



**EUROPEAN
ANTIBIOTIC
AWARENESS DAY**



A European Health Initiative



Use of antibiotics in human health

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Competing interests

Research Support	<ul style="list-style-type: none">- Grant from the <i>Fundació Jordi Gol i Gurina</i> for a research stage at the University of Cardiff in 2013- I am receiving research grants from the European Commission (Sixth and Seventh Programme Frameworks)- I am receiving grants from the <i>Instituto de Salud Carlos III</i> (Spanish Ministry of Health)- I received grants from the Catalan Society of Family Medicine
Employee, consultant, stakeholders, speakers bureau, honoraria	None

A tale of bias

Blindfolded

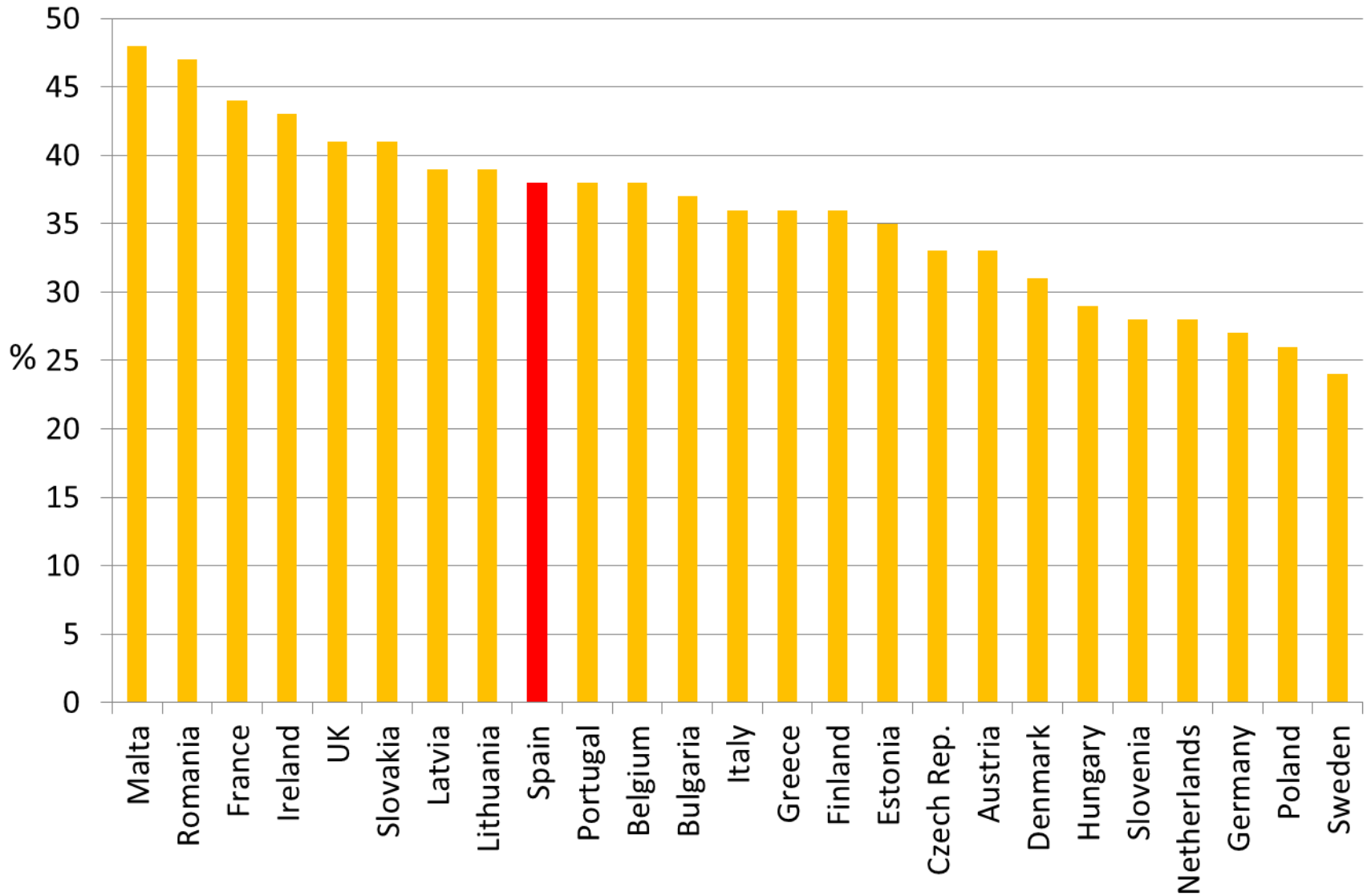


With the eyes wide open



Eurobarometer on the use of antibiotics in Europe, 2013

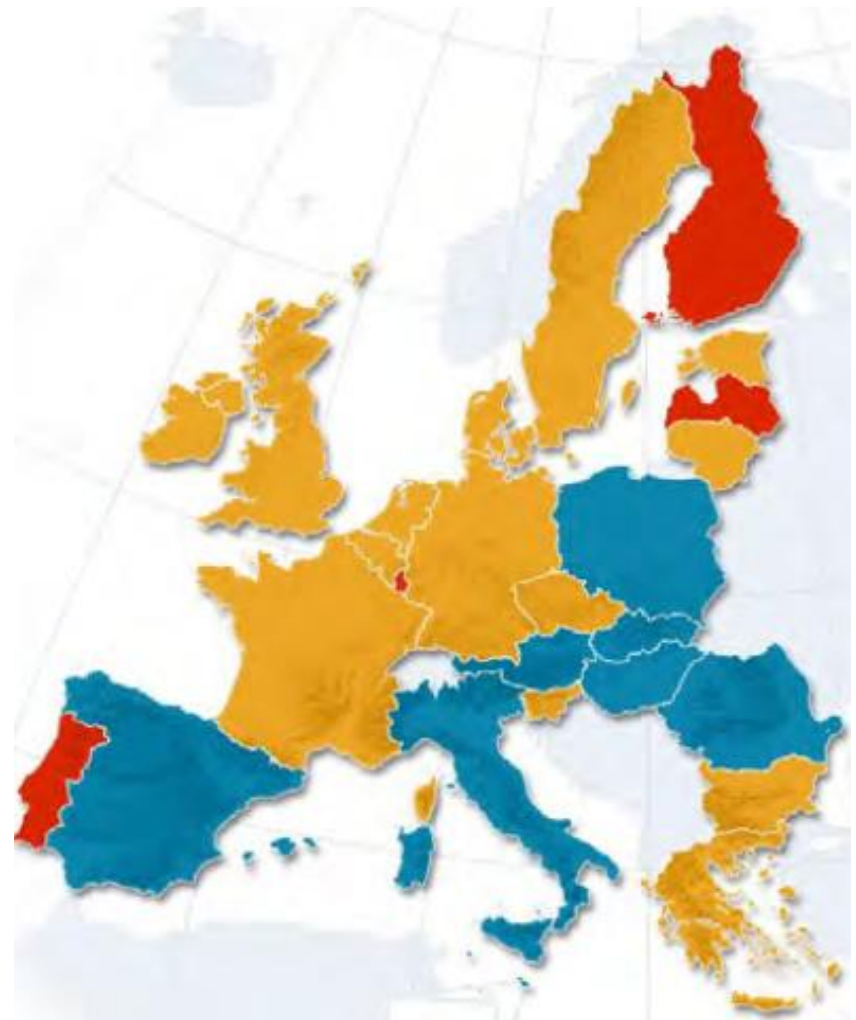
Have you taken any oral antibiotics in the last 12 months?



Eurobarometer on the use of antibiotics in Europe, 2013

Have you taken any oral antibiotics in the last 12 months?

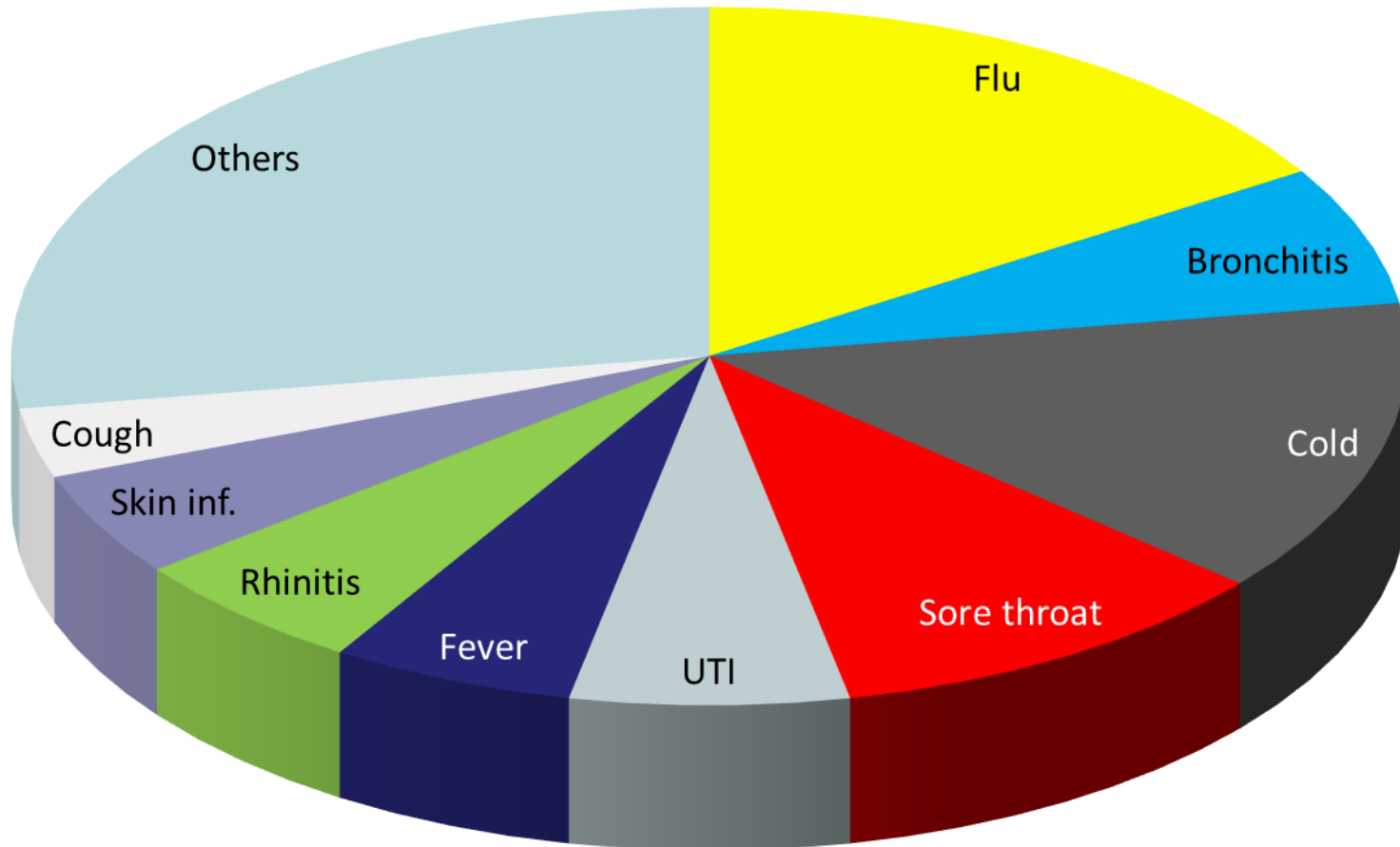
EU27	35%
Sex	
Male	32%
Female	39%
Education (End of)	
15-	38%
16-19	35%
20+	35%
Still studying	36%
Difficulties paying bills	
Most of the time	41%
From time to time	38%
Almost never	33%
Received information	
Yes	46%
No	30%

