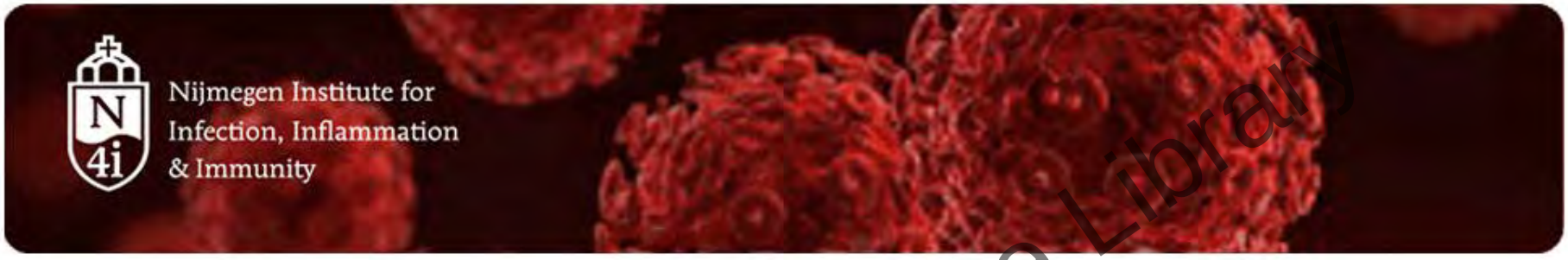

Social and behavioural approach to antibiotic prescribing in hospitals

Jos WM van der Meer MD PhD FRCP(Lon) FRCP(Edin)
President-elect of EASAC
Emeritus professor of Medicine
Radboud University Medical Centre
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Dame Sally Davies
Chief Medical officer UK

Dame Sally Davies has described the rising risk of antibiotic resistance as a bigger threat than global warming and has warned that the population could be facing an "apocalyptic scenario". Speaking to MPs at a science and technology committee meeting, she said: "It is clear that we might never see global warming. The apocalyptic scenario is that, if I need a new hip in 20 years, I'll die from a routine infection because we've run out of antibiotics."

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Not only NDM-1!

- MRSA
- VISA
- VRE

'ESKAPE'

- ESBL
- Carbapenemase producing Klebsiella
- …

Lancet, April 2011

Society's failure to protect a precious resource: antibiotics

Jean Carlet, Peter Collignon, Don Goldmann, Herman Goossens, Inge C Gyssens, Stephan Harbarth, Vincent Jarlier, Stuart B Levy, Babacar N'Doye, Didier Pittet, Rosana Richtmann, Wing H Seto, Jos W M van der Meer, Andreas Voss

Since their discovery last century, antibiotics have served society well by saving tens of millions of lives.

recently introduced agents, such as daptomycin and oxazolidinones.' Community-acquired MRSA strains have

We have watched too passively as the treasury of drugs that has served us well has been stripped of its value. We urge our collegues worldwide to take responsibility for the protection of this precious resource. There is no longer time for silence and complacency.

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Carlet et al, Lancet 2011

There is no longer time for silence and complacency…

So what are we going to do Dr Carlet?

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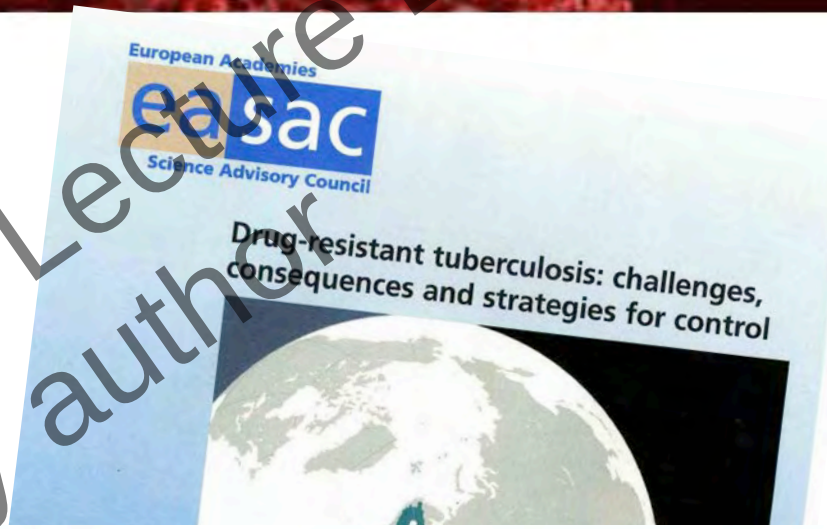
European Academies Science advisory Council



