



Rational use of antibiotics in primary care

CRISTIAN GONZÁLEZ GONZÁLEZ

Departamento de Medicina Preventiva y Salud Pública

Universidade de Santiago De Compostela

Importance

2.3.2 Human burden of antibiotic resistance

The estimated human burden of infections due to the selected antibiotic-resistant bacteria is presented in Table 2.

The study confirmed that MRSA was, in 2007, the most common, single, multidrug-resistant bacterium in the EU as per the estimated number of cases of infection due to this bacterium. However, the sum of cases of antibiotic-resistant Gram-positive bacteria (mostly MRSA and vancomycin-resistant *Enterococcus faecium*) was comparable to that of antibiotic-resistant Gram-negative bacteria (third-generation cephalosporin-resistant *E. coli* and *K. pneumoniae*, and carbapenem-resistant *P. aeruginosa*).

Overall, it was estimated that in 2007 approximately 25 000 patients died from an infection due to any of the selected frequent antibiotic-resistant bacteria in the EU, Iceland and Norway. Notably, about two thirds of these deaths were caused by infections due to Gram-negative bacteria. In addition, infections due to any of the selected antibiotic-resistant bacteria resulted in approximately 2.5 million extra hospital days.

2.3.3 Economic burden of antibiotic resistance

The estimated economic burden of infections due to the selected antibiotic-resistant bacteria is presented in Table 3.

Based on the number of extra hospital days, extra in-hospital costs in 2007 were estimated at more than EUR 900 million in the EU, Iceland and Norway.

Based on 2007 data, outpatient care costs were estimated at about EUR 10 million and productivity losses due to absence from work of infected patients were estimated at more than EUR 150 million, each year. Productivity losses due to patients who died from their infection were estimated at about EUR 450 million each year. Overall, societal costs of infections due to the selected antibiotic-resistant bacteria were estimated at about EUR 1.5 billion each year.



TECHNICAL REPORT

bacterial challenge: time to react

A call to narrow the gap between
multidrug-resistant bacteria in the EU and
the development of new antibacterial agents

www.ecdc.europa.eu
www.ema.europa.eu

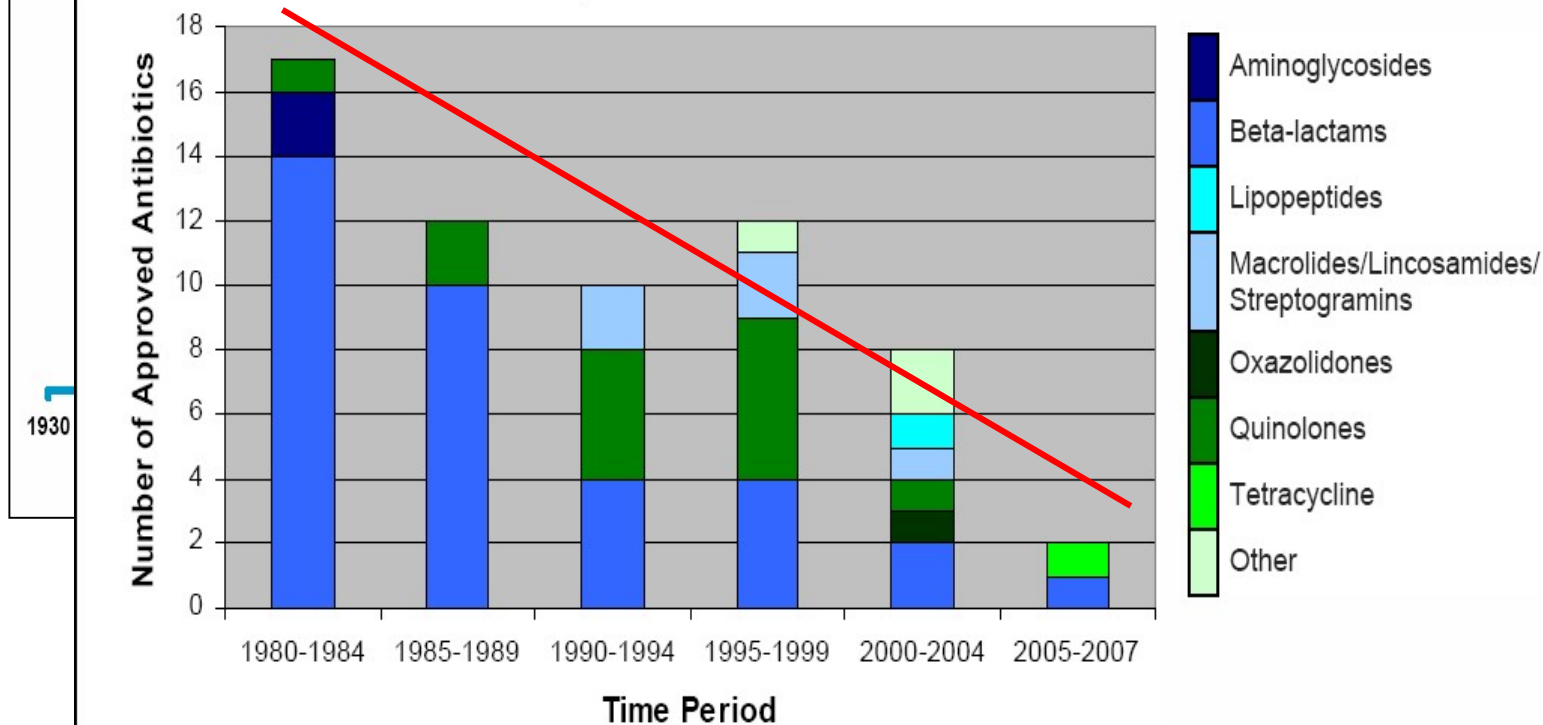
Background

Importance



Figure 1: 14 classes of antibiotics were introduced for human use between 1935 and 1968; since then, 5 have been introduced.

Figure 2: The number of new systemic antibiotic agents has declined since 1980, and most (75%) of these drugs are in two classes, beta-lactams and quinolones.



RESISTANCE

MAY 2008

The next three research: 14 entering novel (le for human ed resistance s, for example— void. More tic classes has es have been ose are limited

tics

new proved by the 1980 (see s. This has left born forms of (cous aureus): s caused by sionally e market.



