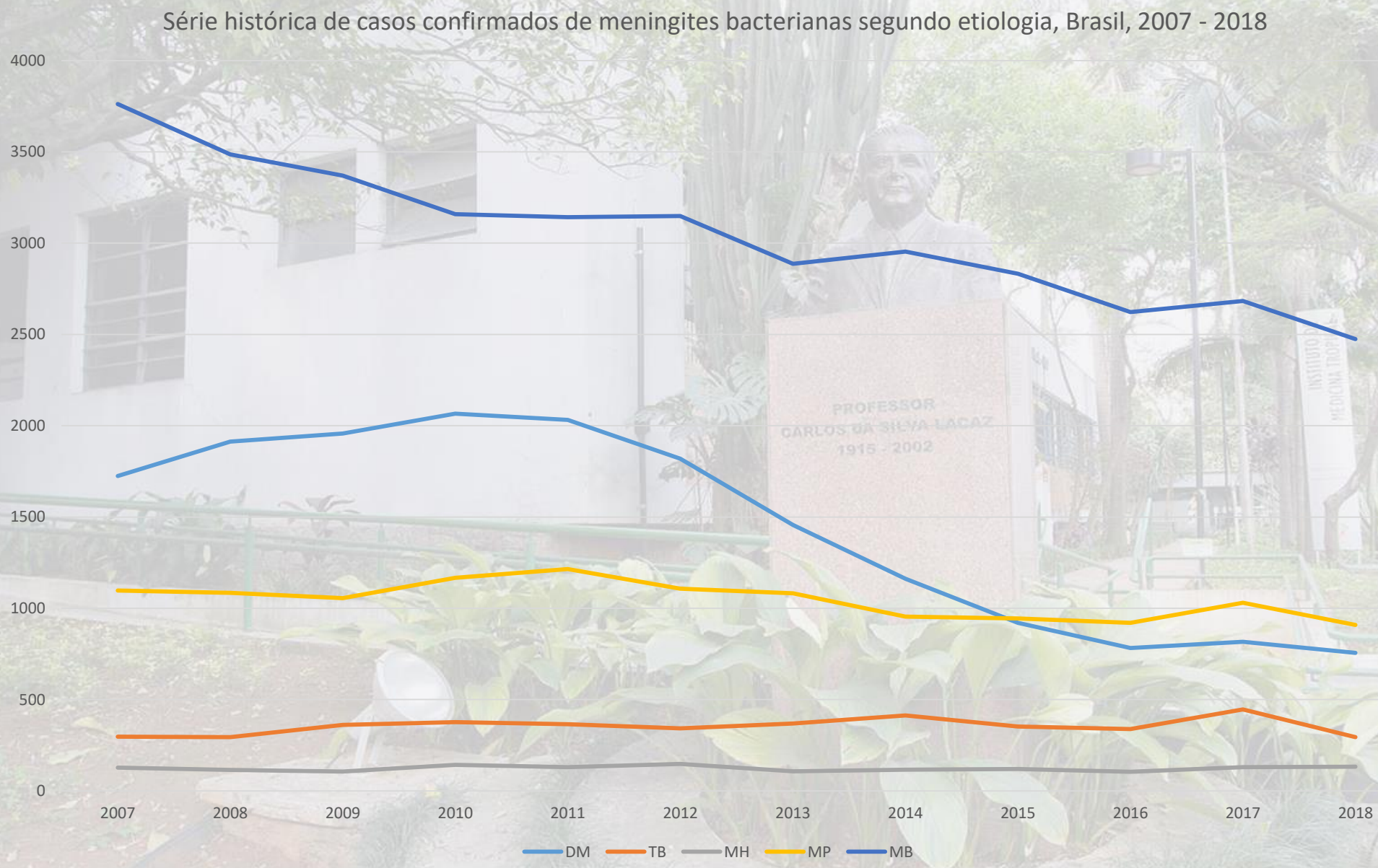
NG indicates nongroupable.

Moraes JC et al. Pediatr Infect Dis J, 2015


DOENÇA MENINGOCÓCICA: INCIDÊNCIA, MORTALIDADE E LETALIDADE,
ESTADO DE SÃO PAULO, 1998 a 2018
COEF
MORT
LET
CI e Mortalidade / 100.000 hab
Letalidade (%)
5,0
4,5
4,0
3,5
3,0
2,5
2,0
1,5
1,0
0,5
0,0
25,0
20,0
15,0
10,0
5,0
0,0
4,5
4,6
4,4
3,1
3,0
2,7
3,1
2,8
2,8
2,8
3,2
3,0
3,5
3,3
2,8
2,3
1,8
1,31
1,04
1,05
0,92
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018*
Fonte : SINAN / DDTR / CVE - ATUALIZAÇÃO EM 08/01/2019.


DOENÇA MENINGOCÓCICA: INCIDÊNCIA POR FAIXA ETÁRIA, ESTADO DE SÃO PAULO, 1998 a 2018.
CI / 100.000 hab
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
5
4,5
4
3,5
3
2,5
2
1,5
1
0,5
0
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018*
<2 a
2-4 a
5-9 a
10-14 a
15-19 a
20-39 a
>=40 a
TOTAL
Fonte : SINAN / DDTR / CVE - ATUALIZAÇÃO EM 08/01/2019.


DOENÇA MENINGOCÓCICA: DISTRIBUIÇÃO PERCENTUAL POR SOROGRUPO, ESTADO DE SÃO PAULO, 1998 a 2018.
PORCENTAGEM
85,0
80,0
75,0
70,0
65,0
60,0
55,0
50,0
45,0
40,0
35,0
30,0
25,0
20,0
15,0
10,0
5,0
0,0
35,9
35,6
37,4
36,1
31,6
41,9
42,8
44,4
44,7
48,1
52,9
57,3
57,9
60,5
64,7
59,3
55,2
53,6
51,9
57,9
53,5
1998
1999
2000
2001
2002
2003
2004
2005
2006
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018*
B
C
W
Y
OUTROS
SOROGRUPAGEM
FONTE: SINAN / DDTR / CVE - ATUALIZAÇÃO EM 08/01/2019.