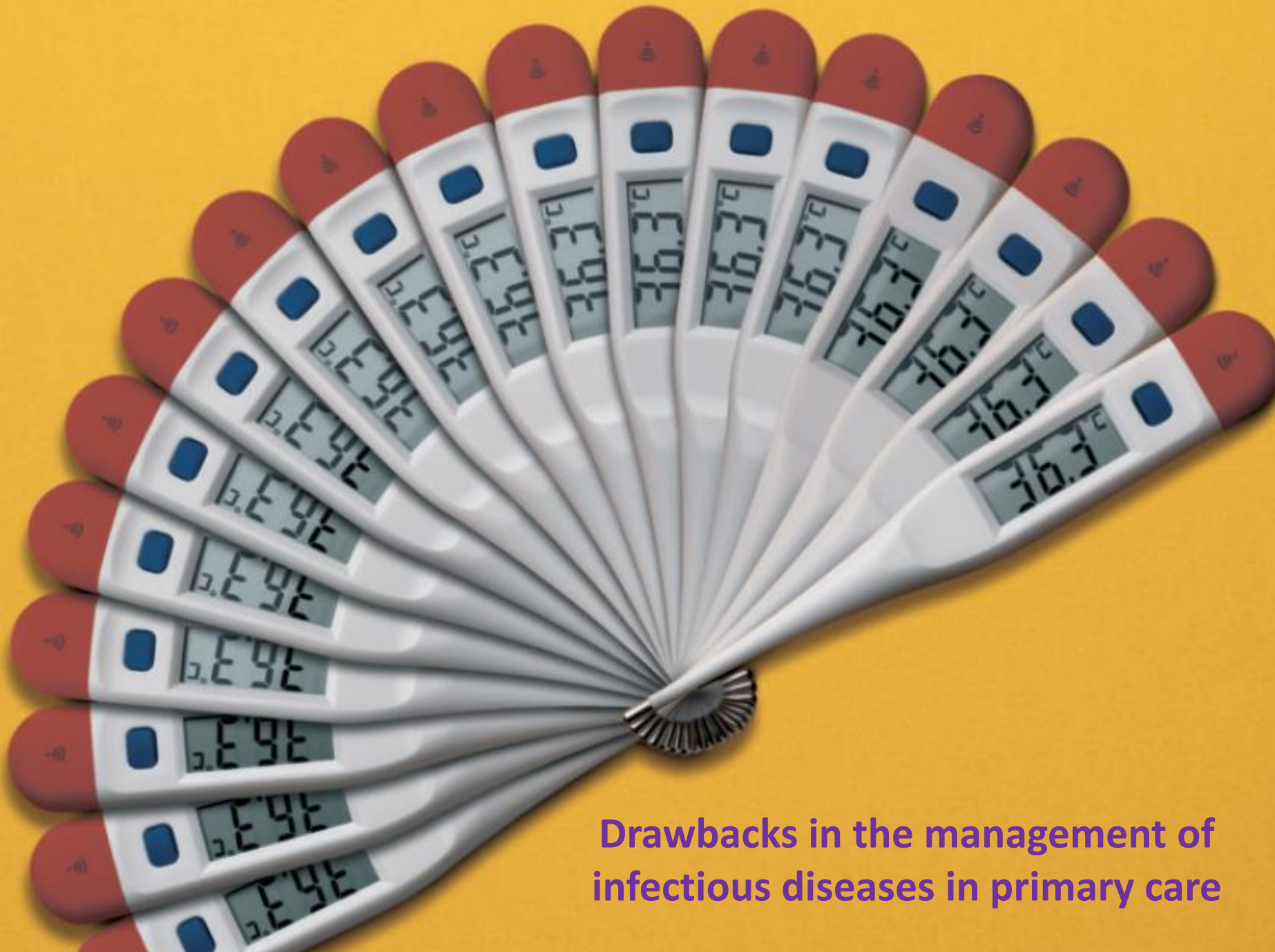


Comparison with 2008 (blue: decreased, red: increased)

Eurobarometer on the use of antibiotics in Europe, 2013

What was the reason for last taking antibiotics that you used? Results from Spain (n=1,008)





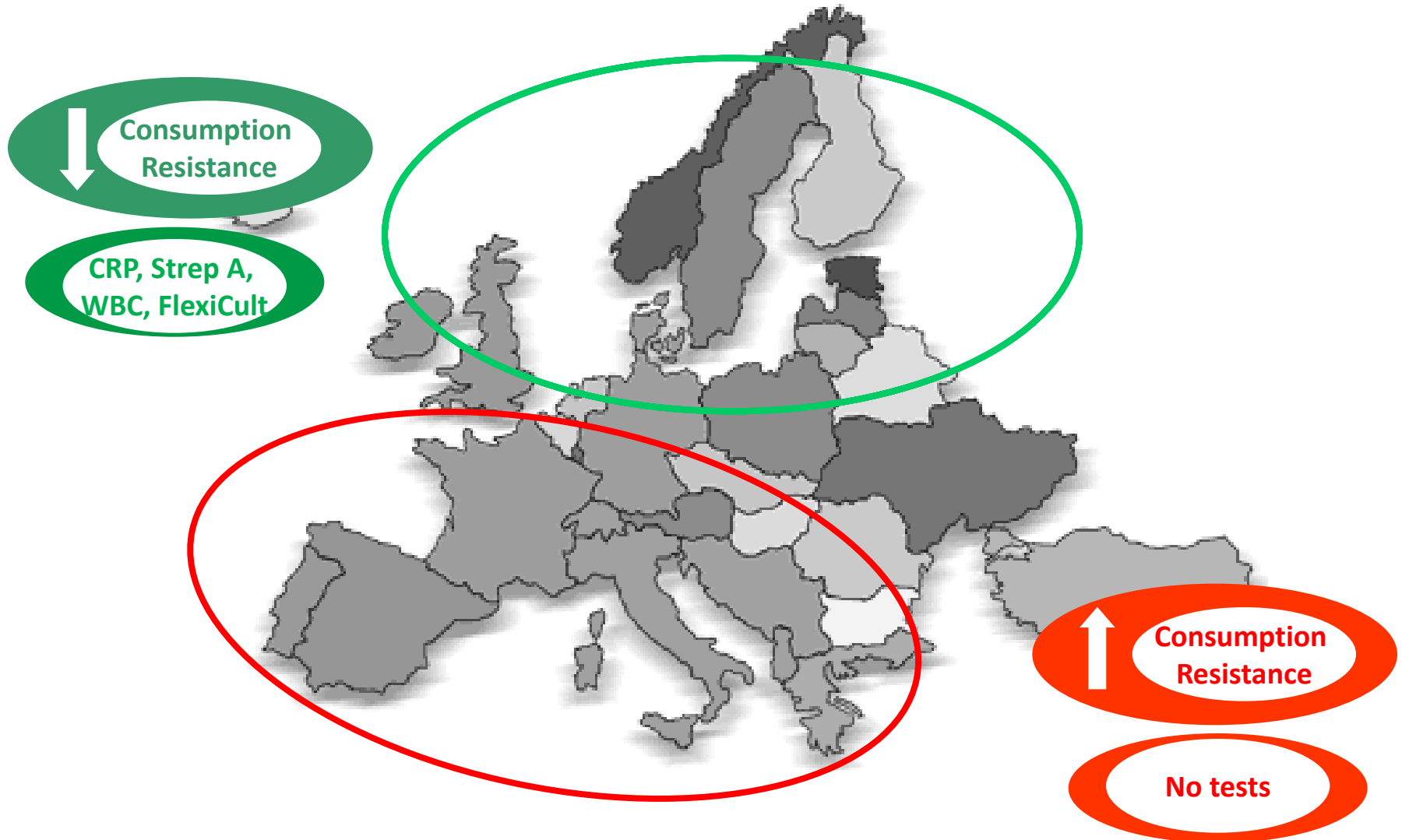
Drawbacks in the management of infectious diseases in primary care

Drawbacks in the management of infectious diseases in primary care

- The diagnosis of most community infections is generally unclear and casts many doubts
- A single best treatment is not available in most community infections, mainly in respiratory tract infections
- GPs do not know the best treatments available and fail consistently to apply them
- GPs do not usually uniformly communicate the progression of the community infectious diseases, mainly in respiratory tract infections
- GPs are in the best position to evaluate trade-offs between different treatments and to make treatment decisions
- GPs overestimate the percentage of patients who are adherent to the antibiotic courses prescribed
- Self-consumption of antibiotics and sale of antibiotics without prescription in community pharmacies

Drawbacks in the management of infectious diseases in primary care

Negative correlation between consumption & resistance and utilisation of rapid tests



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Drawbacks in the management of infectious diseases in primary care

A single best treatment is not available

- As far back as the 1950s, trial evidence showed antibiotics had similar effects to placebo on sore throats¹
 - However, some few trials found a greater benefit from penicillin for sore throat than many might have expected²
- Other pharmacological alternatives might be more appropriate than antibiotic therapy for lower respiratory tract infections:
 - Non-steroidal anti-inflammatories^{3,4}
 - Oral steroids⁵

¹Hardy LM & Traisman HS. *J Pediatr* 1956;**48**:146–56.; ²Fahey T, et al. *Arch Dis Child* 1998;**79**:225–30.;

³Hueston WJ. *J Fam Pract* 1991;**33**:476-80.; ⁴Llor C et al. *BMJ* 2013;**347**:f5762.;

