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A REPORT CALLS FOR 'URGENT ACTION' TO BOOST THE DEVELOPMENT OF NEW ANTIBIOTICS

In recent years, antibiotic developers and infectious disease specialists have highlighted the need to develop new **antibiotics**, which is currently still insufficient and under-equipped to keep up with the spread of antimicrobial resistance (AMR). Over time, numerous reports and analyses have been published describing this issue.

A report by the International Federation of Pharmaceutical Manufacturers and Associations (IFPMA) suggests that a possible plan for developing much stronger new antibiotics is only feasible if governments implement effective measures to stimulate antibiotic research and attract more investors.

From 2017 to 2023, only 10 new antibiotics or combinations have been approved by regulatory agencies, with only 2 of these antibiotics being defined as innovative by the World Health Organization (WHO). None of these constitute a new class of antibiotics.

Moreover, only one candidate in phase 3 studies addresses the four bacterial pathogens classified as critical by WHO. Additionally, of the seven **high-priority pathogens** identified by WHO, only two have innovative drugs in development.

The widely cited reason for the relative lack of new antibiotics is the profitability of investment for drug developers, which is determined by several factors. These include the limited time for which antibiotics are needed (usually a few weeks or months in the case of more severe infections), the small population of patients with highly drug-resistant infections, and the need to preserve new antibiotics as a reserve or last treatment option. Furthermore, clinicians still opt for older, generic antibiotics to treat resistant infections, even when they have access to newer antibiotics. The lack of economic incentives has led many large pharmaceutical companies to **abandon** antimicrobial development for more profitable investments in other therapies, while small biotechnology companies have gone bankrupt even after receiving a production order for an antibiotic.

Many scientists focused on antibiotic research and development are **leaving the field**, raising concerns about who will discover the antibiotics of tomorrow.

Currently, only the United Kingdom has implemented an incentive to address this issue. Using a subscription payment model, the National Health Service pays pharmaceutical companies an annual fee for access to two antibiotics, cefiderocol and ceftazidime-avibactam, which can treat severe, multidrug-resistant infections.

The idea behind this alternative payment model is to provide pharmaceutical companies with a predictable revenue stream based on the public health contribution of their products, rather than reimbursement based on the amount of medication sold.

Thus, companies will be motivated to continue their efforts in antibiotic research and development while promoting the appropriate use of these drugs. Canada is exploring a similar model, Japan has piloted its own antibiotic revenue guarantee, and a bill that would create subscription payments for antibiotics in the United States (the PASTEUR Act) is under debate.

The experimental model estimates that the number of new antibiotics will continue to decline starting in 2026 as funding for studies runs out. By 2033, eight new antibiotics are expected to be approved, with only 26 new candidates in development, six of which are in advanced stages. Another scenario would involve more countries implementing incentives to attract investment following the British model, encouraging more private investment in antibiotic research and development. This could lead to the approval of 19 new antibiotics by 2033, with 72 candidates in development and 41 in final stages of development.

Robust grants are crucial for encouraging investment in the research and development of new antibiotics. The impact of the lack thereof is demonstrated, and this report highlights the economic and health imperative for governments to act in conjunction with the UN, which remains focused on combating AMR.

Adapted after Chris Dall, 15 May 2024