Abril de 2005
Organización Mundial de la Salud
Ginebra

10

La contención de la resistencia a los antimicrobianos

El problema de la resistencia a los antimicrobianos

La resistencia a los antimicrobianos (RAM) es uno de los problemas de salud pública más graves del mundo. Muchos de los microbios (bacterias, virus, protozoos) que causan enfermedades infecciosas han dejado de responder a los antimicrobianos de uso común (antibacterianos, como los antibióticos, antivíricos y antiprotozoarios). El problema es tan grave que, si no se emprende una acción concertada a escala mundial, corremos el riesgo de regresar a la era preantibiótica, época en que morían muchos más niños que ahora por causa de enfermedades infecciosas y no era posible practicar intervenciones quirúrgicas mayores debido al riesgo de infección. Las enfermedades infecciosas más importantes matan a más

El problema de la resistencia a los antimicrobianos

La resistencia a los antimicrobianos (RAM) es uno de los problemas de salud pública más graves del mundo. Muchos de los microbios (bacterias, virus, protozoos) que causan enfermedades infecciosas han dejado de responder a los antimicrobianos de uso común (antibacterianos, como los antibióticos, antivíricos y antiprotozoarios). El problema es tan grave que, si no se emprende una acción concertada a escala mundial, corremos el riesgo de regresar a la era preantibiótica, época en que morían muchos más niños que ahora por causa de enfermedades infecciosas y no era posible practicar intervenciones quirúrgicas mayores debido al riesgo de infección. Las enfermedades infecciosas más importantes matan a más

Outpatient antibiotic use in Europe and association with resistance: a cross-national database study

Herman Goossens, Matus Ferech, Robert Vander Stichele, Monique Elseviers, for the ESAC Project Group

Summary

Background Resistance to antibiotics is a major public-health problem and is recognised as the main selective pressure driving this resistance. Our aim was to assess the association between outpatient antibiotic use and the association with resistance.

Methods We investigated outpatient antibiotic use in 26 countries in Europe using comparable distribution or reimbursement data, between Jan 1, 1997, and Dec 31, 2000, of defined daily doses (DDD) per 1000 inhabitants per day, according to WHO classification and DDD measurement methodology. We assessed the ecological and antibiotic resistance rates using Spearman's correlation coefficients.

Findings Prescription of antibiotics in primary care in Europe varied greatly; (32.2 DDD per 1000 inhabitants daily) and the lowest was in the Netherlands (10.0 DDD). We noted a shift from the old narrow-spectrum antibiotics to the new broad-spectrum antibiotics. We noted striking seasonal fluctuations with heightened winter peaks in countries with high consumption. We showed higher rates of antibiotic resistance in high consuming countries, and consumption in southern and eastern Europe than in northern Europe.

Interpretation These data might provide a useful method for assessing public-health antibiotic use and resistance levels.

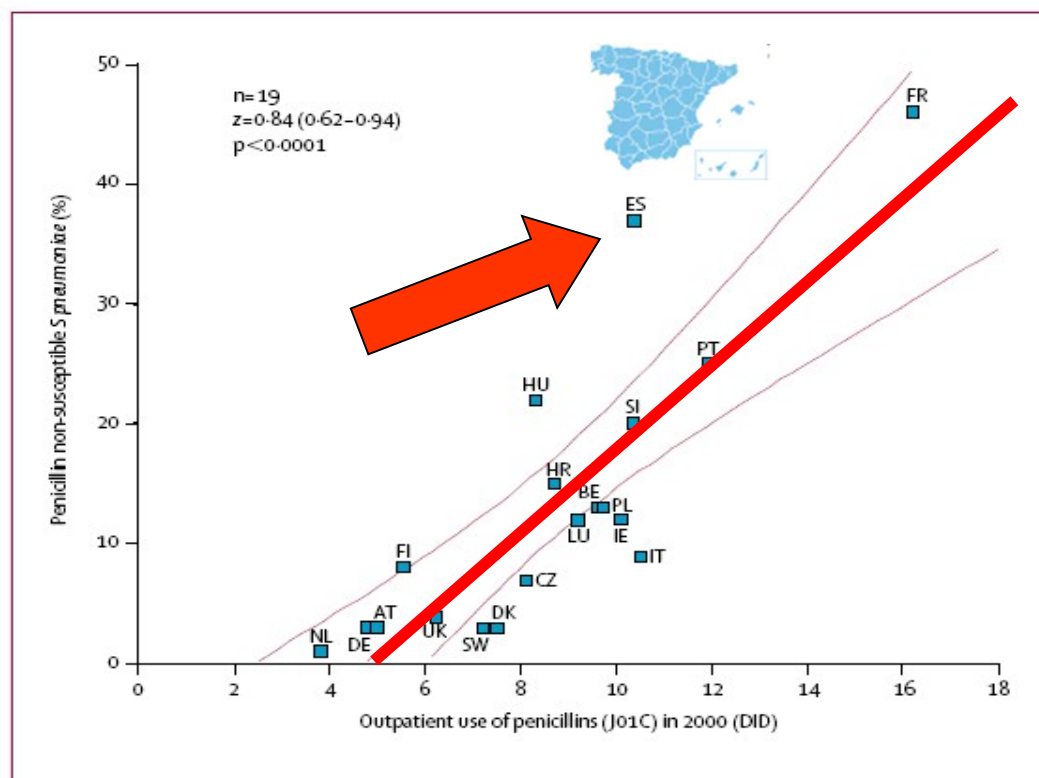
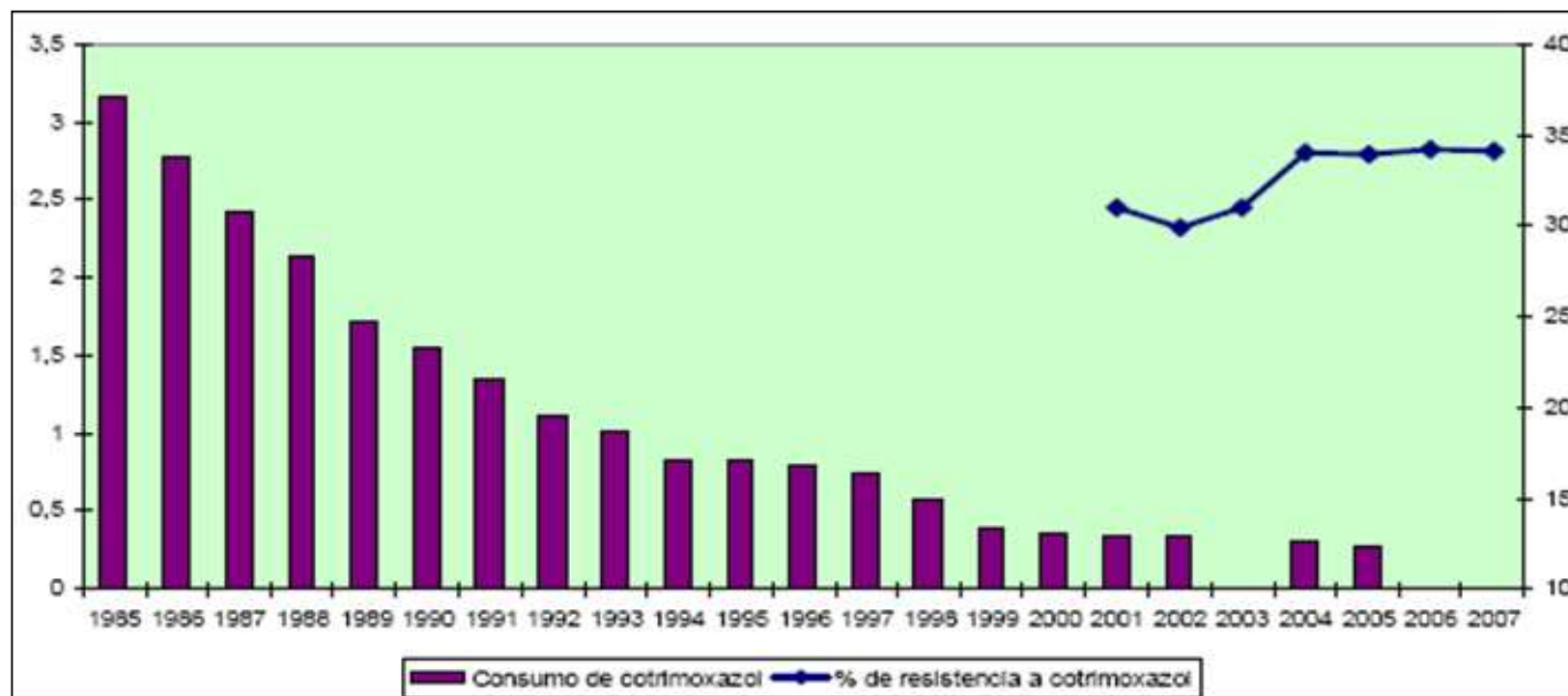


