Antimicrobial Stewardship Programs
The Netherlands

Inge C. Gyssens, MD PhD

Toronto, 16 June 2009
The Netherlands
Healthcare system

Under the actual **Health Insurance Act** (Zorgverzekeringswet), all residents of the Netherlands are obliged to take out a health insurance. The system is a **private health insurance with social conditions**. The system is operated by private health insurance companies; the insurers are obliged to accept every resident in their area of activity.

A system of risk equalization enables the acceptance obligation and prevents direct or indirect risk selection.

The insured pay a nominal premium to the health insurer. Everyone with the same policy will pay the same insurance premium. The Health Insurance Act also provides for an income-related contribution to be paid by the insured. Employers contribute by making a compulsory payment towards the income-related insurance contribution of their employees.
Total Outpatient Antibiotic Use in 27 European Countries and the US in 2004

Streptococcus pneumoniae penicillin resistance

Figure 4.1. Streptococcus pneumoniae: proportion of invasive isolates non-susceptible to penicillin (PNSP) in 2007.

* These countries did not report any data or reported less than 10 isolates.

EARSS report 2007
Staphylococcus aureus - MRSA

EARSS report 2007
Antimicrobial stewardship in the Netherlands

Background

• Undergraduate education and specialist training
• Healthcare organization

• Strong professional groups
  • In hospitals: Medical Microbiology (infection control), Infectious Diseases, Hospital Pharmacy, Antibiotic and Infection control committees
  • In the community: GPs, Public health
Dutch General practitioners national guideline program

Downloadable from the website of the Dutch college for general practitioners in English
www.nhg.artsennet.nl

Otitis media
Bronchitis = « Acute cough »
Tonsillitis
Sinusitis

+ peer pharmacotherapy focus groups
Selective susceptibility reporting and Consultancy (streamlining) are standard practice
Intensive care rounds

12:00 daily

Consultant for infectious diseases

Reporting microbiology results
De-escalation
De-escalation or streamlining

- Simplifying therapy to a narrower spectrum
- Stopping therapy in patients with negative cultures and signs of resolution
- Shortening the duration of broad spectrum therapy

Recommendations for intervention, 2001

WHO Global Strategy for Containment of Antimicrobial Resistance
Part B. Appropriate antimicrobial use and emerging resistance: issues and interventions

Chapter 1. Patients and the general community
Chapter 2. Prescribers and dispensers
Chapter 3. Hospitals
Chapter 4. Use of antimicrobials in food-producing animals
Chapter 5. National governments and health systems
Chapter 6. Drug and vaccine development
Chapter 7. Pharmaceutical promotion
Chapter 8. International aspects of containing antimicrobial resistance
5. NATIONAL GOVERNMENTS AND HEALTH SYSTEMS

5.1 Make the containment of antimicrobial resistance a national priority

— Create a national intersectoral task force
  (membership to include health care professionals, veterinarians, …, government, … and other interested parties).
  For practical purposes such a task force may need to be a government task force which receives input from multiple sectors.

— Allocate resources
  to promote the implementation of interventions to contain resistance.

— Develop indicators to monitor and evaluate the impact
  of the antimicrobial resistance containment strategy.
Examples of National Intersectoral Mechanisms (Task force) in Europe
STRAMA
Swedish Strategic programme for The Rational use of Antimicrobial Agents and Surveillance of Resistance
supported by the government since 2000

http://www.strama.se

SWAB
Netherlands Working Party on Antibiotic Policies
founded in 1996, supported by the government since 1999

http://www.swab.nl
Leadership and accountability in prevention and control of AMR/HCAI

Role of governments: support (1)
Remarkable positive experiences in EU member states

Support of Ministry of Health

for national professional societies/working party activities

WI P

Working parties on Infection Prevention and Antibiotic Policy
www.wip.nl and www.swab.nl
since 1980s 1999

Structural funding from the Government

Following recommendations of the Health Council to the Minister of Health

Project funding support from Ministry of Health through regular calls for research programs “ZonMw”
Leadership and accountability in prevention and control of AMR/HCAI

**Role of governments : support (2)**

Remarkable positive experiences in EU member states

- Society for Hygiene and Infection Prevention in Health Care
- Society for Infectious Diseases
- Dutch Society of Hospital Pharmacists
- Dutch Society for Medical Microbiology
- SWAB
- WIP
- RIVM-Cib Public Health Institute
- Ministry of Health
- Ministry of Food & Agriculture
- Platform AbRes
- CDGP

Netherlands
APUA Member Reception and 2008 APUA Leadership Award Honoring

The Dutch Working Party on Antibiotic Policy (SWAB)
& Dutch Working Party on Infection Prevention (WIP)

In recognition of their exemplary leadership in control of hospital infections and antibiotic resistance.

