Epidemiological status and current vaccination programme in the Netherlands

“Public Health Management bei invasiven Meningokokken-Erkrankungen”

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* for the menC research group

Marburg, May 6th 2004
“Wer reitet so spät durch Nacht und Wind?
Es ist der Vater mit seinem Kind;
Er hat den Knaben wohl in dem Arm,
Er fasst ihn sicher, er hält ihn warm.

Mein Sohn, was birgst du so bang dein Gesicht?
Siehst, Vater, du den Erlkönig nicht?
Den Erlkönig mit Kron und Schweif?
Mein Sohn, es ist ein Nebelstreif…”

Goethe, Der Erlkönig

Symposium of the Dutch Meningitis Foundation, November 12th 2003,
Marburg, May 6th 2004
citation by M. van Deuren
Contents

• Epidemiology of serogroup C meningococci
• Decision making strategy
• Organization of the campaign
• Results
• Conclusions
Bird’s eye view: infectious disease control in the Netherlands

Municipalities = 500

PHS = 40

• decentralized control
• decentralized responsibility
• national control policy (guidelines): OMT

Source:
National Co-ordination Structure for Communicable Diseases Outbreak Management

Ministry of Health Council Board of policy makers (BAO)
Meningococcal disease: data collection

- Meningococcal disease (meningitis and septicemia): notifiable

- GGD ➔ Inspectorate of Health
- GGD ➔ voluntary information to the RIVM
- Isolates ➔ Reference laboratory for bacterial meningitis (RBM)
  - serogroup, subgroup, subtype

Marburg, May 6th 2004
Meningococcal disease before 2000

- Incidence: about 4/100,000
- Serogroup B: 80-90%
- Serogroup C: 10-15%
- Others: serogroup W135, Y, A, X
- Group B: peaks in young age-groups
- Group C: peaks in young age-groups and adolescents
Incidence of meningococcal disease (/ 100,000): increase starting in 2000

Source: RBM
www.isis.rivm.nl/rbm/meningkokok_RBM.html
Distribution of meningococcal serogroups, 1959-2001

Reference Laboratory for Bacterial Meningitis:
RBM: RIVM and AMC

Acknowledgements: prof. J. Dankert +, dr L Spanjaard,
dr. A v/d Ende

Marburg, May 6th 2004
Increase of the proportion of serogroup C meningococcal isolates received by the Reference Laboratory

Source: Reference Laboratory for Bacterial Meningitis

RBM

Acknowledgements: prof. J. Dankert+, dr L Spanjaard, dr. A v/d Ende

Marburg, May 6th 2004
Notifications by municipal health services to the Inspectorate of health en isolates from the RBM

Notifications and isolates from reference laboratory in 1999-2001

Source: IGZ and NRBM  www.rivm.nl/infectieziektenbulletin

Marburg, May 6th 2004
<table>
<thead>
<tr>
<th>YY/mm</th>
<th>location</th>
<th>No. patients (incidence)</th>
<th>Age group 2-19</th>
<th>Interventions (no of children)</th>
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<tbody>
<tr>
<td>1997 (12)</td>
<td>village</td>
<td>7 (93/100,000)</td>
<td>C:2aP:1.5</td>
<td>Vaccination polysaccharide (5000)</td>
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<td>(Putten)</td>
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<td>2001 (02)</td>
<td>county</td>
<td>4 (5)</td>
<td>C:2aP:1.5</td>
<td>No intervention, no clear risk group</td>
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<td>(Zeeland)</td>
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<tr>
<td>2001 (02)</td>
<td>province</td>
<td>3 (17/100,000)</td>
<td>C:2aP:1.5</td>
<td>No intervention, no clear risk group</td>
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<td>(Overijssel)</td>
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<td>2001 (07)</td>
<td>village</td>
<td>5 (25/100,000)</td>
<td>C:2a:nt</td>
<td>Vaccination (conjugate) of 4690 children</td>
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<tr>
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<td>2002 (02)</td>
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<td>Vaccination (conjugate)</td>
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<td>2002 (3)</td>
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Adapted from: S. de Greeff et al. IB. 13, 2002: 06: 219-23.
Clusters of men C-infections: 2001-2002

Cluster management
- definition population at risk
- geographical definition of the cluster

Vaccination with conjugate men C vaccine in 5 clusters on the basis of:
- authoritative advice by the Outbreak Management Team (2X)
- decision national policy makers (2X)
- decision local authorities (mayor) (1X)


Marburg, May 6th 2004
Health Council: January 2002

• Introduction of menCC in the national vaccination programme (RVP) a.s.a.p

• Scenario 1: 2, 3, 4 months of age (preventing 22 deaths and 12 cases residual disorders/ per year)

