

The challenge of antimicrobial resistance: The hidden “fil rouge” for healthcare policy

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Two issues are at the centre of the debate on how to make our health systems more sustainable: tackling unnecessary spending on health, and making sure that medical innovations deliver the right products at the right price. Both of these key issues are epitomised by one of the biggest public health challenges we face today: that of antimicrobial resistance (AMR).

When antibiotics (and similar medicines) do not work because diseases have evolved to resist them, people will die from diseases that most people in OECD countries these days only see on the big screen or on stage, like tuberculosis, or infections from wounds. In fact, around 700,000 people die each year because of

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AMR. Even when the consequences are less serious, the costs of AMR are high: each case of someone having a resistant disease results in an additional US \$10,000 to 40,000 having to be spent per infected patient in OECD countries. And there are other economic costs, too, such as absenteeism from work.

There is a race between the spread of AMR, and the development of new medicines, and it is a race that so far we are losing: AMR is growing, but new antimicrobials are not being developed.

Companies make money out of selling antibiotics either by selling a lot of them, or by setting a high price. The result is that some people are taking antibiotics when they should not, and others are not taking them when they should. This is a market failure: in either case, the result is growing resistance.

In some countries, people consume too many antimicrobials, often when they will not work. For example, we have estimated that in long-term care facilities and general practices in the OECD area, up to 70% and 90% respectively of antibiotics are prescribed for inappropriate reasons. On the other hand, in other countries, people cannot afford to buy the drugs they need. In addition, antimicrobials are also heavily used in agriculture, often for no other reason than to make animals grow more quickly. Such ineffective use encourages AMR.

Similarly, the lack of new antimicrobials is largely due to the same market failure that triggers ineffective use. The costs of developing a new medicine are enormous, but the returns are very uncertain because they depend on sales which in turn will have to be restricted in order to prevent diseases from becoming resistant even to the new antimicrobials. Consequently, in the last two decades, the pharma industry has preferred to invest in therapeutic categories that are more profitable and for which there is less uncertainty. Since 2000, only five new classes of antibiotics have been put on the market and none of these target so-called gram-negative bacteria, which are a leading cause of hospital-acquired infections and may lead to septic shock and death.

Now is the time to scale up global efforts to tackle AMR before it becomes uncontrollable . The OECD has developed a framework based on five areas of action to best address AMR and its associated health and economic burden,

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covering areas such as surveillance, R&D and co-ordination (see references). Since then, we have been working to fill in the knowledge gaps and to identify best practices to help countries meet their aims in each of these areas.

For example, Greece uses three times as many antibiotics as the Netherlands per head of population, and Turkey nearly four times as many. Differences in the use of “second line” antibiotics—drugs that should be used only when more common antibiotics do not work—are equally dramatic. Some countries have managed to reduce unnecessary use of antibiotics, thanks to the likes of stewardship

programmes and educational interventions to change the attitudes of clinicians and patients. Organisational changes, such as better use of diagnostic tests and delayed prescriptions, as well as economic incentives such as pay-for-performance schemes, have sometimes worked. The trouble is, most countries have implemented these actions in a piecemeal fashion, often only in some regions and often on a voluntary basis. There is a long way to go before antibiotics are used when—and only when—they are truly needed.

Together with the World Health Organisation (WHO) and other international organisations, the OECD is supporting G20 countries in their efforts to encourage more investments in the antimicrobial R&D pipeline. Much progress has been made in promoting basic research into new antimicrobials, often through promising public-private partnerships. However, if the returns to innovation still depend on sales, then the market failure in how we pay for new antibiotics may well stop any new breakthroughs from making it to market. This must be corrected, for instance, by introducing market entry rewards or prizes to recompense and motivate innovators, regardless of their sales. Furthermore, stewardship of any new antimicrobials must be improved to ensure they do not add to the problem, but so that new drugs are only used in an effective fashion. This means ensuring that access to the drug is granted when and where it is needed and that we have in place strong actions to prevent ineffective use.

Much modern medicine, from surgery to chemotherapy and treatment for patients with AIDS, depends on effective antimicrobials. If we want to put up our own stiff resistance to AMR, then we need big changes—in the expectations and actions of patients and physicians, the investments of pharmaceutical companies and the oversight of governments. Borders will not defeat AMR, which is a global problem requiring a global response.

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