Figure 6: Correlation between penicillin use and prevalence of penicillin non-susceptible *S pneumoniae*. AT, Austria; BE, Belgium; HR, Croatia; CZ, Czech Republic; DK, Denmark; FI, Finland; FR, France; DE, Germany; HU, Hungary; IE, Ireland; IT, Italy; LU, Luxembourg; NL, The Netherlands; PL, Poland; PT, Portugal; SI, Slovenia; ES, Spain; UK, England only.

Importance

Consumption-resistance

Relation of long-term consumption and resistance: co-selection of resistance.



Oteo J. 2008

Background

Importance

Consumption-resistance

Europe-Spain

THE LANCET

Articles

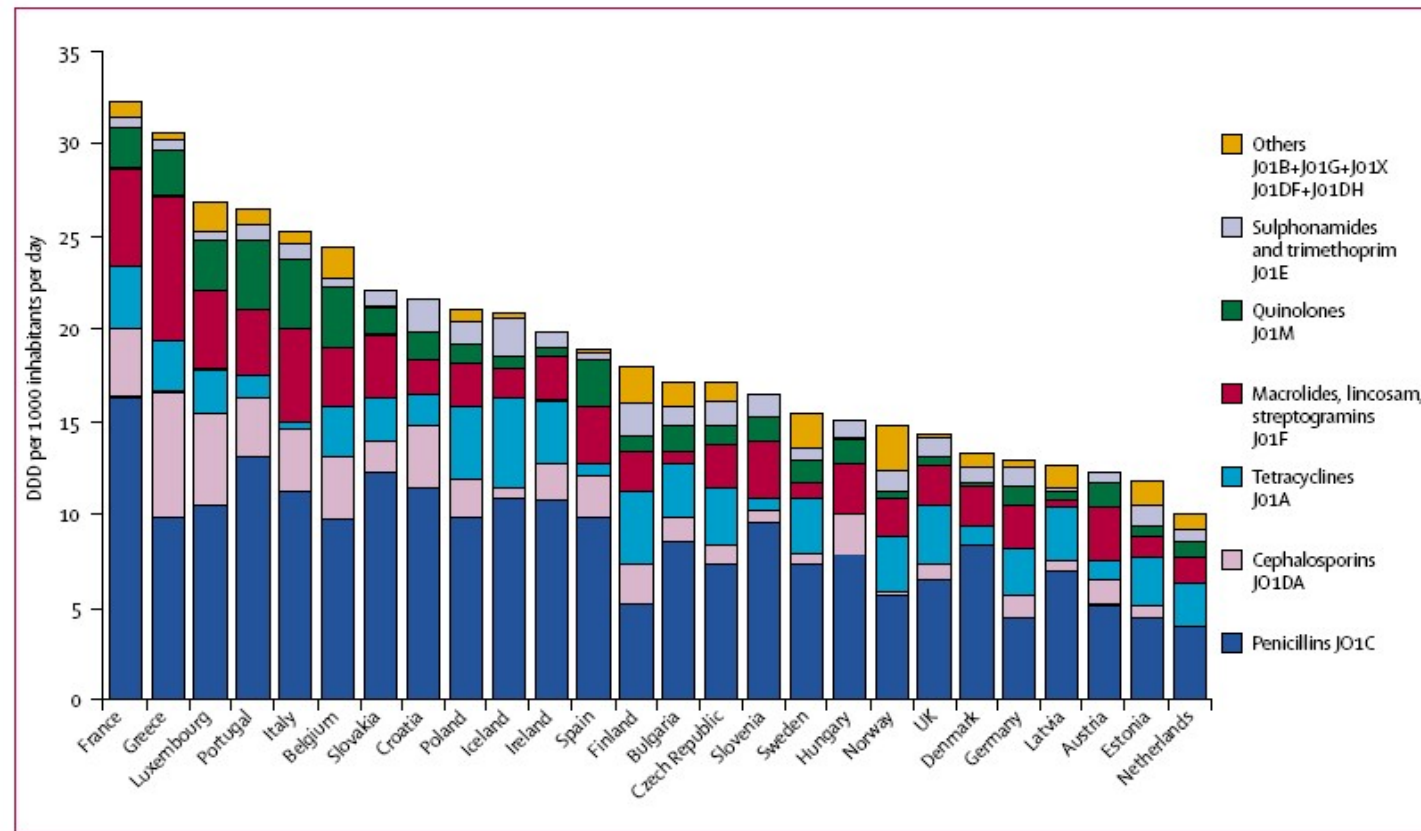


Figure 1: Total outpatient antibiotic use in 26 European countries in 2002

Lancet 2005; 365: 579-87

See Comment page 548

*Members listed at end of report

ESAC Management Team,
Department of Microbiology,
University of Antwerp, B-2610
Antwerp, Belgium
(Prof H Goossens MD,
M Feresh PharmD,
R Vander Stichele MD,
M Elseviers PhD); and
Department of Medical
Microbiology, Leland
University Medical Centre,
Netherlands (H Goossens)

Correspondence to:

Prof H Goossens

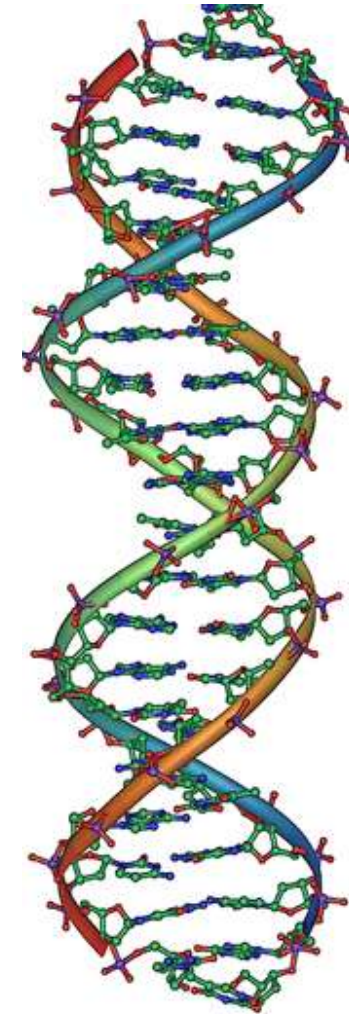
Herman.Goossens@uza.be

Current Situation

Importance

Consumption-resistance

Europe-Spain



Background

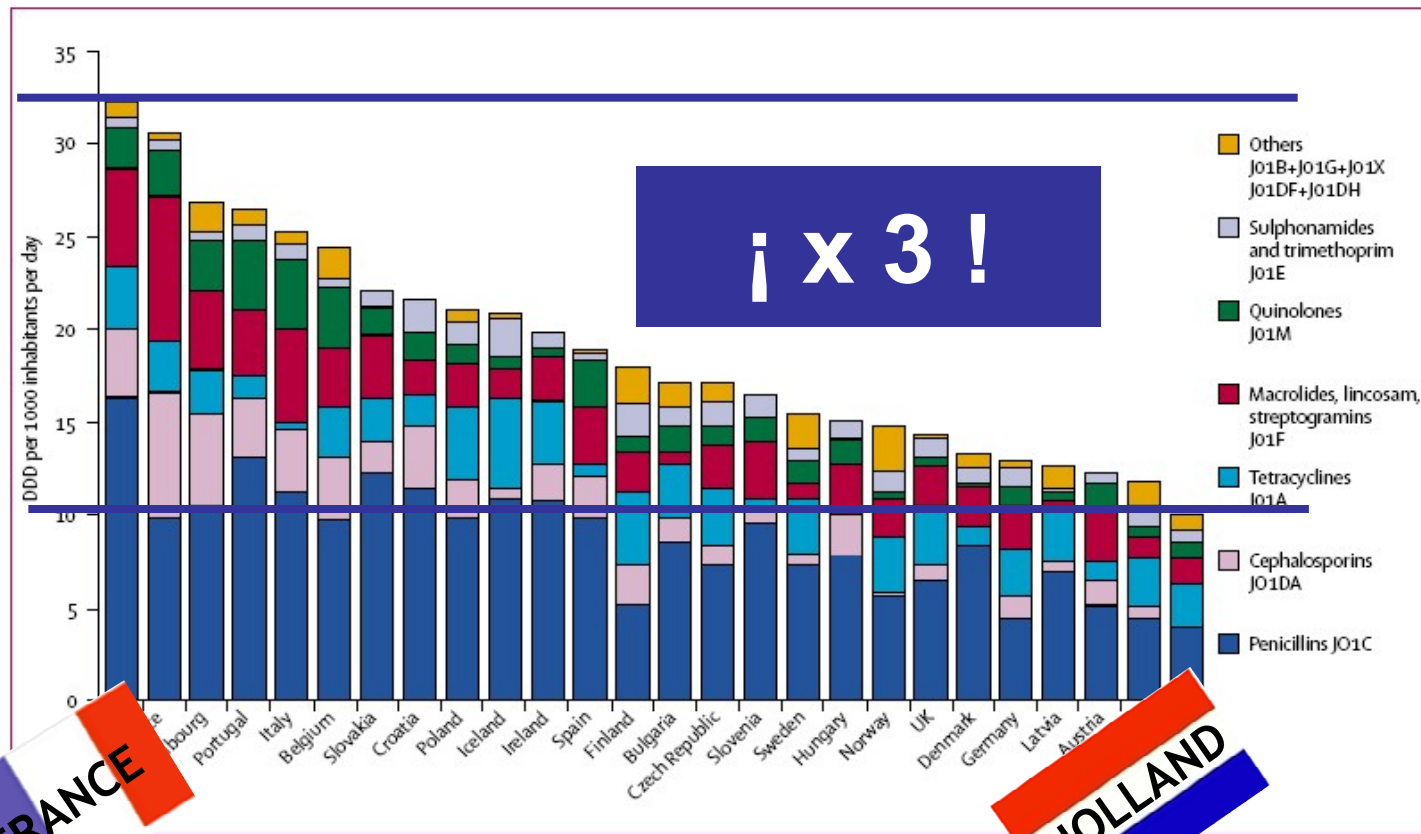
Importance

Consumption-resistance

Europe-Spain

THE LANCET

Articles



Total outpatient antibiotic use in 26 European countries in 2002

Lancet 2005; 365: 579-87

See Comment page 548

*Members listed at end of report

ESAC Management Team,
Department of Microbiology,
University of Antwerp, B-2610
Antwerp, Belgium

(Prof H Goossens MD,
M Feresh PharmD,
R Vander Stichele MD,
M Elseviers PhD); and
Department of Medical
Microbiology, Leland
University Medical Centre,
Netherlands (H Goossens)

Correspondence to:

Prof H Goossens

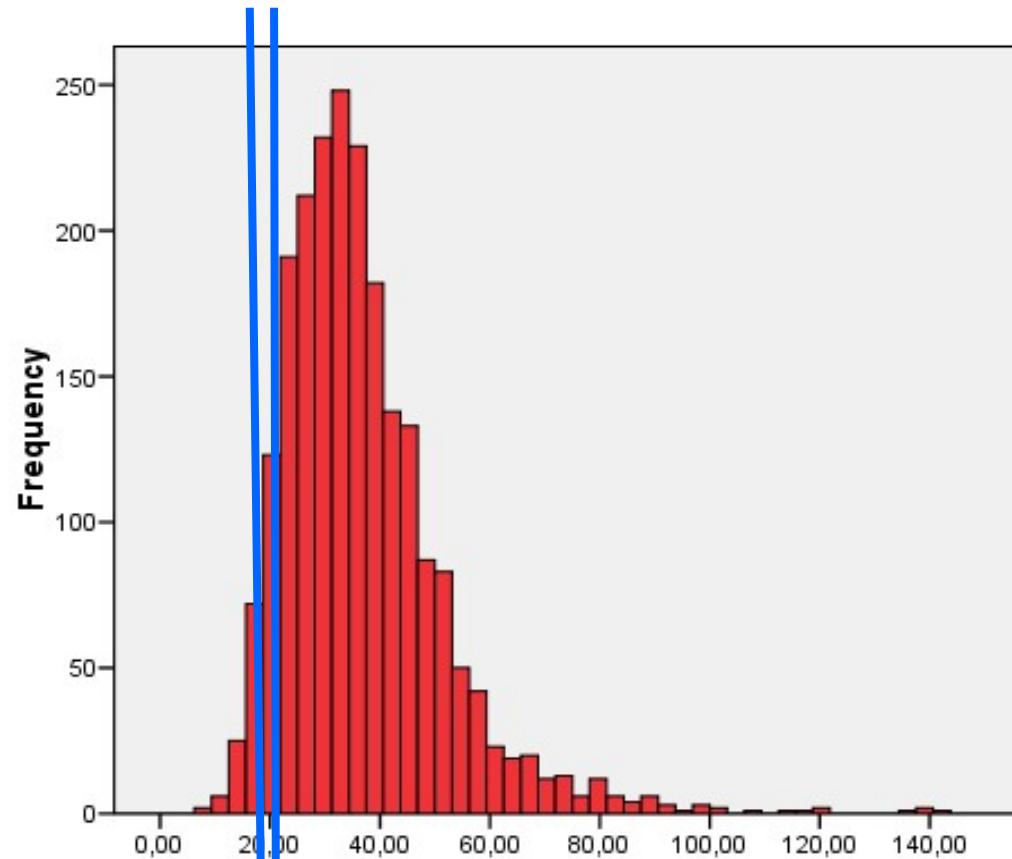
Herman.Goossens@uza.be

Current Situation

Importance

Consumption-resistance

Europe-Spain



(2009 ESAC) EUROPE

SPAIN (2009 ESAC)

