

Literaturübersicht und internationale Erfahrungen

Dr. Agnes Wechsler-Fördös
Antibiotic Stewardship Beratung
Vormals Antibiotika- und Hygienebeauftragte Ärztin
KA Rudolfstiftung Wien

Rudolfstiftung Hospital of the City of Vienna

Teaching hospital of Vienna Medical School
801 beds, ~ 55.000 admissions/year



Conflicts of Interest

- Akademie für Infektionsmedizin, Angelini, Astellas, Becton-Dickinson, Bio-Mérieux, BZH Freiburg, KRAGES, MSD, Pfizer, Sandoz, ÖGACH, ÖGHMP, ÖGIT, FB-Akademie AKH, SchöchI Medical Education

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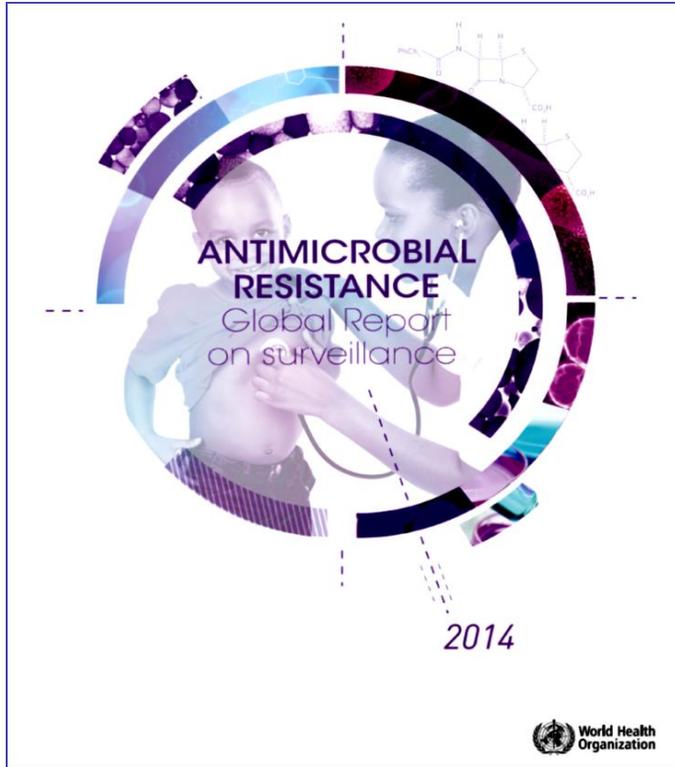


Table 5 *Klebsiella pneumoniae*: Resistance to third-generation cephalosporins^a (summary of reported or published proportions of resistance, by WHO region)

Data sources based on at least 30 tested isolates ^b	Overall reported range of resistant proportion (%)	Reported range of resistant proportion (%) in invasive isolates ^c (no. of reports)
African Region – National data (n=13 countries) – Publications (n=4) from 1 additional country	8–77 9–69	41–62 (n=3)
Region of the Americas – National data or report to ReLAVRA (n=17 countries) – Publications (n=3) from 3 additional countries	4–71 15–56	56 (n=1)
Eastern Mediterranean Region – National data (n=4 countries) – Surveillance network ^d (n=1) in 1 additional country – Publications (n=16) from 7 additional countries	22–50 72 (caz)–82 (cro) 6–75	48 (n=1) 17 (ctx); 43 (caz); 50 (cro) (n=1)
European Region – National data or report to EARS-Net (n=33 countries) – Publications (n=2) from 2 additional countries	2–82 4–61	2–82 (n=31) 11 (cro); 16 (ctx); 18 (caz) (n=1)
South-East Asia Region – National data (n=4 countries) – Publications (n=23) from 4 additional countries	34–81 5–100	53.3–100 (n=4)
Western Pacific Region – National data (n=14 countries) – Institute surveillance (data from 3 hospitals in 1 country) – Publications (n=3) from 2 additional countries	1–72 17–30 27–35	72 (n=1) 27 (n=1)

EARS-Net, European Antimicrobial Resistance Surveillance Network; ReLAVRA, Latin American Antimicrobial Resistance Surveillance Network.

a. caz, ceftazidim; ctx, cefotaxim; cro, ceftriaxone

b. Reported proportions may vary between compound used for testing and some countries report data for several compounds, or data from more than one surveillance system.

c. Invasive isolates are deep infections, mostly bloodstream infections and meningitis.

d. US Naval Medical Research Unit No 3, Global Disease Detection Program, Egypt.

K. pneumoniae C3-R

Infections with resistant bacteria and attributable deaths 2015

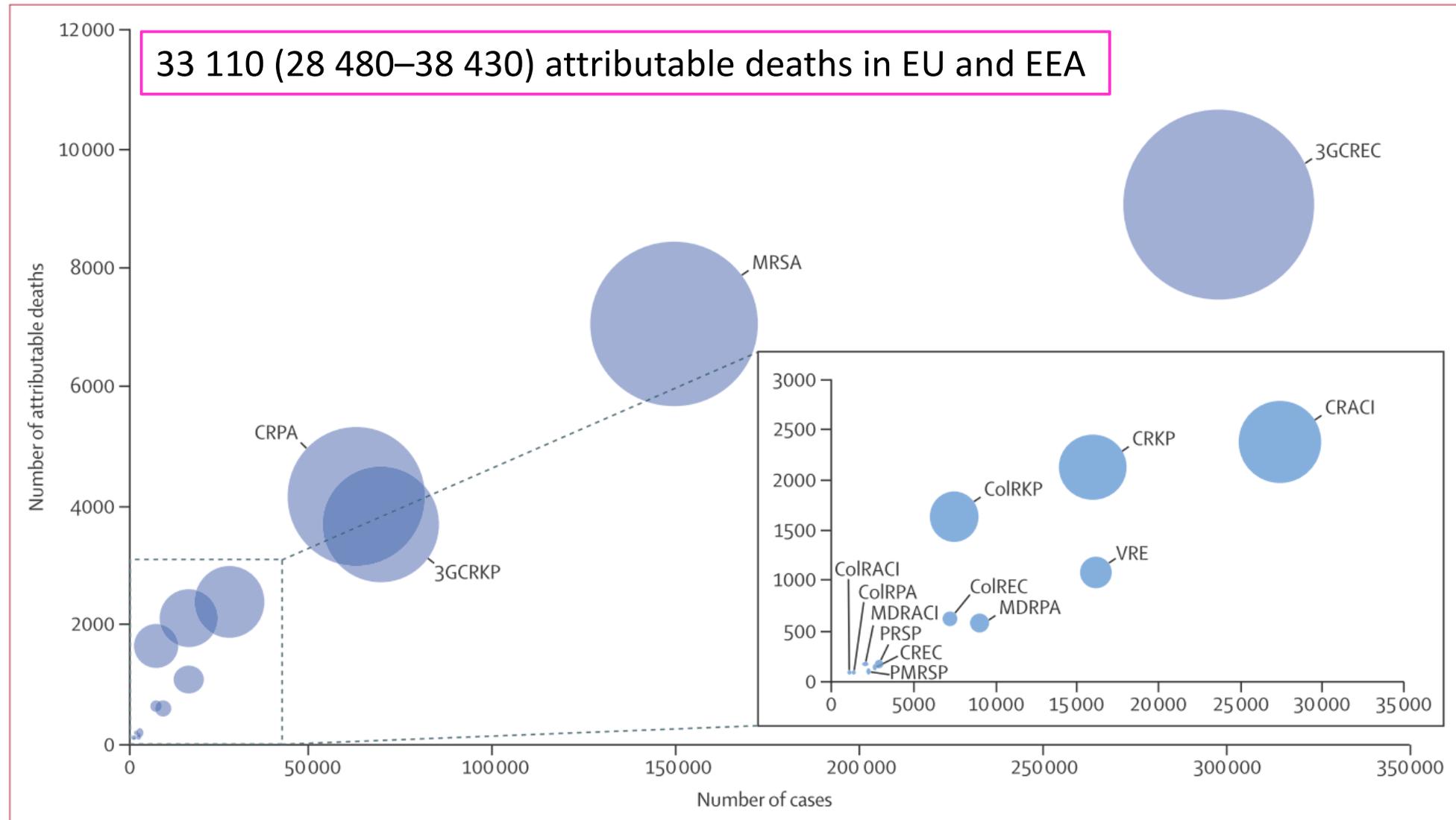


Figure 1: Infections with antibiotic-resistant bacteria, EU and European Economic Area, 2015

RR, 71, m, Sepsis: No risk factors for MDRB

E.coli ESBL 3 MRGN	
-	Aminopen.
-	Piperacillin
-	Amoxyc.+Clav.
+/-	Pip/Tazo
-	Aztreonam
+	Imipenem
+	Meropenem
+	Ertapenem
-	Cefazolin
-	Cefuroxim
-	Cefotaxim
-	Cefepim
-	Gentamicin
+	Amikacin
	Fosfomycin
-	Ciprofloxacin
-	Sulf.+Trim.
+	Tigecyclin
+	Ceftolozan/Tazobactam
+/-	Temocillin

Bestimmung der minimalen Hemmkonzentration (MHK)

E.coli ESBL 3 MRGN

Antibiotikum	Abs.Wert (mcg/ml)	Bewertung
Ceftazidim/Avibactam	0.1900	+
Ceftolozan/Tazobactam	0.5000	+

Prognosis for 2050: O'Neill-Report United Kingdom

The impact of antimicrobial resistance in 2050

Death attributable to antimicrobial resistance every year by 2050 in different countries [1]

DEATHS PER ANNUM FOR ANTIMICROBIAL RESISTANT INFECTIONS AND OTHER CAUSES BY 2050 IN MILLIONS. [1] AND [HTTP:// AMR-REVIEW.ORG/](http://amr-review.org/)

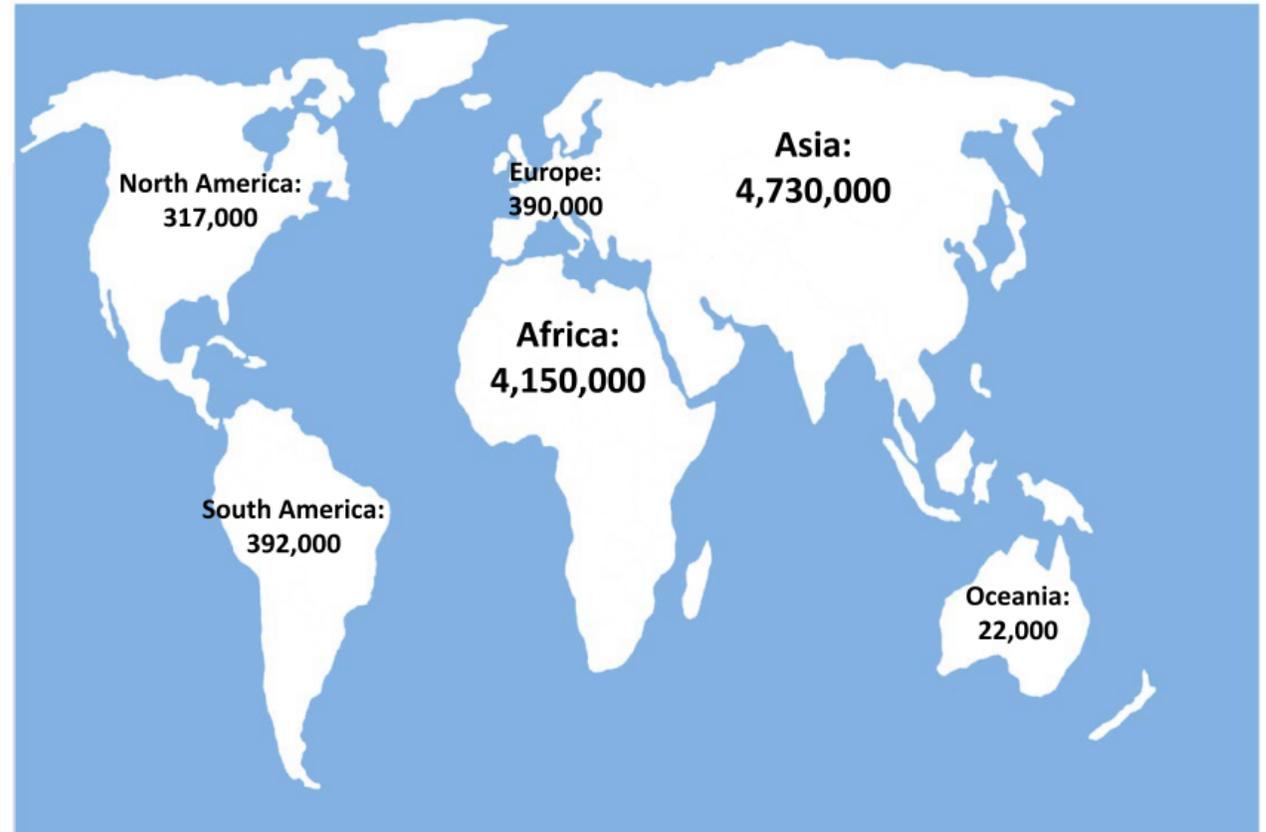
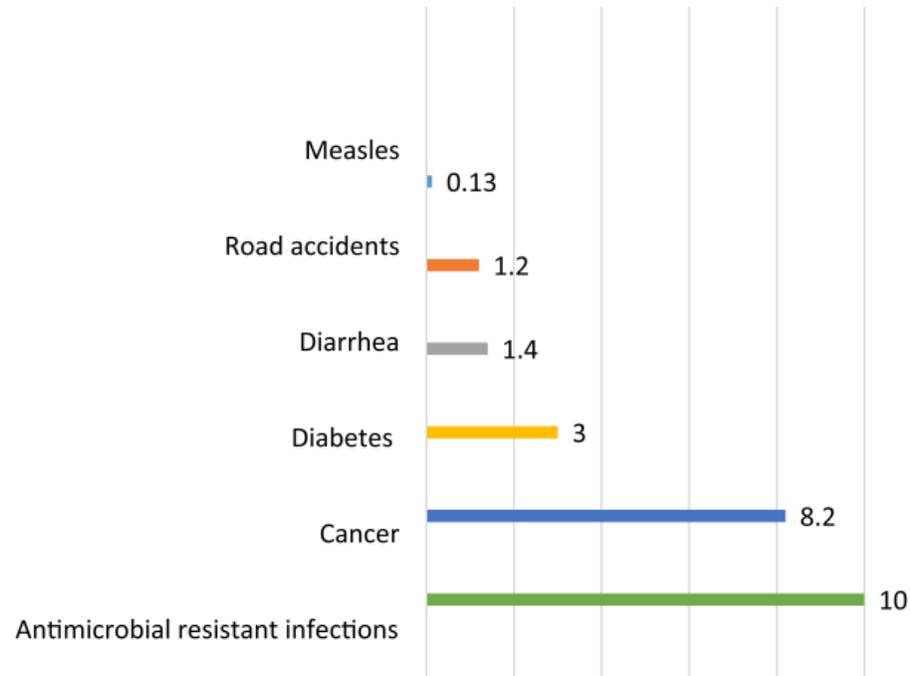
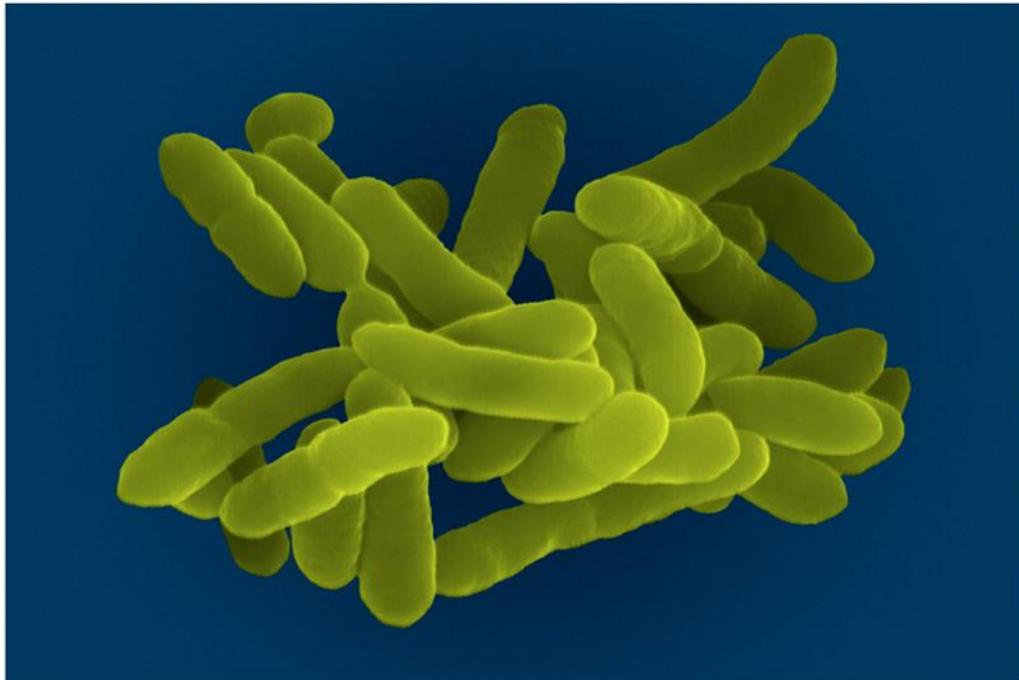


Fig. 1 The impact of antimicrobial resistance in 2050

Woman dies from infection resistant to all available antibiotics

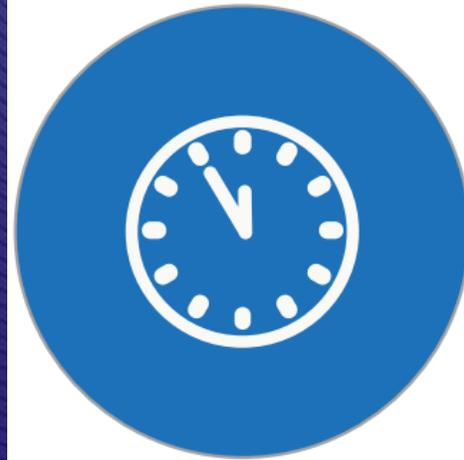


Some *Klebsiella* can beat 26 different antibiotics
Dennis Kunkel Microscopy/SCIENCE PHOTO LIBRARY

Broken Leg in India
Death in Nevada

PRIORITIZATION OF PATHOGENS TO GUIDE DISCOVERY, RESEARCH AND DEVELOPMENT OF NEW ANTIBIOTICS FOR DRUG-RESISTANT BACTERIAL INFECTIONS, INCLUDING TUBERCULOSIS

There is very little treatment



Acinetobacter baumannii, CR
Enterobacteriaceae, CR
Pseudomonas aeruginosa, CR

The *Lancet Infectious Diseases* Commission on antimicrobial resistance: 6 years later

Lancet Infect Dis 2020

Ramanan Laxminarayan, Thomas Van Boeckel, Isabel Frost, Samuel Kariuki, Ejaz Ahmed Khan, Direk Limmathurotsakul, D G Joakim Larsson, Gabriel Levy-Hara, Marc Mendelson, Kevin Outterson, Sharon J Peacock, Yong-Guan Zhu

