SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

Date: 04/06/2018

From
Dr. Aravind. C
Professor and Head,
Department of General Medicine
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Chennai

To
The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Chennai

Sub: Permission to conduct value-added course: ANTIMICROBIAL STEWARDSHIP

Respected Sir,

With reference to the subject mentioned above, the department proposes to conduct a value-added course titled: Antimicrobial stewardship on 06/07/2018. We solicit your kind permission for the same.

Kind Regards

Dr. Aravind. C

FOR THE USE OF DEANS OFFICE

Names of Committee members for evaluating the course:

The Dean: Dr. A. Sugumaran

The HOD: Dr. Aravind. C

The Expert: Dr. Arul Murugan

The committee has discussed about the course and is approved.

Subject Expert

HOD

DEAN
SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES
OSUDU, AGARAM VILLAGE,
NOODAPAKKAM POST,
PUDUCHERRY - 605 502

OFFICE OF THE DEAN

Sri Lakshmi Narayana Institute of Medical Sciences

OSUDU, AGARAM VILLAGE, VILLIANUR COMMUNE, KUDAPAKKAM POST,
PUDUCHERRY - 605 502.
[Recognised by Medical Council of India, Ministry of Health letter No. U/12012/249/2005-ME (P -II) dt. 11/07/2011]
[Affiliated to Bharath University, Chennai - TN]

Circular

11/06/2018

Sub: Organising Value-added Course: ANTIMICROBIAL STEWARDHIP reg

With reference to the above-mentioned subject, it is to bring to your notice that Sri Lakshmi Narayana Institute of Medical Sciences, **Bharath Institute of Higher Education and Research**, is organisinga Value added course, titled, "ANTIMICROBIAL STEWARDSHIP" between July 2018 to November 2018. The course content is enclosed below.

The hard copy of the application should be sent to the institution by registered/ speed post only so as to reach on or before 02.07.2018.Applicanions received after the mentioned date shall not be entertained under any circumstances.

Encl: Copy of Course content and Registration form.

COURSE PROPOSAL

Course Title: **Antimicrobial Stewardship**

Course Objective: To create an awareness among students of the 2nd year M.B.B.S about Antimicrobial stewardship; how it is the need of the hour.

Course Outcome: Improvement in the existing knowledge and awareness about Antimicrobial stewardship – what it is and how to practice it

Course Audience: A batch of 20 students belonging to the 2nd year of M.B.B.S

Course Coordinator: Dr. C. Aravind

Course Faculties with Qualification and Designation:

1. Dr. Arul Murugan
   Associate Professor
   Department of Medicine
2. Dr. Venkatasamy
   Professor
   Department of Medicine

Course Curriculum/Topics with schedule

SINo	Date	Topic	Time	Hours	Name of faculty
1.	06/07/2018	The discovery of antibiotics	5 pm to 8 pm	3 hours	Dr. Arul Murugan
2.	13/07/2018	The role of antibiotics in our society	4: 30 pm to 7: 30 pm	3 hours	Dr. Venkatasamy
3.	20/07/2018	Are we using or mis- using antibiotics?	4 pm to 7 pm	3 hours	Dr. Arul Murugan
4.	10/08/2018	Antibiotics in the farming and animal husbandry	4 pm to 7 pm	3 hours	Dr. Venkatasamy
5.	17/08/2018	What is antimicrobial stewardship?	5 pm to 8 pm	3 hours	Dr. Arul

					Murugan
6.	24/08/ 2018	Who all are the members of an Antimicrobial stewardship team?	4: 30 pm to 7: 30 pm	3 hours	Dr. Arul Murugan
7.	07/09/ 2018	How to initiate, escalate and de-escalate antibiotics?	5 pm to 7 pm	2 hours	Dr. Venkatasamy
8.	21/09/ 2018	Which antibiotics; what scenario	5 pm to 7 pm	2 hours	Dr. Arul Murugan
9.	12/10/ 2018	The possible consequences of antibiotic abuse	4 pm to 6 pm	2 hours	Dr. Arul Murugan
10.	26/10/ 2018	The chronology of antimicrobial resistance	4 pm to 7 pm	3 hours	Dr. Arul Murugan
11.	09/11/ 2018	Is antimicrobial stewardship practical?	4 pm to 7 pm	3 hours	Dr. C. Aravind
			Total Hours	30	

REFERENCE BOOKS:

1. HARRISON'S PRINCIPLES OF INTERNAL MEDICINE; 18th EDITION

2. ANTIMICROBIAL STEWARDSHIP – Principles and Practices

VALUE ADDED COURSE

1. Name of the programme and code

   ANTIMICROBIAL STEWARDSHIP; IM09

2. Duration & period

   30 hrs; between July 2018 to November 2018

3. Information Brochure and course content of value-added courses

   Enclosed as Annexure – I

4. List of students enrolled

   Enclosed as Annexure – II

5. Assessment procedures:

   Short notes – Enclosed as Annexure – III

6. Certificate model

   Enclosed as Annexure – IV

7. No. of times offered during the same year

   1; July 2018 to November 2018

8. Year of discontinuation

   2019

9. Summary report of each program year wise:

VALUE ADDED COURSE: July 2018 to November 2018					
Sl. No.	Course code	Course name	Resource persons	Target Students	Strength and year
1	IM09	ANTIMICROBIAL STEWARDSHIP	Dr. Arul Murugan Dr. Venkatasamy	2nd year MBBS	20 (July 2018 to November 2018)

