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Letter to Editor

Antimicrobial Resistance as a 21-Century Threat to Ethiopia: Current Response and Further Directions

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Abstract

Background: Ethiopia has witnessed a dramatic increase of antimicrobial resistance in the past few years. Despite, the available antimicrobial treatment, In Ethiopia, infectious disease is the most frequent cause of morbidity and mortality. In Ethiopia, along with nutritional problems, it accounts

for 60 - 80 percent of health problems in the country. Infectious diseases still account for 45% of deaths in low-income countries. There lays a gap in rational use of antibiotic and rapid spread of resistant bacteria with a limited surveillance system. This review highlights main current situation, Concerns, effective public health response towards antibiotic resistance in Ethiopia and give a

Methods: PUBMED/MEDLINE, Google and grey literature were searched for suitable article and reports that contained current situation, Concerns, effective public health response towards antibiotic resistance in Ethiopia. The review included full-text articles published in English.

Results: Major causes of morbidity and mortality in Ethiopia are infectious and communicable diseases. Ethiopia has the highest burden of tuberculosis. It is ranked as 15th among 27 high burdens multiple drug resistance tuberculosis countries. Furthermore, there are factors which are accelerating the progress of antibiotic resistance in Ethiopia as like irrational use of antibiotics, free availability of antibiotics over the counter, lack of infection control units in hospitals, black market, substandard and counterfeit medicines, large gap between the public and the private sector, low availability of standard guideline for drug at health facilities, low knowledge of the patient about the drug dispensed to them.

Conclusion: Antimicrobial resistant is a global health issue which requires a solution. There are several concerns which can influence antimicrobial resistant in Ethiopia. The antibiotic abuse, inappropriate prescribing, over counter antibiotic and self-medication can play an important role in antimicrobial resistance. Several initiatives have contributed in tackling antimicrobial resistance. Furthermore, the presence of few medical products has aggravated antimicrobial resistant. In general, antimicrobial resistance is a global challenge which needs a coordinated and multidisciplinary approach towards tackling it.

Keywords: *Current Situation; Concerns; Effective Public Health Response towards Antibiotic Resistance; Ethiopia*

Abbreviation

AIDS: Acquired immunodeficiency Syndrome; AMR: Antimicrobial Resistance; ARTI: Acute Respiratory Tract Infection; CDC: Center for Disease Control; DACA: Acute Administration and Control Authority; FMOH: Federal Ministry of Health; IP: Infection Prevention; MDR: Multi-drug Treatment; MO: Microorganism; TB: Tuberculosis; WHO: World Health Organization

Introduction

Infectious diseases are an important cause of mortality and morbidity in Ethiopia. In Ethiopia, along with nutritional problems, they account for 60 - 80 percent of health problems in the country [1]. Infectious diseases still account for 45% of deaths in low-income countries [2]. The use of antimicrobials has contributed to the dramatic fall in morbidity from communicable and infectious diseases over the last 50 years globally [3]. Because of the emerging resistant strains of microbes that are out patching the development of an effective new drug, there has been increased resistance in Ethiopia. Increased prevalence of resistant bacteria, together with lack and the high cost of new generation drugs have escalated infection-related morbidity and mortality particularly in developing countries like Ethiopia [4,5]. The emergence of antibiotic resistance has increased as a result of the use, overuse, and misuse of antibiotics both in humans and animals.

In Ethiopia, the misuse of antibiotics has increased by health care providers', unskilled practitioners and drug consumers, the rapid spread of resistant bacteria and insufficient surveillance contributed to the problem. The problem of increasing antimicrobial resistance is even more threatening when considering the very limited number of new antimicrobial agents that are in development [6]. Antibiotic resistance may be worsened because of the limitation of resources in Ethiopia, since second-line antibacterial drugs for resistant bacteria may not be present or unaffordable. Furthermore, Infections caused by resistant bacteria adversely affect treatment outcomes, treatment costs, disease spread and duration of illness [7], posing a serious challenge to the future of chemotherapy.

In Ethiopia, limitation of resource has not allowed antimicrobial resistance to be prioritized as major public health concern despite the obvious needs [8]. Antimicrobial resistance is a multifaceted problem.