• Scenario 2: 5, 6 months of age

• Scenario 3: 12-14 months (preventing 20 deaths and 10 cases with residual disorders/ per year)

• Catch-up campaign for children aged 1-19

• Preventing 228 deaths and 92 cases of residual disorders

Context: February-March 2002

- Increase in menC: 15% - 20% - 38% - 45%
- Dilemma’s in managing clusters
- Availability of conjugate vaccines
- Report Health Council (menC to be introduced in the National vaccination programme)
- Increased public awareness and public demand for vaccination
- Decision and policy makers under pressure
The decision of the MOH
(March and April 2002)

- MenC conjugate in the National vaccination programme (RVP) at the age of 14 months: September 2002
- Catch-up programme for the ages < 19: starting in June 2002
- GGD NL was asked to carry out the campaign (target: 90% of the children should be vaccinated)
- RIVM started the enhanced surveillance of meningococcal disease

Marburg, May 6th 2004
The catch-up vaccination programme

Incidence meningococcal disease according to age

- Outside regular care
- Total: **3.6 million** children eligible for immunisation
- Vaccine availability:
  - Not enough for the target group in June
- Schedule
  - June 2002: 14 m -5 y; 15 y - 18 y (1.7 mil.)
  - September 2002: 6-14 years (1.8 mil.)

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400,000 children vaccinated on parental initiative

1,450,000 children

1,510,000 children

Cluster Health Council Decision

Aug 2001 Jan 2002 Febr: 3 clusters June-July Sept-Nov Dec

Marburg, May 6th 2004
# The campaign

## Coordination at national level

- Logistics / Distribution
- Medical issues
- Data collection, evaluation
- Communication: national Q & A, TV-spots, radio-spots

## Local level

- Each GGD carried out its own vaccination programme
- Data collection per region (municipality/GGD)
Medical issues: problems and solutions

• Dealing with underlying disease
  – Immune deficiency
  – Chemotherapy

• Dealing with underlying conditions
  – Pregnancy (do we or don’t we vaccinate)

• Dealing with intervals between vaccinations
  – Within RVP intervals are respected:
    • 2 weeks between dead vaccines
    • 4 weeks between live vaccines
    • 4 weeks after live vaccines
Results: did we reach our target?

Vaccine coverage

\[ V = \frac{\text{nr. vaccinated during campaign} + \text{before}}{\text{nr. invited}} \times 100 \]

\[ V = \frac{2.964667 + 405.529}{3.582398} \times 100 = 94.1\% \]
Results: vaccine coverage

Neppelenbroek SE, Vries M, Greeff SC, Timen A.
Implementatie en evaluatie vaccinatiecampagne meningokokken. June 2003

Lowest: 62.8%

Oostvogel et al, Lancet 1994

Marburg, May 6th 2004
DKTP vaccinaties 1-1-2003
per gemeente, cohort 2000, eerste revaccinatie zuigelingen

Percentage:
- < 80
- 80 - 90
- 90 - 95
- ≥ 95

provencies

BMR vaccinaties 1-1-2003
per gemeente, cohort 2000, eerste revaccinatie zuigelingen (1e meloen)

Percentage:
- < 80
- 80 - 90
- 90 - 95
- ≥ 95

provencies

Vaccine coverage: men C

Source:
Hof S van den , Zwakhals SLN. DKTP en BMR
vaccinaties per gemeente 2003. In:
Volksgezondheid Toekomst Verkenning,
Nationale Atlas Volksgezondheid. Bilthoven:
RIVM, <http://www.zorgatlas.nl>
Results: vaccine coverage/age group

Neppelenbroek SE, Vries M, Greeff SC, Timen A.
Implementatie en evaluatie vaccinatiecampagne meningokokken. June 2003
Efficacy of the vaccine (does it confer the presumed protection): follow-up

• Monitoring attack rates of disease in vaccinated and unvaccinated children
• Optimal notification (get all the cases)
• Optimal collaboration with National reference laboratory (get all the strains)
• Access to vaccination data of all cases (get all information)
Is there an effect on the epidemiology of men C?