10. Course feedback

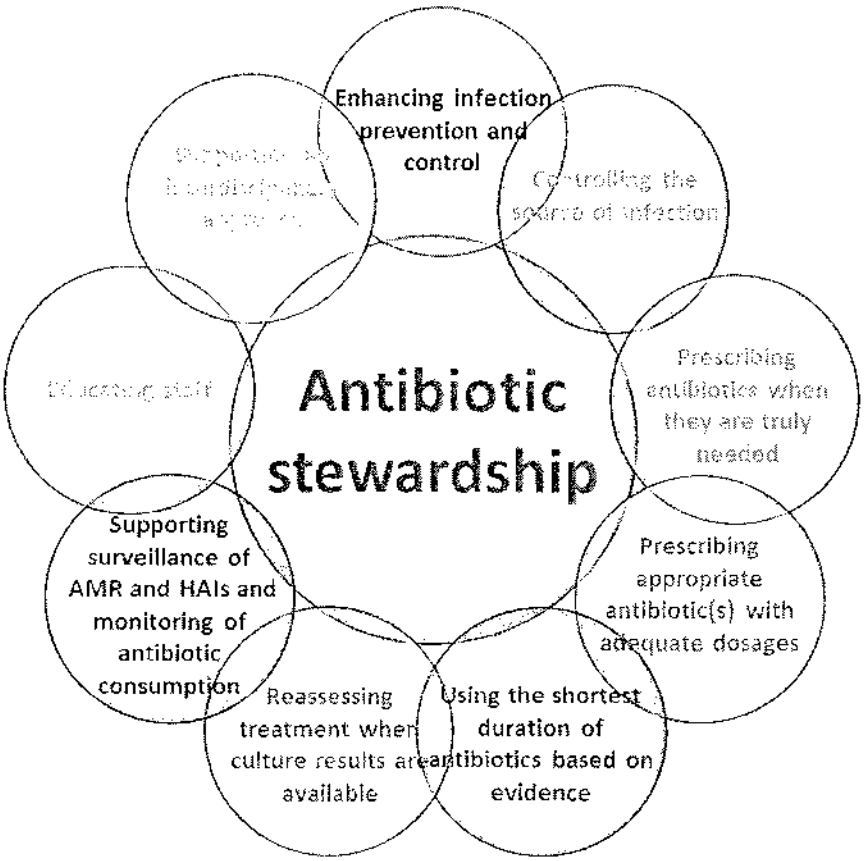
    Enclosed as Annexure - V

RESOURCE PERSON – Dr. Arul Murugan

COORDINATOR – Dr. C. Aravind

ANNEXURE – I

PARTICIPANT HANDBOOK



ANTIMICROBIAL STEWARDSHIP

VALUE ADDED COURSE (July 2018 to November 2018)

COURSE DETAILS

PARTICULARS	DESCRIPTION
Course title	ANTIMICROBIAL STEWARDSHIP
Course code	IM09
Objective	1. The discovery of antibiotics 2. The role of antibiotics in our society 3. Are we using or mis- using antibiotics? 4. Antibiotics in the farming and animal husbandry 5. What is antimicrobial stewardship? 6. Who all are the members of an Antimicrobial stewardship team? 7. How to initiate, escalate and de-escalate antibiotics? 8. Which antibiotics; what scenario 9. The possible consequences of antibiotic abuse 10. The chronology of antimicrobial resistance 11. Is antimicrobial stewardship practical? 12. Where do we stand in AMSPs? 13. The GLOBAL VISION for the future
Key competencies	On successful completion of the course, the students will have a better knowledge about Antimicrobial stewardship; how it is the need of the hour
Target students	2nd year MBBS
Duration	30 hours; between July 2018 – November 2018
Assessment procedure	Short note questions

ANTIMICROBIAL STEWARDSHIP

ALEXANDER FLEMING'S DISCOVERY OF PENICILLIN

Penicillin heralded the dawn of the antibiotic age. Before its introduction there was no effective treatment for infections such as pneumonia, gonorrhea or rheumatic fever. Hospitals were full of people with blood poisoning contracted from a cut or a scratch, and doctors could do little for them but wait and hope.

Antibiotics are compounds produced by bacteria and fungi which are capable of killing, or inhibiting, competing microbial species. This phenomenon has long been known; it may explain why the ancient Egyptians had the practice of applying a poultice of moldy bread to infected wounds. But it was not until 1928 that penicillin, the first true antibiotic, was discovered by Alexander Fleming, Professor of Bacteriology at St. Mary's Hospital in London.

Returning from holiday on September 3, 1928, Fleming began to sort through petri dishes containing colonies of Staphylococcus, bacteria that cause boils, sore throats and abscesses. He noticed something unusual on one dish. It was dotted with colonies, save for one area where a blob of mold was growing. The zone immediately around the mold—later identified as a rare strain of Penicillium notatum—was clear, as if the mold had secreted something that inhibited bacterial growth.