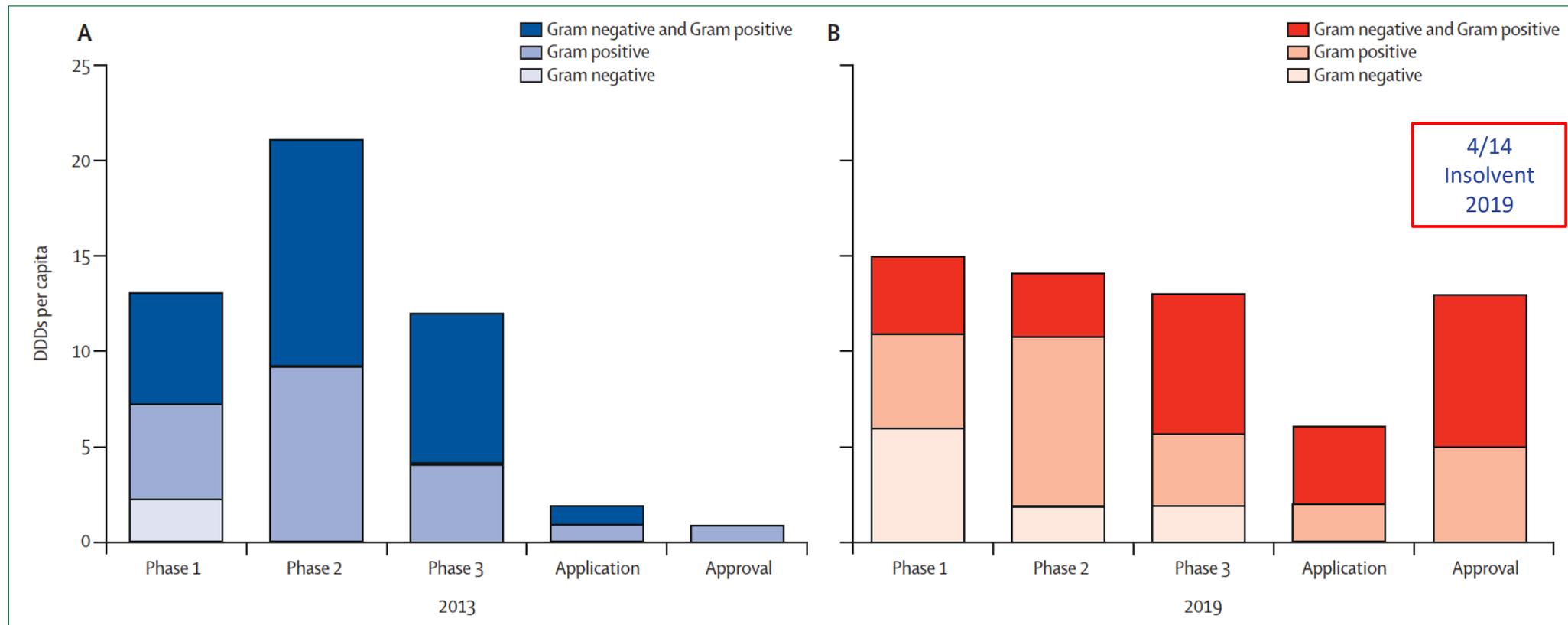


Figure 3: Antibiotic development pipeline in 2013 and 2019

The number of drugs at different stages of development is shown, for Gram-negative or Gram-positive bacterial targets. Based on data from The Pew Charitable Trust¹⁰⁵ and Butler et al.¹⁰⁶

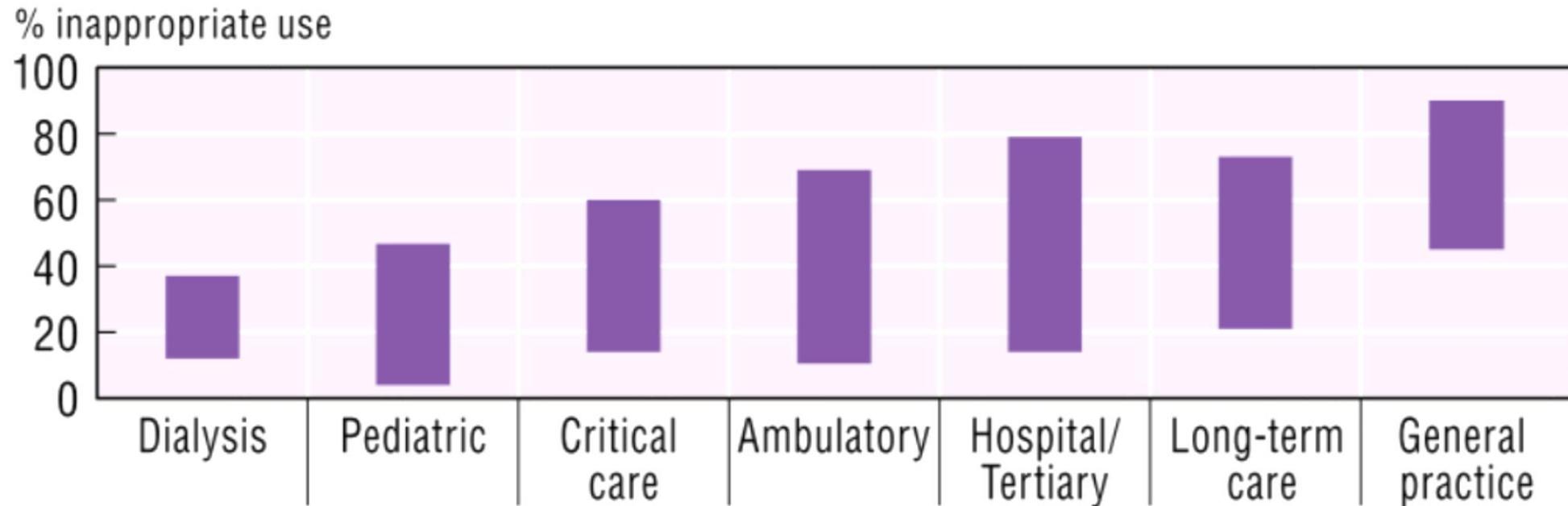
ABS-Bedarf

Empirische Therapie und Streamlining

- 1/3 kein Fieber oder Leukozytose
- 1/2 Röntgen, Mikrobiologie: Keine Infektion
- Großer Teil der Antibiotikagaben vermeidbar:
~ **50% der AB im Krankenhaus sind unnötig**
- Verbesserung des Einsatzes um 37% bei Nutzung von diagnostischen Möglichkeiten

Inappropriate Antibiotic Usage

Estimated proportion of inappropriate use of antibiotics is highest in general practice



Note: bars represent the range of variation across individual health care providers.

Source: OECD (2017), *Tackling Wasteful Spending on Health*.

Global Risks 2013 Eighth Edition

While viruses may capture more headlines, arguably the greatest risk of hubris to human health comes in the form of *antibiotic-resistant bacteria*. We live in a bacterial world where we will never be able to stay ahead of the mutation curve. A test of our resilience is how far behind the curve we allow ourselves to fall.

Until now, leaders have been able to turn a blind eye to this problem, as new antibiotics have always emerged to replace older, increasingly ineffective ones.
This is changing.

The *Lancet Infectious Diseases* Commission on antimicrobial resistance: 6 years later



Ramanan Laxminarayan, Thomas Van Boeckel, Isabel Frost, Samuel Kariuki, Ejaz Ahmed Khan, Direk Limmathurotsakul, D G Joakim Larsson, Gabriel Levy-Hara, Marc Mendelson, Kevin Outterson, Sharon J Peacock, Yong-Guan Zhu

In 2013, a *Lancet Infectious Diseases* Commission described the state of antimicrobial resistance worldwide. Since then, greater awareness of the public health ramifications of antimicrobial resistance has led to national actions and global initiatives, including a resolution at the high-level meeting of the UN General Assembly in 2016. Progress in addressing this issue has ranged from a ban on irrational drug combinations in India to commitments to ban colistin as a growth promoter in animals, improve hospital infection control, and implement better antimicrobial stewardship. Funds have been mobilised, and regulatory barriers to new antibiotic development have been relaxed. These efforts have been episodic and uneven across countries, however. Sustained funding for antimicrobial resistance and globally harmonised targets to monitor progress are still urgently needed. **Except for in a few leading countries, antimicrobial resistance has not captured the sustained focus of national leaders and country-level actors, including care providers.**

Lancet Infect Dis 2020

Published Online

February 11, 2020

[https://doi.org/10.1016/S1473-3099\(20\)30003-7](https://doi.org/10.1016/S1473-3099(20)30003-7)

Centre for Disease Dynamics,
Economics & Policy, New Delhi,
India (R Laxminarayan PhD,
T Van Boeckel PhD, I Frost DPhil);
Princeton Environmental
Institute, Princeton University,

COVID und ABS

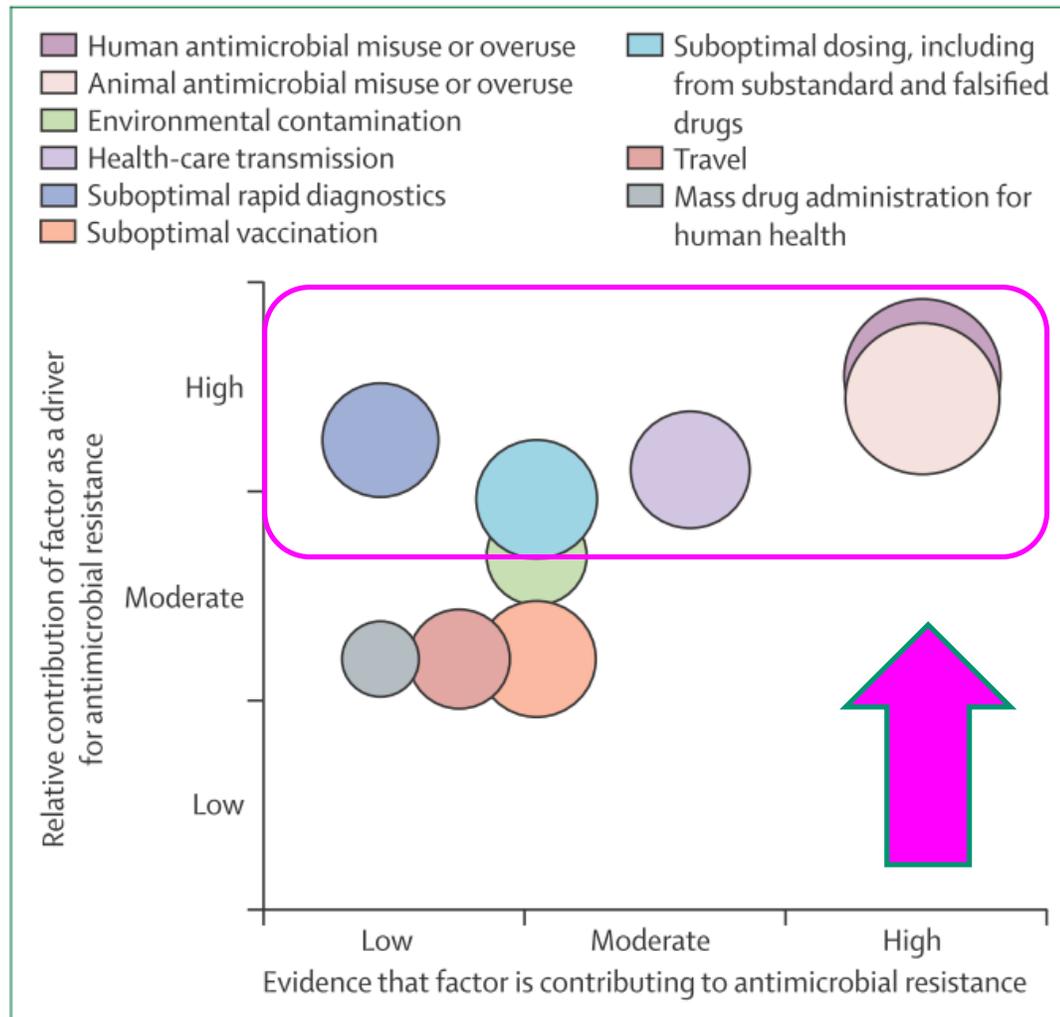
Table 1. Clinical reports mentioning superinfections and/or antibiotic use in patients with COVID-19.

Author [Ref]	Site(s)	Pts, n	Types of pts	Mechanical ventilation*	Antibiotic/Antifungal use	Steroid use	Super-infections	Types of infection/Organisms
Huang [16]	Wuhan, 1 hospital	41	Hospitalized 32% in ICU	5%	Abx, 100%	22%	10% (31% in ICU)	N/S N/S
Chen N [14, 18]	Wuhan, 1 hospital	99	Hospitalized	4%	Abx, 71% AF, 15%	19%	5%	N/S MDR- <i>A. baumannii</i> , <i>K. pneumoniae</i> , <i>A. flavus</i> , <i>C. albicans</i> , <i>C. glabrata</i>

Over 70% may receive antibiotics, but fewer than 10% experience co-infections

Guan [24]	China, 552 hospitals, 30 provinces	1099	Hospitalized 5% in ICU	2.5%	Abx, 58% (80% of severely ill) AF, 7.5%	19%	N/S	N/S N/S
Zhou [17]	Wuhan, 2 hospitals	191	Hospitalized 26% in ICU	17%	Abx, 95%	30%	15%	N/S N/S
Wang [21]	Wuhan, 1 hospital	69	Hospitalized	N/S	Abx, 98.5% AF, 12%	15%	17% (10% excluding <i>Candida</i>) ¹	Positive sputum cultures, no clinical details <i>E. cloacae</i> , <i>A. baumannii</i> , <i>C. albicans</i>
Dong [15]	Wuhan, 3 hospitals	11	Hospitalized	N/S	Abx, 27%	27%	9%	Secondary pneumonia Gram positive cocci and Gram negative rods, not further

Drivers for Antimicrobial Resistance



- Human antimicrobial misuse
- Animal antimicrobial misuse
- Health-care transmission
- Suboptimal dosing
- Suboptimal rapid diagnostics
- Environmental contamination
- Suboptimal vaccination

Figure 3: Role of modifiable drivers for antimicrobial resistance: a conceptual framework

Lancet 2016; 387: 176–87

With All Eyes on Covid-19, Drug-Resistant Infections Crept In

The spread of other dangerous germs is surging — a result, in part, of the chaotic response to the pandemic.



A hospital worker disinfecting a room where a Covid patient had died. Focus on the coronavirus has helped a different set of germs spread. Shannon Stapleton/Reuters

By Matt Richtel

Jan. 27, 2021



Contents lists available at ScienceDirect

International Journal of Antimicrobial Agents

journal homepage: www.elsevier.com/locate/ijantimicag



Letter to the Editor

***Klebsiella pneumoniae* infections in COVID-19 patients: a 2-month retrospective analysis in an Italian hospital**

Infection Control & Hospital Epidemiology (2021), 1–2

doi:[10.1017/ice.2020.1401](https://doi.org/10.1017/ice.2020.1401)

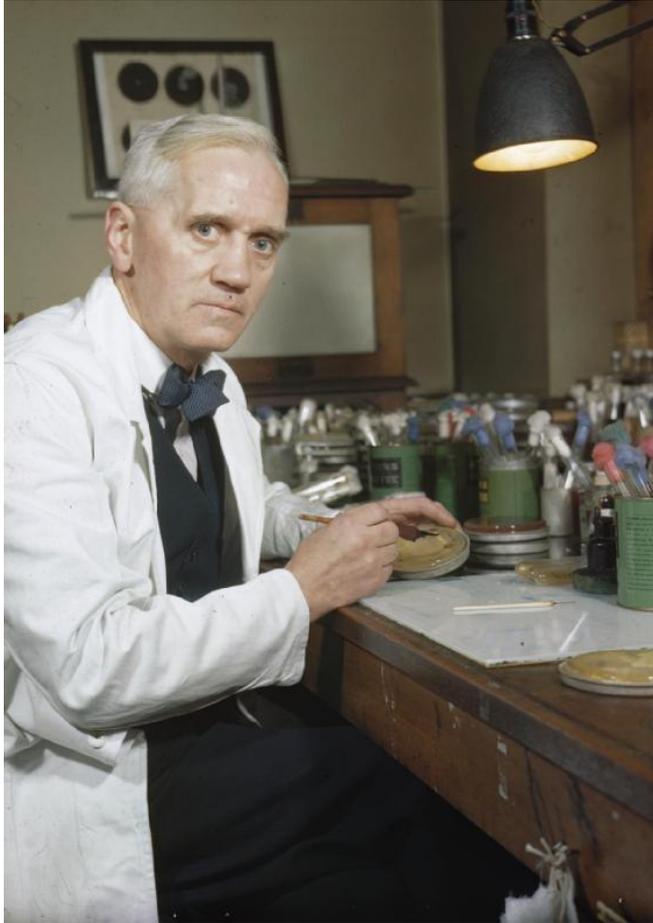
Letter to the Editor

A multidrug-resistant *Klebsiella pneumoniae* outbreak in a Peruvian hospital: Another threat from the COVID-19 pandemic

Kovy Arteaga-Livias MD, MSc(c)^{1,2,3} , Karim Pinzas-Acosta MD³, Lourdes Perez-Abad MD⁴, Vicky Panduro-Correa MD, MSc², Ali A. Rabaan PhD⁵, Samuel Pecho-Silva MD, MSc(c)³ and Bernardo Dámaso-Mata MD, MSc, DSc^{1,2}



Prediction of a Prophet



Alexander Fleming, 1945

„Penicillin should only be used if there is a properly diagnosed reason and, if it needs to be used, use the highest possible dose for the shortest time necessary. Otherwise antibiotic resistance will develop”.

By Official photographer - <http://media.iwm.org.uk/iwm/mediaLib//32/media-32192/large.jpg>

This is photograph TR 1468 from the collections of the Imperial War Museums., Public Domain, <https://commons.wikimedia.org/w/index.php?curid=24436974>

Antimicrobial Stewardship Program - A Definition

- An ongoing effort by a health care institution to optimize antimicrobial use among hospitalized patients in order
 - to improve patient outcomes,
 - ensure cost-effective therapy,
 - and reduce adverse sequelae of antimicrobial use,
 - including antimicrobial resistance

MacDougall C, Polk ER. Clin Microbiol Rev 2005, 18: 638- 56

'Antimicrobial stewardship is a coherent set of actions which promote using antimicrobials in ways that ensure sustainable access to effective therapy for all who need them.'

