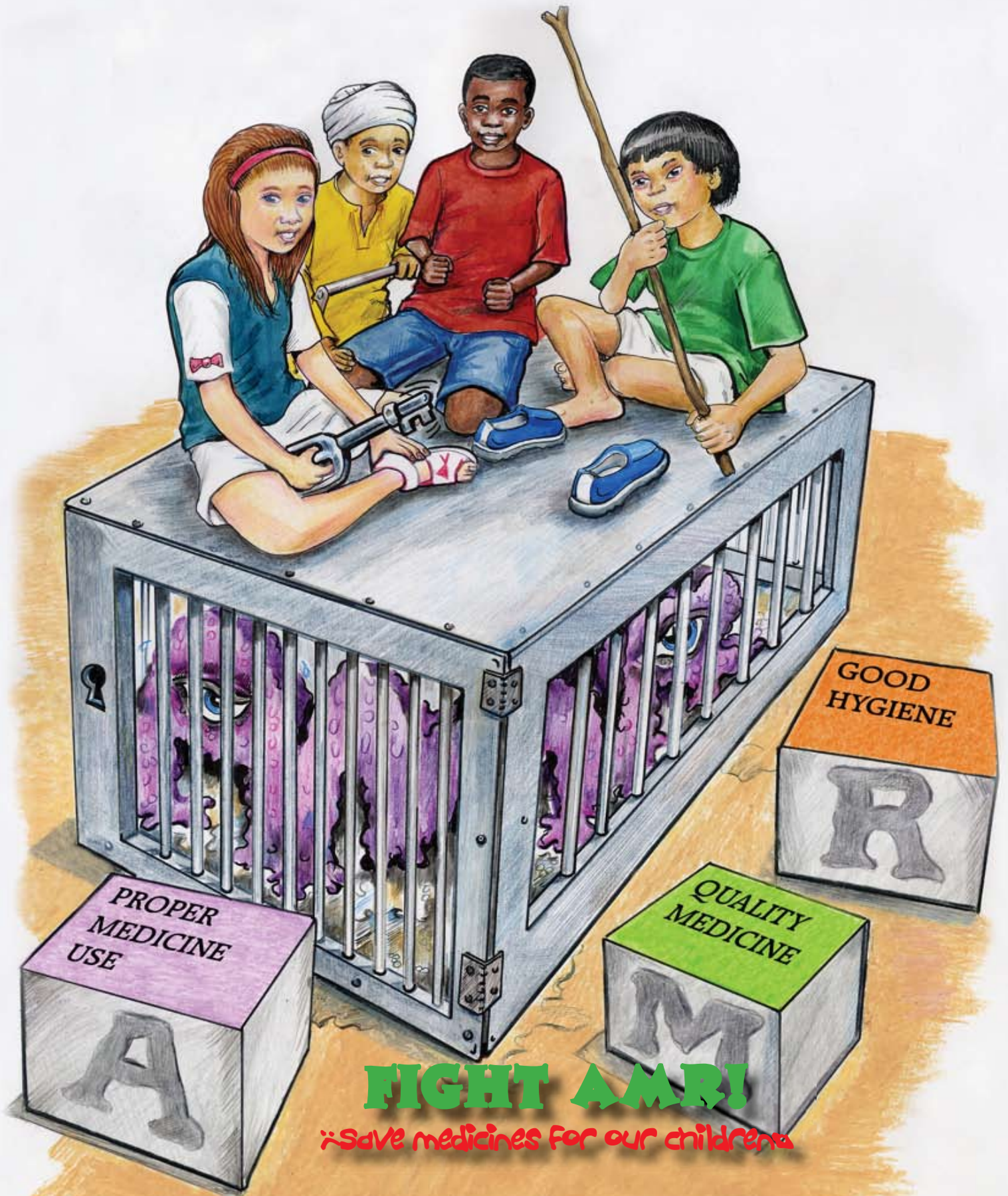


# Pharmalink

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**FIGHT AMRI**

Save medicines for our children

## About Ecumenical Pharmaceutical Network (EPN)

Ecumenical Pharmaceutical Network (EPN) is an independent, not-for-profit, Christian organization whose mission is to support churches and church health systems provide and promote just and compassionate quality pharmaceutical services for all. The work is not just aimed at supporting the provision of not only quality pharmaceutical services by church institutions but also guarantee non discrimination and equal access to all.