Fleming found that his "mold juice" was capable of killing a wide range of harmful bacteria, such as streptococcus, meningococcus and the diphtheria bacillus. He then set his assistants, Stuart Craddock and Frederick Ridley, the difficult task of isolating pure penicillin from the mold juice. It proved to be very unstable, and they were only able to prepare solutions of crude material to work with. Fleming published his findings in the British Journal of Experimental Pathology in June 1929, with only a passing reference to penicillin's potential therapeutic benefits. At this stage it looked as if its main application would be in isolating penicillin-insensitive bacteria from penicillin-sensitive bacteria in a mixed culture. This at least was of practical benefit to bacteriologists, and kept interest in penicillin going. Others, including Harold Raistrick, Professor of Biochemistry at the London School of Hygiene and Tropical Medicine, tried to purify penicillin but failed.

PENICILLIN RESEARCH AT OXFORD UNIVERSITY

It was Howard Florey, Ernst Chain and their colleagues at the Sir William Dunn School of Pathology at Oxford University who turned penicillin from a laboratory curiosity into a life-saving drug. Their work on the purification and chemistry of penicillin began in earnest in 1939, just when wartime conditions were beginning to make research especially difficult. To carry out a program of animal experiments and clinical trials the team needed to process up to 500 liters a week of mold filtrate. They began growing it in a strange array of culture vessels such as baths, bedpans, milk churns and food tins. Later, a customized fermentation vessel was designed for ease of removing and, to save space, renewing the broth beneath the surface of the mold. A team of "penicillin girls" was employed, at £2 a week, to inoculate and generally look after the fermentation. In effect, the Oxford laboratory was being turned into a penicillin factory.

Meanwhile, biochemist Norman Heatley extracted penicillin from huge volumes of filtrate coming off the production line by extracting it into amyl acetate and then back into water, using a countercurrent system. Edward Abraham, another biochemist who was employed to help step up production, then used the newly discovered technique of alumina column chromatography to remove impurities from the penicillin prior to clinical trials.

In 1940, Florey carried out vital experiments, showing that penicillin could protect mice against infection from deadly Streptococci. Then, on February 12, 1941, a 43-year old policeman, Albert Alexander, became the first recipient of the Oxford penicillin. He had scratched the side of his mouth while pruning roses, and had developed a life-threatening infection with huge abscesses affecting his eyes, face, and lungs. Penicillin was injected and within days he made a remarkable recovery. But supplies of the drug ran out and he died a few days later. Better results followed with other patients though and soon there were plans to make penicillin available for British troops on the battlefield.

War-time conditions made industrial production of penicillin difficult. A number of British companies, including Glaxo (now GlaxoSmithKline) and Kemball Bishop, a London firm later bought by Pfizer, took up the challenge.

HOW ARE ANTIBIOTICS IMPORTANT IN OUR LIVES ?

Any substance that inhibits the growth and replication of a bacterium or kills it outright can be called an antibiotic. Antibiotics are a type of antimicrobial designed to target bacterial infections within (or on) the body. This makes antibiotics subtly different from the other main kinds of antimicrobials widely used today:

Antiseptics are used to sterilise surfaces of living tissue when the risk of infection is high, such as during surgery.

Disinfectants are non-selective antimicrobials, killing a wide range of micro-organisms including bacteria. They are used on non-living surfaces, for example in hospitals.

Of course, bacteria are not the only microbes that can be harmful to us. Fungi and viruses can also be a danger to humans, and they are targeted by antifungals and antivirals, respectively. Only substances that target bacteria are called antibiotics, while the name antimicrobial is an umbrella term for anything that inhibits or kills microbial cells including antibiotics, antifungals, antivirals and chemicals such as antiseptics.

Most antibiotics used today are produced in laboratories, but they are often based on compounds scientists have found in nature. Some microbes, for example, produce substances specifically to kill other nearby bacteria in order to gain an advantage when competing for food, water or other limited resources. However, some microbes only produce antibiotics in the laboratory

THE PROBLEM OF ANTIBIOTIC RESISTANCE

Bacteria, not humans or animals, become antibiotic-resistant. These bacteria may infect humans and animals, and the infections they cause are harder to treat than those caused by non-resistant bacteria.

Antibiotic resistance leads to higher medical costs, prolonged hospital stays, and increased mortality.

The world urgently needs to change the way it prescribes and uses antibiotics. Even if new medicines are developed, without behaviour change, antibiotic resistance will remain a major

threat. Behaviour changes must also include actions to reduce the spread of infections through vaccination, hand washing, practising safer sex, and good food hygiene.

SCOPE OF THE PROBLEM

Antibiotic resistance is rising to dangerously high levels in all parts of the world. New resistance mechanisms are emerging and spreading globally, threatening our ability to treat common infectious diseases. A growing list of infections – such as pneumonia, tuberculosis, blood poisoning, gonorrhoea, and foodborne diseases – are becoming harder, and sometimes impossible, to treat as antibiotics become less effective.

Where antibiotics can be bought for human or animal use without a prescription, the emergence and spread of resistance is made worse. Similarly, in countries without standard treatment guidelines, antibiotics are often over-prescribed by health workers and veterinarians and over-used by the public.

Without urgent action, we are heading for a post-antibiotic era, in which common infections and minor injuries can once again kill.

WHAT CAUSES ANTIBIOTIC RESISTANCE ??