Infectious diseases and the future: policies for Europe

European Academies easac Science Advisory Council

A short summary of the EASAC report, *European Public Health and Innovation Policy for Infectious Disease: The View from EASAC*

The 20th century saw many social, scientific and medical developments that greatly reduced the impact of infectious disease. It began to seem that public health measures, vaccination and antibiotics would soon render most infections a distant memory. But despite many successes, communicable illness still accounts for some 10% of

and make them sufficiently flexible to detect novel threats.

Working productively on a European scale requires the standardisation of methods and effective networking among a chain of reference laboratories across the EU and beyond. Reliable and comprehensive databases play a role in the care of patients, in research, in predicting the

What to do?

- Find new antibiotics
  - Pharmaceutical industry
  - Academia
  - Public private alliances

  New approaches for drug discovery

  New approaches for reimbursment

  New attitudes regarding marketing
- Other kinds of treatment (immunotherapy)

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What to do?

- Improve diagnostics
  (easy, rapid, reliable, cheap)
  Aiming at
  - GP: Bacterial or viral?
  - ER: Bacterial, viral or ….?
  - Hospital: What is the susceptibility?
    Bacterial or Fungal?

  Concerns: Quality of specimen, rapid time to respond, cost

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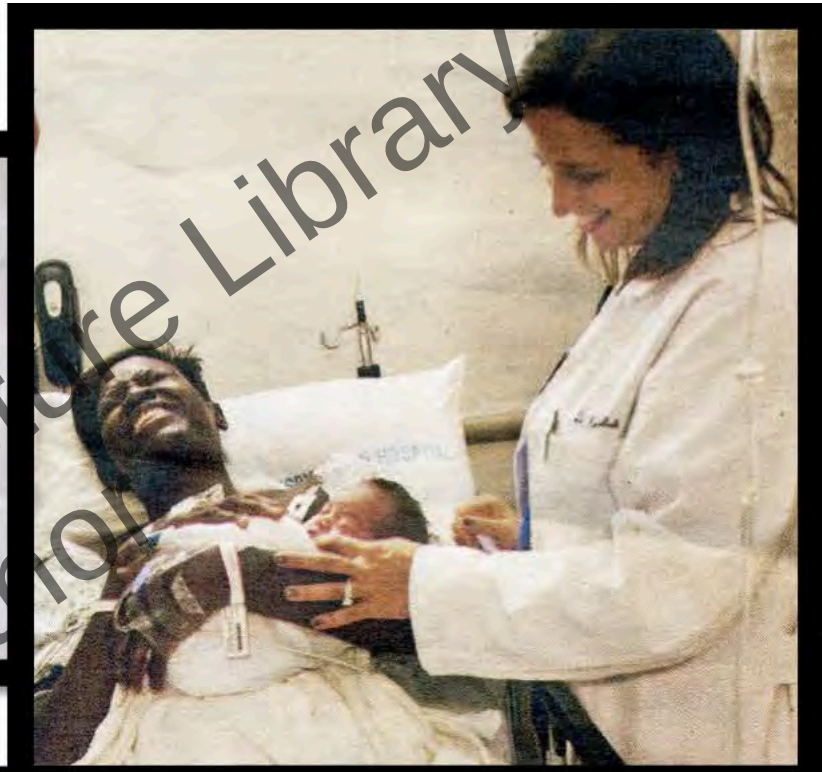
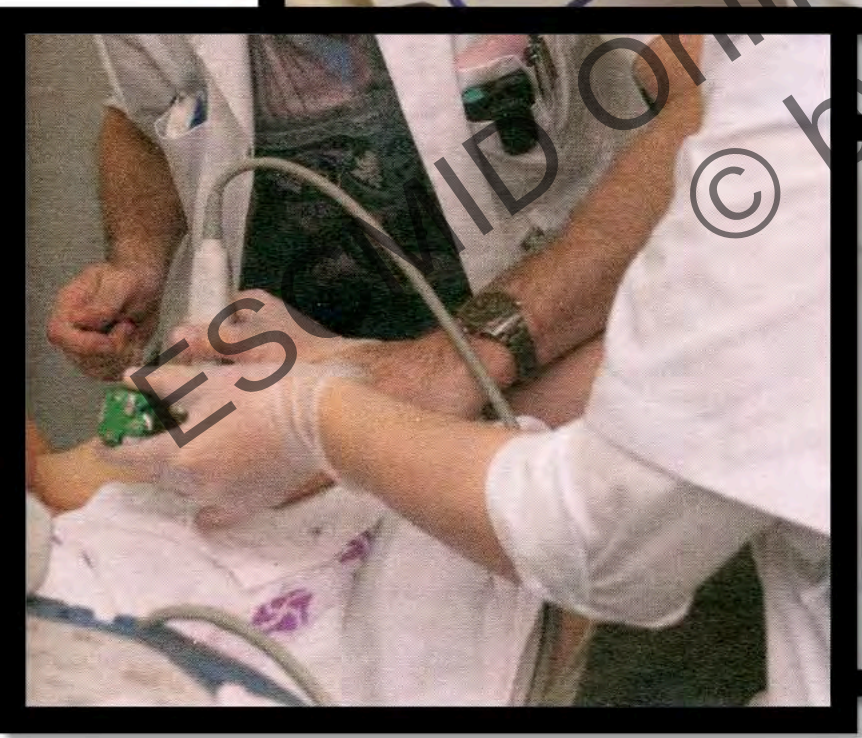
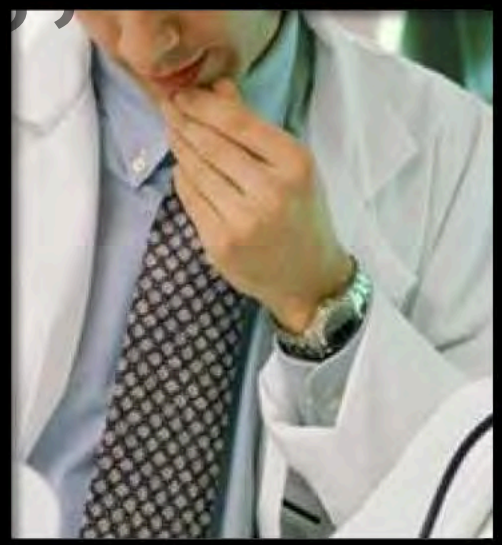
What to do?