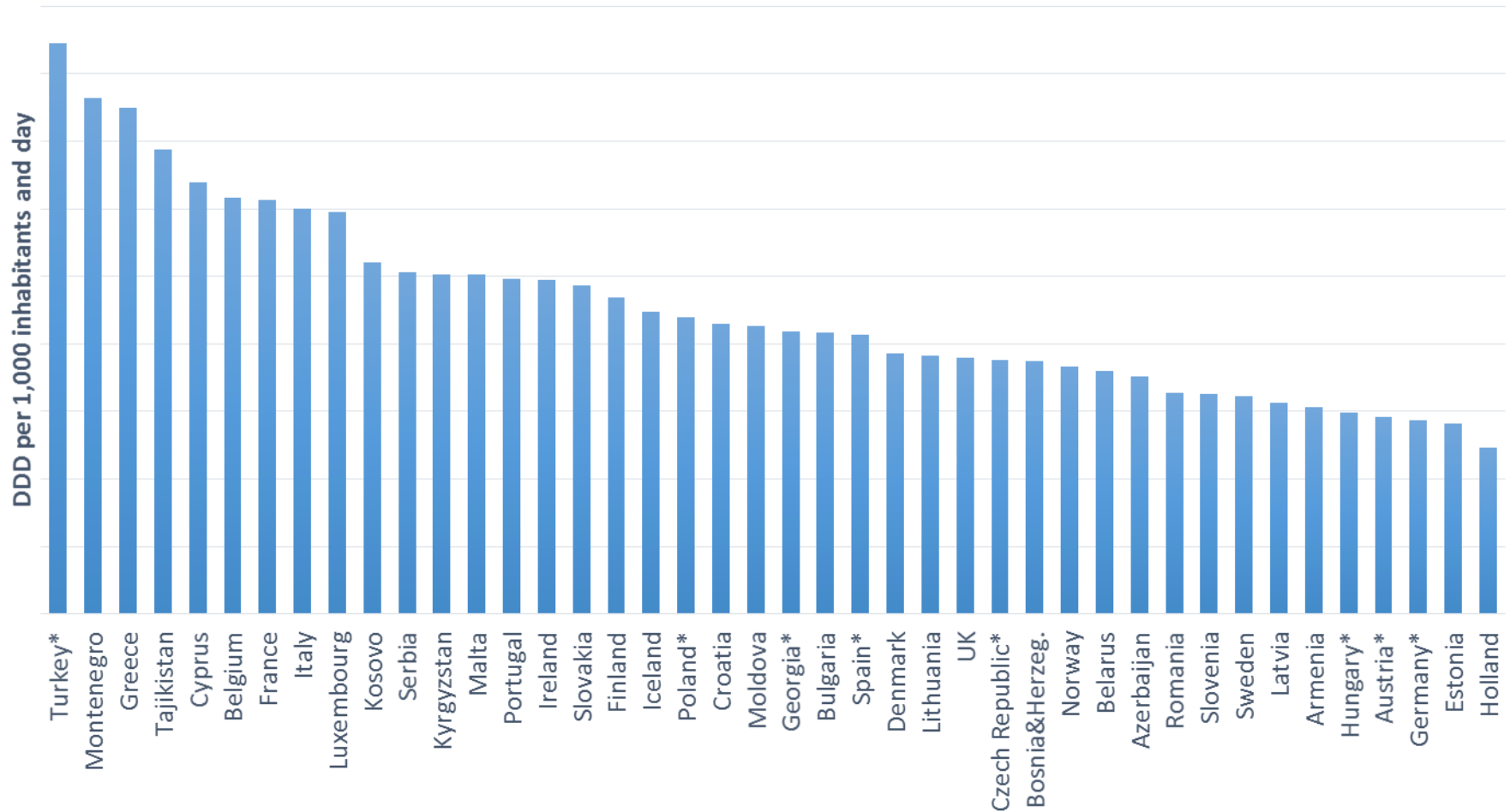
⁵Seemungal T, et al. *Am J Respir Crit Care Med* 2000;**161**:1608–13.

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Drawbacks in the management of infectious diseases in primary care

Total antibiotic use in 2011, expressed in number of DDD per 1,000 inhabitants per day in Europe



*Countries reporting only outpatient antibiotic use
Romania and Spain provided reimbursement data

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Drawbacks in the management of infectious diseases in primary care

Set realistic expectations for symptom duration

Condition	Average duration of symptoms
Acute otitis media	4 days
Acute sore throat	1 week
Common cold	1½ weeks
Acute rhinosinusitis	2½ weeks
Acute cough/bronchitis	3 weeks

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Drawbacks in the management of infectious diseases in primary care

Physicians are in the best position to evaluate trade-offs between different treatments and to make treatment decisions

- Patients make their own evaluations, and problems arise when these are not elicited and addressed in the consultation¹
- Given this uncertainty and lack of overt exploration of patients' evaluations, doctors try to second-guess what patients want ^{2,3}
- Patients' hopes for antibiotics may be based on unsound assumptions or experiences in previous consultations⁴⁻⁸

¹Britten N et al. *BMJ* 2000;**320**:484–8.; ²Cockburn J et al. *BMJ* 1997;**315**:520–3.;

³Britten N & Ukoumunne O. *BMJ* 1997;**315**:1506–10; ⁴Mainous AG et al. *J Fam Pract* 1997;**45**:75–83.;

⁵Braun BL et al. *J Fam Pract* 2000;**49**:153–6.; ⁶Brett AS & Mathieu AE. *J Fam Pract* 1982;**15**:277–92.;

⁷Braithwaite A & Pechere JC. *J Int Med Res* 1996;**24**:229–38. Coenen S et al. *PLoS One* 2013;**8**:e76691.

Drawbacks in the management of infectious diseases in primary care

Physicians are in the best position to evaluate trade-offs between different treatments and to make treatment decisions



‘A 44% of UK GPs admit to have prescribed antibiotics to get a patient to leave the surgery’

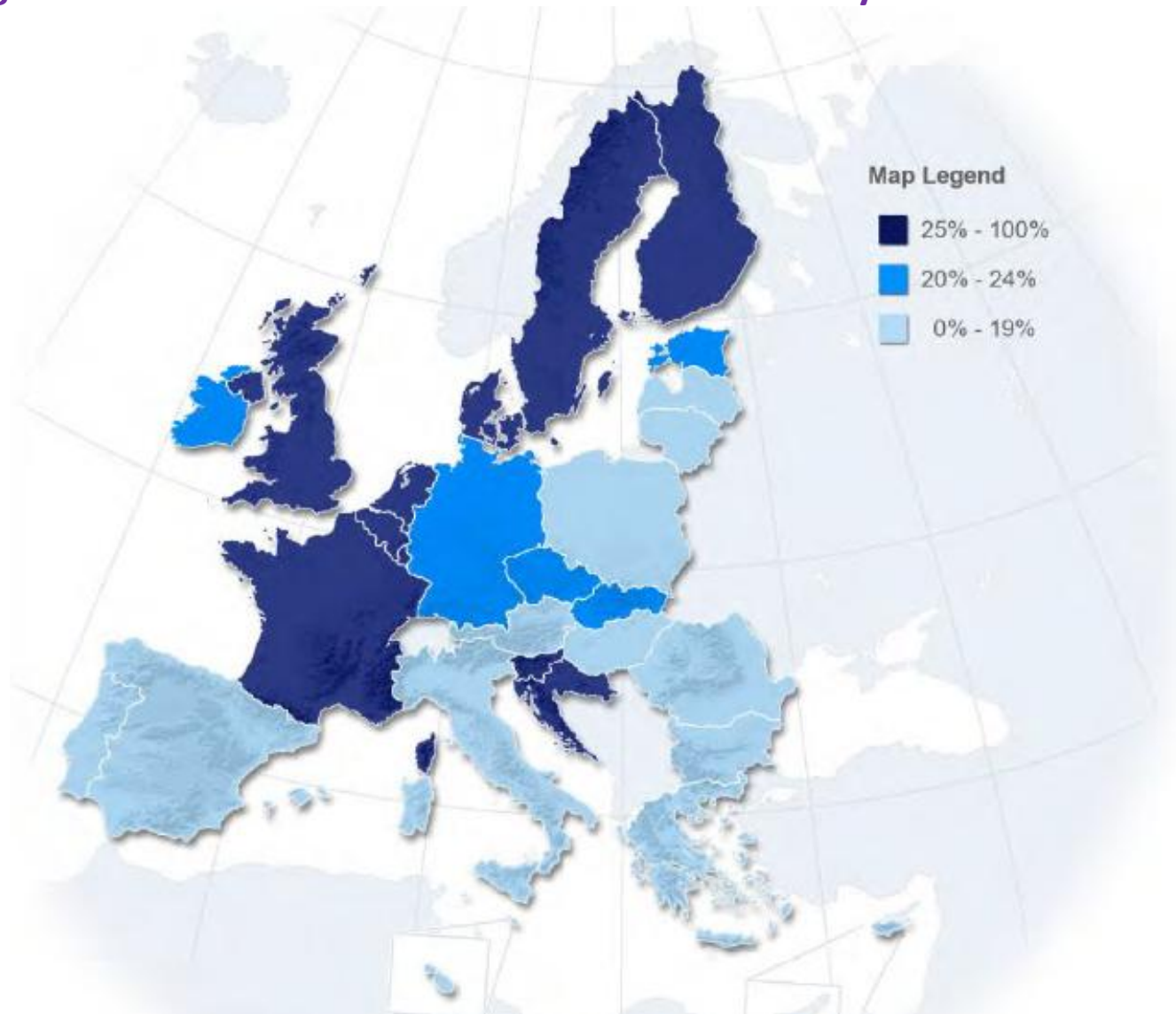
Eurobarometer on the use of antibiotics in Europe, 2013

Knowledge about antibiotics

Statement	% in Spain	% in EU 27
Antibiotics kill viruses	57%	49%
Antibiotics are effective against colds and flu	46%	41%
Unnecessary use of antibiotics makes the become ineffective	87%	84%
Taking antibiotics often has side effects, such as diarrhoea	61%	66%

