Pharmacists Role in Developing Anti-Microbial Resistance

P. Sree Mahalakshmi
Narayana Pharmacy College

***Abstract*- Anti microbial resistance is an emerging threat to public health which can negatively influence health care, veterinary, and agriculture worldwide. The increase of anti microbial resistance can endanger the therapeutic effectiveness of antibiotics. Anti-microbial medicines play a major role in controlling infectious diseases. A significant evidence has suggested that the knowledge and attitude trends among the community will have to develop anti-microbial resistance. However their widespread use often use and misuse is seeing a growing resistance to their efficacy. Therefore one of the key challenges facing countries is to ensure the best use of antibiotics.**

Index Terms- Antibiotics, Anti-microbial resistance, European union, WHO.

INTRODUCTION

As long as they have existed, anti-microbial medicines have played a major role in controlling infectious diseases. Their increasing widespread use has resulted in the development of resistant microorganisms, which are causing disease in community and hospital settings, resulting in increasing morbidity and mortality, and higher health care costs.

The major cause of anti-microbial resistance (AMR) is the inappropriate use of antibiotics. Various studies carried out in and inside Europe revealed that 40% of the prescriptions for antibiotics were more or less inappropriate. This was found to be directly related to the tendency towards self-medication and the unnecessary use of antibiotics for common sore throats and cold that most frequently are caused by viral infections on which antibiotics have no effect.

The spread of AMR cannot be combated at the national level alone. It is a global problem that requires a coordinated effort. Both European union (EU) and WHO strategies for the control of AMR have been applied in the countries of WHO European region.

The 7 key areas of action to address the problem of ANR:

- Strengthen inter sectoral coordination.
- Strengthen surveillance of antibiotic resistance.
- promote rational use and strengthen the surveillance of antibiotic consumption.
- Strengthen infection control and surveillance in health care settings.
- Prevent emerging resistance in the veterinary and food sectors.
- Promote innovation and research on new drugs.
- Improve awareness, patient safety and partnership. [1]

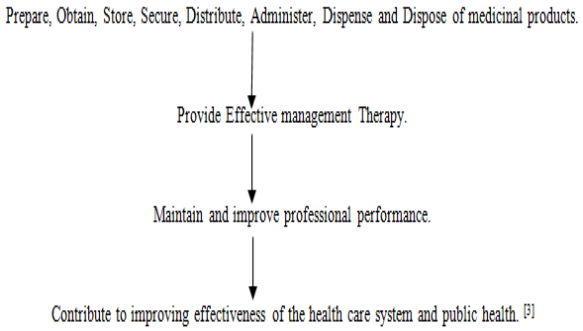
PHARMACY CONTRIBUTIONS TO AMS

SETTING	CONTRIBUTION	BENEFIT
Community	Accessibility of the community pharmacy network as the first port of call for the patients on the high street, super markets and rural communities.	Providing a gateway to health and medicines advice from a health care professional without the need for an appointment, and often out of normal GP surgery working hours.
	Providing opportunistic education, advice and support for people at every stage of life.	Making every contact count with regard to information and advice about health and medicines including antibiotics.
	Responding to symptoms of ill health, as well as advising on health care and products that can be purchased from health relief.	Ensuring early identification of ill health and triaging those that need referal.
	Identifying alarm symptoms which require further investigation.	Referring the individuals for further care and intervention when symptoms requiring

		antibiotics or further investigation are identified.
	Delivering public health campaigns and opportunistic patient advice and counseling such as hygiene, appropriate use of anti-microbial and self care.	Raising awareness of good hygiene practice and preventive health care measures to reduce the risk of bacterial infection in individuals and the general population.
	Providing immunization programs, including flu vaccination.	Preventing the spread of flu, contributing to national public health targets and increasing accesibility of the vaccinations to the public.
Primary care	Independent prescribing pharmacists provide consultations for pharmacists and ensure the right antibiotic choice.	Shifting capacity in primary care settings, increasing the speed of the access for patients to a prescriber, and ensuring the appropriate use of antibiotics.
	Advising the GP practice team on the current antibiotic evidence based and appropriateness of prescribing for different conditions and undertaking audits in this area.	MDT approach, all professionals contributing to AMS at a local level.
	Contributing to the development of local formularies.	Ensuring the current evidence base is translated in to local decision making tools.
	Ensuring up to date and accurate patient records regarding drug allergy history information, including the type of information and significance.	Minimizing the use of second line agents when not necessary.
	Consulting with patients regarding their ill health and advising on self-care options.	Educating patients and reinforcing messages about AMR to help reduce inappropriate demand for antibiotics.
Hospital	Pharmacists are leading on AMS programs in the majority of acute care settings.	Leader ship on AMS and the ability to tailor advice to different specialties and departments.
	AMS pharmacists as a part of ward rounds.	Providing advice on whether an antibiotic is required, the most appropriate antibiotic to use and length of treatment.
	Advising other health professionals on medication regimen and length of treatment with antibiotics.	MDT approach, all professionals contributing to stewardship in hospital settings.
	Contributing to the development of drug formularies.	Ensuring the current evidence base is translated in to local decision making tools.
	Providing patient counseling and advice on antibiotic medication.	Ensuring the patients are fully informed about their treatment regimen, including duration of treatment and possible side effects.
	Contributing to surveillance measures.	Identifying and recording trends in the usage of anti-microbial.
	Contributing to the effective governence of AMS.	Critically appraising antimicrobials for formulary inclusion.
Pharmacist working in other care settings. E.g.: Domiciliary / care home / prison.	Providing judicious use of simple diagnostic tests to identify bacterial infection.	Increasing accessibility of patients who are unable to get to a GP practice.
	Advising other health professionals on medication regimen and length of treatment with antibiotics.	Ensuring an MDT approach with all professionals computing to stewardship.
	Providing early detection of infection and provision of treatment or referral to appropriate services.	Ensuring quicker access to treatment for infections that would progress without intervention and would have potentially led to hospital admission.
Academia and Industry	Securing and strengthening the UKs position as a major player in the global pharmaceutical industry through research and development.	Taking a drug molecule from concept through formulation, clinical trials, manufacture and the regulatory process to its ultimate use as a medicine by the patient.
	Contributing to the development of guidance and tools regarding antibiotic use.	Ensuring clinical guidance and tools are based on the most current research and evidence.
	Drug discovery	Findings from research