DM: doença meningocócica. TB: meningite tuberculosa. MH: meningite por *Haemophylus influenzae* tipo B. MP: meningite pneumocócica. MB: meningite bacteriana não especificada

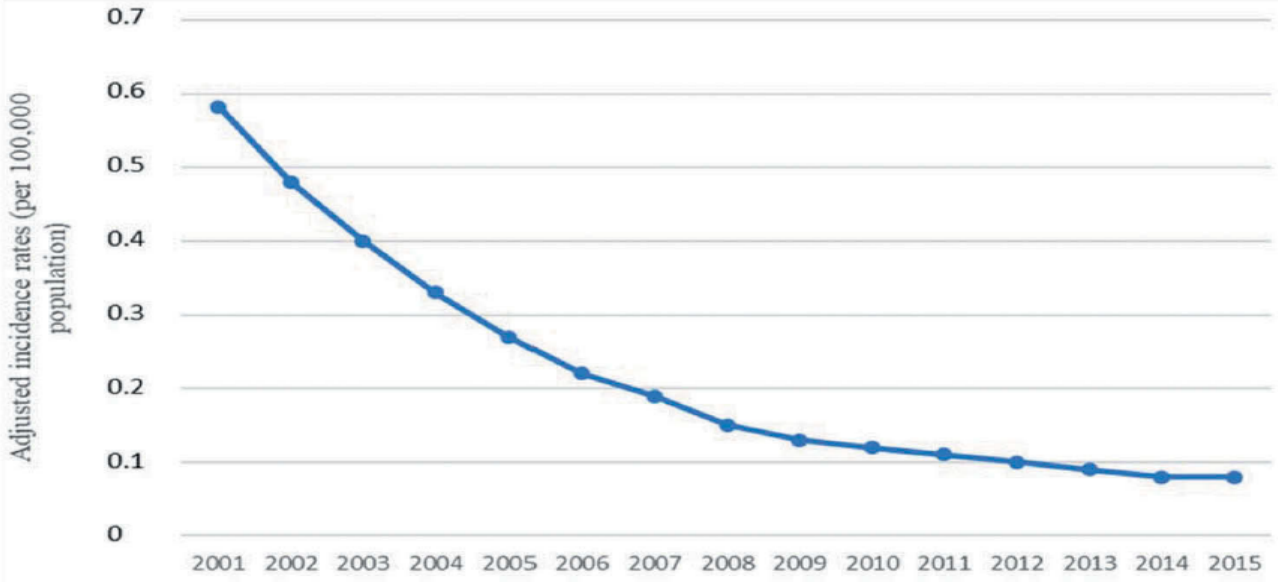


Figure 1. Serogroup B meningococcal disease adjusted incidence rates in Brazil between 2001 and 2015.

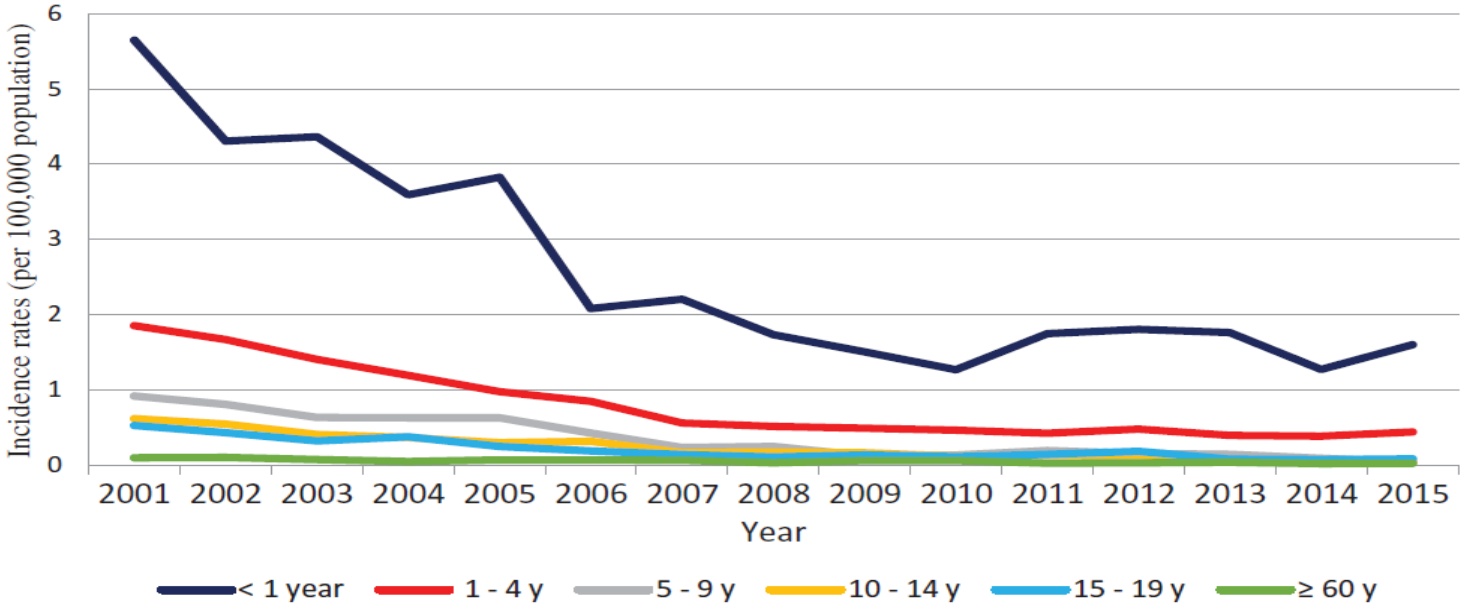


Figure 2. Incidence rates of serogroup B meningococcal disease according to age group in Brazil between 2001 and 2015.

Fonte: Chicuto L et al. Hum Vac Immunother, 2020

Vigilância, Prevenção & Controle

Objetivos do Programa de Vigilância Epidemiológica

Prevenção e Controle da Doença Meningocócica e Outras Meningites.

- **Atenção oportuna e adequada aos pacientes.**
- **Acompanhamento do comportamento epidemiológico.**
- **Controle de surtos e epidemias.**
- **Monitorização dos agentes etiológicos.**

Vigilância, Prevenção & Controle

Procedimentos

1. Notificação
2. Investigação clínico-laboratorial
3. Manejo adequado do caso
4. Investigação epidemiológica na comunidade
5. Vacinas contra DM

Vigilância, Prevenção & Controle

- Procedimentos

1. Notificação: imediata

Caso suspeito: todo paciente com sinais e sintomas de meningite (febre, cefaléia intensa, vômitos, rigidez de nuca/abaulamento de fontanela).

2. Investigação clínico-laboratorial

Caso confirmado:

- bacterioscopia de líquor ou lesões (diplococo G-);
- isolamento em cultura (LCR; sangue);
- detecção do antígeno (CIE, Látex, PCR);
- critério clínico-epidemiológico.

Vigilância, Prevenção & Controle

3. Manejo adequado do caso:

- Suporte clínico – emergência clínica; internação obrigatória.
- Colher material – diagnóstico (bacteriologia e biologia molecular), antes de instituir a antibioticoterapia.
- Isolar por apenas 24 h após a administração de tratamento adequado.
- Na DM - quimioprofilaxia na alta, com rifampicina (exceto para os pacientes tratados com ceftriaxona).

Vigilância, Prevenção & Controle

4. Investigação epidemiológica na comunidade na DM:

Objetivos: busca de casos secundários; identificação dos comunicantes:

- Coabitantes domiciliares, creches, colegas de sala ou alojamento, pessoas que tiveram contacto com secreção nos últimos 10 dias antes do início dos sintomas do caso índice, profissionais de saúde que tiveram contato desprotegido com secreções do caso índice.