## About the Cover Image

Young children take a rest after successfully containing AMR. The illustration is one of many that EPN has developed for its campaign *Fight AMR – Save medicines for our children*. The illustrations are aimed at reinforcing the various messages on AMR containment. AMR containment requires collective action. No one country can do it alone. Illustration by David Radoli

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## Opinions

Opinions expressed in this edition of *Pharmalink* are those of the author and do not necessarily reflect the views of Ecumenical Pharmaceutical Network.

## Editorial

Globally, infectious diseases kill 11 million people annually, 95% of whom live in resource constrained countries. The major life saving intervention for infectious diseases is antimicrobial treatment. However, antimicrobial resistance (AMR) is rapidly reducing effectiveness of these life-saving medicines. The problem has rendered many first line treatments ineffective. This is impacting on all infectious diseases including HIV, TB Malaria, pneumonia, neonatal sepsis among others.

In May 2009, EPN and ReAct launched a Campaign *Fight AMR – Save medicines for our children* intended to stimulate both global and local actors to take concrete action to address antimicrobial resistance (AMR). During the launch at the 62<sup>nd</sup> World Health Assembly in Geneva, a worried microbiologist from Makerere University Uganda, Dr Florence Najjuka, presented the most shocking data on the consequences of Antimicrobial Resistance. In her study of patients at the Mulago Hospital, Kampala, Uganda, almost half (28 of 62) of patients could not be treated with available antibiotics due to resistance against these medicines. 86% of these patients were newborns. “A significant number of these babies died” says Dr Florence Najjuka. “10 years ago these lives could have been saved, but today the remaining treatment options are way too costly for most parents”.

There are gaps in knowledge, but there is evidence demonstrating that it is possible and cost-effective to intervene early in this developing problem. A multifaceted approach is needed to address the many dimensions of this problem as resistance within a wide range of microbes is emerging not only in hospitalized population, but also in human communities and food animal production businesses.

Recognizing that it is impossible to prevent 100% of infections, both community-acquired and hospital-associated, it is important to develop strategies that slow the development of drug resistance. Unless concerted and comprehensive action is taken, valuable agents will continue to be lost leading to higher costs of health care and higher levels of morbidity and mortality associated with infectious diseases.

Many of our members have been involved in country level activities to raise awareness and educate on effective strategies to contain further development of resistance. We hope you will be inspired to take an action and *Save medicines for our children !*





# Antimicrobial Resistance: The Malawi Experience

Dr. Sekeleghe Kayuni

The discovery of antimicrobials in the 20<sup>th</sup> century transformed the fight against infections. They revolutionized the medical treatment bringing under control illnesses which contributed to great suffering, disability and death. Over the years, more potent antimicrobials have been produced and made available to the world for better treatment.

In developing countries where over 70% of world's population live, leading causes of morbidity and mortality are infectious diseases. In Malawi, these include Malaria, Respiratory infections, HIV Infection among others.

Antimicrobials are critical in the healthcare system of the developing world. However, the emergence of antimicrobial resistance (AMR) is becoming a major public health problem. Microbes are no longer susceptible to the antimicrobials after a

standard course of treatment<sup>1</sup>. Several pathogens are increasingly developing resistance particularly to commonly available first-line broad-spectrum antibiotics making them effectively untreatable. As this continues, outbreaks occur which may result in high morbidity and mortality.

With limited drug resources in most health facilities in developing countries like Malawi, AMR poses a huge threat and bears catastrophic consequences to treatment and survival of our people.

