

Influence of Sociocultural Components on Outpatient Antibiotic Use

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HUG

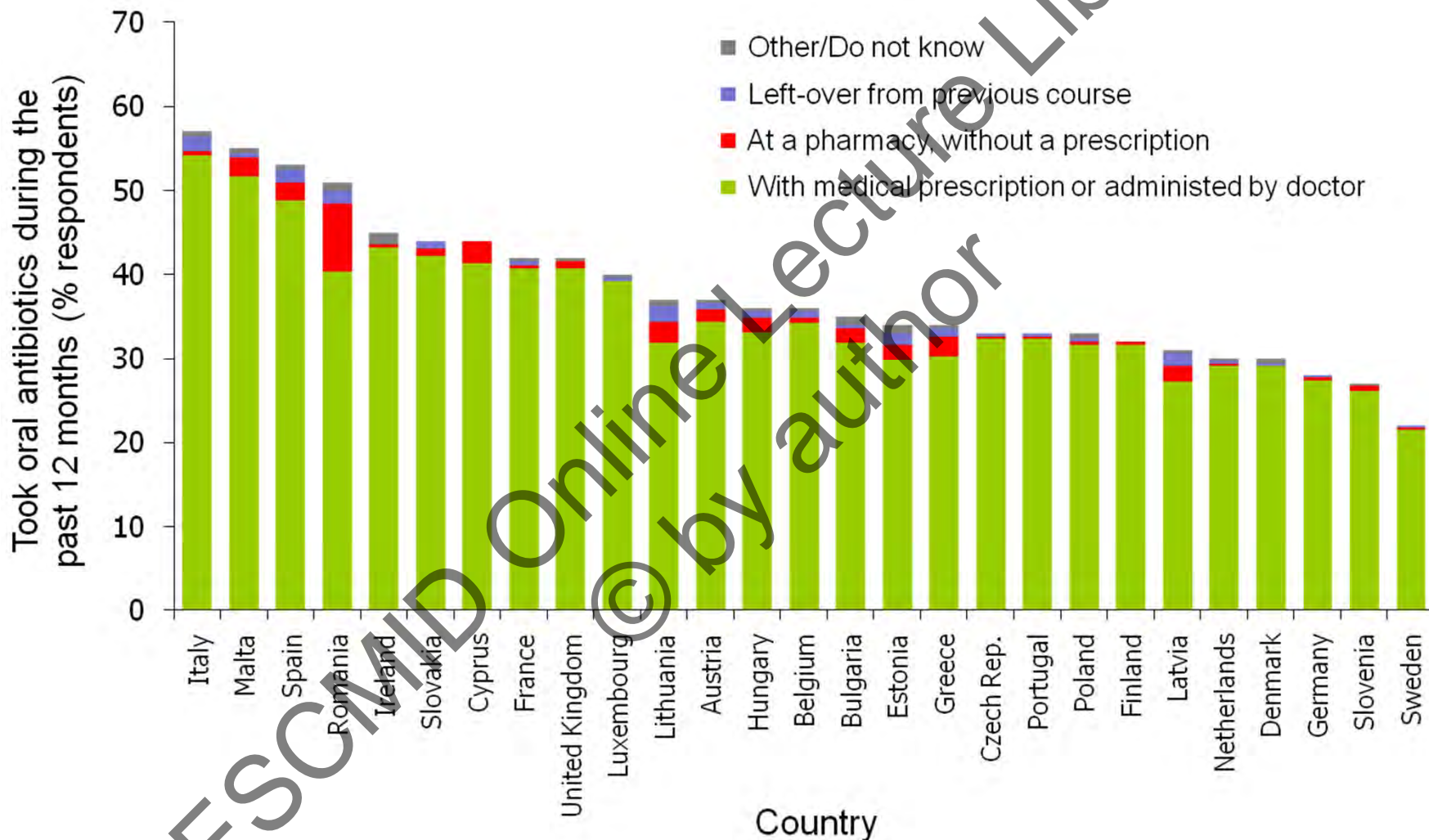


University of Geneva Hospitals

AGENDA

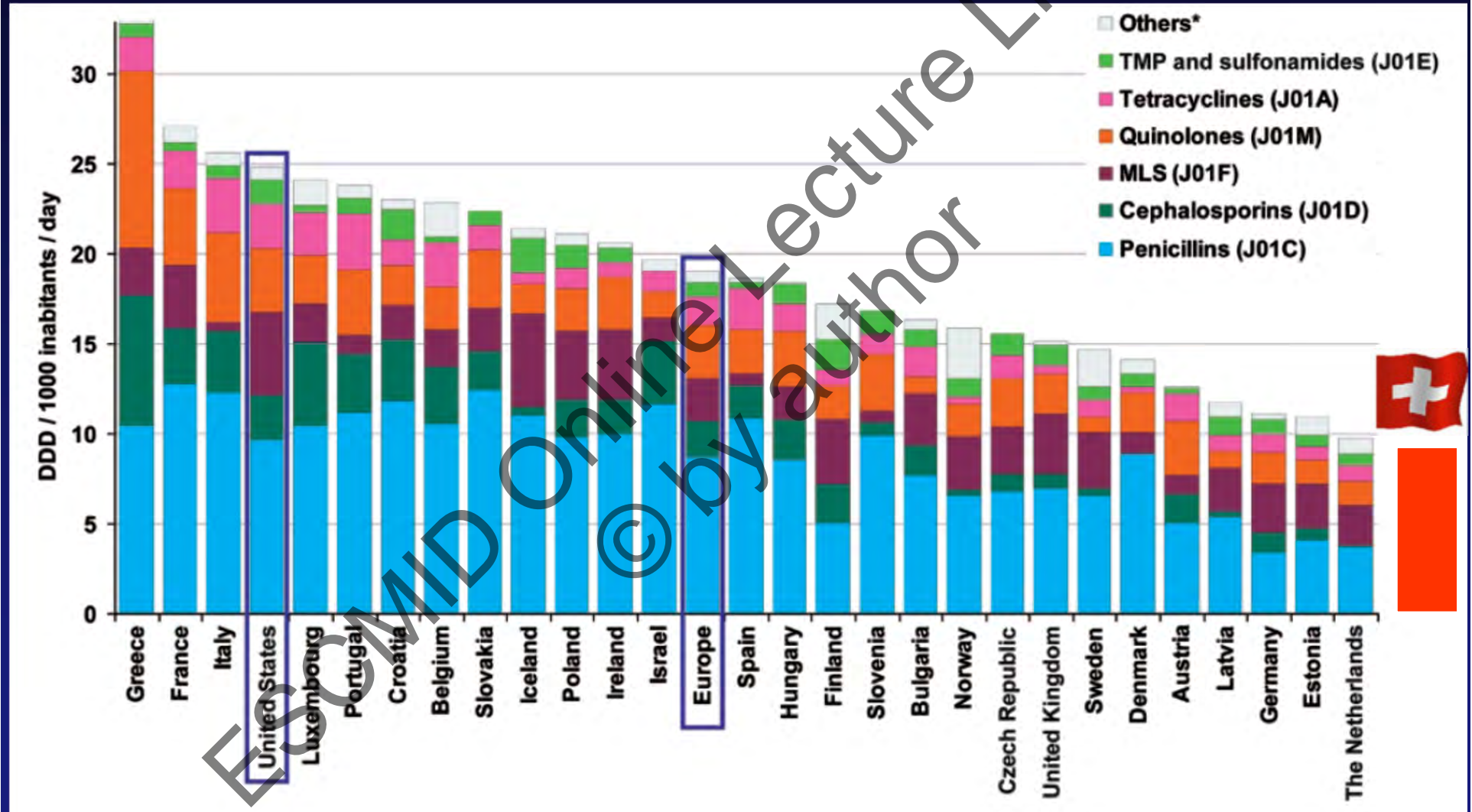
- **Current data on differences and key drivers in outpatient antibiotic use in Europe?**
- **What is the evidence that socio-cultural factors play a role ?**
 - **International studies**
 - **Examples:**
 - France ↔ Germany
 - Belgium ↔ Netherlands
 - Switzerland (F) ↔ Switzerland (D)

How often do Europeans take antibiotics and where from, Nov.-Dec. 2009

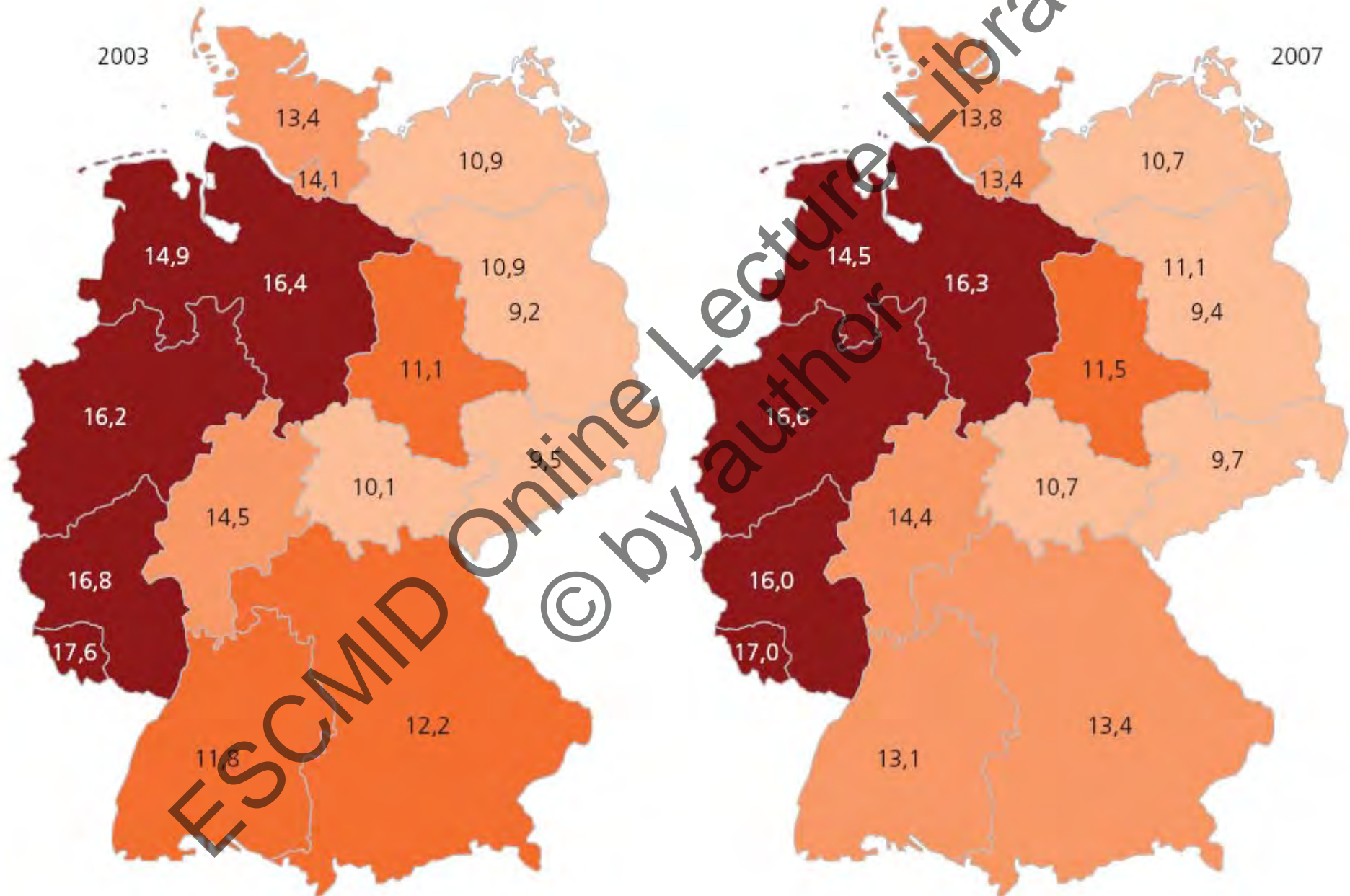


Outpatient antibiotic use (2004)