ESGAP (European Study Group for Antimicrobial Stewardship)

Dyar, CMI 2017;23:793

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Wie man im Krankenhaus die Hygiene- Organisation verbessern kann



029A1 PENICILLINE

Penicillin G-Na

Penicillin G-Na Biochemie 5 Mega, 25 St. Dstfl.
Penicillin G-Na Biochemie 10 Mega, 25 St. Dstfl.
TTD^{*)}: 4 x 5 Mega : ⓈⓈ^{**)}
3 x 10 Mega : ⓈⓈ

029A2 ORAL-PENICILLINE

Penicillin V

Ospen 1000 Filmtabl.: Bp 10x12
Ospen 1500 Filmtabl.: Bp 10x12
TTD: 3 x 1000 mg: Ⓢ

029A3 PENICILLINASE-RESISTENTE PENICILLINE

Flucloxacillin

Floxapen 1g TSA^{***)} 10St
TTD: 3 x 2g: ⓈⓈⓈ

029A4 BREITSPEKTRUMPENICILLINE

Amoxicillin

Clamoxyl 2g TSA 5St.
TTD: 3 x 2g: ⓈⓈⓈ

Ospamox Filmtabl. 500mg 10 St
Ospamox Filmtabl. 750mg 10 St
TTD: 3 x 500 mg: Ⓢ
3 x 750 mg: Ⓢ

Ospamox Gran. f. orale Susp. 250mg/5ml 120ml
TTD: 3 x 10ml (= 3 x 500 mg): Ⓢ

^{*)} Tagestherapiedosis: bezieht sich auf einen 70 kg schweren Patienten mit normaler Nierenfunktion

^{**)} Tagestherapiekosten:
Ⓢ sehr preiswert ≤ 30 ⑆ ⓈⓈⓈⓈ nicht billig 301 - 500 ⑆
ⓈⓈ preiswert 31 - 150 ⑆ ⓈⓈⓈⓈ teuer 501 - 900 ⑆
ⓈⓈⓈ günstig 151 - 300 ⑆ ⓈⓈⓈⓈⓈ sehr teuer > 900 ⑆

^{***)} Trockenstechampulle

1998-2000: Projekt „ABS-AntiBiotikaStrategien“

- Auftraggeber: BM für Gesundheit
- Ziele:
 - Erfassung und Weiterentwicklung der “Antibiotikakultur” in Krankenanstalten
 - Optimierung der Patientenbetreuung bei Prophylaxe und Therapie
 - Reduktion von Resistenzen und Kosten

ABS ANTIBIOTIKA-STRATEGIEN

Leitlinien zur Weiterentwicklung der Antibiotika-Kultur in Krankenanstalten

2., überarbeitete Auflage, November 2002

- Bedeutung des Antibiotika-Themas und ABS-Aktivitäten
- Empfehlungen zur Antibiotika-Therapie
- Antibiotika-Listen
- Infektionsdiagnostik und Resistenzüberwachung
- Antibiotika-Verbrauch auf Basis standardisierter Tagesdosen
- Antibiotika-Organisation
- ABS-Marketing, AB-bezogene Personalentwicklung und Beratung zur AB-Kulturentwicklung

<http://www.bmsg.gv.at>
<http://www.antibiotika-strategien.at>

Autorinnen und Autoren:
Franz Allerberger, Roland Gareis, Oskar Janata, Robert Krause, Stefan Meusburger, Helmut Mittermayer, Monika Rotter-le Beau, Regina Watschinger, Agnes Wechsler-Fördös

2006-2009: EU Projekt „ABS International“

- 11 Partner aus 9 EU Mitgliedsstaaten
 - Österreich, Belgien, Deutschland, Italien, Ungarn, Tschechische Republik, Polen, Slowenien und Slowakei
- Projektdauer: 09/2006 – 02/2009 (2,5 Jahre)
- Gesamtbudget: EURO 1,3 Mio.
- EU-Förderung: 60%



MITGLIED WERDEN

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ANTIMICROBIAL STEWARDSHIP PROGRAM (ASP)

Die Österreichische Gesellschaft für Antimikrobielle Chemotherapie (ÖGACH) bietet praxisorientierte Ausbildungen im Bereich Antimicrobial Stewardship an.

Wir sind derzeit in der COVID-19 Pandemie gefordert wie nie zuvor, daher gibt es eine bunte Mischung an Absagen und Verschiebungen von Veranstaltungen. Die ÖGACH möchte Sie jedoch darüber informieren, daß alle Kurse sowie die Jahrestagung am 19. November 2020 im van Swieten Saal wie geplant stattfinden werden.

Selbstverständlich haben wir uns bereits jetzt intensiv damit befaßt, wie eine Umsetzung zu 100 % gewährleistet werden kann und bieten zusätzlich die Kurse und Veranstaltungen als Virtuelle Hybrid Kongresse zu denselben Registrierungsgebühren an.

Bitte Ihrem gewünschten Kurs einfach anmelden!
Wir freuen uns auf einen interessanten Fachaustausch.

ASP BASICS +
SUMMERSCHOOL

ASP ICU

ASP ICU UPDATE

ASP
WINTERSCHOOL

ASP OÖ UPDATE

31.08. - 04.09.2020
Fleming's Conference Hotel Wien
Neubaugürtel 26-28, 1070 Wien

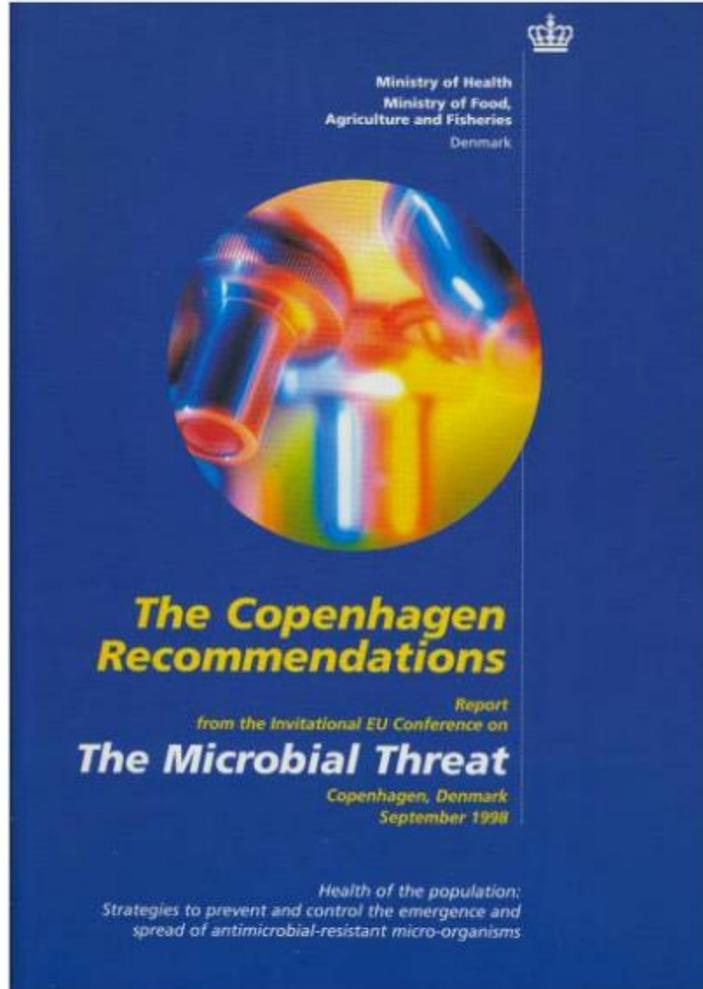
Kurskosten: € 840,-

download

Tag 1: 31.08.	Titel	Referentin
09.00 - 10.30	ASP Inhalte	Agnes Wechsler-Fördös
11.00 - 12.30	Antibiotika Gruppe 1 Laktame	Florian Thalhammer
13.30 - 15.00	Mikrobiologische Diagnostik	Rainer Gattringer

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Copenhagen 1998

“Antimicrobial teams (including clinical microbiologists, infectious disease specialists, and other appropriate specialists) should be introduced in every hospital. They should have the authority to modify antimicrobial prescriptions of individual clinicians in accordance with locally accepted guidelines, always taking account of the needs of the patient.



COMMISSION OF THE EUROPEAN COMMUNITIES

Brussels, 20.06.2001
COM(2001) 333 final

VOLUME II

Proposal for a

COUNCIL RECOMMENDATION

on the prudent use of antimicrobial agents in human medicine

(presented by the Commission)

2007

GUIDELINES

Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America Guidelines for Developing an Institutional Program to Enhance Antimicrobial Stewardship

Timothy H. Dellit,¹ Robert C. Owens,² John E. McGowan, Jr.,³ Dale N. Gerding,⁴ Robert A. Weinstein,⁵ John P. Burke,⁶ W. Charles Huskins,⁷ David L. Paterson,⁸ Neil O. Fishman,⁹ Christopher F. Carpenter,¹⁰ P. J. Brennan,⁹ Marianne Billeter,¹¹ and Thomas M. Hooton¹²

¹Harborview Medical Center and the University of Washington, Seattle; ²Maine Medical Center, Portland; ³Emory University, Atlanta, Georgia; ⁴Hines Veterans Affairs Hospital and Loyola University Stritch School of Medicine, Hines, and ⁵Stroger (Cook County) Hospital and Rush University Medical Center, Chicago, Illinois; ⁶University of Utah, Salt Lake City; ⁷Mayo Clinic College of Medicine, Rochester, Minnesota; ⁸University of Pittsburgh Medical Center, Pittsburgh, and ⁹University of Pennsylvania, Philadelphia, Pennsylvania; ¹⁰William Beaumont Hospital.



**Prudent use of antimicrobial
agents in human medicine:
third report on
implementation of the
Council recommendation**

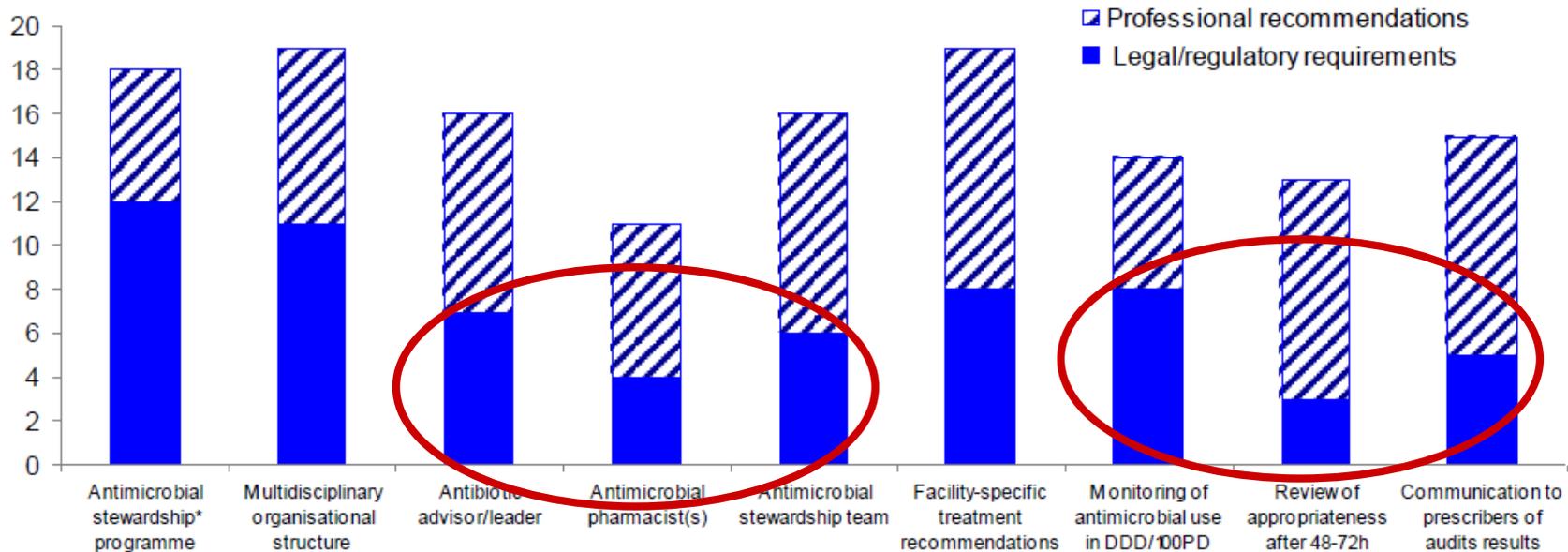
2016

Analysis of countries' reports on the implementation
of the Council recommendation of 15 November 2001
(2002/77/EC) on the prudent use of antimicrobial
agents in human medicine

4.9. Antimicrobial stewardship in hospitals

Hospitals were required to implement antimicrobial stewardship activities in 20 countries (69 %). The most common measures, in all countries but one, were to have in place a formal multidisciplinary organisational structure responsible for antimicrobial stewardship and the implementation of facility-specific treatment recommendations for common clinical conditions (Figure 6).

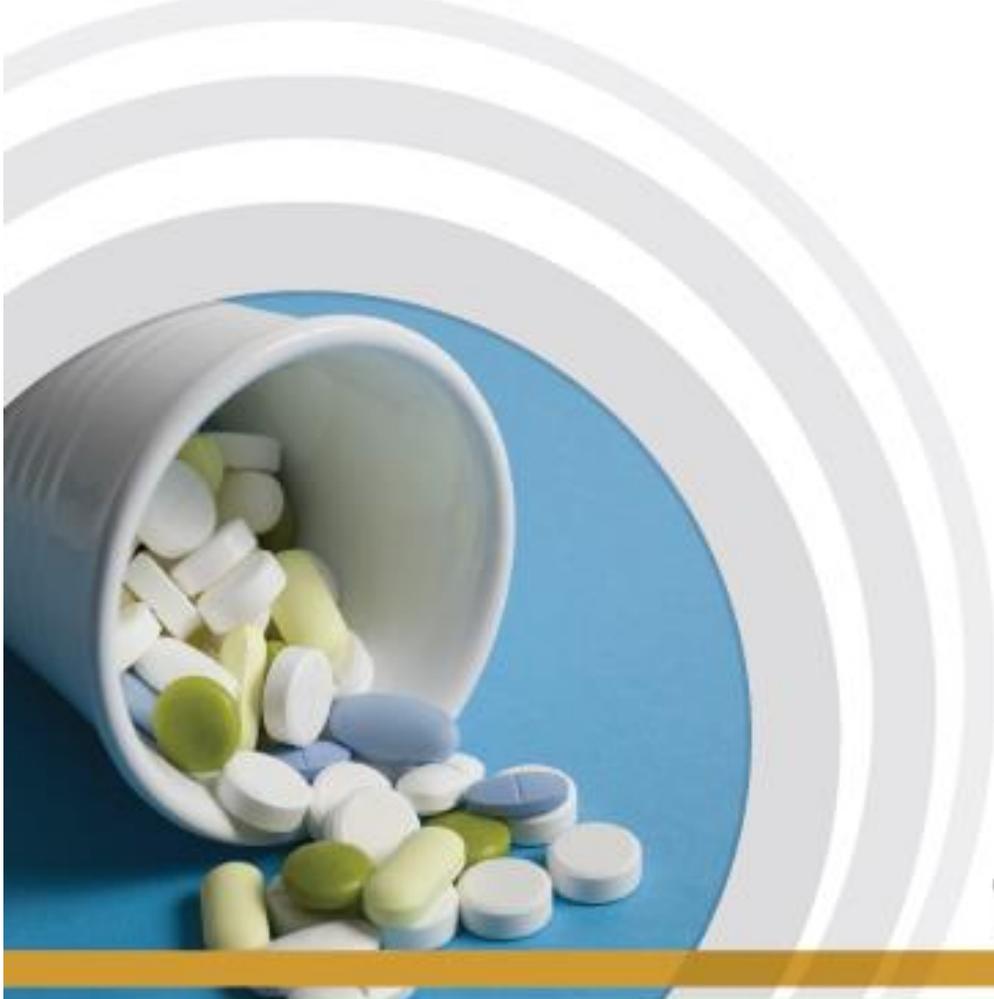
Figure 6: Antimicrobial stewardship measures required in hospitals (n = 20 countries)



Antibiotic advisor/leader = physician in charge of providing advice on antibiotic treatment to any prescriber, on request and identified as leader for antimicrobial stewardship activities.

Antimicrobial pharmacist = pharmacist responsible for ensuring appropriate antimicrobial use.

Antimicrobial stewardship team = multidisciplinary team comprising, for example, a medical doctor, a microbiologist, a pharmacist, etc.



TECHNICAL REPORT

Proposals for EU guidelines
on the prudent use of
antimicrobials in humans

Proposals for EU guidelines on the prudent use of antimicrobials in humans

Principles and elements for inclusion in guidelines.....	2
1. International – organisations, agencies	2
2. National and regional – governments, administrators, public health agencies, professional associations and scientific societies	2
3. Healthcare facilities (resources, systems and processes for healthcare facilities)	3
4. Laboratories	4
5. Prescribers	4
6. Pharmacists.....	5
7. Nurses	5
8. Infection control practitioners	5
9. Education / academics.....	6
10. Public / patients	6
11. Research	6
12. Pharmaceutical industry	6

Empfohlene Indikatoren

Proposed examples of indicators/metrics	Responsibility level
Consumption of beta-lactamase-sensitive penicillins (ATC code: J01CE) expressed as a percentage of the total consumption of antibacterials for systemic use (ATC code: J01)	National/community care
Proportion of combination treatments among total number of antimicrobial treatments	National/community care
Seasonal variation of the total antibiotic consumption (ATC code: J01) (in the community)	National/community care
Number of FTEs for antimicrobial stewardship activities	Healthcare facility
Proportion of prescriptions compliant with guidelines	Healthcare facility
Proportion of antimicrobial treatment courses with documentation of indication in the notes among all antimicrobial treatment courses	Healthcare facility
Antimicrobial consumption measured in DDDs or DOTs per 100 patient-days (in healthcare facilities)	Healthcare facility
Proportion of documented antimicrobial courses with reassessment after 48–72 hours	Hospital
Rate of compliance with administration of perioperative antimicrobial prophylaxis within 60 minutes before incision	Hospital
Rate of compliance with discontinuation of perioperative antimicrobial prophylaxis within 24 hours after initiation of surgery	Hospital

FTE, full-time equivalent; DDD, defined daily dose; DOT, day of therapy.

Nationale Initiativen

NATIONAL STRATEGY FOR COMBATING ANTIBIOTIC- RESISTANT BACTERIA

***Vision:** The United States will work domestically and internationally to prevent, detect, and control illness and death related to infections caused by antibiotic-resistant bacteria by implementing measures to mitigate the emergence and spread of antibiotic resistance and ensuring the continued availability of therapeutics for the treatment of bacterial infections.*

September 2014



Nationwide implementation of antibiotic management teams in Belgian hospitals: a self-reporting survey

Evelyne Van Gastel^{1*}, Michiel Costers¹, Willy E. Peetermans² and Marc J. Struelens³ on behalf of the Hospital
Medicine Working Group of the Belgian Antibiotic Policy Coordination Committee†

¹Belgian Antibiotic Policy Coordination Committee (BAPCOC), Federal Public Service Health, Food Chain Safety and Environment, Victor Horta plein 40/10, 1060 Brussels, Belgium; ²Department of Internal Medicine—Infectious Diseases, Universitaire Ziekenhuizen Leuven Gasthuisberg, Herestraat 49, 3000 Leuven, Belgium; ³Department of Microbiology, Université Libre de Bruxelles Hôpital Erasme, Route de Lennik 808, 1070 Brussels, Belgium

*Corresponding author. Tel: +32-2-524-85-95; Fax: +32-2-524-85-99; E-mail: evelyne.vangastel@health.fgov.be

†The other members of the Hospital Medicine Working Group of the Belgian Antibiotic Policy Coordination Committee are listed in the Acknowledgements section.

Received 16 October 2009; returned 19 November 2009; revised 26 November 2009; accepted 27 November 2009

Objectives: Antibiotic management teams (AMTs) have been advocated to optimize the use of antimicrobials in hospitals. Since 2002, the Belgian Antibiotic Policy Coordination Committee (BAPCOC) has supported the development of AMTs in Belgian hospitals with policy guidance and federal funding for antibiotic managers. We per-

*Corresponding author. Tel: +32-2-524-85-95; Fax: +32-2-524-85-99; E-mail: evelyne.vangastel@health.fgov.be
†The other members of the Hospital Medicine Working Group of the Belgian Antibiotic Policy Coordination Committee are listed in the Acknowledgements section.