Eurobarometer on the use of antibiotics in Europe, 2013

Knowledge about antibiotics: the four statements correctly answered



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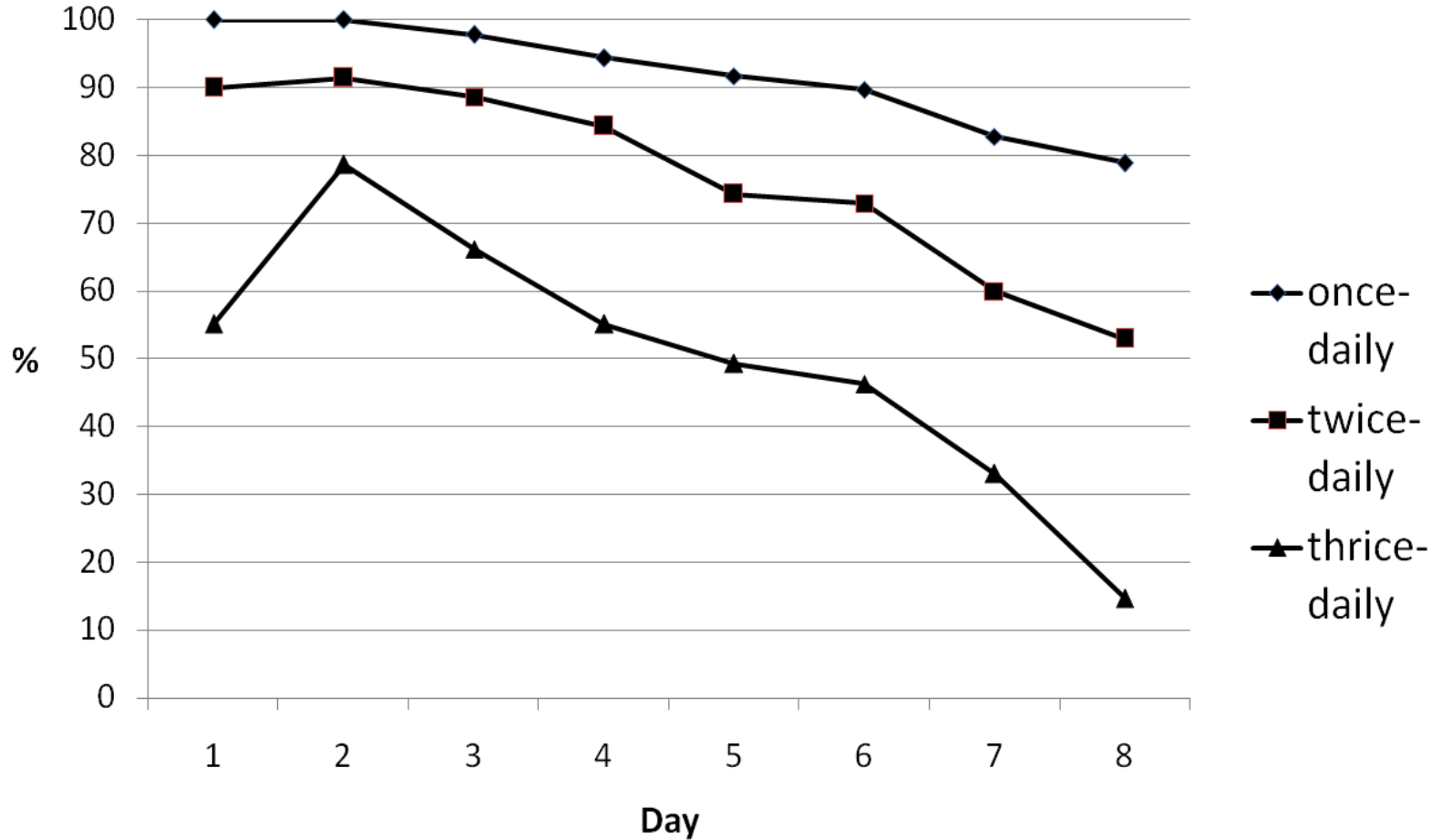
Adherence to antibiotic therapy

Types of adherence

Types of adherence	Definition	Good adherence
Taking adherence	Percentage of times the container is opened during the course of the treatment related to the total number of pills included in the container	≥ 80%
Correct dosing	Number of days on which the patient opens the container at least the prescribed number of times	≥ 80%
Timing adherence	Whether the opening of the container coincides with the times recommended	Intervals of 8±4h / 12±6h / 24±12h during at least 80% of the times

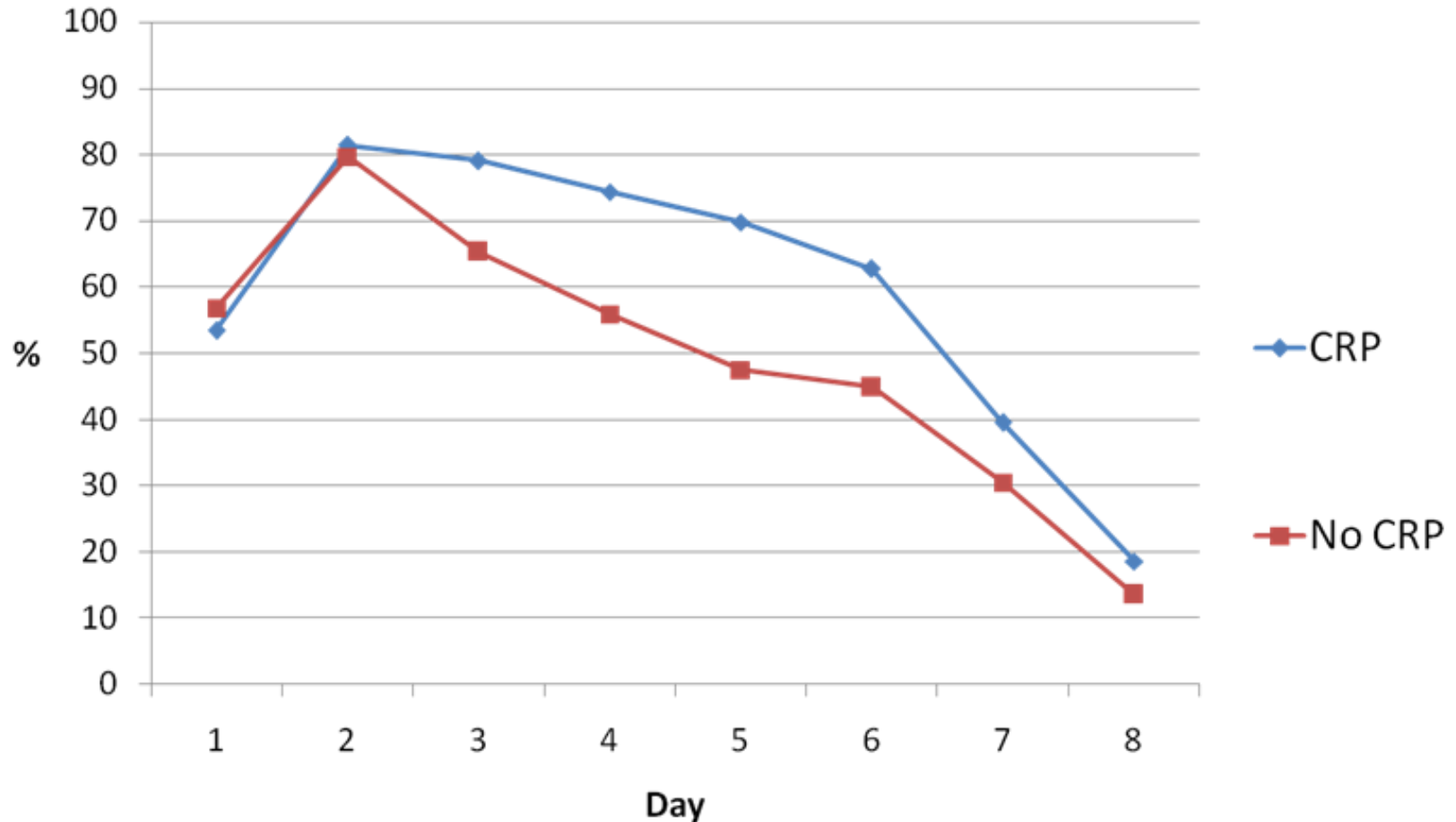
Adherence to antibiotic therapy

Correct dosing



Adherence to antibiotic therapy

Correct dosing: % patients who open the containers with thrice-daily antibiotics at least three times depending on C-reactive protein rapid test use



Types of antibiotic-taking behaviour

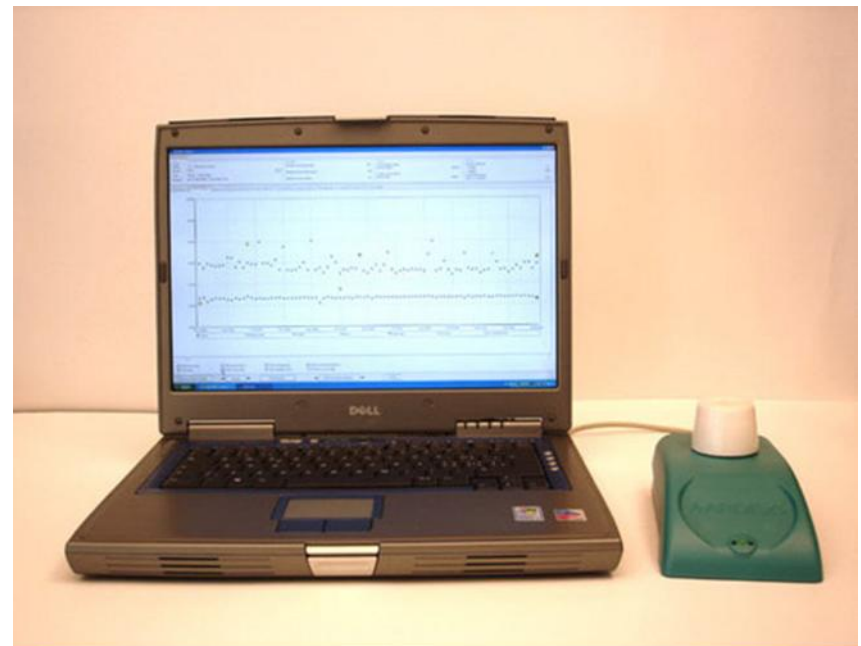
Medication Events Monitoring System (MEMS)-based study

Patient:

Results: From 07/04/2006 3:00 to 13/04/2006

Date	Description	Intervals (hours)
------	-------------	-------------------

07/04/2006 14:24		
07/04/2006 19:43		5:19
07/04/2006 20:48		1:05
08/04/2006 5:41		8:53
08/04/2006 15:20		9:39
08/04/2006 22:56		7:36
09/04/2006 9:52		10:56
09/04/2006 17:55		8:03
09/04/2006 23:58		6:03
10/04/2006 10:00		10:02
11/04/2006 0:49		14:49
11/04/2006 10:03		9:14
11/04/2006 18:15		8:12
11/04/2006 23:59		5:44
12/04/2006 9:03		9:04
12/04/2006 17:02		7:59
12/04/2006 23:44		6:42



Types of antibiotic-taking behaviour

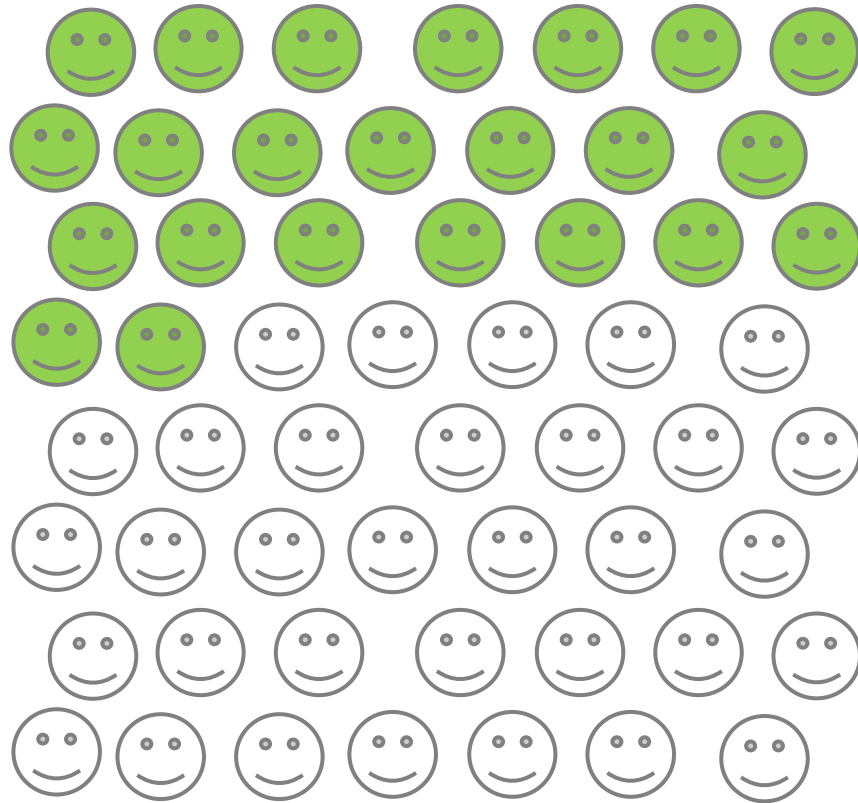
Medication Events Monitoring System (MEMS)-based study