Studies done in Malawian children showed 22% - 23% penicillin resistance in pneumococcal isolates (which causes acute respiratory infections)<sup>2</sup> and *in vitro* resistance of non-typhoidal salmonellae bacteraemia to commonly available antimicrobials like ampicillin (76 – 79%), cotrimoxazole (72%), gentamicin (55%) and increasingly in chloramphenicol (20%)<sup>3,4</sup>. Isolates from burns

patients at Queen Elizabeth Central Hospital in Blantyre showed general broad-spectrum resistance observed in 20% of all bacterial isolates<sup>5</sup>. High levels of gonococci resistance to penicillin, tetracycline and streptomycin were found in Malawi resulting in switching treatment of choice to gentamicin and/or ciprofloxacin<sup>6</sup>. *Shigella dysenteriae* I showed significant resistance to cotrimoxazole<sup>7</sup>.

More disturbing, is the emergence of multi-drug and extensively-drug resistance tuberculosis (MDR-TB, XDR-TB) spreading across developing countries. At least 24 patients with MDR-TB are currently on treatment in Malawi. Since their diagnosis and treatment is sophisticated, expensive and unavailable locally, there is great danger to lives of many vulnerable people.

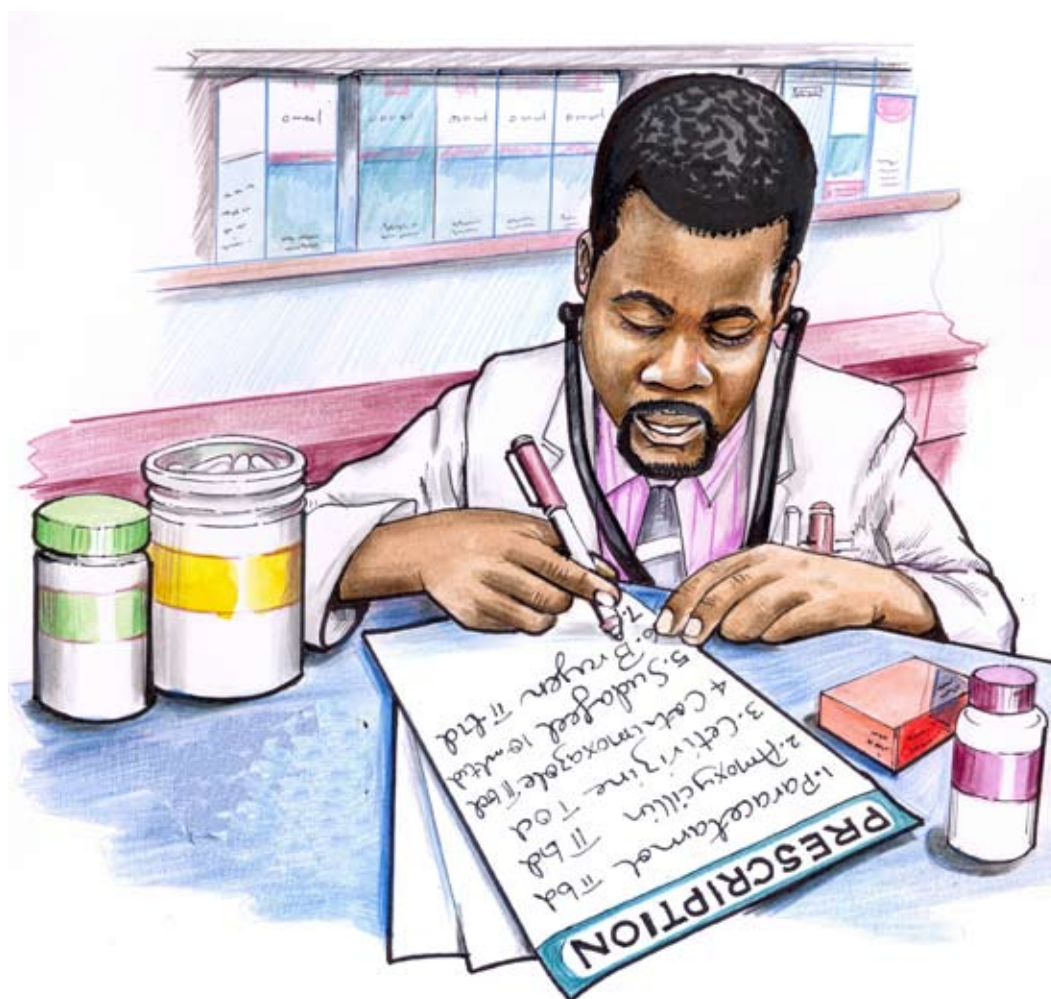
The emergence of AMR has resulted in change of first-line treatment of most microbial infections to second-line drugs, more expensive and less readily available to the majority of the population<sup>1</sup>. In Malawi, treatments of some common infections have had to be replaced for instance, in malaria, from

