

ANTIBIOTIC STEWARDSHIP

What to tell patients and general public?

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ESGAP, 7 - 8 April 2016 - Ijmuiden aan Zee,
The Netherlands



Outline

- ASP – general background
- The role of patients (knowledge and attitudes on antibiotics and resistance)
- Education, campaigns
- Measuring effect

Antimicrobial stewardship (ASP)

- the optimal selection, dosage, and duration of antimicrobial treatment that results in the best clinical outcome for the treatment or prevention of infection, with minimal toxicity to the patient and minimal impact on subsequent resistance

Goals of ASP

- work with health care practitioners to:
 - assure that each patient receives the most appropriate antimicrobial with the correct dose and duration
 - prevent antimicrobial overuse, misuse, and abuse
 - minimize the development of resistance

Effective antimicrobial stewardship program

- Improve appropriateness of antimicrobial use
- ↓ patient morbidity and mortality
- ↓ bacterial resistance rates
- ↓ healthcare costs

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Major approaches to ASP:

Front-end – preprescription

- ✧ restrictive prescribing- guidelines, formulary, policy; education

Back-end - postprescription

- ✧ uses prospective review, audits, feedback; education

or

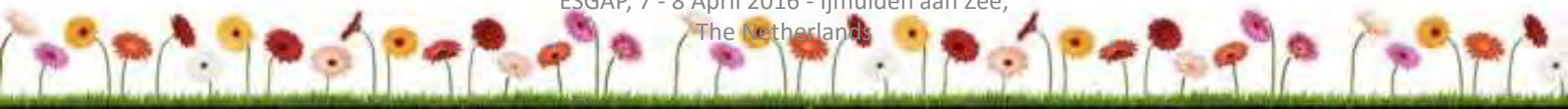
Educational

- ✧ guidelines, seminars, audits, feedback, campaigns

Administrative

- ✧ Restrictive, cycling, preorder forms

- usually a combination



PHARMACOEPIDEMIOLOGY AND DRUG SAFETY 2009; **18**: 691–696

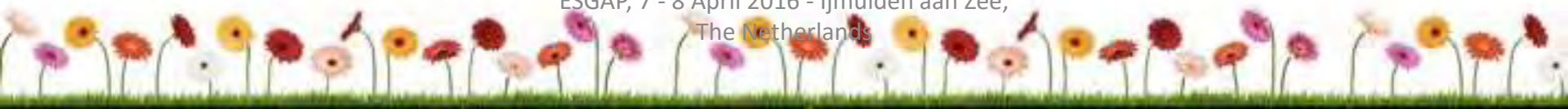
Published online 14 May 2009 in Wiley InterScience (www.interscience.wiley.com) DOI: 10.1002/pds.1768

ORIGINAL REPORT

Attitudes towards antimicrobial drugs among general population in Croatia, Fyrom, Greece, Hungary, Serbia and Slovenia[†]

Nives Radošević¹, Vera Vlahović-Palčevski MD, PhD^{1,2*}, Ria Benko³, Jure Peklar⁴, Inka Miškulin⁵, Maria Matuz³, Paraskevi Papaioannidou⁶, Ana Sabo⁷ and Snežana Palčevska-Koceska⁸