Table 1
Types of antibiotic-taking behavior depending on the number of daily doses in the antibiotic regimen

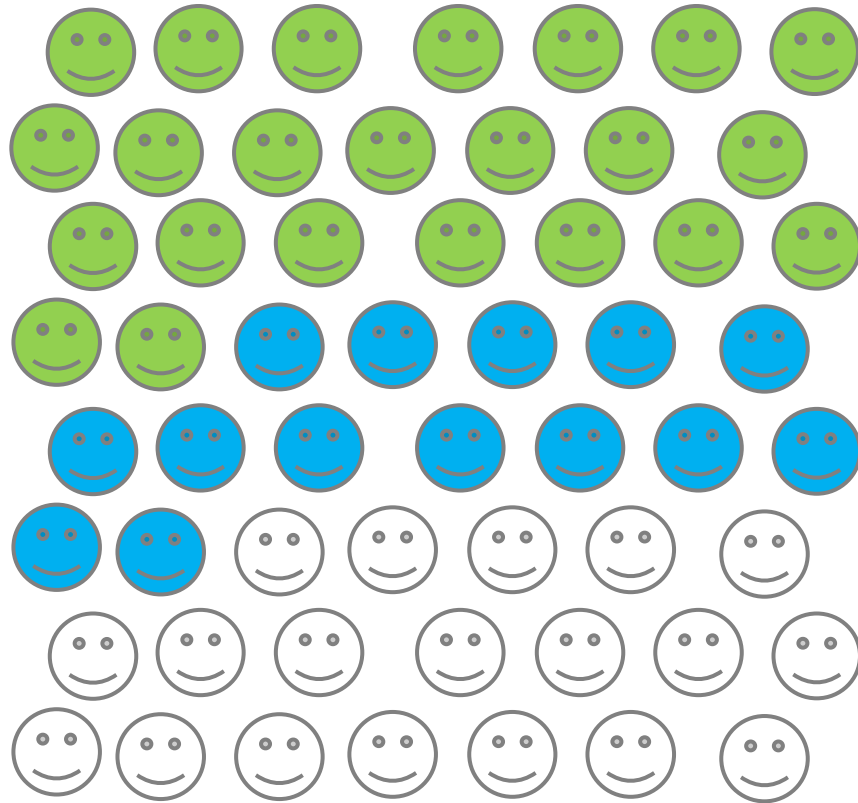
	Once-daily antibiotic regimen	Twice-daily antibiotic regimen	Three times-daily antibiotic regimen	Total
Excellent adherence	34 (82.9)	77 (51.0)	19 (8.1)	130 (30.4)
Acceptable adherence over time	5 (12.2)	23 (15.2)	25 (10.6)	53 (12.4)
Declining adherence over time	2 (4.9)	34 (22.5)	87 (36.8)	123 (28.7)
Non-adherence to consistent correct dosing	0 (0)	16 (10.6)	92 (39.0)	108 (25.2)
Unacceptable adherence	0 (0)	1 (0.7)	13 (5.5)	14 (3.3)
Total	41	151	236	428

Typologies of antibiotic users in the community



Good adherence

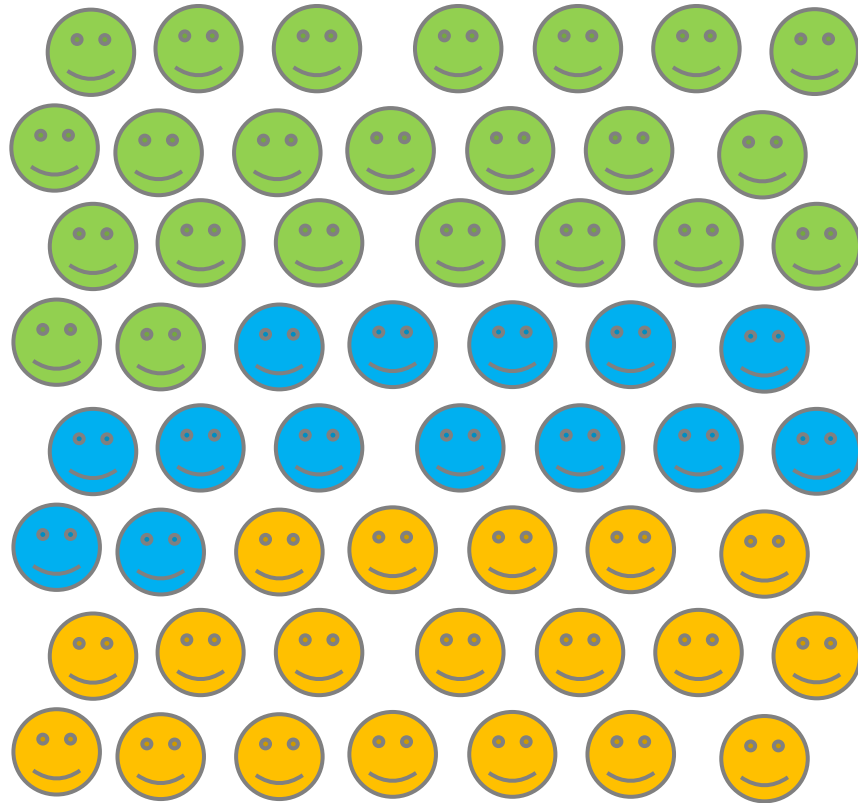
Typologies of antibiotic users in the community



Good adherence

Unintentional non-adherence

Typologies of antibiotic users in the community



Good adherence

Unintentional non-adherence

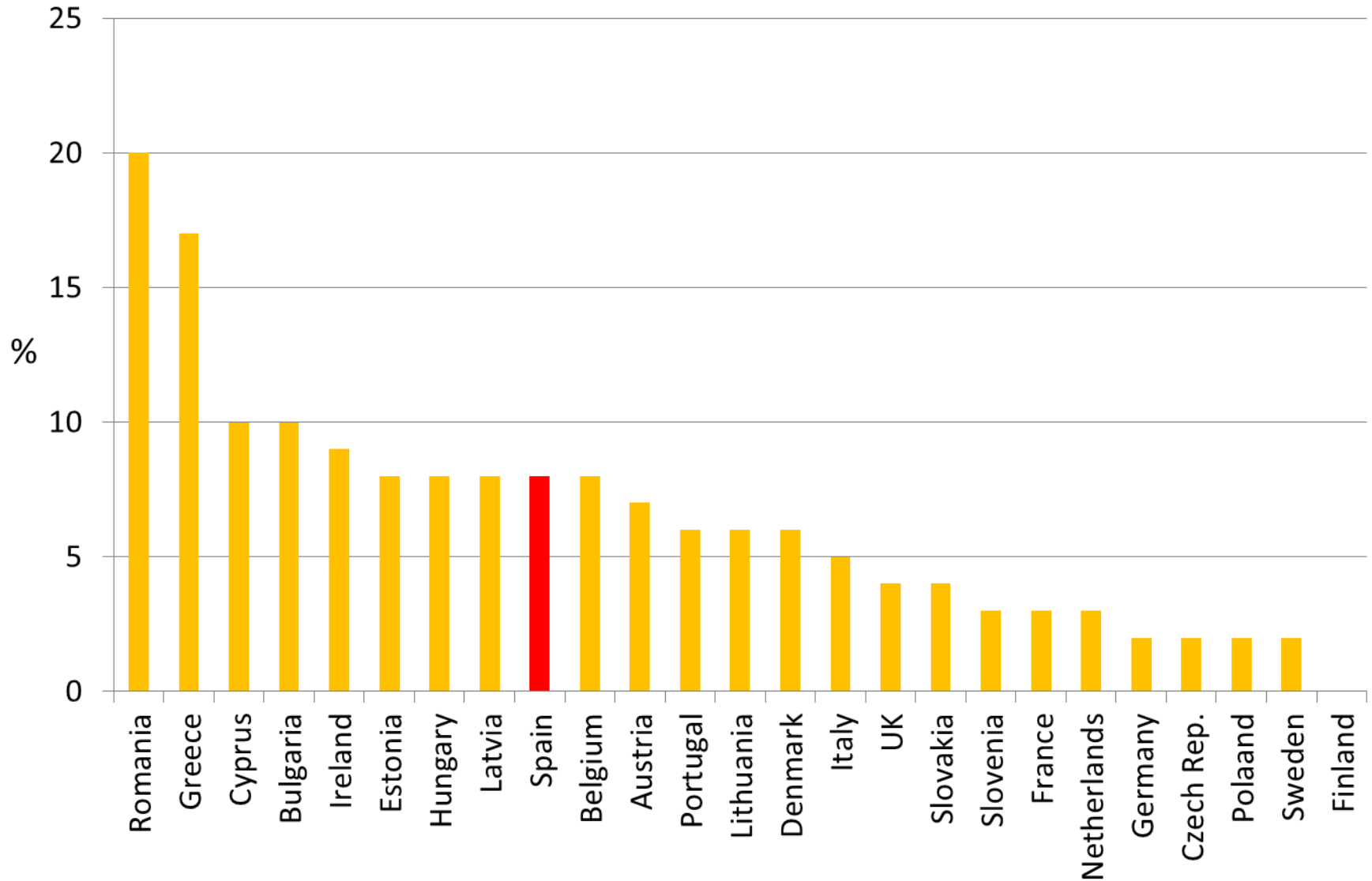
Intentional non-adherence

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Eurobarometer on the use of antibiotics in Europe, 2013

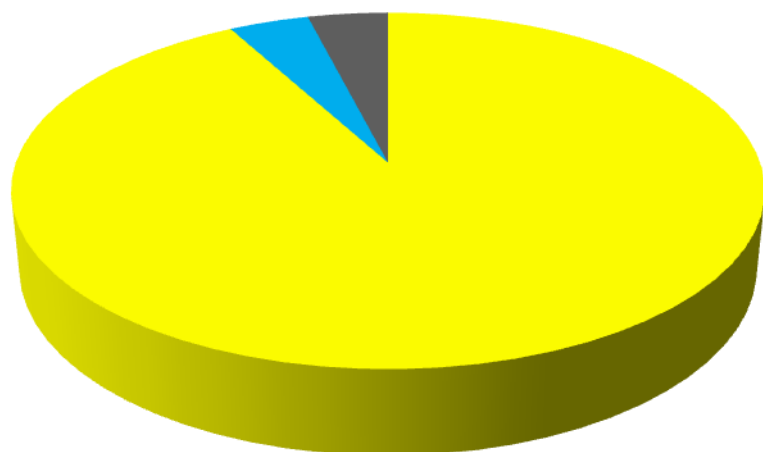
How did you obtain the last course of antibiotics that you used? % of patients who stated not have taken from a medical prescription (left overs, pharmacies, or do not remember)



Eurobarometer on the use of antibiotics in Europe, 2013

How did you obtain the last course of antibiotics that you used?