Vigilância, Prevenção & Controle

- Quimioprofilaxia:
- Quimioprofilaxia – simultânea e rápida (24 horas) nos comunicantes

Rifampicina:

adultos: 600mg – 12/12 hs. – 2 dias

1m – 10 anos: 10mg/kg (máx. 600)

< 1 m: 5mg/kg

observação por 10 dias

- Estudo da eficácia da quimioprofilaxia na prevenção secundária da DM:
  - Incidência no grupo que recebeu a quimioprofilaxia: 0/693
  - Incidência no grupo que não a recebeu: 5/1179 (0,424%), *CDC, 1976*

Epidemiol. Infect. (2015), **143**, 2259–2268. © Cambridge University Press 2015
doi:10.1017/S0950268815000849

REVIEW ARTICLE
Chemoprophylaxis and vaccination in preventing subsequent cases of meningococcal disease in household contacts of a case of meningococcal disease: a systematic review

L. TELISINGHE[1,2]*, T. D. WAITE[1,3,4], M. GOBIN[1], O. RONVEAUX[5], K. FERNANDEZ[5], J. M. STUART[2,5,6] AND R. J. P. M. SCHOLTEN[7]

SUMMARY

Household contacts of an index case of invasive meningococcal disease (IMD) are at increased risk of acquiring disease. In revising WHO guidance on IMD in sub-Saharan Africa, a systematic review was undertaken to assess the effect of chemoprophylaxis and of vaccination in preventing subsequent cases of IMD in household contacts following an index case. A literature search for systematic reviews identified a single suitable review on chemoprophylaxis in 2004 (three studies meta-analysed). A search for primary research papers published since 2004 on chemoprophylaxis and without a date limit on vaccination was therefore undertaken. There were 2381 studies identified of which two additional studies met the inclusion criteria. The summary risk ratio for chemoprophylaxis *vs.* no chemoprophylaxis (four studies) in the 30-day period after a case was 0·16 [95% confidence interval (CI) 0·04-0·64, $P = 0·008$]; the number needed to treat to prevent one subsequent case was 200 (95% CI 111-1000). A single quasi-randomized trial assessed the role of vaccination. The risk ratio for vaccination *vs.* no vaccination at 30 days was 0·11 (95% CI 0·01–2·07, $P = 0·14$). The results support the use of chemoprophylaxis to prevent subsequent cases of IMD in household contacts of a case. Conclusions about the use of vaccination could not be drawn.

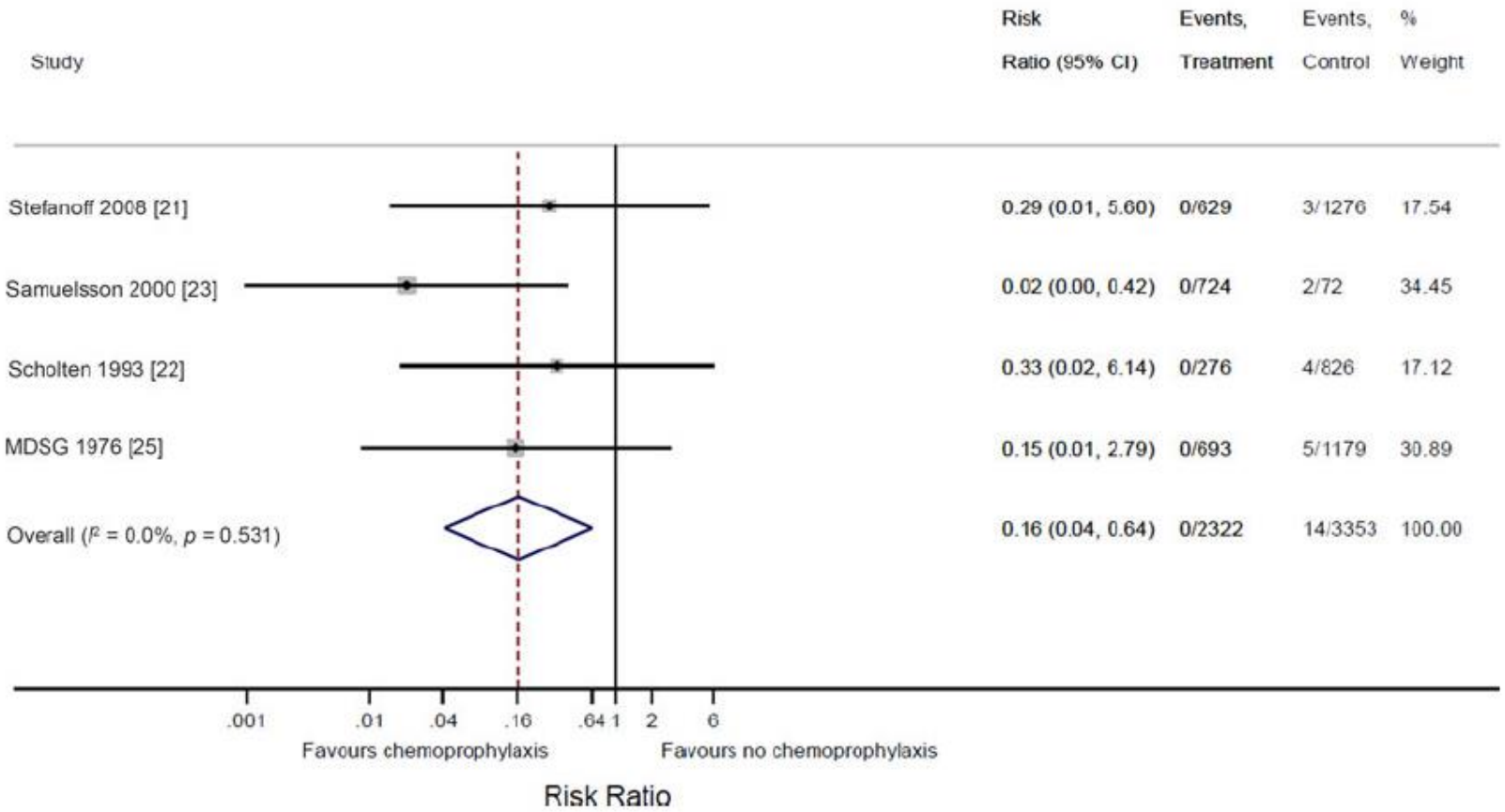


Fig. 2. Forest plot of the risk of subsequent cases of meningococcal disease in the 30 days after an index case in household contacts given and not given chemoprophylaxis.

Vigilância, Prevenção & Controle

- Vacina Meningocócica C (conjugada) foi incorporada ao Calendário Básico de Vacinação da Criança a partir do final de 2010, para uso universal.
- A vacina em incorporação é produzida pela multinacional farmacêutica Novartis, em um acordo de transferência tecnológica com a FUNED/MG.
- Contém 10 g de oligossacarídio meningocócioco C e entre 12,5 e 25 g da proteína CRM197 do *Corynebacterium diphteriae*.
- Esquema preconizado no Brasil:

  2 doses, aos 3 e 5 meses de idade.

