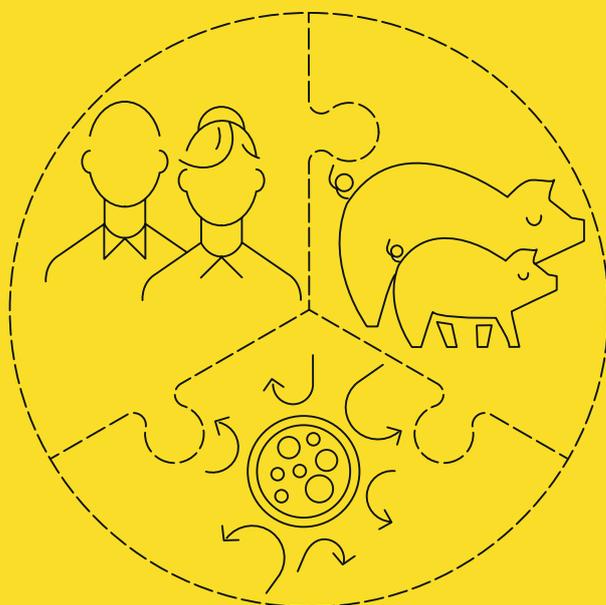




EUROPEAN MEDICINES AGENCY  
SCIENCE MEDICINES HEALTH

# Information session on antimicrobial resistance

Initiatives presented to EMA Working Parties with  
Patients, Consumers and Healthcare Professionals on  
19 September 2017





# The scale of the issue

Antimicrobial resistance (AMR) is the ability of microorganisms to become resistant to antimicrobial treatments, in particular antibiotics.

AMR is a natural phenomenon but an accumulation of factors, including excessive and inappropriate use of antimicrobials in humans and animals combined with poor hygiene or infection control practices, and lack of new antibiotics has transformed AMR into a major threat to global public health requiring action across all government sectors and society.

A growing number of infections such as pneumonia, diarrhoea caused by *Clostridium difficile*, and gonorrhoea, have become more and more difficult to treat because bacteria are becoming increasingly resistant to antibiotics.

Some common pathogens have turned into so-called 'superbugs' that are resistant to a whole range of antibiotics, leaving healthcare professionals with very few options to treat patients. No country or

organisation can face the challenge of antimicrobial resistance alone. To win this battle a global strategy is needed.

The European Medicines Agency (EMA) has joined efforts with the European Centre for Disease Prevention and Control (ECDC) and organised an information session involving experts in the field in order to raise awareness on the issue and highlight international initiatives to address the challenge.

This session was organised at the request of EMA's Working Parties with Patients' and Consumers' Organisations (PCWP) and Healthcare Professionals' Organisations (HCPWP), as the fight against AMR is a key priority in the [EU Medicines Agencies Network Strategy to 2020](#).

This document summarises the initiatives to fight AMR that were presented during this information session at EMA, on 19 September 2017.

**"AMR is a public and animal health issue touching on many aspects, including science, public health policy and clinical practice. Patients, consumers, animal and health care professionals must all be involved in discussions on the solutions to ensure they can be implemented."**

Zaide Frias, Head of EMA's Human Medicines Evaluation Division



**"Although 80% of people know that the overuse of antibiotics can make them ineffective, still about 44% do not know that antibiotics are ineffective against colds and flu. Providing the right information to patients is crucial, not only to allow them to make the right decision about their own health but also to empower them as citizens to call for action from decision makers."**

Kaisa Immonen, co-Chair of the Patients' and Consumers' Organisations Working Party