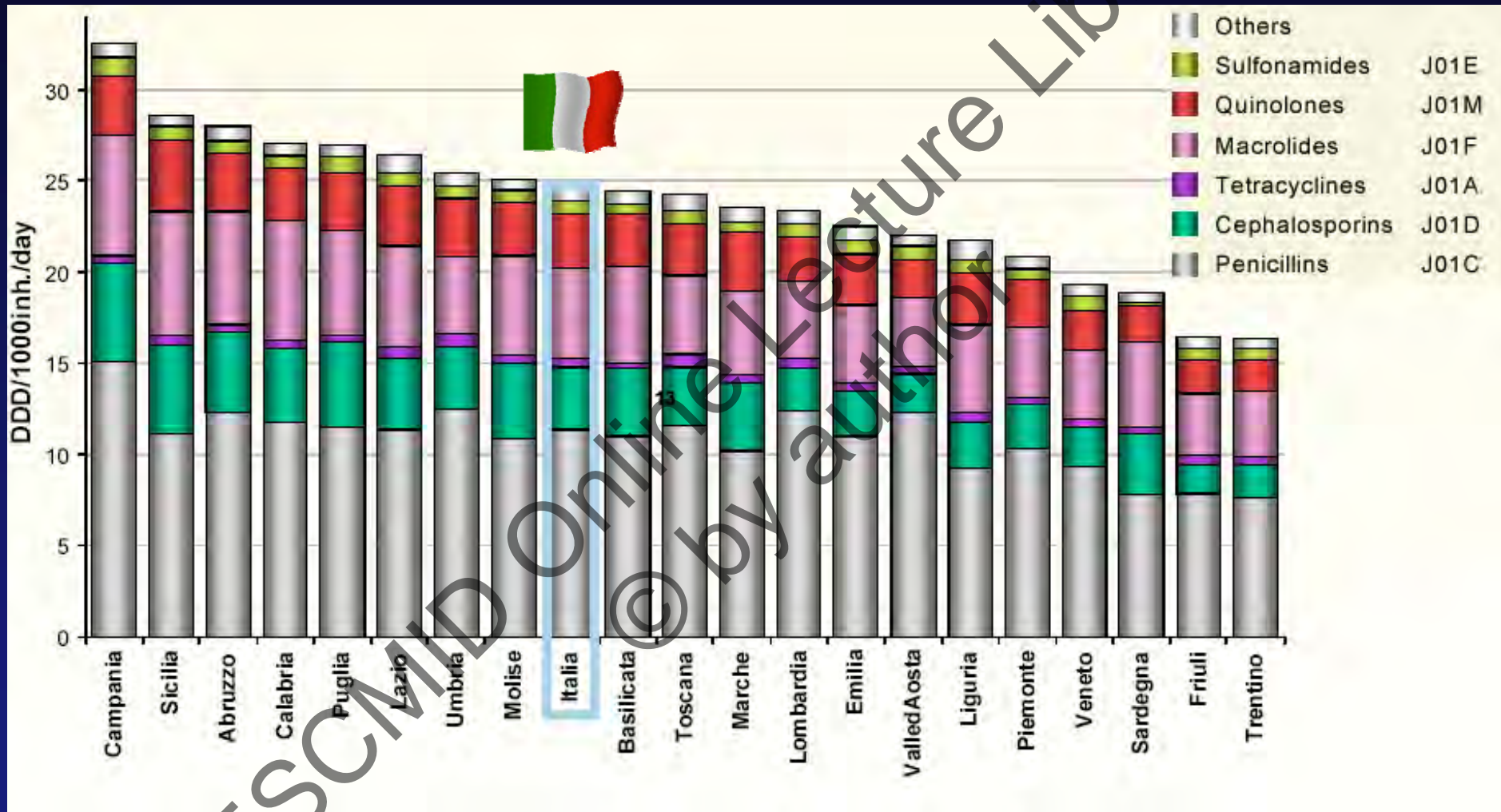
DDD / 1000 hab / day



Regional variability of AB consumption in Germany



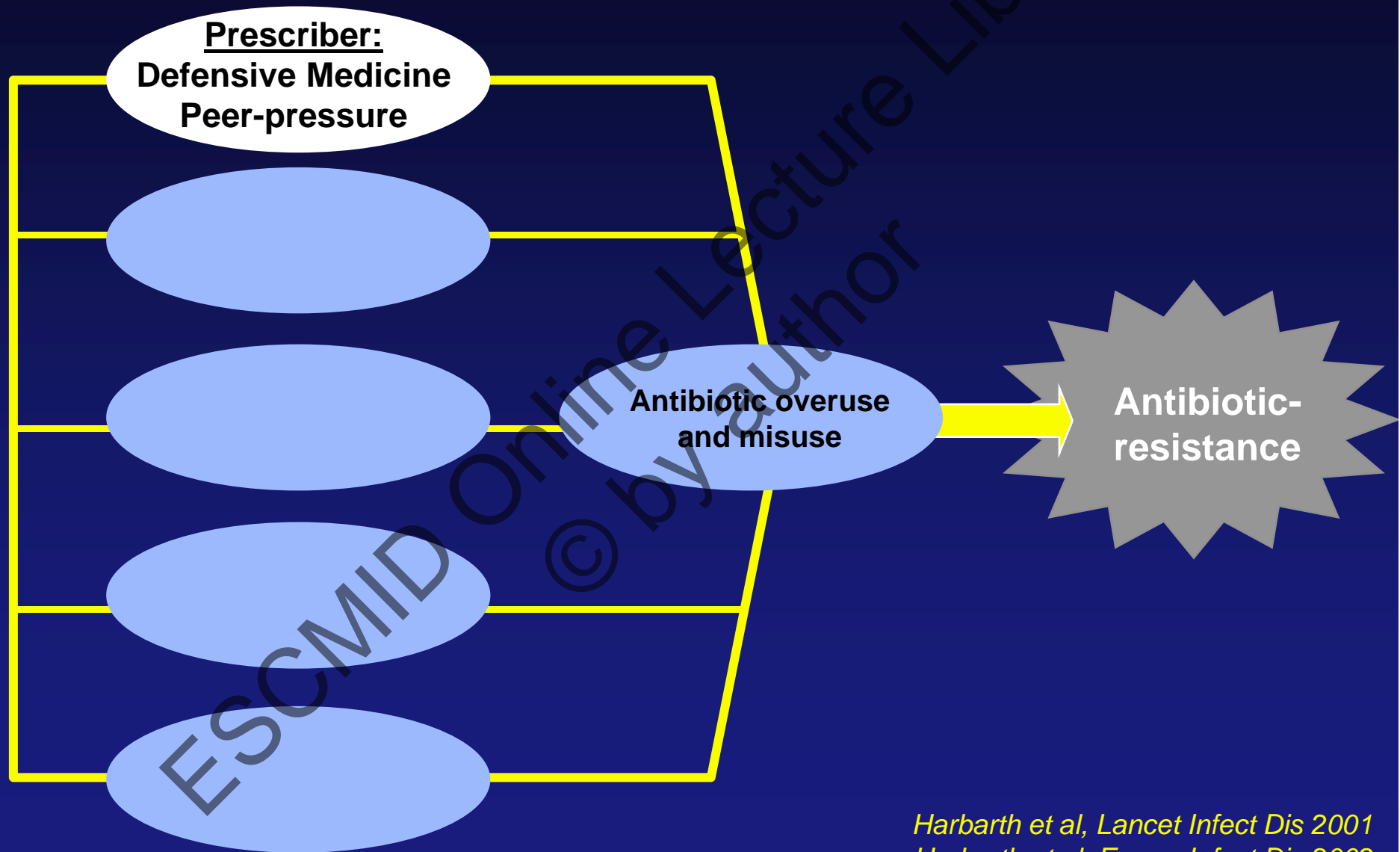
Outpatient AB use in Italy (2002)



What are key drivers of AB use & resistance ?

Variable	Important determinants
Pathogen	Survival costs & fitness burden; virulence
Physician	→ Prescribing patterns; diagnostics, knowledge
Patient	→ Education & health beliefs
Population	Infection and transmission rates
Pharmaceut. industry	Promotion & marketing
Politics	Health care regulation & Reimbursement system

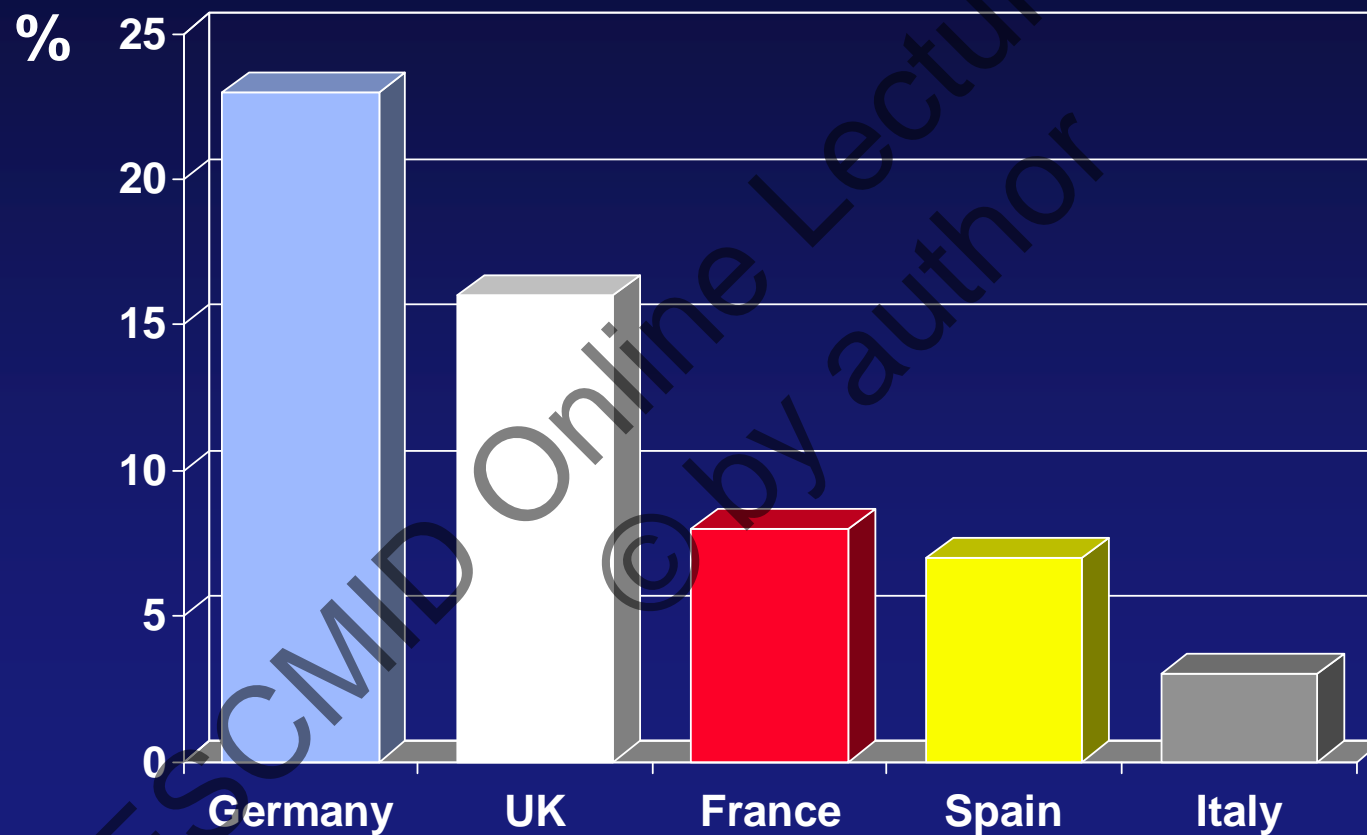
Socio-cultural determinants influencing antibiotic use & resistance



Harbarth et al, Lancet Infect Dis 2001
Harbarth et al, Emerg Infect Dis 2002

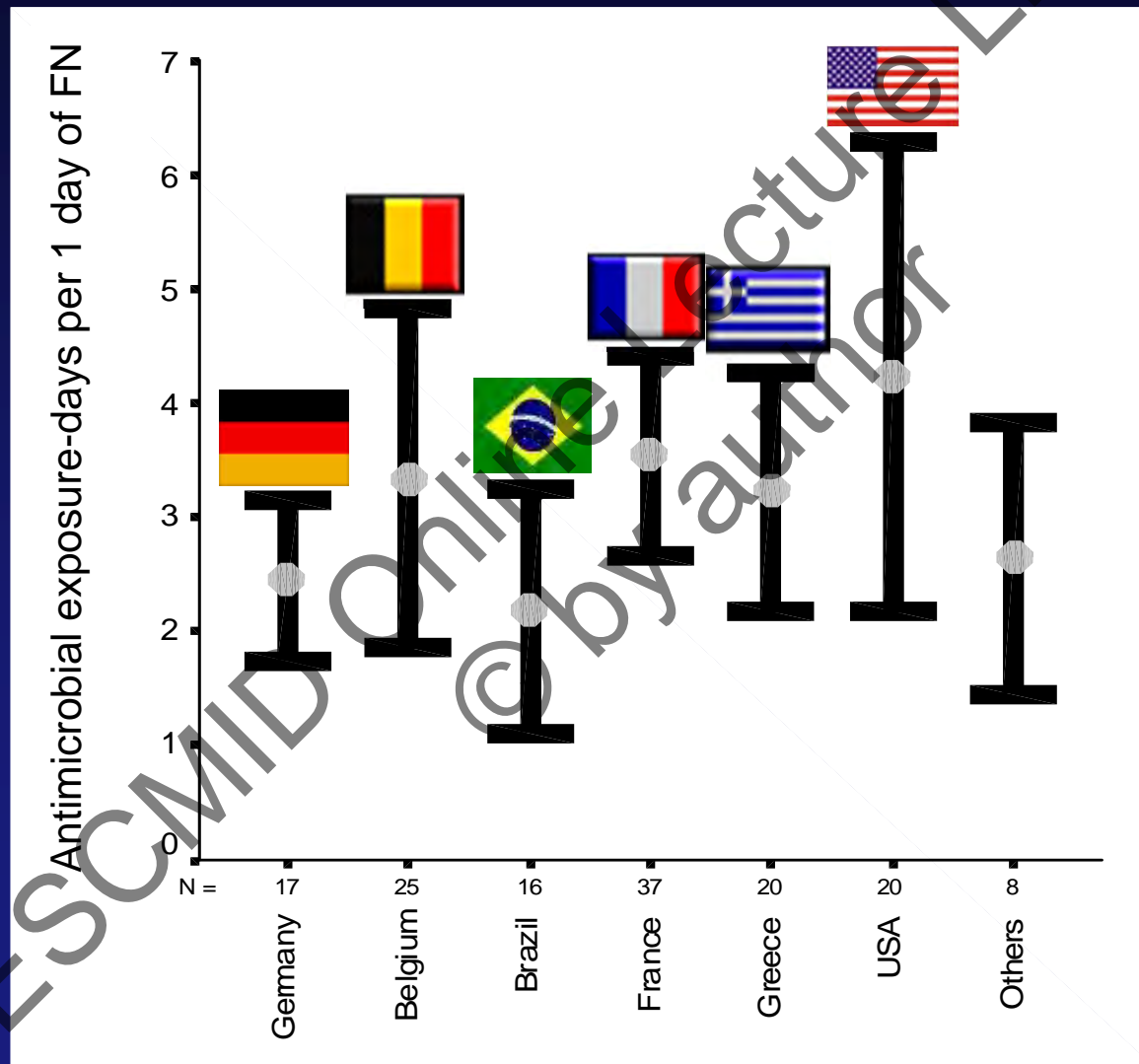
No antibiotic treatment for suspected pneumonia at 1st consultation