sulphadoxine- pyrimethamine to Artemisinin Combination Therapies. In adult pneumonia, treatment has been changed from cotrimoxazole to amoxicillin, in salmonellosis, from chloramphenicol to ciprofloxacin and in gonorrhoea from penicillin to gentamicin. This poses a challenge to remote health facilities and mission hospitals whose resources are limited since the second line treatment is relatively more expensive.

Many factors have contributed to the emergence and spread of AMR in Malawi:

### 1. Poor prescribing practices by Health Professionals

Unnecessary prescription of antibiotics has been documented in many developing countries and in Malawi as well. This is due to poor clinical judgment, lack of updated standard treatment guidelines or in-service training. In the end, scarce essential antibiotics are wasted on wrong patients thereby misusing the meager resources and facilitating development of AMR.



**Polypharmacy**

## 2. Use of antimicrobials in growth promotion

In some Malawian communities, poultry farmers use antimicrobials (even antiretroviral drugs) to enhance chicken growth (verbal information). Resistant bacteria of animal origin have been detected in humans, making treatment difficult.

## 3. Poor quality antimicrobials

Malawi is threatened with the influx of poor quality antimicrobials which contain little or none of the active ingredients needed for treatment. Lack of appropriate laboratory facilities to test the quality and quantity of drugs, limited financial resources to procure good quality antimicrobials from reputable firms, poor pharmaceutical procurement practices and weak regulation of drug production, imports and sales have contributed to the massive presence of substandard antimicrobials.

The move made by Pharmacy, Medicine and Poisons Board in Malawi (PMPB) on drug donation policy and importation will assist in reducing influx and flushing out poor quality drugs.

## 4. Poor Infection Control Practices

Improper practices and non compliance to infection control are commonly seen in most health facilities in Malawi. This result in spread of resistant microbes among patients and to health professionals. Promotion and compliance to simple practices such as hand washing, contact control, disinfection of surface, and isolation of infectious patients are essential in controlling resistant microbes.

## 5. Poor Laboratory Infrastructure

Lack of well established laboratory facilities in Malawi and skilled trained technicians have led to development of experimental, problem-oriented management strategies for administering antimicrobials. This has contributed to over prescribing of antimicrobials for prophylaxis which has contributed to the emergence of AMR. Proper lab infrastructure is critical in diagnosis and treatment of common microbial infections.

## 6. Lack of Research activities and Surveillance of AMR

Surveillance is necessary to detect, monitor and document emergence of any AMR in any locality. This will help in putting in place measures for containment. Findings from studies on AMR would

go a long way to improve care and contain further spread of resistant microbes.

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*TB and respiratory disease patients being treated in Quetta, Pakistan. Kamila Hyat/IRIN*

# Setting up an Infection Control System

Dr. Florence Najukka

The basic purpose of infection control (IC) is to prevent micro-organisms reaching a susceptible site on a patient in sufficient numbers or of sufficient virulence to cause an infection. The practice of infection control requires reference to and the use of official guidelines and up to date sources of information.

Infection control is an important aspect to the quality of care provided to a patient and is essential for the well being of the patients and the safety of both patients and staff. To ensure IC takes place, the institution requires a functional structure i.e. an Infection Control Committee (ICC) dedicated to ensuring infection control practices are adhered to. Ideally the ICC should be comprised of a clinician or microbiologist, a nurse and key personnel from various departments. The ICC which is responsible for the day to day decisions on infection control, requires individuals who have had some sensitization or training on infection control practice activities.