- Combat antibiotic misusage
  - Convince the public
  - Convince professionals
  - Intensify education (Students, residents, doctors)
  - Change prescribing
  - Change license to kill
  - Abolish AB 'over the counter' (first EU)
  - Control veterinary and agricultural use

When are we getting serious about infection control?







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What to do?

- Make guidelines!

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Major problems

- Antibiotic therapy is not very 'evidence based'.
- Many trials with insufficient 'power'
- Old antibiotics have rarely been investigated in 'modern' RCTs
- Most clinical trials were initiated and sponsored by pharmaceutical industry and deal with new antibiotics
- Clinical trials are aimed at efficacy and rarely at avoiding resistance and stewardship

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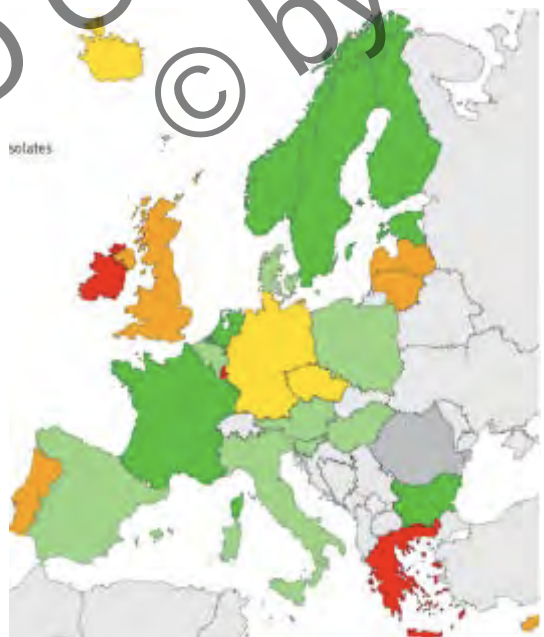
Major problems

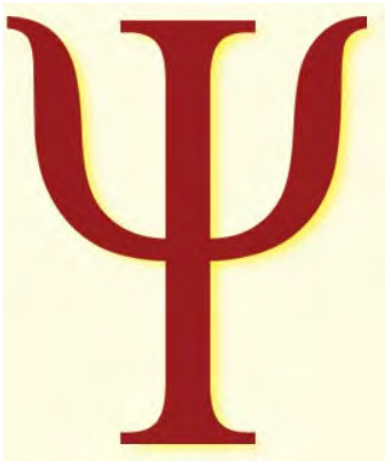
The results of an RCT in one area of the world are not necessarily relevant for other areas.