Antibiotics are important medications. It would be difficult to overstate the benefits of penicillin and other antibiotics in treating bacterial infections, preventing the spread of disease and reducing serious complications of disease.

But some medications that used to be standard treatments for bacterial infections are now less effective or don't work at all. When an antibiotic no longer has an effect on a certain strain of bacteria, those bacteria are said to be antibiotic resistant. Antibiotic resistance is one of the world's most pressing health problems.

The overuse and misuse of antibiotics are key factors contributing to antibiotic resistance. The general public, doctors and hospitals all play a role in ensuring proper use of the medications and minimizing the development of antibiotic resistance.

A bacterium resists a medication when the bacterium has changed in some way. The change either protects the bacterium from the action of the medication or neutralizes the medication.

Any bacterium that survives an antibiotic treatment can multiply and pass on its resistant properties. Also, some bacteria can transfer their medication-resistant properties to other bacteria — as if passing along a cheat sheet to help each other survive.

The fact that bacteria develop resistance to a medication is normal and expected. But the way that medications are used affects how quickly and to what extent resistance occurs.

Overuse of antibiotics

The overuse of antibiotics — especially taking antibiotics even when they're not the appropriate treatment — promotes antibiotic resistance. According to the Centers for Disease Control and Prevention, up to one-third to one-half of antibiotic use in humans is unnecessary or inappropriate.

Antibiotics treat bacterial infections but not viral infections. For example, an antibiotic is an appropriate treatment for strep throat, which is caused by the bacterium Streptococcus pyogenes. But it's not the right treatment for most sore throats, which are caused by viruses.

Other common viral infections that don't benefit from antibiotic treatment include:

- Cold
- Flu (influenza)
- Bronchitis
- Most coughs
- Some ear infections
- Some sinus infections
- Stomach flu

Taking an antibiotic for a viral infection:

- Won't cure the infection
- Won't keep other people from getting sick
- Won't help you or your child feel better
- May cause unnecessary and harmful side effects
- Promotes antibiotic resistance

If you take an antibiotic when you actually have a viral infection, the antibiotic attacks bacteria in your body — bacteria that are either beneficial or at least not causing disease. This misdirected treatment can then promote antibiotic-resistant properties in harmless bacteria

that can be shared with other bacteria, or create an opportunity for potentially harmful bacteria to replace the harmless ones.

Taking antibiotics responsibly

It's tempting to stop taking an antibiotic as soon as you feel better. But the full treatment is necessary to kill the disease-causing bacteria. Failure to take an antibiotic as prescribed can result in the need to resume treatment later and may promote the spread of antibiotic-resistant properties among harmful bacteria.

Consequences of antibiotic resistance

For many years, the introduction of new antibiotics outpaced the development of antibiotic resistance. In recent years, however, the pace of medication resistance has contributed to an increasing number of health care problems.

Approximately 2 million infections from antibiotic-resistant bacteria occur in the United States each year, resulting in 23,000 deaths.

Other consequences of medication-resistant infections include:

- More-serious illness
- Longer recovery
- More-frequent or longer hospitalization
- More doctor visits
- More-expensive treatments

ANTIBIOTIC STEWARDSHIP

The appropriate use of antibiotics — often called antibiotic stewardship — can help to:

- Preserve the effectiveness of current antibiotics
- Extend the life span of current antibiotics
- Protect people from antibiotic-resistant infections
- Avoid side effects from using antibiotics inappropriately

Many hospitals and medical associations have implemented new diagnostic and treatment guidelines to ensure effective treatments for bacterial infections and reduce inappropriate use of antibiotics.

The public also plays a role in antibiotic stewardship. You can help reduce the development of antibiotic resistance if you:

- Avoid pressuring your doctor to give you an antibiotic prescription. Ask your doctor for advice on how to treat symptoms.
- Practice good hygiene, to avoid bacterial infections that need antibiotic treatment.
- Make sure you and your children receive recommended vaccinations. Some recommended vaccines protect against bacterial infections, such as diphtheria and whooping cough (pertussis).
- Reduce your risk of getting a foodborne bacterial infection. Don't drink raw milk, wash your hands, and cook foods to a safe internal temperature.
- Use antibiotics only as prescribed by your doctor. Take the prescribed daily dosage, and complete the entire course of treatment.
- Never take leftover antibiotics for a later illness. They may not be the correct antibiotic and would not be a full course of treatment.
- Never take antibiotics prescribed for another person.

WHY WE NEED ANTIBIOTICS?

Nearly One half of the Hospitalized patients receive antimicrobial agents.

• Antibiotics are valuable Discoveries of the Modern
Medicine.

• All current achievements in Medicine are attributed to
use of Antibiotics

• Life saving in Serious infections.

WHAT WENT WRONG WITH ANTIBIOTIC USAGE

• Treating trivial infections / viral Infections with Antibiotics has become routine affair.

• Many use Antibiotics without knowing the Basic principles of Antibiotic therapy.

• Many Medical practioners are under pressure for short term solutions.

• Commercial interests of Pharmaceutical industry pushing the Antibiotics, more so Broad spectrum and Newer Generation antibiotics. as every Industry has become profit oriented.

• Poverty encourages drug resistance due to under utilization of appropriate Antibiotics.

WHAT IS ANTIBIOTIC STEWARDSHIP?