That's why the need for the involvement of all sectors that are involved in the use of antimicrobials, resistance prevention, and containment efforts. This policy brief highlights main current situation, Concerns, effective public health response towards antibiotic resistance in Ethiopia and give a recommendation.

Scope of the problem

Major causes of morbidity and mortality in Ethiopia are infectious and communicable diseases [9]. The country's most important health problems are communicable diseases such as diarrheal diseases, malaria, HIV/AIDS, tuberculosis, sexually transmitted infections (STIs) and epidemic-prone diseases like meningococcal meningitis, cholera, measles and bacillary dysentery [10]. Ethiopia is one of the country's most heavily affected by HIV/AIDS, and an estimated 1.5 million people are currently living with this problem (national prevalence in urban areas being 12.6 percent and in rural areas 2.6 percent) [11].

Ethiopia has the highest burden of tuberculosis. It is ranked as 15th among 27 high burdens multiple drug resistance tuberculosis countries. The estimated MDR rate was (0.9% - 2.8%) for new cases and (5.6% - 21%) for retreatment cases [12]. Furthermore, it is estimated that three-fourths of the land below 2000 meters is malarias' with two-thirds of the country's population at risk. This makes malaria the number one health problem in Ethiopia affecting many people. It causes 70,000 deaths each year [13]. There is many challenges arising today in tackling malaria. The emergence and spread of Plasmodium falciparum resistance to antimalarial drugs are now one of the greatest challenges facing the global effort to control malaria [14].

Hence, communicable disease account to highest disease burden in the country. There is a need for addressing the rise in antimicrobial resistance and controlling the situation.

Concerns in Ethiopia

There are factors which are accelerating the progress of antibiotic resistance in Ethiopia as listed below [15]:

- Irrational use of antibiotics
- Free availability of antibiotics over the counter

- Lack of infection control units in hospitals
- Black market
- Substandard and counterfeit medicines
- Large gap between the public and the private sectors
- Limited knowledge and awareness regarding AMR
- No synergy between Ministry of Health and medical doctors/hospitals with a gap in communication
- Limited ability to do diagnostics at rural health facilities
- Drug quality concerns in rural and around border areas
- Long stock out of essential drugs in public facilities
- Weak storage capacity of pharmaceutical
- Low availability of standard guideline for drug at health facilities
- Low knowledge of the patient about the drug dispensed to them.

Response towards antibiotic resistance in Ethiopia

DACA is the key partner for AMR country-level activity in Ethiopia. It plays a role in ensuring safety, efficacy, quality, and rational use of medicines. In 2005, it made a request to international organizations for support of drug treatment control activities as a way to help improve medicine use in hospitals and contain AMR. Ministry of health has high support for antimicrobial resistance. There is a large potential to use the expertise and resources of the Addis Ababa University (AAU) and other universities in Ethiopia for AMR work, particularly in relation to interventions dealing with pre-service and in-service education of health care providers, education of patients, and infection control. The partnership of the CDC is of critical importance because it is supporting surveillance of pathogens and improvement of laboratories in Ethiopia. Furthermore, WHO provide support toward training on and the establishment of Drug treatment and control.

Recommendation [15-19]

- Develop policies or regulations on the use of antibacterial by level of prescribers and dispensing staff within a health facility and enforcement.
- Strengthen/introduce surveillance on MOs resistance surveillance system such as Culture and Sensitivity records review and information dissemination mechanisms. Establish standard methods and quality assurance techniques and systems.
- Improve availability of key antibacterial and IP supplies.
- Ensure the availability and monitor utilizations of treatment guidelines, drugs lists, IP guidelines and other related materials.
- Organize and conduct need-based in-service/on-job training for prescribers and dispensing staffs.
- Improve availability and reliability of laboratory facilities, particularly Culture and Sensitivity tests.
- Implement and evaluate strategies to improve the availability of safe, cost-effective antibacterial and IP supplies.
- Support targeted applied research on antibacterial use and resistance.
- Facilitate dissemination of data and information on antibacterial use and resistance patterns.
- Provide technical and material support for health facility IP program.
- Pharmaceutical companies and/or importers/distributors have responsibilities to capitalize on the government efforts of AMR containment practices through ethical practices that are control over promotional messages that that would promote rational use and control over the activities of medical representatives.

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