The Committee acts as liaison between departments responsible for patient care and those providing supportive services such as the pharmacy and maintenance departments. The support of the

hospital manager/administrator for the existence and functioning of the ICC is crucial. The most important components of an infection control committee include:

- Establishing objectives for the hospital IC programme by identifying problem areas and acting upon the findings.
- Establishing policies, standards and procedures or systems to be used within the hospital.
- Maintaining an ongoing educational programme for all hospital personnel in the use of such standards/policies/procedures.
- Ensuring the necessary facilities for maintaining good infection control practices are available to the hospital personnel.
- Monitoring staff health to prevent staff-to-patient spread of organisms.
- Monitoring the use of antibiotics, disinfectants and frequency of cleaning.

The ICC will also establish a system for case finding, advise on management of 'at risk' patients such as isolation categories and control measures and

will investigate epidemics. They will routinely carry out targeted surveillance of nosocomial infections and provide relevant information on infection problems to the management. In circumstances involving a problem coming from the community or another health facility (for example a infectious disease outbreak, the ICC will liaise with hospital doctors, administration, community health doctors and nurses and infection control staff in adjacent hospitals.

There is a need for a close working relationship between the hospital manager (or management team) and the ICC. For instance, in order to provide a safe environment for patients and staff, management is expected to provide a safe clean environment, sterile water for invasive procedures, safe clean food and in surgery, an air supply appropriate for the level of surgery provided. The infection control team supports management by providing advice on good architectural features, clean water sources, and proper facilities for hand washing and drinking. They also arrange and set up procedures for separation of clean and dirty materials.

The sustainability of the infection control practices can be achieved by providing written policies for critical elements of infection control and generating manuals for use accompanied by appropriate staff training. The manuals can cover a number of topics on patient care such as hand washing, isolation practices and invasive procedure. There would also be need for ward specific procedures such as surgical and operating theatre techniques and obstetrical, neonatal and intensive care techniques. Where relevant, information on production of items of critical importance such as sterilization and disinfection, and medication and infusion

preparation should be included. The immunization protocols schedules as well as procedures for post exposure prophylaxis (PEP) should also be included. In all cases information for investigation and management of major outbreaks such as *Methicillin Resistant Staphylococcus aureus* (MRSA) and diarrhoea should be available.

Infection prevention is often looked at as requiring much input within a constrained budget. However consequences of lack of infection control are serious and therefore institutions should strive to have at least the minimum administrative requirements i.e. a clinician and a nurse responsible for control of infection, a manual for critical procedures and an educational programme for staff. Countries may identify priorities. For example, in Uganda, attention has been paid towards cleaning, care of equipment and waste management.

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## INFECTION CONTROL ASSESSMENT TOOL

Infection control is a key strategy for hospitals to contain AMR and all hospitals must have an infection control program based on best practice. Good infection control not only decreases the spread of resistant organisms but also controls the spread of nosocomial infection, reduces the morbidity and mortality from infectious diseases and reduces the cost of health care. The infection control self assessment tool was developed as a component of an approach to improve hospital infection control practices in resource constrained settings. The approach comprises the tool and rapid cycle quality improvement methods using team problem solving. The tool which provides a standardized approach for the assessment of existing hospital infection control systems, has 21 modules covering various areas including hand hygiene, waste management, sterilization, microbiology laboratory and pharmacy. The tool and user manual are available at: <http://www.msh.org/projects/rpmpplus/WhatWeDo/Antimicrobial-Resistance/Infection-Control.cfm>





US Air force captain Dr Michelle Wild extracts a tooth from Sulima Barrie, an 8 year-old Liberian boy at the JFK Hospital, Monrovia, Liberia, on 24th March 2008. Tugela Riddley/IRIN

## Fighting Antimicrobial Resistance in Dentistry

Dr. Cosmas Gitobu

Antibiotics are vital drugs in the management of infectious diseases. Unfortunately their value is being jeopardized by the presence of microorganisms resistant to their effects.