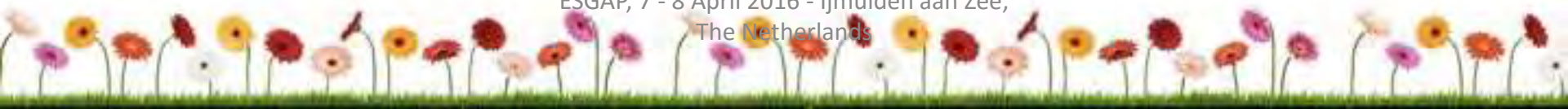
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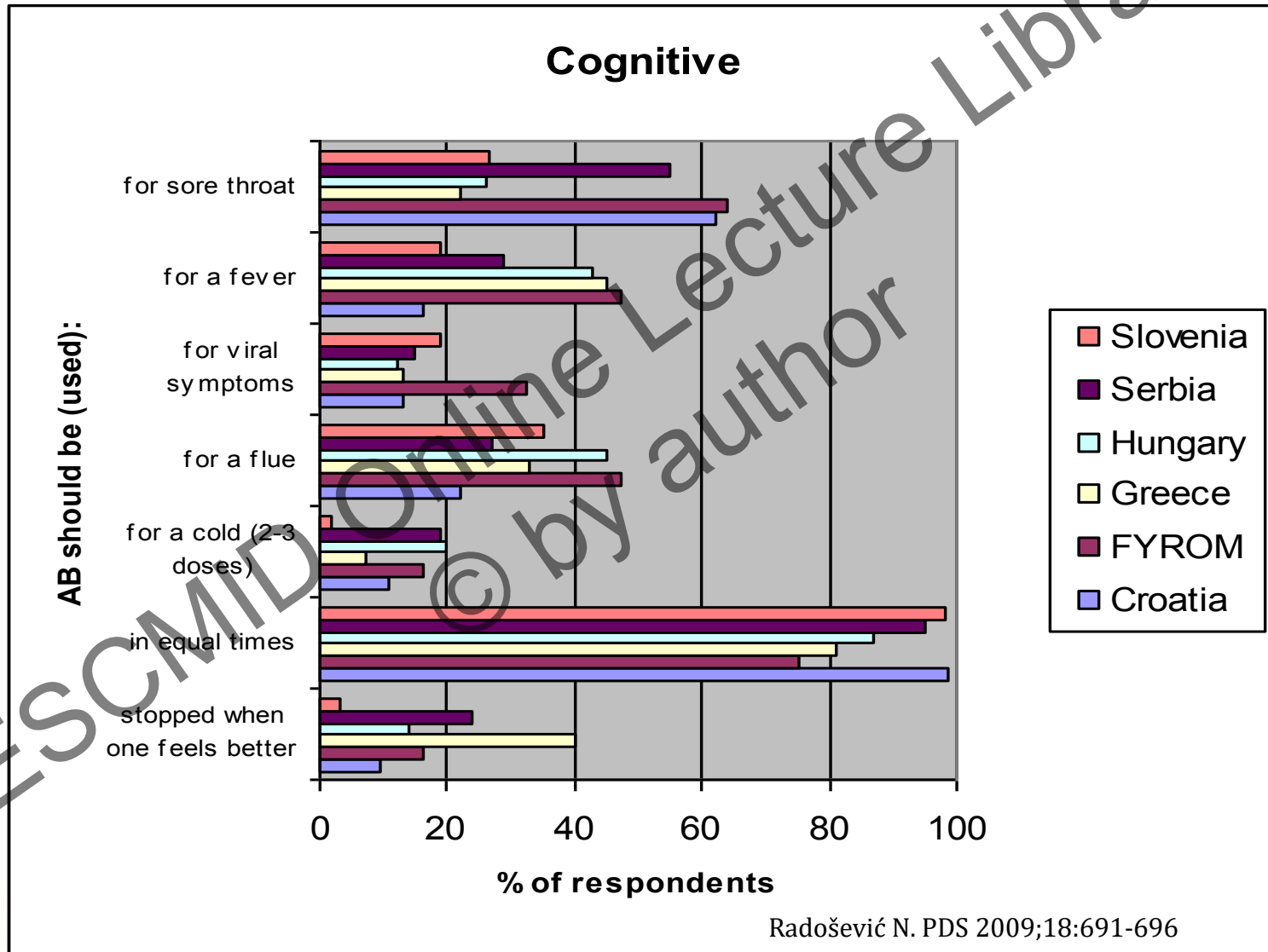
Pilot study testing general population attitudes, knowledge and behaviour regarding ABs

- > 30% respondents in Croatia know when they need an AB without physician's recommendation!
- > 20% believe that selfmedication with AB is justified!
- 20-25% think that ABs are drugs for fever, viral symptoms, cold or flue!
- 18% had bought an AB without a prescription!