Antimicrobial stewardship is a coordinated program that promotes the appropriate use of antimicrobials (including antibiotics), improves patient outcomes, reduces microbial resistance, and decreases the spread of infections caused by multidrug-resistant organisms.

- A program that encourages judicious (vs injudicious) use of antibiotics
- Antibiotics are relatively so effective, non-toxic and inexpensive…so easy to use…that they are prone to abuse.
- When the diagnosis is uncertain, antibiotics are often prescribed…
- Stewardship strives to fine tune antibiotic Rx in regards to
- Efficacy
- Toxicity
- Resistance-induction
- *C. difficile*-induction
- Cost
- Discontinuation

Until this next giant step is achieved, those of us not developing new drugs have another job: conserve the antibiotics we have. In the hospital, antimicrobial stewardship teams are charged with this important initiative. Antimicrobial stewardship has been defined as "the optimal selection, dosage, and duration of antimicrobial treatment that results in the best clinical outcome for the treatment or prevention of infection, with minimal toxicity to the patient and minimal impact on subsequent resistance." The goal of antimicrobial stewardship is 3-fold.

The first goal is to work with health care practitioners to help each patient receive the most appropriate antimicrobial with the correct dose and duration. Joseph and Rodvold10 wrote about the "4 D's of optimal antimicrobial therapy": right Drug, right Dose, De-escalation to pathogen-directed therapy, and right Duration of therapy. The optimal care of an infected patient means treating with the correct, properly dosed antibiotic and one that has the least likelihood of causing collateral damage (ie, leading to resistance in the patient or his or her contacts). An added benefit of programs that aim to optimize antibiotic use is that they

generally experience cost savings because fewer doses of antibiotic are used and less expensive antibiotics are chosen.

The second goal is to prevent antimicrobial overuse, misuse, and abuse. In both the hospital and the outpatient setting, physicians use antibiotics when they are not necessary. Antibiotics are given to patients with viral infections, noninfectious processes (a classic example is the febrile patient with pancreatitis), bacterial infections that do not require antibiotics (such as small skin abscesses that will resolve with incision and drainage), and bacterial colonization (as in the case of a positive urine culture result in a patient with a bladder catheter). Antibiotics are also frequently misused, such as in the very common scenario of the use of broad-spectrum antibiotics that cover multidrug-resistant organisms in a patient whose infection was acquired in the community or the failure to adjust antibiotics according to culture data, thus maintaining the patient on a regimen to which the organism is not susceptible. Abuse of antibiotics is more difficult to define, but the term might be used to describe the use of one particular antibiotic preferentially over others by a physician as a result of aggressive detailing by the pharmaceutical representative or worse because of financial interest.

The third goal is to minimize the development of resistance. Both at the individual patient level and at the community level, antibiotic use changes susceptibility patterns. Patients exposed to antibiotics are at higher risk of becoming colonized or infected by resistant organisms. The most common cause of the development of *Clostridium difficile* diarrhea is exposure to antibiotics. Gram-negative resistance to carbapenems and cephalosporins has been shown to increase 10- to 20-fold with exposure to these broad-spectrum antimicrobials. In a recent systematic review and meta-analyses of outpatient prescribing practices, the use of common antibiotics was associated with significant increased risk of development of antibiotic resistance, up to 12 months after antimicrobial exposure (pooled odds ratio [OR], 1.33; 95% confidence interval [CI], 1.2-1.5). More importantly, antimicrobial resistance is associated with increased morbidity and mortality. Carbapenem-resistant *K pneumoniae* is associated with an increased attributable mortality compared with sensitive *Klebsiella* (OR, 4.69; 95% CI, 1.9-11.58; *P*=.001) and methicillin-resistant *S aureus* bacteremia, relative to methicillin-sensitive *S aureus* bacteremia, has a significantly greater mortality risk as well (OR, 1.93; 95% CI, 1.54-2.42; *P*=.001). These resistant organisms can become transmitted to other individuals within the hospital or in the patient's community. Antimicrobial resistance also has significant hospital and societal costs. A recent

study by Roberts et al estimated that the cost of an antimicrobial-resistant infection is $18,588 to $29,069 per patient, with an excess duration of hospital stay of 6.4 to 12.7 days and attributable mortality of 6.5% The third goal is to minimize the development of resistance. Both at the individual patient level and at the community level, antibiotic use changes susceptibility patterns. Patients exposed to antibiotics are at higher risk of becoming colonized or infected by resistant organisms.18-20 The most common cause of the development of Clostridium difficile diarrhea is exposure to antibiotics.21 Gram-negative resistance to carbapenems and cephalosporins has been shown to increase 10- to 20-fold with exposure to these broad-spectrum antimicrobials.22-24 In a recent systematic review and meta-analyses of outpatient prescribing practices, the use of common antibiotics was associated with significant increased risk of development of antibiotic resistance, up to 12 months after antimicrobial exposure (pooled odds ratio [OR], 1.33; 95% confidence interval [CI], 1.2-1.5).25 More importantly, antimicrobial resistance is associated with increased morbidity and mortality. Carbapenem-resistant K pneumoniae is associated with an increased attributable mortality compared with sensitive Klebsiella (OR, 4.69; 95% CI, 1.9-11.58; P=.001)22 and methicillin-resistant S aureus bacteremia, relative to methicillin-sensitive S aureus bacteremia, has a significantly greater mortality risk as well (OR, 1.93; 95% CI, 1.54-2.42; P=.001).26 These resistant organisms can become transmitted to other individuals within the hospital or in the patient's community. Antimicrobial resistance also has significant hospital and societal costs. A recent study by Roberts et al27 estimated that the cost of an antimicrobial-resistant infection is $18,588 to $29,069 per patient, with an excess duration of hospital stay of 6.4 to 12.7 days and attributable mortality of 6.5%.