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Objectives: Antibiotic management teams (AMTs) have been advocated to optimize the use of antimicrobials in hospitals. Since 2002, the Belgian Antibiotic Policy Coordination Committee (BAPCOC) has supported the development of AMTs in Belgian hospitals with policy guidance and federal funding for antibiotic managers. We performed a national, self-reporting survey to assess the level of AMT activities in 2007.

Methods: A structured questionnaire survey was performed on the composition, organization and service activities of the AMT in all acute care and larger chronic care hospitals in the country in 2007. Descriptive statistics were stratified by duration of AMT funding.

Results: Completed questionnaires were provided by 112 of 116 hospitals (response rate, 96.6%). Multidisciplinary AMTs varied in size (mean 10, range 2–28 members). Antibiotic stewardship tools used by AMTs included: hospital antibiotic formulary (96.3% of hospitals); practice guidelines for antibiotic therapy and surgical prophylaxis (91.6% and 96.3%, respectively); list of ‘restricted’ antimicrobial agents (75.9%); concurrent review of antibiotic therapies (64.2%); de-escalation of therapy after a few days (63.9%); sequential intravenous/oral therapy for antibiotics with equivalent bioavailability (78.7%); dedicated antimicrobial order forms (36.1%); automatic stop of delivery (43.5%); analysis of antibiotic consumption data (96.2%); and analysis of microbial resistance data (89.8%).

Conclusions: These data demonstrate a well-developed structure of AMTs in Belgian hospitals and the broad range of services provided. Technical and financial support by healthcare authorities was key to the extensive implementation of antimicrobial stewardship programmes across the national hospital care system.

Keywoi

216 x 279 mm



12:48

BMJ Open The Belgian policy of funding antimicrobial stewardship in hospitals and trends of selected quality indicators for antimicrobial use, 1999–2010: a longitudinal study

Marie-Laurence Lambert,¹ Robin Bruyndonckx,² Herman Goossens,³ Niel Hens,^{2,4} Marc Aerts,² Boudewijn Catry,¹ Fiona Neely,¹ Dirk Vogelaers,⁵ Naima Hammami¹

- Between 1999 and 2010:
QI Surgery (AB prophylaxis) improved from 59% to 71%,
QI Parenteral/Oral Switch from 0.72 to 0.97
QI DDD (Mean number of DDDs/100 PD) from 96 to 64

IfSG - Gesetz zur Verhütung und Bekämpfung von Infektionskrankheiten beim Menschen (Infektionsschutzgesetz)

Änderung 2011

§ 23 IfSG Nosokomiale Infektionen; Resistenzen; Rechtsverordnungen durch die Länder

(4) **Die Leiter von Krankenhäusern** und von Einrichtungen für ambulantes Operieren **haben sicherzustellen**, dass die vom Robert Koch-Institut nach § 4 Absatz 2 Nummer 2 Buchstabe b festgelegten nosokomialen Infektionen und das Auftreten von Krankheitserregern mit speziellen Resistenzen und Multiresistenzen fortlaufend in einer gesonderten Niederschrift aufgezeichnet, bewertet und sachgerechte Schlussfolgerungen hinsichtlich erforderlicher Präventionsmaßnahmen gezogen werden und dass die erforderlichen Präventionsmaßnahmen dem Personal mitgeteilt und umgesetzt werden.

Darüber hinaus haben die Leiter sicherzustellen, **dass** die nach § 4 Absatz 2 Nummer 2 Buchstabe b festgelegten **Daten zu Art und Umfang des Antibiotika-Verbrauchs fortlaufend in zusammengefasster Form aufgezeichnet, unter Berücksichtigung der lokalen Resistenzsituation bewertet und sachgerechte Schlussfolgerungen hinsichtlich des Einsatzes von Antibiotika gezogen werden und dass die erforderlichen Anpassungen des Antibiotikaeinsatzes dem Personal mitgeteilt und umgesetzt werden.** Die Aufzeichnungen nach den Sätzen 1 und 2 sind zehn Jahre nach deren Anfertigung aufzubewahren. Dem zuständigen Gesundheitsamt ist auf Verlangen Einsicht in die Aufzeichnungen, Bewertungen und Schlussfolgerungen zu gewähren.

Uradni list Republike Slovenije



Internet: www.uradni-list.si

e-pošta: info@uradni-list.si

Št. **10** Ljubljana, petek **18. 2. 2011**

ISSN 1318-0576

Leto XXI

Two Slovenian rules (in pdf of the Slovenian Official Journal) regulating antimicrobial stewardship (consumption surveillance and rational use including guidelines).

DRŽAVNI ZBOR

374. Zakon o prostovoljstvu (ZProst)

Na podlagi druge alineje prvega odstavka 107. člena in prvega odstavka 91. člena Ustave Republike Slovenije izdajam

U K A Z

o razglasitvi Zakona o prostovoljstvu (ZProst)

Razglasjam Zakon o prostovoljstvu (ZProst), ki ga je sprejel Državni zbor Republike Slovenije na seji 3. februarja 2011.

Št. 003-02-2/2011-17

Liubliana, dne 11. februarja 2011

3. člen

(spodbujanje organiziranega prostovoljstva)

S tem zakonom se vzpostavljajo pogoji za zagotavljanje enakopravnosti, varnosti in preglednosti delovanja vseh posameznikov in organizacij, ki so vključeni v organizirano prostovoljstvo in določajo ukrepi za spodbujanje in razvoj organiziranega prostovoljstva kot pomembne družbene vrednote.

4. člen

(subsidiarna uporaba zakona)

Ta zakon se ne uporablja za posamezne pravice in obveznosti prostovoljskih organizacij in prostovoljcev, ki so s posebnim zakonom drugače urejene.



EDITORIALS

The new UK antimicrobial resistance strategy and action plan

A major societal, political, clinical, and research challenge

Anthony S Kessel *honorary professor*¹, Mike Sharland *professor in paediatric infectious diseases*²

S3- Leitlinie

Strategien zur Sicherung rationaler Antibiotika-Anwendung im Krankenhaus

AWMF-Registernummer 092/001 – update 2018

S3-Leitlinie der Deutschen Gesellschaft für Infektiologie e.V. (DGI) (federführend) in Zusammenarbeit mit den folgenden Fachgesellschaften/Verbänden/Institutionen:

Bundesverband Deutscher Krankenhausapotheker e.V. (ADKA)
Deutsche Gesellschaft für Hygiene und Mikrobiologie e.V. (DGHM)
Paul-Ehrlich-Gesellschaft für Chemotherapie e.V. (PEG)
Deutsche Gesellschaft für Krankenhaushygiene e.V. (DGKH)
Deutsche Gesellschaft für Anästhesiologie & Intensivmedizin e.V. (DGAI)
Deutsche Gesellschaft für Innere Medizin e.V. (DGIM)

Arbeitsgemeinschaft Österreichischer Krankenhausapotheker (AAHP)
Österreichische Gesellschaft für Infektionskrankheiten und Tropenmedizin (ÖGIT)
Österreichische Gesellschaft für antimikrobielle Chemotherapie (ÖGACH)

Dr. Dr. Katja de With¹, Katja Wilke², Prof. Dr. Winfried V. Kern³, PD Dr. Richard Strauß⁴, Dr. Evelyn Kramme⁵, Dr. Anette Friedrichs⁶, Dr. Thomas Holzmann⁷, Prof. Dr. Heinrich K. Geiss⁸, Dr. Caroline Isner⁹, Dr. Matthias Fellhauer¹⁰, Dr. Andreas von Ameln-Mayerhofer¹¹, Prof. Dr. Dr. Marianne Abele-Horn¹², Prof. Dr. Georg Häcker¹³, Dr. Peter Walger¹⁴, Prof. Dr. Maria Deja¹⁵, Prof. Dr. J. Janne Vehreschild¹⁶, Anna Kather²²

Dr. Emanuela Friese¹⁹, Dr. Ulla Porsche¹⁷, Dr. Oskar Janata²⁰, Prof. Dr. Robert Krause²¹, Dr. Agnes Wechsler-Fördös¹⁸

Maßnahmen Ziel 1	Status	Priorität	Umsetzung bis	Zuständigkeiten
Etablierung eines ASP-Teams / Infektiologin/Infektiologe / einer/eines ASP-beauftragte/r Ärztin/Arzt mit geregelter Stundenäquivalent und ausreichenden Ressourcen zur Planung und Steuerung von ASP in KA	empfohlen, tw. bereits vorhanden	hoch	Ende 2015	BMG, Parlament, Bundesländer, Kostenträger, Krankenanstalten
Definition des Leistungsspektrums von und Bedarfserhebung an Infektiologinnen/Infektiologen	empfohlen	hoch	2014	BMG
Verpflichtung der KA, den Antibiotikaverbrauch in international standardisierter Form periodisch herauszugeben (siehe Kapitel Surveillance), um in Zusammenschau mit den Resistenzdaten therapeutische Konsequenzen zu ziehen	empfohlen	hoch	Ende 2014	Krankenanstalten
Überprüfung der Empfehlungen zu Prozessen und Strukturen in den künftigen deutsch-österreichischen Leitlinien für Hospital Antibiotic Stewardship in Hinblick auf Aktualität, Realisierbarkeit und Finanzierbarkeit	empfohlen	hoch	2014	BMG, Bundesländer, Kostenträger, Fachgesellschaften
Erhebung von und Auszeichnungen für KA, die bereits ASP durchführen – ASP-Diplom	geplant	hoch	2014	BMG
Angeführte Strukturmaßnahmen im ÖSG verankern	empfohlen	hoch	2014	BMG

Nationaler Aktionsplan zur Antibiotikaresistenz

NAP-AMR



Tabelle 8: Kapitel Antimicrobial Stewardship/Maßnahmen zu Ziel 1

Maßnahmen Ziel 1	Status	Priorität	Umsetzung bis	Zuständigkeiten
Überprüfung der Empfehlungen der S3 Leitlinie in Hinsicht auf Aktualität und Realisierbarkeit in Österreich	erledigt	hoch	2016	BMASGK, Fachgesellschaften
Erstellung eines Qualitätsstandards Antibiotika-Anwendung in Krankenanstalten (Antibiotic Stewardship Program, ASP)	empfohlen	hoch	2018	BMASGK, GÖG, Fachgesellschaften
Erhebung des Antibiotika-Verbrauchs in Krankenanstalten (siehe Kapitel Surveillance, Ziel 3)	empfohlen	hoch	laufend ab 2018	BMASGK
Etablierung von ASP im niedergelassenen Bereich	empfohlen	hoch	2020	Medizinische Fachgesellschaften
Angeführte Strukturmaßnahmen im ÖSG verankern	empfohlen	hoch	2018	BMASGK



Ressourcen? Personal?



A European One Health Action Plan against Antimicrobial Resistance (AMR)



Thomas P. Van Boeckel et al. Science 2017;357:1350-1352



“it is too late for the patients already dying of resistant infections”



Emergence of plasmid-mediated colistin resistance mechanism MCR-1 in animals and human beings in China: a microbiological and molecular biological study

Yi-Yun Liu, Yang Wang*, Timothy R Walsh, Ling-Xian Yi, Rong Zhang, James Spencer, Yohei Doi, Guobao Tian, Baolei Dong, Xianhui Huang, Lin-Feng Yu, Danxia Gu, Hongwei Ren, Xiaojie Chen, Luchao Lv, Dandan He, Hongwei Zhou, Zisen Liang, Jian-Hua Liu, Jianzhong Shen*

Interpretation The emergence of MCR-1 heralds the breach of the last group of antibiotics, polymyxins, by plasmid-mediated resistance. Although currently confined to China, MCR-1 is likely to emulate other global resistance mechanisms such as NDM-1. Our findings emphasise the urgent need for coordinated global action in the fight against pan-drug-resistant Gram-negative bacteria.

- **In November 2016, the Chinese government decided to ban the use of colistin as a feed additive on livestock farms.**

Lancet Infect Dis 2016;16:161-68

Lancet Infect Dis 2018;18:256

*“it is too late for the patients already dying
of resistant infections”*



MCR-1 detected worldwide

Lancet Infect Dis 2016;16:161-68

Lancet Infect Dis 2018;18:256

Changes in colistin resistance and *mcr-1* abundance in *Escherichia coli* of animal and human origins following the ban of colistin-positive additives in China: an epidemiological comparative study



Yang Wang*, Chunyan Xu*, Rong Zhang*, Yiqiang Chen*, Yingbo Shen*, Fupin Hu*, Dejun Liu, Jiayue Lu, Yan Guo, Xi Xia, Junyao Jiang, Xueyang Wang, Yulin Fu, Lu Yang, Jiayi Wang, Juan Li, Chang Cai, Dandan Yin, Jie Che, Run Fan, Yongqiang Wang, Yan Qing, Yi Li, Kang Liao, Hui Chen, Mingxiang Zou, Liang Liang, Jin Tang, Zhangqi Shen, Shaolin Wang, Xiaorong Yang, Congming Wu, Shixin Xu, Timothy R Walsh, Jianzhong Shen

Lancet Infect Dis 2020

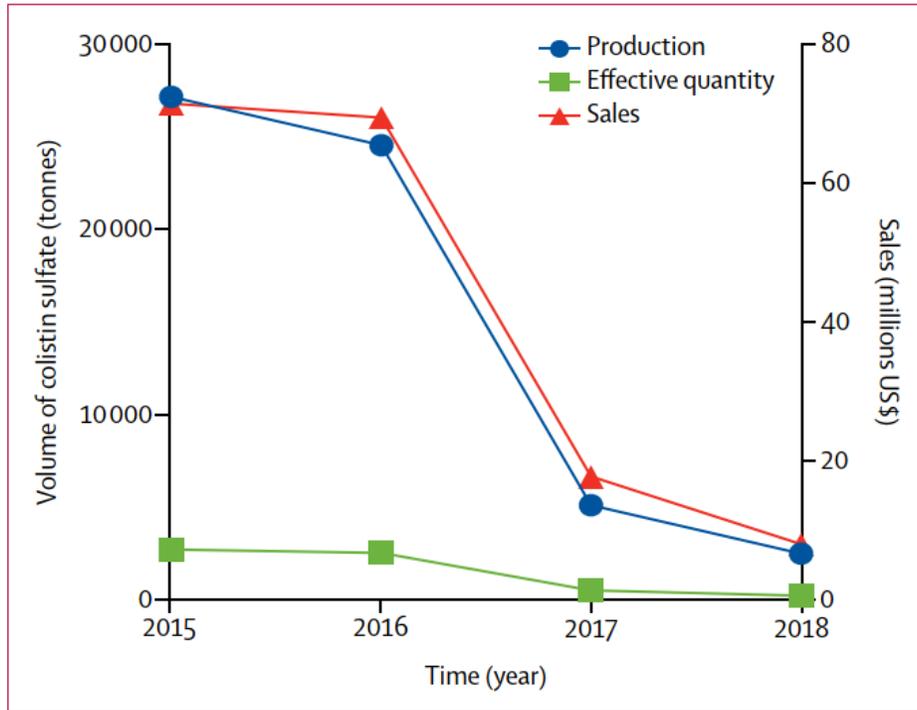


Figure 2: Production and sales of colistin sulfate premix in China in 2015–18

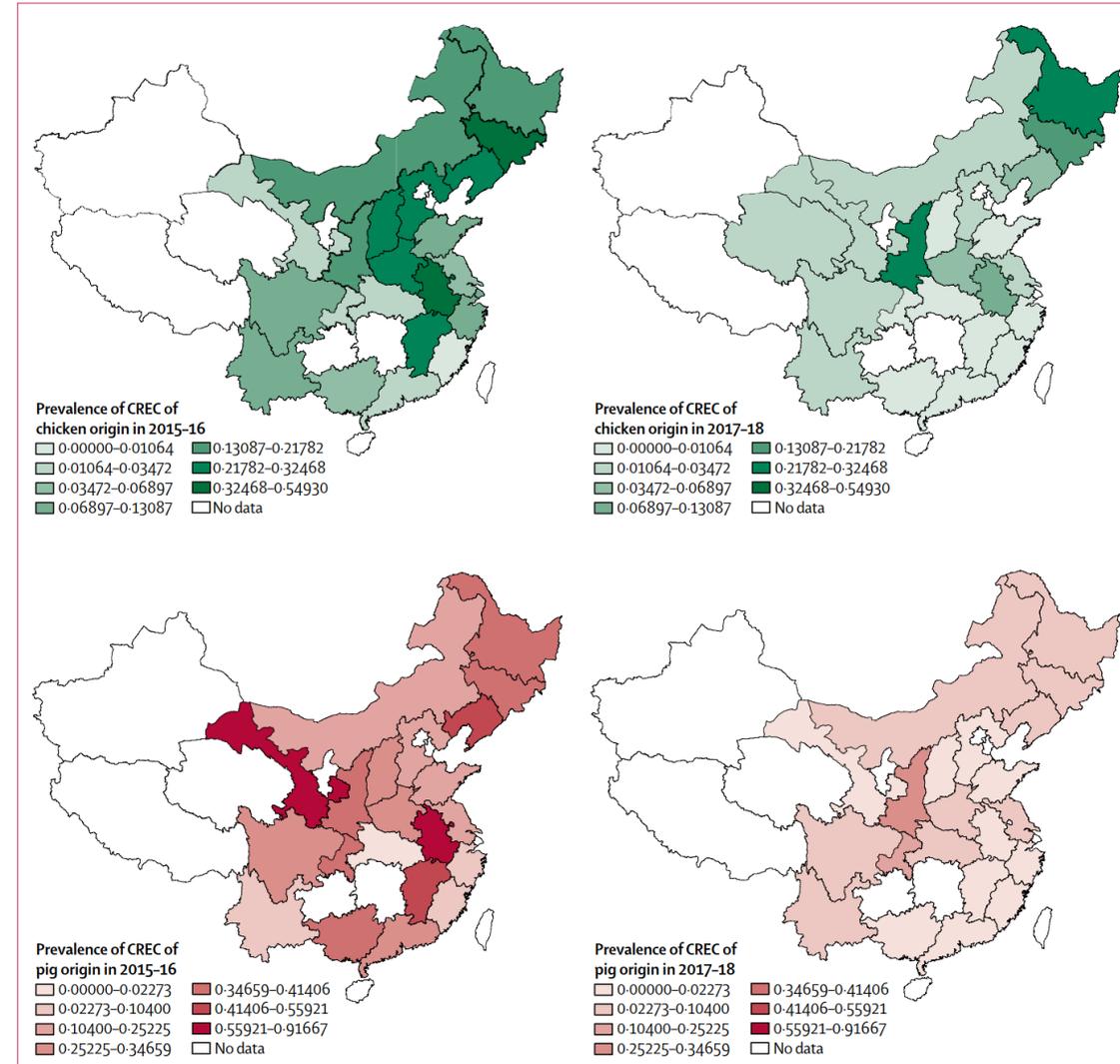
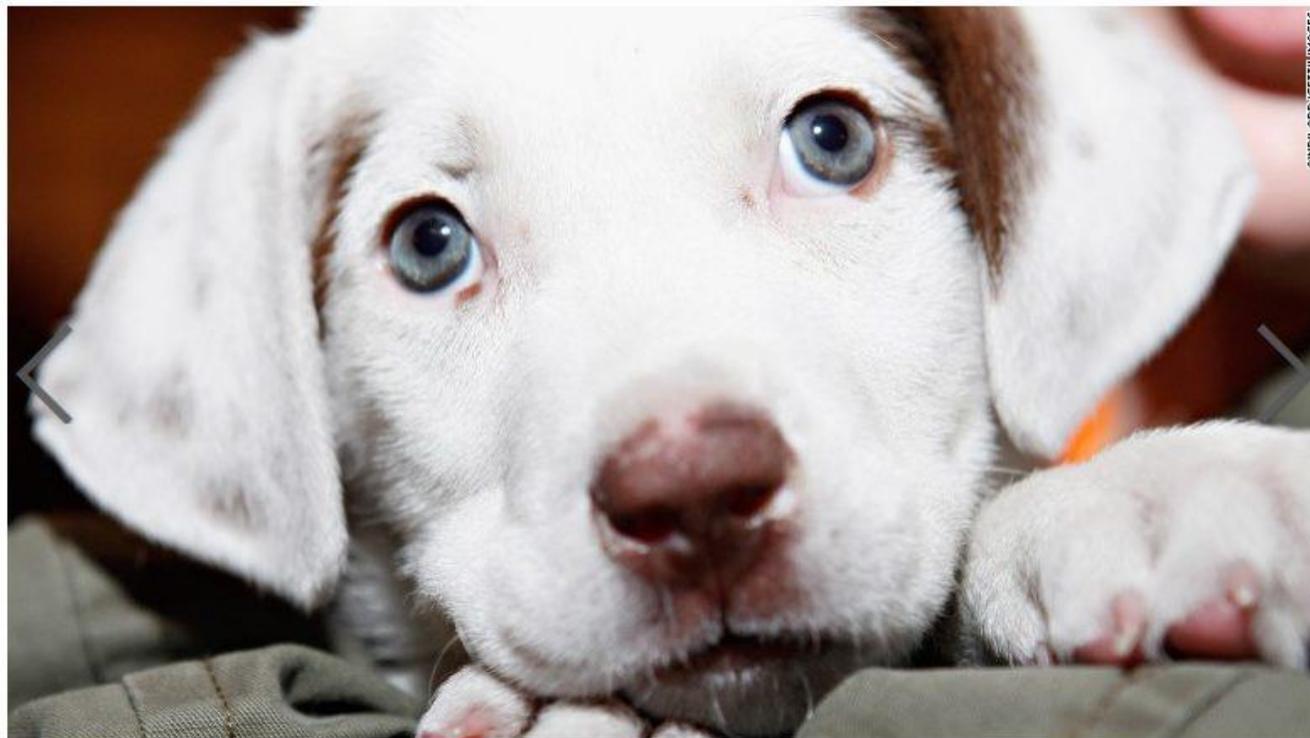