Radošević N. PDS 2009;18:691-696



Cognitive component of attitudes towards ABs



Systematic review and meta analysis

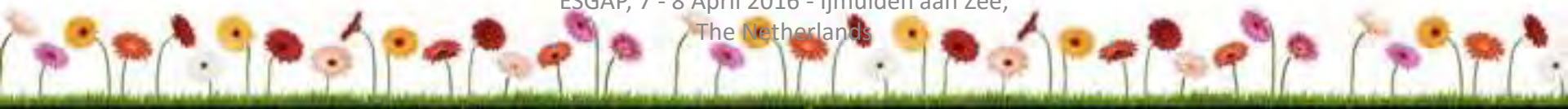
General population's knowledge and attitudes about antibiotics

- 2000.-2013. PubMed and Scopus
- 2890 papers screened
- 26 studies - systematic review
- 24 studies - meta analysis



Results

- 33,7% - did not know that ABs can treat bacterial infections
- 53,9% - did not know that ABs are ineffective against viruses
- 59,4% - aware of the resistance problem
- 26,9% - did not know that misuse of ABs can lead to resistance
- 47,1% - stop taking ABs when feeling better



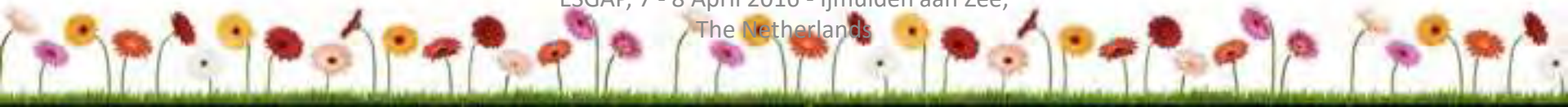
Conclusion

- Necessary to **strengthen educational initiatives** in the community and push physicians to correctly inform patients (importance of correct behaviour concerning AB consumption)
- Suggest campaigns!



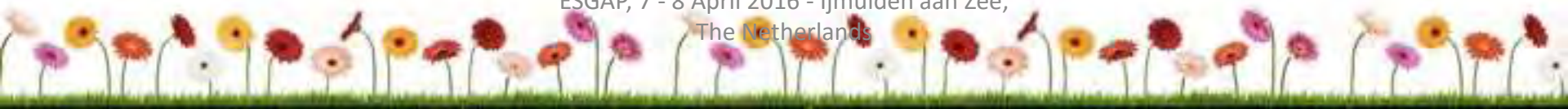
Systematic review of the public's knowledge and beliefs about AB resistance

- Until July 2014
- 3537 papers screened
- 54 studies selected
- Conclusion:
 - The public have an incomplete understanding of AMR and misperception about it and its causes and do not believe they contribute to its development
 - **Design interventions that seek to change public beliefs about how they can contribute to tackling resistance**



Antimicrobial Stewardship in Outpatient Settings: A systematic Review

- Objective: to evaluate the effect of outpatient ASP on prescribing, patient, microbial outcomes and cost
- Medline 2000-2013
- 6694 papers
- 50 included
- Results:
 - Medium strength evidence that that ASP is associated with reduction in AB use
 - Low strength evidence that ASP is associated with improved prescribing
 - No studies reported microbial outcomes
 - No studies reported patient education only



NICE

first guideline to address the issue of antimicrobial resistance (AMR)

- AMS – an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of ABs to preserve their future effectiveness
 - Recommendations for:
 - Organisations (commissioners and providers)
 - Prescribers
 - Other health and social care practitioners (including GPs, nurses, pharmacists and dentists)
 - Explicitly excluded recommendations on how to improve the public's awareness of AMR

Owens R. Prescriber UK, Oct 2015

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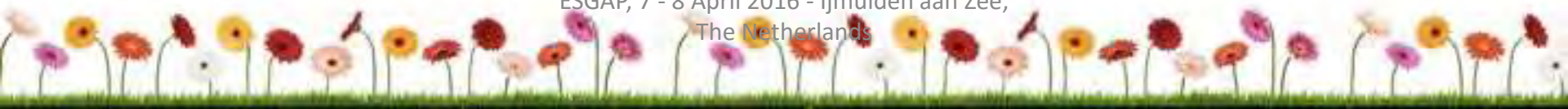
But,

- resent research from Wellcome Trust, UK has shown
 - public and prescribers attitudes and behaviours around infection and its management - influence the inappropriate use of ABs
- Conclusion: Evidence of interventions to deliver effective behaviour is required urgently
- NICE – published a draft guideline for consultation:

Antimicrobial stewardship: changing risk-related behaviours in the general population

Owens R. Prescriber UK, Oct 2015

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Search NICE...

