ESGAP
ESCMID STUDY GROUP FOR ANTIBIOTIC POLICIES
European Society of Clinical Microbiology and Infectious Diseases

THE ANTIMICROBIAL STEWARDSHIP TEAM – WHO AND WHAT IS ESSENTIAL?

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Summary of the presentation

- This presentation will focus on providing guidance for:
  - the selection of antimicrobial stewardship interventions to be implemented in your hospital;
  - specific plans for supporting and evaluating the programme once implemented;
  - which resources to use;
  - and what the team should look like.

Learning outcomes

- The participant will learn:
  - how to create an antimicrobial stewardship team;
  - about the main conditions needed to implemented an antimicrobial stewardship programme in his/her hospital;
  - how to best select antimicrobial stewardship interventions to be implemented in his/her hospital;
  - how to monitor the progress of his/her programme.

Articles for further reading

- http://ecdc.europa.eu/en/publications/Publications/draft-EU-guidelines-prudent-use-antimicrobials-human-medicine.pdf
- https://www.ncbi.nlm.nih.gov/pubmed/27066980
- https://www.ncbi.nlm.nih.gov/pubmed/27080992

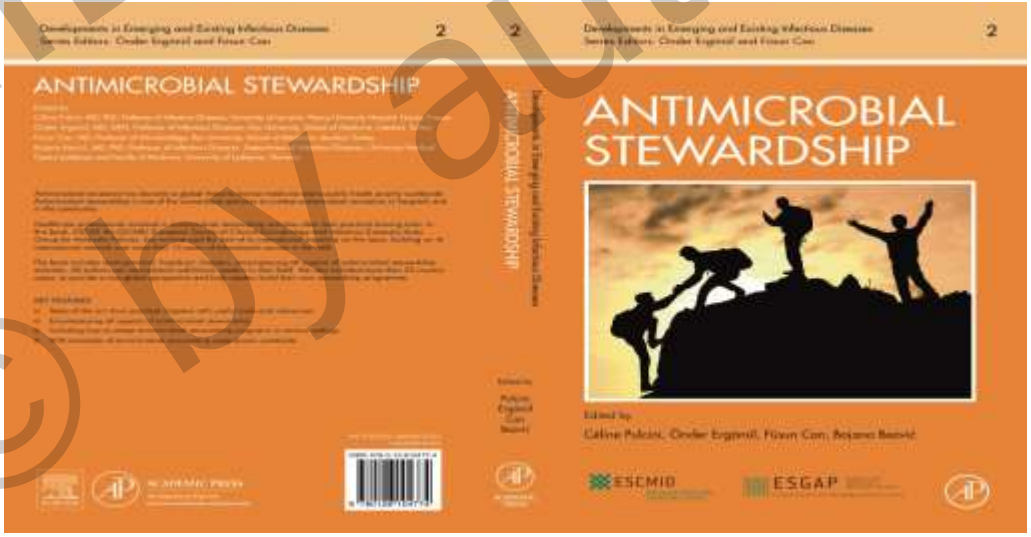
Disclosures

- None to declare relevant to this topic

That will be a very brief overview !

- Two-day ESGAP courses on the same topic
  - AMS course in Istanbul October 2017, and possibly Madrid 2018
  - Antibiotic prescribing course in Madrid in November 2017

- ESGAP book



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Antimicrobial Stewardship: Managing Antibiotic Resistance

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INTRODUCTION

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

WATCH THE TRAILER

UNIVERSITY OF DUNDEE

BSAC The British Society for Antimicrobial Chemotherapy

TO KNOW YOU BETTER

Is there an antimicrobial stewardship (AMS) team in your hospital ?

1. Yes, and I am part of it

1. Yes, but I am not part of it

1. Not yet, but it is planned in the near future

1. No

2012 ESGAP International Survey

- 660 hospitals in 67 countries

- 58% of hospitals had an AMS programme in place
- 22% were planning to implement one

Howard P *et al*. JAC 2015, PMID: 25527272

For those of you who have an AMS programme in your hospital, which professionnals are members of the AMS ‘operational’ team ?

1. Pharmacist
1. Infectious Diseases (ID) specialist
1. Microbiologist
1. Nurse
1. Infection control team

2012 ESGAP International Survey

1. Pharmacist 95%
1. Infectious Diseases (ID) specialist 84%
1. Microbiologist 91%
1. Nurse 59%
1. Infection control team 65%

Howard P *et al*. JAC 2015, PMID: 25527272

Do you have standards regarding the human resources needed for your AMS team in your country ? *(e.g. 1 FTE pharmacist / 200 beds)*

1. Yes

1. No

2. I don’t know

WHAT IS ANTIMICROBIAL STEWARDSHIP?