## Key figures on AMR

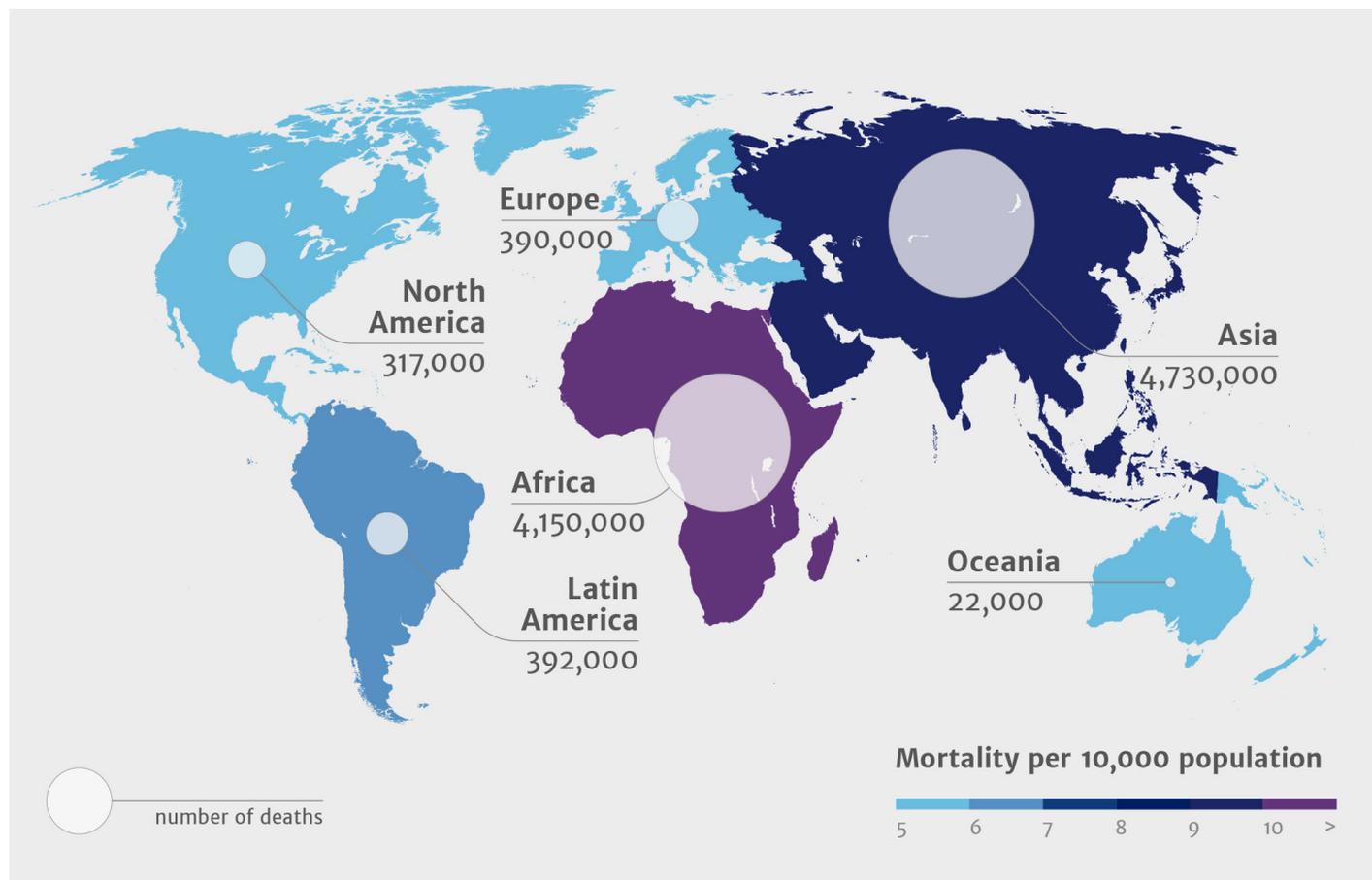
25,000 deaths per year in **EU\***

2.5 million extra hospital days in **EU\***

€1.5 billion a year in healthcare costs and productivity losses in **EU\*\***

10 million deaths **worldwide** in 2050\*\*\*

## Deaths attributable to AMR in 2050\*\*\*



\* Source: [The Bacterial Challenge Time to React \(ECDC\)](#) Figures from 2009, underestimated as take into account 5 multidrug resistant bacteria and 4 types of infections. Figures to be updated in 2018.

\*\* Source: World Health Organization [factsheet](#).

\*\*\* Source: [J. O'Neil, 2014. Antimicrobial Resistance: Tackling a crisis for the health and wealth of nations.](#)

## Watch interviews of experts talking about AMR



Source: [EMA website/Antimicrobial resistance - A challenge for Everyone](#)

# WHO global action plan – a worldwide political commitment

In 2001, WHO adopted a global strategy for containment of AMR, which followed resolutions from the World Health Assembly dating back as far as 1984. According to Dr Carmem Lucia Pessoa-Silva, who leads WHO's Global Antimicrobial Resistance Surveillance System (GLASS), AMR is a major threat to modern medicine and the global economy which requires immediate and harmonised action on a global scale.

The multi-sectorial nature of the issue, which touches on human and animal health as well as food and environment, makes the crisis even more difficult to contain and requires an absolute cross-disciplinary coordination, noted Dr Pessoa-Silva.

In May 2015, the World Health Assembly endorsed a [global action plan on AMR](#) to tackle antimicrobial resistance, including antibiotic resistance, the most urgent drug resistance trend.

The goal of the plan is to ensure, for as long as possible, continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them.

The plan follows the One Health approach, looking at actions on human and animal health care areas, the food chain and the environment.

The global action plan sets out five strategic objectives:

- to improve awareness and understanding of antimicrobial resistance;
- to strengthen knowledge through surveillance and research;
- to reduce the incidence of infection;
- to optimize the use of antimicrobial agents;
- to develop the economic case for sustainable investment that takes account of the needs of all countries, and increase investment in new medicines, diagnostic tools, vaccines and other interventions.

