

Global battle against antibiotic resistance requires tailored solutions

March 12 2021



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The global battle against antibiotic resistance can only succeed if local contexts are taken into account. "A tailored approach is needed in each country," says Heiman Wertheim of Radboud university medical center. "There is no 'one-size-fits-all' solution." This was the main finding of a study on antibiotic resistance in African and Asian countries funded by

the British Wellcome Trust. Wertheim is the lead investigator of a large group of international researchers who recently published an article on this study in *The Lancet Global Health*.

Antibiotics are powerful treatments for bacterial infections. They are indispensable for controlling infections such as pneumonia, meningitis or blood poisoning (sepsis) caused by bacteria. But they are ineffective for treating viral infections, such as colds or flu, and do not work against infections with parasites, fungi or yeasts.

Increasing resistance

Incorrect use of [antibiotics](#) increases the risk of antibiotic resistance. This means that bacteria adapt in such a way that the antibiotic is no longer effective and the disease can no longer be controlled. Antibiotic resistance is now a major problem worldwide.

The problem is growing especially in low- and middle-income Countries (LMIC), where antibiotic use increased by 35% between 2000 and 2010. Research in various countries show that for example 80% of children under the age of five with respiratory infections are treated with antibiotics. In many cases, this was unjustified. To gain more insight into this problem, a large group of international researchers led by Heiman Wertheim from Radboud university medical center carried out the ABACUS project. ABACUS stands for AntiBiotic ACces and USe.

Large differences between countries

The results of the study, which was conducted in LMIC countries in Africa (Mozambique, Ghana, South Africa) and Asia (Bangladesh, Vietnam, Thailand), have now been published in *The Lancet Global Health*. Wertheim: "We looked primarily at how easy or difficult it is to

obtain antibiotics in those countries and in which situations they are used. On those aspects alone, we found enormous differences between the six countries. For example, in some countries, you can purchase antibiotics in the pharmacy only with a doctor's prescription, while in others, there are no restrictions and antibiotics are available at any time from the drug store around the corner. We also saw that antibiotics are much more readily available in Asia than in Africa. And that the situation is relatively better in wealthier countries such as Thailand and South Africa."

Self-medication

Nga Thi Thuy Do, a researcher at the Oxford University Clinical Research Unit in Vietnam and lead author of the paper, summarizes the findings: "Bangladesh and Vietnam have the most places where antibiotics can be purchased without a prescription. In some settings you have one drugseller per 500 inhabitants, which is an awful lot. This is reflected in the extent to which antibiotics are used as self-medication. In Vietnam, Bangladesh and Ghana, 57%, 45% and 36% of the population, respectively, regularly take antibiotics for self-medication. But self-medication is much less frequent in Mozambique, Thailand and South Africa, with rates of 8%, 4% and 1%, respectively. The difference is enormous."

The researchers also observed uncertainty in the local population—even among the sellers of antibiotics—about what an antibiotic actually is and how you can recognize it. For example, painkillers were sometimes confused with antibiotics. In a follow-up study, also funded by the Wellcome Trust, the consortium will investigate whether improved recognition of antibiotics can lead to better use.

Context, context, context

The reasons for opting for self-medication are obvious: Getting antibiotics from the drugstore without a prescription is faster, cheaper and easier. But purchasing antibiotics without a prescription is not always possible. And that in turn depends on all kinds of factors such as how the healthcare is organized, whether consumers trust the supplier and the severity of the disease. Wertheim says,

"Our research makes it clear that a generic approach towards combating antibiotic resistance is ineffective. To have any chance of success, you must consider the context that affects the availability and use of antibiotics in each country. The conclusions of our study provide an excellent starting point for giving shape to global initiatives to improve antibiotic use, so that those who really need it can get the right antibiotic and those with a runny nose can get a 'warm cup of tea.'"

More information: Community-based antibiotic access and use in six low-income and middle-income countries: a mixed-method approach. *The Lancet Global Health*. [doi.org/10.1016/S2214-109X\(21\)00024-3](https://doi.org/10.1016/S2214-109X(21)00024-3)

Provided by Radboud University

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