

ESGAP

European Society of Clinical Microbiology and Infectious Diseases

ESCMID STUDY GROUP
FOR ANTIMICROBIAL
STEWARDSHIP

BON USAGE DES ANTIBIOTIQUES ET PRÉVENTION DE LA RÉSISTANCE

Pr Céline PULCINI
Nancy

Santé Publique France – Mai 2018



Plan

1. Focus sur bon usage des antibiotiques (BUA)
2. Principes
3. Exemples pratiques (en France)
4. Perspectives

INTRODUCTION

AMS = Hot topic

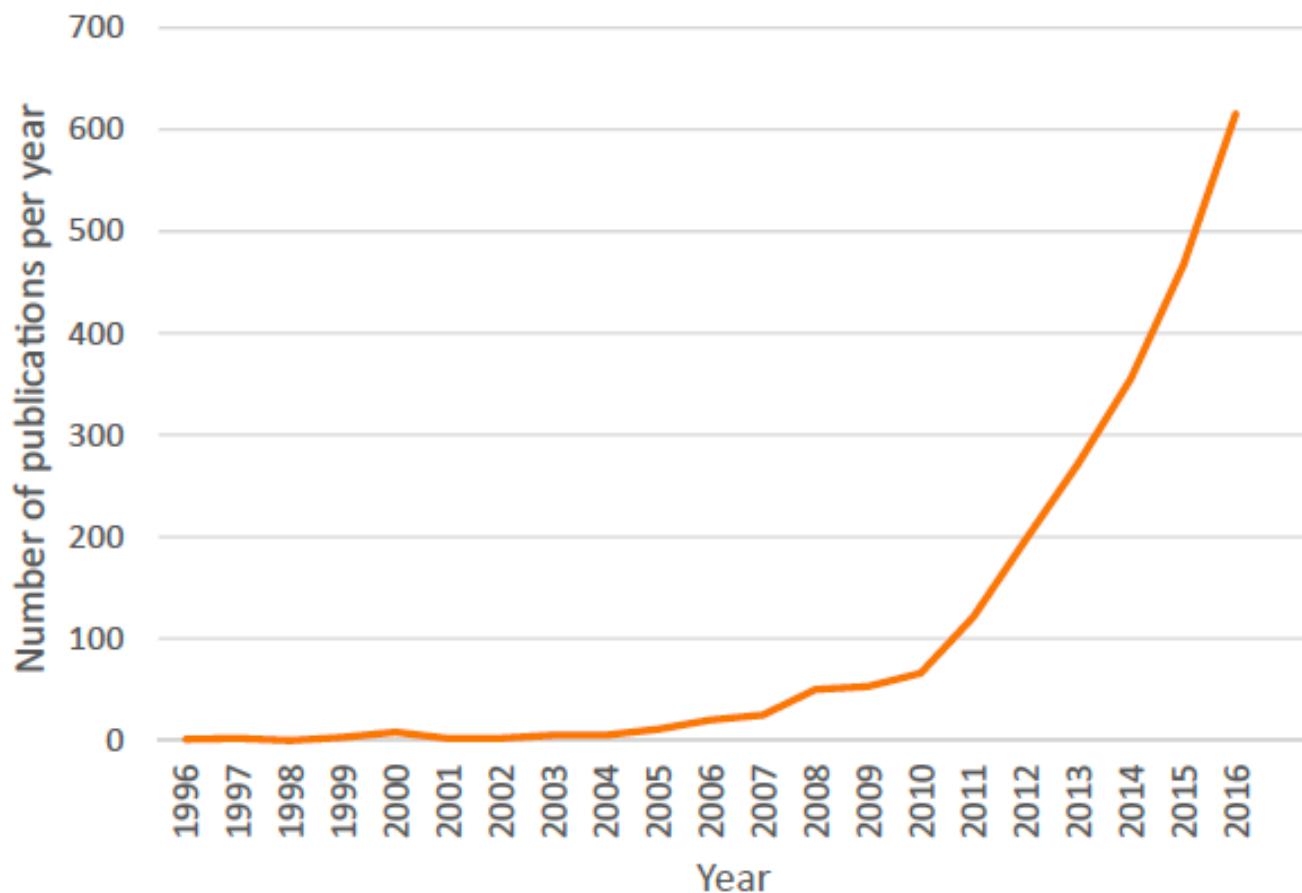


Fig. 1. Pubmed citations on antimicrobial or antibiotic stewardship over the past 20 years.

