

STRATEGIES AND CHALLENGES OF ANTIMICROBIAL STEWARDSHIP IN LONG-TERM CARE FACILITIES

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RECENT REVIEWS ON THE TOPIC

- Dyar OJ, Pagani L, Pulcini C. *Strategies and Challenges of Antimicrobial Stewardship in Long-Term Care Facilities*. **Clin Microbiol Infect**; **2015**; 21: 10–19.
- Moro ML, Gagliotti C. *Antimicrobial resistance and stewardship in long-term care settings*. **Future Microbiol**. **2013**; 8: 1011-1025.
- Nicolle LE. *Antimicrobial stewardship in long term care facilities: What is effective?* **Antimicrob Resist Infect Control**. **2014**; 3: 6.
- Rhee SM, Stone ND. *Antimicrobial stewardship in long-term care facilities*. **Infect Dis Clin North Am**. **2014**; 28: 237-246.
- Crnich *et al*. *Optimizing Antibiotic Stewardship in Nursing Homes: A Narrative Review and Recommendations for Improvement*. **Drugs Aging** (**2015**) 32:699–716
- Fleming *et al*. *Antibiotic Prescribing in Long-Term Care Facilities: A Meta-synthesis of Qualitative Research*. **Drugs Aging** (**2015**) 32:295–303

LTCFs in Europe

- 3.7 million residents in 2010
- Will increase in the years to come

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1. ANTIMICROBIAL STEWARDSHIP

IN GENERAL

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Burden of bacterial resistance

ECDC (2009)
25 000 deaths/year in Europe

CDC (2013)



WHO

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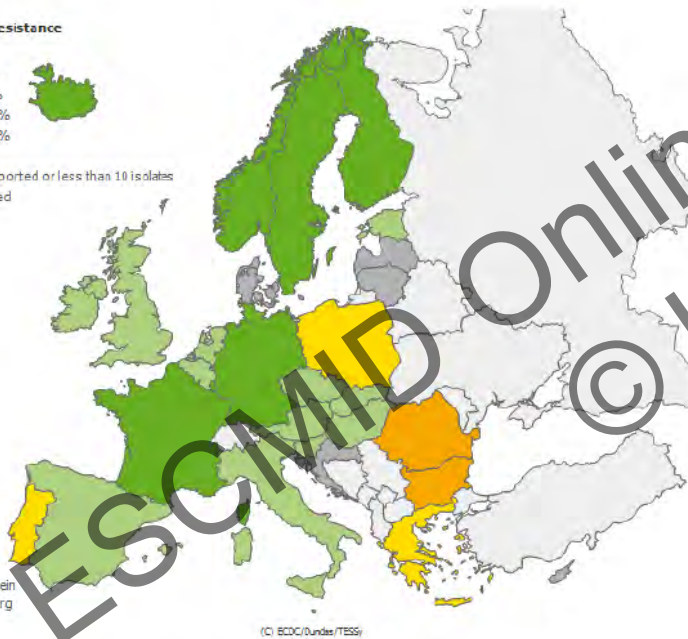
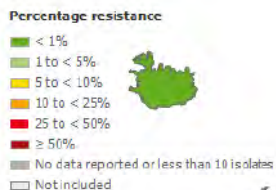
ANTIMICROBIAL
RESISTANCE
Global Report
on Surveillance

2014

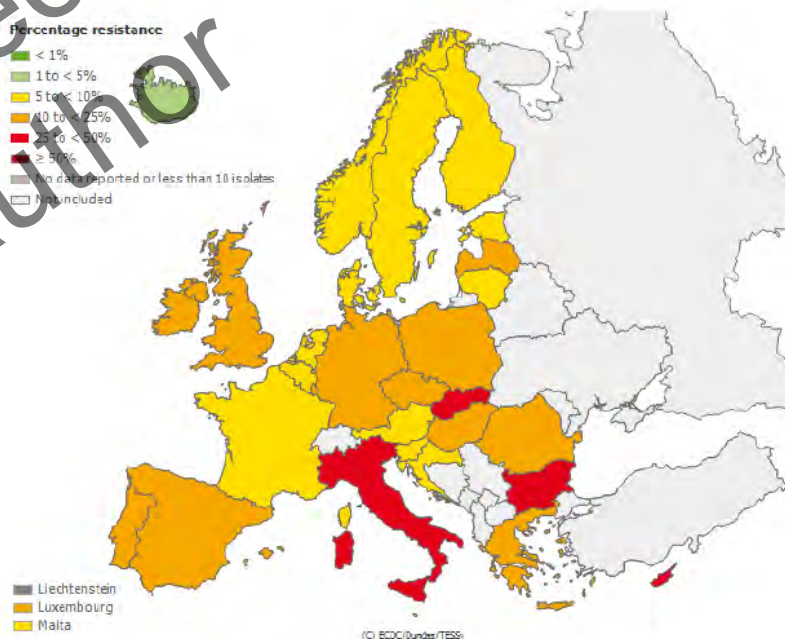
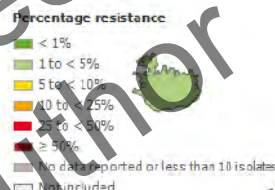
E. coli 3rd gen. Ceph.-R (> 85% ESBL)