Some suggestions

- Definition of **AMS**: a *strategy aiming at promoting responsible antibiotic use*
- Implemented as an **AMS programme** in hospitals = a *set of interventions*
- **WHAT** to achieve: responsible antibiotic use, defined by process measures (prescription compliant with guidelines, review of therapy…)
- **HOW** to achieve it: set of behavioural interventions
  - At the prescriber level: audit and feedback, education…
  - At the organisation/system level: AMS team, selective reporting…

Reviews planned in CMI this year on this topic

WHICH INTERVENTIONS?

Clinical Infectious Diseases Advance Access published April 13, 2016

IDSA FEATURES

Implementing an Antibiotic Stewardship Program: Guidelines by the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America

Tamar F. Barlam,[1] Sara E. Cosgrove,[2] Lilian M. Abbo,[3] Conor MacDougall,[4] Audrey N. Schuetz,[5] Edward J. Septimus,[6] Arjun Srinivasan,[7] Timothy H. Dellit,[8] Yngve T. Falck-Ytter,[9] Ned D. Fishman,[10] Cindy W. Hamilton,[11] Timothy C. Jackson,[12] Pamela A. Lipsett,[13] Preeti N. Malani,[14] Larissa S. May,[15] Gregory J. Moran,[16] Melinda M. Neuhauser,[17] Janet G. Newland,[18] Christopher A. Ohl,[19] Matthew H. Samore,[20] Susan K. Seo,[21] and Kavita K. Trivedi[22]

Evidence-based guidelines for implementation and measurement of antibiotic stewardship interventions in inpatient populations including long-term care were prepared by a multidisciplinary expert panel of the Infectious Diseases Society of America and the Society for Healthcare Epidemiology of America. The panel included clinicians and investigators representing internal medicine, emergency medicine, microbiology, critical care, surgery, epidemiology, pharmacy, and adult and pediatric infectious diseases specialties. These recommendations address the best approaches for antibiotic stewardship programs to influence the optimal use of antibiotics.

Keywords. antibiotic stewardship; antibiotic stewardship programs; antibiotics; implementation.

EXECUTIVE SUMMARY

Antibiotic stewardship has been defined in a consensus statement from the Infectious Diseases Society of America (IDSA), the Society for Healthcare Epidemiology of America (SHEA), and the Pediatric Infectious Diseases Society (PIDS) as "coordinated interventions designed to improve and measure the appropriate use of [antibiotic] agents by promoting the selection of the optimal [antibiotic] drug regimen including dosing, duration of therapy, and route of administration" [1]. The benefits of antibiotic stewardship include improved patient outcomes, reduced adverse events including *Clostridium difficile* infection (CDI), improvement in rates of antibiotic susceptibilities to targeted antibiotics, and optimization of resource utilization across the continuum of care. IDSA and SHEA strongly believe that antibiotic stewardship programs (ASPs) are best led by interdisciplinary clinical physicians with additional stewardship training.

Summarized below are the IDSA/SHEA recommendations for implementing an ASP. The expert panel followed a process used in the development of other IDSA guidelines, which included a systematic weighting of the strength of recommendation and quality of evidence using the GRADE (Grading of Recommendations Assessment, Development and Evaluation) system (Figure 1) [2–5]. A detailed description of the methods, background, and evidence summaries that support each of the recommendations can be found online in the full text of the guidelines. For the purposes of this guideline, the term antibiotic will be used instead of antimicrobial and should be considered synonymous.

RECOMMENDATIONS FOR IMPLEMENTING AN ANTIBIOTIC STEWARDSHIP PROGRAM

Interventions

i. Does the Use of Preauthorization and/or Prospective Audit and Feedback Interventions by ASPs Improve Antibiotic Utilization and Patient Outcomes?

Recommendation

1. We recommend preauthorization and/or prospective audit and feedback over no such interventions (strong recommendation, moderate-quality evidence).

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Clinical Infectious Diseases®

DOI: 10.1093/cid/ciw118

Infection
DOI 10.1007/s15010-016-0885-2

GUIDELINE

Strategies to enhance rational use of antibiotics in hospital: a guideline by the German Society for Infectious Diseases

K. de With[1] · T. Allerberger[2] · S. Amann[1] · P. Apfalter[3] · H.-R. Brodt[4] · T. Eckmanns[5] · M. Fellhauer[6] · H. K. Geiss[5] · O. Junuzi[6] · R. Krause[19] · S. Lemmen[21] · E. Meyer[12] · H. Mittermayer[7] · U. Porsche[11] · E. Presterl[14] · S. Reuter[15] · B. Sinha[16] · R. Strauß[17] · A. Weidner-Fördös[18] · C. Wenisch[18] · W. V. Kern[20]

Abstract

Introduction In the time of increasing resistance and paucity of new drug development there is a growing need for strategies to enhance rational use of antibiotics in German and Austrian hospitals. An evidence-based guideline on recommendations for implementation of antibiotic stewardship (ABS) programmes was developed by the German Society for Infectious Diseases in association with the following societies, associations and institutions: German Society of Hospital Pharmacists, German Society for Hygiene and Microbiology, Paul Ehrlich Society for Chemotherapy, The Austrian Association of Hospital Pharmacists, Austrian Society for Infectious Diseases and Tropical Medicine, Austrian Society for Antimicrobial Chemotherapy, Robert Koch Institute.