Home > NICE Guidance > Conditions and diseases > Infections > Antibiotic use

Antimicrobial stewardship - changing risk-related behaviours in the general population

NICE in development [GID-PHG89] Anticipated publication date: TBC [Register as a stakeholder](#)

Project information | **Project documents**

Status	In progress
Anticipated publication date	TBC
Developed As	PHG
Topic area	Infectious diseases Public health

Provisional Schedule

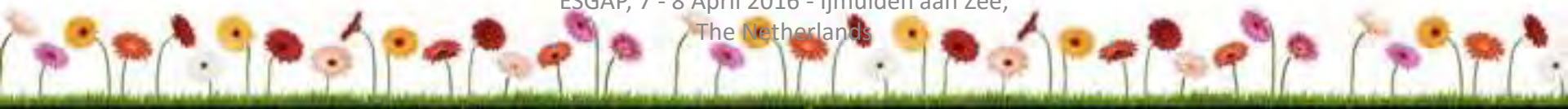


Education of general public

- Mass media campaigns!
- Behavioural science – messages and modalities

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/405031/Behaviour_Change_for_Antibiotic_Prescribing_-_FINAL.pdf

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Effectiveness of campaigns

WELL KNOWN

- Knowledge and attitudes of both the prescribing physician and the patient influence the prescribing of antibiotics

NOT KNOWN

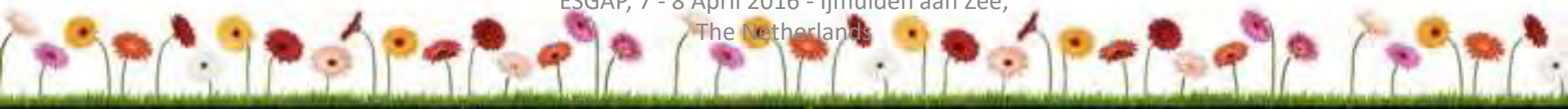
- Little empirical data exist about the effect of national campaigns on public knowledge regarding antibiotics

Podolsky SH, 2014



Evaluation

- Control group (not covered!) (Ca, UK, Hr) or before and after
- Short term (USA, Ca, B, Hr) effects
 - patient knowledge (GPs, pharmacists, nurses) questionnaires
- Mid term (USA, Ca, B, AU, UK, Hr) effects
 - AB use monitoring
- Long term effects
 - resistance surveillance
 - patient outcomes (does reduction in AB use have adverse effects)
 - cost-effectiveness



SHORT TERM

Knowledge and attitudes, general population

Rijeka, Pg County, Croatia

	Before campaign 2008.	2009.	2010.	2011.	2012. (ST before 2013.)
AB treat cough	24%	15%	10%	8%	4% (15)
AB treat flu	35%	25%	28%	19%	11% (22)
AB traet fever	35%	23%	20%	18%	15% (28)
When I have a flu, I take 2-3 tablets...	7%	4%	3%	5%	2% (13)

MID TERM

Characteristics and outcomes of public campaigns aimed at improving the use of antibiotics in outpatients in high-income countries

- 22 campaigns (1990-2007)
- Varied in intensity, national or regional
- Most seem to reduce AB use
- The effect on resistance could not be assessed