– Data from 2,056 patients & 605 GPs in 5 countries –



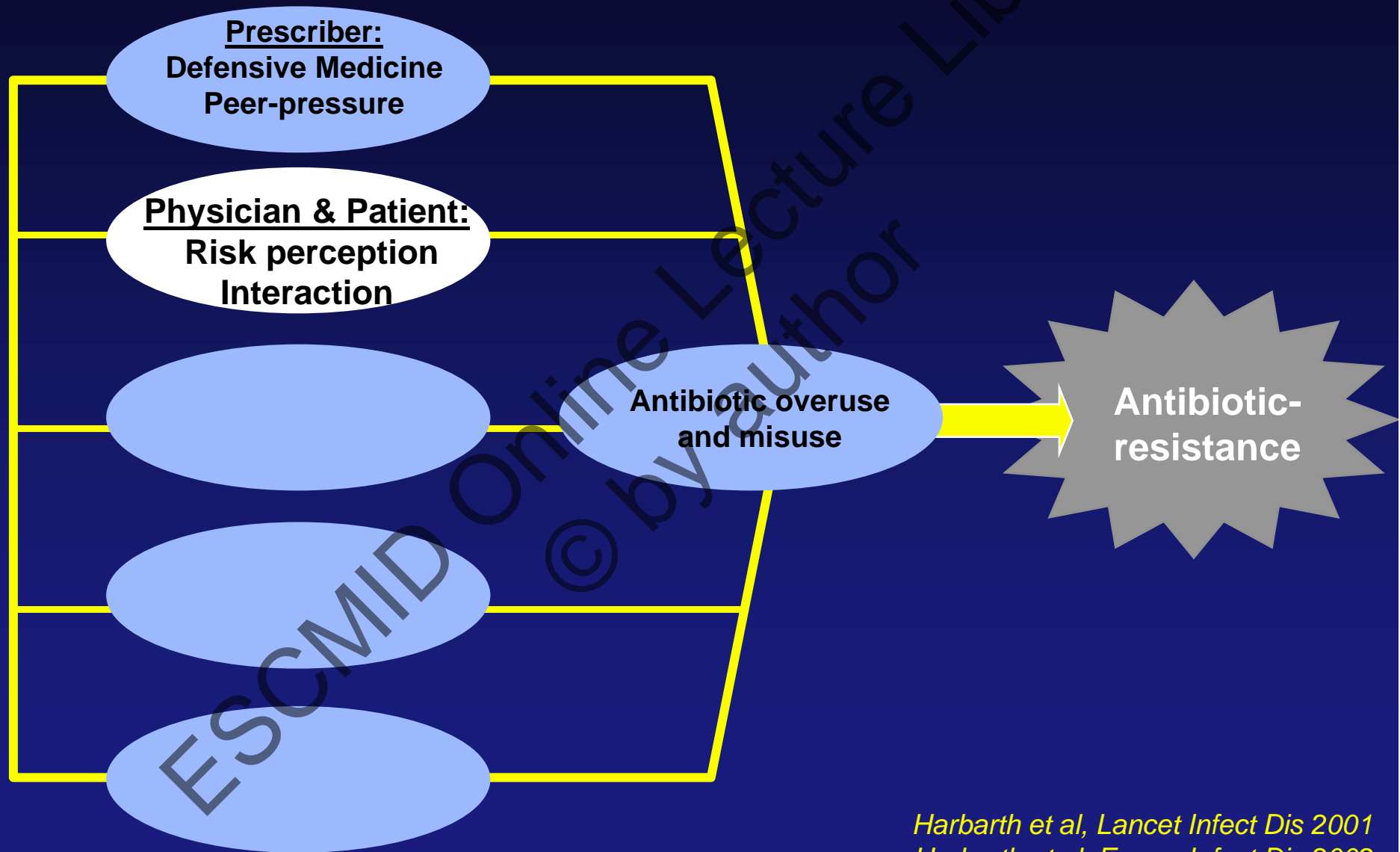
GJ Huchon et al; Eur Resp J 1996; 9: 1590-95

Antimicrobial exposure in oncologic patients with febrile neutropenia



Harbarth et al,
Infection 2000

Socio-cultural determinants influencing antibiotic use & resistance



Harbarth et al, Lancet Infect Dis 2001
Harbarth et al, Emerg Infect Dis 2002

We always agree

Top expert

Doubt his competence

Feel ignored

What do you think about your Doc ?

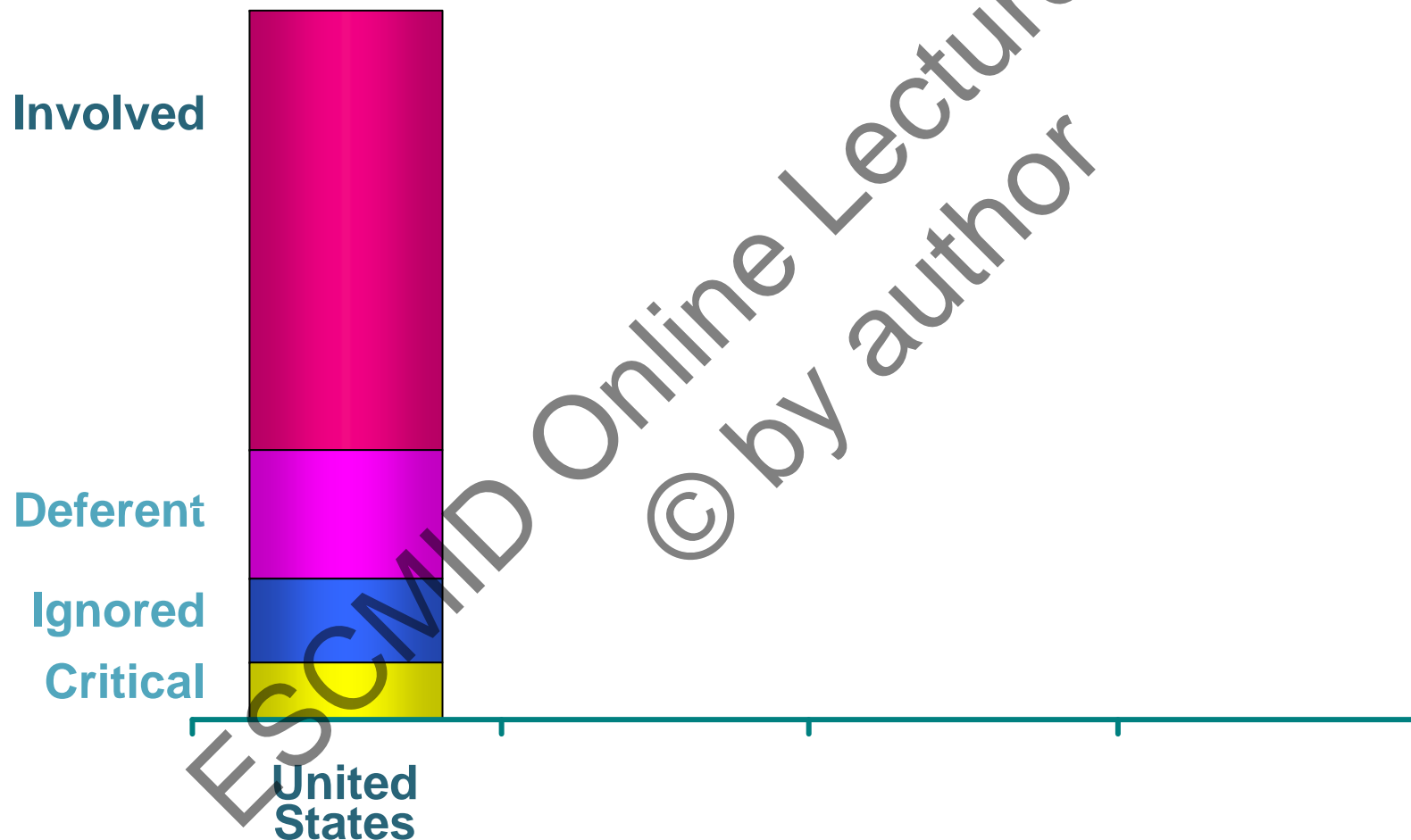
Patient types and attitudes towards antibiotics

(Survey: n>3,000)

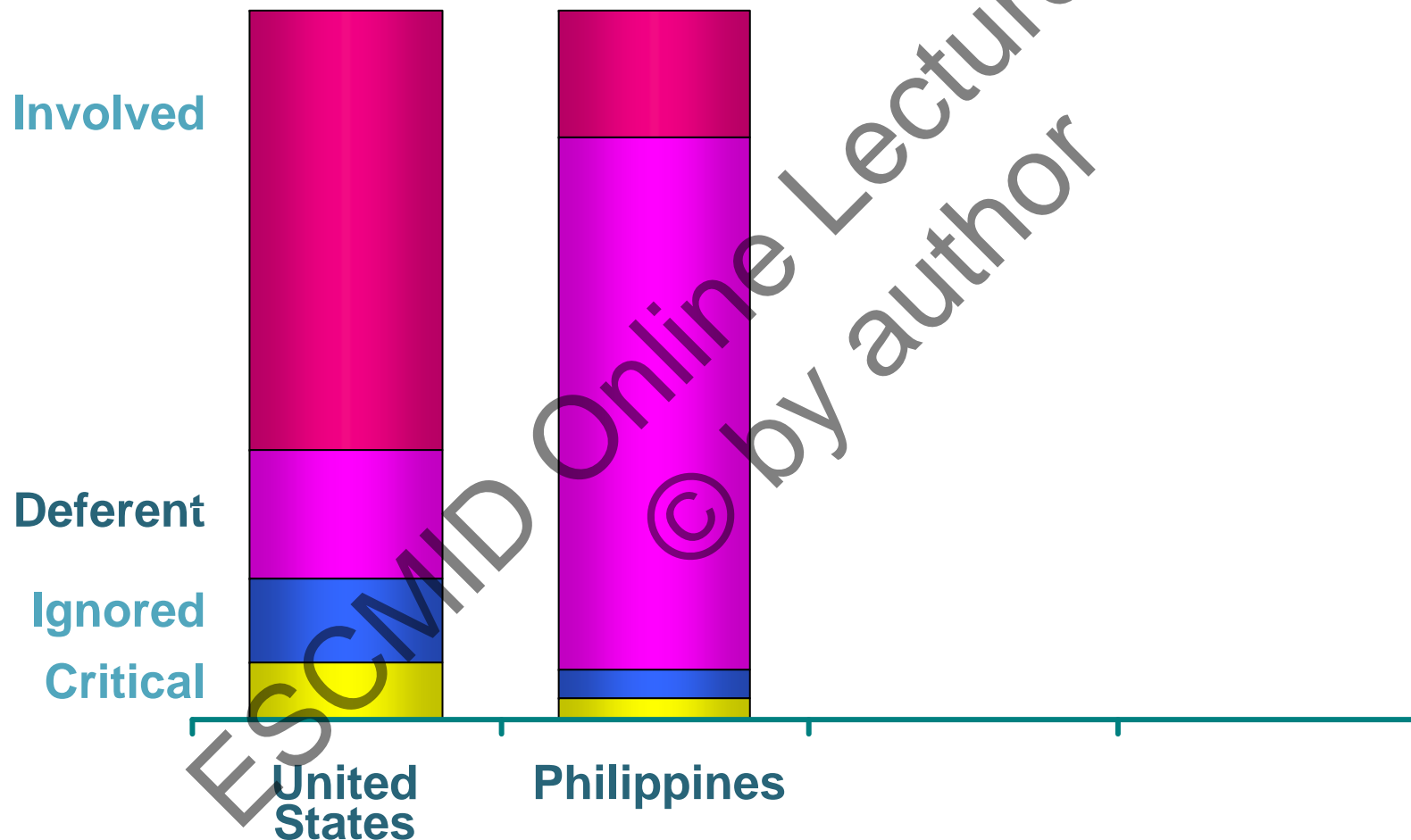
*Pechere et al.
Intern J Antimicrob Agents 2002*



