

SHORT COMMUNICATION

EMERGING CHALLENGES WITH DRUG-RESISTANT ENTERIC FEVER IN BANGLADESH

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World Antimicrobial Awareness Week (November 18-24) reminds us to take action now against antimicrobial resistance (AMR). This year's theme "Educate Advocate Act now" is especially important for Bangladesh. Our country has a serious problem of antibiotic resistance in enteric fever. As healthcare providers, we must raise awareness about the proper use of antibiotics.

Global Threat of Antimicrobial Resistance:

AMR is one of the top ten threats to global health. In 2021, AMR caused 1.14 million deaths worldwide. By 2050, AMR could claim 39 million lives unless we take action now.¹ These numbers show us that we cannot wait. We must act immediately to protect our patients and future generations.

Enteric Fever Burden in Bangladesh:

Bangladesh is a country where enteric fever is very common. Enteric fever includes both typhoid and paratyphoid fever. These diseases affect many people in our country. The hospitalization incidence of typhoid fever in Dhaka, Bangladesh was 913 per 100,000 people during 2016-2019.² More recent data shows that *Salmonella Typhi* is the most common cause of bloodstream infections in children over 2 months of age.³

In Bangladesh, typhoid diagnosis often relies on clinical symptoms rather than blood culture. This leads to over diagnosis. For each confirmed case, there are at least three suspected cases who receive antibiotics without proper diagnosis.⁴ This practice contributes to the development of antibiotic resistance.

Changing Pattern of Antibiotic Resistance:

The pattern of antibiotic resistance in enteric fever has changed over the years in Bangladesh. A recent study analyzed more than 12,000 blood-culture-confirmed typhoid cases from 1999 to 2022.⁵ The study found some good news and some bad news.

The good news is that multidrug-resistant (MDR) typhoid has decreased. MDR means resistance to three old antibiotics: amoxicillin, chloramphenicol, and cotrimoxazole. MDR typhoid fell from 80% in 2002 to 17% in 2022.^{4,5} Since 2017, more than 80% of typhoid bacteria have been susceptible to these older antibiotics.⁴ This decline happened because we stopped using these drugs widely.

The bad news is that resistance to newer antibiotics is increasing. By the mid-2010s, more than 90% of typhoid bacteria in South Asia showed resistance

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tociprofloxacin.⁴ Ciprofloxacin was the primary treatment choice during the 1980s to 1990s. When ciprofloxacin stopped working, doctors started using third-generation antibiotics.⁵ Now, resistance to these newer drugs is also emerging.

Recent studies show low levels of resistance to ceftriaxone and emerging resistance to azithromycin in Bangladesh.^{4,6} These are our primary treatment options today. Even more concerning, an outbreak of ceftriaxone-resistant *Salmonella Typhi* was identified in Bangladesh in 2024.³ Forty-seven cases were detected from April to September 2024.³ This outbreak shows that resistance is spreading quickly. Azithromycin resistance has also been reported among strains from Bangladesh and other South Asian countries.⁷

Reasons behind antibiotic resistance in Bangladesh: Antibiotic resistance in Bangladesh results from overuse and misuse of antibiotics in humans and animals, over-the-counter sales without prescriptions, lack of laboratory testing facilities leading to improper diagnosis, poor sanitation and hygiene, poverty-related factors like malnutrition and unaffordable quality drugs, increased animal protein consumption requiring more antibiotics in livestock, and weak regulatory systems with inadequate surveillance.⁸

The Threat of Extensively Drug-Resistant Typhoid
In 2016, an outbreak of extensively drug-resistant (XDR) typhoid began in Pakistan.^{7,9} XDR typhoid shows resistance to multiple antibiotics including fluoroquinolones and third-generation cephalosporins. This outbreak spread to other countries. If XDR typhoid spreads widely in Bangladesh, we will have very few treatment options left. We might need to use carbapenem antibiotics. These are expensive and must be given intravenously. They are not practical for outpatient treatment.

After XDR strains, we are running out of effective oral antibiotics. If azithromycin also loses effectiveness, we will return to a time when typhoid was a deadly disease. This possibility should worry all of us.

What Can We Do?

We must need to take several steps to combat antibiotic resistance in enteric fever;

Improve diagnosis:

We should use blood cultures more frequently. Rapid tests like typhoid and Widal often give false positive results. These tests lead to unnecessary antibiotic prescriptions.

Antimicrobial stewardship:

We must prescribe antibiotics carefully. We should use susceptibility testing to guide treatment. We should choose the right antibiotic at the right dose for the right duration. We should avoid using broad-spectrum antibiotics when narrow-spectrum antibiotics will work.

Surveillance:

We need regular monitoring of antibiotic resistance patterns. This data helps us update treatment guidelines. Bangladesh should strengthen its surveillance system for enteric fever and AMR.

Education:

Healthcare providers need regular training on proper antibiotic use. The public needs education about when antibiotics are needed and when they are not. People must understand the danger of self-medication and incomplete treatment.

Vaccination:

The typhoid conjugate vaccine (TCV) offers protection against typhoid fever. Bangladesh plans to introduce TCV in a national campaign in 2025.⁸ Vaccination can reduce the disease burden. This will reduce antibiotic use and slow the development of resistance.

Rethink old antibiotics:

Since MDR has decreased, we could consider reintroducing first-line antibiotics for treatment.⁵ However, this requires careful oversight. We must monitor closely to ensure resistance does not reappear quickly.

Physician responsibility:

As medical professionals, it is our responsibility to use antibiotics judiciously. When we prescribe antibiotics, we should ask: Is it necessary? Is it the right choice? Is the dose and duration appropriate? We should educate our patients about completing the full course of treatment. We should explain why antibiotics are not needed for viral infections.

Pharmacists should not dispense antibiotics without prescription. Patients should not use leftover antibiotics from previous illnesses. Everyone has a role to play in the fight against AMR.

Conclusion

Antibiotic resistance in enteric fever is a serious and growing problem in Bangladesh. This situation requires urgent action by all stakeholders. Healthcare providers, policymakers, and the public need to work together. World Antimicrobial Awareness Week reminds us that now is the time to take action. Let us use this

opportunity to strengthen our commitment to antimicrobial stewardship. Let's protect the effectiveness of antibiotics for future generations. The health of our nation depends on the actions we take today.

Keywords: Enteric fever, Antimicrobial resistance (AMR), MDR (Multidrug-Resistant), XDR (Extensively Drug-Resistant)

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