Materials and methods A structured literature research was performed in the databases EMBASE, BIOSIS, MEDLINE and *The Cochrane Library* from January 2006 to November 2010 with an update to April 2012 (MEDLINE and *The Cochrane Library*). The grading of recommendations in relation to their evidence is according to the AWMF Guidance Manual and Rules for Guideline Development.

Conclusion The guideline provides the grounds for rational use of antibiotics in hospital to counteract antimicrobial resistance and to improve the quality of care of patients with infections by maximising clinical outcomes while minimising toxicity. Requirements for a successful implementation of ABS programmes as well as core and supplemental ABS strategies are outlined. The German version of the guideline was published by the German Association of the Scientific Medical Societies (AWMF) in December 2013.

Keywords Antibiotic stewardship · ABS · Guideline · Antimicrobial resistance · Quality of care · Rational use

AWMF (Association of the Scientific Medical Societies in Germany) Registry No. 092/001.

S3-Guideline of the German Society for Infectious Diseases Reg.Soc. (Deutsche Gesellschaft für Infektiologie e.V., DGI) in association with the following professional societies/associations/institutions:
German Society of Hospital Pharmacists (ADKA),
German Society for Hygiene and Microbiology (DGHM),
Paul Ehrlich Society for Chemotherapy (PEG),
The Austrian Association of Hospital Pharmacists (AASHP),
Austrian Society for Infectious Diseases and Tropical Medicine (ÖGIT),
Austrian Society for Antimicrobial Chemotherapy (ÖGACH),
Robert Koch Institute (RKI), Berlin.
Editorial reviewer: Prof. Dr. Stephan Harbarth, Genf.
Patient representative: Viktoria Mühlbauer, Düsseldorf.
Editor of the English version: Sita Hellig, Dresden.

H. Mittermayer: Deceased.

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Published online: 11 April 2016

Other guidelines/guidance

- ECDC proposal / guidance: http://ecdc.europa.eu/en/publications/Publications/draft-EU-guidelines-prudent-use-antimicrobials-human-medicine.pdf
- NICE (UK): https://www.nice.org.uk/guidance/qs121
- Australia : http://www.safetyandquality.gov.au/our-work/healthcare-associated-infection/antimicrobial-stewardship/
- Netherlands, Spain…
- Library on the ECDC website: http://ecdc.europa.eu/en/healthtopics/Healthcare-associated_infections/guidance-infection-prevention-control/Pages/guidance-antimicrobial-stewardship.aspx

Lancet Infect Dis 2016

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

Empirical therapy according to the guidelines
Blood cultures
Cultures from the site of infection
De-escalation of therapy
Adjustment of therapy to renal function
Switch from intravenous to oral therapy
Documented antibiotic plan
Therapeutic drug monitoring
Discontinuation of antibiotic therapy if infection is not confirmed
Presence of a local antibiotic guide
Local antibiotic guide in agreement with national antibiotic guidelines
List of restricted antibiotics
Bedside consultation
Assessment of patients' adherence

Mix of **WHAT** to achieve and **HOW** to achieve it

Cochrane Library
Cochrane Database of Systematic Reviews

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

Davey P, Marwick CA, Scott CL, Charani E, McNeil K, Brown E, Gould IM, Ramsay CR, Michie S.
Interventions to improve antibiotic prescribing practices for hospital inpatients.
Cochrane Database of Systematic Reviews 2017, Issue 2. Art. No.: CD003543.
DOI: 10.1002/14651858.CD003543.pub4.

www.cochranelibrary.com

WILEY

How to choose the best interventions

- Guidelines / Literature

- No magic bullet
- Multifaceted strategy, usually both restrictive and persuasive
- Adapted to your specific context
- And taking into account local barriers

- Behaviour change strategy

Reviews planned in CMI this year on this topic

Pieces of advice

- Start small, with low-hanging fruits
- With friendly colleagues
- Stepwise approach
- Build on successes
- Monitor your impact and adapt

WHICH SYSTEM IN PLACE?

Essential starting point

- Institutional support
- Clear distribution of roles and responsibilities
- Close collaboration with the infection prevention and control team

HOW TO MONITOR?