Proportion of 3rd gen. cephalosporins Resistant (R) *Escherichia coli* Isolates in Participating Countries in 2002



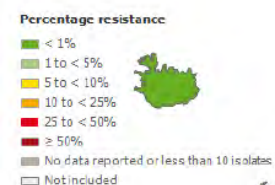
Proportion of 3rd gen. cephalosporins Resistant (R) *Escherichia coli* Isolates in Participating Countries in 2013



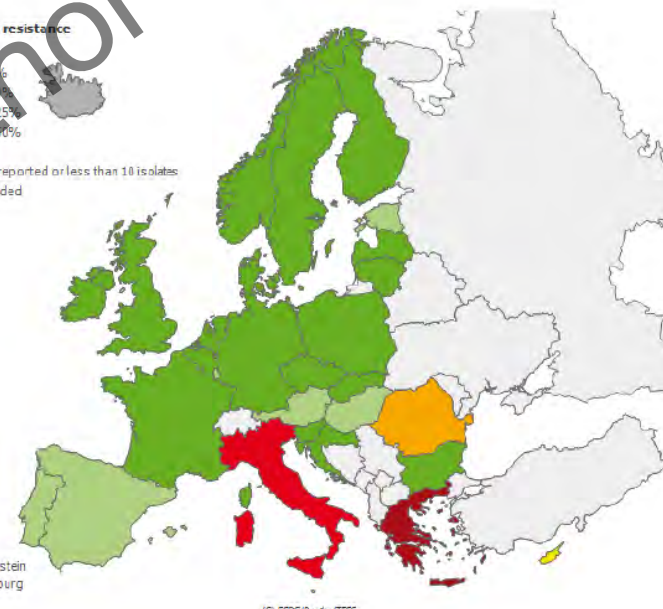
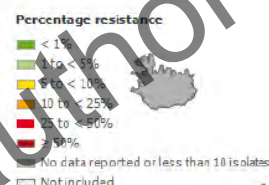
K. pneumoniae carbapenems-R



Proportion of Carbapenems Resistant (R) *Klebsiella pneumoniae* Isolates in Participating Countries in 2010



Proportion of Carbapenems Resistant (R) *Klebsiella pneumoniae* Isolates in Participating Countries in 2013

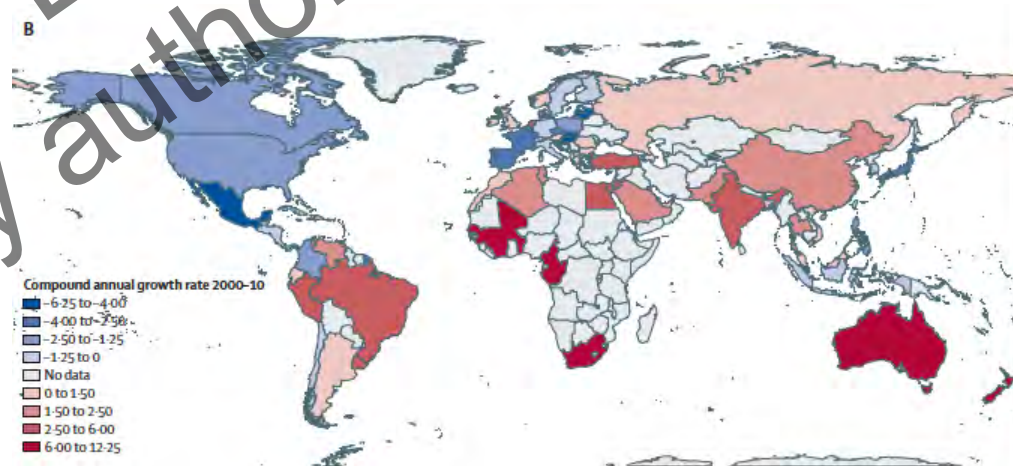


Antibiotic use is a driver for resistance

- Any antibiotic has an impact on the microbiota
- (Resistant) bacteria are transmissible
- Bacteria are adaptable