  Reforço aos 12 meses.

Recomendado o uso da vacina para controle de surtos, nos quais o agente tenha sido identificado.

Para indicação da vacinação de bloqueio em surtos comunitários ou institucionais: 3 ou mais casos relacionados, com confirmação laboratorial do sorogrupo.

Vigilância, Prevenção & Controle

Vacina contra *Haemophilus influenzae tipo B*

- Em 1999 o PNI incorporou a vacina contra HIB no calendário de vacinação universal dos menores de um ano.
- Atualmente a vacina HIB faz parte da Vacina Pentavalente (DTP + HIB + HepB), administrada em 3 doses, aos 2, 4 e 6 meses de idade e um reforço entre 12 e 15 meses.

Vacina conjugada 10 valente contra *Streptococcus pneumoniae*

- Em 2010 o PNI incorporou a vacina conjugada 10 valente, produzida pela multinacional farmacêutica GSK.
- Esquema preconizado: 3 doses, aos 2, 4 e 6 meses, e um reforço aos 15 meses de idade.

Novas vacinas contra *Neisseria meningitidis*

Vigilância, Prevenção & Controle

- Vacina conjugada polissacáride-proteica **tetravalente (A + C + Y + W).**
  - ✓ Men ACWY, da Sanofi (MenQuadrifi™), e Men ACWY-CRM, da Novartis (Bexsero®).

Vigilância, Prevenção & Controle

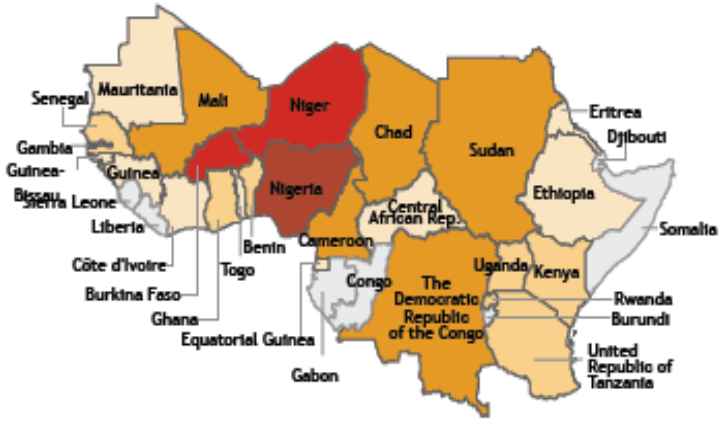
Novas vacinas contra *Neisseria meningitidis* sorogrupo B

- **Vacinas desenvolvidas a partir da prospecção de antígenos viabilizada pelo sequenciamento completo do genoma da bactéria.**
- **Duas vacinas estão no mercado internacional, a MenB-FHbp (Pfizer) e a MenB-4C (Novartis).**
- **Nos EUA, recomendadas para maiores de 10 anos em risco acrescido, e para adolescentes e adultos jovens (de 16 a 23 anos), em 2015.**

Nova vacina conjugada contra o sorogrupo A desenvolvida por uma parceria de várias instituições, coordenada pela Fundação Path e financiada pela Fundação Bill & Melinda Gates

Envisioned Impact

Men A epidemics present a major health crisis across the Meningitis Belt



Avg. cases per year (1966-2009[1])
- <500
- 500 - 2K
- 2K - 5K
- 5K - 10K
- 10K

Men A represents 85% of meningitis epidemic cases

An effective vaccine could deliver a significant public health impact

By 2016:

- Prevent over 1.4M cases
- Prevent more than 140,000 deaths
- Avert at least 300,000 disabilities
- Avoid a total of 12.7M DALYs
- Save ~$120M in diagnosis and treatment costs

Alguns resultados da vacinação com a conjugada contra o sorogrupo A

No Chade, país da região do Saara, com população de 11 milhões de habitantes.

Comparação de 2 regiões do país, uma que recebeu a vacinação em 2011 (aproximadamente 1,8 milhões de vacinados), e outra que não havia ainda recebido a vacinação.

Resultados em 2012:

Região vacinada: incidência de 2,48 por 100.000 (57 casos em 2,3 milhões de habitantes)

Região não vacinada: incidência de 43,8 (3.809 casos em 8,7 milhões),

Diferença de 94%.

Redução na proporção de portadores de *N. meningitidis* sorogrupo A na população

	Number of CSF samples	Diagnosis*					
		Meningococci				Pneumococci	Other
		A	W	X	Other		
Non-vaccinated regions†							
1–29 years	305	57	3	0	0	2	0
<1 or ≥30 years	24	2	1	0	0	2	0
Total	329	59	4	0	0	4	0
Vaccinated regions							
1–29 years	34	0	0	2	0	0	0
<1 or ≥30 years‡	3	0	0	0	0	0	0
Total	37	0	0	2	0	0	0

CSF=cerebrospinal fluid. *Diagnosis based on culture or latex test. †Includes regions where reactive vaccination in response to an outbreak was undertaken. ‡Not in the target group for vaccination.

Table 1: Diagnosis of serogroup A meningococcal meningitis in individuals from non-vaccinated and vaccinated regions in Chad

Redução no número de casos confirmados de DM pelo sorogrupo A

	Number tested	Meningococci isolated				
		All	A, P1·20,9*	W	X	Other†
Survey one (September–November, 2010, 13–15 months before vaccination)						
<1 year	74	0	0	0	0	0
1–29 years	670	6	6	0	0	0
≥30 years	254	0	0	0	0	0
Total	998	6	6	0	0	0
Carriage prevalence	–	0·6%	0·6%	0%	0%	0%
Survey two (August–October, 2011, 2–4 months before vaccination)						
<1 year	260	1	1	0	0	0
1–29 years	2904	45	25‡	3	6	11
≥30 years	1114	10	6	0	0	4
Total	4278	56	32	3	6	15
Carriage prevalence	–	1·3%	0·7%	0·07%	0·1%	0·4%
Survey three (April–June, 2012, 4–6 months after vaccination)						
<1 year	68	0	0	0	0	0
1–29 years	4665	39	1	1	5	32
≥30 years	268	2	0	0	0	2
Total	5001	41	1	1	5	34
Carriage prevalence	–	0·8%	0·02%	0·02%	0·1%	0·7%

PsA–TT=serogroup A meningococcal polysaccharide–tetanus toxoid conjugate vaccine. *Specimens in which the meningococcal serogroup A capsular region, *rpF* allele 1 (*rpF*-1), and a *porA* gene subtypes P1·20,9 were detected. †Other serogroups include specimens that were confirmed as *Neisseria meningitidis*, but not characterised as serogroup A subtype P1·20,9 or serogroup X or W. Further information about these specimens are given in the appendix. ‡One of these specimens yielded both a serogroup A and a serogroup X meningococcus.