Plan in advance

- List of indicators
- And monitoring system (ideally automated)
- Time to analyse the data
- Feedback to clinicians:
  - Involve them
  - Short report, easy to understand
  - Real time

Measuring the impact of an AMS programme

- Accurate definition of numerators/denominators
- Structure/activity measures
- Process measures :
  - IV-oral switch
  - Review of antibiotic prescriptions
  - Expert advice for bacteremia
  - Prescription compliant with guidelines…
- Outcome measures : influenced by many factors
  - Antibiotic use
  - Bacterial resistance
  - *C. difficile* infections
  - *S. aureus* bacteremia mortality rate
  - SSIs rate…
- Balancing measures:
  - Readmission rate for infections

How to choose the indicators?

- National/regional regulation
- Local context
- Feasibility

- Examples of indicators:
  - TATFAR: https://www.cdc.gov/drugresistance/pdf/tatfar_rec1-finalreport_2015.pdf
  - DRIVE-AB: http://drive-ab.eu/wp-content/uploads/2014/09/WP1A_Final-QMs-QIs_final.pdf

WHO SHOULD BE PART OF THE TEAM?

Two levels

- AMS operational ‘core’ team:
  - daily work
- Antimicrobial committee:
  - regular meetings to validate the strategy at an institutional level

AMS guidelines

- All recommend a multidisciplinary team

- ID specialist
- Pharmacist
- Microbiologist
- + others

CORE TEAM

- Depending on the context

- Differences between countries

Clinical impact of ID specialists

- More appropriate antibiotic prescriptions
- Decrease in (unnecessary) antibiotic use
- Better clinical outcomes
- Decrease in AMR in some studies
- **Impact more pronounced if the IDS is helped by a team**

Pulcini C *et al*. CMI 2014, PMID: 25039787

Activities of the AMS team and distribution of roles

- Depends on the country
- To be discussed and defined

Available here at the ECCMID

- Practices, organization and legal responsibility in advising on antibiotic prescription: the international ESGAP AntibioLegalMap survey (Abstract #1227)

- ePoster #P1120
- Paper Poster Area: Sunday 24th April from 12:30 to 13:30

And also

- Defensive medicine in antibiotic prescribing among specialists in infectious diseases and clinical microbiology: the international ESGAP AntibioLegalMap survey
- Paper Poster Area: Sunday 24th April from 12:30 to 13:30

- Session: Antibiotic prescribing - consumer and prescriber surveys
- View ePoster #P1121
- View Abstract #1229

Example: France

AMS activity	ID specialist	Pharmacist
Replying to clinicians' requests	*Commonly done*	*Sometimes done*
Ward rounds		*Quite uncommon*
Review of antibiotic prescriptions for specific indications		
Education of prescribers		
Audit and feedback		
Guidelines		
Antibiotic use monitoring, analysis and feedback	Mostly analysis and feedback	
TDM		
Drug interactions, IV-oral switch		

Le Coz P et al. Med Mal Infect 2016, PMID: 27021932

Team culture

- Variation in recommendations between AMS team members
- Undermines credibility among prescribers

Potential solutions:

- Local guidelines
- Avoid multiplicity of advisers for the same patient/ward
- Trace recommendations and check before giving another piece of advice
- Discuss inconsistencies during frequent team meetings
- Some situations may lack evidence, or diagnosis is uncertain
  => explain to clinicians

Pulcini C *et al*. CMI 2014, PMID: 25039787

Promote your team !

- Speak in a positive way of your AMS team colleagues to prescribers
- Clinicians are nicer if they know your face

WHICH RESOURCES?

Human resources

German guidelines

- 2 FTE / 1000 beds

= **minimum** staff resources for the whole team

French Task Force

- **Optimal** AMS team resources:
  - 3.6 FTE / 1000 beds ID specialist
  - 2.5 FTE / 1000 beds pharmacist
  - 0.6 FTE / 1000 beds microbiologist
  - Total of 6.7 FTE / 1000 beds

De With K *et al*. Infection 2016, PMID: 27066980 ; Le Coz P *et al*. Med Mal Infect 2016, PMID: 27021932

IT tools

- Shared form for the AMS team in the electronic medical record (EMR):
  - Activity report
  - Traceability for clinicians
  - Consistency within the team
- Computerised decision support systems

Share ideas, tools, and network

- At local level in your hospital
- At regional level, including primary care and long-term care facilities
- At national level

Toolboxes: some examples

- UK / BSAC : http://www.bsac-arc.com
- France / SPILF : http://www.infectiologie.com/fr/toolbox.html
- Sweden / React : https://www.reactgroup.org/toolbox/

Folkhälsomyndigheten
PUBLIC HEALTH AGENCY OF SWEDEN

Swedish work on containment of antibiotic resistance

Tools, methods and experiences

CONCLUSIONS

Interested in AMS… Join ESGAP !

ESGAP meeting tomorrow at 18.15

Hall N

Thanks for your attention !

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