Antibiotic use is increasing worldwide

- 2000-2010 international data
- + 36%, particularly broad-spectrum AB



Very few new antibiotics in the pipeline



Impact of bacterial resistance

- Alternatives often more toxic, less efficient, and parenteral only
- Increased mortality
- Increased costs
- Worse-case scenario: threat to modern medicine: surgery, cancer chemotherapies, transplants...

An alarming situation



• « ...a problem so serious that it threatens the achievements of modern medicine.

A post-antibiotic era—in which common infections and minor injuries can kill—far from being an apocalyptic fantasy, is instead a very real possibility for the 21st century. »

The English response

- Professor Dame Sally Davies
- England's Chief Medical Officer

« Antimicrobial resistance poses a catastrophic threat. If we don't act now, any one of us could go into hospital in 20 years for minor surgery and die because of an ordinary infection that can't be treated by antibiotics. And routine operations like hip replacements or organ transplants could be deadly because of the risk of infection. »

The US response

- President Barack Obama
 - Ambitious national plan
 - 5-year
- 18th September 2014
 - « Urgent health threat »
 - Dedicated funding

3 main actions to curb resistance



Any setting, human or not

Antimicrobial
stewardship



Infection control
Environment



Vaccination

SOME USEFUL RESOURCES

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18 November

JOURNÉE EUROPÉENNE D'INFORMATION SUR LES ANTIBIOTIQUES



UNE INITIATIVE EUROPÉENNE EN
MATIÈRE DE SANTÉ

français (fr) ▾



Préparer une campagne ▶ À l'intention des médecins ▶ S'informer ▶ Participer ▶ Campagnes en Europe ▶ Actualités À propos ▶

Ne prenez pas d'antibiotiques
sans avis médical

Infographie

Témoignages

Données et rapports

Qu'est-ce que la résistance aux
antibiotiques?

Ne prenez pas d'antibiotiques sans avis médical

Matériel de campagne: affiches,
animations, sacs de pharmacie

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#EAAD



Nuala O'Connor @DrNuala

17h

Via @robounney you must watch this @PaschalSheehy
@PrisellaLynch @paulcullenit @juneshannon #EAAD day

Expand



Trevor @Astral_ION

27 Sep

@Astral_Cam who is this #EAAD 🐱

Expand

Tweet #EAAD

1/6 of Europeans are not aware that the
misuse of antibiotics makes them less
effective



00:32



HD



Qu'est-ce que la résistance aux antibiotiques et
l'utilisation prudente des antibiotiques?

Comment utiliser les antibiotiques de façon
responsable?

Témoignages de patients, infographies et vidéos



Comment organiser une campagne sur
l'utilisation responsable des antibiotiques?

Kit de communication/matériel de communication
à l'intention du grand public, des médecins
hospitaliers et généralistes

WORLD ANTIBIOTIC AWARENESS WEEK

16-22 NOVEMBER 2015



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Antimicrobial Stewardship: Managing Antibiotic Resistance

Join now – started 28 Sep

INTRODUCTION

Understand antibiotic resistance, and how antimicrobial stewardship can slow down or reduce it, with this free online course

WATCH THE TRAILER





e-Bug

Accueil

Ecoles primaires

Collèges

Jeux

Présentation

France

Bienvenue sur le site e-Bug!

NOUVEAUTES ET ACTUALITES

Garçons	Filles
2 mois 1ère injection 6-en-1 combinant les vaccins contre diphtérie, tétanos, polio, coqueluche, hémophilus et hépatite B Pneumocoque	2 mois 1ère injection 6-en-1 combinant les vaccins contre diphtérie, tétanos, polio, coqueluche, hémophilus et hépatite B Pneumocoque
4 mois 2ème injection 6-en-1 combinant les vaccins contre diphtérie, tétanos, polio, coqueluche, hémophilus et hépatite B Pneumocoque	4 mois 2ème injection 6-en-1 combinant les vaccins contre diphtérie, tétanos, polio, coqueluche, hémophilus et hépatite B Pneumocoque

Calendrier vaccinal interactif

Découvrez ce **Calendrier vaccinal interactif** qui permet de visualiser aisément les vaccinations conseillées en fonction de l'âge et du sexe. Vos élèves pourront télécharger leur calendrier vaccinal personnel ou celui de leurs proches, pour voir instantanément les vaccinations qu'ils doivent avoir reçu à ce stade et les vaccinations à recevoir.