3 main strategies to curb AMR

Selection



All settings, all professionals

AMS

Transmission



Infection control
Environment

Prevention



Vaccination and
Infection prevention

One Health approach

Adverse events of antibiotics

At the patient level

- ‘Classical’ adverse events (allergy, hepatotoxicity...)
- Adverse events related to the **microbiota** impact:
 1. Diarrhea
 2. *Clostridium difficile* infection
 3. Bacterial resistance:
 - Sometimes at the focus of infection
 - Always in the microbiota
 4. More broadly: modification of the microbiota, and its consequences

At the population level

- **Transmission** of resistant bacteria and *C. difficile*

How can a prescriber do to reduce the risk of bacterial resistance?

Use antibiotics only when needed !

Focus of infection

- Sometimes happens, in particular in ICU patients
- Avoid long durations
- Optimised PK/PD
- Control the source of infection / reduce bacterial load
- Combination therapy?
- Certain antibiotics carry a higher risk of selection (e.g. fluoroquinolones)

Microbiota

- Always happens
- Risk factors:
 - Long durations (beware of long half-lives, e.g. azithromycin)
 - Broad spectrum
 - Good diffusion in the microbiota

LES PRINCIPES

Antibiotic resistance has a language problem

A failure to use words clearly undermines the global response to antimicrobials' waning usefulness. Standardize terminology, urge Marc Mendelson and colleagues.

Clinicians have long known that microbes such as bacteria, viruses and fungi are becoming alarmingly resistant to the medicines used to treat them. But a global response to this complex health threat — commonly termed 'antimicrobial resistance' — requires engagement from a much broader array of players, from governments, regulators and the public, to experts in health, food, the environment, economics, trade and industry.

People from these disparate domains are talking past each other. Many of the terms routinely used to describe the problem are misunderstood, interpreted differently or loaded with unhelpful connotations.

On 16 March, the United Nations formed an interagency group to coordinate the fight against drug resistance¹. We urge that, as one of its first steps, this group coordinate a review of the terminology used by key actors. Such an effort could improve understanding

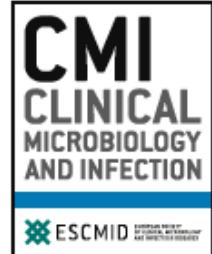
across the board and help to engender a consistent and focused global response.

BLINDED BY SCIENCE

A 2015 survey by the World Health Organization (WHO) in 12 countries highlighted people's unfamiliarity with the language of antibiotic resistance². Fewer than half of the nearly 10,000 respondents had heard of the term 'antimicrobial resistance'. Only one-fifth were aware of its abbreviated form 'AMR'. ►

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com



Review

What is antimicrobial stewardship?

O.J. Dyar ¹ *, B. Huttner ², J. Schouten ³, C. Pulcini ⁴, on behalf of ESGAP (ESCMID Study Group for Antimicrobial stewardshiP)

Problems

- ‘Stewardship’ is now widely used
- But people do not understand it the same way
- Difficult to translate

What is AMS?