SETTING UP AN ANTIBIOTIC STEWARDSHIP PROGRAM

Every hospital should work within its resources to create an effective team given its budget and personnel constraints. The stewardship team does not have to fit a particular mold, and it would be a mistake to delay implementation of a stewardship program because of a lack of availability of one or more of the typical team participants listed subsequently. Most stewardship teams include either an infectious disease physician or a pharmacist (with or without specialized training in infectious disease) or both. Sometimes a hospitalist with an interest in infectious disease serves in this role. Often the infection preventionist is an active member of the team. Close collaboration with the staff in the microbiology laboratory, hospital epidemiology, and administration is essential to a well-functioning program. A

working relationship with the information specialist can be especially helpful. Engaging hospital leadership will open doors to good relationships with other physician groups. Therefore, early involvement of thought leaders from hospital administration and the various practitioner groups will improve acceptance and implementation

GOALS OF AB STEWARDSHIP

• Optimizing clinical outcomes while minimizing unintended consequences of antimicrobial uses.

•*Toxicity*

•*Selection of Pathogenic organisms*

Emergence of Resistance

Secondary goal is also the reduction of health care costs without adversely impacting quality of care

ELEMENTS OF AN ANTIMICROBIAL STEWARDSHIP PROGRAM

- Active Antimicrobial Stewardship Strategies
- Supplemental Antimicrobial Stewardship Strategies Computer Surveillance and Decision Support
- Microbiology Laboratory Comprehensive
- Multidisciplinary Antimicrobial Management Programs
- Monitoring of Process and Outcome Measurements

ACTIVE ANTIMICROBIAL STEWARDSHIP STRATEGIES

1. PROSPECTIVE AUDIT WITH INTERVENTION AND FEEDBACK.

• A medium-sized community hospital resulted in a 22% decrease in the use of parenteral broad- spectrum antimicrobials.

• They also demonstrated a decrease in rates of *C. difficile infection & nosocomial infection* compared with the preintervention period.

2. FORMULARY RESTRICTION & PREAUTHORIZATION REQUIREMENTS FOR SPECIFIC AGENTS

1. Most hospitals have a pharmacy and therapeutics committee or an equivalent group
2. They evaluates drugs for inclusion on the hospital formulary on the basis of therapeutic efficacy, toxicity, cost
3. They also limit redundant new agents with no significant additional benefit.

3. SUPPLEMENTAL ANTIMICROBIAL STEWARDSHIP STRATEGIES

- *Education.*
- *Guidelines and clinical pathways.*
- *Antimicrobial cycling*
- *Antimicrobial order forms.*
- *Combination therapy.*
- *Streamlining or de-escalation of therapy.*
- *Dose optimization.*
- *Conversion from parenteral to oral therapy.*

MOST FREQUENTLY EMPLOYED INTERVENTIONS

- Educational efforts include passive activities
    1. conference/ presentation
    2. student and house staff teaching sessions
    3. provision of written guidelines
    4. e-mail alerts

However, education alone, without incorporation of active intervention, is only marginally effective and has not demonstrated a sustained impact

The role of combination antimicrobial therapy for the prevention of resistance is limited to those situations in which there is:

1. A high organism load
2. A high frequency of mutational resistance during therapy.

• Classic examples are tuberculosis or HIV infection.

CDC VISION FOR INPATIENT CARE

• Implementation of an antimicrobial stewardship program in a healthcare facility – regardless of inpatient setting – will help ensure that hospitalized patients receive the right antibiotic, at the right dose, at the right time, and for the right duration. As a result, there is reduced mortality, reduced risks of *Clostridium difficile*-associated diarrhea, shorter hospital stays, reduced overall antimicrobial resistance within the facility, and cost savings

COMPUTER SURVILLANCE:

• Computer physician order entry (CPOE) as 1 of the most important —leaps‖ that organizations can take to substantially improve patient safety.

• CPOE has the potential to incorporate clinical decision support and to facilitate quality monitoring.

Antibiotic prescribing practices and decreasing antibiotic resistance can be addressed through multifaceted strategies:

A. Use of ongoing education

B. Use of evidence-based hospital antibiotic guidelines and policies

C. Restrictive measures and consultations from infectious disease physicians, microbiologists and pharmacists.

PRACTICE RATIONALISM IN ANTIBIOTIC USE TO PROMOTE ANTIBIOTIC STEWARDSHIP

1. Antibiotic overuse contributes to the growing problems of *Clostridium difficile* infection and antibiotic resistance in healthcare facilities.

2. Improving antibiotic use through stewardship interventions and programs improves patient outcomes, reduces antimicrobial resistance, and saves money. Interventions to improve antibiotic use can be implemented in any healthcare setting—from the smallest to the largest.

