Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine: what has been achieved by TATFAR?

Dominique L. Monnet (ECDC)
Recommendation 1: Develop common structure and process indicators for hospital antimicrobial stewardship programmes

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine

Let’s Keep Antibiotics Effective!
Rec. 1: Antimicrobial stewardship indicators

Rationale

• Antimicrobial stewardship is a coordinated programme that implements interventions promoting optimal antimicrobial prescribing to limit antimicrobial resistance and to prevent C. difficile infections, an adverse event associated with antibiotic use.

• Antimicrobial stewardship contributes to high quality and effective health care by decreasing unnecessary antimicrobial-related diseases, deaths, and costs.

• To effectively promote antimicrobial stewardship, an understanding of the key elements of successful stewardship programmes and interventions is needed.

Implementers

• CDC, ECDC and other stakeholders

Let’s Keep Antibiotics Effective!
Rec. 1: Antimicrobial stewardship indicators

What has been achieved (1)

- CDC and ECDC coordinated 20 antimicrobial stewardship experts (13 EU; 7 US) to participate in:
  - a modified Delphi process between March and May 2014;
  - an in-person meeting at ECDC in June 2014.
- The outcome was a set of 33 indicators (17 core indicators and 16 indicators).
Rec. 1: Antimicrobial stewardship indicators

What has been achieved (2)

- A final report on Recommendation #1 was cleared by ECDC and CDC and a synopsis of this report, including a table with the indicators, was posted on the TATFAR website in June 2015.
- A manuscript “A concise set of structure and process indicators to assess and compare antimicrobial stewardship programs among European Union and United States hospitals: results from a multinational expert panel” is currently under review.
Recommendation 2: Convene a joint US/EU working group to propose standards for measuring antimicrobial use in hospital settings

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine

Let’s Keep Antibiotics Effective!
Rec. 2: Standards for measuring antimicrobial use

Rationale

• Most human antimicrobial use occurs in healthcare settings.
• Methods to measure antimicrobial use in hospitals vary widely, preventing data comparisons

Implementers

• CDC, ECDC and other stakeholders
Rec. 2: Standards for measuring antimicrobial use

What has been achieved (1)

• CDC and ECDC shared US and EU surveillance approaches and methods to measure antimicrobial use in these settings with the purpose of improving the comparability of the antimicrobial use data.

• This comparison would require synchronising data sources and methods (i.e. numerator) to generate common measures that can easily be compared (e.g., defined daily dose [DDD], days of therapy [DOT], etc.).

Let’s Keep Antibiotics Effective!
Rec. 2: Standards for measuring antimicrobial use

What has been achieved

• Meeting of a US-EU working group on 18-19 June 2013 (7 EU, 5 US, WHO/Europe, WHO Collaborating Centre)
• Available hospital data and methods for reporting vary between US and EU
• Implementers have enrolled one of the involved external experts to begin writing, together with CDC and ECDC, a manuscript reviewing current standards for measuring antimicrobial use in hospital settings.
• The resulting article will be the final deliverable for this recommendation.

Let’s Keep Antibiotics Effective!
Recommendation 6: Establish an EU-US working group to assess the evidence for effectiveness of communications in promoting behaviour change to increase appropriate use and to develop joint priorities.

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine
Rec. 6: Campaigns on prudent antibiotic use

Rationale

• Existing campaigns in the US (“Get Smart with Antibiotics”) and the EU (European Antibiotic Awareness Day, 18 November)

• Campaigns to promote appropriate antimicrobial use must be periodically updated based on effectiveness data and societal factors

Implementers

• CDC and ECDC

Let’s Keep Antibiotics Effective!
Rec. 6: Campaigns on prudent antibiotic use

• What has been achieved (1)
  • Conference calls between CDC and ECDC to develop joint priorities and share information about their respective work on prudent antibiotic use campaigns
  • Since 2010, CDC and ECDC agreed to launch both of their campaigns during the week of 18 November. Since 2012, Canada and Australia have also aligned the timing of their national campaigns.
  • In 2013, ECDC and CDC published a joint editorial in The Lancet Infectious Diseases entitled “Global collaboration essential to spread the message on prudent antibiotic use” on prudent antibiotic use campaigns in the US and Europe, as well as in Canada and Australia.
  • On 18 November 2013, both ECDC and CDC took part in the first extended global Twitter conversation with global partners (e.g., Canada and Australia).
Rec. 6: Campaigns on prudent antibiotic use

• What has been achieved (2)

  • In 2014, ECDC and CDC coordinated a 24-hour Twitter conversation with a single hashtag (#AntibioticDay). All parties agreed on a plan to lead the conversation in a specific time-slot and on rules to allow a smooth transition of the conversation from partner to partner—thus enhancing the overall coordination.