Huttner B. Lancet ID 2010:10:17-31

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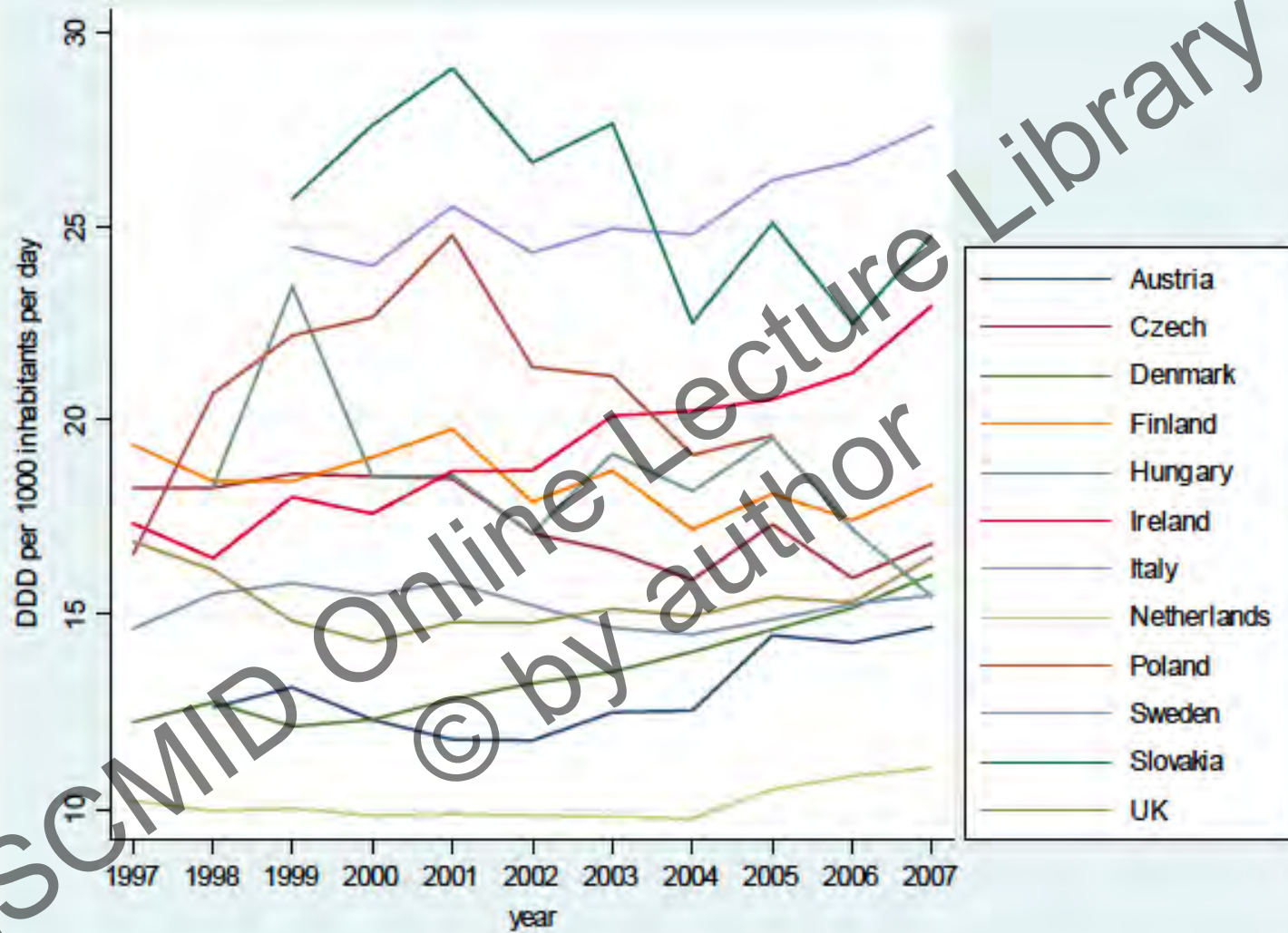


Figure 2: Outpatient antibiotic use in DID (defined daily doses per 1000 inhabitants per day) for countries that did not implement any public campaign between 1997 and 2007. Data source: European Surveillance of Antimicrobial Consumption (ESAC).