Resistance was first observed in the 1940s when it was discovered that penicillin was no longer always effective against *Staphylococcus Aureus*<sup>1</sup>. Since then, a succession of new antibiotics have been used to cope with the ongoing emergence of new strains of resistant bacteria which have rendered even newly developed drugs ineffective. The competition between new drug development and emergence of new resistant organisms is on. Currently, the most serious concern is that the bacteria are winning the race.

The role of dentists in the emergence of resistance is not clear due to lack of studies in this area. Unnecessary use of antimicrobials in dentistry and

dental practitioners who are not always aware of correct clinical guidelines will contribute to the growing antimicrobial resistance.

Dentists should use antimicrobials rationally and responsibly not only for effective treatment but also to avoid resistance. Antimicrobials should be used only for management of active infections or to prevent the potential systemic spread of infection in a patient known to be at risk.

Guidelines for prophylaxis against bacterial endocarditis and recommendations for more limited use in patients with total joint replacement and other conditions have recently been updated<sup>2</sup>. It is important to follow these guidelines and to only use prophylactic antibiotics when there is a clear indication to do so. Oral-facial infections must be treated with local incision and drainage whenever possible.



Antibiotics should be considered as adjuncts to treatment when there are signs of systemic involvement such as extra-oral, neck and intraoral airway swellings or fever. Antibiotics are not the primary treatment for dental infections except in the case of primary spreading cellulitis. Antibiotics should be used very selectively in periodontal treatment and ideally in selected patients.

Routine use of antibiotics before or after extractions and endodontic procedures has not been shown to be effective<sup>1</sup>. Therefore routine prescribing for every extraction or endodontic procedure must be discouraged. Long duration antibiotic therapy is being challenged and instead sufficiently high doses for short durations being encouraged<sup>3</sup>.

Use of diagnostic microbiology laboratories by dental practitioners to assist in therapeutic decisions, resistance monitoring and policy formulating is necessary. Very few dentists make use of diagnostic laboratories; for example, the number of specimens received from dental practitioners by the microbiology laboratory of Glasgow Dental hospital decreased by 60% from 45 to 17 per year<sup>4</sup>.

Dentists must always follow accepted principles and guidelines for prescribing antimicrobials<sup>5,6</sup>.

These include:

1. Make an accurate diagnosis (bearing in mind the microorganisms involved).
2. Consider using narrow spectrum drugs.
3. Use appropriate antibiotics and dosing schedules.
4. Avoid unnecessary use of antibacterial drugs in treatment of viral infections.
5. Treatment regimens should be based on patient's progress or test results.
6. Obtain knowledge of the side effects and drug interactions of antibacterial drugs when prescribing them.
7. Educate patients regarding proper use of the prescribed drugs and stress the importance of completing the full treatment course therapy.
8. Use antibiotics only when there is an indication.
9. Use antimicrobials when the risk/

benefit balance is favorable.

10. Antibiotics are not a substitute for establishing adequate drainage.
11. Prescribe an adequate dose.
12. Prescribe for an appropriate duration.
13. Choose the drug with the fewest side effects.
14. Choose the least expensive drug.

Additional considerations include:

1. Consider laboratory identification and sensitivity tests to target specific bacteria with the antibiotics that have been identified as effective.
2. Recognize that antibiotics encourage development of resistance if used too long and at suboptimal doses.
3. Consider alternatives to antibiotics such as topical debridement and application of topical antiseptics.

In conclusion, better use of diagnostic services, surveillance and improvements in dental education are required to reduce the impact of antibiotic resistance in future. Campaigns to prevent antimicrobial resistance in dentistry should focus on prevention of infection and cross infection, correct diagnosis and wise use of antimicrobials.