Table 2: Meningococcal carriage in the Mandelia district of Chad before and after vaccination with PsA–TT

Projeto MenAfriVac

- Desde o seu início em 2010 foram vacinadas cerca de 235 milhões de pessoas em 16 países do Cinturão Africano das meningites.
- Países onde foi feita a campanha de vacinação: Benin, Burkina Faso, Camarões, Chade, Costa do Marfim, Etiópia, Gâmbia, Gana, Guiné, Mali, Mauritânia, Níger, Nigéria, Senegal, Sudão e Togo.

Impacto da MenAfriVac

Redução de 59% da incidência de casos suspeitos de meningites, na comparação entre populações vacinadas e não vacinadas, nos 9 países analisados.

Impact of MenAfriVac in nine countries of the African meningitis belt, 2010–15: an analysis of surveillance data

Caroline L Trotter, Clément Lingani, Katya Fernandez, Laura V Cooper, André Bita, Carol Tevi-Benissan, Olivier Ronveaux, Marie-Pierre Préziosi, James M Stuart

Summary

Background In preparation for the introduction of MenAfriVac, a meningococcal group A conjugate vaccine developed for the African meningitis belt, an enhanced meningitis surveillance network was established. We analysed surveillance data on suspected and confirmed cases of meningitis to quantify vaccine impact.

Methods We compiled and analysed surveillance data for nine countries in the meningitis belt (Benin, Burkina Faso, Chad, Côte d'Ivoire, Ghana, Mali, Niger, Nigeria, and Togo) collected and curated by the WHO Inter-country Support Team between 2005 and 2015. The incidence rate ratios (IRRs) of suspected and confirmed cases in vaccinated and unvaccinated populations were estimated with negative binomial regression models. The relative risk of districts reaching the epidemic threshold of ten per 100 000 per week was estimated according to district vaccination status.

Findings The incidence of suspected meningitis cases declined by 57% (95% CI 55–59) in vaccinated compared with unvaccinated populations, with some heterogeneity observed by country. We observed a similar 59% decline in the risk of a district reaching the epidemic threshold. In fully vaccinated populations, the incidence of confirmed group A disease was reduced by more than 99%. The IRR for non-A serogroups was higher after completion of MenAfriVac campaigns (IRR 2·76, 95% CI 1·21–6·30).

Interpretation MenAfriVac introduction has led to substantial reductions in the incidence of suspected meningitis and epidemic risk, and a substantial effect on confirmed group A meningococcal meningitis. It is important to continue strengthening surveillance to monitor vaccine performance and remain vigilant against threats from other meningococcal serogroups and other pathogens.

Funding World Health Organization.

Lancet Infect Dis 2017; 17: 867–72

Published Online May 22, 2017 http://dx.doi.org/10.1016/S1473-3099(17)30301-8

See Comment page 789

Disease Dynamics Unit, Department of Veterinary Medicine, University of Cambridge, Cambridge, UK (C L Trotter PhD, L V Cooper MPhil); **Inter-country Support Team for West Africa, World Health Organization, Ouagadougou, Burkina Faso** (C Lingani MSc, A Bita MD); **Department of Pandemic and Epidemic Diseases, World Health Organization, Geneva, Switzerland** (K Fernandez MPH, O Ronveaux MD); **Immunization and Vaccine Development Unit, Regional Office for Africa, World Health Organization, Brazzaville, Congo** (C Tevi-Benissan PhD);

Community-Based Outbreak of *Neisseria meningitidis* Serogroup C Infection in Men who Have Sex with Men, New York City, New York, USA, 2010–2013

Molly M. Kratz, Don Weiss, Alison Ridpath, Jane R. Zucker, Anita Geevarughese, Jennifer Rakeman, Jay K. Varma

In September 2012, the New York City Department of Health and Mental Hygiene identified an outbreak of *Neisseria meningitidis* serogroup C invasive meningococcal disease among men who have sex with men (MSM). Twenty-two case-patients and 7 deaths were identified during August 2010-February 2013. During this period, 7 cases in non-MSM were diagnosed. The slow-moving outbreak was linked to the use of websites and mobile phone applications that connect men with male sexual partners, which complicated the epidemiologic investigation and prevention efforts. We describe the outbreak and steps taken to interrupt transmission, including an innovative and wide-ranging outreach campaign that involved direct, internet-based, and media-based communications; free vaccination events; and engagement of community and government partners. We conclude by discussing the challenges of managing an outbreak affecting a discrete community of MSM and the benefits of using social networking technology to reach this at-risk population.

Emerging Infectious Diseases 2015, 21(8): 1379-86

Surto de doença meningococíca sorogrupo C em Nova Iorque.
Entre 2010 e 2013: 27 casos entre HSH e mais 7 entre não HSH, mas relacionados ao surto.
Surto relacionado ao uso de sites da internet e aplicativos para celulares para busca de parceiros.

Notes from the Field

Meningococcal Disease Among Men Who Have Sex with Men — United States, January 2012–June 2015

Hajime Kamiya, MD, PhD[1]; Jessica MacNeil, MPH[2]; Amy Blain, MPH[2]; Manisha Patel, MD[2]; Stacey Martin, MS[2]; Don Weiss, MD[3]; Stephanie Ngai, MPH[3]; Ifeoma Ezeoke, MPH[3]; Laurene Mascola, MD[4]; Rachel Civen, MD[4]; Van Ngo, MPH[4]; Stephanie Black, MD[5]; Sarah Kemble, MD[5]; Rashmi Chugh, MD[6]; Elizabeth Murphy, MPH[6]; Colette Petit[6]; Kathleen Harriman, PhD[7]; Kathleen Winter, MPH[7]; Andrew Beron, MPH[8]; Whitney Clegg, MD[8]; Craig Conover MD[8]; Lara Misegades, PhD[2]

Since 2012, three clusters of serogroup C meningococcal disease among men who have sex with men (MSM) have been reported in the United States. During 2012, 13 cases of meningococcal disease among MSM were reported by the New York City Department of Health and Mental Hygiene (*1*); over a 5-month period during 2012–2013, the Los Angeles County Department of Public Health reported four cases among MSM; and during May–June 2015, the Chicago Department of Public Health reported seven cases of meningococcal disease among MSM in the greater Chicago area. MSM have not previously been considered at increased risk for meningococcal disease. Determining outbreak thresholds* for special populations of unknown size (such as MSM) can be difficult. The New York City health department declared an outbreak based on an estimated increased risk for meningococcal infection in 2012 among MSM and human immunodeficiency virus (HIV)–infected MSM compared with city residents who were not MSM or for whom MSM status was unknown (*1*). The Chicago Department of Public Health also declared an outbreak based on an increase in case counts and thresholds calculated using population estimates of MSM and HIV-infected MSM. Local public health response included increasing awareness among MSM, conducting contact tracing and providing chemoprophylaxis to close contacts, and offering vaccination to the population at risk (*1–3*). To better understand the epidemiology and burden of meningococcal disease in MSM populations in the United States and to inform recommendations, CDC analyzed data from a retrospective review of reported cases from January 2012 through June 2015.