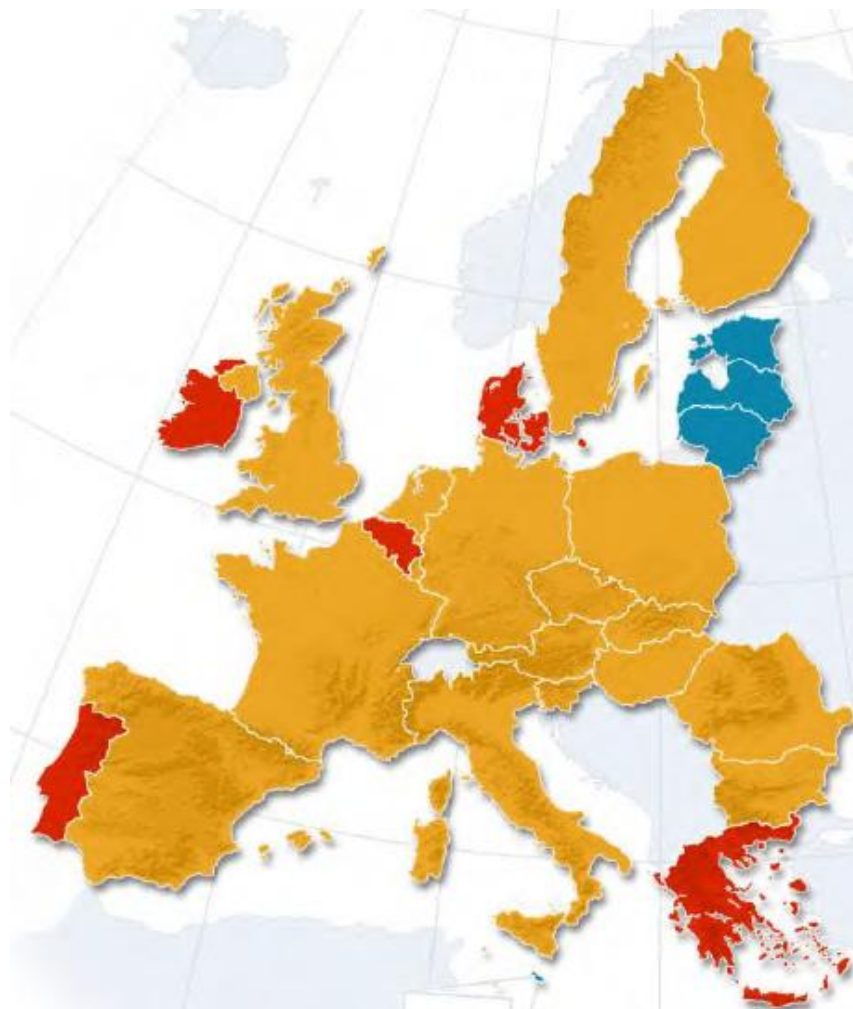
Results in Spain, 2013



■ Medical prescription

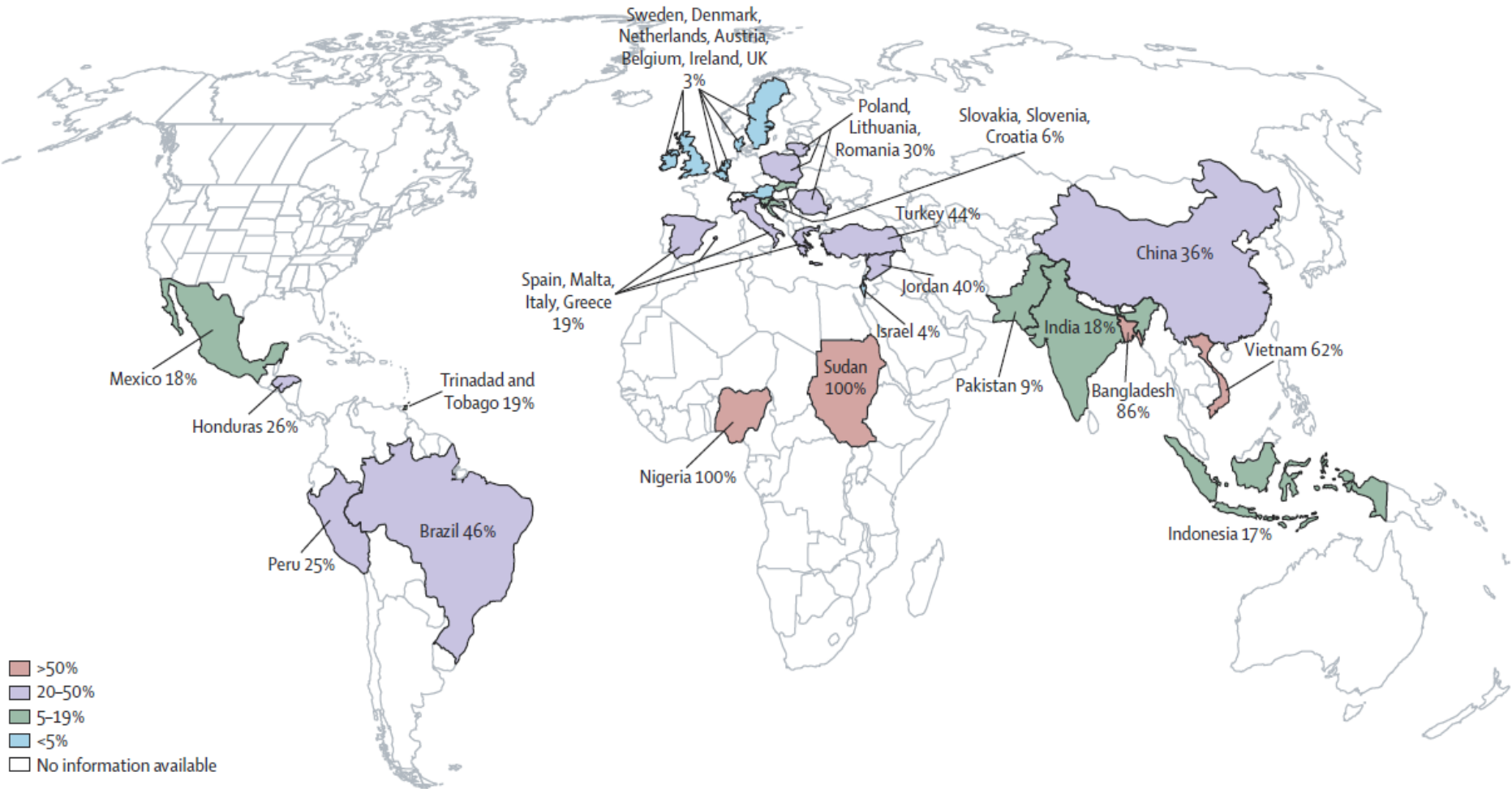
■ Left overs

■ Pharmacy sale



Comparison with 2008 (blue: increased, red: decreased)

Non-prescription antimicrobial use worldwide





PERGONAL PROZAC

OPEN

THE BEST STOCK
IN GENERICS AND
ANTIBIOTICS

COME IN →

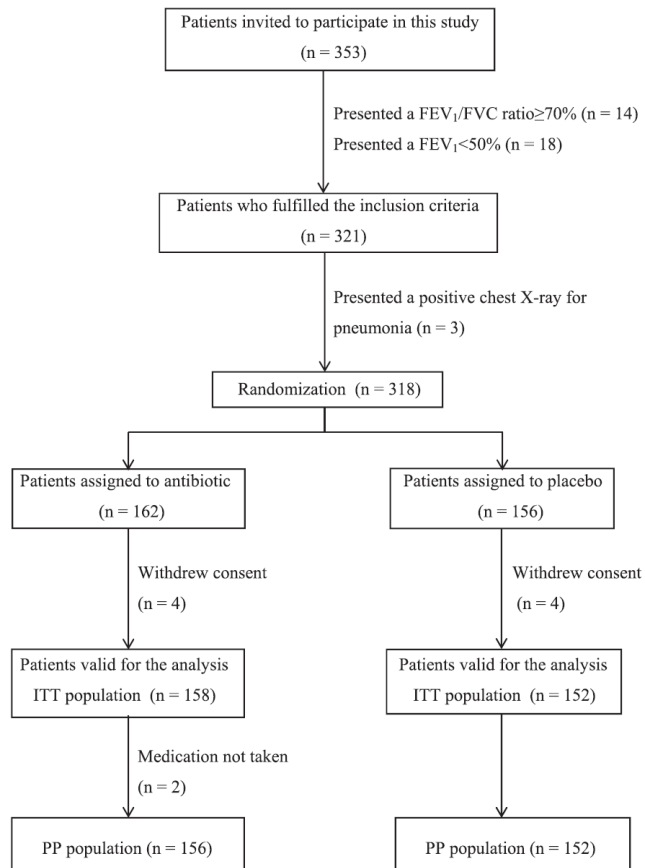
KETEX
20% OFF

38 9 27

Efficacy of Antibiotic Therapy for Acute Exacerbations of Mild to Moderate Chronic Obstructive Pulmonary Disease

Carl Llor¹, Ana Moragas², Silvia Hernández², Carolina Bayona³, and Marc Miravittles⁴

¹University Rovira i Virgili, Primary Care Center Jaume I, Tarragona, Spain; ²Primary Care Center Jaume I, Tarragona, Spain; ³Primary Care Center Valls, Valls, Spain; and ⁴Institut d'Investigacions Biomèdiques August Pi i Sunyer (IDIBAPS), Hospital Clinic, CIBER de Enfermedades Respiratorias (CIBERES), Barcelona, Spain



- Sample size calculated=667
- Main reason why we didn't meet this size: previous consumption of antibiotics by patients themselves

A photograph taken from a first-person perspective looking down at a brown, textured doormat. The mat is placed on a blue tiled floor with white grout. The text "You again?" is printed in a bold, black, sans-serif font in the center of the mat. At the bottom of the frame, the tips of two white sneakers with black stripes are visible. Some green leaves are scattered around the edges of the mat.

You again?

