Over 3 million children died from antimicrobial resistance-related infections in 2022, major study shows

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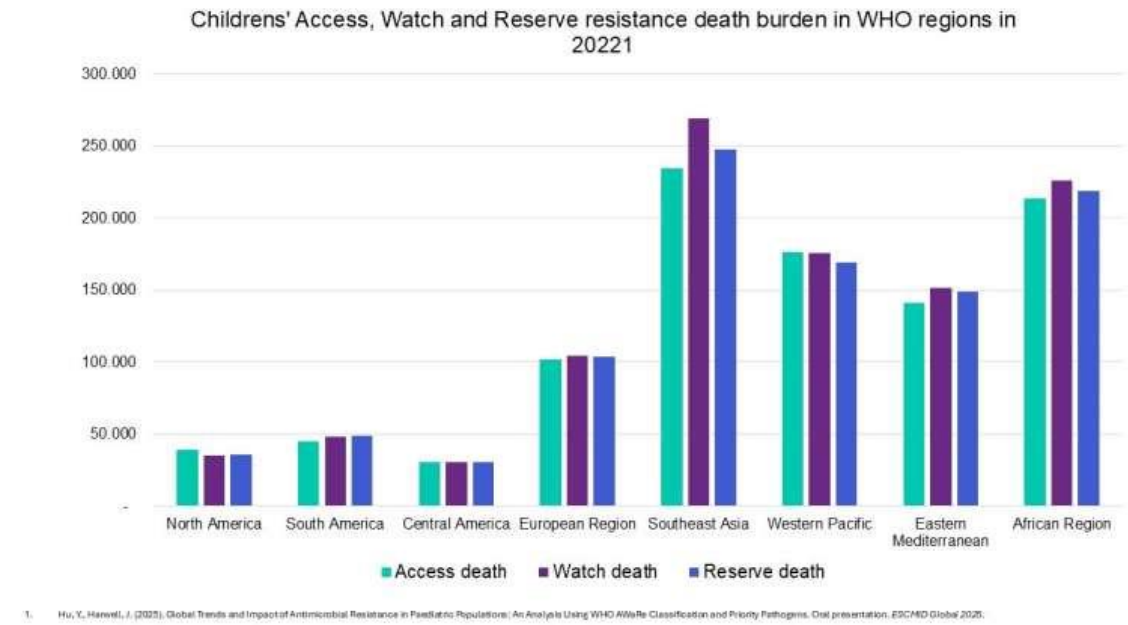

Childrens' Access, Watch and Reserve resistance death burden in WHO regions in 2022. Credit: ESCMID

A study presented at ESCMID Global 2025 reveals that over 3 million children worldwide lost their lives in 2022 due to antimicrobial resistance (AMR)-related infections.

The study underscores the urgent need for both regional and global strategies to control pediatric AMR, particularly in high-burden areas such as South-East Asia and Africa. AMR poses a critical threat to children, who are highly vulnerable to infections. Access to new antibiotic formulations is often much more limited for children because of product development delays.

The study data found that in 2022 alone, more than 752,000 children in Southeast Asia and 659,000 children in Africa died of AMR-associated complications. Many of these deaths were linked to the use of Watch antibiotics (drugs with a high risk of resistance) and Reserve antibiotics (last-resort treatments for severe, multidrug-resistant infections).

Watch and Reserve antibiotics are not intended for first-line treatment and their use should be limited only for those who need them to preserve their effectiveness and reduce the development of resistance.

In contrast, Access antibiotics are those that are more widely available and used to treat common infections due to their lower potential for increasing resistance.

Between 2019 and 2021, the use of Watch antibiotics increased by 160% in Southeast Asia and 126% in Africa. During the same period, the use of Reserve antibiotics rose by 45% in Southeast Asia and 125% in Africa.

Globally, of the more than 3 million children's deaths, 2 million were associated with the use of Watch and Reserve antibiotics.

"While the rise in the use of Watch and Reserve antibiotics may be necessary in response to the concurrent rise in drug-resistant infections, the sharp rise in use of these drugs presents several serious long-term risks", commented Professor Joseph Harwell, study co-author.

"Their increased use, especially without careful oversight, elevates the risk of resistance and limits future treatment options. If bacteria develop resistance to these antibiotics, there will be few, if any, alternatives for treating multi-drug-resistance infections."

Several factors contribute to the severity of AMR in low- and middle-income countries, including overcrowded hospitals, poor sanitation, and weak infection prevention measures that facilitate the spread of resistant pathogens within health care settings and communities. Due to a lack of diagnostic tools and concerns over misdiagnosis, overuse and misuse of antibiotics are also widespread in these regions.

Additionally, many low- and middle-income countries lack effective national surveillance and antimicrobial stewardship programs, making it difficult to track resistance trends and establish effective treatment protocols.

"Rising resistance to Watch and Reserve antibiotics will ultimately lead to higher treatment failure," said Professor Harwell. "Mortality rates, which are already alarmingly high, will continue to rise significantly, particularly in low- and middle-income countries where access to alternative treatments and advanced medical interventions may be limited."

Professor Harwell furthered, "Addressing this issue requires urgent and coordinated action at both the regional and global levels. Global and national surveillance on AMR must adopt a 'One Health' approach, with cost-effective systems that can inform treatment guidelines and measure the impact of control interventions."

"On a regional level, we call on policymakers to mandate hospital-based antimicrobial stewardship programs in all pediatric health care facilities. Improved age classifications in surveillance data will also enhance our understanding of important differences in resistance rates across the age categories, as well as pediatric-specific resistance mechanisms. Additionally, we urge the implementation of national guidelines to ensure routine surveillance informs antibiotic use," concludes Professor Harwell.

More information: Hu, Y., Harwell, J. Global Trends and Impact of Antimicrobial Resistance in Paediatric Populations: An Analysis Using WHO AWaRe Classification and Priority Pathogens. Oral presentation. ESCMID Global 2025.

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