- **a coherent set of actions which promote using antimicrobials responsibly**
- *i.e. in ways that ensure sustainable access to effective therapy for all who need them*

How we can be good antimicrobial stewards

Actor	What it means to be good antimicrobial stewards	Example actions
Prescriber	I use antimicrobials responsibly by	<ul style="list-style-type: none"> • Making accurate diagnoses • Following local antimicrobial guidelines • Regularly reviewing the need for therapy • Taking cultures at appropriate times • Ensuring patients understand how to take antimicrobials on discharge • Taking antimicrobial courses as recommended by the prescriber • Not storing or using leftover antimicrobials • Developing guidelines for antimicrobial use • Supporting audit and feedback for prescribers • Educating prescribers
Nurse	I help ensure antimicrobials are used responsibly by	
Patient	I use antimicrobials responsibly by	
Antimicrobial stewardship team	We help others in our institution use antimicrobials responsibly by	
Hospital governance	Our institution uses antimicrobials responsibly by	<ul style="list-style-type: none"> • Ensuring sufficient sustainable and dedicated funding for antimicrobial stewardship teams • Monitoring antimicrobial use and resistance • Investing in a Clinical Decision Support System • Enabling formulary restrictions • Diagnosing selectivity • Not using antimicrobials as growth promoters
Producer/farmer	I use antimicrobials responsibly by	
Pharmaceutical company	Our company ensures antimicrobials are used responsibly by	<ul style="list-style-type: none"> • Limiting advertising of antimicrobials, especially broad spectrum • Helping ensure there is a continuous supply of antimicrobials • Prioritizing and funding antimicrobial stewardship activities • Supporting the use of quality metrics and pay for performance
National policy maker	Our country uses antimicrobials by	

Multiple actors and holistic approach:
system / prescriber / other professionals / patients / public

3 targets

- System
- Public and patients
- Health professionals (prescribers and non-prescribers)



Contents lists available at [ScienceDirect](#)

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com



Review

Managing responsible antimicrobial use: perspectives across the healthcare system

O.J. Dyer ^{1, 4}, G. Tebano ^{2, 4}, C. Pulcini ^{3,*}, on behalf of ESGAP (ESCMID Study Group for Antimicrobial stewardship)



Public Health
England



Department
of Health

Behaviour change and antibiotic prescribing in healthcare settings

Literature review and behavioural analysis

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com



Review

Antibiotic stewardship: does it work in hospital practice? A review of the evidence base

M.E.J.L. Hulscher ^{1,*}, J.M. Prins ²

Core elements and checklist items

Clinical Microbiology and Infection xxx (2018) 1–6



Contents lists available at ScienceDirect

Clinical Microbiology and Infection

journal homepage: www.clinicalmicrobiologyandinfection.com



Original article

Developing core elements and checklist items for global hospital antimicrobial stewardship programmes: a consensus approach

C. Pulcini ^{1, 2, *}, F. Binda ^{1, 2, 3}, A.S. Lamkang ⁴, A. Trett ⁴, E. Charani ⁵, D.A. Goff ⁶,
S. Harbarth ⁷, S.L. Hinrichsen ⁸, G. Levy-Hara ⁹, M. Mendelson ¹⁰, D. Nathwani ¹¹,
R. Gunturu ¹², S. Singh ¹³, A. Srinivasan ¹⁴, V. Thamlikitkul ¹⁵, K. Thursky ¹⁶,
E. Vlieghe ^{17, 18, 19}, H. Wertheim ²⁰, M. Zeng ²¹, S. Gandra ⁴, R. Laxminarayan ^{4, 22}

- Group of 15 international experts
- Set of globally applicable essential core elements and checklist items for hospital AMS programmes

One example

Box 1. Core element 1: Senior hospital management leadership towards antimicrobial stewardship

Accompanying comment: *This section relates to governance of the programme by hospital executives, and specifies how senior hospital management supports the antimicrobial stewardship programme.*

Checklist item 1.1:

Has your hospital management formally identified antimicrobial stewardship as a priority objective for the institution and included it in its key performance indicators?

Checklist item 1.2:

Is there dedicated, sustainable and sufficient budgeted financial support for antimicrobial stewardship activities (e.g., support for salary, training, or IT (information technology) support)?