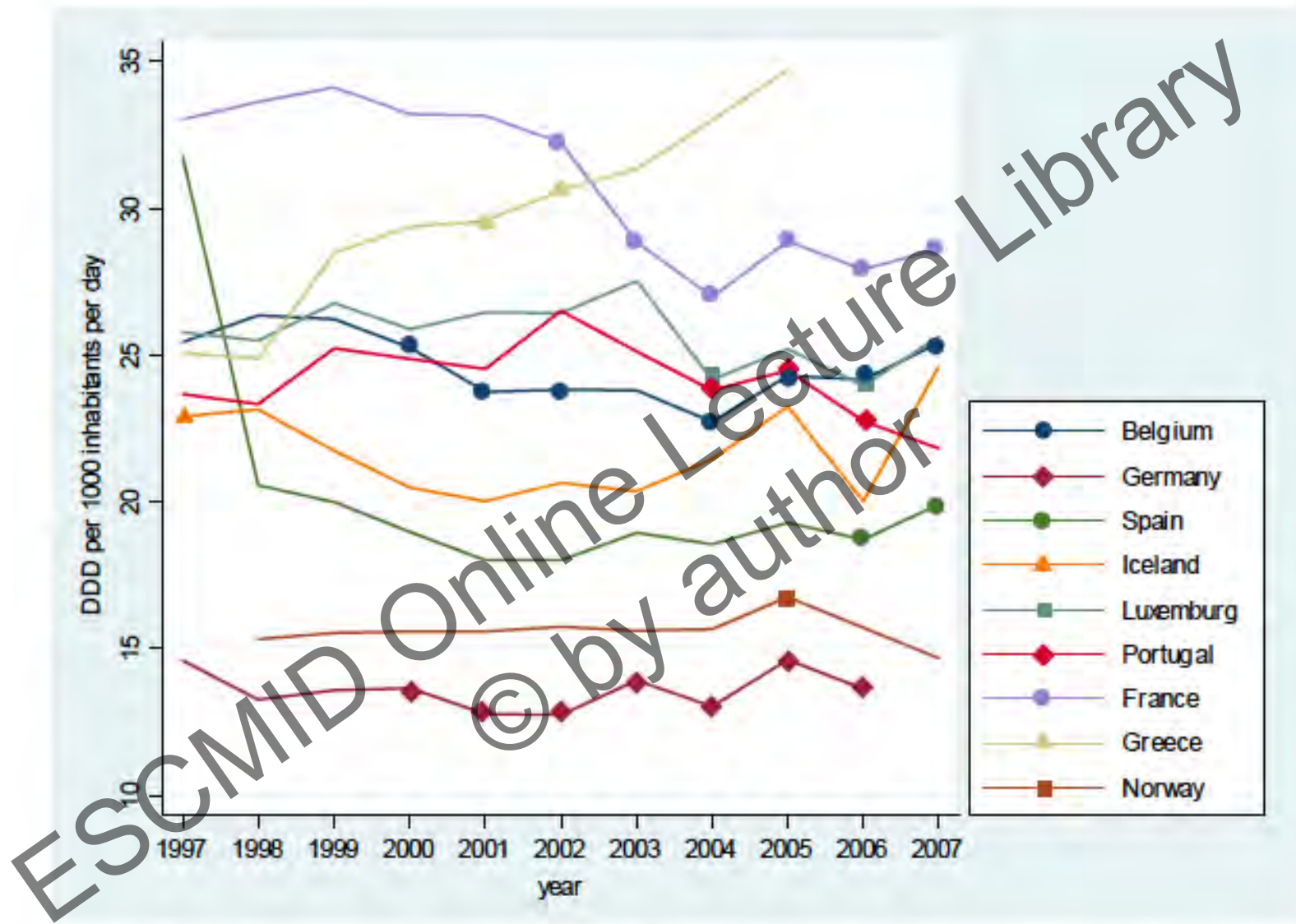