BMJ

RESEARCH

Variation in antibiotic prescribing and its impact on recovery in patients with acute cough in primary care: prospective study in 13 countries

C C Butler, professor,¹ K Hood, director,² T Verheij, professor,³ P Little, professor,⁴ H Melbye, professor,⁵ J Nuttall, senior trial manager,² M J Kelly, statistician,² S Mölsted, professor,⁶ M Godycki-Cwirko, physician,⁷ J Almirall, professor,⁸ A Torres, professor,⁹ D Gillespie, trainee statistician,² U Rautakorpi, senior medical officer,¹⁰ S Coenen, postdoctoral fellow,^{11,12} H Goossens, professor¹³

¹Department of Primary Care and Public Health, School of Medicine, Cardiff University, Cardiff CF14 4XN, Wales

²South East Wales Trials Unit (SEWTU), Department of Primary Care and Public Health, School of Medicine, Cardiff University, Heath Park, Cardiff, Wales

³University Medical Centre Utrecht, Julius Center for Health, Sciences and Primary Care, Universiteitsweg 100, Stratum

ABSTRACT

Objective To describe variation in antibiotic prescribing for acute cough in contrasting European settings and the impact on recovery.

Design Cross sectional observational study with clinicians from 14 primary care research networks in 13 European countries who recorded symptoms on presentation and management. Patients followed up for 28 days with patient diaries.

Setting Primary care.

antibiotic prescribing is not associated with clinically important differences in recovery.

Trial registration Clinicaltrials.gov NCT00353951.

INTRODUCTION

Antibiotic resistance is a growing problem worldwide, with 10% of *Streptococcus pneumoniae* isolates recorded as non-susceptible to penicillin in 30 countries in 2007.¹ There is wide variation in antibiotic prescribing for ambulant patients in Europe.² We do not know if

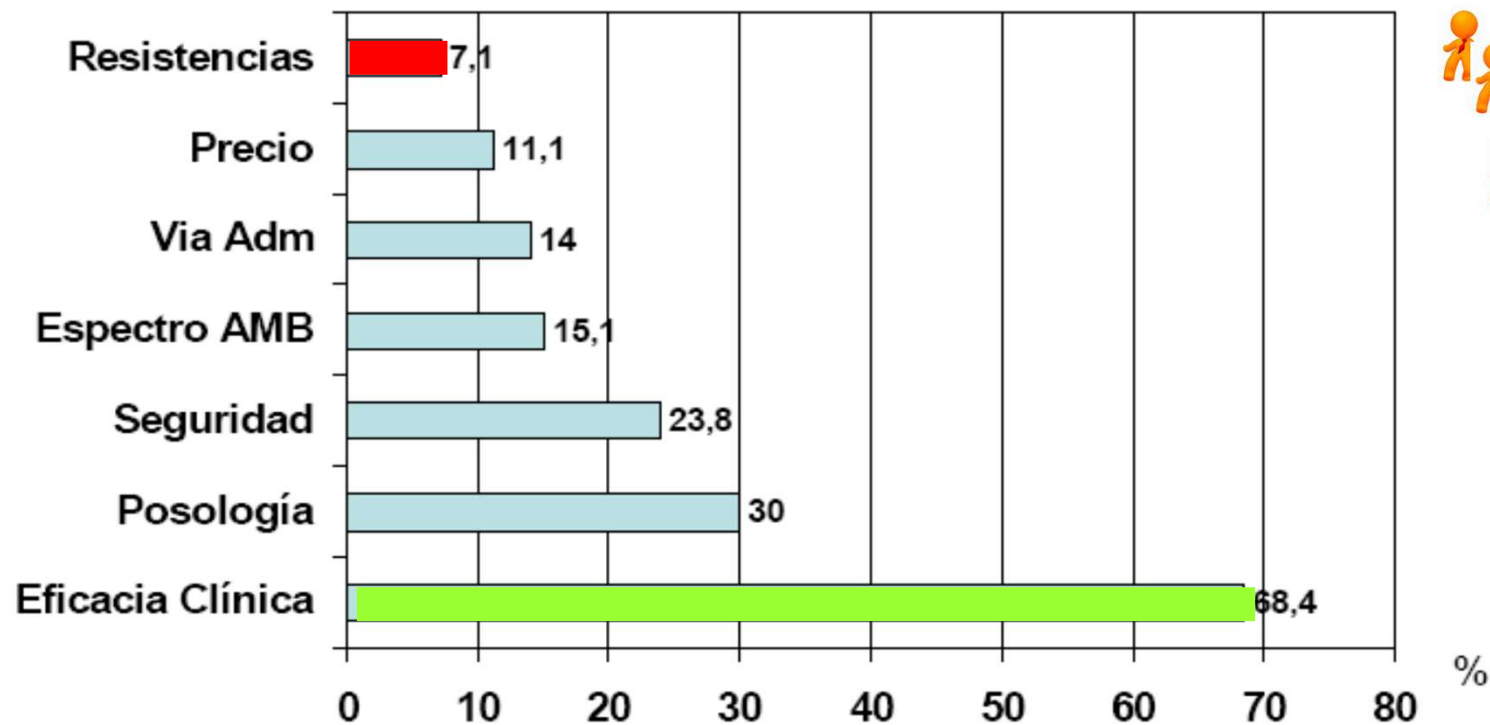
Importance

Consumption-resistance

Europe-Spain

Primary care

Factors influencing the prescription of antibiotics by primary care doctors



Ripoll MA et al, Rev Esp Quimioter 2008;21(1):26-31

Current Situation

Importance

Consumption-resistance

Europe-Spain

Primary care

ISSN 0305-7192

MEDICINA CLINICA

www.elsevier.es/medicinaclicinica

Indicadores: Science Citation Index - Journal Citation Reports - Index Medicus/MEDLINE - Current Contents/Clinical Medicine - Index Medicus Español - Europa Medicapress - HSPA - SCOPUS - MEDLINE