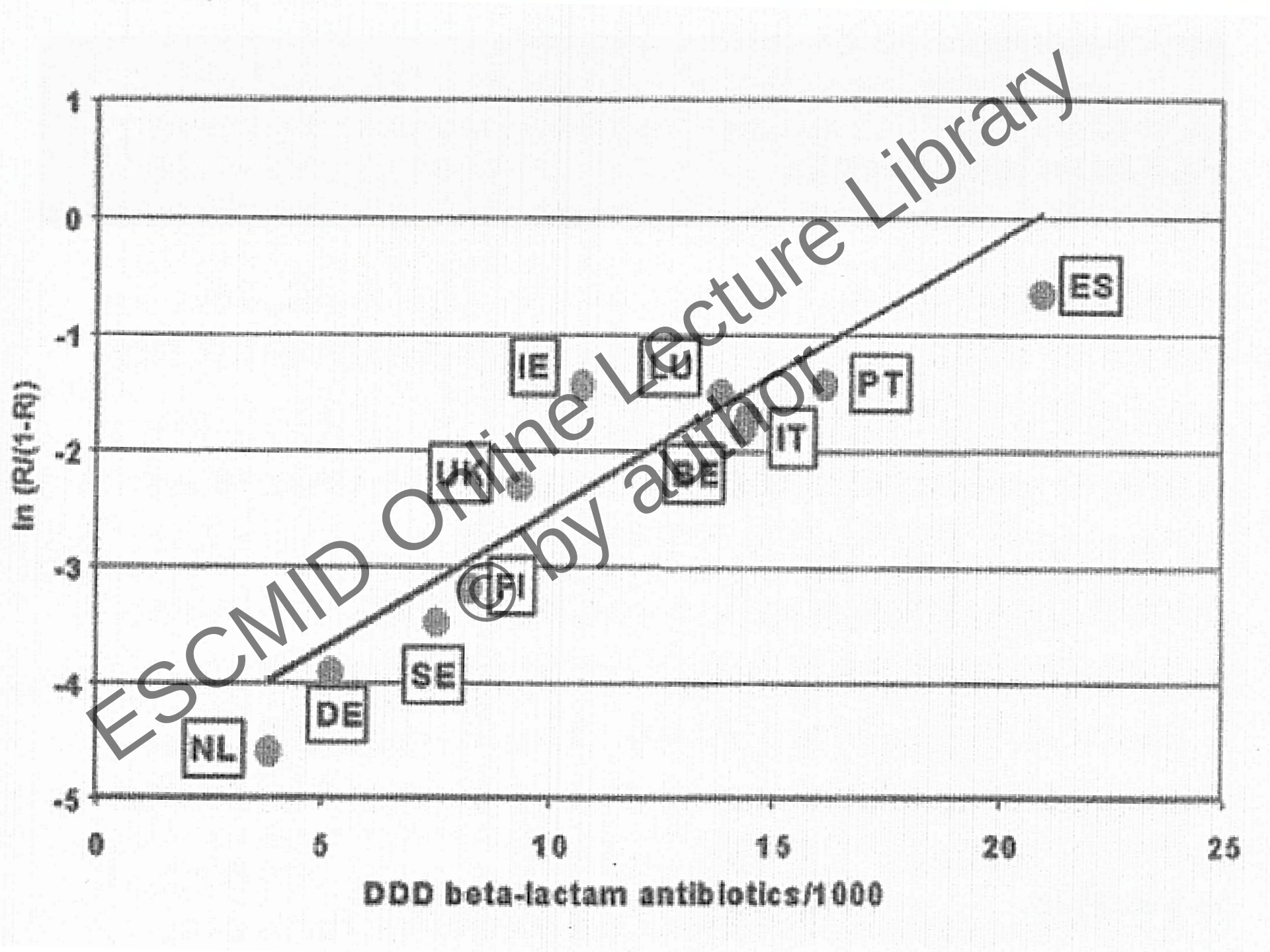


- US guidelines for pneumonia may not apply to the European situation
- Sepsis Guidelines within Europe should vary
- Antibiotic guidelines have a shrinking half life