Figure 3: Prevalence of animal-derived CREC in 23 provinces in China in 2015–16 and 2017–18

Puppies to blame for drug-resistant infection in 118 people

By Susan Scutti, CNN

🕒 Updated 1700 GMT (0100 HKT) September 20, 2018



Photos: Diseases you can catch from animals

Dogs – Roundworm is one of the most common diseases that we get from dogs. Every year there are about 10,000 cases of roundworm spreading through the body and causing fever and fatigue. Dogs and puppies also can transmit campylobacter infections. Symptoms include diarrhea, cramping, abdominal pain and fever.

News & buzz



Low testosterone, 'r for older...



Pompeo crack improper use, State...

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Zweigelt 2016
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7. ABS Rasche Diagnostik
8. ABS Kurze Therapiedauer
9. ABS Indikatoren
10. ABS Was bringt's?

Original Investigation | Infectious Diseases

Feasibility of Core Antimicrobial Stewardship Interventions in Community Hospitals

Deverick J. Anderson, MD, MPH; Shera Watson, MPH; Rebekah W. Moehring, MD, MPH; Lauren Komarow, MS; Matthew Finnemeyer, MPH; Rebekka M. Arias, BS; Jacqueline Huvane, PhD; Carol Bova Hill, PhD; Nancie Deckard, BSN, MS; Daniel J. Sexton, MD; for the Antibacterial Resistance Leadership Group (ARLG)

- Preauthorization (PA) and postprescription audit and review (PPR)
- Targets: Vancomycin, piperacillin-tazobactam, antipseudomonal carbapenems
- Median time dedicated to the stewardship interventions varied, 5-19h/week
- Overall antibiotic use decreased during PPR compared with historical controls (mean days of therapy/1000 pt-days, 925.2[109.8] vs 965.3[109.4]; mean difference, -40.1; 95% CI, -71.7 to -8.6)

2019;2(8):e199369.doi:10.1001/jamanetworkopen.2019.9369

Antimicrobial stewardship across 47 South African hospitals: an implementation study



*Adrian J Brink, Angeliki P Messina, Charles Feldman, Guy A Richards, Piet J Becker, Debra A Goff, Karri A Bauer, Dilip Nathwani, Dena van den Bergh, on behalf of the Netcare Antimicrobial Stewardship Study Alliance**

- Pharmacist-driven, prospective audit and feedback strategy for antimicrobial stewardship on the basis of a range of improvement science and behavioural principles

Targeted process measures

Cultures not done before commencement of empirical antibiotics

More than 7 days of antibiotic treatment

More than 14 days of antibiotic treatment

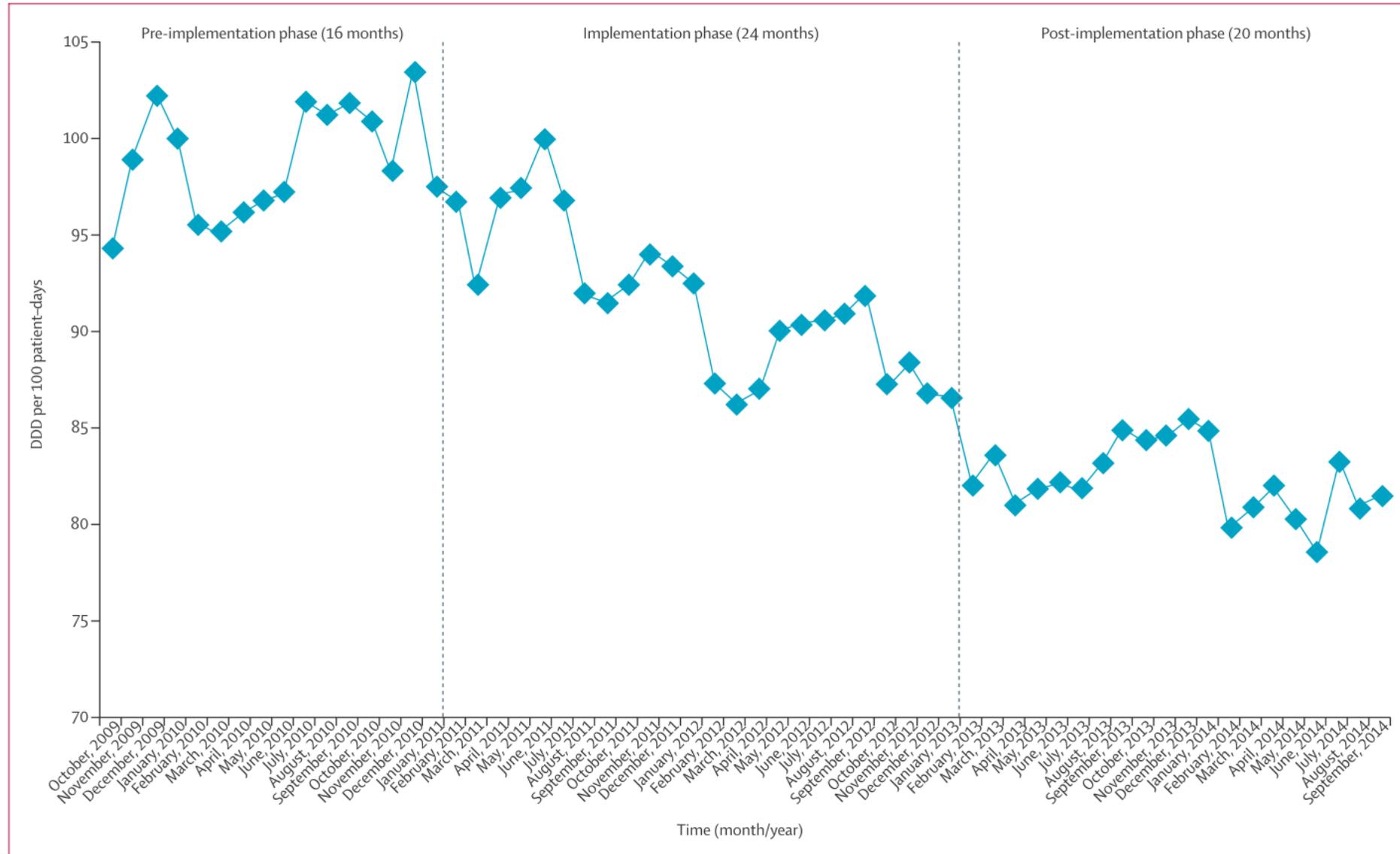
Use of more than four antibiotics concurrently

Redundant or so-called double antibiotic coverage

Lancet Infect Dis 2016

Outcome ABS Südafrika

- ↓ mean DDD/100 PD after intervention: 101.38 (93.05–109.72) to 83.04 (74.87–91.22) ($p < 0.0001$).





American Journal of Infection Control

journal homepage: www.ajicjournal.org

Major Article

Exploring the nurses' role in antibiotic stewardship: A multisite qualitative study of nurses and infection preventionists

Eileen J. Carter PhD, RN ^{a,b,*}, William G. Greendyke MD ^{c,d}, E. Yoko Furuya MD, MS ^{c,d},
Arjun Srinivasan MD, FSHEA ^e, Alexa N. Shelley MS, FNP-BC ^{a,b}, Aditi Bothra BS, CHES ^f,
Lisa Saiman MD, MPH ^{c,g}, Elaine L. Larson PhD, RN, FAAN, CIC ^{a,f}

1. Questioning the need for urine cultures;
2. Ensuring proper culturing technique;
3. Recording an accurate penicillin drug allergy history;
4. Encouraging the prompt transition from IV to oral antibiotics
5. Initiating an antibiotic timeout.

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Mechanisms of anti-microbial harm

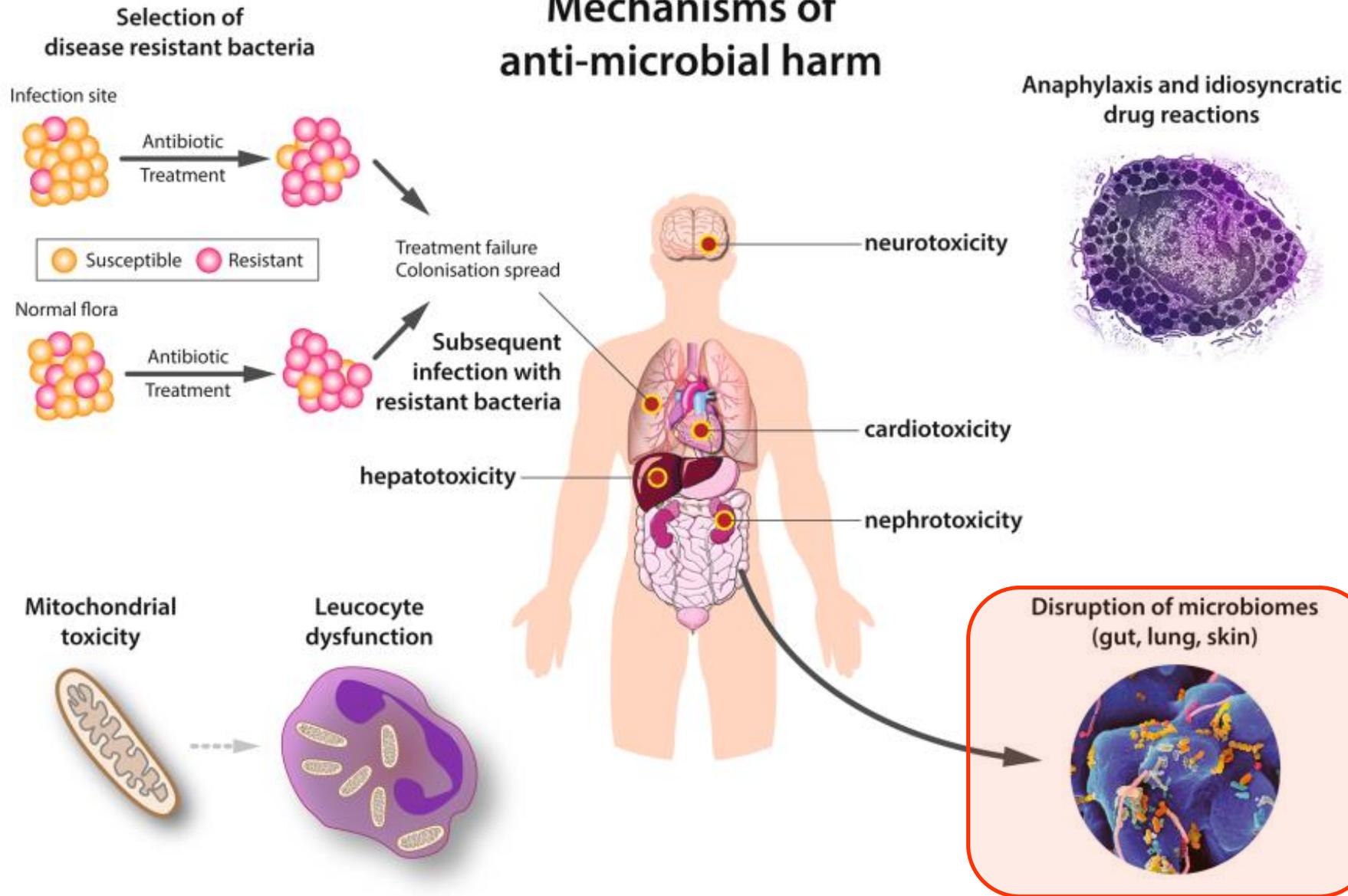
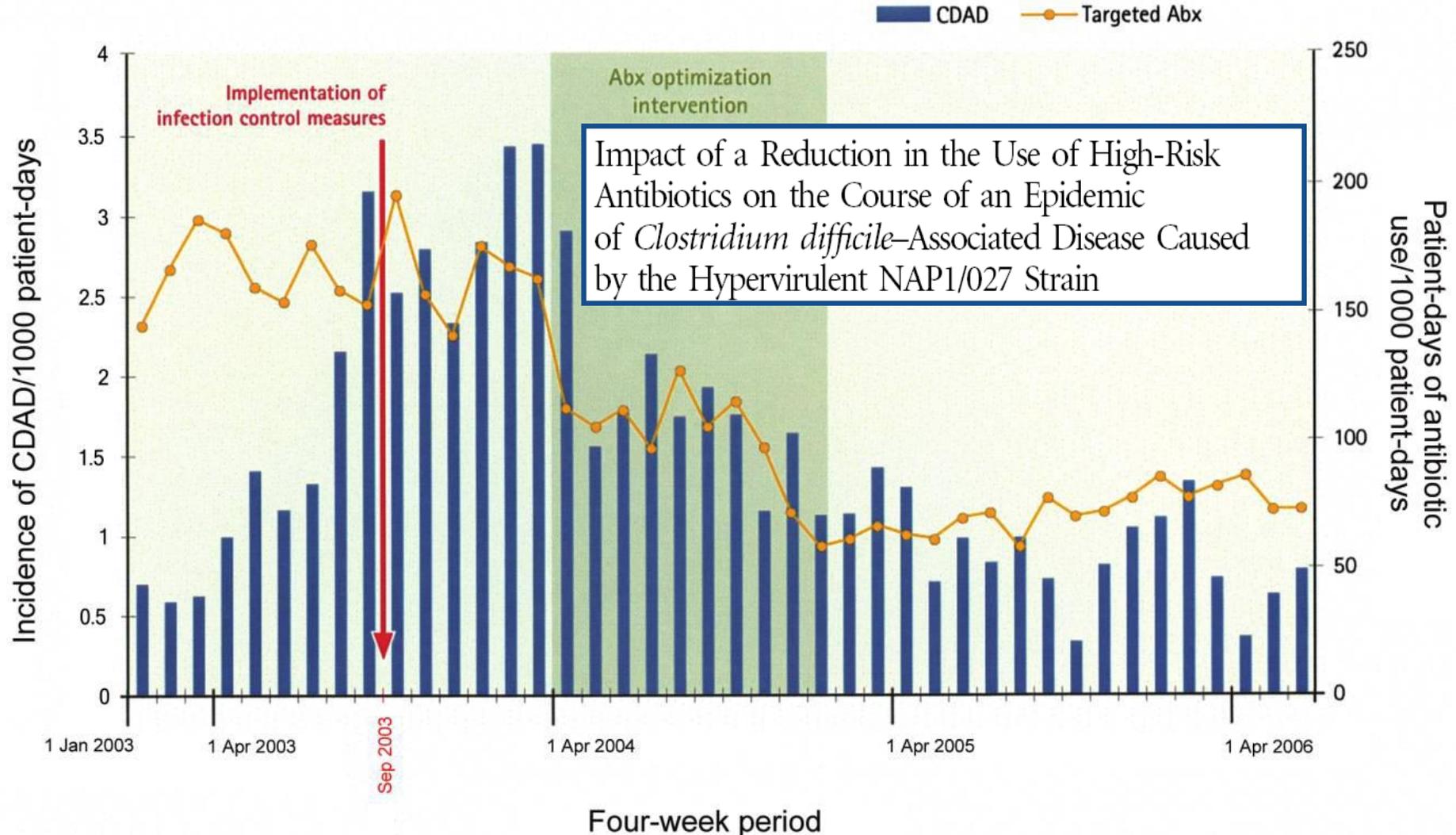


Fig. 1 Summary of the mechanisms by which antimicrobials may harm patients

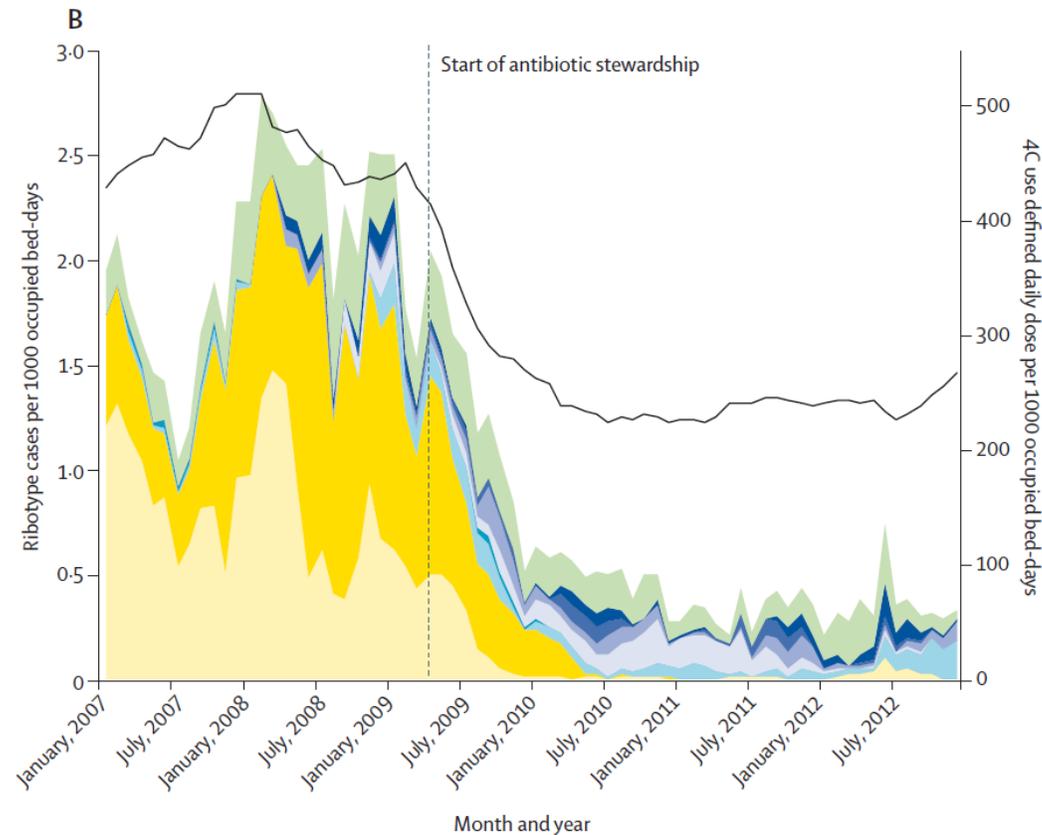
ASP targeting adverse effects: *Clostridium difficile*