Introduction pour les enseignants

e-Bug est une **ressource éducative** gratuite (brochure et site web) destinée aux élèves des écoles et des collèges et à leurs enseignants concernant **les micro organismes, la transmission, la prévention et le traitement des infections**. La ressource résulte à la fois de l'implication de 18 pays européens et de nombreux partenaires français, tant au niveau de l'Education que de la Santé Publique. La brochure peut être **commandée gratuitement** sur le site web de l'Institut National de Prévention et d'Education pour la Santé: <http://www.inpes.sante.fr/> en utilisant le lien suivant: <http://www.inpes.sante.fr/professionnels->

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Brain Infections

Clinical Parasitology

Clostridium difficile

Critically Ill Patients

Elderly Infections

Epidemiological Markers

Food/Water Infections

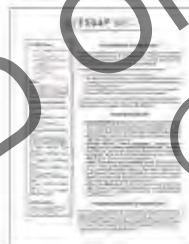
Forensic/Postmortem Microbio

Fungal Infection



ESCMID Study Group for Antibiotic Policies - ESGAP

News & Activities



14 September 2015

September ESGAP Newsletter published

- Do antibiotics matter to you?
- News from ESGAP
- European Antibiotic awareness Day
- ESGAP sessions at the next ECCMID
- OVLC
- European Day during the WAAW
- Announcements

Infectious diseases - clinical microbiology - infection control staffing survey in hospitals



In an attempt to define standard personnel to hospital bed ratio we designed the current survey. Hospitals will be de-identified for the analysis and reporting.

Thank you for having taken part in this survey. We are currently analyzing the accumulated data to be published soon.

Bojana Beovic, Barry Cookson, Markus Hell, Leonard Leibovici, Dilip Nathwani, Ran Nir-Paz, Mical Paul, Celine Pulcini, Evelina Tacconelli

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2. ANTIBIOTIC USE

IN LTCFs

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Very high use

- **Prevalence** on any given day: **3-15%**
- 80% of residents with a suspected infection are prescribed antibiotics
- 50-80% of residents receive at least one AB course per year
- Huge variations between LTCFs (x5-10)

Motives for AB use

Suspected

1. UTI: 32-66%
2. RTI: 15-36%
3. SSTI: 13-18%

Patterns of antibiotic use

- Quite similar to primary care patterns
- Except for higher use of parenteral route (10-20% in France for example)

Are AB prescriptions appropriate ?

- The one-third rule...

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What about durations of treatments?

- Frequently too long
- >7 days in half of the cases in a Canadian study (*Daneman et al. 2013*)
- In this study: duration was dependent on the prescriber, not the patients' characteristics

=> (Big) room for improvement !



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3. BACTERIAL RESISTANCE

IN LTCFs

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Prevalence of MDR bacteria

- High, sometimes higher than in hospitals
- Residents often colonised for several months
- **LTCFs = MDR bacteria 'reservoir'**

4. ANTIBIOTIC PRESCRIBING: A CHALLENGE IN LTCF

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1. Difficult decision-making process: high level of diagnostic uncertainty

- Difficulties in getting relevant clinical information (hearing loss, dementia...)
- Clinical findings often atypical and non specific
- Lack of onsite diagnostic facilities
- And difficulties in getting good quality samples/investigations
- Colonisation / infection

2. Healthcare organisation / culture

Medical staff

- Multiple doctors
- Lack of onsite doctors to provide immediate clinical assessment
- Unfamiliarity with patients
- Half of antibiotics are prescribed over the phone

Nursing staff

- Shortage of staff
- Rapid staff turnover
- Insufficient training on infection
- Nurses are the cornerstone of care in LTCFs, and doctors rely on the information they provide to prescribe antibiotics