Dr Pessoa-Silva stressed that the WHO global action plan was developed by the international community, including the WHO Member States, international organisations and civil society, and this widely inclusive approach will be key to the implementation of the plan. She also insisted that all five strategic objectives must be addressed in parallel if we are to tackle the issue. Also, all regions and countries needed to address the issue.

As global coordination is crucial, in September 2016 WHO established an ad-hoc interagency coordination on AMR to draw, where necessary, on expertise from relevant stakeholders to provide practical guidance on approaches in the fight against AMR. Dr Pessoa-Silva also mentioned the recent creation of a [community of practice](#). The discussion forum is a free and open online resource for those developing and implementing national action plans to combat antimicrobial resistance. Participants were invited to register.



**“Right now there is an unprecedented level of political commitment to fight AMR. This creates a unique momentum for action worldwide. The challenge now is to make sure that global and national action plans are implemented without delay.”**

Carmem Lucia Pessoa-Silva, World Health Organization

# EU action plan - Towards the implementation of solutions

In the EU, the European Commission (EC) adopted the new [EU One Health Action Plan against antimicrobial resistance](#) in June 2017, building on the achievements of a previous action plan, feedback received on an EC Roadmap on AMR and an open public consultation.

The overarching goal of this new plan is to preserve the possibility of effective treatment of infections in humans and animals.

It supports the EU and its Member States in delivering innovative, effective and sustainable responses to AMR, strategically reinforces the research agenda on AMR and enables the EU to actively promote global action and play a leading role in the fight against AMR.

It provides a framework for continued, more extensive action to reduce the emergence and spread of AMR and to increase the development and availability of new effective antimicrobials inside and outside the EU.

The key objectives of this new plan are built on three main pillars:

- making the EU a best practice region;
- boosting research, development and innovation;
- shaping the global agenda.

Martial Plantady, policy officer working in the Task Force on antimicrobial resistance (AMR) in the Directorate-General for Health and Food Safety of the European Commission, highlighted that the plan builds on achievements made in the past decades in the fight against AMR. These include the 2006 EU ban on antibiotics for growth promotion in livestock (which the EU now plans to push beyond the frontier of the EU), legislative changes to make surveillance of antimicrobial consumption in humans and animals easier across the EU, and new proposed rules on veterinary medicines and medicated feed for animals to avoid the development of resistant pathogens.