Major problems

- These problems limit our credibility in trying to issue guidelines





Lancet Infectious Diseases
2010, 10:167

Antibiotic prescribing in hospitals: a social and behavioural scientific approach

Marlies E J L Hulscher, Richard P T M Grol, Jos W M van der Meer

Antibiotics have dramatically changed the prognoses of patients with severe infectious diseases over the past 50 years. However, the emergence and dissemination of resistant organisms has endangered the effectiveness of antibiotics. One possible approach to the resistance problem is the appropriate use of antibiotic drugs for preventing and treating infections. This Review describes how the volume and appropriateness of antibiotic use in hospitals vary between countries, hospitals, and physicians. At each specific level—cultural, contextual, and behavioural—we discuss the determinants that influence hospital antibiotic use and the possible improvement strategies to make it more appropriate. Changing hospital antibiotic use is a challenge of formidable complexity. On each level, many determinants play a part, so that the measures or strategies undertaken to improve antibiotic use need to be equally diverse. Although various strategies for improving antibiotic use are available, a programme with activities at all three levels is needed for hospitals. Evaluating these programme activities in a way that provides external validity of the conclusions is crucial.

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Determinants regarding prescribing

- Epidemiologic factors
- Cultural and educational differences
  - Prescribers
  - Patient's attitude
  - Reimbursement
- Pressure from pharmaceutical industry

Hulscher, Grol, Van der Meer,
Lancet Infectious diseases 2010

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Cultures differ!

Hofstede's Dimensions and Scores.

- Power Distance
- Individualism
- Uncertainty Avoidance
- Masculinity
- Long term orientation

//geert-hofstede.international-business-center.com

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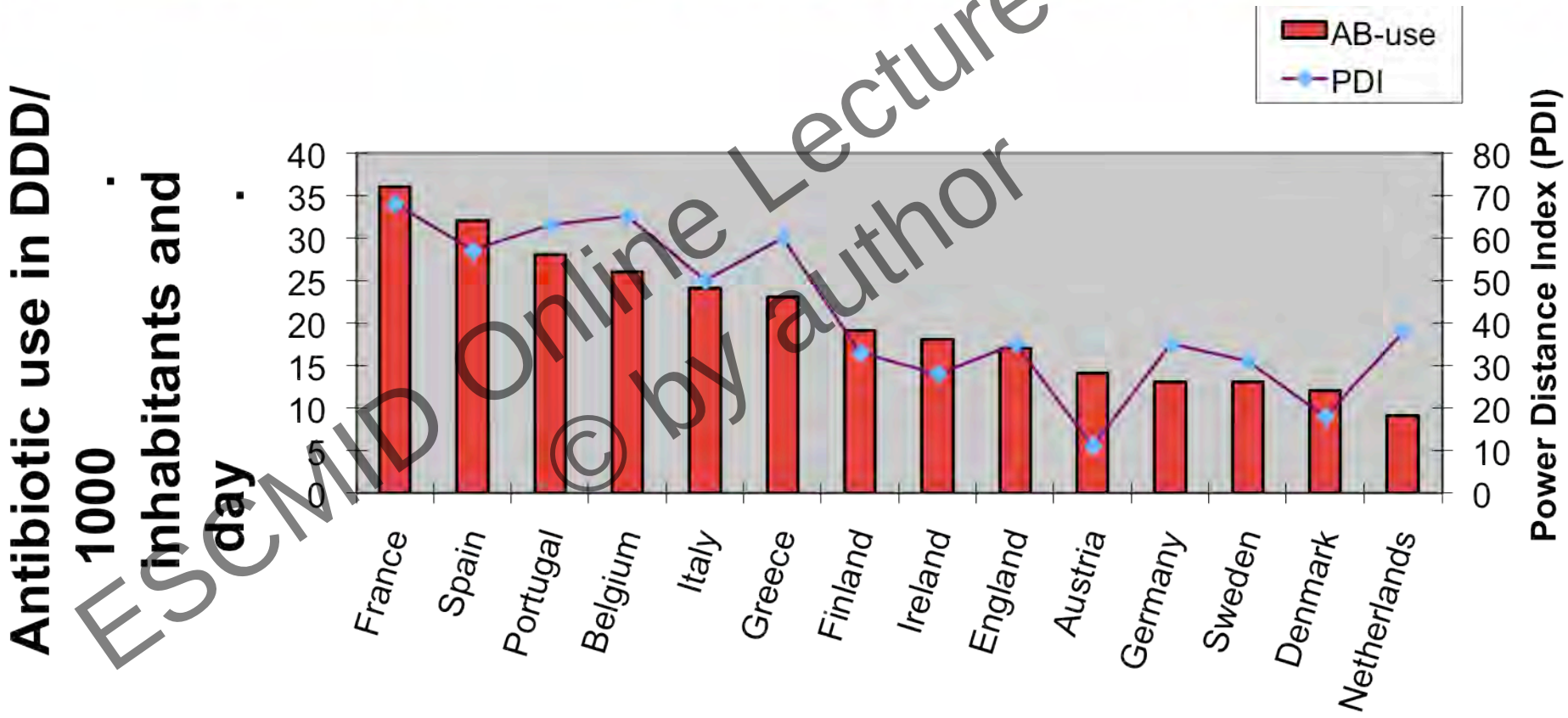
Antibiotic use and power distance index