Checklist item 1.3:

Does your hospital follow any (national or international) staffing standards for antimicrobial stewardship activities (e.g. number of full-time equivalent (FTE) per 100 beds for the different members of the antimicrobial stewardship team)?

Accompanying comment: *These staffing standards should ideally be set at national level.* [56]

REVIEW

How can we improve antibiotic prescribing in primary care?

Oliver J. Dyar^a, Bojana Beović^b, Vera Vlahović-Palčevski^c, Theo Verheij^d and Céline Pulcini^e on behalf of ESGAP (the ESCMID [European Society of Clinical Microbiology and Infectious Diseases] Study Group for Antibiotic Policies)

Interventions targeting healthcare professionals		Interventions aiming at modifying the healthcare system	
Description	Level of evidence [18]	Description	Level of evidence [18]
Education	Low	Limiting the over-the-counter use of antibiotics	N/A
Communication skills training	Medium	Unit dispensing of antibiotics	N/A
Guidelines	Low	Reducing the number of available antibiotics or increasing the price of antibiotics	N/A
Clinical decision support systems	Low	Separating prescribing and dispensing of antibiotics	N/A
Delayed prescribing	Low	Prescribers' remuneration system	N/A
Education material for patients	Low	Pay-for-performance	Low
Public commitment	N/A	Public reporting	N/A
Point-of-care diagnostic tests	Medium	Sickness leave regulation	N/A
Selective susceptibility reporting	N/A	Limiting advertising of antibiotics	N/A
Quality indicators	N/A		
Audit and feedback	Low		
Restrictive prescribing measures	Low		

EHPAD

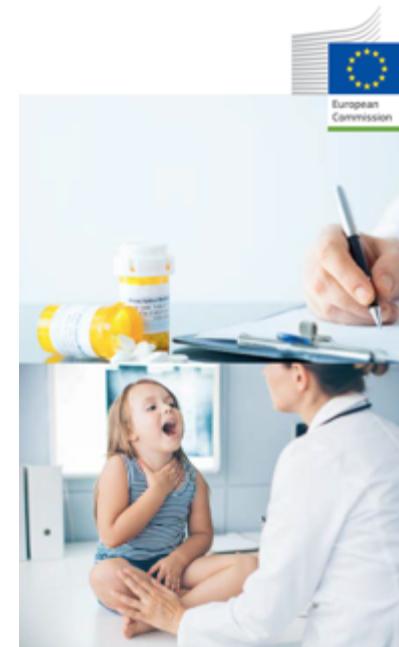
- Plusieurs revues récentes dans la littérature
- Mais peu d'études interventionnelles publiées

European Commission (EU countries)



The European Commission logo is in the top right corner.

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



The European Commission logo is in the top left corner.

EU Guidelines for the prudent use of antimicrobials in human health



The ECDC logo is in the bottom right corner.

En France



COMITÉ INTERMINISTÉRIEL POUR LA
SANTÉ



1^{RE} RÉUNION DU COMITÉ INTERMINISTÉRIEL POUR LA SANTÉ
MAÎTRISER LA RÉSISTANCE BACTÉRIENNE AUX ANTIBIOTIQUES

13 GRANDES MESURES INTERMINISTERIELLES
40 ACTIONS

17 novembre 2016



programme national d'actions de prévention
des infections associées aux soins



EXEMPLES PRATIQUES

Programmes de BUA en Lorraine

Contexte

- AntibioLor (devenu AntibioEst) depuis 2003
- Pluridisciplinaire ++
- Peu d'infectiologues, essentiellement à Nancy, Metz et Epinal
- Soutien de l'ARS Grand Est, de l'Assurance Maladie, de l'Omedit
- Synergie avec CPIAS Grand Est

Formation

- Initiale des étudiants en médecine
- FST + formation au CHU pour les internes de médecine
- Formation continue des médecins: quelques formations proposées par AntibioEst
- Formation des référents en antibiothérapie:
 - DU Nancy
 - Séminaire national SPILF
 - Réunions bi-annuelles AntibioEst

