The end of the antibiotic era

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Doctors' propensity to prescribe antibiotics for any illness and the human behavioural influence on outbreaks have come under the spotlight at the 10th Prestigious Lecture entitled Superbugs: Are the bugs winning the war?

The Wits Faculty of Health Sciences the lecture, originally established by the Faculty's Research Office in an effort to support and assist researchers in delivering their important research findings to the community.

The lecture was presented by internationally acclaimed experts, Professor Guy Richards, Head of the Division of Critical Care in the School of Clinical Medicine in the Wits Faculty of Health Sciences and the Director of the Department of Critical Care at the Charlotte Maxeke Johannesburg Academic Hospital (CMJAH); and Professor Adriano Duse, Head of the Department of Clinical Microbiology and Infectious Diseases, of the National Health Sciences Laboratory (NHLS) and the School of Pathology in the Wits Faculty of Health Sciences.

Superbugs encompass both viruses and bacteria; with the bacteria being antibiotic resistant organisms, regarded as multidrug resistant (MDR) or extensively drug resistant (XDR). Whilst typically found in hospitals, colonization of Gram-negative bacteria is starting to occur in the community as well.

Richards presented information on the therapeutic, infection prevention and control challenges of these bacterial pathogens, with Duse focusing

on similar challenges posed by agents which cause viral hemorrhagic fevers such as the deadly Ebola and Marburg viruses.

According to Richards, antibiotics are abused in the community, in hospitals and also in the animal husbandry environment with over and incorrect prescribing, having disastrous consequences. Contemporary medicine now recognises antibiotic resistance as a serious threat and has become a massive worldwide health concern.

"We have reached the end of the antibiotic era, they are a finite and dwindling resource due to the fact that it has become unprofitable for pharmaceutical companies to develop new agents. The pipeline of medication has reduced to a trickle, which means that patients who contract these infections which previously may have been considered to be minor will die," explained Richards.

What can be done about this crisis? Richards believes infection control is paramount, while other steps include educating general practitioners and hospital doctors on responsible antibiotic prescription, educating the public to take an antibiotic until 24 – 48 hours after they start to feel better. He further strongly advises individuals to go for the annual flu vaccine, and encourages the banning of antibiotics in animals for use as a growth stimulant.

On the topic of viral infections, Duse said, "It is often human behaviour that influences outbreaks. This includes not washing our hands or exposing ourselves to diseases by encroaching on previously undisturbed eco-systems such as tropical rain forests where superbugs have been around for millennia. There is also a lack of respect for animal health and often infections are transmitted between animals and humans which are caused by microorganisms as diverse as viruses, bacteria, fungi and parasites."

The health of humans is inextricably linked to the health of animals and the environment. More broadly, the environment not only encompasses physical, geographical, climatic, ecological, agricultural and veterinary dimensions, but also the social, cultural, political and religious factors that influence those human behaviours that shape it.

Alarmingly, the filovirus (the virus family which causes the Ebola and Marburg virus) outbreaks are now occurring with increased frequency and spreading from small rural areas into large towns and cities.

After giving evidence of how microbes evolve to combat modern drugs and how humans are responsible for their spread, the thought provoking lecture ended with Duse asking the audience "Who is the Superbug: Man or Microbe?"

"It was both visually and scientifically an excellent presentation of the research and knowledge around superbugs," said Professor Beverley Kramer, Assistant Dean for Research and Postgraduate Support in the Faculty of Health Sciences at Wits.

Provided by Wits University

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