3. Improving antibiotic use is a medication-safety and patient-safety issue.

IMPLEMENTATION OF WHONET CAN HELP TO MONITOR RESISTANCE

Legacy computer systems, quality improvement teams, and strategies for optimizing antibiotic use have the potential to stabilize resistance and reduce costs by encouraging heterogeneous prescribing patterns and use of local susceptibility patterns to individual patients.

HOSPITAL LEADERSHIP COMMITMENT

Support from the senior leadership of the hospital, especially the chief medical officer, chief nursing officer, and director of pharmacy, is critical to the success of antibiotic stewardship programs. A lack of necessary resources is commonly cited as the top barrier to success by stewardship programs. Hospital leadership can play a critical role in helping the stewardship program get the resources needed to accomplish its goals.

Priority examples of leadership commitment include:

- Giving stewardship program leader(s) time to manage the program and conduct daily stewardship interventions.

- Providing resources, including staffing, to operate the program effectively. Staffing suggestions for hospital antibiotic stewardship programs are available from the Veteran's Administration and a survey published in 2018.

- Having regular meetings with leaders of the stewardship program to assess the resources needed to accomplish the hospital's goals for improving antibiotic use.

- Appointing a senior executive leader to serve as a point of contact or "champion" for the stewardship program to help ensure that the program has resources and support to accomplish its mission.

- Reporting stewardship activities and outcomes (including key success stories) to senior leadership and the hospital board on a regular basis (e.g. including stewardship measures in hospital quality dashboard reports).

Other examples of leadership commitment include:

- Integrating antibiotic stewardship activities into other quality improvement and patient safety efforts, such as sepsis management and diagnostic stewardship.

- Having clear expectations for the leaders of the program on responsibilities and outcomes.

- Making formal statements of support for efforts to improve and monitor antibiotic use.

- Outlining stewardship-related duties in job descriptions and annual performance reviews for program leads and key support staff.

- Supporting training and education for program leaders (e.g. attendance of stewardship training courses and meetings) and hospital staff.

- Supporting enrollment in and reporting to the National Healthcare Safety Network (NHSN) Antimicrobial Use and Resistance (AUR) Module (20), including information technology support.

- Supporting participation in local, state, and national antibiotic stewardship quality improvement collaboratives.

- Ensuring that staff from key support departments (outlined below) have sufficient time to contribute to stewardship activities.

Annexure II

Bharath Institute of Higher Education and Research

Sri Lakshmi Narayana Institute of Medical Sciences

Participant list with signatures

Value added course: **ANTIMICROBIAL STEWARDSHIP (dated 06/07/2018)**

Sl.No	Reg.No	Name of the candidate	Signature
1.	U16MB251	AARTHI.A	
2.	U16MB252	ABILASHA.K	
3.	U16MB253	ABITHA RAJLIN J.S	
4.	U16MB254	ADAPALA PRIYANKA	
5.	U16MB255	ADHITHAYA RAJ .N	
6.	U16MB256	AJAY .N	
7.	U16MB257	AKSHYA .R	
8.	U16MB258	ALLARI KARTHIK ABHIROOP	
9.	U16MB259	AMAL ASHOK	
10.	U16MB260	AMIRTHAVARSHNI .R	
11.	U16MB271	AVIDI VENKATA SAISUSHMA	
12.	U16MB272	AVIRAL PATPATIA	
13.	U16MB273	BALACHANDRAN .A	
14.	U16MB274	BALAJI .S	
15.	U16MB275	BHASKARAN .K.C	
16.	U16MB276	BHAVANI . K.M	
17.	U16MB277	BLESSY AMALA RISHA .J	
18.	U16MB278	CAREENA DANIEL	

19.	U16MB279	CHANDRA PRAKASH.M	
20.	U16MB280	CHINJU S.R	

Annexure - III

SRI LAKSHMI NARAYANA INSTITUTE OF MEDICAL SCIENCES

ANTIMICROBIAL STEWARDSHIP

SHORT NOTES

Course Code: IM09

WRITE SHORT NOTES ON THE FOLLOWING:

1. Misguided use of antibiotics
2. Emergence of drug resistance
3. Antimicrobial stewardship programme
4. AMSP team

SRI LAKSHMI NARAYANA INSTITUE OF HIGHER EDUCATON AND RESEARCH

Annexure - III

ANTIMICROBIAL STEWARDSHIP

SHORT NOTES

Student Name :

AMRITHAVARSHINI.K

Course Code: JM09

WRITE SHORT NOTES ON THE FOLLOWING:

1. Misguided use of antibiotics
2. Emergence of drug resistance
3. Antimicrobial stewardship programme
4. AMSP team

8

10/3/24 (Dr. LAKSHMI IND)

1) Recent antibiotics use is a risk factor for infection or colonization & resistant bacterial pathogens. Demand for antibiotics are to be affected by common knowledge attitude and practices. Patients believe that taking antibiotics when they have cold, it will quickly get cured.

2) Antimicrobial resistance occurs naturally over time, usually through genetic changes. They can spread from person to person or between people & animals. including from use of animal antigen The most important factor responsible for the development of multi resistance in bacterial pathogens is mutation in treatment antibiotics.