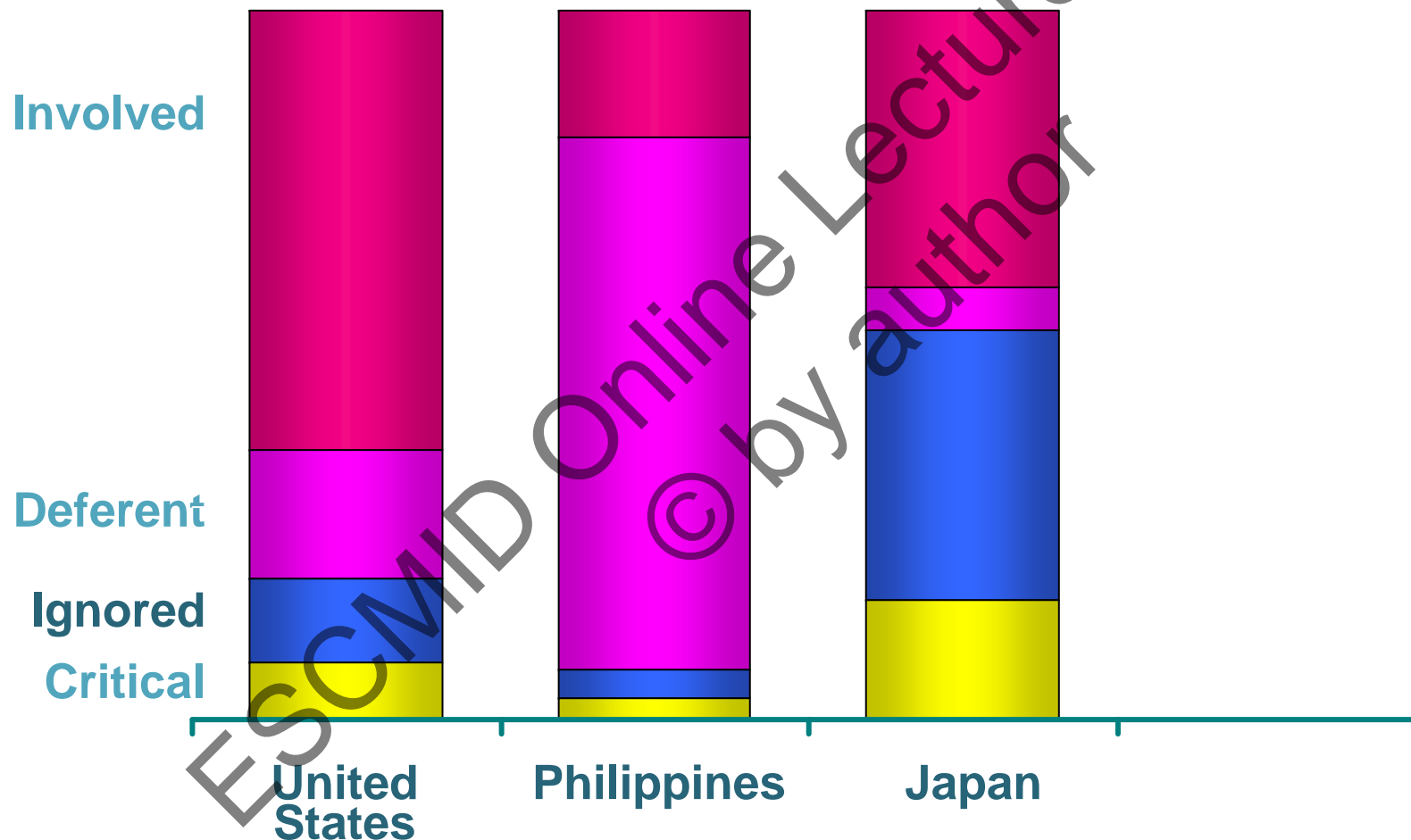
Patient Type Varies Around the World



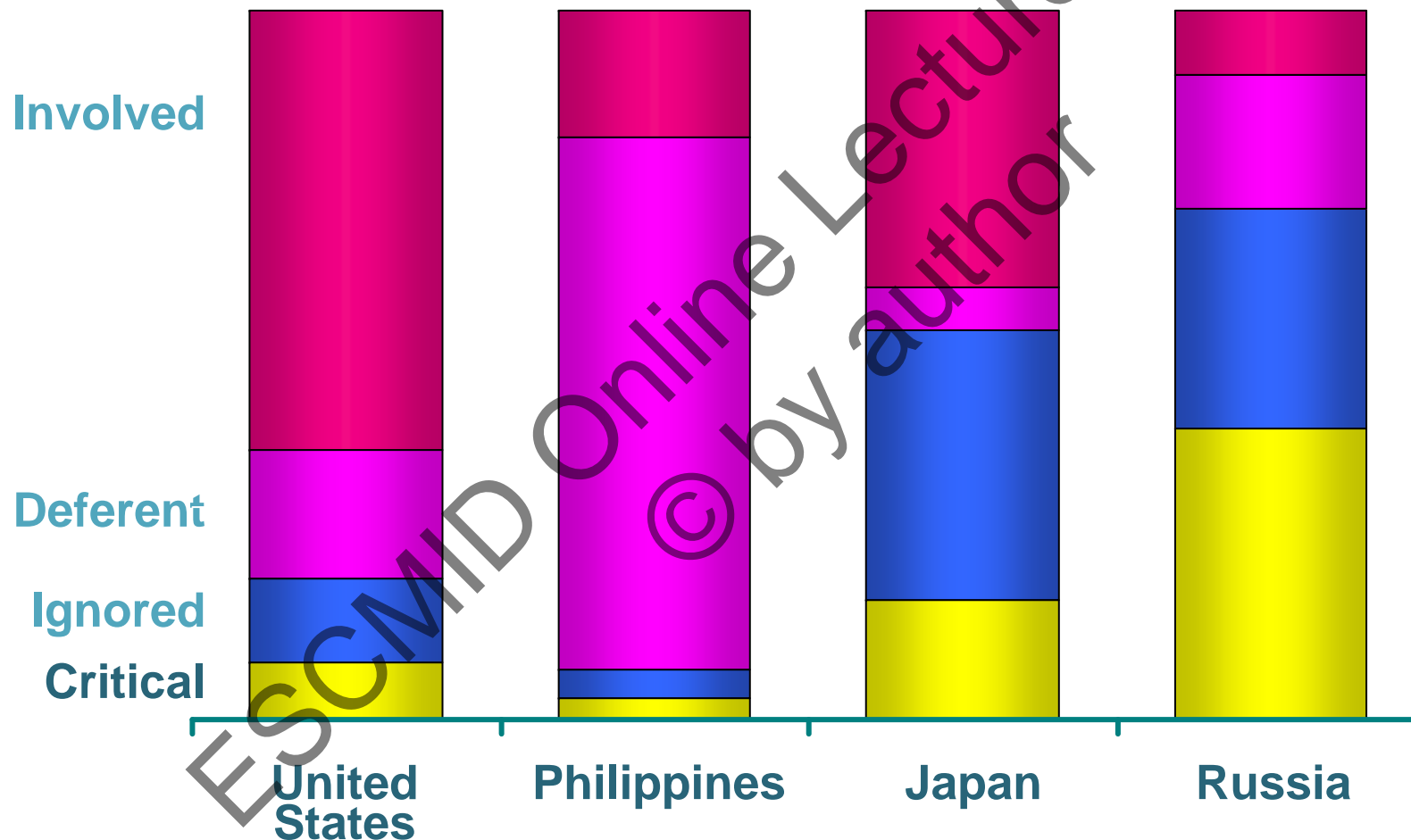
Patient Type Varies Around the World



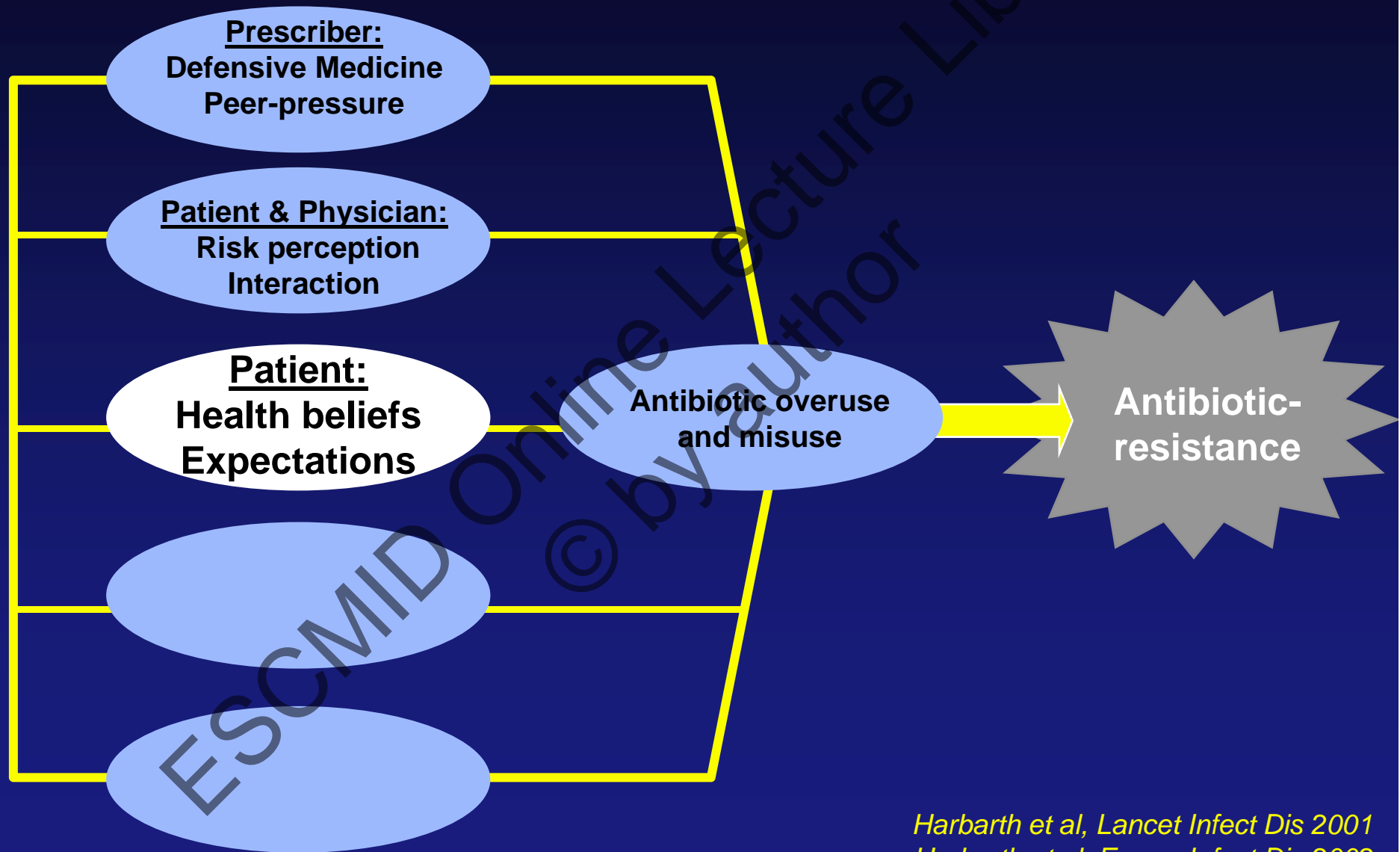
Patient Type Varies Around the World



Patient Type Varies Around the World

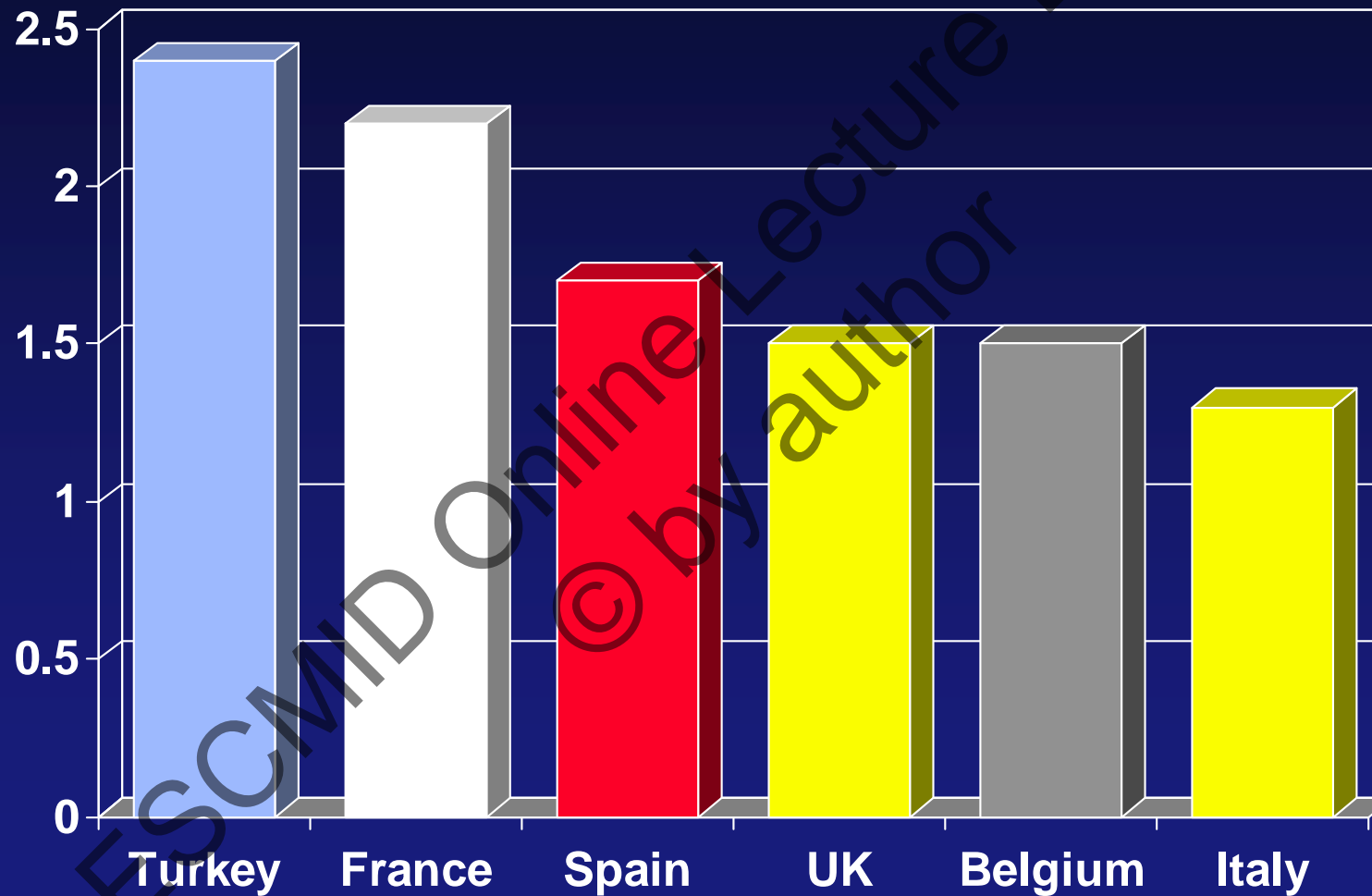


Socio-cultural determinants influencing antibiotic use & resistance



Index of antibiotic demand

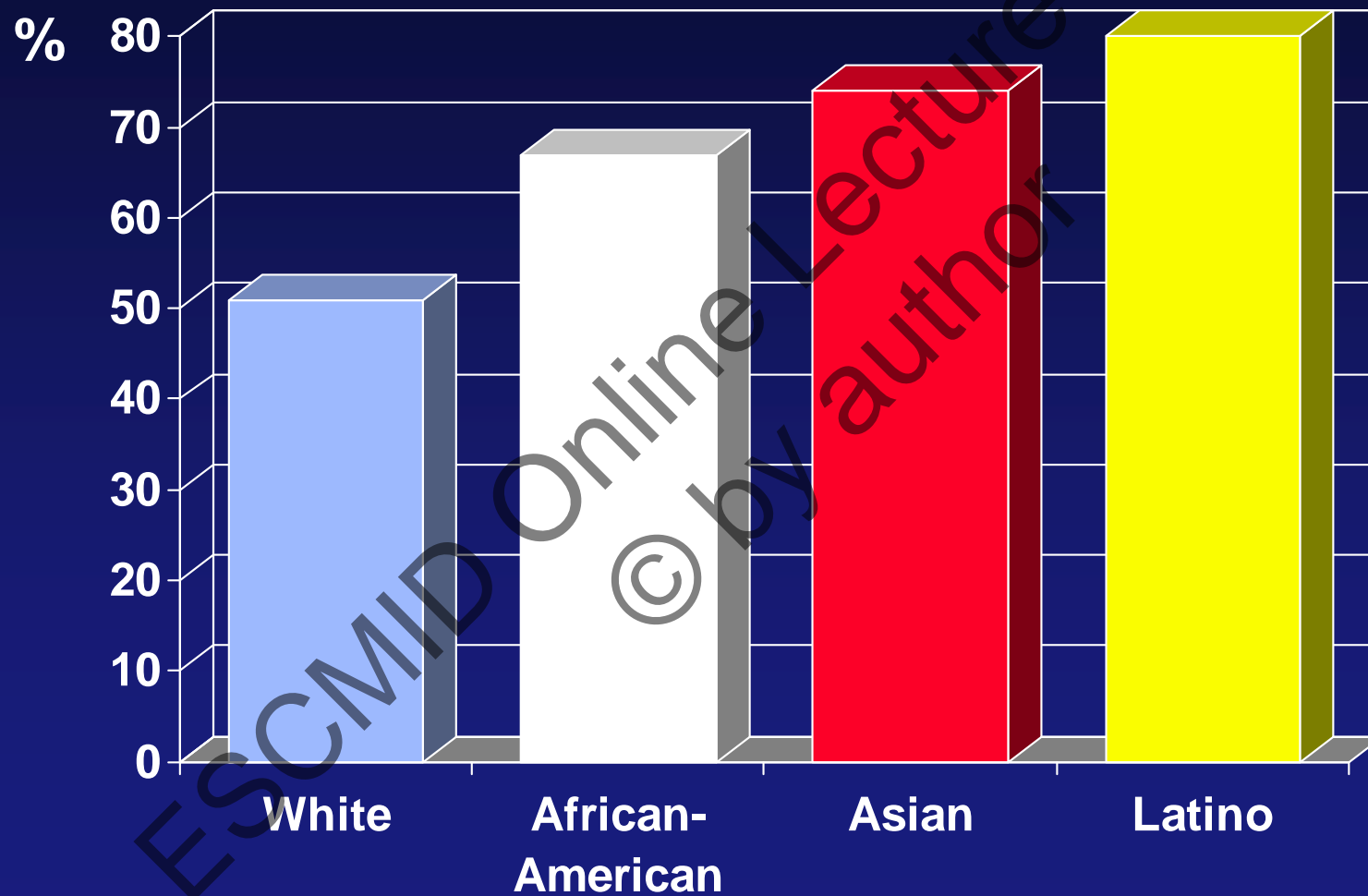
-- Cumulative proportion of patients expecting antibiotics for RTI --