In May 2013 and again in August 2015, CDC requested that health departments review all cases of probable or confirmed meningococcal disease caused by any serogroup and reported among males during January 2012–June 2015 to the National Notifiable Disease Surveillance System and, if possible, determine MSM status. The requests were made through Epi-X, a secure communications network for public health officials, and follow-up with each state health department occurred through individual e-mail correspondence. All 50 state health departments and the health departments of New York City, Los Angeles County, Chicago, and the District of Columbia responded to CDC's request for information. Analysis of the data was restricted to cases occurring among MSM aged 18–64 years.

During the case review period, 527 meningococcal disease cases among males aged 18–64 years were reported. Although MSM status is not routinely collected as part of national meningococcal case reporting and might be underreported, 74 cases were identified among MSM: 23 from New York City, 14 from Los Angeles County, 11 from Chicago, and 26 sporadic cases occurring in states or geographic areas where fewer than three cases of the same meningococcal serogroup were reported among MSM during a 3-month period (*4*) (Table). MSM status could not be verified for the other 453 meningococcal disease cases among men aged 18–64 years using available data, nor could CDC distinguish between health departments reporting zero cases in MSM and those that had no data on MSM status.

Among the 74 reported cases among MSM aged 18–64 years, the median age was 31 years (range = 20–59 years). Thirty-seven (52%) of 71 patients with known race were white, 29 (41%) were black, two (3%) were Asian, and three (4%) were other race. *Neisseria meningitidis* serogroup C accounted for 62 (84%) cases; serogroups B, W, and Y accounted for five, two, and three cases, respectively; and the serogroup for two patients was unknown. Overall, 24 (32%) cases were fatal, including six of the New York City cases (26%), five (36%) of the Los Angeles County cases, three (27%) of the Chicago cases, and 10 (38%) of the sporadic cases. Among 63 patients for whom HIV status was reported, 37 (59%) were HIV-positive; among these, 11 (30%) died. Meningococcal vaccination status was known for 41 patients; among these, six (15%) were vaccinated with a quadrivalent meningococcal vaccine. Five of the six vaccinated patients had serogroup C meningococcal disease, and two of the five died. Further analysis of meningococcal disease rates, risk factors, and pulsed-field gel electrophoresis data from all cases identified among MSM is ongoing.

* Occurrence of three or more confirmed or probable cases during a period of ≤3 months among persons who are not close contacts of each other and who do not share a common affiliation, with a primary attack rate of at least 10 cases per 100,000 population.

Serogroup C invasive meningococcal disease among men who have sex with men and in gay-oriented social venues in the Paris region: July 2013 to December 2014

L Aubert (lyderic.aubert@ars.sante.fr)[1], M K Taha[2], N Boo[3], Y Le Strat[4], A E Deghmane[2], A Sanna[1], A S Barret[4], D Lévy-Bruhl[4], S Vandentorren[1], I Parent du Châtelet[4]

1. French Institute for Public Health Surveillance (InVS) in Paris region, Paris, France
2. National Reference Centre for Meningococci (NRC), Institute of Pasteur, Paris, France
3. Regional Public Health Agency (ARS) in the Paris region, Paris, France
4. French Institute for Public Health Surveillance (InVS), Saint-Maurice, France

Citation style for this article:
Aubert L, Taha MK, Boo N, Le Strat Y, Deghmane AE, Sanna A, Barret AS, Lévy-Bruhl D, Vandentorren S, Parent du Châtelet I. Serogroup C invasive meningococcal disease among men who have sex with men and in gay-oriented social venues in the Paris region: July 2013 to December 2014. Euro Surveill. 2015;20(3):pii=21016. Available online: http://www.eurosurveillance.org/ViewArticle.aspx?ArticleId=21016

Article submitted on 15 January 2015 / published on 22 January 2015

In November 2014, French public health authorities renewed the recommendation to target for vaccination against invasive meningococcal disease men who have sex with men (MSM) and all individuals ≥25 years attending social venues associated with the gay community. This policy was extended beyond the Paris region as a reaction to the continuing spread of serogroup C isolates belonging to a new lineage within clonal complex cc11 since the recommendation was first issued in July 2013.

among MSM in Canada in 2001 and in the United States in 2003 (Chicago) and in 2011–13 (New York City), a rapid risk assessment was prepared by the European Centre for Disease Prevention and Control (ECDC) in July 2013 [3,4].

We established a national enhanced surveillance and prompted the regional public health officers to assess a possible link to the MSM community for all cases infected by C:P1.5-1,10-8:F:3-6:cc11 isolates.

Surto de DM – sorogrupo C – em Paris, na comunidade de HSH
36 casos de janeiro de 2013 a dezembro de 2014

Aumento da incidência de doença meningocócica pelo sorogrupo W no Reino Unido, a partir de 2014

Search Results (31)

26 Feb 2017 Meningitis, meningococcal - Malta: fatal, serogroup B, vaccine shortage
25 Feb 2017 Meningitis, meningococcal - Togo: fatal, emergence of serogroup W
11 Jan 2017 **Meningitis, meningococcal - UK: emergence of serogroup W, changed vaccine policy**
30 Dec 2016 Meningitis, meningococcal - Italy (10): fatal
18 Dec 2016 Meningitis, meningococcal - Italy (09): (TC) fatal, sg. C, another case
03 Dec 2016 Meningitis, meningococcal - Italy (08): (TC) fatal, sg C, another case
23 Nov 2016 Meningitis, meningococcal - USA (02): (OR) college, sg B, sg B vaccine
22 Nov 2016 Meningitis, meningococcal - Italy (07): (TC) fatal, sg C, more cases
18 Nov 2016 Meningitis, meningococcal - Australia (04): (SA) sg B and W
13 Nov 2016 Meningitis, meningococcal - Italy (06): (TC) duration of vaccine

ProMED-mail alerts on HealthMap

View Full Map »

Follow us on:

<promed@promedmail.org>

[The incidence of invasive disease due to meningococcal serogroup W (Men W) has been found to have increased 88% between 2014 and 2015 in the UK (ProMED-mail post Meningitis, meningococcal - UK: emergence of serogroup W, changed vaccine policy 20150926.3673122). Between July 2013 and June 2014, just 98 cases were reported in England and Wales, but 184 cases were reported between July 2014-June 2015, at which time, Men W accounted for 15 per cent of all meningococcal disease. In 2009, Men W accounted for only 1-2 percent of all meningococcal cases in the UK. The strain of Men W (ST-11) is particularly virulent, causing more severe illness and a higher case fatality rate.