3) Hospital epidemiologist — Nsp director — Information services
Zo section — Zo physician — Director, pharmacy
Pulmonary specialists — Zo pharmacist — Clinical microbiology laboratory manager
Dermatological pharmacy specialist

4) ASMSP team is arranged by team of academic & administration staff.
Infectious disease physician
Clinical pharmacist & infection disease training
Clinical microbiologist
An information systems specialist
Infection control professional
Hospital epidemiologist.

SRI LAKSHMI NARAYANA INSTITUE OF HIGHER EDUCATON AND RESEARCH

Annexure - III

ANTIMICROBIAL STEWARDSHIP

SHORT NOTES

Student Name :

ARUN . A

Course Code: IM09

WRITE SHORT NOTES ON THE FOLLOWING:

1. Misguided use of antibiotics
2. Emergence of drug resistance
3. Antimicrobial stewardship programme
4. AMSP team

6/10

(B.C ARAVIND)

(1) * use of Antibiotic with no clinical indication.
* use of broad spectrum antibiotics when not indicated
* Inappropriate choice of empiric antibiotics.
* Inappropriate route/Duration.

(2) modification of the drug target - Secreted drugs acts by their ability to inhibit non particulate site within bacterial cells in order to eliminate their bactericidal/bacteriostatic activity.

Somewhere a drug binding target is changed or many dead to development of resistance in bacteria against that drug.

(3) Antimicrobial Stewardship is coordinated program that promotes the appropriate use of antimicrobials improve patient outcomes, reduce microbial resistance, and decrease the spread of infection caused by Multidrug resistant organisms

(4) The AMSP is managed by trained medical and Administration staffs. It also collaborates external teams to provide best assistance for teachers and students across country.

ANNEXURE IV

This is to certify that ADAPALA PRIYANKA has actively participated in the Value Added Course on "AntiMicrobial Stewardship" between July 2018- November 2018. organized by Sri Lakshmi Narayana Institute of Medical Sciences. Pondicherry- 605 502. India.

Dr. Arul Murugan
RESOURCE PERSON

Dr. C. Aravind
COORDINATOR

ANNEXURE – IV

Sri Lakshmi Narayana Institute of Medical Sciences

Affiliated to Bharath Institute of Higher Education and Research
Deemed to be University, u/s 3 of the UGC Act, 1956

CERTIFICATE OF MERIT

This is to certify that AKSHYA .R has actively participated in the Value Added Course on "AntiMicrobial Stewardship" between July 2018- November 2018, organized by Sri Lakshmi Narayana Institute of Medical Sciences, Pondicherry- 605 502, India.

Dr. Arul Murugan
RESOURCE PERSON

Dr. C. Aravind
COORDINATOR

ANNEXURE - V

Student Feedback Form

Course Name:**ANTIMICROBIAL STEWARDSHIP**

Subject Code: **IM09**

Name of Student: Parthi. A Roll No.: 016MB251

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear				✓	
2	Course contents met with your expectations				✓	
3	Lecturer sequence was well planned				✓	
4	Lectures were clear and easy to understand					✓
5	Teaching aids were effective					✓
6	Instructors encourage interaction and were helpful				✓	
7	The level of the course				✓	
8	Overall rating of the course	1	2	3	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Signature

Date: 9/11/2018

ANNEXURE - V

Student Feedback Form

Course Name:**ANTIMICROBIAL STEWARDSHIP**

Subject Code: **IM09**

Name of Student: Djaf . N Roll No.: 016MB256

We are constantly looking to improve our classes and deliver the best training to you. Your evaluations, comments and suggestions will help us to improve our performance

Sl. NO	Particulars	1	2	3	4	5
1	Objective of the course is clear			✓		
2	Course contents met with your expectations			✓		
3	Lecturer sequence was well planned			✓		
4	Lectures were clear and easy to understand			✓		
5	Teaching aids were effective			✓		
6	Instructors encourage interaction and were helpful			✓		
7	The level of the course			✓		
8	Overall rating of the course	1	2	3	4	5

** Rating: 5 – Outstanding; 4 - Excellent; 3 – Good; 2– Satisfactory; 1 - Not-Satisfactory*

Suggestions if any:

Signature

Date: 9/11/2018

Date: 12/11/2018

From
Dr. Aravind. C,
Professor and Head
Department of Internal Medicine
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Chennai

Through Proper Channel

To
The Dean,
Sri Lakshmi Narayana Institute of Medical Sciences
Bharath Institute of Higher Education and Research
Chennai

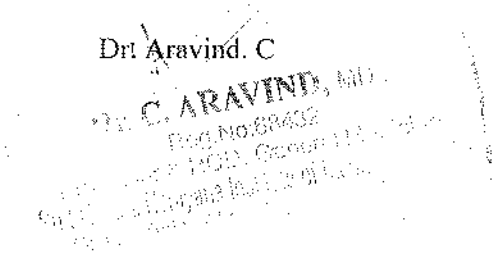
Sub: Completion of value-added course: Antimicrobial Stewardship

Respected Madam,

With reference to the subject mentioned above, the department has conducted the value-added course titled: **"Antimicrobial Stewardship"** on 09/11/2018. We solicit your kind action to send certificates for the participants. Also, I am attaching the photographs captured during the conduct of the course.

Kind Regards

Dr. Aravind. C



Encl: Photographs