Branthwaite & Pechere; J Intern Med Research 1996; 24: 229-238

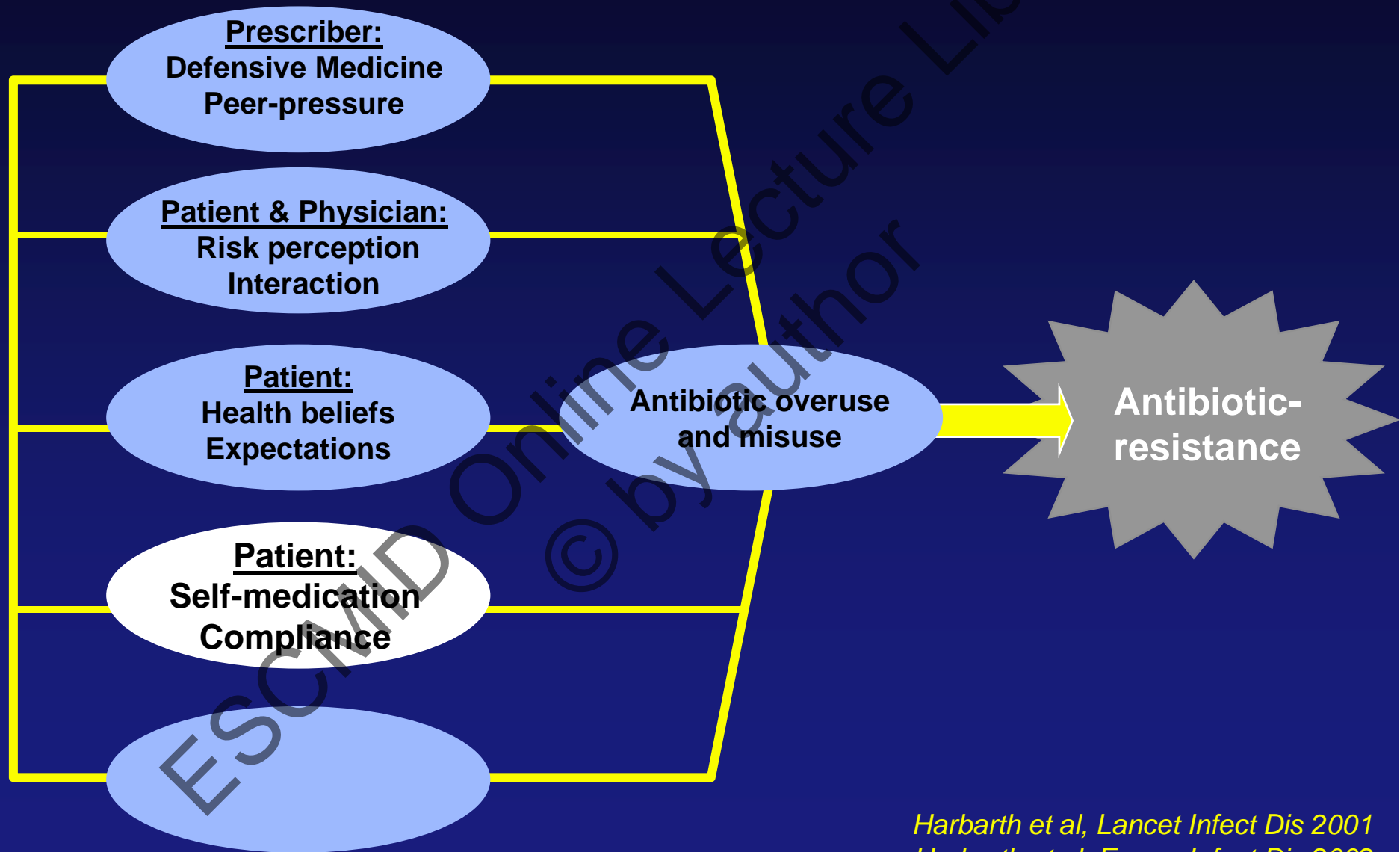
Parents expecting antibiotics

-- Ethnic variation in anxiety level --



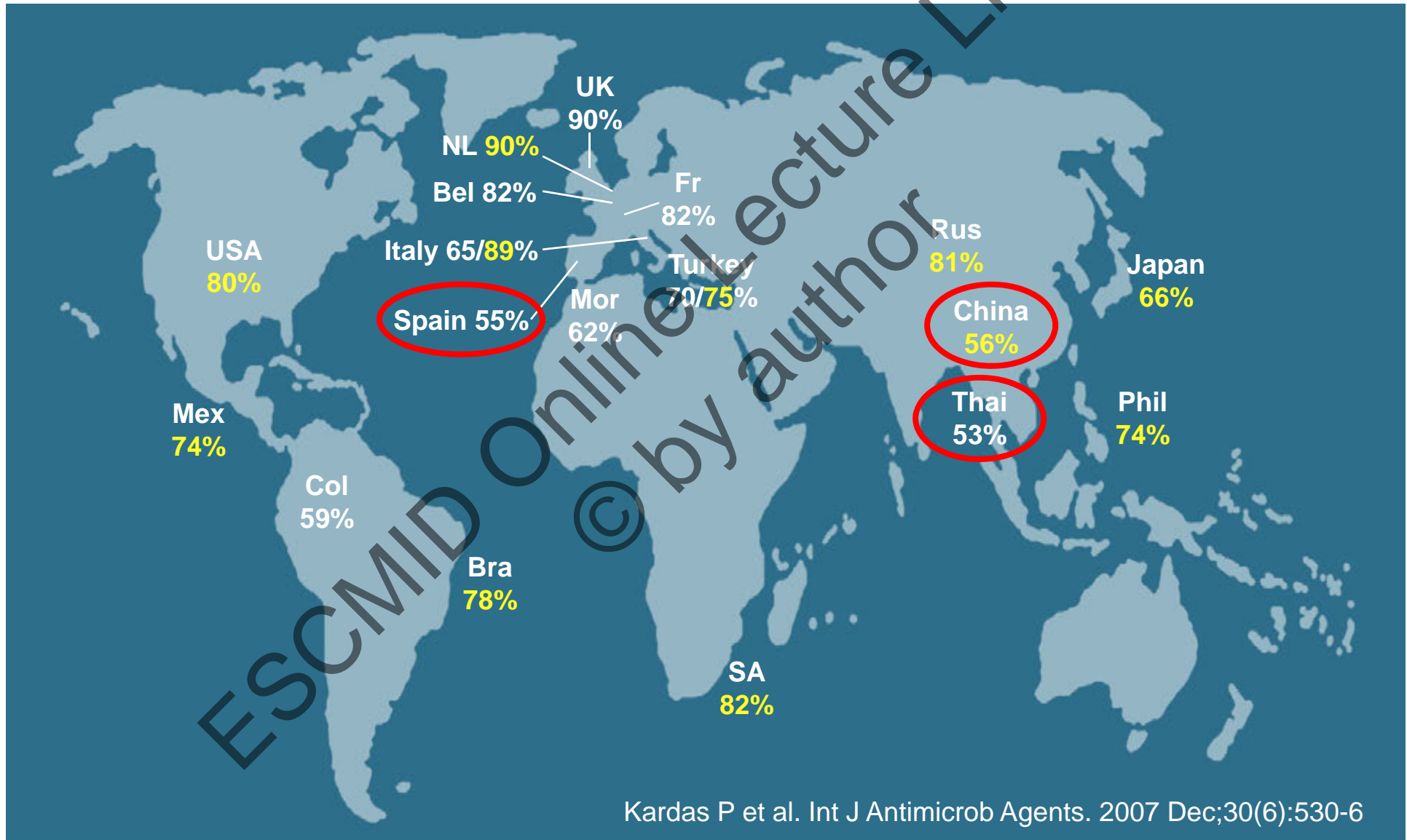
Mangione-Smith et al; Pediatrics 2004; 113: e385-e394

Socio-cultural determinants influencing antibiotic use & resistance



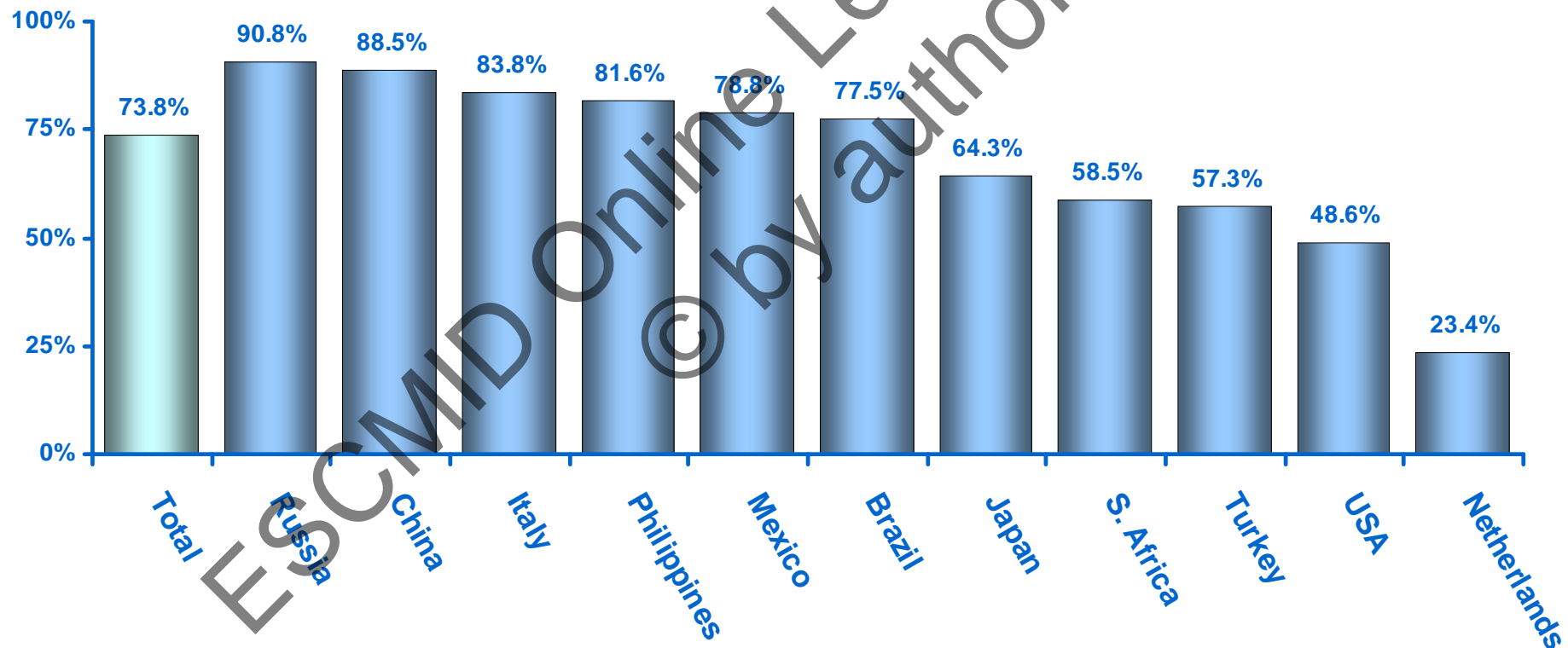
Harbarth et al, *Lancet Infect Dis* 2001
Harbarth et al, *Emerg Infect Dis* 2002