  • The evaluation of the joint social media activities generated a total of 41 million Twitter impressions (number of people that have a Twitter account that received the tweets with the hashtag #AntibioticDay).

  • In 2015, implementers and other partners will again participate in a global Twitter chat (#AntibioticResistance) on November 18, as well as support the WHO’s inaugural World Antibiotic Awareness Week (November 16-22).
Recommendation 7: Consultation and collaboration on a point-prevalence survey for HAIs

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine

Let’s Keep Antibiotics Effective!
Rec. 7: Point-prevalence surveys of HAIs

Rationale

• Methods for collecting information and definitions of healthcare-associated infections (HAIs) for surveillance vary between US and EU

• CDC and ECDC were preparing large scale point-prevalence surveys of HAIs

Implementers

• CDC and ECDC

Let’s Keep Antibiotics Effective!
Rec. 7: Point-prevalence surveys of HAIs

What has been achieved (1)

• Since 2009, CDC and ECDC have attempted to harmonise key methods related to point prevalence surveys (PPSs) of HAIs and antimicrobial use. Although the ECDC and CDC protocols are not identical, additional variables were added to both protocols to enable comparison of results.

• CDC and ECDC completed their PPS of HAIs and antimicrobial use in acute care hospitals in 2011 and 2012, respectively, providing national estimates of HAI rates and of antimicrobial use, and information about the epidemiology of infections.

Let’s Keep Antibiotics Effective!
Rec. 7: Point-prevalence surveys of HAIs

What has been achieved (2)

• Plans are in place for a second PPS in acute care hospitals for both the U.S. (2015) and the EU (2016-2017). Ongoing communications and sharing of plans and modifications to U.S. and EU survey methods have been very valuable as implementers seek to improve upon the previous survey experiences in the U.S. and EU and enhance the utility of the HAI data.

• This collaboration will continue into the next implementation phase of TATFAR.

Let’s Keep Antibiotics Effective!
Recommendation 8: Develop a process for transatlantic communication of critical events that may signify new resistance trends with global public health implications.

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine.

Let’s Keep Antibiotics Effective!
Let's Keep Antibiotics Effective!

Rec. 8: Rapid communication on critical events

Rationale

• Public health officials need to be kept informed of emerging resistance trends to be prepared to respond appropriately

• Timely transatlantic communication and common actions are fundamental to respond to emerging threats and critical trends attributable to AMR.

Implementers

• CDC and ECDC
Rec. 8: Rapid communication on critical events

What has been achieved (1)

• Approved terms of reference (ToR) on how international communication and actions about critical antimicrobial resistance surveillance results will occur between CDC and ECDC, and which type of information should be communicated. The ToR describes a procedure for notification when novel resistant phenotypes are identified, as well as quarterly conference calls in which CDC and ECDC subject matter experts discuss new antimicrobial resistance data and critical trends.

• These calls were initiated in 2012 and allow experts to exchange information on resistance, but also on surveillance programs and protocols.
Rec. 8: Rapid communication on critical events

What has been achieved (2)

- CDC and ECDC continue to convene regular conference calls. Recent topics include findings from the European Survey of Carbapenemase-Producing Enterobacteriaceae (EuSCAPE project) and reports of CDC’s new national estimates of Clostridium difficile infections.

- CDC and ECDC will work together to identify a common US-EU system for sharing and analyzing bacterial resistance patterns for the most important antibiotic resistant threats (e.g., the threats identified as urgent and serious in the 2013 CDC report).

- In addition, implementers will work with WHO to identify global strategies for global communication of important antimicrobial resistance results and trends.

Let’s Keep Antibiotics Effective!
Recommendation 9: Encourage efforts to harmonise, to the extent possible, interpretive criteria for susceptibility reporting of bacterial isolates across surveillance programmes in the US and EU.
Rec. 9: Harmonisation of epidemiological interpretive criteria for AMR surveillance

Rationale

• Susceptibility criteria differ in the US and EU, making comparison of resistance rates difficult

• ECOFFs distinguish between isolates with and without phenotypically detectable resistance mechanisms whereas clinical breakpoints distinguish between organisms that can and cannot be treated with the agent in question.

• ECOFFs can be used for the purpose of reporting harmonized surveillance results as described in this recommendation. The setting of ECOFFs requires standardised methods. In addition, for each organism and agent, MIC distributions from many investigators must coincide.