Valiquette et al CID 2007

Effect of a national 4C antibiotic stewardship intervention on the clinical and molecular epidemiology of *Clostridium difficile* infections in a region of Scotland: a non-linear time-series analysis

Timothy Lawes, José-María Lopez-Lozano, Cesar A Nebot, Gillian Macartney, Rashmi Subbarao-Sharma, Karen D Wares, Carolyn Sinclair, Ian M Gould



Lancet Infect Dis 2017; 17: 194–206

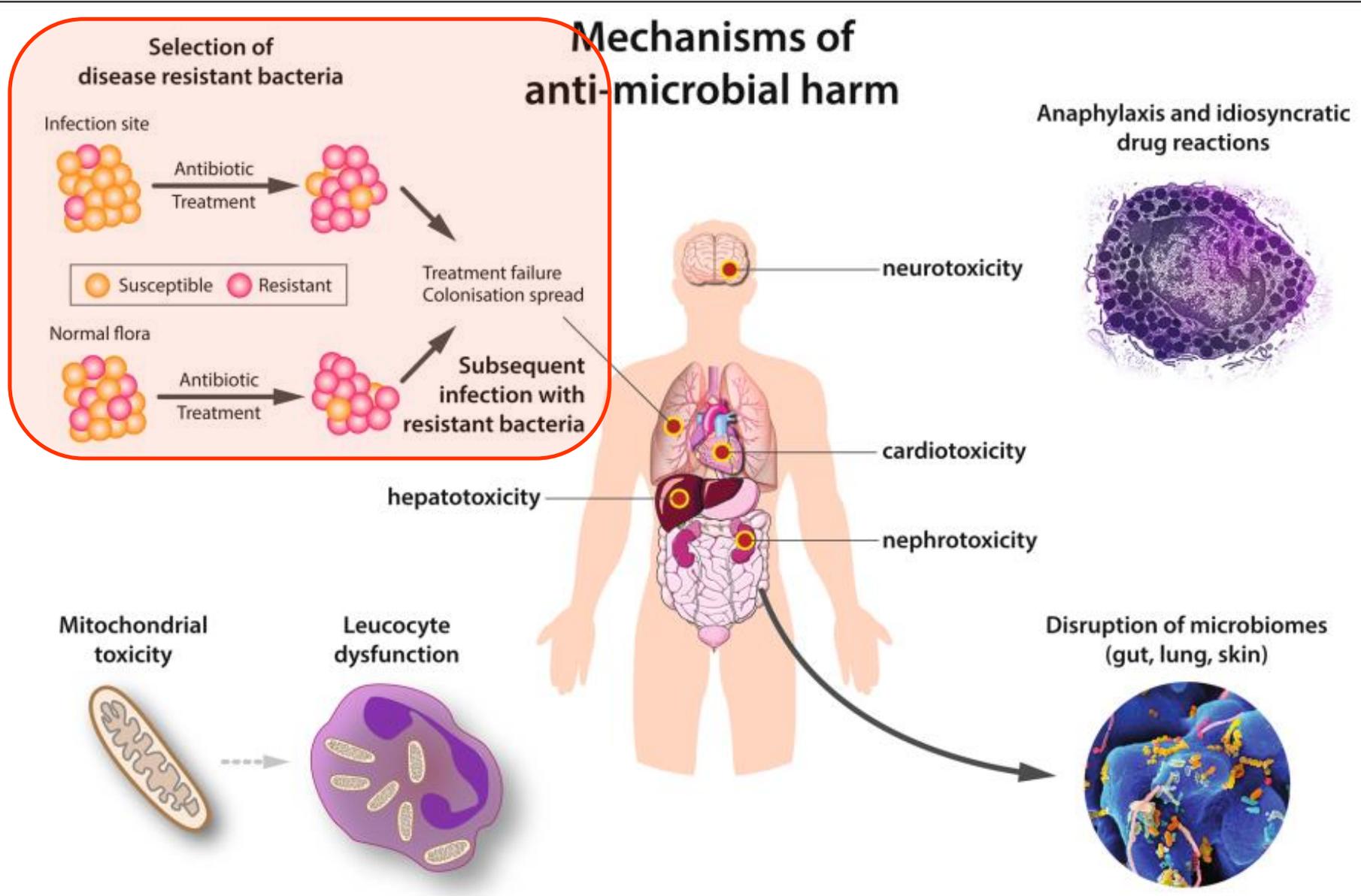


Fig. 1 Summary of the mechanisms by which antimicrobials may harm patients

Original Article

Improvement of gram-negative susceptibility to fluoroquinolones after implementation of a pre-authorization policy for fluoroquinolone use: A decade-long experience

Rachael A. Lee MD¹, Morgan C. Scully MD¹, Bernard C. Camins MD, MSc¹, Russell L. Griffin PhD², Danielle F. Kunz RPh, BCPS (AQ)-ID³, Stephen A. Moser PhD⁴, Craig J. Hoesley MD¹, Todd P. McCarty MD¹ and Peter G. Pappas MD¹

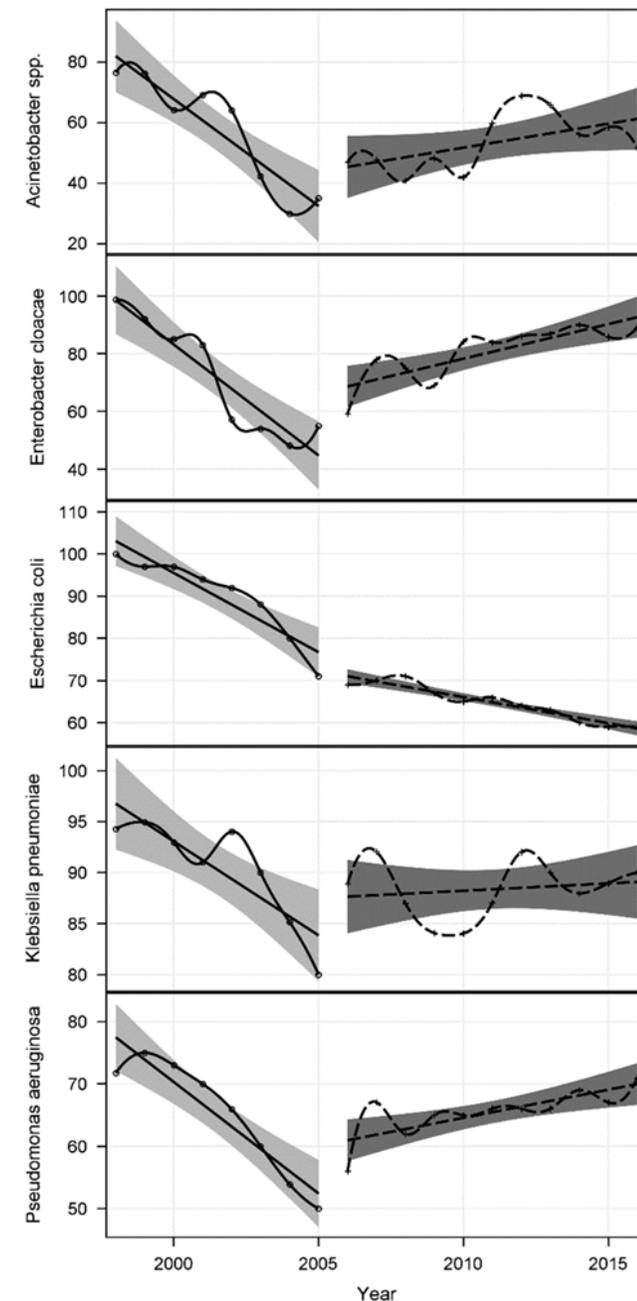
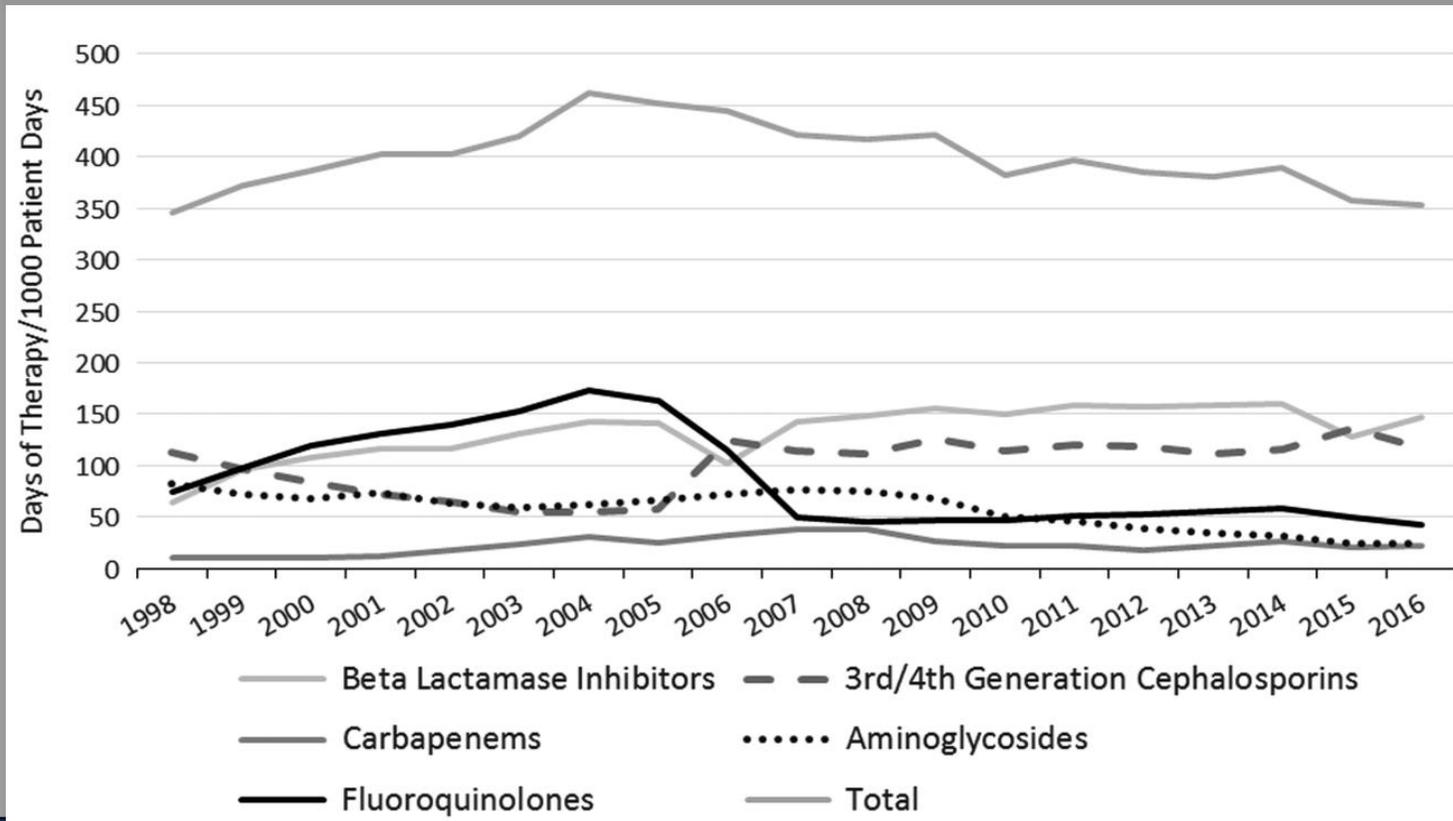


Fig. 2. Linear annual trends in fluoroquinolone-susceptibility rates before and after implementation of a policy requiring prior authorization for fluoroquinolone prescription.



Meropenem antimicrobial stewardship program: clinical, economic, and antibiotic resistance impact

J. F. García-Rodríguez¹  · B. Bardán-García² · M. F. Peña-Rodríguez³ · H. Álvarez-Díaz¹ · A. Mariño-Callejo¹

Received: 30 July 2018 / Accepted: 16 October 2018
© Springer-Verlag GmbH Germany, part of Springer Nature 2018

Abstract

There are few prospective studies with sufficient duration in time to evaluate clinical and antibiotic resistance impact of antibiotic stewardship programs (ASP). This is a descriptive study between January 2012 and December 2017, pre-post intervention. A meropenem ASP was initiated in January 2015; in patients who started treatment with meropenem, an infectious disease physician performed treatment recommendations to prescribers. Prospective information was collected to evaluate adequacy of meropenem prescription to local guidelines and to compare results between cases with accepted or rejected intervention. Analysis was performed to verify variables associated with intervention acceptance and with any significant change in meropenem consumption, hospital-acquired multidrug-resistant (MDR) bloodstream infections (BSIs), and 30-day all-cause crude death in MDR BSIs. Adequacy of meropenem prescription and de-escalation from meropenem treatment to narrower-spectrum antibiotic improved progressively over time, after ASP implementation ($p < 0.001$). Interventions on prescription were performed in 330 (38.7%) patients without meropenem justified treatment; in 269, intervention was accepted and in 61 not. Intervention acceptance was associated with shorter duration of treatment, cost, and inpatient days ($p < 0.05$); intervention rejection was not associated with severity of patient. During the period 2015–2017, meropenem consumption decreased compared with 2012–2014 (rate ratio [RR] 0.67; 95% CI 0.58–0.77, $p < 0.001$). Also decreased were hospital-acquired MDR BSI rate (RR 0.63; 95% CI 0.38–1.02, $p = 0.048$) and 30-day all-cause crude death in MDR BSIs (RR 0.45; 95% CI 0.14–1.24, $p = 0.096$), coinciding in time with ASP start-up. The decrease and better use of meropenem achieved had a sustained clinical, economic, and ecological impact, reducing costs and mortality of hospital-acquired MDR BSIs.

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Auswirkung „Pencillinallergie“

- Retrospektive Kohortenstudie 51,582 „Penicillinallergie“
- Ø 0.59 mehr Aufenthaltstage (9.9%; 95% CI, 0.47-0.71)
- Signifikant häufiger
 - Fluorochinolone, Clindamycin, Vancomycin (P < .0001)
- Häufiger Infektionen in „Allergiekohorte“
 - C difficile 23.4% (95% CI, 15.6% to 31.7%)
 - MRSA 14.1% (95% CI, 7.1% to 21.6%)
 - VRE 30.1% (95% CI, 12.5% to 50.4%)

Macy, J Allergy Clin Immunol 2014;133:790

Figure 1. Symptoms Distinguishing Groups of Cutaneous Drug Reactions

IgE-mediated reactions	Benign T-cell-mediated reactions	Severe T-cell-mediated reactions or severe cutaneous adverse reactions
Onset minutes to hours into treatment course Raised off of the skin Pruritic Each lesion lasts <24 h Fades without scarring	Onset days into treatment course Typically less pruritic than IgE-mediated reactions Each lesion lasts >24 h Fine desquamation with resolution over days to weeks	Onset days to weeks into treatment course Blistering and/or skin desquamation Mucosal and/or organ involvement Usually requires hospitalization
		
		
		

JAMA January 15, 2019 Volume 321, Number 2

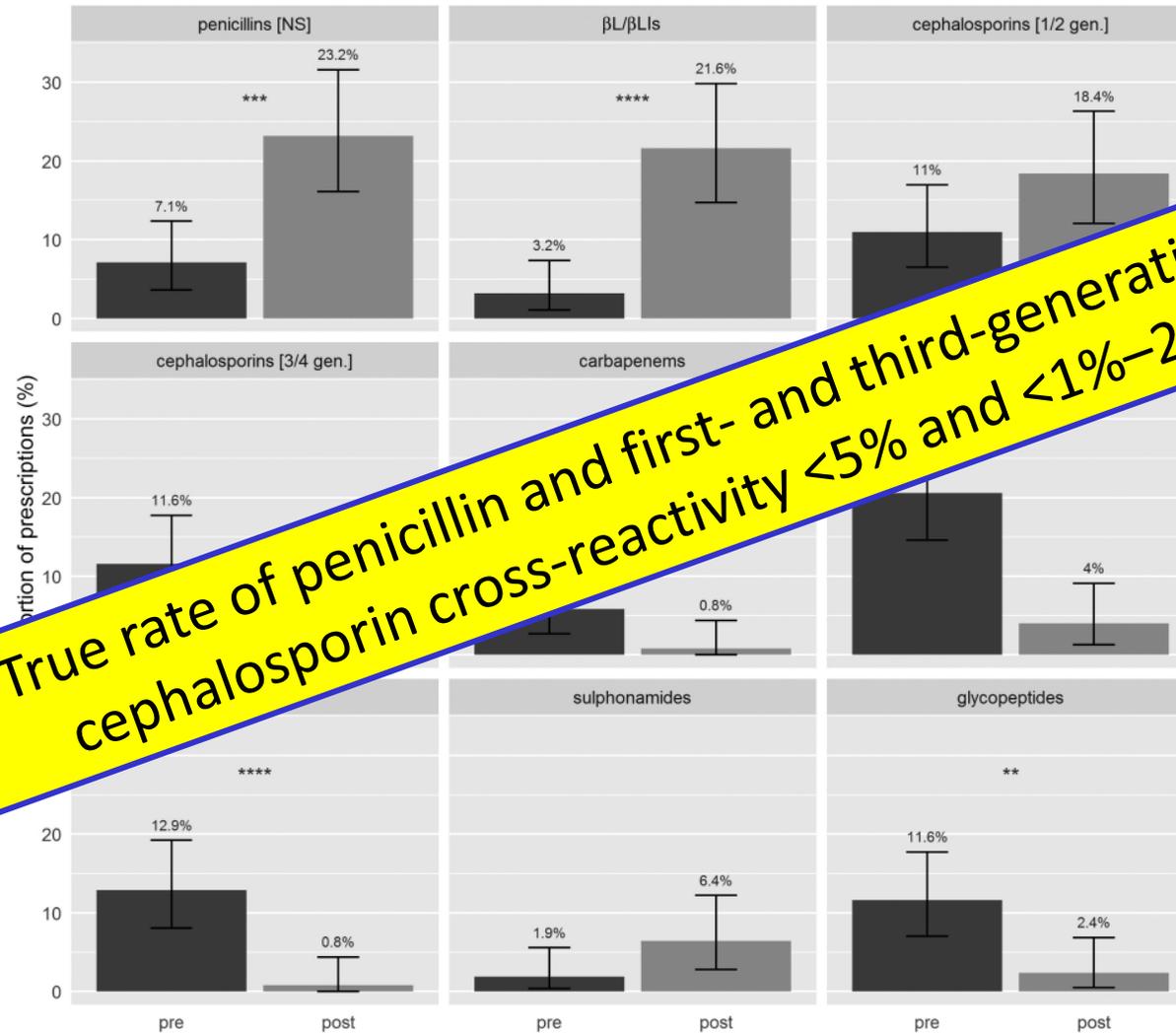
1,51faches Risiko für postoperative Wundinfektion
wegen Second-Line POP