Compliance Varies by Country



Leftover Antibiotics are Often Saved

Proportion of those who had leftover antibiotics who saved them

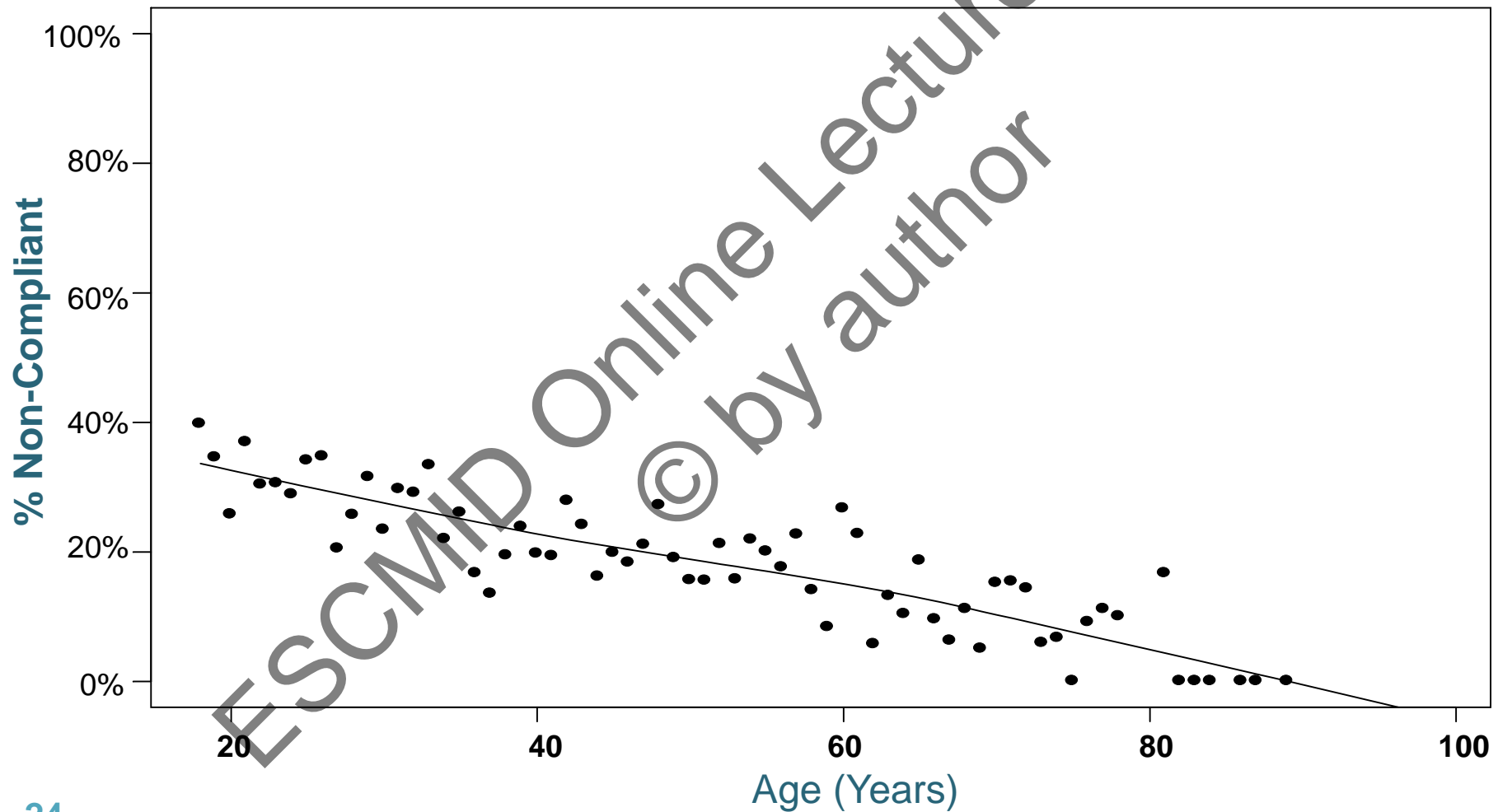


Independent Factors of Non-Compliance

- Country
- Dosage regimen: No. of daily doses
- Dispensing practice: packs vs. non-packs
- Attitude to the doctor
- Attitude to antibiotics
- Age

Admitted Non-Compliance by Age

Pechere JC et al. Int J Antimicrob Agents. 2007; 29: 245-53



Cultural Differences – Self Medication

The Sale of Antibiotics without Prescription
in Pharmacies in Catalonia, Spain

Carl Llor¹ and Josep Maria Cots²

¹Primary Care Center Jaume I, University Rovira i Virgili, Tarragona, and ²Primary Care Center La Marina, University of Barcelona, Barcelona, Spain

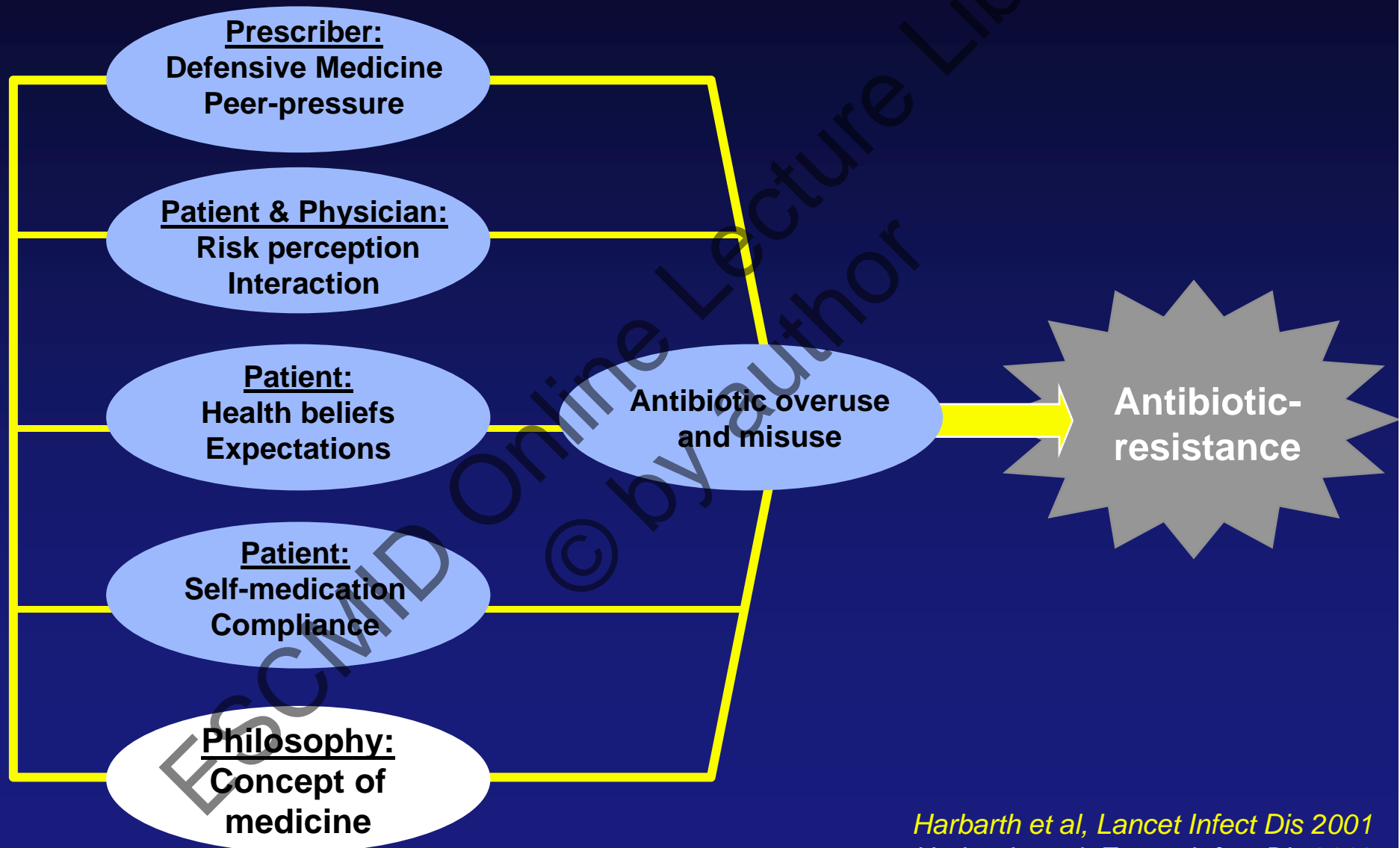
Llor and Cots (2009). *Clin Infect Dis* 48:1345-9.

Table 1. Sale of antibiotics according to the clinical case and statement made to obtain the drug.

Result and level of demand (statement)	Clinical case presented, no. (%) of pharmacies visited			
	Urinary tract infection (n = 69)	Sore throat (n = 69)	Acute bronchitis (n = 59)	Total (n = 197)
Antibiotic obtained				
1 (Can you give me something to alleviate the symptoms of the infection?)	52 (75.4)	12 (17.4)	1 (1.7)	65 (33.0)
2 (Can't you give me something stronger?)	2 (2.9)	10 (14.5)	5 (8.5)	17 (8.6)
3 (I would like an antibiotic.)	1 (1.4)	2 (2.9)	4 (6.8)	7 (3.6)
All	55 (79.7)	24 (34.8)	10 (16.9)	89 (45.2)
Antibiotic not obtained	14 (20.3)	45 (65.2)	49 (83.1)	108 (54.8)

Llor and Cots (2009). *Clin Infect Dis* 48:1345-9.

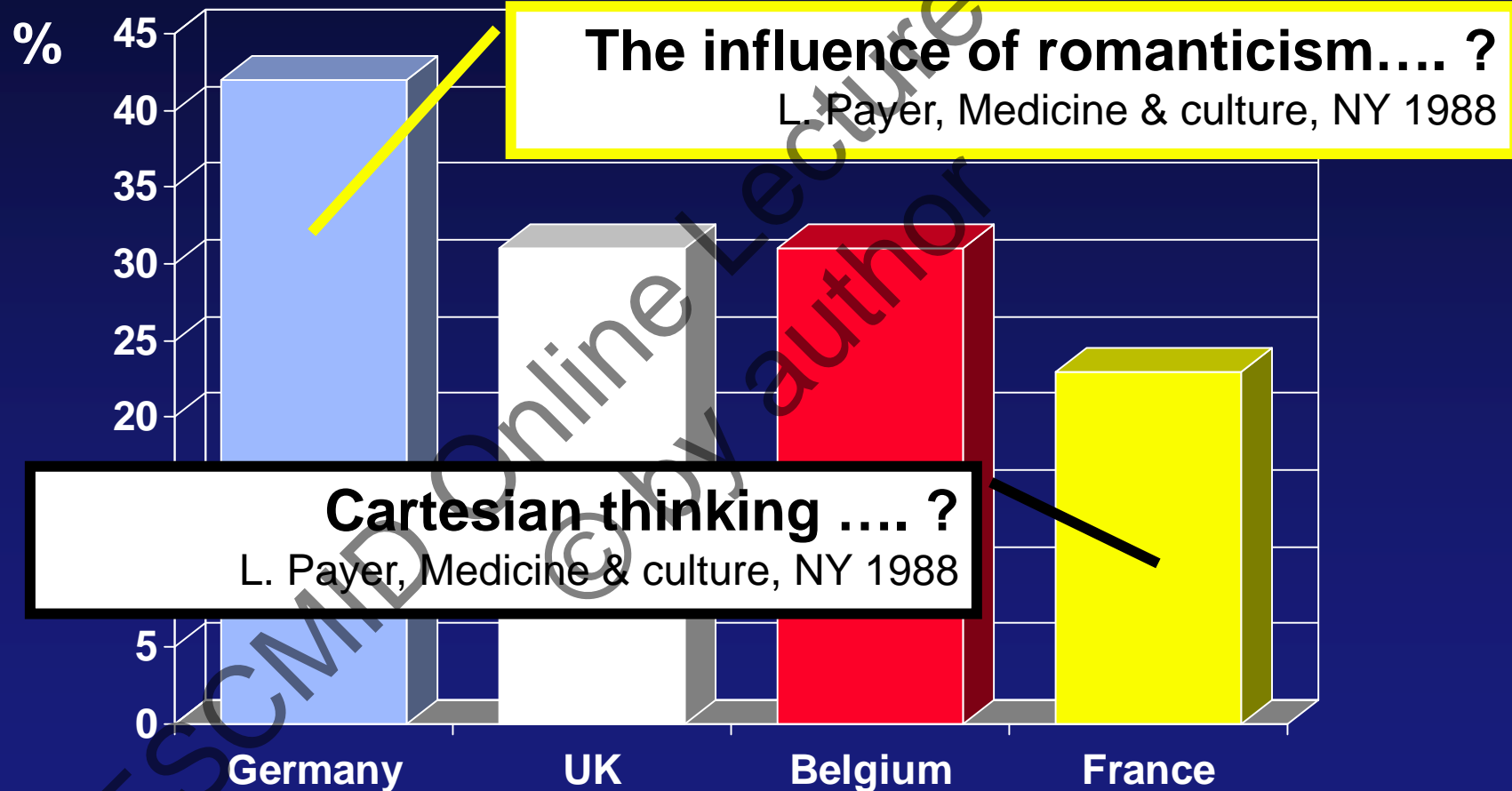
Socio-cultural determinants influencing antibiotic use & resistance