Sábado 23 de Abril de 2011. Volumen 136 - Número 11

Medicina Clínica en breve		Conferencia clinicopatológica	
Originales		Mujer de 47 años con diabetes progresiva, tusefación cutánea y pteridris de forma	
La hemoglobina glicosilada como marcador de riesgo de hipercalcemia en la población general		S. Puig, P. Argán y J.M. Carr	
E. García-Escobar, V. Pérez-Vidal, D. Moreda, S. Vallet, R. Valverde, V. Baranda, M.I. Velasco, M.S. Ruiz de Adana, M. Rodríguez-Igúzquiza, G. Rojo-Martínez y F. Soriano		495-500	
Original breve		Preguntas y respuestas en farmacología clínica	
Eficacia y seguridad de sustitutos de degeneración macular neovascular asociada a la edad		Eficacia de los glucocorticoides y los antiácidos en el tratamiento de la parálisis de Bell	
J.M. Real Campaña, P. Carrero Lozano, C. Torres Fernández-Bueno, R. Buerre Lacort, I. Novela Martínez y M.J. Robinson Hernández		V. Pulvirenti e I. Durré Carreira	
471-477		501-503	
Original breve		Cartas científicas	
Prevalencia de obesidad en la población gestante de Gran Canaria		Frecuencia y variabilidad de valores extremadamente bajos de colesterol ligado a lipoproteínas de alta densidad	
I. Acuña-Castillo, M. Almodín-Pérez, J.J. García-Salvador, A. González-Quesada, J.A. García-Hernández y I. Serra-Majem		J.D. García-Díaz, J.M. Hernández Rey, M.J. Caspar Riquelme y A. López de Guzmán	
478-480		504-505	
Editorial		Relación entre presión arterial y laxitud articular	
Hipercalcemia y alteración del metabolismo de la glucosa: implicaciones de una relación compleja		G. Piñero, O. Meroño, A. Aguiló y A. Balboa	
M. Bernal		505-506	
Revisión		Cartas al Editor	
Sistemas de soporte hepático artificial. Revisión de la bibliografía médica		Elegido de tratamientos complementarios y alternativos en una población de pacientes de Zaragoza con insuficiencia renal crónica hemodializada	
S. Lofgren, M.J. Bernal y A. Escorial		M. Ortiz-Lacort, V. Pizarro Ruiz y R. Sáez Piñel	
484-487		506-507	
Artículos especiales		Cartas al Editor	
La interconsulta médica: problemas y soluciones		Consumo de opiáceos en el síndrome coronario agudo	
E. Montero Ruiz y J. López-Alvarez		X. Carrillo, A. Caró, J. Serra y V. Valle	
488-490		508-509	
Límites en la intersección avanzada del embarazo		Respuestas	
P.J. Torres Pons		M. Trío-Iturró y I. Morzano	
491-494		509-510	
		Imagen de la semana	
		Ulipizilis subcutánea secundaria a intoxicación por glucocorticoides	
		E. Marco, J.M. Muñoz, E. Duarte y F. Escalado	
		511-513	

Data distribution according to percentage of correct and incorrect prescription of antibiotic in Primary Care. *Med Clin.*



Saturno PJ. Med Clin (Barc)

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

CONDITIONING FACTORS OF THE PRESCRIPTION OF ANTIBIOTICS IN Primary CARE:

Patient pressure

Industrial pressure

Fear / Uncertainty

Adherence to clinical guidelines

Access to clinical tests



Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

CONDITIONING FACTORS OF THE PRESCRIPTION OF ANTIBIOTICS IN Primary CARE:

Patient pressure

~~Industrial pressure~~

Fear / Uncertainty

Adherence to clinical guidelines

~~Access to clinical tests~~



Current Situation

Importance

Consumption-resistance

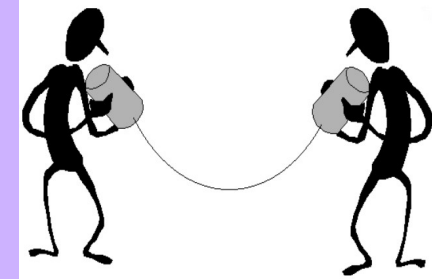
Europe-Spain

Primary Care

SOLUTION

Patient pressure

Communication Skills



Fear / Uncertainty

Adherence to
clinical guidelines

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

PATIENT PRESSURE: COMMUNICATION SKILLS

Improve patient-doctor communication.

In 50% of the cases:

- NO detected complaints
- Patient and doctor. NO agreement

The patient can not describe his/her problem



BMJ

The Toronto consensus

part, Peter Maguire, Mack Lipkin, Dennis Novack,

substantial deficiencies when studied. Only a low proportion of visits with doctors include any patient education,¹⁵ and a surprisingly high proportion of patients do not understand or remember what their physicians tell them about diagnosis and treatment.¹⁶ Cultural differences also impede the work with patients.^{17,18}

Patient anxiety and dissatisfaction is related to uncertainty and lack of information, explanation, and feedback from the doctor. Yet doctors often misperceive the amount and type of information patients want. The language doctors use is often unclear, both as regards the use of jargon and in relation to a lack of the expected shared meanings of relatively common terms.²⁰⁻²³

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

PATIENT PRESSURE: COMMUNICATION SKILLS

✓ Non-verbal behavior:

Impersonal tone of voice

Rude and distant

Speak rapidly

G

P

For this, antibiotic is
not needed

(type book))



Current Situation

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

Little ASSERTIVITY

Low EMPATHY

No Point of AGREEMENT

Outcome:

Poor adherence to treatment

Consequences for the patient:

Passivity towards doctor's recommendations

Consequences for the physician:

NO Closeness to the patient

Burn out professional

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

PATIENT PRESSURE: COMMUNICATION SKILLS

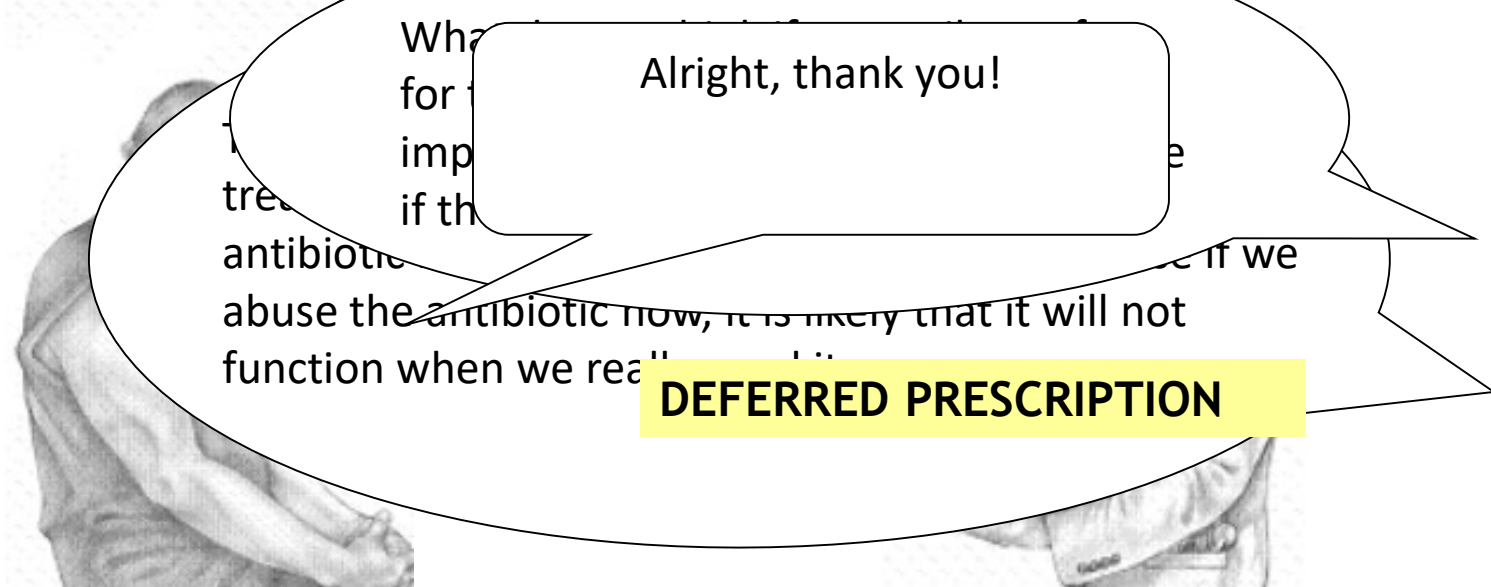
✓ Non-verbal behaviour:

