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Perspective

Addressing the global challenge of colistin-resistant bacteria: A call for unified action

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Abstract
Antimicrobial resistance (AMR), especially colistin-resistant bacteria, threatens global health, with rising cases in Nigerian newborns. Colistin's agricultural use accelerates resistance, demanding a global ban. Combining strict regulations, alternative farming, and international cooperation, a One Health approach is vital to curb AMR, safeguard antibiotics, and address economic and food security challenges.
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The growing threat of colistin-resistant bacteria

Antibiotic resistance, especially colistin-resistant bacteria, is a global crisis requiring immediate action. The situation is particularly alarming in Nigeria, with newborns less than a week old found to carry colistin-resistant bacteria.[1] This discovery, as reported by Gavi, the Vaccine Alliance, clearly indicates the urgent need to address the spread of antibiotic-resistant bacteria in Nigeria.

Antimicrobial resistance (AMR) can affect people at any stage of life and poses significant challenges across interconnected sectors, including healthcare, where it complicates treatment; veterinary medicine, where it impacts animal health; and agriculture, where antibiotic use in livestock contributes to resistance that can spread to humans through the food chain and environment. This makes it one of the world's most urgent public health problems.[2] This resistance complicates treatment, making infections more challenging to manage. Sub-Saharan Africa, including Nigeria, experiences some of the highest rates of AMR-related mortality, with an estimated 23.5 deaths per 100 000 people.[3] By 2050, AMR is expected to cause 10 million deaths annually, surpassing the current death toll from cancer.[4,5] The World Health Organization (WHO) identifies AMR as a top global public health and development threat. The report draws attention to the probable link between agricultural practices and the emergence of colistin resistance.[6] In Nigeria, colistin is rarely used in hospitals, suggesting its resistance stems from its use in agriculture. Globally, more antibiotics are administered to animals than humans, primarily to prevent infections and promote growth rather than to treat illnesses. This practice is linked to the global spread of colistin resistance, increasing human antibiotic-resistant infections.[7]

The need for a unified global response

While individual countries like China and members of the European Union have taken steps to ban the use of colistin in agriculture, the continued export of livestock feeds containing colistin to low and middle-income countries, including Nigeria, despite these bans, is a stark reminder of the need for a unified global response.[8] This contradiction underscores the crucial role of global collaboration in tackling this urgent issue, including establishing international agreements to regulate the export and use of antibiotics in agriculture, sharing resources and expertise to develop and implement alternative practices, strengthening surveillance systems to monitor resistance trends, and providing financial and technical support to low- and middle-income countries (LMICs) to improve regulatory frameworks and promote sustainable farming practices. We can only effectively address the international spread of antibiotic resistance through collective action.

The Gavi report advocates for an immediate global ban on the indiscriminate use of colistin in agriculture to preserve its efficacy for human medicine. However, implementing such a ban, particularly in LMICs, presents significant challenges.[1] High prevalence rates of colistin-resistant bacteria and the economic impact of banning colistin commonly used as a growth promoter could exacerbate local poverty and food insecurity. Disruptions in food production, including increased animal disease rates and slower growth without colistin, may lead to economic losses for farmers. LMICs also struggle with inadequate infrastructure, weak regulatory frameworks, and enforcement issues, complicating efforts

to implement alternatives and improve disease control. Balancing the need to combat AMR with maintaining food security and economic stability is crucial, as sudden changes could result in food shortages and increased poverty.[7] To address the challenges includes investing in infrastructure improvements for animal health and farm hygiene, promoting effective non-antibiotic alternatives for disease prevention, and strengthening regulatory frameworks with stringent enforcement. Enhancing public awareness about AMR and providing financial and technical support to farmers can help mitigate economic impacts. To effectively combat resistance while protecting food security and economic stability, the ban should be complemented by global collaboration to share resources and knowledge. Rigorous monitoring and evaluation systems are essential to measure its impact.

A One Health approach to addressing AMR

Addressing AMR requires a comprehensive One Health approach, an integrated strategy recognizing the interconnectedness of human, animal, and environmental health, tackles public health issues like AMR by promoting responsible antibiotic use, enhancing infection prevention, and improving public awareness. This approach emphasizes the need for stringent regulations in veterinary medicine, sustainable agricultural practices, and comprehensive surveillance systems to monitor resistance patterns across all sectors to monitor resistance patterns and promote non-human antibiotics in animal feed to prevent resistance to human antibiotics. Support for farmers in LMICs is essential to improve farm hygiene and management practices, ensuring that antimicrobial restrictions do not negatively affect animal welfare or exacerbate poverty.[8] Global cooperation is crucial for implementing these measures, promoting international commitment, and providing financial and technical support to LMICs. By integrating these strategies, we can effectively manage AMR while safeguarding food security and economic stability.

Conclusion

Dealing with the worldwide issue of colistin-resistant bacteria demands immediate and coordinated action. The Gavi report emphasizes the urgent need to stop using colistin in agriculture to preserve its effectiveness for human medicine. However, implementing this ban, especially in LMICs, poses significant challenges such as potential economic losses and food insecurity. To overcome these obstacles, it is essential to make substantial investments in infrastructure, alternative disease prevention methods, and regulatory improvements. Furthermore, it is crucial to promote global collaboration, raise public awareness, and establish strong monitoring systems to effectively manage AMR while ensuring food security and economic stability.

Competing Interests
None to declare.

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