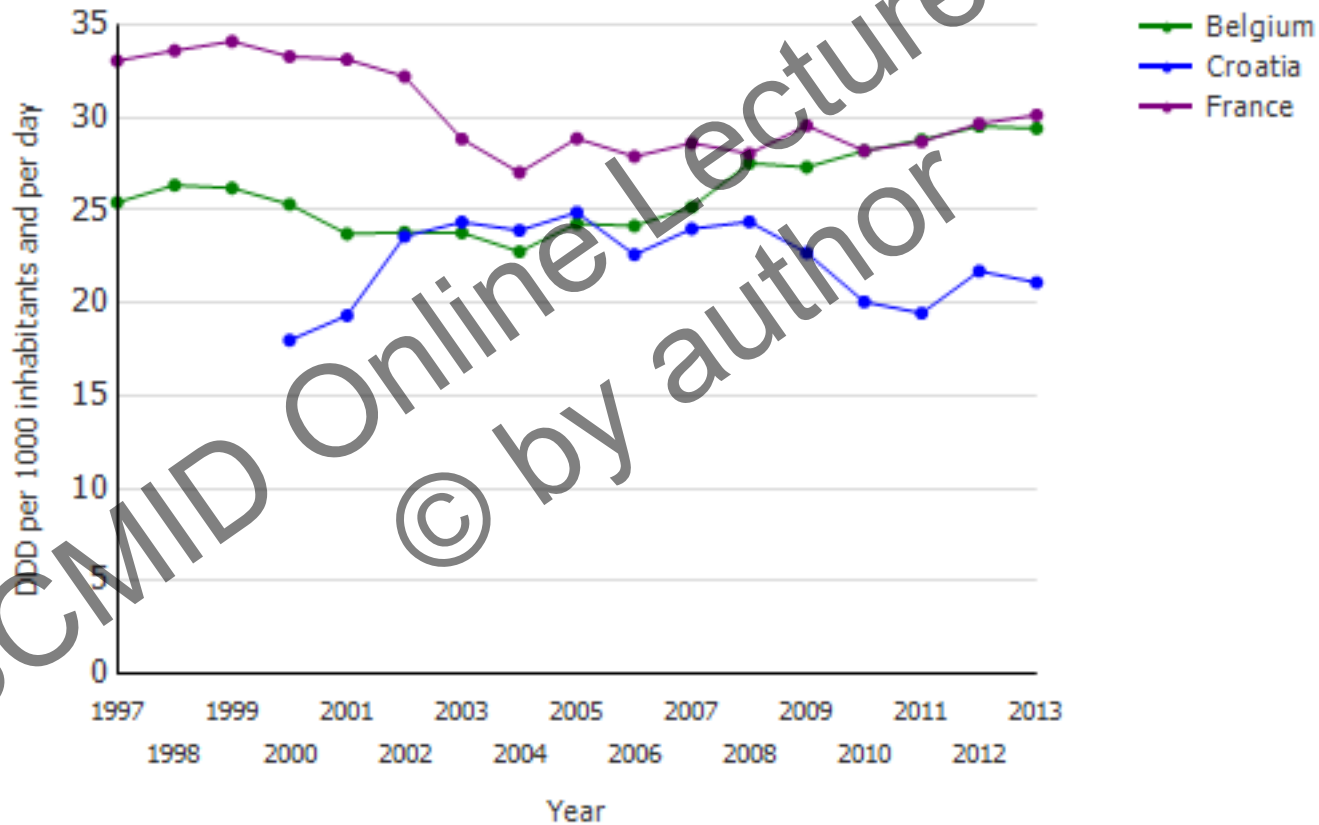