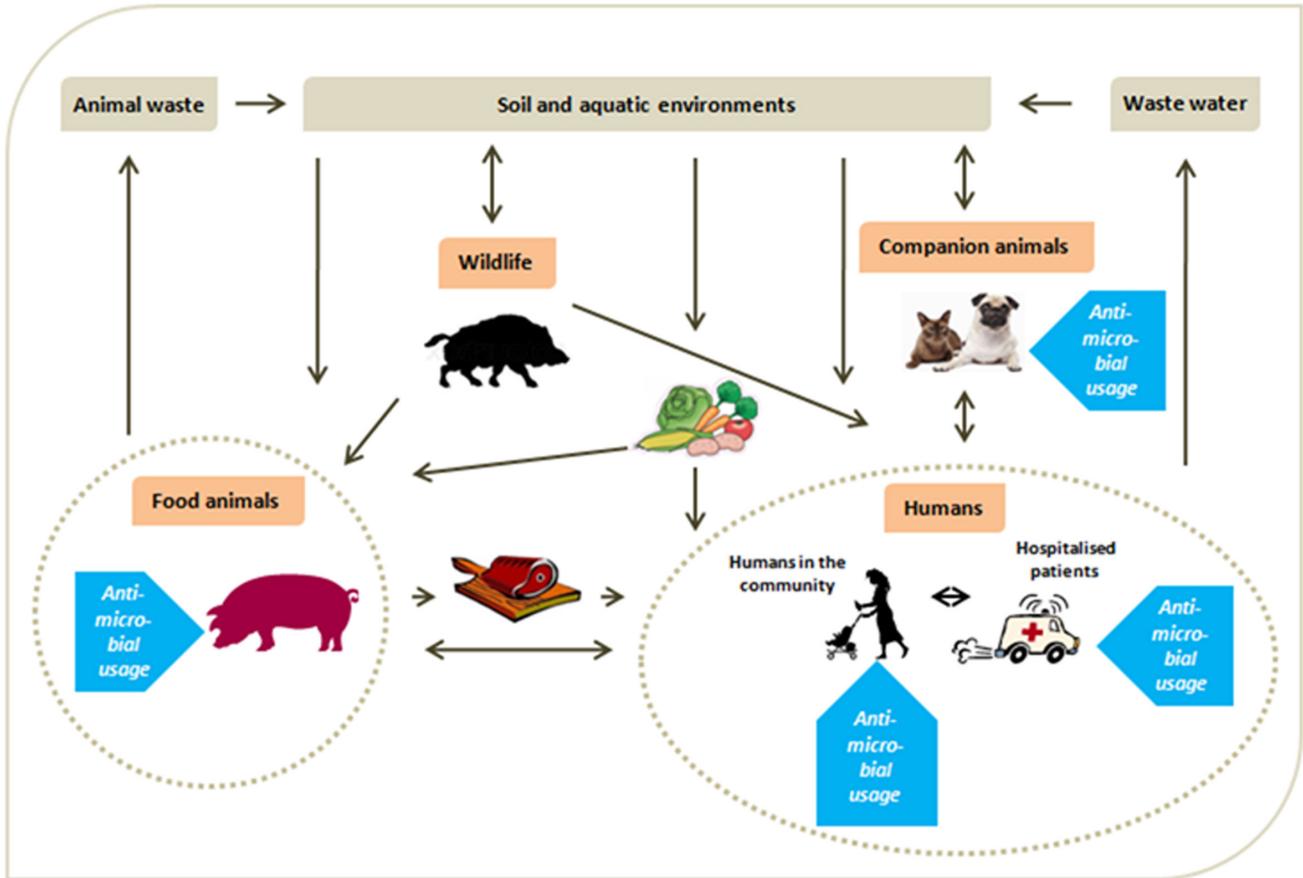
## Actions to support Member States

***"Our aim is to make the EU a best practice region on AMR. Through the new action plan we will enhance our support to Member States by providing them with better evidence on the challenge of AMR and concrete tools for them to implement effective actions,"*** Martial Plantady, European Commission, Directorate General for Health and Food safety

Concrete tools to support the EU Member States include:

- **AMR One Health Network** set up in early 2017 to bring together experts from human health, animal health and environment sectors to allow sharing of innovative ideas, and cross fertilisation to accelerate national efforts.
- **Joint ECDC/European Commission country visits** to evaluate the situation with regard to AMR in a specific country and provide tailored recommendations and advice, in line with the One Health approach.
- [Structural Reform Support Service](#) (SRSS) provides expertise to Member States for free upon request to help them implement specific solutions.
- [Better Training for Safer Food](#) (BTSF) trainings cover food and feed law, animal health and welfare; also at global level to address third country challenges.
- [Eurobarometers](#) surveys targeting citizens to help Member States identify gaps in knowledge and misconceptions.

## Illustration of the One Health approach: how resistance spreads among humans, animals and the environment

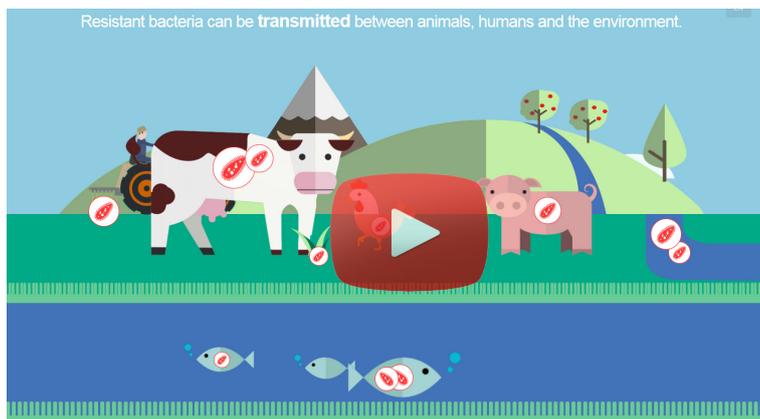


Source: [ECDC/EFSA/EMA first joint report on the integrated analysis of the consumption of antimicrobial agents and occurrence of antimicrobial resistance in bacteria from humans and food-producing animals \(JIACRA I\)](#)

Pietro Stella from EFSA highlighted recent initiatives to improve communication, education and training. He pointed at the recent development of materials, including interactive infographics, which aim to explain to the general public the scientific concepts behind AMR and the interactions between food,

animals, humans and the environment in this phenomenon. Mr Stella also highlighted how EFSA, EMA and ECDC collaborate to conduct joint assessments and communicate jointly the outputs of these assessments in line with the One Health approach. See infographic on this collaboration [here](#).

### AMR interactive storytelling



Source: EFSA website

# Monitoring use of antibiotics and emergence of resistance

Surveillance of resistance and monitoring the use of antimicrobials is the cornerstone for assessing the burden of AMR and documenting the links between use of antimicrobials and development of resistance; this enables local, national and regional actions, policies and research to be guided by the best evidence.

Surveillance programmes are not only necessary to characterise issues and identify gaps in evidence; they also serve as wake-up calls for public authorities.

Dr Herman Goossens, professor of Medical Microbiology at the University of Antwerp in Belgium, pointed out that a number of EU countries launched ambitious action plans to encourage a more prudent use of antimicrobials following the release of the first data on the consumption of antibiotics showing significant differences across countries. These monitoring programmes and the open sharing of data show the impact of national actions and encourage cross-border sharing of best practices.

