Stop AMR Global Media Monitor

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Not only overuse of antibiotics but poor hygiene and sanitation can also result in antimicrobial resistance

In recent research published in the journal Scientific Reports, scientists found that poor hygiene could also be one of the reasons for the increases in antimicrobial resistance. They surveyed different people from the rural and urban households of Guatemalan communities to track the spread of antimicrobial-resistant Escherichia coli bacteria, which is usually found in contaminated water and can result in acute diarrhea.

The results of the survey showed that antimicrobial-resistance was found in people who had an increased incidence of antibiotic use, had poor household sanitation, consumed milk on a regular basis, and had frequent episodes of diarrhea. The scientists conclude that in order to reduce the prevalence of antimicrobial resistance, access to antibiotics needs to be controlled better along with ensuring hygiene in every household.

Source:
First Post, 17 August 2020
Nature Research Journal, 13 August 2020

Honey is more effective than standard medicines at combating coughs and sore throats

Researchers at Oxford University found that honey is more effective than usual over-the-counter treatments in combating the symptoms of upper respiratory tract infections. The pantry staple was associated with a significant reduction in combined symptom score, a decreased the frequency of coughing of 36%, and a reduced cough severity of 44%. They suggested that it could be taken instead of cough syrups and painkillers to ease symptoms, and that doctors could even prescribe it as a "*reasonable alternative*" instead of antibiotics.

"*Honey is more effective and less harmful than usual care alternatives and avoids causing harm through antimicrobial resistance*." Although the paper states that more high quality, placebo-controlled trials are necessary, this traditional layman remedy could provide a widely available and cheap substitute to antibiotics.

Source: BMJ Journals, 18 August 2020

It's time to fix the antibiotic market

Producing a new antibiotic is slow and expensive work, typically requiring 10 to 15 years and over $1 billion. And not all potential products are successful: from the beginning of the development process, a drug candidate has a 1 in 70 chance of reaching the market. Furthermore, use of new antibiotics is rightly restricted to last resort cases in order to slow the development of resistance. This in turn causes lower demand, which means limited sales and low prices.

This risky business of antibiotic development means that only companies with deep financial pockets that can tolerate a high failure rate will be able to participate, but the economic disincentives might put them off, making it very difficult to achieve this much-needed innovation. In order to retain progress in this sector, we must therefore rethink and re-engineer how companies are reimbursed for their antibiotic products

Particular attention is being directed to the latter stages of drug development. Some potential solutions include market entry rewards (lump-sum payments to companies that successfully develop new antibiotics); an insurance premium model (where governments would make fixed annual subscription payments to pharmaceutical companies in return for access to newly developed antibiotics); or establishing clinical trial networks promoting information sharing.

This article is thus a call to action for antibiotic market reform. "*The private sector cannot save the antibiotics market on its own. Nor can governments. […] All need to work together to safeguard the world's supply of new antibiotics and make sure that modern medicine can keep saving our lives*."

Source: Wellcome, n.d.

More than 1 in 3 urinary infections in nursing homes caused by resistant bacteria

An analysis of urinary tract infections (UTIs) in US nursing homes found that more than one in three were caused by antibiotic-resistant pathogens, researchers reported in *Infection Control & Hospital Epidemiology*.

Overall, 243 nursing homes from 46 states reported at least 1 month of UTI surveillance data from January 2013 through December 2017. In total, 6,157 pathogens were reported from 5,485 UTIs, with 9 pathogens accounting for 90% of all UTIs.

The three most frequently identified pathogens were *Escherichia coli* (41%), Proteus species (14%), and *Klebsiella pneumoniae/oxytoca* (13%). Among *E coli,* fluoroquinolone resistance (49.9%) and extended-spectrum cephalosporin resistance were the most prevalent. *Staphylococcus aureus* (67.1% resistant to methicillin) and *Enterococcus faecium* (59.5% resistant to vancomycin) had the highest levels of resistance but accounted for less than 5% of pathogens reported.

Of the 5,485 UTIs reported, 36% were associated with a resistant pathogen.
"The levels of antibiotic resistance observed demonstrate the importance of monitoring nursing homes and implementing nursing-home specific antibiotic stewardship activities," the authors wrote.

Source: CIDRAP, 12 August 2020
From: Infection Control & Hospital Epidemiology, 12 August 2020

Insect wings inspire new ways to fight superbugs

The wings of cicadas and dragonflies are natural bacteria killers, a phenomenon that has spurred researchers searching for ways to defeat drug-resistant superbugs. The wings of cicadas and dragonflies are covered in tiny nanopillars, which were the first nanopatterns developed by scientists aiming to imitate their bactericidal effects.

New anti-bacterial surfaces are being developed, featuring different nanopatterns that mimic the deadly action of insect wings, but scientists are only beginning to unravel the mysteries of how they work. In a review published in *Nature Reviews Microbiology*, researchers have detailed exactly how these patterns destroy bacteria. The review for the first time categorises the different ways these surface nanopatterns deliver the necessary mechanical forces to burst the cell membrane: stretching, slicing or tearing apart the bacteria.

Lead author, RMIT University's Distinguished Professor Elena Ivanova, said: "If we can understand exactly how insect-inspired nanopatterns kill bacteria, we can be more precise in engineering these shapes to improve their effectiveness against infections." Professor Ivanova continued: "Our ultimate goal is to develop low-cost and scalable anti-bacterial surfaces for use in implants and in hospitals, to deliver powerful new weapons in the fight against deadly superbugs."

Source: Science Daily, 18 August 2020
From: Nature Reviews Microbiology, 17 August 2020