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## INVESTIGATING ANTIMICROBIAL USE IN HOSPITALS

Antimicrobial (AM) medicines often account for a significant portion of the medicines budget of many hospitals in Africa. Therefore it is in the interest of the hospital managers to know whether the antimicrobial use in their hospitals is optimal. Under its RPM plus and SPS programs, Management Sciences for Health has developed a manual, intended for use in developing countries, to objectively describe the management and use of antimicrobials in a hospital setting. Hospital AM use studies are not only important for problem identification but also for monitoring and comparing performance within and without the hospital and assessing the changes resulting from interventions. The manual provides for the investigation of such variables as the existence of treatment guidelines and approved hospital formulary; the availability of and stock out levels for selected medicines; the compliance of prescriptions with agreed treatment protocols and the length of hospital stay for patients on antimicrobials. The manual is comprehensive describing in detail not just the indicators but the implementation process and how to analyze and report on the findings. The manual is available at: [http://pdf.usaid.gov/pdf\\_docs/PNADN079.pdf](http://pdf.usaid.gov/pdf_docs/PNADN079.pdf)

## FIGHT AMR!

### Save medicines for our children

The 'Fight AMR save medicines for our children' is a campaign of EPN and its partners aimed at raising awareness about the challenge of AMR among all relevant stakeholders. The campaign is intended to stimulate renewed attention to fighting AMR both locally and globally. The key campaign tool is a call to action document developed by representatives from the EPN membership in Moshi, Tanzania in November 2008. The call to action is targeted at all the different groups of stakeholders who are in position to contribute to implementation of the containment actions that have been defined in the *WHO Global Strategy for Containment of Antimicrobial Resistance (2001)*. Apart from using the call to reach out to the relevant stakeholders, EPN members have undertaken a number of other activities including:

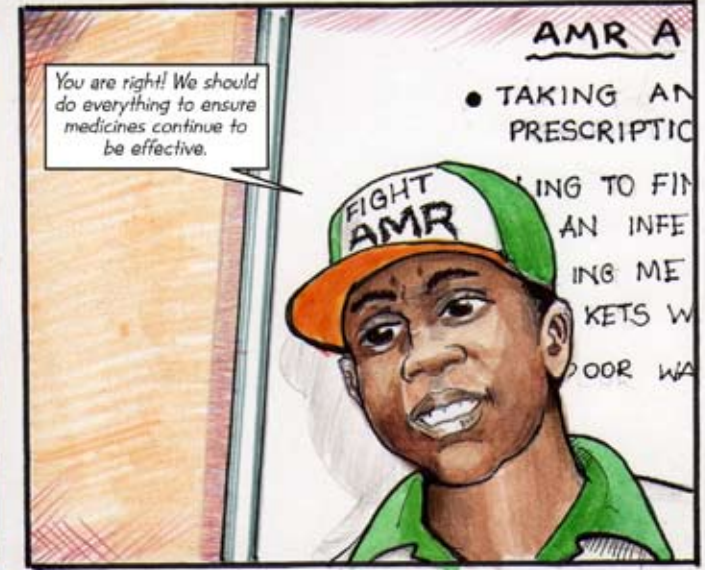
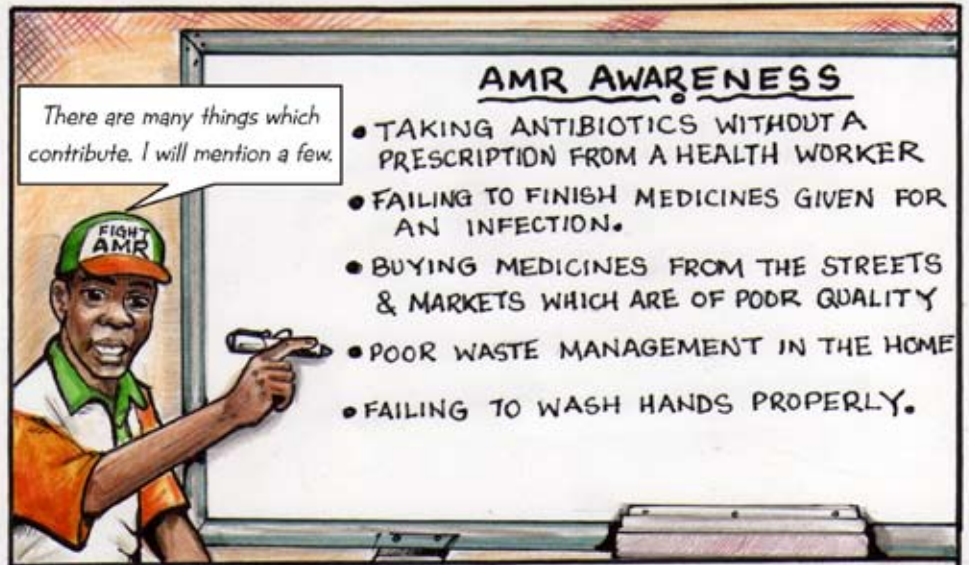
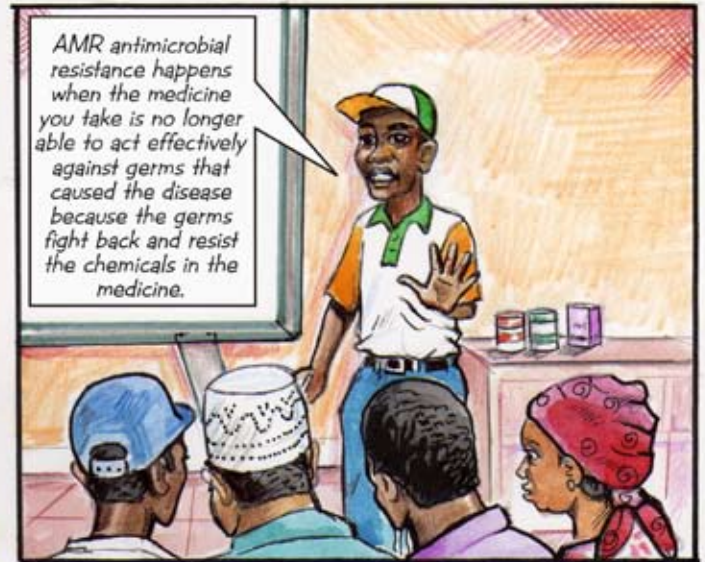
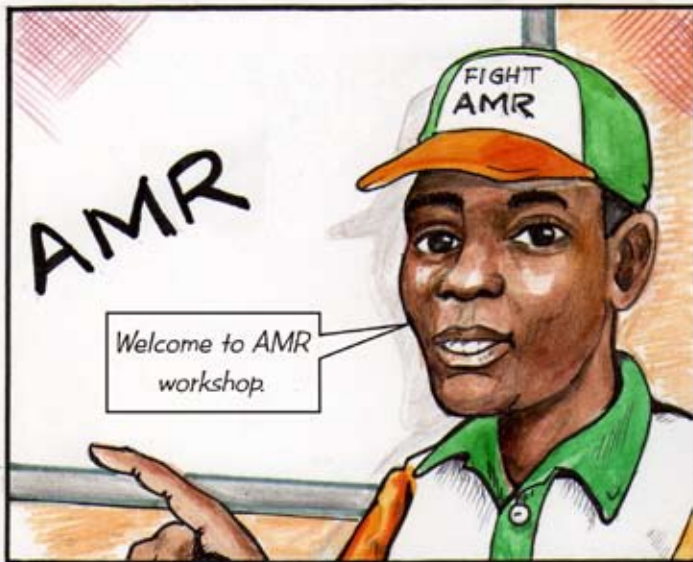
- Sensitization seminars for health professionals in Malawi, Togo, Kenya, Cameroon and Nigeria
- Education for children and high school students on rational use of antibiotics in Moldova and India
- Research to investigate knowledge and perceptions on Antibiotic use and Antimicrobial resistance in Sierra Leone and Tanzania

The campaign draws particular attention to the following areas of intervention: infection control, promoting effective diagnosis, improving prescribing practices and encouraging optimal use of antimicrobial agents. For further information on the campaign log on to: [www.epnetwork.org](http://www.epnetwork.org) and Facebook- *Fight AMR save medicines for our children*





# Community AMR Awareness



The EPNAMR comic strip is an initiative intended to deliver messages on AMR to health professionals and the general public to increase their understanding on the problem and its causes in an interesting and memorable way. It is also intended to inform various stakeholders within and outside the health institutions on the actions they can undertake to contain the spread of resistance. The production of this comic strip is possible through funding from the USAID supported SPS program of Management Sciences for Health.



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