- Reduction of incidence of men C?
- Herd immunity: data from the UK - evidence of herd immunity*
- Unwanted effect: follow-up needed
  - Increase in other strains?
  - Capsule switching (sub typing isolates is needed)


Marburg, May 6th 2004
Effect on the incidence: notification of meningococcal disease

Source: notifications by Municipal Health Services
www.isis.rivm.nl
Marburg, May 6th 2004
Effect on the incidence of MenC; isolates from the RBM

Source: RBM

http://www.isis.rivm.nl/rbm/meningokok_RBM.html
Men C cases / 2 months, 2001-2002, according to age

![Graph showing Men C cases distribution by age and month, 2001-2002.](Graph.png)

Acknowledgements to prof. J Dankert +, dr. L Spanjard and dr. A. van der Ende, RBM
Age specific incidence of infections with group B and group C meningococci, 2000-2004

**Figure 3.**
Boven: Leeftijdsspecifieke incidentie meningokokken B-ziekte, 2000-2004
Onder: absolute aantal patiënten met meningokokken B-ziekte in januari-maart 2000-2004 (totaal aantal per jaar) naar leeftijd

**Figure 4.**
Boven: Leeftijdsspecifieke incidentie meningokokken C-ziekte, 2000-2004
Onder: absolute aantal patiënten met meningokokken C-ziekte in januari-maart 2000-2004 (totaal aantal per jaar) naar leeftijd

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<td>0jr</td>
<td>28 (73)</td>
<td>21 (67)</td>
<td>18 (65)</td>
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<td>1jr</td>
<td>20 (56)</td>
<td>17 (44)</td>
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<td>7 (29)</td>
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<td>2-18jr</td>
<td>63 (198)</td>
<td>76 (233)</td>
<td>68 (189)</td>
<td>45 (142)</td>
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<td>19-24jr</td>
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<td>&gt;44jr</td>
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<td>156 (417)</td>
<td>139 (420)</td>
<td>133 (373)</td>
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<td>16 (60)</td>
<td>40 (164)</td>
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<td>11 (25)</td>
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<tr>
<td>25-44jr</td>
<td>1 (7)</td>
<td>3 (18)</td>
<td>8 (17)</td>
<td>2 (7)</td>
<td>3</td>
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<td>&gt;44jr</td>
<td>7 (21)</td>
<td>6 (39)</td>
<td>18 (31)</td>
<td>3 (11)</td>
<td>3</td>
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<td>totaal</td>
<td>28 (105)</td>
<td>63 (276)</td>
<td>168 (221)</td>
<td>17 (42)</td>
<td>7</td>
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Source: RBM
http://www.isis.rivm.nl/rbm/meningokok_RBM.html
• Vaccinated age groups
  – 75% decrease incidence menC, during the first 3 months* after vaccination (age: 1-5; 15-18)
  – 96% (age 1-5y), 100% (age 6-14 y), 93% (age 15-18 y) decrease incidence menC, nov.02-jan.03.

• Not vaccinated age groups
  – 50% (age 0), 85% (age > 18 y) decrease incidence menC, nov.02-jan. 03

• Total population
  – 89% decrease incidence menC, nov.02-jan.03

* In comparison to the same period the year before
Monitoring adverse effects: 1
(RIVM-LTR in collaboration with GGD NL)

- Passive adverse effects reports (similar to other RVP-vaccines)
- 1600 (1/2300 doses; UK: 1/2875*)
  - Mostly expected: headache, injection site reactions
  - Coincidental: not related to the vaccine (75**)
  - Causality still needs to be assessed (25**)
- Reporting “fainting” episodes


Marburg, May 6th 2004
Monitoring adverse effects: 2

- Active reporting (tolerability): carried out in 2 regions
  - The Hague: 36% no complaints, 59% no inj. site reactions**
  - Brabant: serious adverse effects: 0.3%; inj site reactions: 18.2%; mild symptoms: 10%***

*** Kroesbergen HT, de Boer E, Graven S, Vermeer BM. Postvaccinale verschijnselen van een geconjugeerd meningokokken C-vaccin. TSG. Jaargang 82/2004 nr. 1

Marburg, May 6th 2004
Conclusions: is there a “best” moment for introduction of men C vaccination?

- Safe vaccine, long term protection,
- Good individual protection
- Protection in young ages
- Herd immunity (?)
- Increase in men C (or traditionally high incidence of men C)
- Cluster management
- Public awareness
- Cost-effectiveness

Marburg, May 6th 2004
Lessons learned?

Part one

- Co-ordination at national level is important
- Vaccine distribution is part of the co-ordination at national level;
- Vaccine purchase and availability can be problematic
- Vaccination “campaign” outside regular health-care is an option (disadvantage: expensive; advantage: high response)
- Risk perception is an important factor which influences compliance to vaccination

Marburg, May 6th 2004
Lessons learned?

Part two

- A comprehensive programme evaluation should be “part of the deal”
- When organizing a vaccination programme one should take enough time in order to get everything organised
- Men C vaccination was a good exercise for a future vaccination campaign…men B? other?

Marburg, May 6th 2004
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The Reference Laboratory for Bacterial Meningitis
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SVM (NVI)
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LVE (LTR)
LCI

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