Over-the-counter sale of antibiotics in 2007 in Catalonia, Spain

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)

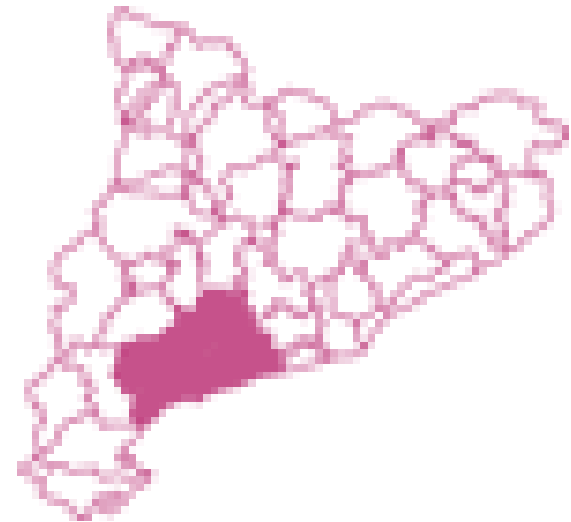
Comparison of the over-the-counter sale of antibiotics in 2007 and 2014 in Catalonia, Spain

Catalonia, January 2007 –
May 2007



n=197

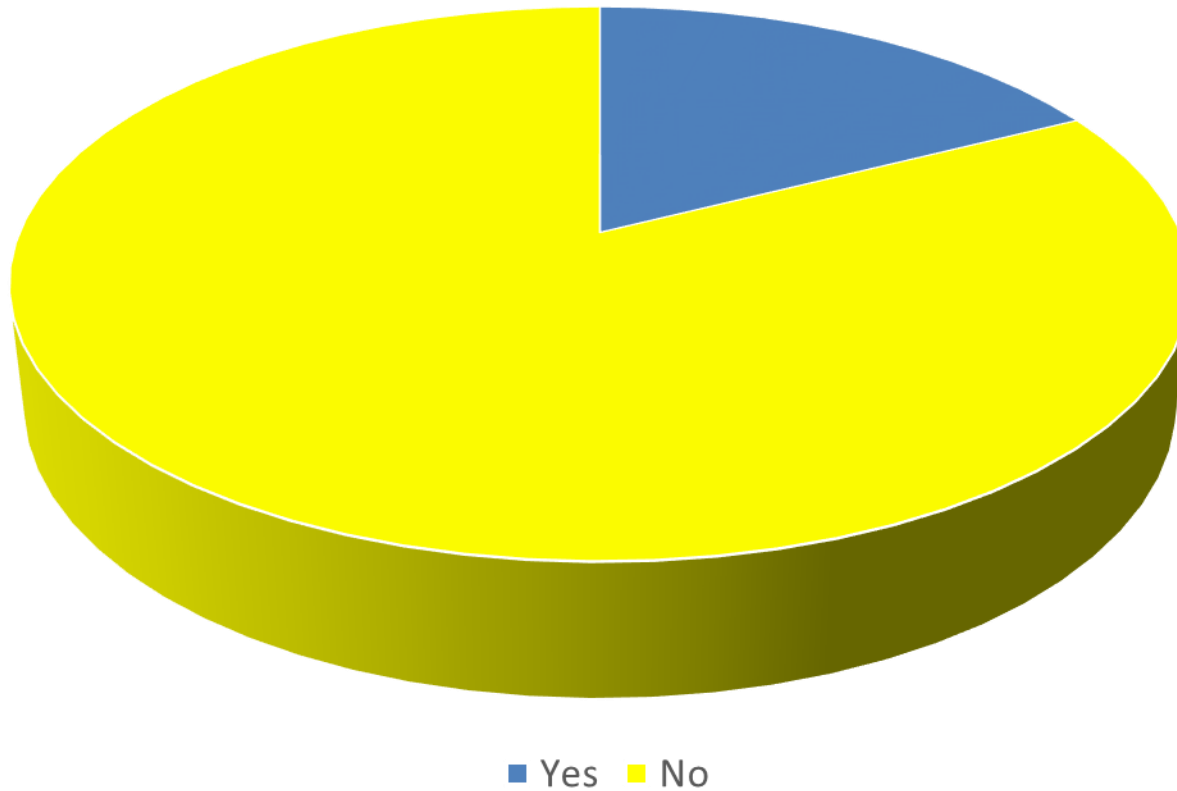
Tarragona Health Region, January
2013 – February 2014



n=220

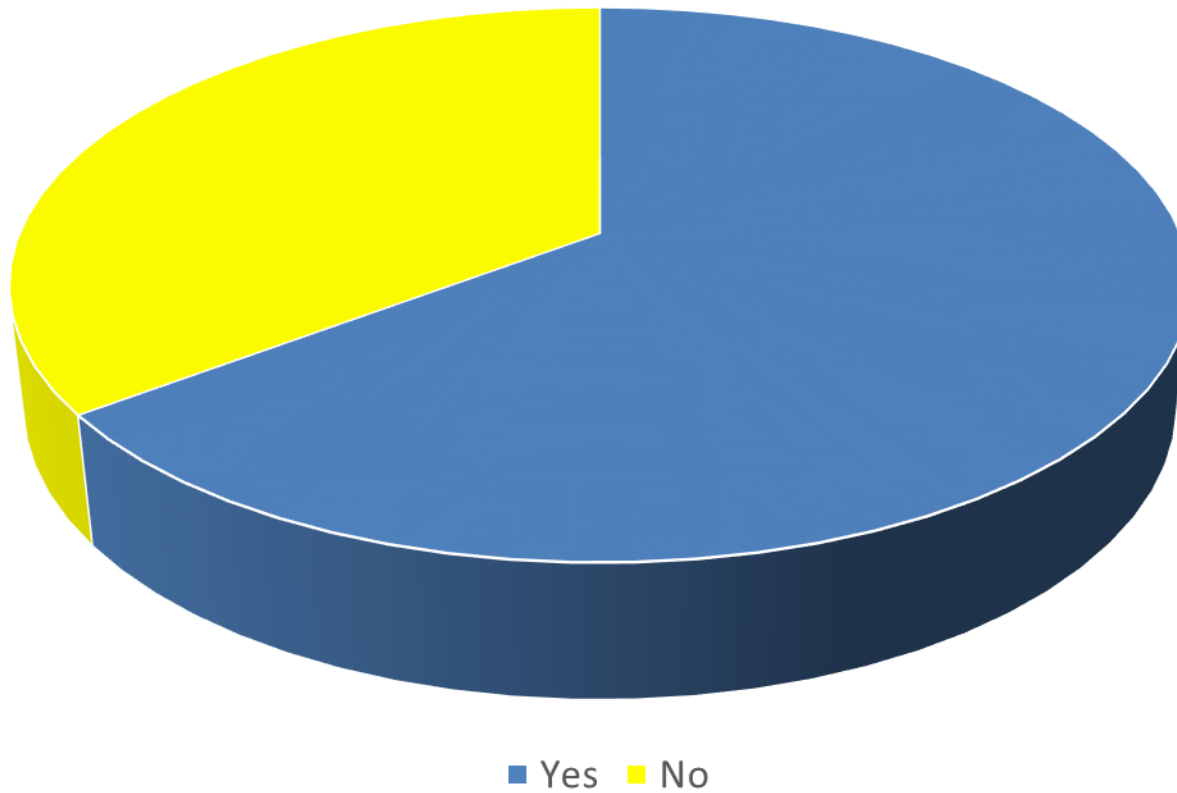
Over-the-counter sale of antibiotics in 2009 in Gipuzkoa

- Simulated actresses pretending to have UTI
- n=280 community pharmacies



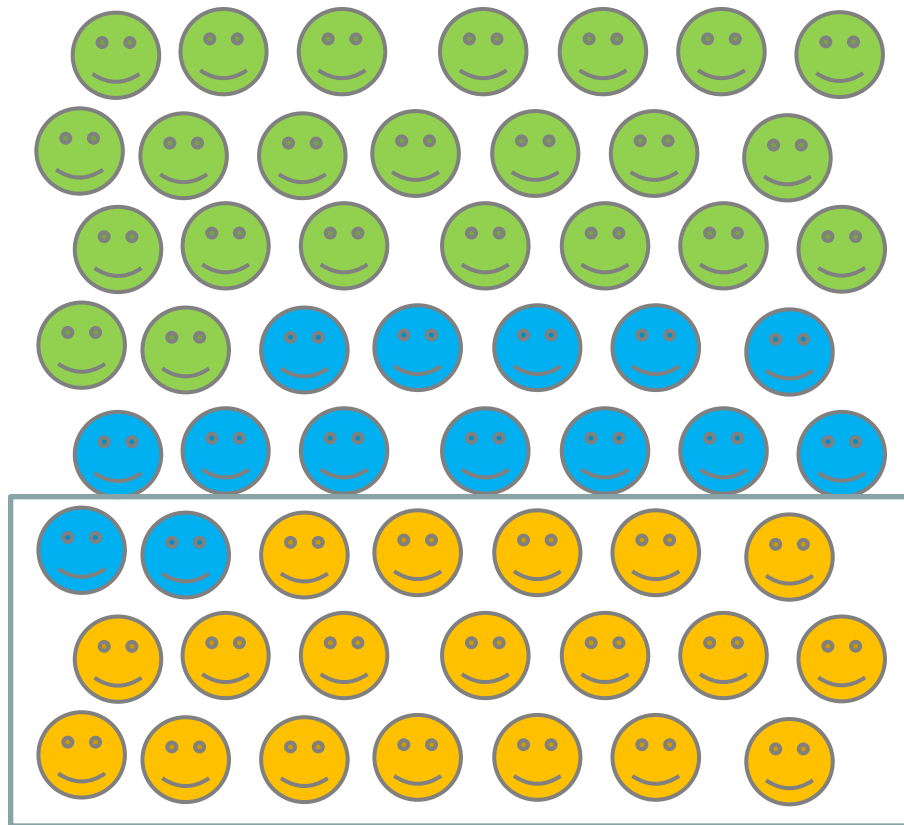
Over-the-counter sale of antibiotics in 2012 in Galicia

