A Review of Antimicrobial Use and Antimicrobial Resistance in Bangladesh

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Introduction

- Antimicrobial resistance (AMR) is a serious concern for global health
- Excessive and irrational use of antimicrobials contribute rapid spread of AMR globally
- In Bangladesh, extensive and inappropriate use of antimicrobials increase AMR
- A limited data is available for antimicrobial use and AMR in the context of Bangladesh

Objectives

- Explore drug distribution system, patterns of antimicrobial use, the emergence of AMR and it's impacts as well as efforts to reduce AMR in Bangladesh

Methods

- Systematic review of relevant literatures on AMR

Results

Antibiotic distribution system

- 3 drug distribution channels: public hospitals, private hospitals and drug shops
- Active 100 pharmaceutical companies, 1200 wholesale drug shops, 107,461 licensed and thousands of unlicensed retail drug shops
- Pharmaceutical company provide incentives to drug shops and physicians
- Antibiotics available over-the-counter
- Drug salespersons have lack of training for dispensing

Figure 1: Antibiotic selling in drug shops

Patterns of antibiotic use

- 83% prescriptions with 43 % incomplete direction and 26.69% self-medication with antibiotics
- Antibiotics contained feed (39%) and antibiotics (23.3%) used for household livestock production
- 100% poultry farms used antibiotics for poultry production
- Banned antibiotics used for shrimp production

Figure 2: Antibiotic use in poultry farms

Figure 3: Antibiotic use in shrimp farming

Figure 4: AMR bacteria detected in supply water

Figure 5: AMR bacteria detected in waste water

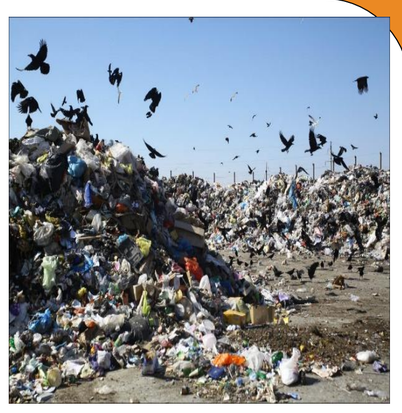

Figure 6: AMR bacteria detected in wild birds

Emergence of AMR

- High prevalence of multi-drug resistance detected in different water sources, poultry products, birds and fresh produce
- High prevalence (62%) of superbug NDM-1 producing multi-drug resistance bacteria detected in environmental water sample

Figure 7: AMR bacteria detected in fresh produces

Impact of AMR

- Increasing morbidity. mortality and huge expenses of out-of-pocket money
- Multi-drug resistance including NDM-1-positive bacteria found in more than 100,000 human blood samples
- 62% poultry farmers and 50% poultry traders had AMR bacteria
- Drug resistance strains of mycobacterium TB, MDR TB and gonorrhea

Efforts to reduce AMR

- Drugs Act 1940, Drugs (Control) Ordinance 1982 and CPMP 1994
- Fish Feed and Animal Feed Act-2010
- National Drug Policy 2016
- Antimicrobial Resistance Containment in Bangladesh 2017- 2022

Conclusion

- Weak legislation and monitoring systems lead to excessive antibiotic use and emergence of AMR
- Need more social science researches to explore the actual scenario of antibiotic transaction

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