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Cultural differences

Consumers/patients differ in

- Ideas about health
- Ideas about cause of disease
- Labeling of illness
- Coping strategies
- Ideas and expectations about treatment

Cultural differences

- Egalitarian societies (NL, UK, Scandinavia) consume fewer antibiotics than hierarchical societies (F, I, Spain, Portugal, Greece)
- Coincides with protestant and catholic countries

Deschepper et al, Kooijker & van der Wijst

Guidelines

- Are like traffic lights:
  - In Germany they are an obligation
  - In the Netherlands they only hold for cars
  - In France they are an advice
  - In Spain they are a suggestion
  - In Italy they are Christmas decoration

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Barriers to change antibiotic policy

Barriers are factors that limit or restrict complete physician adherence to a guideline

[Cabana et al JAMA 282:1458, 1999]

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Barriers in physicians

Changing physician behavior is considered by many to be an exercise in futility - an unattainable goal intended only to produce premature aging in those seeking the change. The more optimistic might describe the process as uniquely challenging.

Sbarbaro Clin Infect Dis 2001:33 S240-4

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Behaviour change in physicians

Sequence:

Knowledge → Attitudes → Behaviour

Woolf SH Arch Int Med 153:2646, 1993

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Barriers in physicians

Attitude of supervisors and local opinion leaders:
participation
&
endorsement

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Guidelines are for beginners!

Real life

- Internists think about treatment
- Surgeons know only one antibiotic
- Intensivists just give a carbapenem
- Oncologists treat infection like cancer
- Hematologists just combine everything (never stop)

Barriers in the system

- Lack of resources
- Reimbursement systems
- Lack of time
- Organisational constraints
- Other persons in the system

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Adherence with AB prophylaxis in surgery

- Lack of awareness due to ineffective distribution of recent guidelines
- Lack of agreement with local guidelines
- Environmental barriers: organizational constraints in surgical suite and wards
- *Major problems: dosing and timing*