Conversational voice tone

Speak fluently

First person message

Patient.co



NEGOTIATION: reach to an agreement between both

Current Situation

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

ASSERTIVENESS

EMPATHY

NEGOTIATION

Results:

More adherence to treatment

Positive assessment of the physician

Consequences for the physician:

Closeness to the patient

Work satisfaction



THE CONSULTATION TIME DOES NOT INCREASE

Current Situation

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION

Recuerde

- Los antibióticos no son eficaces contra los resfriados ni la gripe
- Tome los antibióticos de forma responsable y sólo cuando se los recete el médico
- Todos somos responsables de conseguir que los antibióticos sigan siendo eficaces

Cuando los *necesite*, utilice los antibióticos de manera responsable

Cuando le receten antibióticos, siga las instrucciones del médico para minimizar el riesgo de desarrollar bacterias resistentes.

Si no sigue las instrucciones correctamente —si, por ejemplo, acorta la duración del tratamiento o toma una dosis menor o no toma los antibióticos en los momentos correctos que le haya prescrito el médico—, las bacterias pueden adquirir resistencia a los antibióticos.

Las bacterias resistentes pueden quedarse en su organismo y también pueden transmitirse a otras personas. Esto le expone a usted y expone a otros al riesgo de no responder a los antibióticos la próxima vez que los vuelva a necesitar.

- Siga las instrucciones de su médico y tome los antibióticos cuándo y cómo él se lo indique
- No utilice los antibióticos que le sobren
- Pregunte a su médico o farmacéutico cómo debe tirar los antibióticos que le sobren

EUROPEAN
ANTIBIOTIC
AWARENESS DAY

A European Health Initiative



Uso responsable de los antibióticos

Contribuya a mantener la eficacia de los antibióticos



Current Situation

Importance

Consumption-resistance

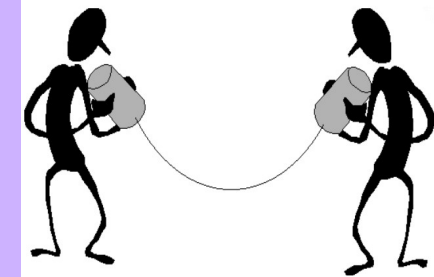
Europe-Spain

Primary Care

SOLUTION

Patient pressure

Communication skills
Deferred Prescription
Supporting material



Fear / Uncertainty

Deferred Prescription

D	L	M	M	J	V	S
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Adherence to
clinical guidelines

Delayed antibiotics for respiratory infections (Review)

Spurling GKP, Del Mar CB, Dooley L, Foxlee R



This is a reprint of a Cochrane review, prepared and maintained by The Cochrane Collaboration and published in *The Cochrane Library* 2011, Issue 1

<http://www.thecochranelibrary.com>



blinding gave two trials (Chao 2008; Little 2005a) which blinded the outcome assessor to give an odds ratio for these two trials of 1.42 (95% CI 0.92 to 2.19). The one completely unblinded trial (Little 1997) gave an odds ratio of 1.49 (95% CI 0.70 to 3.19). In the *delayed* antibiotic arm 413 of participants were satisfied or very satisfied out of 473 participants (87.3%) compared to 387 out of 465 participants in the *no* antibiotics group (83.2%).

Delayed antibiotics for respiratory infections (Review)

Copyright © 2011 The Cochrane Collaboration. Published by John Wiley & Sons, Ltd.

14

benefit over *delayed* antibiotics in participants with sore throat and AOM. All strategies appear to have similar safety with no advantage found for *delayed* antibiotics over *no* antibiotics for disease complications. *Delay and no* antibiotic strategies dramatically reduce the use of antibiotics for ARTIs compared to *immediate* antibiotics. The least antibiotic use was in the *no* antibiotic group followed by *delay* and then *immediate*. The number needed to treat to prevent one antibiotic prescription using the *delay* strategy is 1.6 compared to *immediate* antibiotics. The number needed to treat to prevent one antibiotic prescription using a *no* antibiotic strategy compared to *delay* is 5.6. Patient satisfaction was highest in the *immediate* antibiotic group with 92.2% being satisfied or very satisfied with the consultation. The *delay* and *no* groups had similar quite high satisfaction rates at 87.3% and 83.2%, respectively.

Overall completeness and applicability of evidence

DISCUSSION

Summary of main results

Small differences were found between prescribing strategies for clinical outcomes with *immediate* antibiotics most likely to show

Dowell 2001; Little 2005a; Spiro 2006), the outcomes assessor was blinded but not the patient nor the care giver. Otherwise, studies were well reported and appeared to be high quality.

Potential biases in the review process

Heterogeneity of RCTs is the main limitation of this review. Heterogeneity may have resulted from variable clinical presentations, differences in delay method, differences in antibiotic use and quality of included studies. Type I error is a concern when interpreting the results of this review, given the heterogeneity of results with multiple outcome measures. This is especially concerning for the comparisons for clinical outcomes between *delayed* and *immediate* antibiotic groups.

Agreements and disagreements with other

Importance

Consumption-resistance

Europe-Spain

Primary Care

SOLUTION



THE COCHRANE
COLLABORATION®

Delayed antibiotics for respiratory infections (Review)

Spurling GKP, Del Mar CB, Dooley L, Foxlee R

	EFFECTIVENESS	SECURITY
DEFERRED Vs IMMEDIATE	≈	Increase in RAM ^{M.N1} Increase in resistances

Diapositiva 25

M.N1

a qué corresponde RAM?

