Medical Xpress

Antibiotic crisis grows while drug companies make lifestyle meds

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South Korean models promote Cialis, a drug made by Eli Lilly that claims to make men potent for up to 36 hours, dosage depending. Credit: AAP/Yonhap News.

Antibiotics for acute infections are a pillar of medicine, but doctors say the pillar is crumbling as pharmaceutical companies neglect antibiotic development and instead chase massive profits from chronic illnesses and lifestyle diseases.

With a surge in often lethal infections that are resistant to existing

antibiotics coinciding with a drastic shortage of new antibiotics in development, Professor Laura Piddock, of the University of Birmingham's School of Immunity and Infection, has called for a global alliance to find a new generation of this most staple of medicines.

Writing in The Lancet Infectious Diseases edition last week, Professor Piddock argues that the drug industry will be shooting itself in the foot if it continues its myopic focus on the most lucrative drugs: "pharmaceutical companies need to recognise that many expensive medicines in their portfolio and in development might by useless if patients succumb to fatal infections. Therefore, their return on investment for products to treat cancer or chronic diseases depends, in part, on effective treatment of infections."

Professor Piddock, who is also the President of the British Society for Antimicrobial Chemotherapy, writes that while public attention is often focused on access to exotic new drugs for diseases such as cancer, it is antibiotics that routinely keep cancer patients alive. The same is true for people aged over 65 whose immune systems are naturally waning yet often find themselves having medical procedures, Professor Piddock writes. For such people, antibiotics are an "integral and routine part of treatment".

Yet, this routine treatment is increasingly failing as infectious bacteria become resistant to antibiotics. The World Health Organization (WHO) warns that "many infectious diseases risk becoming uncontrollable".

Even as "the antibiotic pipeline is drying up", discovering new ones is much more difficult than it used to be, said Professor Ken Harvey, Adjunct Senior Lecturer of Public Health at La Trobe University.

"The low-hanging fruit's disappeared. Penicillin came from a mould that floated in through the window of Alexander Fleming's laboratory.

Streptomycin came from a mould on a cantaloupe. The easy stuff has been done, and it's more difficult to develop new drugs," Professor Harvey said.

"Another really big problem is that the industry really hasn't put the money into it in recent years, and there's a reason for that: there's not a good return on investment with antibiotics when you compare them to drugs for diabetes, heart disease – these are chronic, lifelong diseases that need lifelong medication – the problem is that antibiotics are basically used in short courses to treat infections," Professor Harvey said

"They [the drug companies] say there's no return on investment, and that's rather ironic because classically that's been the problem of neglected diseases in the third world where poor people don't have the money to pay for medicines, and so they haven't researched tropical diseases, etcetera, but now it's definitely come home to bite developed countries with antibiotics," Professor Harvey said.

The relatively few new antibiotics suitable for resistant organisms are often used very sparingly to avoid the bugs finding ways to overcome them – and this practice compounds the commercial disincentive to develop such medicines, Professor Harvey said.

"There's no profit in it, and therefore the research has dried up, but meanwhile bacterial resistance has increased inexorably and there's still a lot of inappropriate use of antibiotics out there. There are now some organisms in hospital practice that are resistant to everything we've got and patients are dying, but they tend to be immuno-suppressed patients, critically ill, with lots of other things wrong with them. We are running out of antibiotics – the germs are doing well and the chemists have not given us what we should have," Professor Harvey said. "The profit orientated approach, which has been quite successful for chronic diseases because there's money in it, is not working for antibiotics."

Developing medicines for ongoing conditions is often so profitable that the drug industry sometimes exaggerates the incidence of diseases requiring ongoing medication or even invents diseases to suit, Professor Harvey said.

“Disease mongering it’s called,” said Professor Harvey. “The focus we’re trying to bring the industry to is to produce drugs that are genuinely needed rather than producing drugs that aren’t needed, but it’s more profitable to produce the 15th anti-depressant or the 27th anti-hypertensive than it is to produce a new antibiotic at the moment, because you can market them aggressively and try to make out that new is better than old when often it isn’t.”

Meanwhile, antibiotic-resistant “superbugs” are killing an estimated 500,000 people each year just in Europe and the US, according to Matthew Cooper, the Professor of Molecular Bioscience at the University of Queensland. “With each patient who gets a superbug staying in an ICU [intensive care unit] upwards of a week, it’s costing the US alone upwards of $20 billion a year – it’s an enormous cost to society,” said Professor Cooper, who is working to gather the figures for Australia.

Despite the toll of our failing antibiotics, it would be unrealistic to expect pharmaceutical companies to pull their R&D money out of more lucrative drugs aimed at patients who need to take them for years. “We can’t change capitalist behaviour; we live in a capitalist society, and drug companies need to make money to survive. What we can do, however, is look at different types of business models,” he said.

In addition to hybrid models of public-private partnerships, “we could use patent extension [for new antibiotics] – so they have five more years before it becomes generic, or if the government subsidised the cost of Phase III trials [randomised multi-centre trials on large numbers of

patients], then not just big pharma companies but smaller biotechs could afford to develop antibiotics," Professor Cooper said. "When a new drug is launched it will not only save millions of lives, it will save billions of dollars – so it makes a lot of sense to look at different types of business models and development models that will encourage biotechs to invest in antibiotics again."

A global alliance to develop new antibiotics was vital but not unprecedented, Professor Cooper said. "We've seen a couple of global alliances make a huge impact – polio vaccine, small pox. HIV/AIDS is a good example because there was a fantastic lobbying alliance by the gay community in America and right now we've got great drugs for HIV/AIDS and people don't actually die in Africa very much anymore from HIV, they die from TB – tuberculosis – so when we actually behave in an egalitarian manner and put our resources together we can make a big difference," he said.

Source: The Conversation

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