Overview of surveillance programmes presented:

- WHO [Global Antimicrobial Resistance Surveillance System](#) (GLASS) aims to combine clinical, laboratory and epidemiological data on pathogens; 47 countries were involved as of July 2017. The first report is expected in 2018.
- ECDC's surveillance programmes include: [European Antimicrobial Resistance Surveillance Network](#) (EARS-Net) which collects clinical antimicrobial susceptibility data from local and clinical laboratories from across the EU; [European Surveillance of Antimicrobial Consumption Network](#) (ESAC-Net) which collects data on the consumption of antimicrobials for systemic use in the community and in hospitals in the European Economic Area; [Healthcare-associated Infections Surveillance Network](#) (HAI-Net) which coordinates the European prevalence of HAI and antimicrobial use in acute care hospital. ECDC publishes [updated data](#) on antibiotic resistance and antibiotic consumption every year.
- [European Surveillance of Veterinary Antimicrobial Consumption](#) (ESVAC) – EMA's collection of data on how antimicrobials are used in animals across the EU and the European Economic Area. A report is published every year and an interactive ESVAC database allows users to access data for a specific country or sales of a particular antimicrobial class. Under development: collect data per animal species at farm level.
- [Central Asian and Eastern European Surveillance of Antimicrobial Resistance](#) (CAESAR) network, led by WHO: the aim is to set up a network of national surveillance systems so that the trends in AMR can be compared across all European countries.

## **More evidence on link between antibiotic use and antibiotic resistance**

The second [Joint Interagency Antimicrobial Consumption and Resistance Analysis \(JIACRA\) report](#) published in July 2017, looked at specific classes of antibiotics used in humans and animals, and provided more evidence on the direct link between the use of these antibiotics and the emergence of resistant bacteria. The report highlighted that there are still important differences in the use of antibiotics across the EU countries and between animals and humans. As an example, a class of antibiotics called polymyxins – which includes colistin – has been used widely in the veterinary sector for decades, and is now also increasingly used in hospitals to treat multidrug-resistant infections due to the lack of alternative treatments. Restriction of the use of this class of antimicrobials in animals has been recommended. The analysis, a joint undertaking between the European Food Safety Authority (EFSA), EMA and ECDC, was presented by Jordi Torren Edo, Head of EMA's Service of Veterinary Risk and Surveillance. This is one of many examples where the three EU agencies have joined efforts and their respective expertise to help fight AMR. See infographic on this collaboration [here](#).

# Promoting prudent use to preserve antibiotics

As there is growing evidence showing that there is a direct link between the use of antibiotics and the emergence of resistant bacteria, promoting a prudent and appropriate use of these medicines is key to preserve the activity of the current arsenal for as long as possible.

Various initiatives to encourage prudent use were presented:

- [WHO list of essential medicines](#) was updated in 2017 to define three categories of antibiotics: those that should be available at all times; those that should be used as first- or second-choice treatments for a small number of infections; those reserved for last-resort options;
- [WHO list of critically important antimicrobials \(CIA list\)](#) updated in March 2017 to promote restriction of use of certain antibiotics;
- EMA's review of the product information of 'old antibiotics' for human and animal use to harmonise their use across the EU, and restrict their use where necessary;
- [EU Guidelines on the prudent use of antimicrobials in human health](#) published in 2017 to reduce inappropriate use and promote prudent use of antimicrobials in people. They target all actors who are responsible for or play a role in antimicrobial use;
- [EU Guidelines for the prudent use of antimicrobials in veterinary medicine](#) published in 2015 on how prudent usage of antimicrobials in animals can contribute to containing the development of AMR;
- the [Antimicrobial Advice Ad Hoc Expert Group \(AMEG\)](#), convened by EMA at the request of the Commission, has looked into the impact of the use of antibiotics in animals on public health and animal health and issued recommendations to manage the possible risk to humans;
- [EMA/EFSA joint scientific opinion](#) on measures to reduce the need to use antimicrobial agents in animal husbandry in the European Union, and the resulting impacts on food safety (Ronafa) – the recommended specific measures centred on the theme 'reduce, replace and rethink'. Among those is a recommendation to phase out preventative use of antibiotics in animals.

## ***Restriction of use of last resort antibiotic colistin in animals***

Colistin has been used for over 50 years in both humans and animals. In human medicine it is a last resort medicine to treat bacterial infections resistant to other antibiotics. In July 2016, the expert group AMEG [recommended](#) that all Member States should reduce the use of colistin in animals below a defined target level. If successfully applied, this could result in an overall reduction of approximately 65% in the current sales of colistin for veterinary use at EU level, reported Helen Jukes, Chair of the Antimicrobials Working Party of EMA's Committee for Medicinal Products for Veterinary Use (CVMP) and Vice-Chair of the CVMP. In its advice, AMEG underlined that the reduction of colistin sales should not be compensated by increase in the use of other types of antimicrobials, but should be achieved through other measures such as improved farming conditions, biosecurity between production cycles, and vaccination of livestock.