Blumenthal, Clinical Infectious Diseases® 2017;XX(00):1

Stewardship-Intervention Allergy Testing

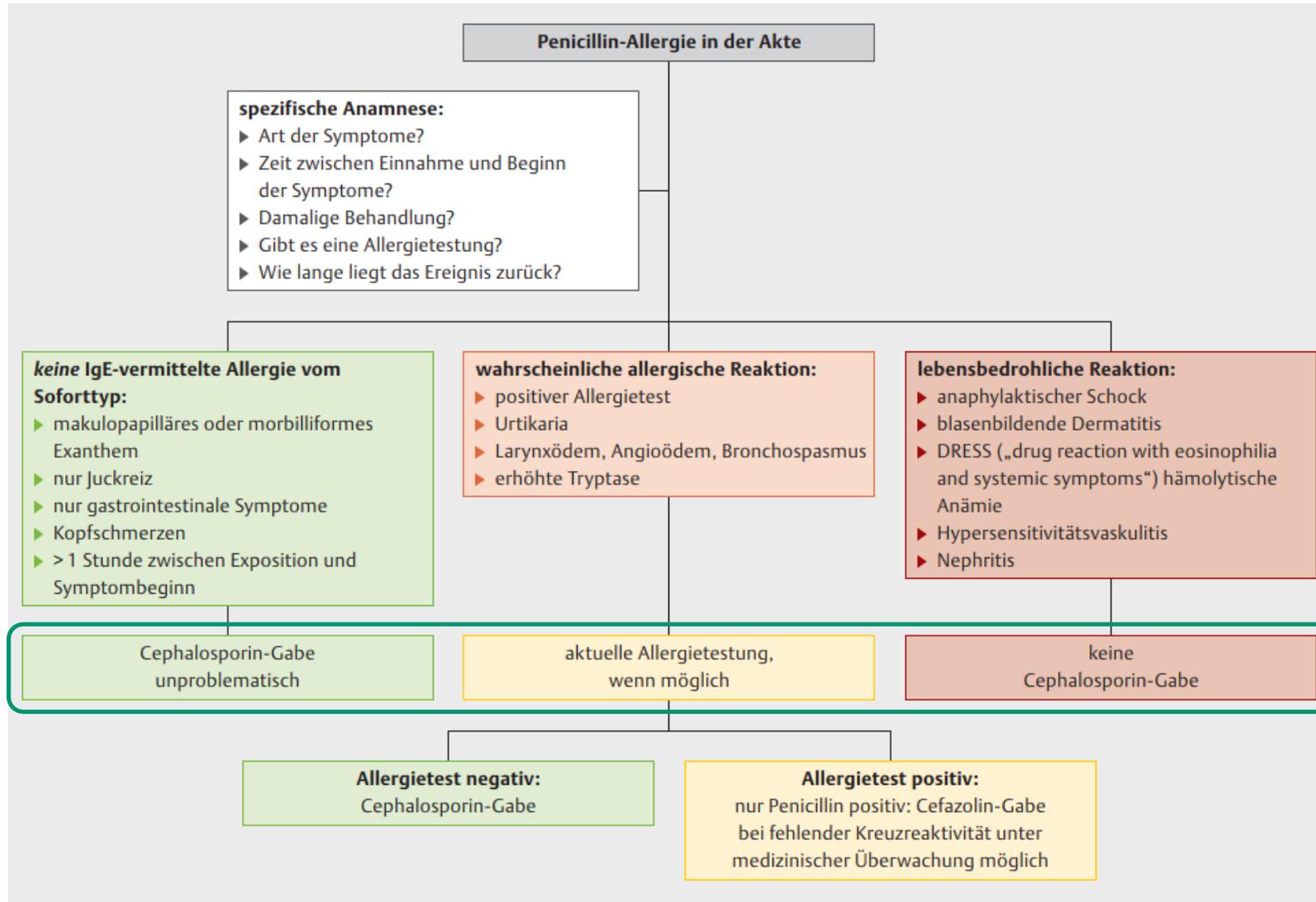
AAT-AMS allowed AAL de-labeling in 98 (83%) patients—
56% (55/98) with all AALs removed.

Trubiano, CID 2017;65(1):166



True rate of penicillin and first- and third-generation cephalosporin cross-reactivity <5% and <1%-2%

Algorhythmus Penicillinallergie



▶ **Abb. 1** Algorithmus für die Entscheidung zur Gabe von Cephalosporinen bei Patienten mit anamnestischer Penicillin-Allergie.

Development and Validation of a Penicillin Allergy Clinical Decision Rule

Jason A. Trubiano, MBBS, PhD; Sara Vogrin, MBBS, MBIostat; Kyra Y. L. Chua, MBBS, PhD; Jack Bourke, MBBS; James Yun, MBBS, PhD; Abby Douglas, MBBS; Cosby A. Stone, MD; Roger Yu, MD; Lauren Groenendijk, MD; Natasha E. Holmes, MBBS, PhD; Elizabeth J. Phillips, MD

JAMA Intern Med. doi:10.1001/jamainternmed.2020.0403
Published online March 16, 2020.

PEN	Penicillin allergy reported by patient	<input type="checkbox"/> If yes, proceed with assessment
F	Five years or less since reaction ^a	<input type="checkbox"/> 2 points
A	Anaphylaxis or angioedema	<input type="checkbox"/> 2 points
	OR	
S	Severe cutaneous adverse reaction ^b	
T	Treatment required for reaction ^a	<input type="checkbox"/> 1 point
		<hr/>
		<input type="checkbox"/> Total points

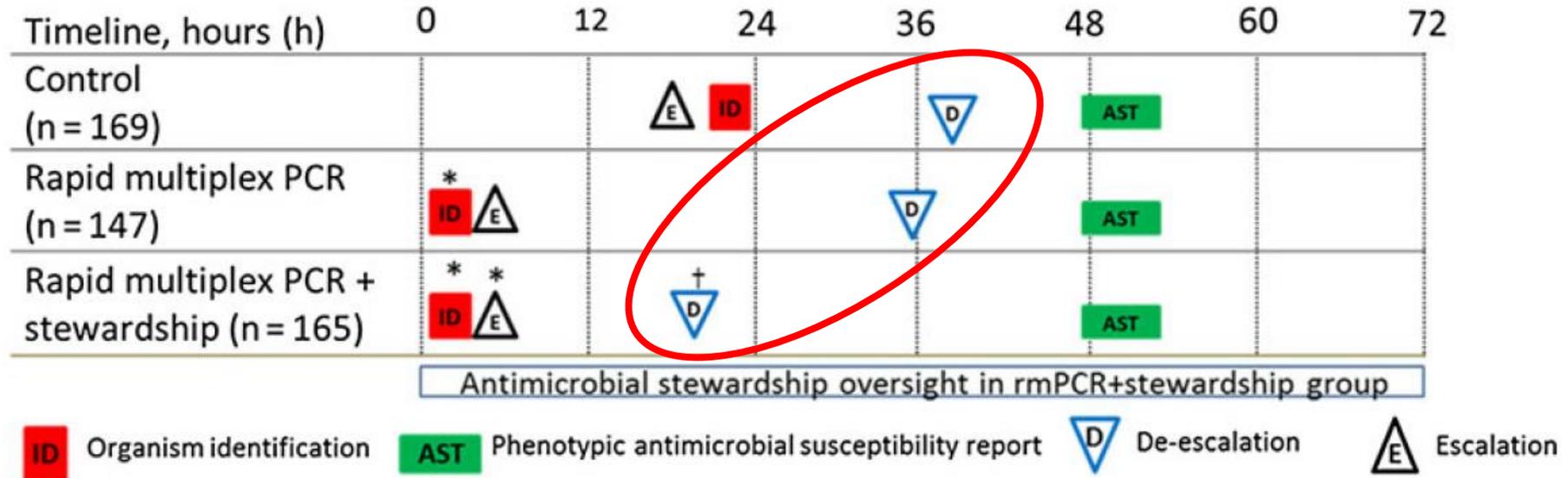
Interpretation

Points	Cutoff < 3: Negative predictive value 96,3%
<input type="checkbox"/> 0	Very low risk of positive penicillin allergy test <1% (<1 in 100 patients reporting penicillin allergy)
<input type="checkbox"/> 1-2	Low risk of positive penicillin allergy test 5% (1 in 20 patients)
<input type="checkbox"/> 3	Moderate risk of positive penicillin allergy test 20% (1 in 5 patients)
<input type="checkbox"/> 4-5	High risk of positive penicillin allergy test 50% (1 in 2 patients)

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9. ABS Indikatoren
10. ABS Was bringt's?

Rasche Diagnostik und deren Auswirkung



- Erregeridentifizierung in 1,3 statt in 22,3 Stunden
- Raschere Therapie-Anpassung und De-Eskalation
- Weniger Breitspektrumpräparate verwendet

Banerjee, CID 2015;61(7):1071

Impact of cerebrospinal fluid syndromic testing in the management of children with suspected central nervous system infection

Lamprini Posnakoglou¹ · Tania Siahaniidou¹ · Vasiliki Syriopoulou¹ · Athanasios Michos¹ 

prospective cohort study; period of 1 year

Received: 19 February 2020 / Accepted: 6 July 2020

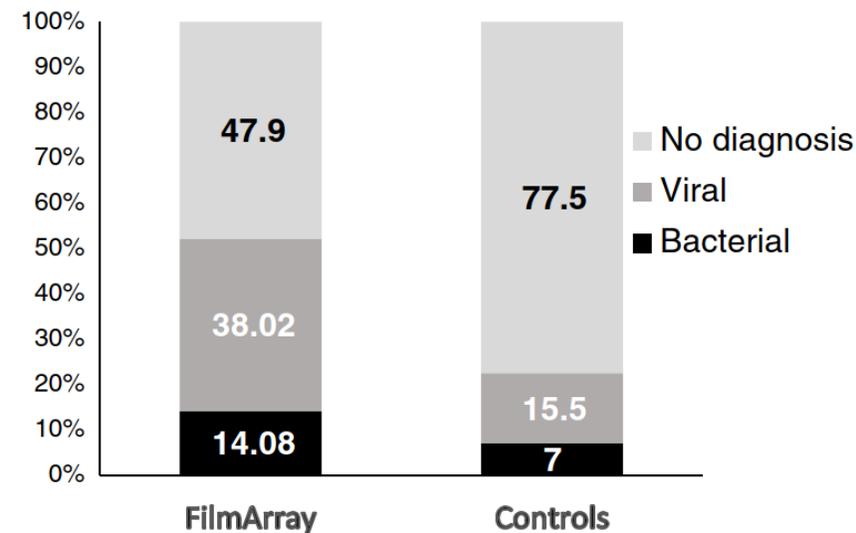
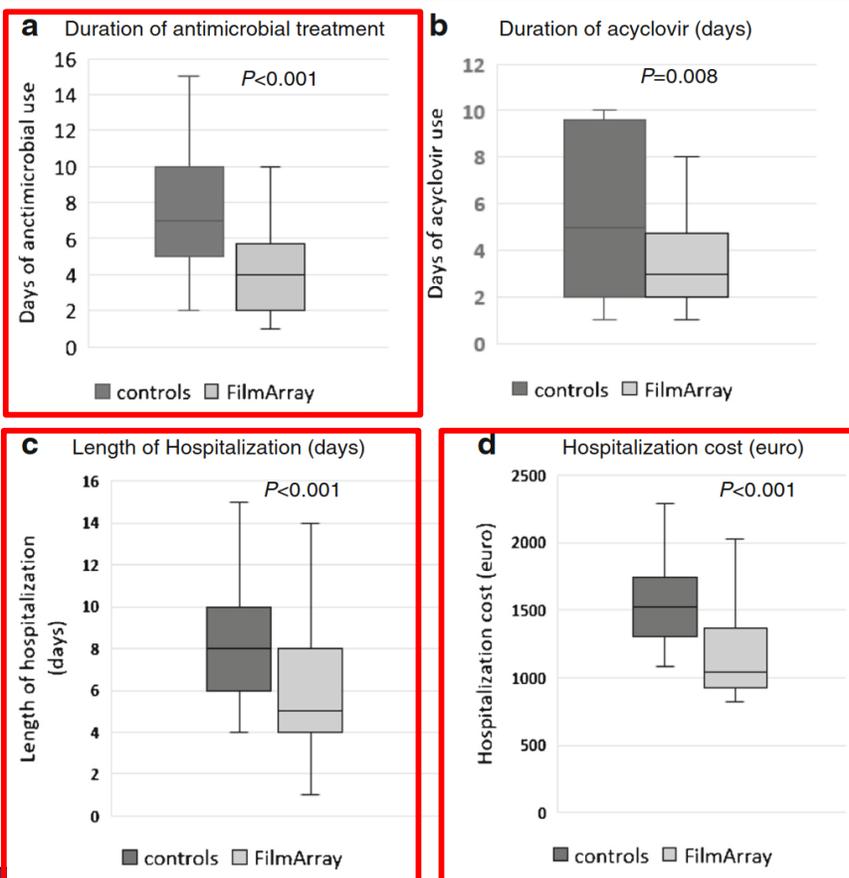


Fig. 1 Percentage (%) of bacterial, viral pathogens, or negative results in children with suspected CNS infection, having their CSF tested with FilmArray ME or only CSF culture and/or single PCRs (controls)

- However, interpretation should always be integrated in the clinical context as there is possibility for false positive/negative results
- Not all microbes included - M. tuberculosis!
- Oft auch noch nach AB-Beginn hilfreich

RESEARCH ARTICLE

Open Access

Use of BioFire FilmArray gastrointestinal PCR panel associated with reductions in antibiotic use, time to optimal antibiotics, and length of stay



Daisy Torres-Miranda, Hana Akselrod^{*} , Ryan Karsner, Alessandra Secco, Diana Silva-Cantillo, Marc O. Siegel, Afsoon D. Roberts and Gary L. Simon



- Length of hospital stay shorter (3 vs. 7.5 days, $p = 0.0002$)
- Optimal AB started earlier (hospital day 1 vs. 2, $p < 0.0001$).
- More patients discharged without AB after introduction of the FilmArray GI panel (14.0% vs. 4.5%; $p < 0.001$).

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Table. Infections for Which Short-Course Therapy Has Been Shown to Be Equivalent in Efficacy to Longer Therapy

Disease	Treatment, Days	
	Short	Long
Community-acquired pneumonia ¹⁻³	3-5	7-10
Nosocomial pneumonia ^{6,7}	≤8	10-15
Pyelonephritis ¹⁰	5-7	10-14
Intraabdominal infection ¹¹	4	10
Acute exacerbation of chronic bronchitis and COPD ¹²	≤5	≥7
Acute bacterial sinusitis ¹³	5	10
Cellulitis ¹⁴	5-6	10
Chronic osteomyelitis ¹⁵	42	84

Comparing the Outcomes of Adults With Enterobacteriaceae Bacteremia Receiving Short-Course Versus Prolonged-Course Antibiotic Therapy in a Multicenter, Propensity Score–Matched Cohort

Darunee Chotiprasitsakul,¹ Jennifer H. Han,² Sara E. Cosgrove,³ Anthony D. Harris,⁴ Ebbing Lautenbach,² Anna T. Conley,⁵ Pam Tolomeo,² Jacqueleen Wise,² and Pranita D. Tamma⁶; for the Antibacterial Resistance Leadership Group

¹Department of Medicine, Division of Infectious Diseases, Ramathibodi Hospital, Mahidol University, Bangkok, Thailand; ²Department of Medicine, Division of Infectious Diseases, University of Pennsylvania School of Medicine, Philadelphia; and ³Department of Medicine, Division of Infectious Diseases, Johns Hopkins University School of Medicine, and Departments of ⁴Epidemiology and Public Health and ⁵Medicine, University of Maryland School of Medicine, and ⁶Department of Pediatrics, Division of Infectious Diseases, Johns Hopkins University School of Medicine, Baltimore, Maryland

Background. The recommended duration of antibiotic treatment for Enterobacteriaceae bloodstream infections is 7–14 days. We compared the outcomes of patients receiving short-course (6–10 days) vs prolonged-course (11–16 days) antibiotic therapy for Enterobacteriaceae bacteremia.

Letalität bei 8d vs 15 d Therapie ident
Recurrence ident
Trend zu weniger Resistenzentwicklung zu MDRGNB

Enterobacteriaceae bacteremia, and may protect against subsequent MDRGN bacteria.

Keywords. duration of therapy; gram-negative bacteremia; antibiotics; multidrug-resistant.

RESEARCH ARTICLE

The cost impact of PCT-guided antibiotic stewardship versus usual care for hospitalised patients with suspected sepsis or lower respiratory tract infections in the US: A health economic model analysis

Janne C. Mewes¹, Michael S. Pulia², Michael K. Mansour^{3,4}, Michael R. Broyles⁵, H. Bryant Nguyen^{6,7}, Lotte M. Steuten^{1,8,9*}

- Reduction in antibiotic days
- Shorter length of stay on the regular ward
- Shorter length of stay on the intensive care unit
- Shorter duration of mechanical ventilation
- Fewer patients at risk for antibiotic resistant or C. difficile infection
- Total costs in the PCT-group compared to standard care: reduced by
 - 26.0% in sepsis (-\$11,311 per patient)
 - 17.7% in LRTI (-\$2,867 per patient)

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10. ABS ABS Was bringt's?

Transatlantic Taskforce on Antimicrobial Resistance (TATFAR)

Report on the modified Delphi process for common structure and process indicators for hospital antimicrobial stewardship programmes

Draft Authors: Lori A. Pollack, Diamantis Plachouras, Heidi Gruhler, Ronda Sinkowitz-Cochran

8/27/2014

- Seventeen “core” indicators essential to characterise core aspects of ASP programmes
- Sixteen “supplemental” indicators

- Domains
- Infrastructure
- Policy and practice
- Monitoring and feedback

CORE Indicators for hospital antimicrobial stewardship programs

Infra stru ctur e	1.	Does your facility have a formal antimicrobial stewardship programme accountable for ensuring appropriate antimicrobial use?
	2.	Does your facility have a formal organizational structure responsible for antimicrobial stewardship (e.g., a multidisciplinary committee focused on appropriate antimicrobial use, pharmacy committee, patient safety committee or other relevant structure)?
	3.	Is an antimicrobial stewardship team available at your facility (e.g., greater than one staff member supporting clinical decisions to ensure appropriate antimicrobial use)?
	4.	Is there a physician identified as a leader for antimicrobial stewardship activities at your facility?
	5.	Is there a pharmacist responsible for ensuring antimicrobial use at your facility?
	6.	Does your facility provide any salary support for dedicated time for antimicrobial stewardship activities (e.g., percentage of full-time equivalent (FTE) for ensuring appropriate antimicrobial use)?
	7.	Does your facility have the IT capability to support the needs of the antimicrobial stewardship activities?
Poli cy and Prac tice	8.	Has your facility produced a cumulative antimicrobial susceptibility report in the past year?
	9.	Does your facility have facility-specific treatment recommendations based on local antimicrobial susceptibility to assist with antimicrobial selection for common clinical conditions?
	10.	Does your facility have a written policy that requires prescribers to document in the medical record or during order entry a dose, duration, and indication for all antimicrobial prescriptions?
	11.	Is it routine practice for specified antimicrobial agents to be approved by a physician or pharmacist in your facility (e.g., pre-authorization)?
	12.	Is there a formal procedure for a physician, pharmacist, or other staff member to review the appropriateness of an antimicrobial after 48 hours from the initial order (post-prescription review)?
Moni torin g and Feed back	13.	Are results of antimicrobial audits or reviews communicated directly with prescribers?
	14.	Does your facility monitor if the indication is captured in the medical record for all antimicrobial prescriptions?
	15.	Does your facility audit or review surgical antimicrobial prophylaxis choice and duration?
	16.	Does your facility monitor antimicrobial use by grams [Defined Daily Dose (DDD)] or counts [Days of Therapy (DOT)] of antimicrobial(s) by patients per days?
	17.	Has an annual report focused on antimicrobial stewardship (summary antimicrobial use and/or practices improvement initiatives) been produced for your facility in the past year?