Implementers

• CDC, ECDC, EFSA, FDA, EU Member States, EURL-AR and other stakeholders
Rec. 9: Harmonisation of epidemiological interpretive criteria for AMR surveillance

What has been achieved (1)

• Criteria for a common MIC database and for the setting of ECOFFs had to be established.

• Need for swift progress since EFSA is already recommending the use of ECOFFs for measuring resistance in several pathogens and the U.S National Antimicrobial Resistance Monitoring System (NARMS) is adopting ECOFFs for reporting the results of Campylobacter monitoring beginning with data collected in 2012 and discussions are ongoing for adopting ECOFFs for reporting Salmonella results. 

Let’s Keep Antibiotics Effective!
Rec. 9: Harmonisation of epidemiological interpretive criteria for AMR surveillance

What has been achieved (2)

• CDC and ECDC are working with members of the Clinical and Laboratory Standards Institute (CLSI) Subcommittee for Antimicrobial Susceptibility and the European Committee on Antimicrobial Susceptibility Testing (EUCAST) to harmonize surveillance interpretive criteria for the bacteria-drug combinations outlined in the WHO guidance for global antimicrobial resistance surveillance.

• This process has been facilitated by revisions of CLSI document M23 and the release of technical guidance for global surveillance by WHO.

Let’s Keep Antibiotics Effective!
Rec. 9: Harmonisation of epidemiological interpretive criteria for AMR surveillance

What has been achieved (3)

- Surveillance interpretive criteria will be based upon data that is routinely generated in hospital laboratories.
- For pathogens that are not routinely tested in hospital laboratories, the surveillance interpretive criteria will be based upon epidemiological cutoff values agreed upon by implementers.
Recommendation 10: Convene a workshop bringing together public health experts from the US and EU to develop consensus evaluation tools for hospital infection control programmes.

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine.

Let’s Keep Antibiotics Effective!
Rec. 10: Evaluation tools for infection control programmes

Rationale

- Effective infection control programmes rely on good implementation of infection control measures, adequate training of healthcare professionals, and educational campaigns for healthcare professionals and the general public as well as the involvement of hospital administration.
- Methods for the evaluation of hospital infection control programmes vary widely

Implementers

- CDC and ECDC

Let’s Keep Antibiotics Effective!
What has been achieved (1)

• CDC and ECDC reviewed the evolution of the culture of infection control in US and EU Member States and the available structure and process indicators for evaluating and monitoring hospital infection control programmes.

• The indicators used at the national and hospital programmes were not the same in the EU and the US, and facilities in the EU and US are at different stages in implementing infection control components.

• Furthermore, the US developed structures and process indicators linked to incentives and reimbursements, which are not common practices in the EU, with the exception of some EU Member States.
Rec. 10: Evaluation tools for infection control programmes

What has been achieved (2)

• Because the drivers and programmes in the US and in many EU Member States are different, CDC and ECDC agreed that reaching a consensus could not be reached.

• Recommendation was ceased. Due to lack of resources, there will be no peer-reviewed article.

• Data on infection control practices (indicators) that will be collected through the ECDC point prevalence survey of HAI and antimicrobial use in European acute care hospitals and the US National Healthcare Safety Network Patient Safety Component—Annual Hospital Survey will allow some comparisons between the EU and the U.S. when they are completed during 2016-2017.
Recommendation 11: Develop a transatlantic strategy to facilitate vaccine development for HAIs

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine
Rec. 11: Strategy to facilitate vaccine development for HAIs

Rationale

- Candidate vaccines to prevent infection with common HAIs, including MRSA and C. difficile have the potential to significantly reduce the prevalence of antimicrobial-resistant infections and associated diseases, deaths, and costs.
- Surveillance data are needed to inform development strategies for vaccines targeting HAIs and to evaluate the impact of such vaccines after their introduction.

Implementers

- CDC, ECDC and DG RTD

Let’s Keep Antibiotics Effective!
Rec. 11: Strategy to facilitate vaccine development for HAIs

• What has been achieved
  • CDC and ECDC started to identify the existing initiatives to facilitate developing candidate vaccines to prevent infection with common HAIs.
  • CDC and ECDC agreed to produce a joint peer-reviewed article delineating the need for new vaccines to address HAIs, including which vaccines are most needed and which patient populations would most benefit from different vaccines.
  • CDC and ECDC use different models to interact with the vaccine industry and a common strategy could not be forged.
  • This recommendation was ceased. Due to lack of resources, there will be no peer-reviewed article for this recommendation.

Let’s Keep Antibiotics Effective!
Thank You!

Let’s Keep Antibiotics Effective!
Current ideas for future work?

Appropriate therapeutic use of antimicrobials and prevention of drug-resistant infections in human medicine