Stop AMR Global Media Monitor

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We need new antimicrobials to prevent the next infectious disease crisis

Innovation in antimicrobials has slowed dramatically in recent years, with higher rates of failure, which has coincided with the widespread overuse of these medicines. According to the US Center for Disease Control and Prevention, about 1/3 of antibiotic prescriptions are unnecessary. This overuse has led to an explosion of antibiotic-resistant bacteria.

This article highlights two efforts for the United States to partake to fight this issue. First, encourage doctors to prescribe antibiotics only when truly necessary. Second, pass two reforms currently before Congress that could bring more effective antimicrobials.

Unless lawmakers in the United States take steps to combat antimicrobial infection, the world will soon find itself unprepared for a global health emergency as deadly as Covid-19.

Source: Stat News, 12 August 2020

Researchers develop skin-friendly, antimicrobial wound dressing

Untreatable wound infections are a big threat in the incoming world of AMR, so a team led by the Swiss Federal Laboratories for Materials Science and Technology (Empa) researcher Katharina Maniura from the Biointerfaces lab in St. Gallen is tackling this by developing wound dressings with antimicrobial properties.

Using electrospinning technology, fine cellulose fibres with a diameter of less than 1µm were spun into a delicate multi-layered, three-dimensional fabric, made flexible and stable through the addition of polyurethane. Researchers then added specially-designed multifunctional peptides which could bind to the fibers and exhibit antimicrobial activity. Further tests not only confirmed this effect but also proved human skin cells tolerated the resulting membranes.

The future of this technology is bright as it could also be equipped with additional functions. Maniura states as an example that "the peptides might be functionalized with binding sites that enable the controlled release of further therapeutic substances".

Source: News-Medical, 11 August 2020

Antibiotic resistance: how drug misuse in livestock farming is a problem for human health

Farmers and vets should ideally do what is best for the animal, while reducing the risk of antimicrobial resistance. However, external pressures from governments and consumers are also influencing factors on reasons why a farmer might decide to use antibiotics.

For example, when one animal gets an infection, prophylactic antibiotics might be given to the entire herd. Such practices can be used inappropriately to compensate for increased risk of outbreaks resulting from intensive production practices, overcrowding and poor living conditions for animals. Another reason is to promote animal growth by supplementing their feed with antibiotics. While this may be economically beneficial for the farmer, helping to grow bigger animals faster, using antibiotics as growth promoters is inappropriate as it contributes to antimicrobial resistance.

If demand increases for dairy, meat and poultry raised responsibly in terms of welfare and antibiotics, farmers and retailers will feel pressure to satisfy those needs and comply with guidelines and best practices. As members of the public with purchasing power, we all can play a role in improving antibiotic use in farming.

Source: The Conversation Trust, UK , 10 August 2020

Child malnutrition and antibiotics use: a call to share information

Combating child malnutrition may at first seem manageable: providing access to children with a wholesome diet rich in nutrients. However, even when given enough to eat, many children remain stunted. According to a study published by the New England Journal of Medicine, a microbiologist has found new information on the bacteria that reside in the small intestine, where most nutrients are absorbed.

In the study, researchers recruited over 500 children in Dhaka, Bangladesh from 2016 to 2018, all approximately 18 months old and at a high risk of stunting. Each child was given a nutritious diet. Most children grew, but one-fifth stayed small. An analysis of the gut revealed that their small intestines showed signs of inflammation and the same types of bacteria.

We kindly invite you to share any information or insights regarding (the need for more research into) the potential link between the gut microbiome, antibiotics and malnutrition; please join the discussion on the StopAMR website's Forum.

Source: StopAMR

India-UK team tackles Antimicrobial Resistance spread in waterways

An estimated 58,000 babies die in India every year from superbug infections passed on from their mothers, whilst drug resistant pathogens cause between 28,000 to 38,000 extra deaths in the European Union every year.

A research programme led by experts in the India-UK team has received funding to explore the role played by India's rivers in increasing antimicrobial resistance.

Experts will study two contrasting river networks in India - the Musi river in Hyderabad, which has high concentrations of antibiotics released from production facilities, and the less polluted Adyar river in Chennai. The team aims to learn how far resistant bacteria travel before they die or are eaten by other organisms.

Results will allow the team to compare the effectiveness of different interventions such as separate treatment of waste streams from manufacturing of antibiotics, decentralized sewage treatment or containment reservoirs.

Source: University of Birmingham, 6 August 2020

SMART researchers discover a new way to reverse antibiotic resistance in some bacteria

Researchers from the Singapore-MIT Alliance for Research and Technology (SMART), MIT's research enterprise in Singapore, have discovered a new way to reverse antibiotic resistance in some bacteria using hydrogen sulphide (H2S).

In most bacteria studied, the production of endogenous H2S has been shown to cause antibiotic tolerance, so H2S has been speculated as a universal defence mechanism in bacteria against antibiotics. A team at SMART's Antimicrobial Resistance (AMR) Interdisciplinary Research Group (IRG) tested that theory by adding H2S releasing compounds to Acinetobacter baumannii - a pathogenic bacterium that does not produce H2S on its own. They found that rather than causing antibiotic tolerance, exogenous H2S sensitised the A.baumannii to multiple antibiotic classes. It was even able to reverse acquired resistance in A.baumannii to gentamicin, a very common antibiotic used to treat several types of infections.

"*Acinetobacter baumannii is a critically important antibiotic-resistant pathogen that poses a huge threat to human health*," says Say Yong Ng, lead author of the paper and Laboratory Technologist at SMART AMR. "*Our research has found a way to make the deadly bacteria and others like it more sensitive to antibiotics, and can provide a breakthrough in treating many drug-resistant infections*."

Source: Science Daily, 12 August 2020
From: Frontiers in Microbiology, 7 August 2020

Pew research shows barriers to combating antibiotic resistance

Published in the journal Open Forum Infectious Diseases, the study revealed that while 94% of primary care physicians agree antibiotic resistance is a problem in the U.S., 55% do not find it to be an area of concern in their own practices, ranking it as less important than other public health issues like obesity, diabetes, opioids, smoking, and vaccine hesitancy.

Additionally, 91% of respondents indicated they believe stewardship programs are appropriate for office-based practices, but many said patients and families should be the primary focus of stewardship efforts. Approximately half of the participants felt that tracking appropriate antibiotic use would be difficult to do in an accurate and fair manner and that antibiotic use reporting would be a significant burden for their practice.

"*Antibiotic resistance is an impending public health crisis. We are seeing today, as we respond to the COVID-19 pandemic, what our health system looks like with no or limited treatments available to tackle an outbreak. To stem the rise of antibiotic-resistant infections, we must all remain vigilant in combatting the spread of antibiotic-resistant bacteria and be prudent when prescribing antibiotics*," said American Medical Association President Susan R. Bailey, M.D.

Source: American Medical Association, 6 August 2020
From: Open Forum Infectious Diseases, 20 July 2020