Dr. Inge C. Gyssens
Professor Jos W.M. van der Meer
Professor Henri S. Verbrugh
Professor John E. Degener
Professor Christina M. Vandenbroucke-Grauls
Professor Peter J.M. Van den Broek

at the 48th Annual ICAAC Meeting
Thursday, October 27, 2008 – 5:30 to 8:00 p.m.
Clyde’s of Gallery Place, Washington, DC
Dutch Intersectoral Coordinating Mechanism to contain Antimicrobial Resistance

- Annual Surveillance report on AB Use and Resistance
- National Guideline programme
- National Electronic AB guide SWAB ID
- Educational programs
- Affiliated research projects
- Annual symposium and SWAB award lecture

- First Public Campaign in November 2008 in collaboration with the National Institute for Public Health rivm

SWAB surveillance program

www.swab.nl
National Surveillance report on Antibiotic Resistance and Use

For download on www.swab.nl
Figure 11. Total use of antibiotics for systemic use (J01) in Dutch hospitals: university versus general hospitals (Source: SWAB).
Resistance; MICs

Source: SWAB NethMap
Prins JM, Kullberg BJ, Gyssens IC. The SWAB guidelines revisited. 
Free at journal site http://www.zuidencomm.nl/njm/getpdf.php?id=427
Netherlands Hospital guideline program

• National SWAB Guidelines: recommendations based on a systematic review of the literature and graded conclusions
• National Electronic Antibiotic guide SWAB-ID: treatment advice based on the recommendations of the guidelines, updated annually
• Local Hospital Electronic Antibiotic guide: local version of the national guide, adapted by hospital Antibiotic committees
• Hospital formularies - limited lists of drugs based on the antimicrobial agents recommended in the guide
Guidelines

Supermycin

Between Vice and Virtue. Hercules. Flemish painting, Musée du Louvre, Paris
Steps of a clinical practice Guideline program

• Identifying and prioritizing health topics = SCOPE
  • Burden of disease assessment
• Identifying stakeholders
• Developing/adapting the guideline
  • AGREE instrument - ADAPTE instrument
• Disseminating the guideline -piloting
• Implementing the guideline
• Evaluating the effect
Steps of a clinical practice guideline program

- Identify and prioritize health topics
  - Burden of disease assessment
- Identify stakeholders
- Developing/adapting the guideline
  - AGREE instrument - ADAPTE instrument
- Disseminate the guideline
- Implement the guideline
- Evaluate the effect
Support by the government Institute of Healthcare Improvement

Development of evidence-based clinical practice guidelines

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Development of evidence-based clinical practice guidelines
“Guideline adaptation: Enhancing efficiency in guideline development and utilisation”

What?

Guideline adaptation is the systematic approach to considering the use and/or modification of a guideline(s) produced in one cultural and organizational setting for application in a different context. Adaptation might be used as an alternative to de novo guideline development or for customizing an existing guideline(s) to suit the local context.

Search strategy

"First, they do an on-line search."
National guidelines: a framework for hospital guidelines

Pneumonia 1999 (updated 2005)
Bronchitis 1999
Septicemia 1999
Surgical Prophylaxis 2000
Urinary tract infections 2005
Acute diarrhea 2006
MRSA carriage 2007
Fungal infections 2008
Draft: Septicemia (update 2009)
Draft: Meningitis 2009
...
Draft: Update Surgical Prophylaxis 2010
Steps of a clinical practice guideline program

- Identify and prioritize health topics
  - Burden of disease assessment
- Identify stakeholders
- Develop/adapt guideline
  - AGREE instrument - ADAPTE instrument
- Disseminating the guideline
- Implement the guideline
- Evaluate the effect
Disseminating guidelines

As wide as possible

• Publication (print)
  Several journals: General Practitioners (NTVG), Neth J Medicine, specialist journals
• Websites
• Downloadable - free of charge (pdf)

Dutch Working Party on Antibiotic Policy  www.swab.nl
Steps of a clinical practice guideline program

- Identifying and prioritizing health topics
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- Developing/adapting the guideline
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- Disseminating the guideline
- Implementing the guideline
- Evaluating the effect
• November 2004

• First National SWAB Workshop for Antibiotic committees

• Consensus on the national Antibiotic guide
National Electronic AB guide
SWAB ID

www.swab.nl
Steps of a clinical practice guideline program

• Identifying and prioritizing health topics
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• Evaluating the effect
Education to change professional practice

Variably effective

- audit/feedback
- patient education
- local opinion leaders
- local consensus conference

Anything can work some of the time!
Criteria for review of individual Antibiotic Prescriptions

- Indication
- Choice of antibiotic
  - antimicrobial activity
  - toxicity
  - width of spectrum
  - cost
- The antibiotic regimen
  - The dose
  - The interval
  - The way of administration
- The duration
- The timing


Van der Meer & Gyssens
Clin Microbiol Infect Dis 2001;7suppl 6:12-15
To simplify, audit against a “standard”

- Surgical prophylaxis guideline

Dutch Working Party on Antibiotic Policy
www.swab.nl
Intervention study to implement the surgical prophylaxis guideline

**CHIPS: Total consumption of antibiotics for surgical prophylaxis in 13 hospitals**

Support by the government

Development of evidence-based clinical practice guidelines

Institute of Healthcare Improvement

Surveillance of HCAI network
Antibiotic Prophylaxis and the Risk of Surgical Site Infections following Total Hip Arthroplasty: Timely Administration Is the Most Important Factor