Van Kasteren et al, JAC 51:1389, 2003

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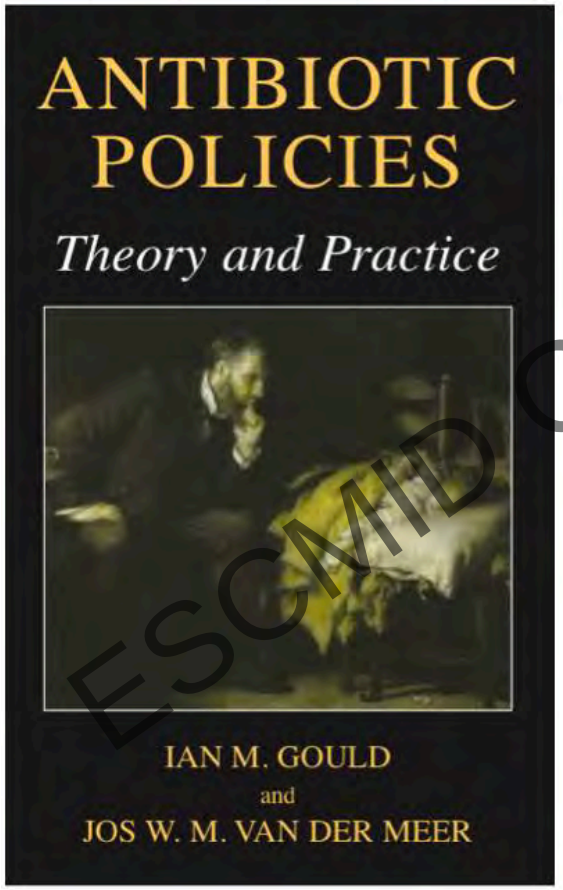

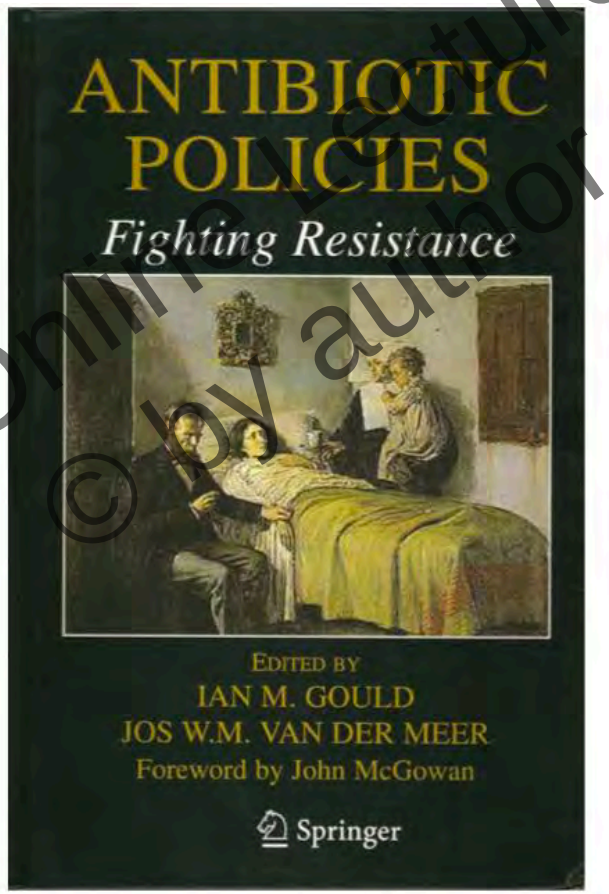

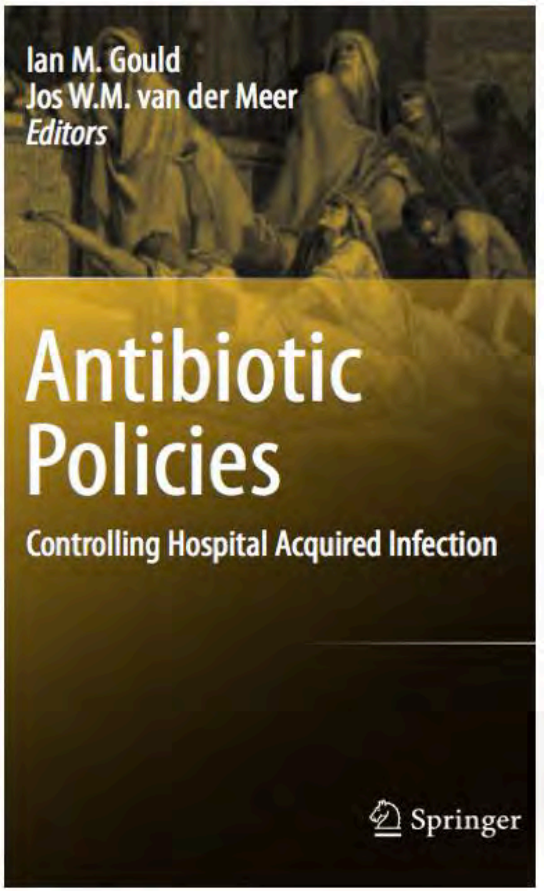

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