A l'hôpital

- Référence = ICATB2
- On sait quoi faire
- Mais manque de moyens:
 - Équipes multidisciplinaires en antibiothérapie en nombre insuffisant
 - + formation insuffisante
- Actions AntibioEst :
 - Réunions bi-annuelles pour les référents (partage expériences et outils) + AG annuelle
 - AntibioGuide
 - Commission Régionale des Anti-Infectieux

Toolkits

- <http://www.infectiologie.com/fr/toolbox.html>
- [http://ecdc.europa.eu/en/healthtopics/Healthcare-associated infections/guidance-infection-prevention-control/Pages/guidance-antimicrobial-stewardship.aspx](http://ecdc.europa.eu/en/healthtopics/Healthcare-associated_infections/guidance-infection-prevention-control/Pages/guidance-antimicrobial-stewardship.aspx)
-
- <http://www.ateams.nl>
-
- <https://www.reactgroup.org/toolbox/about-the-toolbox/how-to-use-the-toolbox/>
-
- <http://www.bsac-arc.com>

En ville

- Actions AntibioEst :
 - AG annuelle + participation à la JRI annuelle + Info'Antibio
 - Antibioville + Antibio'Dentaire
 - Documents d'information pour les patients
 - Soutien à l'application smartphone Antibioclic
 - AntibioTel
- En projet:
 - E-Bug
 - GRIVE
- Dans le cadre de projets de recherche:
 - Charte + ordonnance de non prescription + fiche d'information
 - Antibiogrammes ciblés
 - Indicateurs qualité
 - Application + site Internet pour les usagers



Fun games and teaching resources about
microbes and antibiotics

Teachers

Junior

Students

Junior

Senior

Senior

Young Adult

Young Adult

Teacher Home

Partners

Educator Training

Community Resources

Peer Education

En EHPAD

- Actions AntibioEst :
 - Idem que pour ville
 - + guide spécifique EHPAD
 - + formations des médecins coordonnateurs
- Dans le cadre de projets de recherche:
 - Enquête
 - Indicateurs (quantity metrics + quality indicators)
 - Puis étude interventionnelle

PERSPECTIVES



FEMS Microbiology Letters, 364, 2017, fnx230

doi: [10.1093/femsle/fnx230](https://doi.org/10.1093/femsle/fnx230)

Advance Access Publication Date: 30 October 2017

Commentaries

COMMENTARIES – Professional Development

Antibiotic stewardship: a European perspective

Céline Pulcini^{1,2,*}

Perspectives France / Europe

Forces françaises

- Données
- Hygiène hôpital
- ICATB2
- Dynamisme des acteurs de terrain

Faiblesses françaises

- Data for action
- Synergie hygiène/BUA
- Ressources humaines / référent et pas équipe / pas de CRCA partout, rien en EHPAD
- Manque de communication
- + de lisibilité du programme national de BUA + problème de terminologie (IAS/ABR)



Commentary

Human resources estimates and funding for antibiotic stewardship teams are urgently needed

C. Pulcini ^{1, 2, 3,*}, C.M. Morel ^{4, 5}, E. Tacconelli ^{6, 7}, B. Beovic ^{3, 8, 9}, K. de With ¹⁰,
H. Goossens ¹¹, S. Harbarth ¹², A. Holmes ¹³, P. Howard ^{3, 14}, A.M. Morris ¹⁵,
D. Nathwani ^{16, 17}, M. Sharland ¹⁸, J. Schouten ^{3, 19}, K. Thursky ²⁰, R. Laxminarayan ²¹,
M. Mendelson ²²

Some useful resources

Developments in Emerging and Existing Infectious Diseases
Series Editors: Onder Ergönül and Füsun Can

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ANTIMICROBIAL STEWARDSHIP

Edited by
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Antimicrobial resistance has become a global threat to human medicine and a public health priority worldwide. Antimicrobial stewardship is one of the cornerstone activities to combat antimicrobial resistance in hospitals and in the community.