# Supporting R&D of new treatment options and diagnostic tests

## *Shaping the research agenda at global and EU levels*

While many of the antibiotics available today are at risk of becoming ineffective if the emergence of resistance does not slow down, at the same time, very few antimicrobials with new mechanisms of action are currently being developed to ensure that future generations have access to effective medicines.

Both WHO and the EU have included support for research and development of new antimicrobials as a top priority in their action plans against AMR. Alternative approaches to antibiotics, such as bacteriophages (naturally occurring viruses that target bacteria), monoclonal antibodies, vaccines, combination of therapies to limit resistance, also need to be explored, as mentioned by a number of experts present at the information session.

Research priorities are embedded in both WHO's and the EU's action plans:

- WHO has published a [list of 12 groups of pathogens](#) (the global priority pathogens list), some of them causing common infections such as pneumonia or urinary tract infections that are increasingly resistant to existing antibiotics and urgently in need of new treatments; the aim is to guide and [promote research and development](#).

- The [Global Antibiotic Research and Development Partnership](#) (GARDP) has been created to develop new antibiotic treatments addressing antimicrobial resistance, while ensuring equitable access for all in need. GARDP is being incubated by the Drugs for Neglected Diseases initiative (DNDi) in collaboration with the World Health Organization (WHO).

- [Joint programming initiative on AMR](#) (JPIAMR) has been set up to streamline the European research efforts in AMR by joint planning, implementation and evaluation of national research programmes; it coordinates annual joint calls for new research projects on AMR with EU or national funding.

- The Commission funds several [antimicrobial resistance projects](#) through its [Health Programme](#) and its research programmes.

Martial Plantady from the European Commission also pointed out that, in addition to new antimicrobials, the development of cheap rapid diagnostic tests is also key to guide the appropriate use of antibiotics thereby reducing overuse and misuse, and is also amongst the priorities of the European action plan.

## ***Supporting development through regulatory guidance***

EMA supports the development of new antimicrobial agents through the provision of guidance on the data needed to support the authorisation of new medicines and tailored scientific advice to medicine developers.

Dr Mair Powell, member of EMA's Infectious Diseases Working Party and clinical assessor at the UK's MHRA, highlighted that recent EMA guidance on the development of antimicrobials has introduced a level of flexibility with regard to data requirements and a possibility for limited clinical development programmes for medicines that will benefit patients with multi-drug resistant infections.

Dr Powell provided an overview of the most relevant guidance in this area:

- [Guideline on the evaluation of medicinal products indicated for treatment of bacterial infections](#) which contains a section on how to lay-out information on AMR in the product information of medicines.

- [Addendum](#) to the above guideline: this introduced the possibility for limited development programmes with smaller trials for medicines that address unmet needs. In such cases the product information is to mention the pathogen-specific indication and restricted use in patients with limited other treatment options.

- [Guideline](#) on the use of pharmacokinetics and pharmacodynamics in the development of antimicrobial medicinal products, which describes how modelling and simulation methods, pharmacokinetics and pharmacodynamics analyses, can speed up development of new antibiotics.

- [Guidance on the development of new medicines to treat tuberculosis](#), with a focus on multidrug-resistant tuberculosis.

- Under development: A further addendum to the guideline on the evaluation of medicinal products indicated for treatment of bacterial infections to address paediatric-specific clinical data requirements.

## ***Harmonising data requirements globally***

Alignment of data requirements by regulators worldwide can help stimulate the development of new antibiotics to fight antimicrobial resistance. Such harmonisation will streamline the way trials are conducted and facilitate global development plans, explained Marco Cavaleri, Head of EMA's Anti-infectives and Vaccines Service.

Initiatives for harmonisation were first discussed in the context of the [Transatlantic Taskforce on Antimicrobial Resistance](#) (TATFAR). Dr Cavaleri pointed out that the US Food and Drug Administration (US FDA) and EMA currently routinely discuss development

plans for new antimicrobials; discussions are also ongoing on the possibility of establishing standardised protocols agreed by the two agencies.

He also highlighted recent harmonisation efforts between EMA, US FDA and the Japanese regulatory authority (PMDA) through which tri-partite meetings are organised twice a year to agree on concrete areas of convergence. [Proposals](#) for convergence were agreed for example in the context of the development of medicines for urinary tract and intra-abdominal infection trials.

# Exploring new economic models and incentives

Developing new economic models to incentivise antibiotic discovery and development was one of the hot topics of the event, as antibiotics are relatively cheap medicines with low return on investment.