Harbarth et al, *Lancet Infect Dis* 2001
Harbarth et al, *Emerg Infect Dis* 2002

Approval of homeopathy

– Survey among 1,577 opinion leaders (response rate, 34%) –



*Homoeopathic medicine in Europe. Vol. DGXII.
European Commission, Brussels; 1996.*

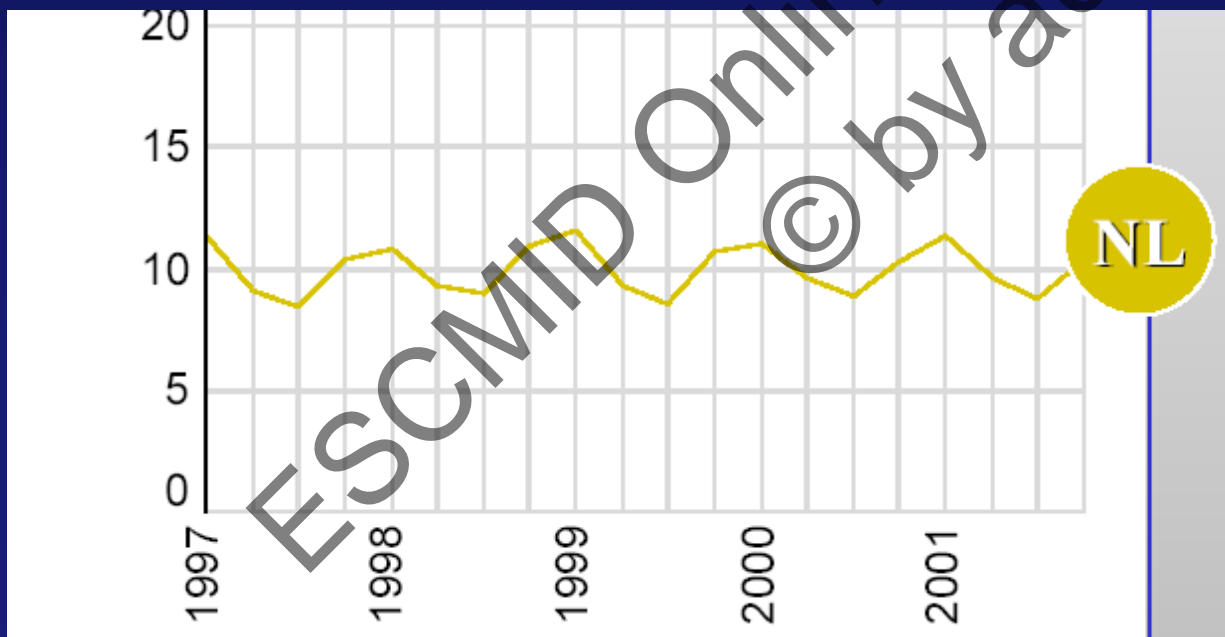
Cross-country examples

Belgium ↔ Netherlands

France ↔ Germany

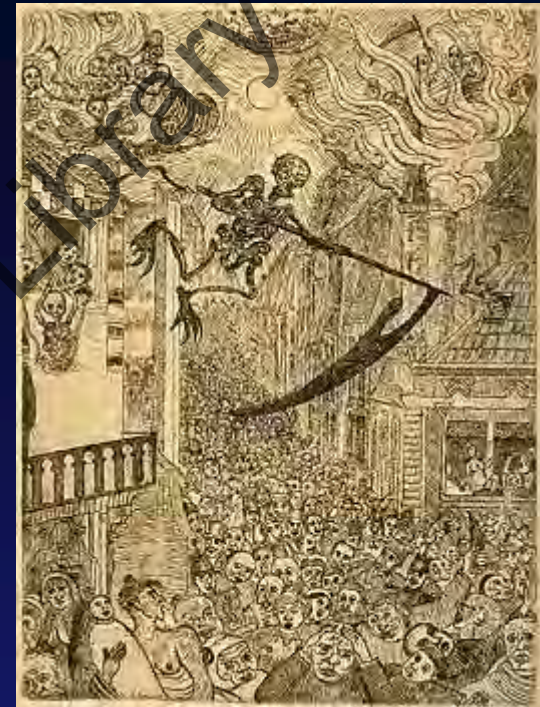
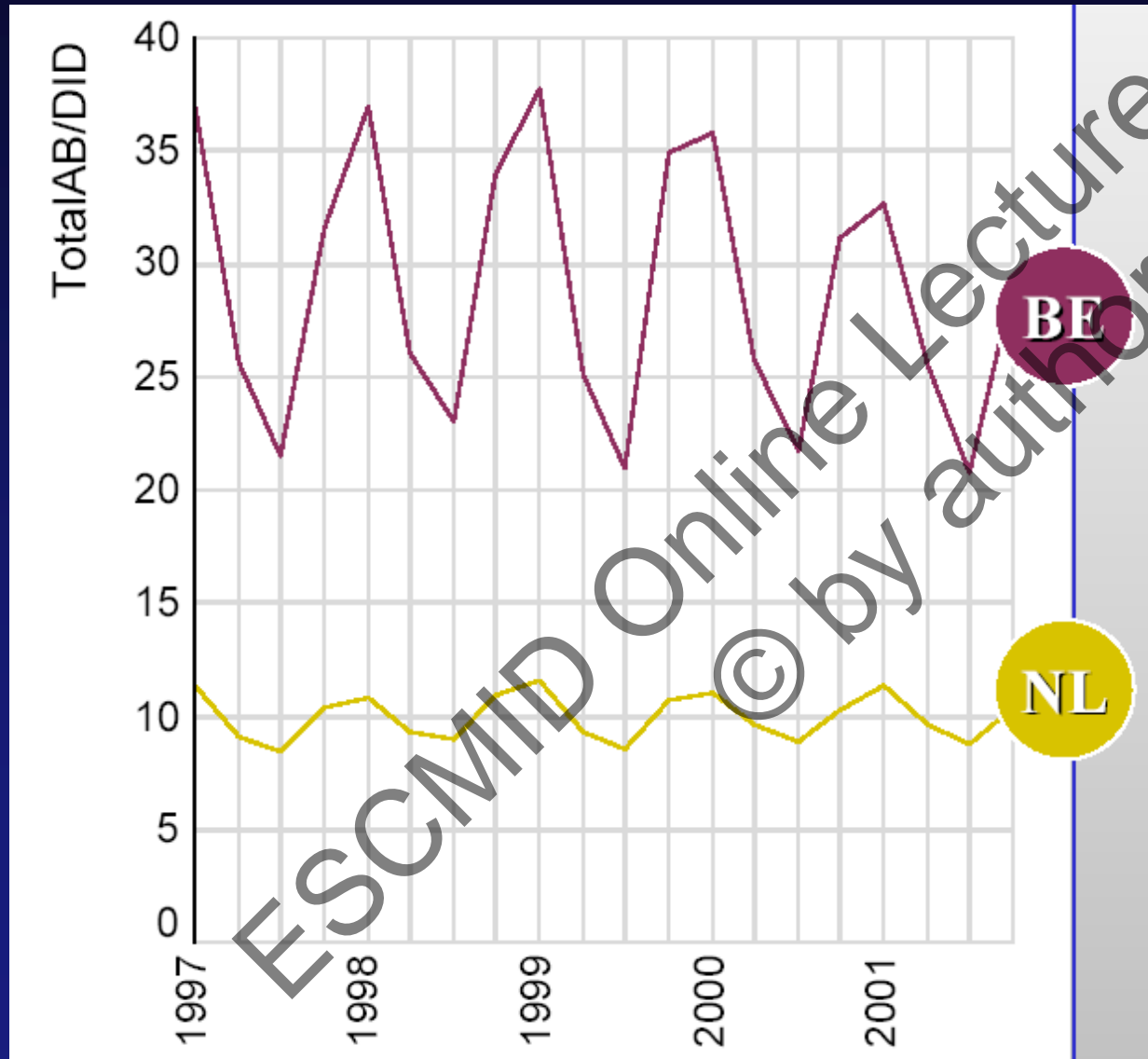
Switzerland (F) ↔ Switzerland (D)

Variation of antibiotic use -- Belgium vs. Netherlands --



Source: ESAC data
M. Elseviers, N. Bruinsma

Variation of antibiotic use -- Belgium vs. Netherlands --



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M. Elseviers, N. Bruinsma

Risk taking in medical decision making

- Dutch GPs:



Only 24%

No risk-taking attitude

- Belgian GPs:



60%

No risk-taking attitude



Antibiotic Demand, France vs. Germany



	France	Germany
Average number of office visits for acute tonsillopharyngitis per 1,000 population	136	51
Average number of antibiotic prescriptions per 100 office visits for acute tonsillopharyngitis	94.6	69.6
Average number of office visits for common cold per 1,000 population	253	19
Average number of antibiotic prescriptions per 100 office visits for common cold	48.7	7.7

Cultural & Social Factors

- Acceptance of alternative medicine
In a survey, German patients (n= 2,111) more likely to accept alternative medicines
 - 83% of Germans had positive attitudes regarding alternative medicine
 - 42% disliked antibiotics

Cultural & Social Factors (II)

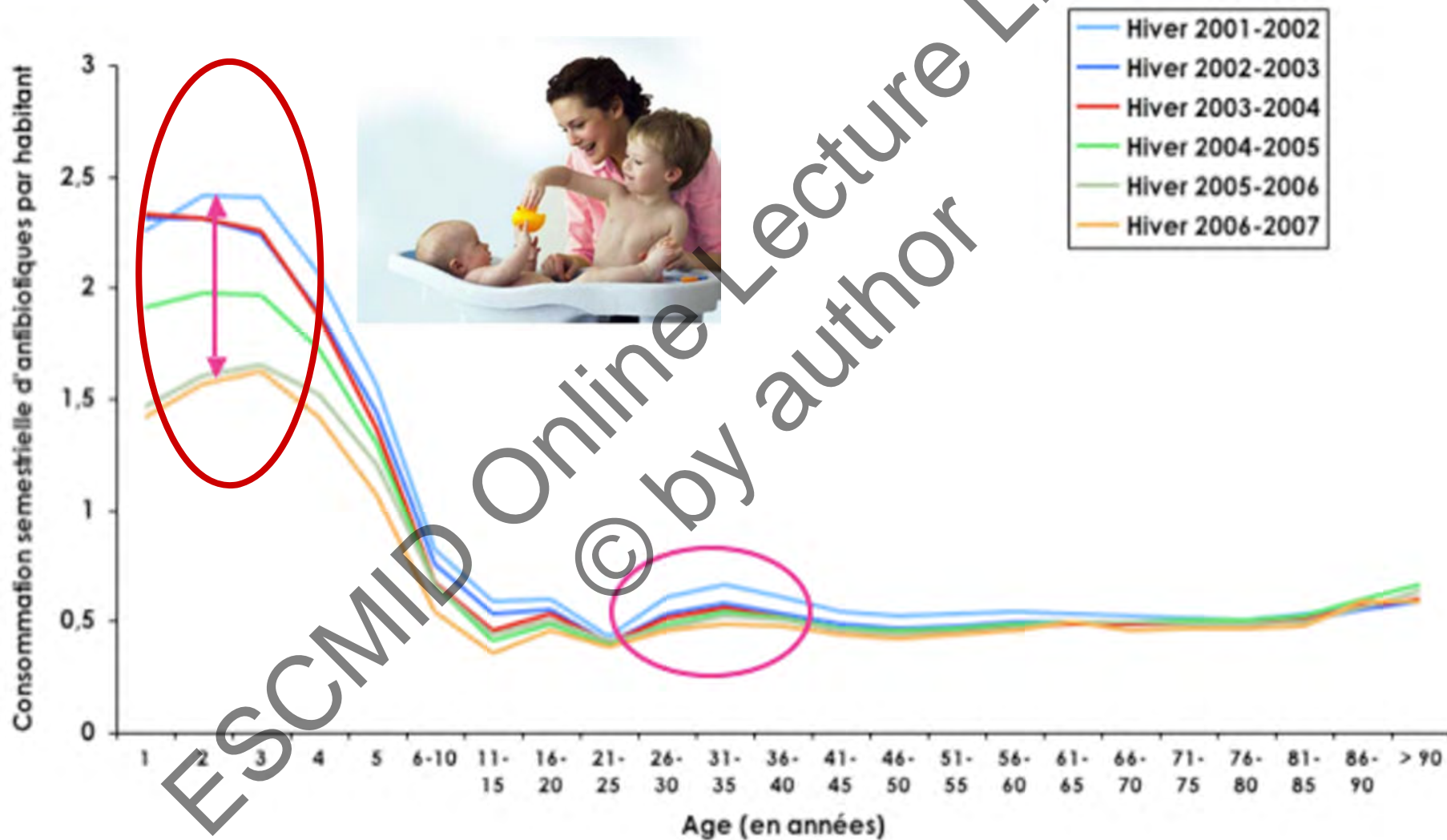
- Daycare practices:
23% of French infants (0-2 yrs) in daycare,
<3% in Germany
- If they enter child-care, German children enter it later than French children, which delays the peak incidence of otitis media and associated antibiotic use.