Healthcare professionals involved in antimicrobial stewardship activities often lack practical training tools. In this book, ESGAP, the ESCMID (European Society of Clinical Microbiology and Infectious Diseases) Study Group for Antibiotic Policies, has summarized the best of its international expertise on this topic, building on its international network and more than 15 years of educational courses in the field.

The book includes short practical 'hands-on' chapters, encompassing all aspects of antimicrobial stewardship activities. All authors are international well-known leaders in their field. We also included more than 30 country cases, to provide a true global perspective and help readers build their own stewardship programme.

KEY FEATURES

- o State-of-the-art short practical chapters with useful tools and references
- o Encompassing all aspects of antimicrobial stewardship
- o Including how to adopt antimicrobial stewardship programs in various settings
- o With examples of antimicrobial stewardship experiences worldwide

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ANTIMICROBIAL STEWARDSHIP

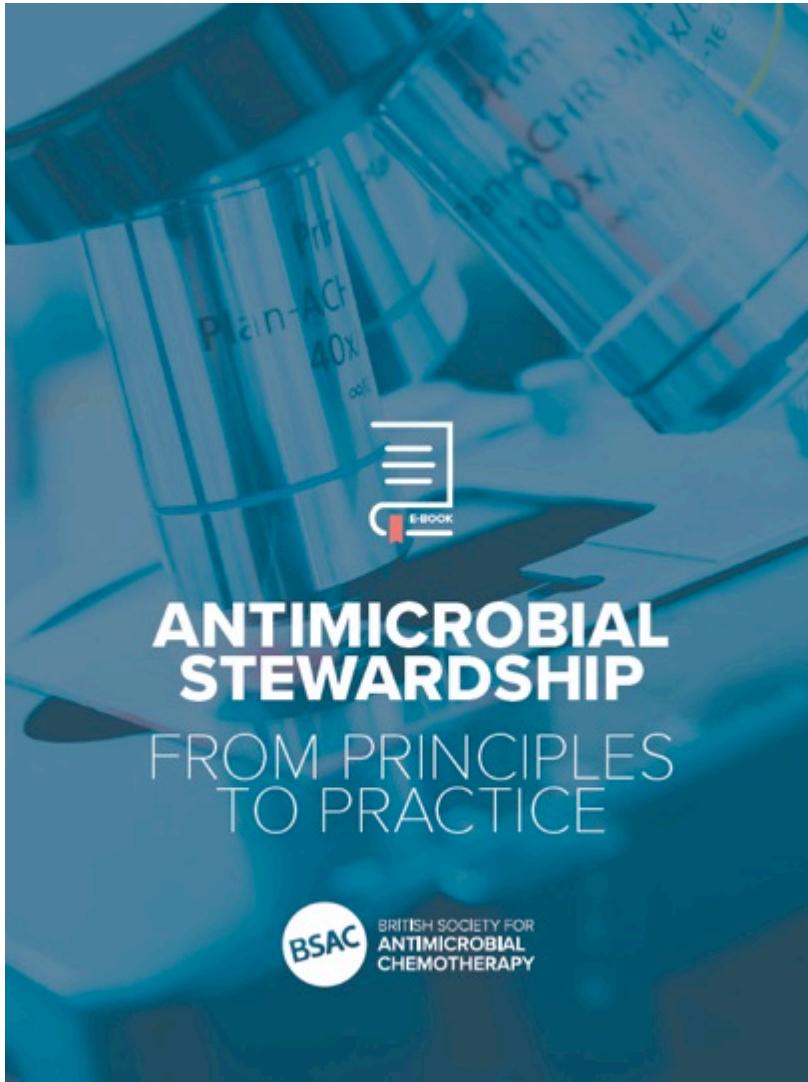


Céline Pulcini, Onder Ergönül, Füsun Can, Bojana Beović

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IN COLLABORATION
WITH ESGAP/ESCMID



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