		in to the use, safety and efficacy of medicines in patient feed back in to the medicines development process and there by informing and influencing the creation of new medicinal products.

The roles of the pharmacist according to GPP (Good Pharmacy Practice) guidelines:



PHARMACISTS ROLE IN ANTI-MICROBIAL RESISTANCE

Impact of Pharmacists on anti-microbial stewardship teams in a community settings

Choosing a correct antibiotic therapy for a condition in a timely manner is a main point of focus in treating blood stream infections. Rapid identification of pathogens is essential and can help pharmacists optimize anti-microbial regimens sooner than traditional methods, leading to decreased antibiotic use, length of the hospital and intensive care stay and mortality.

In addition to pathogen identification, a dedicated antibiotic stewardship team (AST) providing prompt notification of results and facilitating timely interventions is essential to achieving improved clinical outcomes.

Pharmacists improve patient outcomes after emergency department discharge

Multi drug resistant pathogens are a growing concern when treating nosocomial and community associated infections. They are associated with increased morbidity, mortality and costs. Anti-microbial stewardship programs are one method that can be used to control the rise in resistance and improve the quality of patient care. Inappropriate empiric antibiotic therapy may lead to hospital readmission and complications for the patient, secondary to infection.

Anti-microbial agents are commonly prescribed to patients who are discharged from the emergency department. However there is often limited or inconsistent follow up of culture results to systematically ensure appropriate therapy. A wide variety of services can be provided by pharmacists in this practice setting, including providing essential patient care and education, managing medication services, providing education or information to other health care professionals, contributing to quality improvement initiatives and participating in research.

Research has shown that pharmacist play an important role in the emergency department, but there is a need for data supporting this in specific patient outcomes, since the majority of the literature addresses adverse drug event prevention and cost-containment.

Pharmacists play a key role in educational interventions

Lack of treatment adherence and self-medication are two of the biggest problems in antibiotic misuse among patients. Unlike drugs that only affect individual patients, misused antibiotics add to the global risk of antimicrobial resistance, which jeopardizes their effectiveness and can lead to over all increased morbidity, mortality, health demands, hospitalization, medical expense and impairment of the effectiveness of the treatment for future patients. Adherence has been studied in chronic disease but there is lack of studies focusing on acute diseases such as infectious diseases. Education and knowledge is a key aspect in addressing the misuse of antibiotics and community pharmacists are in an ideal position to provide it. [4]

DEVELOPMENT OF ANTIBIOTIC PHARMACIST

In the clinical pharmacy service includes prescription monitoring, taking accurate medication histories, provision of medicines information, patient counseling, regular liaison with the medical or surgical team and daily contact with the patient. This has been shown to improve patient care and provide better, more cost effective use of medicines.

The role of antibiotic pharmacist

Some UK hospitals have appointed microbiologists or infectious diseases physicians with antibiotic

management as a specific role. However experience has shown that it is a full time task and these medical professionals have many other functions to fulfill. A dedicated antibiotic pharmacist have the time and the skills to monitor antibiotic prescribing and manage it appropriately, lessening the demand on the hard-pressed microbiologists and infectious diseases physicians. Utilizing a network of pharmacists and accessing IT, microbiology and pharmacy computer systems allows the antibiotic pharmacist to identify problem areas and devote the resources tackling them.

Key roles of antibiotic pharmacist include:

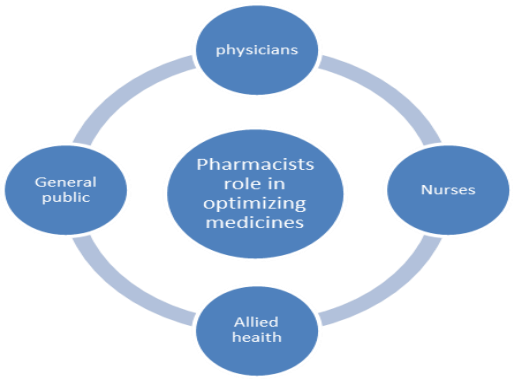
- Education of medical, pharmaceutical and nursing staff.
- Audit of local practices.
- Monitoring of antibiotic consumption.
- Participation in infection control.
- Formulary development.
- Appraisal of new antibiotics.

The addition of an antibiotic pharmacist to an active team has been shown to benefit patients by reducing medication errors and length of hospital stay, encouraging oral medication and ensuring appropriate drug choice. It is difficult to quantify exactly how great the clinical and financial benefits are as the field of studies is generally poor of quality.

EXPANDING THE ROLE OF ANTIBIOTIC PHARMACIST

At present antibiotic pharmacists generally offer a service based advice and feedback of collected data. The logical progression is to move one where they perform a more active role. [5]

PHARMACISTS IN OPTIMIZING MEDICINES



Adequate education and extensive training are important for practicing pharmacists and their pharmaceutical services are central to coordinating and optimizing antibiotics among health care professionals, patients and general public. [6]

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