The vaccination schedule in the UK had been as follows: At 2 months of age, babies were given meningococcal serogroup B (Men B) vaccine; at 3 months of age, Men C vaccine; at 4 months, a 2nd dose of Men B; at 12-13 months, a 3rd dose of Men B and a 2nd dose of Men C in a combined vaccine with _Haemophilus influenzae_ type b (Hib); and at 13-18 years of age and 1st-time university students, meningococcal serogroups A, C, W, and Y (Men ACWY) vaccine (http://www.nhs.uk/Conditions/vaccinations/Pages/men-c-vaccine.aspx).

Since the Men C vaccine was introduced in 1999, the Men C disease has been virtually eliminated in the UK. Nowadays, there are just a handful of Men C cases each year, mainly in older, unvaccinated adults (http://www.nhs.uk/Conditions/vaccinations/Pages/men-c-vaccine.aspx). However, the near elimination of Men C as a consequence of the Men C conjugate vaccine program in the UK has been followed by the emergence of a "replacement" pathogen, Men W. Consequently, starting on 1 Jul 2016, the dose of Men C vaccine that had been offered to babies at 3 months of age has been removed from the vaccination schedule (http://www.nhs.uk/Conditions/vaccinations/Pages/men-c-vaccine.aspx). All children will continue to be offered the Hib/Men C vaccine at one year of age, and the tetravalent Men ACWY vaccine at 14 years of age, and students up to the age of 25 1st going to university, to prevent Men W disease (http://www.nhs.uk/Conditions/vaccinations/Pages/men-acwy-vaccine.aspx).

South East England is the most populous of the 9 official regions of England and includes the counties of Hampshire, Surrey, Berkshire, Buckinghamshire, East Sussex, the Isle of Wight, Kent, Oxfordshire, and West Sussex. A map of the counties of England can be found at http://www.picturesofengland.com/mapofengland/counties-map.html. - Mod.ML

A HealthMap/ProMED-mail map can be accessed at: http://healthmap.org/promed/p/40.]

See Also

2016

Meningitis, meningococcal - Europe (02): (Sweden,UK) scouts, sg W, ST-11, 2015 20161111.4622280
2015

Meningitis, meningococcal - UK: emergence of serogroup W, changed vaccine policy 20150926.3673122
Meningitis, meningococcal - Europe (02): (Sweden, UK) ex Japan, Boy Scouts alert 20150826.3604861
Meningitis, meningococcal - Europe: (Sweden, UK) ex Japan, Boy Scouts, RFI 20150820.3591304
.....mhm/ml/msp/dk

Rise in Group W Meningococcal Carriage in University Students, United Kingdom

Neil J. Oldfield, Caroline Cayrou, Mahab A.K. AlJannat, Ali A.A. Al-Rubaiawi, Luke R. Green, Shehzan Dada, Oliver D. Steels, Christopher Stirrup, Joe Wanford, Banan A.Y. Atwah, Christopher D. Bayliss, David P.J. Turner

MenACWY conjugate vaccination was recently introduced in the United Kingdom for adolescents and young adults to reduce disease from infection by *Neisseria meningitidis* group W. We conducted a cross-sectional meningococcal carriage study in first-year UK university students. Despite 71% MenACWY vaccine coverage, carriage of group W increased substantially.

Neisseria meningitidis causes severe sepsis and meningitis. The main reservoir in most populations is as-

university students (*8*). A catch-up campaign was used to offer MenACWY vaccine to all 14–18-year-old persons, with persons who left school in 2015 (17–18 years of age) given priority.

The rationale for targeting the vaccine to older adolescents and young adults stems from carriage studies showing that this demographic represents the principal reservoir of meningococcal carriage, as well as experience with other polysaccharide conjugate vaccines. Introduction of the MenC monovalent conjugate vaccines previously reduced carriage acquisition of MenC strains in adolescents and young adults (*9*). There is evidence, albeit limited, to suggest that the quadrivalent vaccine may have a similar effect on carriage of MenCWY strains (*10*,*11*). Reduced carriage in this population should lead to indirect protection of other age groups through herd immunity, thus enhancing the public health effect and

Aumento na prevalência de portadores de *N. meningitidis* sorogrupo W em estudantes universitários no Reino Unido.

Estudo entre os calouros da Universidade de Nottingham.

N = 769 (10,9% do total de calouros: 7.049)

Prevalência de portadores: 14% em Set 2015. 39% em Nov 2015 e 46% em Mar 2016.

Portadores do sorogrupo W: 0,7% em Set 2015 e 8% em Mar 2016.

Cobertura vacinal: 31% em Set 2015 e 71% em Mar 2016.

Dos 50 alunos portadores do sorogrupo W, 36 haviam sido vacinados (72%).

Emerg Infect Dis 23(6), June 2017

ProMED mail 1994~2014 20 YEARS
Program for Monitoring Emerging Diseases

View printable version Share this post:

Published Date: 2015-07-24 17:40:30
Subject: PRO/EDR> Meningitis, meningococcal - Niger (04): serogroup C, fatal, WHO, update
Archive Number: 20150724.3533998

MENINGITIS, MENINGOCOCCAL - NIGER (04): SEROGROUP C, FATAL, WHO, UPDATE
****
A ProMED-mail post
http://www.promedmail.org
ProMED-mail is a program of the
International Society for Infectious Diseases
http://www.isid.org

Date: Thu 23 Jul 2015
Source: WHO Emergencies preparedness, response [edited]
http://www.who.int/csr/don/23-july-2015-niger/en/

Disease outbreak news - Meningococcal disease - Niger (update)

Between 1 Jan and 28 Jun 2015, the Ministry of Public Health of Niger notified WHO of 8500 suspected cases of meningococcal meningitis, including 573 deaths. This was the largest meningitis outbreak caused by _Neisseria meningitidis_ serogroup C in the African meningitis belt.

The number of suspected cases increased very rapidly, tripling weekly between 1 and 15 May 2015. 13 districts in Niger crossed the epidemic threshold. The 5 districts of Niamey, Niger's capital and largest city, reported 5267 suspected cases and 260 deaths.

The outbreak peaked between 4 and 10 May 2015 when 2182 cases, including 132 deaths, were reported. Since then, the outbreak declined substantially -- from 22 to 28 Jun, a total of 11 cases, including 2 deaths, were reported.

Laboratory tests confirmed the predominance of _Neisseria meningitidis_ (Nm) serogroup C in the affected areas, with Nm serogroup W also being identified in 12 percent of positive samples. Although serogroup C has been the predominant cause of meningitis in wealthy countries, it has never been of high concern in Africa.

An epidemic committee was activated to manage the outbreak at all levels of the country. An international team comprising experts from WHO and the US Centers for Disease Control and Prevention (CDC) was deployed to support the Ministry of Public Health in carrying out epidemiological investigations and strengthening the national surveillance capacity.