Dr Cavaleri and Martial Plantady described a few initiatives that aim to explore new business models:

- “Push” incentives that support discovery and early phases of development, e.g. JPIAMR, CARB-Xw;
- “Pull” incentives that delink payment from prescribing volume;
- Platforms in the EU and US to discuss approaches, e.g. TATFAR, Duke-Margolis PAVE, DRIVE-AB.

Dr Cavaleri also highlighted that information needed by health technology assessment (HTA) bodies to assess the added value of new antibiotics, in particular to tackle multi-drug resistant infections, should be collected at the time of medicine development, in order to facilitate and potentially accelerate patients’ access to new antibiotics.

Dr Cavaleri explained that EMA is open to discussion with HTA bodies on these aspects, and mechanisms are in place to facilitate such discussions at an early stage of medicine development.

# Awareness campaigns: everybody can contribute

Each year on 18 November ECDC coordinates the European Antibiotic Awareness Day (EAAD) to raise awareness about antibiotic antimicrobial resistance and the need for prudent use of antibiotics.

With this annual campaign, ECDC aims to support national initiatives by providing educational and information materials that can be tailored to the specificities of each country, explained Giovanni Mancarella, head of the Press, Media & Information team, and Andrea Nilsson, EAAD project manager.

ECDC has developed materials for the general public as well as toolkits specifically designed for healthcare professionals to support efforts to increase prudent use of antibiotics. The toolkits contain template materials and evidence-based key messages in all EU languages, and suggest tactics for getting the messages regarding prudent use of antibiotics through to the target audiences. Also developed by ECDC are [factsheets](#), [infographics](#), [posters](#), [brochures](#) and, more recently, [patient stories](#).

Andrea Nilsson pointed out that the toolkits are available to the EU Member States to support their national campaigns but also to any organisation of patients or healthcare professionals. She encouraged organisations to contribute to EAAD 2017 by sharing the EAAD materials, using banners on their websites, contributing to discussions on social media using the hashtag #EAAD and producing 2-minute video

pledges explaining what their organisation does to keep antibiotics working.

WHO has joined the ECDC initiative and is now also organising an annual awareness campaign, the World Antibiotic Awareness Week, coinciding with EAAD.

At the occasion of the EAAD, ECDC releases updated data on antibiotic resistance and antibiotic consumption, stemming from [EARS-Net](#) and [ESAC-Net](#).

ECDC has made available a [Directory of online resources for prevention and control of antimicrobial resistance \(AMR\) and healthcare-associated infections \(HAI\)](#) on its website.



# From awareness to engagement

Dr Diane Ashiru-Oredope, Lead Pharmacist for the Antimicrobial Resistance Programme at Public Health England, described how the organisation in 2014 moved from an awareness campaign to engagement campaign to change people's behaviours.

The campaign called on the public, students and educators, farmers, the veterinary and medical communities and professional organisations, to become 'Antibiotic Guardians'. For example, the initiative invited member of the public to choose one simple pledge about how they will make better use of antibiotics, among a list of pledges tailored to the population category they selected. A family member can choose for example: **'If anyone in my family is prescribed antibiotics, I will ensure they are taken exactly as prescribed and never shared with others'.**

The [Antibiotic Guardian campaign](#) uses a pledge-based behaviour change strategy ('if-then' approach) and the team worked with behavioural scientists and

marketing specialists to make the pledge messages more impactful, highlighted Dr Ashiru-Oredope.

As of 31 December 2016, there were 42,457 Antibiotic Guardian pledges from 129 countries across the world. The pledges are available in English, French, Dutch, Russian and Turkish.

[Evaluation of the campaign](#) impact showed that the initiative had a wide outreach, increased commitment to tackling AMR in both healthcare professionals and members of the public and increased knowledge and self-reported changed behaviour, explained Dr Ashiru-Oredope.

A new mass media campaign for the general public (Keep Antibiotics Working) will be launched in England in October alongside the pledge-based Antibiotic Guardian campaign. Keep Antibiotics Working campaign aims to reduce demand from the public for antibiotics using TV, radio and social media.

The image shows a digital interface for selecting a pledge. At the top, it says "BECOME AN ANTIBIOTIC GUARDIAN CHOOSE YOUR PLEDGE NOW!". Below this is a white box labeled "I AM A". Three lines lead from this box to three selection boxes: "HEALTH OR SOCIAL CARE PROFESSIONAL OR LEADER" (red), "MEMBER OF THE PUBLIC" (grey), and "STUDENT, EDUCATOR OR SCIENTIST" (red). Each box has a dropdown menu with the text "Select from the list below". The "MEMBER OF THE PUBLIC" dropdown is currently set to "Adults". Below these is a section titled "SELECT A PLEDGE MESSAGE" with the subtext "Messages will display below". It lists five pledge options:

- For infections that our bodies are good at fighting off on their own, like coughs, colds, sore throats and flu, I pledge to try treating the symptoms for five days rather than going to the GP
- For infections that our bodies are good at fighting off on their own, like coughs colds sore throats and flu, I pledge to talk to my pharmacist about how to treat the symptoms first rather than going to the GP
- It is vital we prevent antibiotics from getting into the environment. I pledge to always take any unused antibiotics to my pharmacy for safe disposal
- If the NHS offers me a flu vaccination, I pledge to accept
- If I'm prescribed antibiotics, I will take them exactly as prescribed and never share them with others

Source: [Antibioticguardian.com](http://Antibioticguardian.com) website

# ***Joining efforts for improving communication, education and training***

Representatives from various stakeholders groups were invited to present their views and initiatives to fight AMR through improved communication, education and training.

- **Patients' and consumers' perspective:**

Sascha Marschang from the European Public Health Alliance (EPHA) highlighted that, at EPHA's initiative, a [thematic network on AMR](#) was launched in May 2017. This network brings together diverse groups of the civil society and public health communities and will be developing a joint call to action and statement to be presented on 27 November 2017. EPHA provided a number of recommendations during the public consultation on the new EU action plan, including fostering rapid diagnostics and digital tools, developing de-linkage models for the development of new antimicrobials and addressing the issue of the availability of new antibiotics across the world.

- **General practitioners' perspective:** Dr Walter Marrocco from the European Forum for Primary Care pointed out that the use of 'leftover' antibiotics is a lead cause of overuse and misuse and must be tackled. Dr Marrocco called for the availability of more diagnostic tests and the increased use of preventive vaccines as ways of reducing the use of antibiotics. He also stressed the importance of GPs taking part in continuous education programmes and developing their communication skills so they can adapt their language to their patients' cultural background and health literacy.

- **Community pharmacists' perspective:** Jamie Wilkinson from the Pharmaceutical Group of the European Union (PGEU) presented a [best practice paper on AMR](#) which calls on governments to involve community pharmacists in the development of AMR

action plans, encourages increased collaboration within the healthcare community and suggests making better use of community pharmacies to promote preventative activities such as good hygiene practices, support for self-care, awareness raising of vaccinations and vaccination in the pharmacy where appropriate. Jamie Wilkinson also stressed that pharmacists should be given access to electronic health records to ensure the safe, effective and rational use of their medication and that the possibility for exact quantity dispensing of antibiotics should be explored, to avoid potential misuse of leftovers.

- **Specialist nurses perspective:** Ber Oomen from the European Specialist Nurses Organisations (ESNO) highlighted the areas where nurses in specialist areas and/or in advanced roles can play a role in the fight against AMR, e.g. by monitoring misuse and overuse of antibiotics and alerting patients to the risks of AMR, in particular when visiting homes. He mentioned that ESNO is exploring the possibility to develop a 'Nurses information and communication guideline' on AMR specifically. Mr Oomen called for a multi-interdisciplinary approach and involvement of nurses in prescribing activities.

- **A learned society perspective:** Prof Murat Akova from the European Society of Clinical Microbiology and Infectious Diseases (ESCMID) stressed that AMR is at the forefront of the Society's activities. He highlighted the research grants made available on AMR projects, the availability of courses and workshops, for example on antimicrobial stewardship, and the publication of medical guidelines on the management of specific infections.

## Concluding remarks

Dr Juan Garcia Burgos, Head of EMA's Public Engagement Department and Co-chair of the EMA patients' and healthcare professionals' working parties, concluded the information session with a few remarks. He noted the commitment of all participants to exchanging information and ideas. Some key areas of action were identified and will be further explored by the PCWP and HCPW. These include reflection

on new ways to inform and empower patients and addressing the issue of the availability of antibiotics across the EU.

Dr Garcia Burgos also highlighted the key take away messages from the information session which included:

- AMR is a multifaceted, multi-sectorial issue requiring action across all sectors of the economy and society. Collaboration and coordination is essential as all regions across the world and individual countries must take coordinated action.
- There are large variations in use of antimicrobials amongst EU Member States and between regions worldwide that need to be addressed.
- Monitoring AMR and collecting data on the consumption of antimicrobials is a key activity that needs to be pursued and strengthened to guide public policies, monitor the impact of action plans and prompt actions at national level.
- New ways to inform and empower patients, e.g. through the packaging of foodstuffs or by including warnings on the prudent use of antibiotics in the package leaflets of medicines, could be explored.
- While a more responsible use of antibiotics must continue to be promoted, innovative models for the development of new antibiotics are also needed to ensure that effective medicines are available for future generations; these include "Pull" incentives which delink payment from prescribing volume.
- The potential usefulness of the PCWP and HCPWP as platforms to enable meaningful actions to be implemented and to cascade down information was highlighted.
- There is a unique political momentum and high commitment of stakeholders to take action. It is time now for implementation.

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