Antibiotics are sometimes prescribed to avoid hospitalisation or a revisit

3. Lack of local resistance data

- < 20% of the cases in European LTCFs

The same is true for antibiotic use data

4. High prevalence of bacterial colonisation

- Wounds

- Urine

- 100% if catheter
- No catheter: 25%-50% (women) and 15%-40% (men)

- RTI if COPD

Systematic samples
= driver for unnecessary
antibiotic use

5. AB use and end-of-life care

- Controversial topic
- ABs are largely prescribed in that situation (mostly RTI and dementia)
- Positive clinical impact not proven
- Advance care plans might be helpful

6. Patients' and families' expectations

- Same problems as in primary care practice

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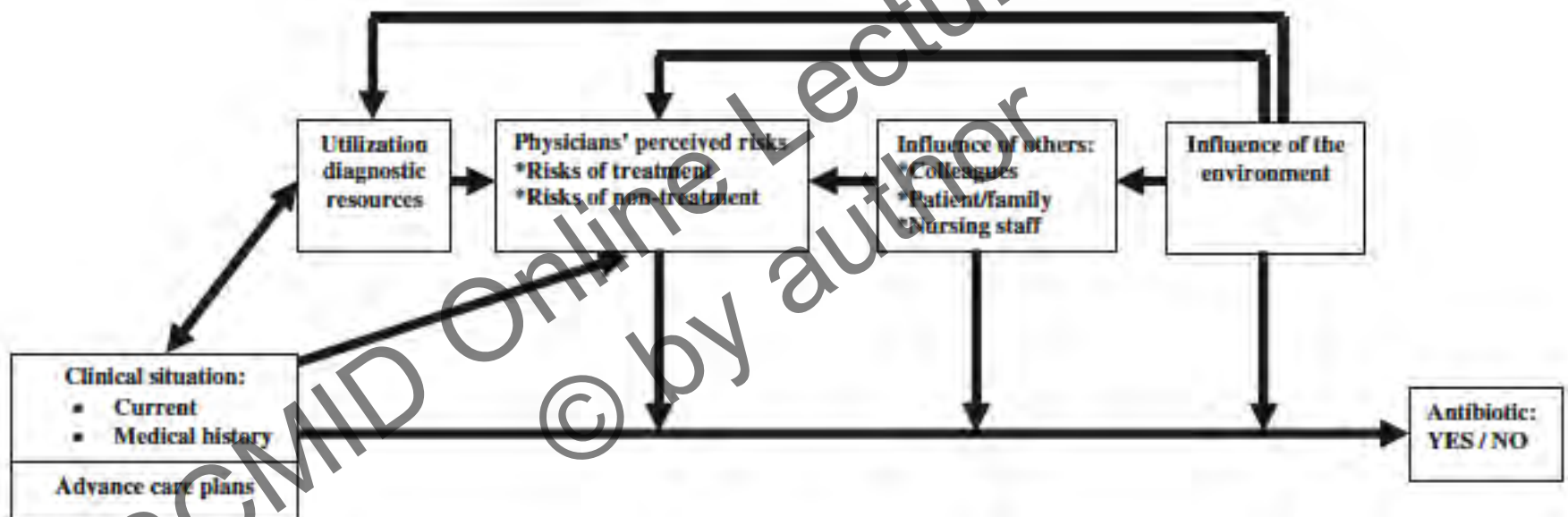
7. Guidelines

- Often not available in LTCFs
- Concern that the usual guidelines are generally not applicable to the older LTCF population
- ‘Frailty’ concept
- Better safe than sorry => overprescription

8. Lack of awareness

- Bacterial resistance is invisible
- Impact overlooked
- Short life expectancy
- AMS is not a priority compared to other topics

Qualitative study in the Netherlands



5. INTERVENTIONAL STUDIES

REGARDING ANTIMICROBIAL STEWARDSHIP
IN LTCFs

Around 20 published studies

- Mostly in USA/Canada, a few in Europe

Interventions showing a positive impact:

- Education doctors/nurses
- Audit and feedback
- Quality improvement projects
- Of course repeated and multifaceted actions work best
- ID advice in one study
- Form to be completed by nurses on days 1 and 3 of AB prescriptions => reduction in AB use in one study

Table 5 Potential areas of focus for antimicrobial stewardship interventions as proposed by study participants