Clin Infect Dis 2007;44(7):921-7
Other evaluation system

• Quality indicator:
  Retrospectively measurable element of practice performance for which there is evidence or consensus that it can be used to assess quality

*Campbell et al. BMJ 2003; 326:816-819*
Audit by development of quality indicators

Schouten et al. Quality of Antibiotic Use for LRTI Clin Infect Dis 2005;41-450-460
Process outcome evaluation by use of quality indicators

(In)adequate management – example CAP

- Start of therapy
  - Indication
  - Selection of drug
  - Timing
- Change of therapy
  - Streamlining
  - Switch to oral
  - Duration of therapy
- Diagnostic process
  - Test performed
  - Timing of the test

Understanding variation in quality of antibiotic use for CAP

Table 1. Performance levels of quality indicators for antibiotic use in CAP

<table>
<thead>
<tr>
<th>Quality indicator</th>
<th>Adherence (median, %)</th>
<th>Range (eight hospitals, %)</th>
<th>Supporting evidence&lt;sup&gt;b&lt;/sup&gt;</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Timely initiation of antibiotic therapy (within 4 h after presentation)</td>
<td>68</td>
<td>36–87</td>
<td>B</td>
</tr>
<tr>
<td>2. Empirical antibiotic regimen according to national guidelines</td>
<td>45</td>
<td>5–59</td>
<td>B</td>
</tr>
<tr>
<td>3. Adapting dose and dose interval of antibiotics to renal function</td>
<td>77</td>
<td>40–100</td>
<td>D</td>
</tr>
<tr>
<td>4. Switching from iv to oral therapy, according to existing criteria and when clinically stable</td>
<td>81</td>
<td>35–93</td>
<td>B</td>
</tr>
<tr>
<td>5. Changing broad-spectrum empirical into pathogen-directed therapy (streamlining therapy)</td>
<td>80</td>
<td>50–100</td>
<td>C</td>
</tr>
<tr>
<td>6. Stopping antibiotic therapy after three consecutive days of defervescence&lt;sup&gt;a&lt;/sup&gt;</td>
<td>11</td>
<td>2–32</td>
<td>D</td>
</tr>
<tr>
<td>7. Taking two sets of blood samples for culture</td>
<td>57</td>
<td>48–67</td>
<td>B</td>
</tr>
<tr>
<td>8. Obtaining sputum samples for Gram stain and culture</td>
<td>54</td>
<td>24–100</td>
<td>D</td>
</tr>
<tr>
<td>9. Urine antigen testing against <em>Legionella</em> spp. upon clinical suspicion</td>
<td>84</td>
<td>67–100</td>
<td>B</td>
</tr>
</tbody>
</table>

<sup>a</sup>Indicator not included in multilevel analysis.

<sup>b</sup>Grades A–D including references: for comment see Appendices 3 and 4 (available as Supplementary data at www.jac.oupjournals.org).

More SWAB research affiliated projects ...

• The use of selective antibiotic decontamination of the digestive tract compared to the use of live lactobacilli to prevent hospital acquired infections in Intensive Care patients

• Non-antibiotic versus antibiotic prophylaxis for recurrent urinary tract infections (NAPRUTI)

• TRIANGLE (Testing of Resistance in relation to Infection control and Antibiotic use in the Netherlands, Getting Less problems by working together): the association of resistance and antimicrobial consumption in hospitals

• What association exists between the use of antibiotics in hospitals and Clostridium difficile associated diarrhoea (CDAD), caused by PCR ribotype 027, toxinotype III?
Conclusion

Antimicrobial stewardship in the Netherlands

• Long tradition of prudent antimicrobial use
• Undergraduate education and specialist training
• Strong professional groups
  • In hospitals: Medical Microbiology (infection control), Infectious Diseases, Hospital Pharmacy, Antibiotic and Infection control committees
  • In the community: GPs, Public health
• Intersectoral mechanism involving all stakeholders
• Support of the government and national institutions
• Enforcement by the Health Inspectorate (infection control)
Role of the Health Care Inspectorate
Infection prevention and policy regarding antibiotic use is always part of the supervision programme of the health inspectorate in hospitals; specific subjects are policies regarding:

- infection prevention and antibiotic use
- disinfection
- infection prevention during the surgical process
- MRSA
- infection prevention in nursing homes
- infection prevention in the use of flexible scopes

The Health Inspectorate uses the WIP guidelines as professional standards during its supervisory activities. The Chief Inspector is Chief Medical Officer of the Netherlands
• Clinical microbiologists and infection prevention practitioners have developed a common auditing system for quality assurance within their own profession “Visitations”, i.e. peer audits are organized.

• NIAZ, the Dutch Institute for Accreditation of Hospitals grants accreditation according to a General Quality Standard. It has shouldered a strategic alliance with the market leader in indemnity insurance, MediRisk (covering over 70 % of Dutch hospitals). MediRisk acknowledges the NIAZ accreditation program as sufficient to replace its own standard periodic assessment. NIAZ systematically works on further synergy with the visitation programs of the College of Medical Specialists (“Orde”).

NIAZ is trying to have their program recognized as an adequate basis on which the Healthcare Inspectorate may rely for its own surveillance.