Together with its partners, WHO assisted the government of Niger in the implementation of mass vaccination campaigns and other emergency control measures. The International Coordinating Group (ICG) on Vaccine Provision for Epidemic Meningitis Control approved 4 vaccination requests and released 965 000 doses of multivalent C and W containing polysaccharide vaccine and 200 000 doses of ACYW conjugate vaccine. Furthermore, the government of Niger obtained 200 000 doses of polysaccharide ACWY vaccine from the government of Mali.

In addition to mass immunization campaigns and enhanced surveillance, social mobilization and case management activities were performed in all affected areas. These measures led to the control of the outbreak. Currently, all districts are below the epidemic threshold.

--
Communicated by:

Surto de DM – sorogrupo C no Niger, 2015

Epidemia de doença meningocócica pelo sorogrupo W no Togo, África Ocidental

PRO/PORT> Doença meningocócica - Togo, surto, sorogrupo W, OMS/WHO

promed-port@promedmail.org
para promed-port-po.

DOENÇA MENINGOCOCICA - TOGO, SURTO, SOROGRUPO W, OMS/WHO
****
Uma mensagem / Una mensaje / de ProMED-PORT
<http://www.promedmail.org>
ProMED-mail e um programa da / es un programa de la
International Society for Infectious Diseases
<http://www.isid.org>

Data: Quinta-feira, 02 de março de 2017
Fonte: OMS/WHO [23/02/2017] [editado]
<http://www.who.int/csr/don/23-february-2017-meningococcal-disease-togo/en/>

Meningococcal disease - Togo

Since 1 January 2017, 201 suspected cases of meningitis with 17 deaths were reported by 19 health districts.

In week 2, the district of Akebou which is part of the Plateau Region issued an alert after 4 cases of meningitis were reported.

In week 4, the epidemic threshold was reached with 9 cases and an attack rate of 12.4 per 100 000 inhabitants.

>From 2 January to 12 February 2017, 48 suspected meningitis cases with 3 deaths were reported (case fatality rate of 6.3%). Of these, 14 specimens were confirmed as _Neisseria meningitidis_ serogroup W by PCR.

The Plateau Region, together with the other 3 regions in the country benefited from the mass vaccination campaign with MenAfriVac in December 2014.

Togo is part of the African meningitis belt and documents cases and deaths due to meningitis every year. In 2016, the country recorded an epidemic in the northern part caused by _Neisseria meningitidis_ serogroup W. A total of 1975 cases and 127 deaths were reported in 2016.

Public health response

In response to the outbreak, the following measures are being implemented:
- 56.000 doses of meningitis vaccines have been requested from the International Coordinating Group (ICG) for the planned vaccination campaign.
- WHO Field Mission was deployed in the field to strengthen outbreak management.
- Strengthening of meningitis surveillance at the district level.
- Training of clinicians at the district level on case management.
- Conducting cross-border meetings with Ghana and Benin.

MENINGITIS, MENINGOCOCCAL - AFRICA MENINGITIS BELT: EMERGENCE OF NEW SEROGROUPS POST-MASS VACCINATION
****

A ProMED-mail post
http://www.promedmail.org
ProMED-mail is a program of the
International Society for Infectious Diseases
http://www.isid.org

Date: Tue 19 Mar 2019
Source: Outbreak News Today [edited]
http://outbreaknewstoday.com/menafrivac-brings-meningitis-africa-strains-rising-83510/

The major cause of meningitis in Africa has changed in recent years, a study published in EBioMedicine and funded by Meningitis Research Foundation has confirmed. A type of bacterial meningitis called MenA (meningococcal group A) has seen huge declines, but now meningococcal groups W, X, and C have risen as major causes of meningitis in the African region known as the meningitis belt [Ref. 1].

The meningitis belt countries of sub-Saharan Africa have been repeatedly devastated by meningitis epidemics since the early 1900s. Fortunately, since the introduction of the vaccine MenAfriVac in 2010, over 300 million 1-29-year-olds living in the meningitis belt countries have been vaccinated against MenA, and there has been a dramatic decline in cases of MenA. However, meningitis caused by other types of meningococcal bacteria are rising, and the disease remains a major public health threat.

In a new study, researchers from the 3 World Health Organization (WHO) Collaborating Centers for Reference and Research on Meningitis, in collaboration with the national laboratories in Burkina Faso, Niger, Chad, and Mali, as well as with the Agence de Medecine Preventive, have provided further evidence about the different meningococcal strains that are now causing disease in sub-Saharan Africa, revealing how these bacteria travel between countries.

Professor Dominique Caugant from the Norwegian Institute of Public Health, who led the study, said, "We used cutting-edge sequencing technology to study the genetic makeup of over 700 samples of meningococcal bacteria collected from patients with meningitis in the meningitis belt from 2011 to 2016. We've identified that previously circulating strains of MenX, MenW, as well as MenC strains have evolved to become major causes of meningococcal meningitis and are continuing to expand. The new strain of MenC that caused massive epidemics in Niger and Nigeria in 2015 and again in 2017 is continuing to evolve and expand into other countries. Interestingly, this research also revealed that, for some meningococcal strains, there is a geographical split, with 'families' of bacteria causing disease in western Africa forming clusters distinct from those in central Africa. These bacteria are evolving locally and new, and potentially more virulent strains may emerge in a region of the world that has been hit the hardest by meningitis."

Vigilância, Prevenção & Controle

- **Leitura recomendada:**

Brasil/ Ministério da Saúde – Guia de Vigilância em Saúde. 2019, 4ª ed. Brasília. Capítulo 1, pp 33-44. Disponível em http://bvsms.saude.gov.br/bvs/publicacoes/guia_vigilancia_saude_4ed.pdf

Heymann D. Control of Communicable Diseases Manual. 2015, 20ª ed. Washington, APHA/WHO. Capítulo "Meningitis", pp 401-413

Harrison L. Prospects for vaccine prevention of meningococcal infection. Clinical Microbiology Reviews 2006, 19: 142-164

Snape MD et al. Immunogenicity of a tetravalent meningococcal glycoconjugate vaccine in infants: a randomized controlled trial. JAMA 2008, 299(2): 173-184

Santolaya ME et al. Immunogenicity and tolerability of a multicomponent meningococcal serogrup B (4CMenB) vaccine in healthy adolescents in Chile. Lancet 2012, 379: 617-24

Kratz M et al. Community-based outbreak of N. meningitidis serogroup C infection in MSM, New York City, NY, USA, 2010-13. Emerging Infectious Diseases 2015, 21(8):1376-86

Aubert L et al. Serogroup C ivasive meningococcal disease among MSM and in gay-oriented social venues in the Paris region, July 2013 – December 2014. Eurosurveillance 2015, 20(3):pii21016

Taha MK et al. Evolutionary events associated with an outbreak of meningococcal disease in men who have sex with man. PLoS One, 2016

Agradecimentos

Secretaria de Vigilância em Saúde/MS
Divisão de Doenças Respiratórias/CVE/SES/SP
C. Domingues/ SVS/MS
A. Teixeira/ SVS/MS