AMS interventions	Potential areas of focus
Nursing staff education and training	<ul style="list-style-type: none">-Reinforcement of issues about antibiotic use, antibiotic resistance and benefits of antimicrobial stewardship-Education sessions as part of in-service training, via online training modules, awareness campaigns, etc.
Aged care-specific infection management algorithms for nursing staff	<ul style="list-style-type: none">-Flow charts to guide appropriate initial testing of residents, as well as guidance with regard to conditions that may be observed versus those requiring immediate contacting of prescribers-Targeted management of common infections, in particular, urinary and respiratory tract infections
Aged care-specific antibiotic treatment guidelines	<ul style="list-style-type: none">-Development of evidence-based aged care antibiotic treatment guidelines (with recommendations about appropriate dosages and duration of therapy)-Education to prescribers through online updates or distribution of newsletters, highlighting evidence-based prescribing practices
Regular surveillance of antibiotic use by consultant pharmacists	<ul style="list-style-type: none">-Passive surveillance and audit of antibiotic use, with regular feedback to the prescribers-Documentation of individual residents' prior antibiotic exposure over time, supplemented by antibiotic susceptibility results to guide prescribing decisions
Improved communication about decisions related to antibiotic prescribing	<ul style="list-style-type: none">-Early discussion with residents and/or families about antibiotic use during acute events and terminal illness as part of advanced care planning-Proper handover from locum doctors to regular GPs regarding antibiotics prescribed after hours for further review-Faxing of treatment plans for phone ordering of antibiotics via antibiotic ordering form with clear indications for treatment and planned duration of treatment

6. ANTIMICROBIAL STEWARDSHIP PROGRAMS

IN LTCFs

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Recommendations ?

- Specific evidence-based guidelines regarding prudent antibiotic use in LTCFs are lacking

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	ESAC[11] Europe n=260	HALT[14] Europe n=117
Antimicrobial stewardship committee	8%	16%
Therapeutic formulary	16%	57%
Antimicrobial guidelines	50%	45%
Data about antibiotic consumption	-	33%
Data about local antimicrobial resistance profiles	9%	17%
Regular training of prescribers on antibiotic use	16%	22%
Individual antimicrobial prescribing profiles	-	27%
Pharmacist advice on antibiotic use	-	19%
Regular audits assessing antibiotic use	-	-

7. STRATEGIES TO IMPROVE ANTIBIOTIC USE

IN LTCFs

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1. No AB prescription without a clinical examination

- Association between absence of clinical examination and:
 - Increased AB use
 - More AB misuse
- Important to document indication in the medical record

2. Education

- **All healthcare professionals**
 - **Doctors:** CME, audits and feedback, AB prescribing profiles
 - **Nurses:**
 - When is a bacterial infection likely ?
 - When should AB not be prescribed
 - Indications for microbiological investigations
- **Patients and their families:** bacterial resistance, situations when an AB is not needed
- <http://www.sante.gouv.fr/kit-pedagogique-pour-l-usage-des-antibiotiques-en-etablissement-d-hebergement-pour-personnes-agees-dependantes-ehpad,13615.html>
- <http://www.plan-antibiotiques.sante.gouv.fr/Kit-antibiotiques-en-EHPAD-ARS-lle.html>

3. Where to start ?

Global strategy

- Target situations where AB misuse is frequent
- And where improving prescribing will be easier
- Stepwise approach
- Change the system

Situations where misuse is frequent

- AB prophylaxis (UTI)
- Colonisation
- No guidelines
- Broad-spectrum AB
- Topical AB
- Durations of treatment

4. Microbiological investigations

- Urine dipsticks
- Urine cultures
- Wound swabs
- Only if prescribed by a doctor, after a clinical examination

5. Reassess AB prescriptions around day 3

Especially if:

- Potentially severe infection: pyelonephritis, prostatitis, pneumonia, ...
- Diagnosis uncertainty
- Adaptation to microbiology results

6. Major role of microbiology lab

- Reporting:
 - Educational messages
 - Restrictive reporting (no reporting or limited number of antibiotics)

7. Rapid diagnostic tests

- Ideally Point-Of-Care (POC)
- CRP
- Influenza

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8. Innovative strategies need to be tested!

- Infection champion
- AMS team
- ID advice available on the phone
- Computerised decision support systems
- ...
- Process and outcome indicators to monitor your program +++

9. Regulatory measures

- Certification/accreditation
- LTCF medical coordinator
- Integrate AMS in existing quality/safety/infection prevention and control programmes
- Should be part of regulatory requirements

Any question?

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