MALLAH ... NARMEEN; 06/10/2020

Current Situation

Importance

Consumption-resistance

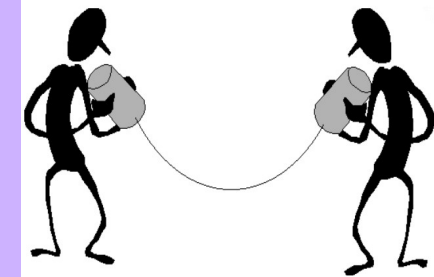
Europe-Spain

Primary Care

SOLUTION

Patient pressure

Communication skills
Deferred Prescription
Supporting material



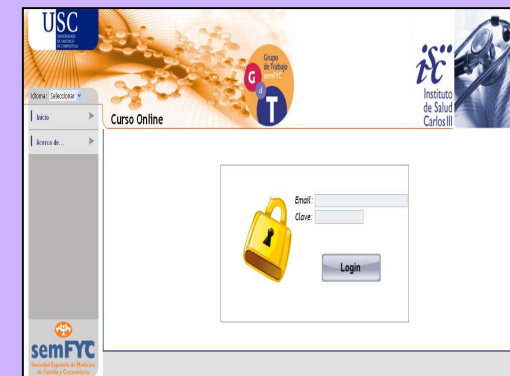
Fear / Uncertainty

Deferred Prescription

D	L	M	M	J	V	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Adherence to clinical guidelines

Online course





Idioma:

Presentación

Información
General

Metodología

Manual del usuario

Sistema de Evaluación

Casos Clínicos

Algoritmos

Bibliografía de
apoyo



semFYC

Sociedad Española de Medicina
de Familia y Comunitaria

Sistema de Evaluación

Sistema de Evaluación

El curso está dividido en 5 casos clínicos que servirán de introducción a los conceptos teóricos. Se realizará una prueba de evaluación al final con preguntas tipo test, en la que el alumno tendrá la oportunidad de valorar su evolución contrastando sus propias respuestas antes y después de realizar los casos.

Requerimientos exigidos para la acreditación

Haber superado en la prueba de evaluación final el 50 % de aciertos.

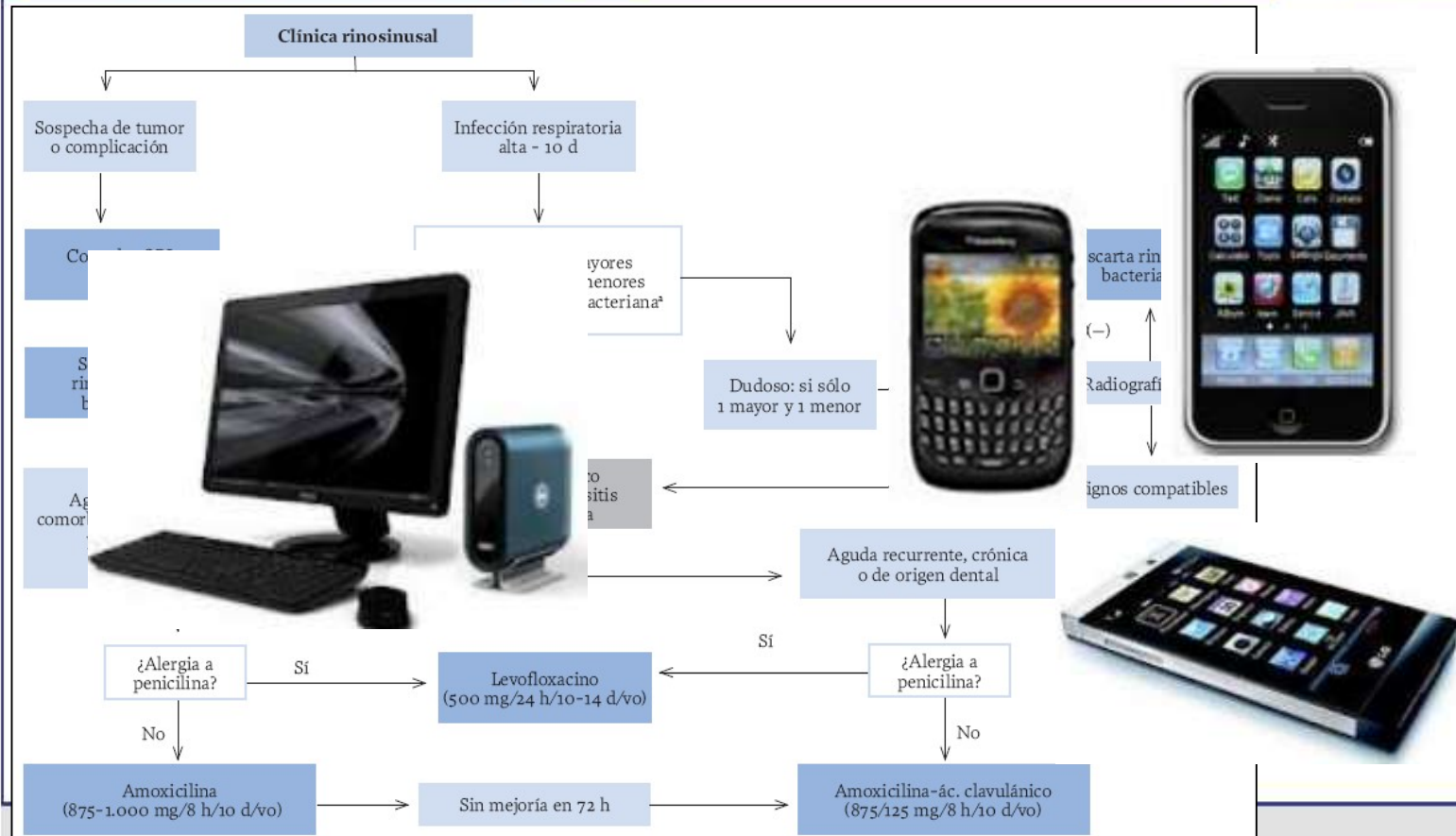


Idioma: Seleccionar

Inicio

Acerca de...

Curso Online



Sistema experto

Situación Actual

Importancia

Consumo-resistencias

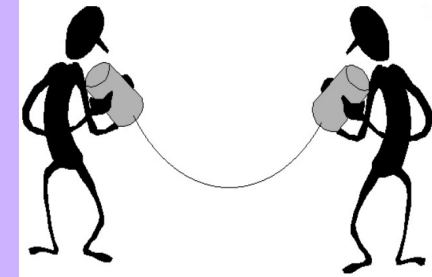
Europa-España

At. Primaria

SOLUCIONES

Presión del paciente

Habilidades de comunicación
Prescripción Diferida
Materiales de apoyo



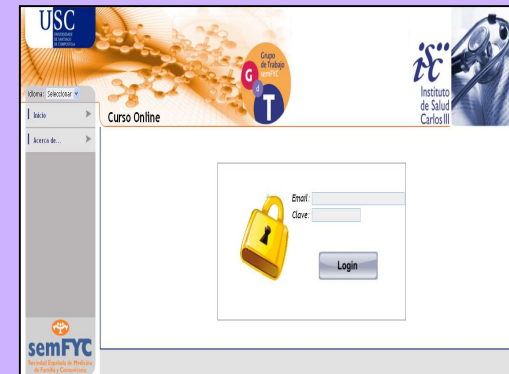
Miedo / Incertidumbre

Prescripción Diferida

D	L	M	M	J	V	S
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

Adherencia a guías
clínicas

Curso online





MUCHAS GRACIAS POR SU ATENCIÓN

cristian.gonzalez@usc.es