Cultural & Social Factors (III)

- Breastfeeding:

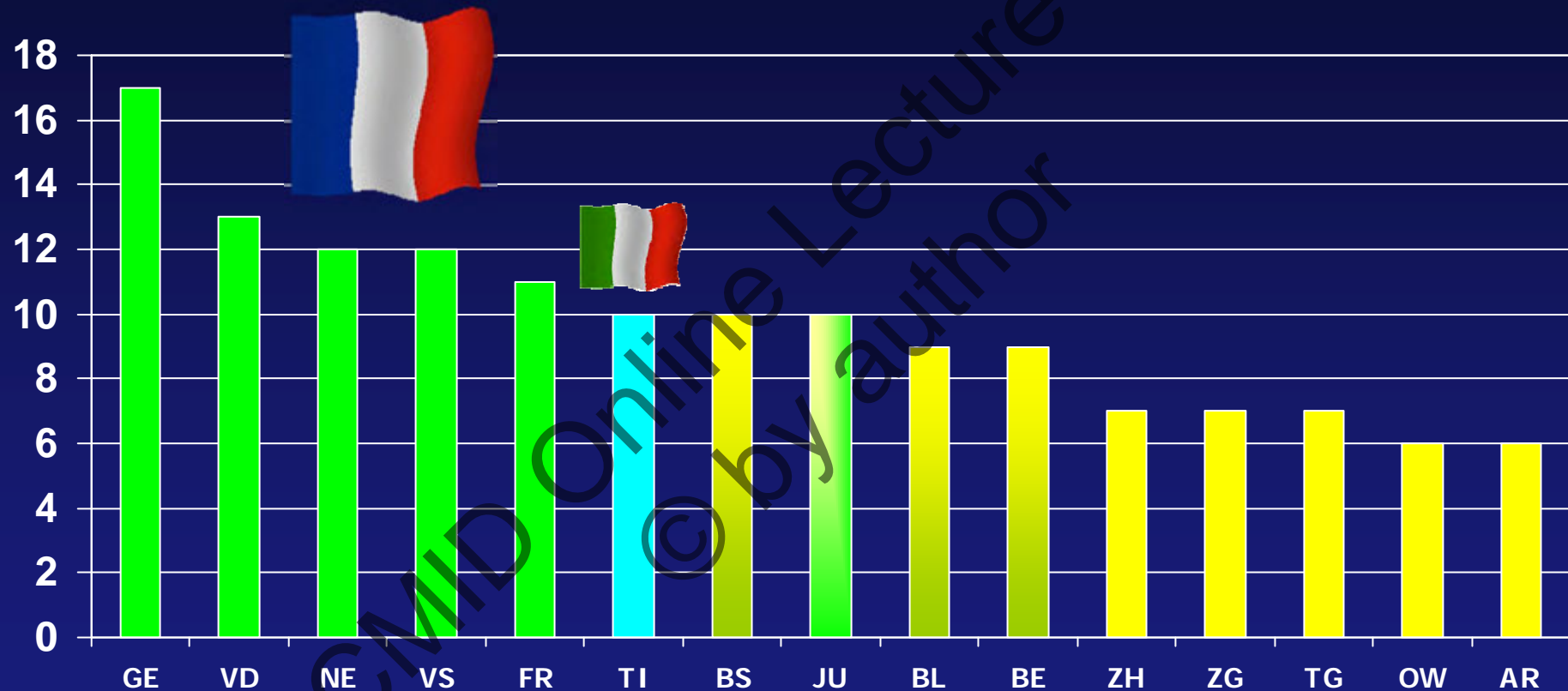
A national survey conducted in 1995 among 12,179 babies at French maternity hospitals showed that France was at the lowest level among Western countries (52%)

Antibiotic consumption by age and year 2001-2006 (Yearly October/March periods)



Antibiotic use in Switzerland (2003)

DDD / 1000 hab / day



Source: IHA/IMS

Courtesy: P. Francioli and M. Giuliano

Antibiotic use in hospitals in Valais (2002)



8 days (IQR, 6)

> 50 Euros

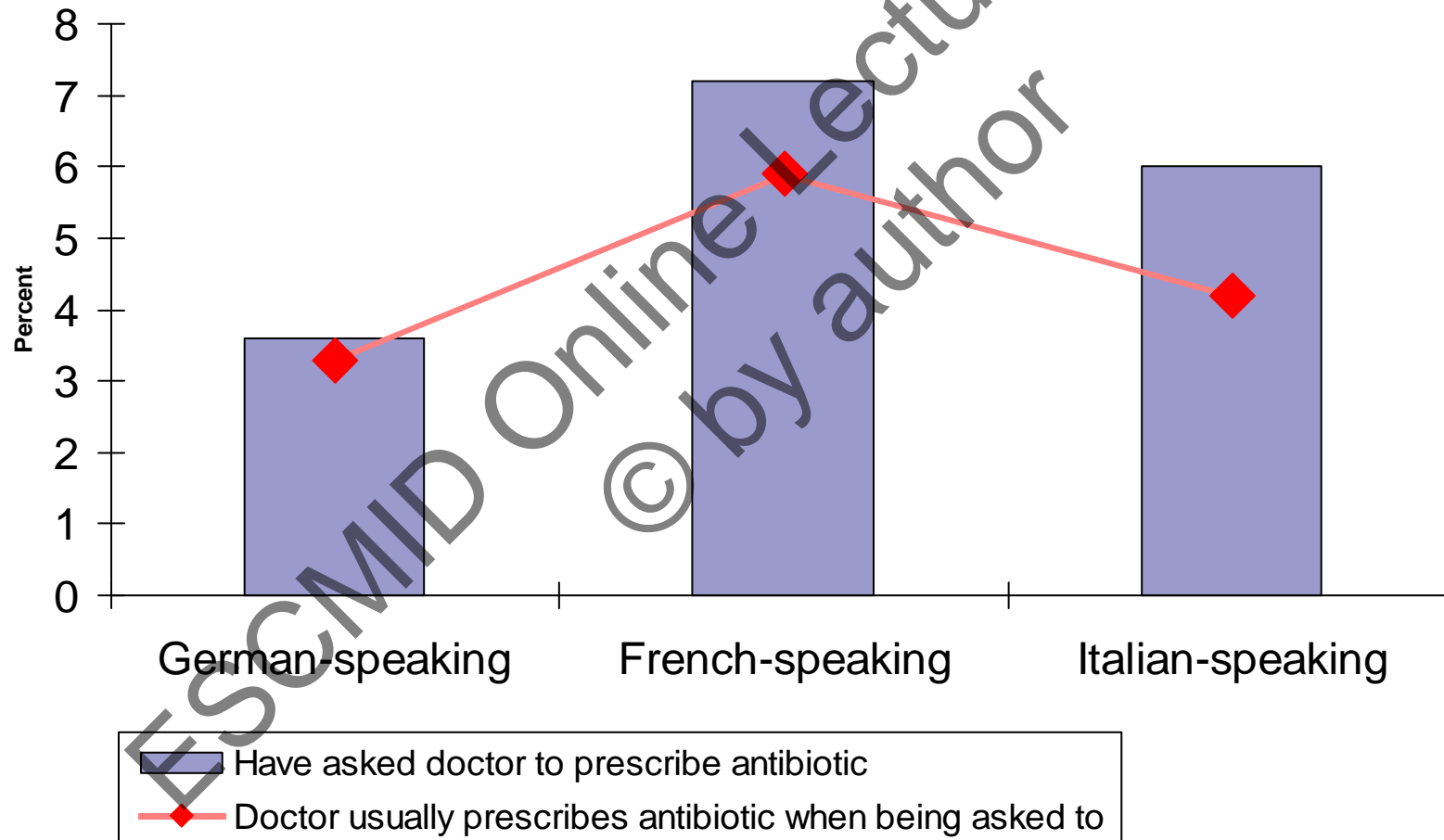
Duration

**Costs
(per dose)**

6 days (IQR, 5)

27 Euros

Patients demanding antibiotic prescriptions



Conclusions

- **Outpatient antibiotic use is embedded in a matrix of cultural factors, social constraints and patient expectations**
 - **CAVE: Stereotypes and simplistic ecologic analyses !**

High antibiotic consumption correlates with good results at soccer championships

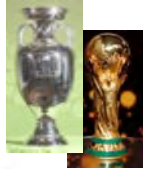
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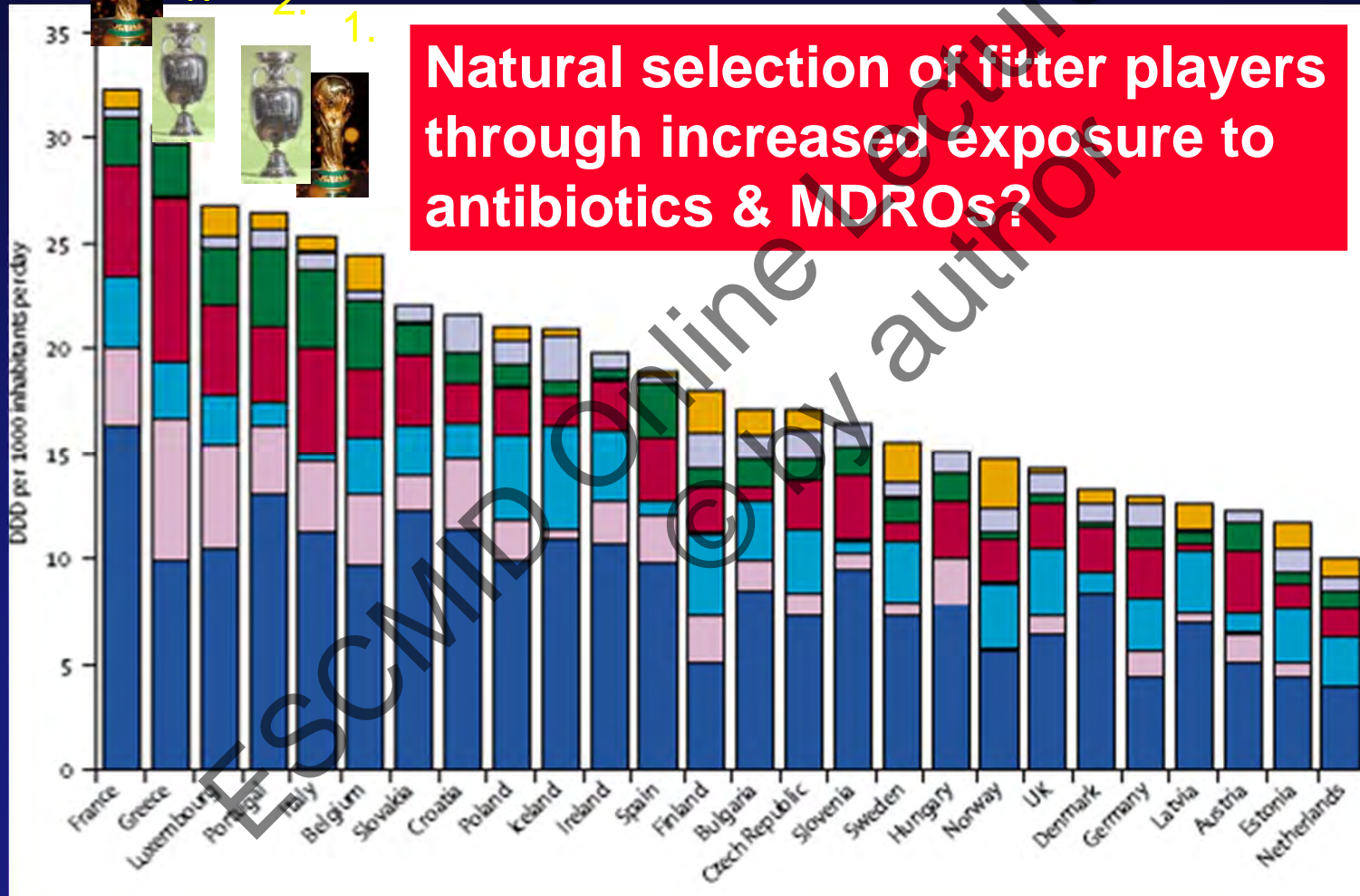
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Natural selection of fitter players through increased exposure to antibiotics & MDROs?



Conclusions

- **Antibiotic use is embedded in a matrix of cultural factors, social constraints and expectations**
 - **CAVE: Stereotypes and simplistic analyses !**
- **Contribution of the cultural environment to differences in antibiotic use and resistance rates**
- **Failure to understand this socio-cultural perspective will lead to inadequate conclusions about the chances of success for interventions**

Borg MA. JAC 2012 Mar;67(3):763-7.

- **National cultural dimensions as drivers of inappropriate ambulatory care consumption of antibiotics in Europe and their relevance to awareness campaigns.**



Rudolf Virchow, 1849:

“Medicine is a social science in its very bone and marrow.”

Antibiotic Overuse: The Influence of Social Norms

The McDonnell Norms Group

J Am Coll Surg (2008) - McDonnell - Social Norms and Abuse

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

Lancet Infectious Diseases (2010) – Hulscher et al - Social and Behavioural Approach

Journal of Antimicrobial Chemotherapy (2009) 63, 230–237

doi:10.1093/jac/dkn508

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JAC

Sustainability for behaviour change in the fight against antibiotic resistance: a social marketing framework

Timothy Edgar^{1*}, Stephanie D. Boyd² and Megan J. Palamé¹