INFECTION CONTROL & HOSPITAL EPIDEMIOLOGY

ORIGINAL ARTICLE

A Concise Set of Structure and Process Indicators to Assess and Compare Antimicrobial Stewardship Programs Among EU and US Hospitals: Results From a Multinational Expert Panel

Lori A. Pollack, MD, MPH;¹ Diamantis Plachouras, MD, PhD;² Ronda Sinkowitz-Cochran, MPH;¹ Heidi Gruhler, MPH;¹ Dominique L. Monnet, PharmD, PhD;² J. Todd Weber, MD;¹ Transatlantic Taskforce on Antimicrobial Resistance (TATFAR) Expert Panel on Stewardship Structure and Process Indicators

Infect Control Hosp Epidemiol 2016;1–11

S3- Leitlinie
Strategien zur Sicherung rationaler Antibiotika-Anwendung
im Krankenhaus

AWMF-Registernummer 092/001 – update 2018

Tabelle 3: ABS-Prozessindikatoren (Kapitel 1.3)

Indikator	Evidenz	Ranking (1=hoch, 2=mittel, 3=niedrig)	Erfüllungsgrad (ITT, % IQR) nach ABS-QI-Studie [12]	Hausinterner Erfüllungs- grad (%)
ambulant erworbene Pneumonie				
• Initiale Therapie (Substanzen, Dosierung) nach lokaler/ nationaler Leitlinie)	[11, 144, 347]	1	54% (24-76)	
• Abnahme von Blutkulturen (2 Sets) vor Therapiebeginn	[11, 144, 348]	1	28% (14-55)	
• Mitteilung Ergebnis Legionella-AG-Test innerhalb von 3 Tagen	[11, 347]	1	10% (0-17)	
• Monotherapie spätestens ab Tag 4 (Patienten auf Normalstation)	[144, 347]	1	71% (52-85)	
• Oralisierung der Therapie bis Tag 4, abhängig vom klinischen Zustand (Patienten auf Normalstation)	[11, 347, 348]	2	7% (6-15)	
• Therapiedauer nicht länger als 7 Tage (Patienten auf Normalstation)	[11, 144, 348]	1	40% (29-50)	
nosokomial erworbene Pneumonie				
• Initiale Therapie (Substanzen) nach lokaler/ nationaler Leitlinie	[11, 144]	1	50% (20-73)	
• Abnahme von Blutkulturen (2 Sets) am Tag des Therapiebeginns	[11, 144]	1	35% (25-43)	
• Therapiedauer nicht länger als 10 Tage (Patienten auf Normalstation)	[11, 144]	1	64% (40-75)	
Bakteriämie/Fungämie				

Tabelle 2: ABS-Strukturindikatoren (Kapitel 1.3)

Indikator	Evidenz	Ranking (1=hoch 2=mittel, 3=niedrig)	hausinterner Erfüllungsgrad (ja/nein)
Zu 1. Voraussetzungen zur Implementierung von ABS-Programmen			
Personal/Team/Auftrag/Infrastruktur			
• Multidisziplinäres ABS-Team von der Krankenhausleitung berufen und beauftragt	[3, 13, 132, 144]	1	
• ABS-Team vertreten in der Arzneimittelkommission	[3, 13, 132, 144]	2	
• Mindestens 2 (protokollierte) ABS-Teamtreffen pro Jahr	[16, 132, 144]	2	
• ABS-Strategiebericht enthält quantitative Ziele mit Angaben der Indikatoren	[16, 132, 144]	2	
• Hausinterne Vorgaben zur Präanalytik (inkl. Rückweiskriterien) für mikrobiologische Proben sind definiert	[144]	1	
Surveillance Antiinfektivaeinsatz			
• Antiinfektivverbrauchszahlen (in DDD/RDD oder PDD pro 100 Pflage tage) mindestens jährlich für die wichtigsten Antibiotika-klassen sowie Gesamtverbrauch, nach: - Fachabteilung bzw. aggregierten Fachabteilungen (z.B. konservativ vs. operativ) sowie - Stationsart (z.B. Normal- vs. Intensivstationen) verfügbar	[16, 119, 132, 144]	1	
• Rate orale versus parenterale Verordnung (% DDD/RDD oder PDD) mindestens jährlich für die wichtigsten Antibiotika, nach: - Fachabteilung bzw. aggregierten Fachabteilungen (z.B. konservativ vs. operativ) sowie - Stationsart (z.B. Normal- vs. Intensivstationen) verfügbar	[144]	1	
Surveillance Infektionserreger (mit/ohne Resistenz)			

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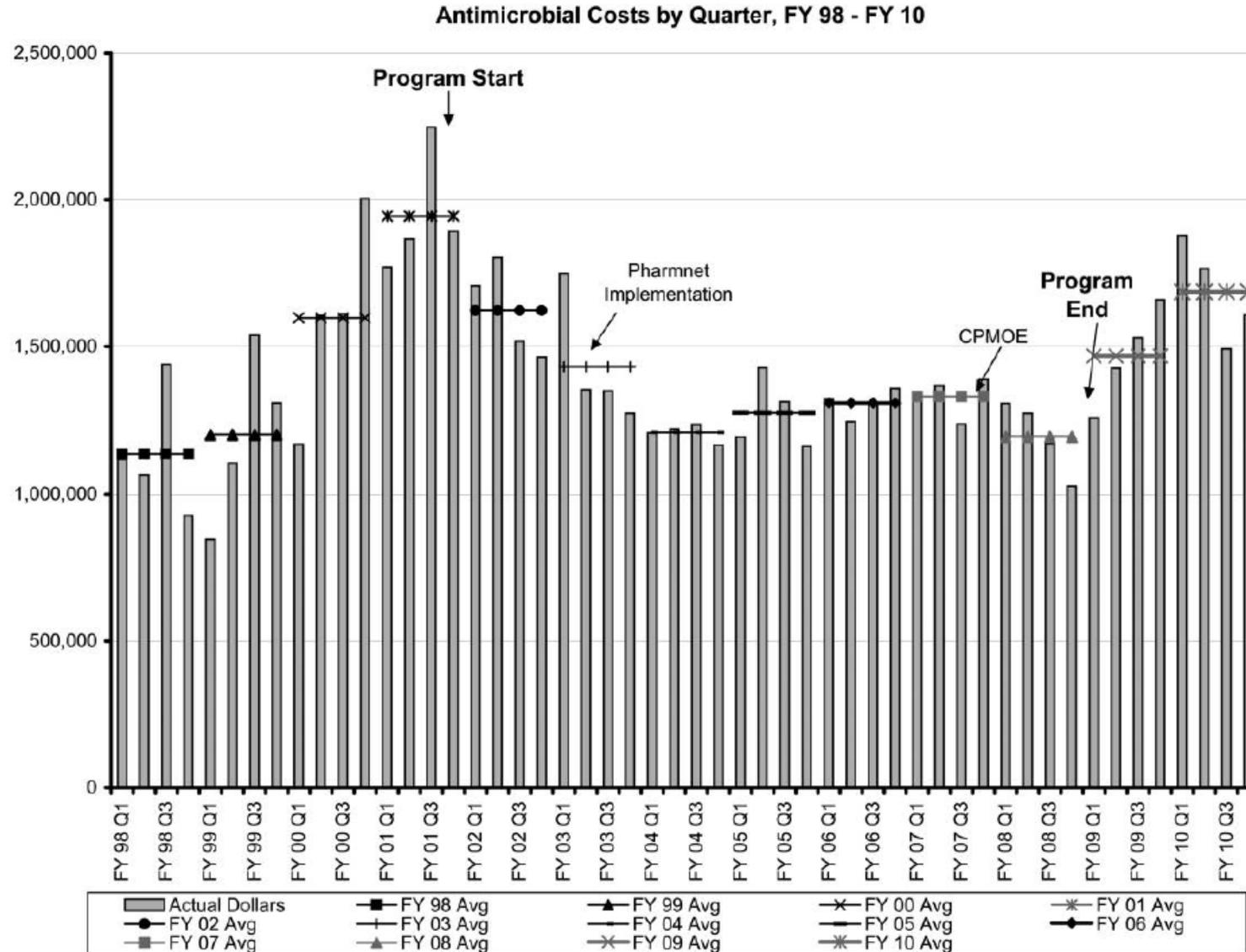
ABS ANTIBIOTIKA-STRATEGIEN

Leitlinien zur Weiterentwicklung der Antibiotika-Kultur in Krankenanstalten

2., überarbeitete Auflage, November 2002

Die Antibiotika-Ausgaben der Rudolfstiftung haben sich durch die Einführung der Antibiotika-Liste von (ATS 24,6 Mio.) 1,788 Mio. Euro im Jahr 1993 auf 1,054 Mio. Euro (ATS 14,5 Mio.) im Jahr 1997 reduziert. Trotz einer Zunahme der Zahl der stationären Patienten/Patientinnen und der Aufnahme neuer, teurer Substanzen in die Antibiotika-Liste konnten die Ausgaben für Antibiotika im Jahr 2001 bei 1,145 Mio. Euro (15,8 Mio. ATS) gehalten werden. Dies entspricht einer Senkung der Antibiotika-Kosten um 36 % seit 1993. (Dr. Agnes Wechsler-Fördös, Krankenhaus Rudolfstiftung der Stadt Wien)

Kostenentwicklung in ABS-Programm



Standiford, Infect Control Hosp Epidemiol 2012;33(4):338

Current evidence on hospital antimicrobial stewardship objectives: a systematic review and meta-analysis

Emelie C Schuts, Marlies E J L Hulscher, Johan W Mouton, Cees M Verduin, James W T Cohen Stuart, Hans W P M Overdiek, Paul D van der Linden, Stephanie Natsch, Cees M P M Hertogh, Tom F W Wolfs, Jeroen A Schouten, Bart Jan Kullberg, Jan M Prins

- Kriterien:
clinical outcomes, adverse events, costs, and bacterial resistance rates
- Interventionen:
 - Empirical therapy according to guidelines,
 - de-escalation of therapy,
 - switch from intravenous to oral treatment,
 - therapeutic drug monitoring,
 - use of a list of restricted antibiotics,
 - bedside consultation
- the overall evidence showed significant benefits for one or more of the four outcomes

Effect of antibiotic stewardship on the incidence of infection and colonisation with antibiotic-resistant bacteria and *Clostridium difficile* infection: a systematic review and meta-analysis

David Baur*, Beryl Primrose Gladstone*, Francesco Burkert, Elena Carrara, Federico Foschi, Stefanie Döbele, Evelina Tacconelli

- 32 Studien mit > 9 Millionen Pflegetagen
- Abnahme von Kolonisation und Infektion mit
 - Gramnegativen MRE -51%
 - ESBL -48%
 - MRSA -37%
 - *C. difficile* -32%
- Besonders wirksam in Kombination mit Infektionskontrolle und Händehygiene
- Kein Impact auf VRE und Chinolon- und Aminoglykosid-resistenten gramnegativen Bakterien

Baur, Lancet Inf Dis online 16. Juni 2017

ABS und MR GN-Bakterien

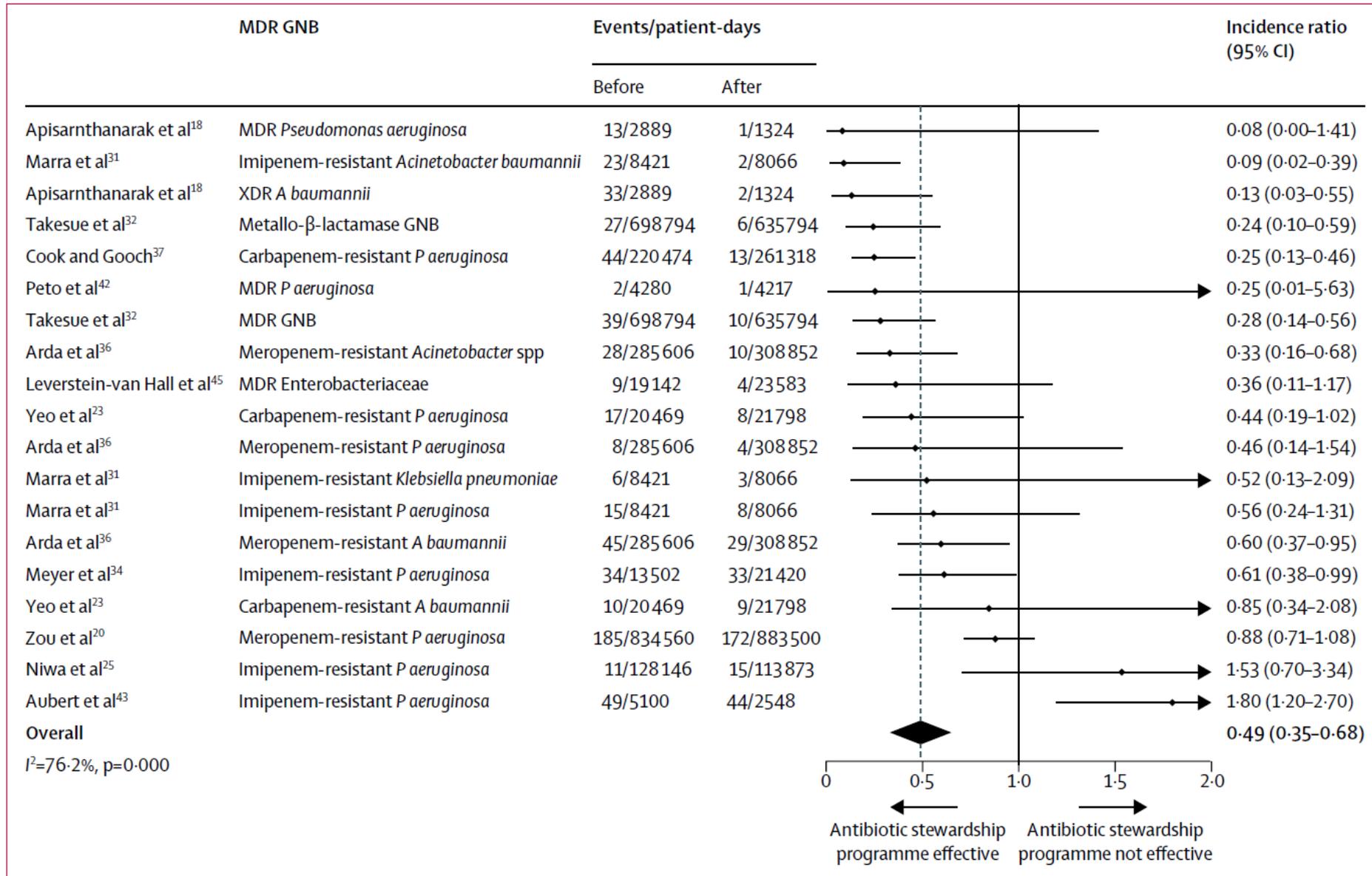


Figure 2: Forest plot of the incidence ratios for studies of the effect of antibiotic stewardship on the incidence of MDR GNB
GNB=Gram-negative bacteria. MDR=multidrug-resistant. XDR=extensively drug-resistant.

Bedside Consultation

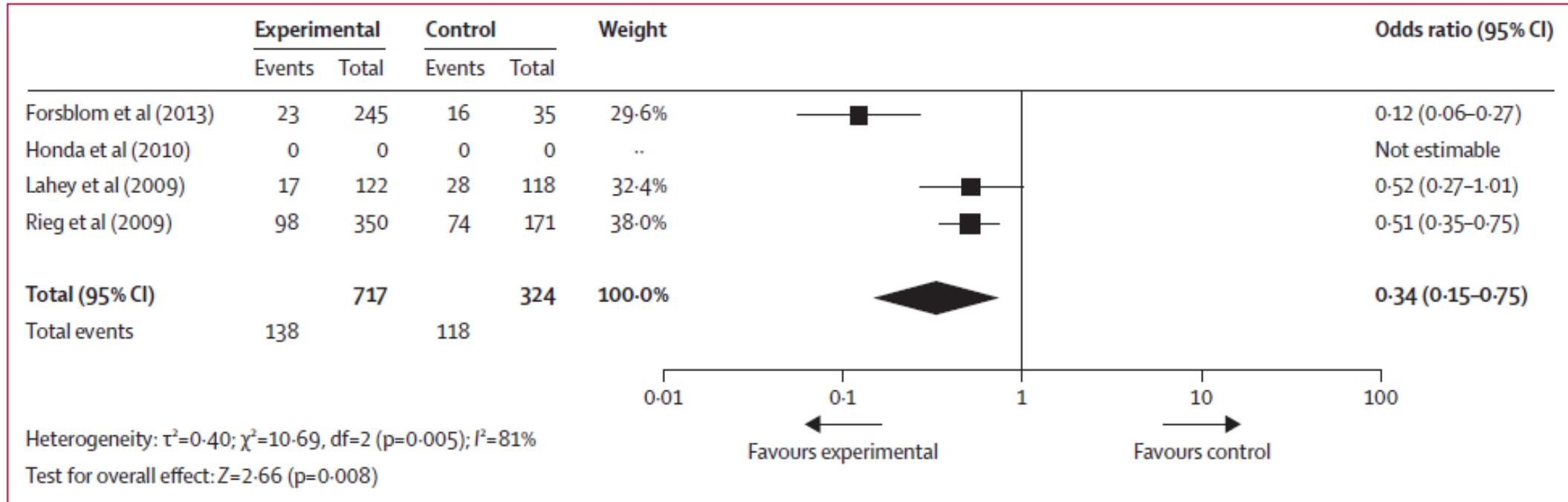


Figure 4: Effect of bedside consultation for *Staphylococcus aureus* bacteraemia on mortality

Interventions to improve antibiotic prescribing practices for hospital inpatients (Review)

Davey P, Marwick CA, Scott CL, Charani E, McNeil K, Brown E, Gould IM, Ramsay CR, Michie S

Cochrane Database of Systematic Reviews 2017, Issue 2. Art. No.: CD003543.

DOI: 10.1002/14651858.CD003543.pub4.

- 29 RCTs provide high-certainty evidence that
 - interventions are effective in increasing compliance with antibiotic policies and
 - in reducing duration of antibiotic treatment safely: ↓1.95d
 - without an increase in mortality
- Additional trials comparing antibiotic stewardship with no intervention are unlikely to change our conclusions

“Insanity is doing the same thing
over and over again
and expecting different results”

Albert Einstein

ANTIMICROBIAL STEWARDSHIP



Edited by

Céline Pulcini, Önder Ergönül, Füsün Can, Bojana Beović