- Questionnaire-based study
- n=286 pharmacists



Store of antibiotics in Spanish households

Correlation with the typologies of antibiotic users



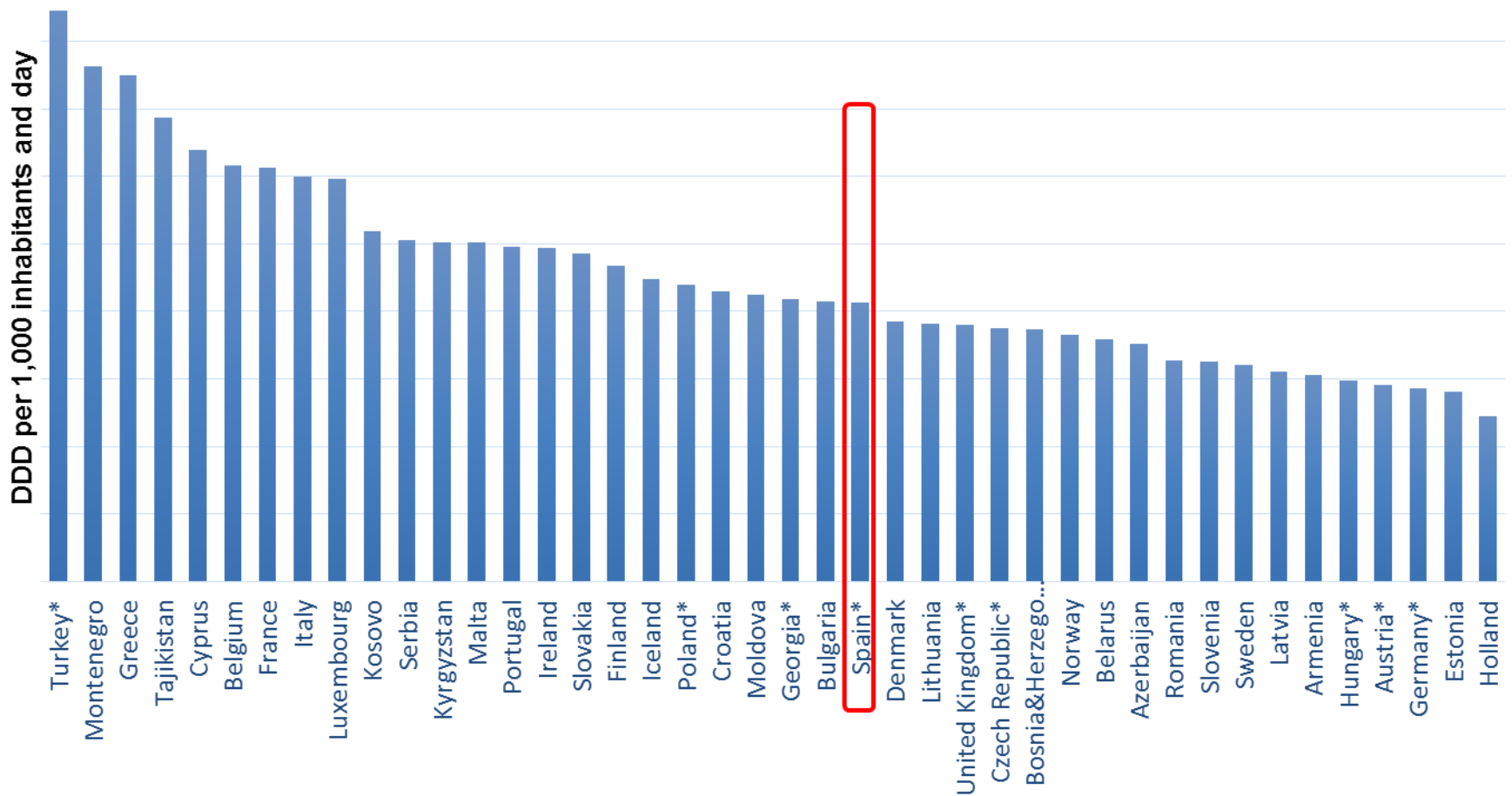
- Questionnaire-based survey carried out in 2006
- n=2,955 telephone calls
- 1,000 valid phone calls
- There was at least one antibiotic packet in 37% of the households

A black gravestone with a white inscription on a green field background. The stone is rectangular with a slightly arched top and sits on a black base. The background is a blurred green field under a grey sky.

SIEMPRE SUPE
QUE TODO SE
IBA A ARREGLAR

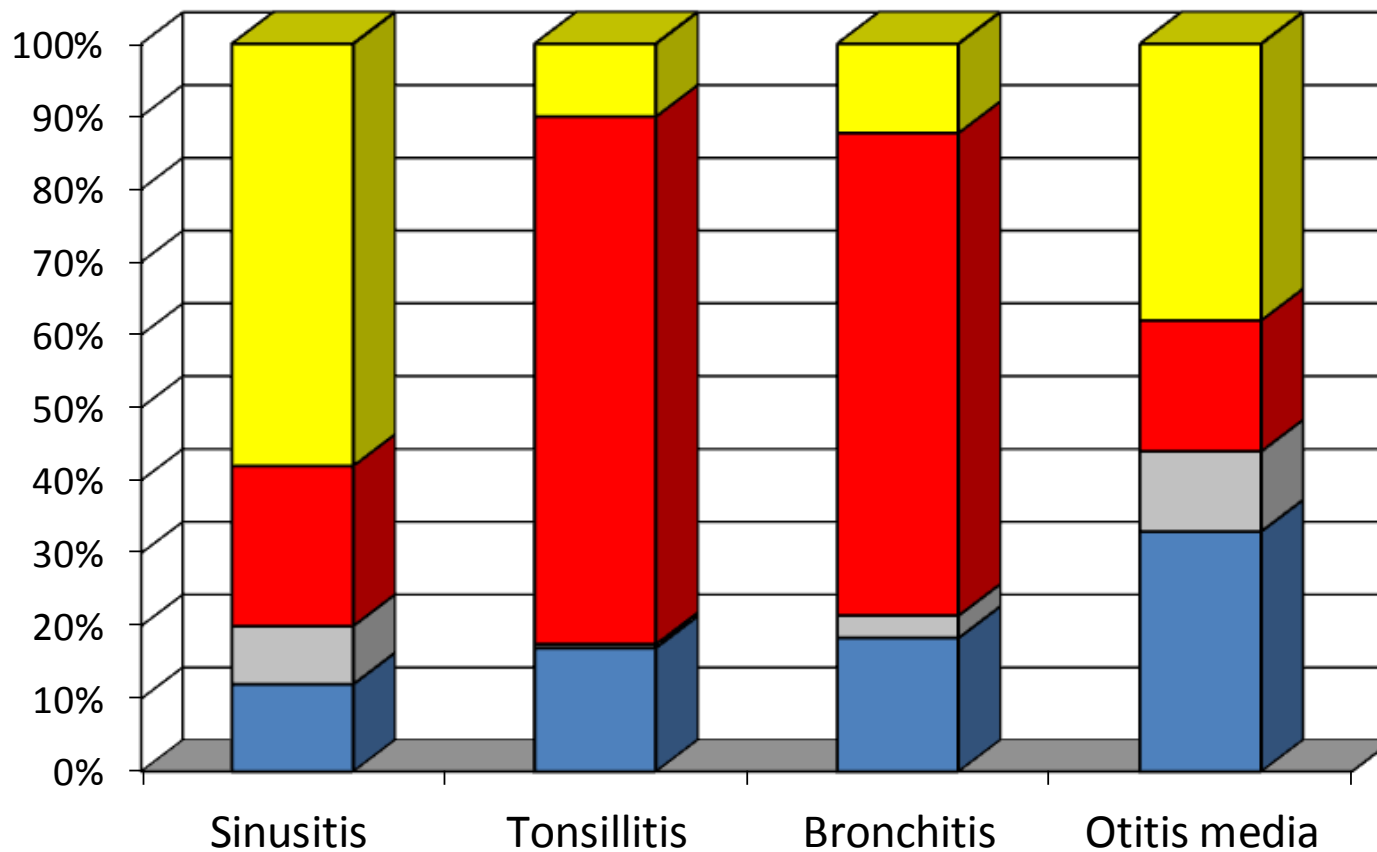
Drawbacks in the management of infectious diseases in primary care

Total antibiotic use in 2011, expressed in number of DDD per 1,000 inhabitants per day in Europe



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Romania and Spain provided reimbursement data

Appropriateness of antibiotic prescribing in Holland



■ Neither recommended nor prescribed

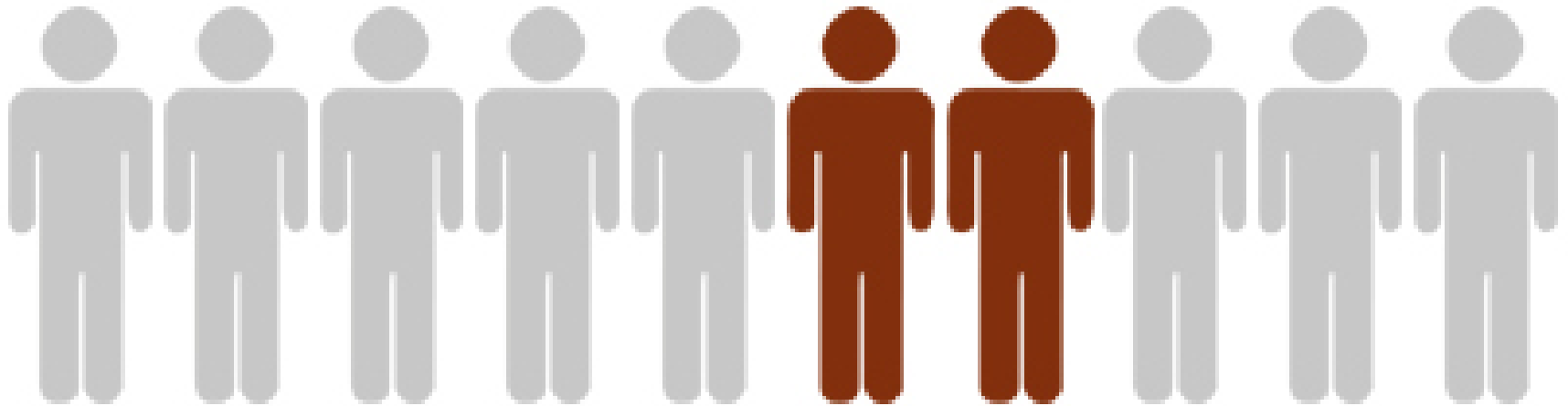
■ Recommended but not prescribed

■ Not recommended but prescribed

■ Recommended and prescribed

Wrapping up...

Only two out of ten really need an antibiotic





Antibiotics: “one of the most uncomfortable prescribing decisions general practitioners make”

Decálogo para un uso más racional de los antibióticos, semFYC

1. Si reduces el uso de antibióticos innecesarios, reduces las tasas de resistencia
2. No todas las infecciones necesitan tratamiento antibiótico. Incluso, muchos procesos de etiología bacteriana tienen un curso autolimitado
3. Explica detalladamente la pauta y la duración de las pautas antibióticas
4. Si tienes que prescribir antibióticos, evita aquellos de amplio espectro
5. Siempre que estén disponibles, utiliza técnicas de diagnóstico rápido
6. Utiliza tus habilidades comunicativas y folletos informativos con los pacientes
7. No prescribas antibióticos de forma preventiva si no están plenamente indicados
8. No presupongas que los pacientes están informados sobre el uso adecuado de los antibióticos
9. Si no estás de acuerdo con la indicación, no prescribas un tratamiento con antibióticos indicado por otro profesional sanitario o dispensado en una farmacia
10. Retira el antibiótico pautado por otro profesional o autoadministrado por el propio paciente si consideras que no lo necesita