Figure 3: Outpatient antibiotic use in DID (defined daily doses per 1000 inhabitants per day) for countries that implemented public campaigns between 1997 and 2007 (years of campaign implementation are marked). Data source: European Surveillance of Antimicrobial Consumption (ESAC) and [12].

Trend of the consumption of antimicrobials in ATC group J01 (antibacterials for systemic use) in the community (primary care sector) in Belgium, Croatia and France from 1997 to 2013



Samuel Coenen, et al.

Appropriate international measures for outpatient antibiotic prescribing and consumption: recommendations from a national data comparison of different measures

J. Antimicrob. Chemother. (2014) 69 (2): 529-534

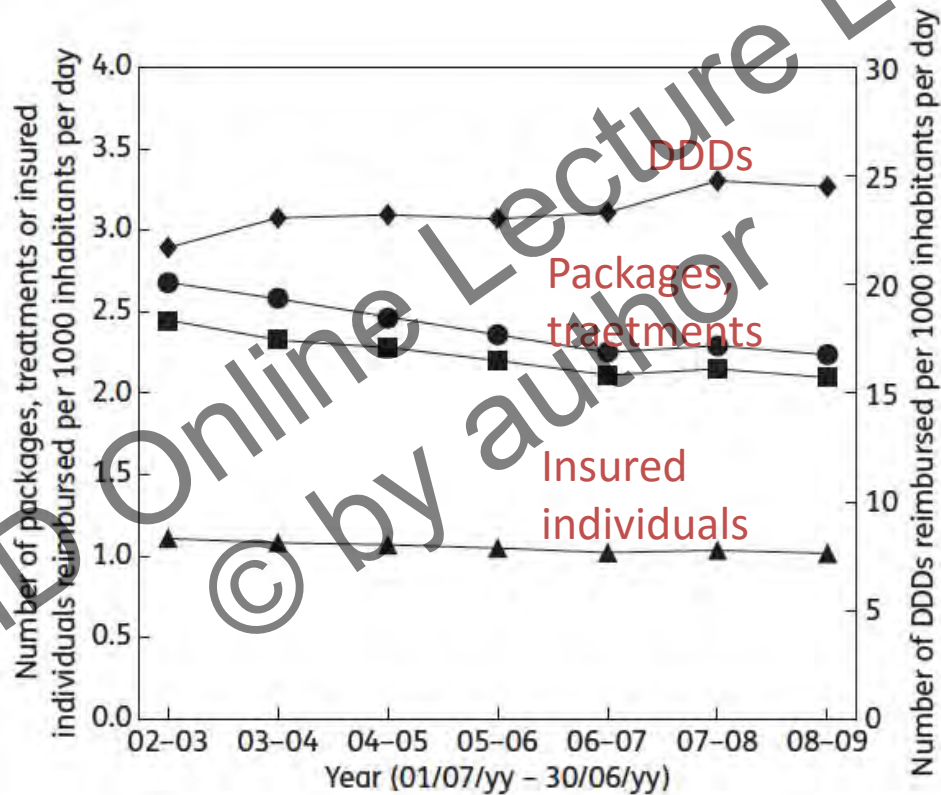


Figure 1. Outpatient antibiotic use in Belgium per July–June year expressed as the number of DDDs (diamonds), packages (circles), treatments (squares) and insured individuals (triangles) reimbursed per 1000 inhabitants per day.

DEBATE

- **Original research:**

Samuel Coenen, Birgit Gielen, Adriaan Blommaert, Philippe Beutels, Niel Hens, and Herman Goossens

Appropriate international measures for outpatient antibiotic prescribing and consumption: recommendations from a national data comparison of different measures

J. Antimicrob. Chemother. (2014) 69 (2): 529-534 first published online October 1, 2013
doi: 10.1093/jac/dkt385

- **Research Letter:**

Milan Čížman

Measurement units for antibiotic consumption in outpatients

J. Antimicrob. Chemother. first published online June 4, 2014 doi:10.1093/jac/dku194

- **Letter to the Editor:**

Samuel Coenen, Robin Bruyndonckx, Niel Hens, Marc Aerts, and Herman Goossens

Comment on: Measurement units for antibiotic consumption in outpatients

J. Antimicrob. Chemother. first published online September 8, 2014 doi:10.1093/jac/dku292

- **CORRESPONDENCE:**

Frédéric Fripiat, Christelle Vercheval, and Nathalie Layios

Decreased Antibiotic Consumption in the Belgian Community: Is It Credible?

Clin Infect Dis. first published online October 3, 2015 doi:10.1093/cid/civ868



DDD/1000inhabitants / day?



Packages /
1000inhabitants /
day?



Limitations:

- different strengths
- different pack sizes
- International comparisons impossible
- longitudinal analysis misinterpreted



- Definition of Responsible Antibiotic Use
- Quantity metrics of Responsible Antibiotic Use
- Quality indicators of Responsible Antibiotic Use

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LONG TERM

resistance, patient outcomes, cost

- The effect on resistance not assessed in the campaigns
- No data on patient outcomes and cost

Conclusion

- Effects of outpatient stewardship programs on antimicrobial resistance is unknown
- Ecological evidence linking increasing antimicrobial use and antimicrobial resistance is robust and biologically plausible
- Reduction in antimicrobial use are likely to be beneficial
- Large scale studies needed (resistance, patient outcomes, cost)
- ASP should involve patients and general public / behavioural science
- Expected NICE guideline - Antimicrobial stewardship –changing risk related behaviors in the general population



Thank you!



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