Chapter 84

Roadmap: To Tackle the Challenge of Antimicrobial Resistance

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INTRODUCTION

“Roadmap—To Tackle the Challenge of Antimicrobial Resistance (AMR)”, a joint meeting of Medical Societies of India, August 24th, organized as pre-conference symposium of CIDCON 2012, was the first ever meeting of medical societies in India, on the tackling resistance issue. Our plan was to formulate a road map to tackle Indian perspective of the global challenge of AMR. We had representatives of most of the medical societies in India, eminent policy makers from both Central and State Governments, representatives of World Health Organization (WHO), National Accreditation Board of Hospitals (NABH), Medical Council of India (MCI), Drugs Controller General of India (DCGI) and Indian Council of Medical Research (ICMR) along with well known dignitaries in the Indian medical field. The meeting consisted of plenary and interactive discussion sessions designed to seek experience and views from a large range of health care professionals and included six international experts who shared action plans in their respective regions. Our intention was to gain a broad consensus and focus of opinion to inform the road map. The ethos of the meeting was very much not to look back but rather to look forward and make joint efforts to tackle the menace of antibiotic resistance.

TACKLING ANTIMICROBIAL RESISTANCE—THE INDIAN PERSPECTIVE: DR DILIP MATHAI, PRESIDENT, CLINICAL INFECTIOUS DISEASES SOCIETY

Dr Dilip Mathai enumerated the following factors responsible for AMR:

- Inappropriate and irrational antibiotic use in humans and animals
- Rapidly changing ecosystems with poor sanitation and sewage pollutants
- Lack of comprehensive and coordinated efforts
- Ill-defined accountability and insufficient engagement of communities
- Weak or absent surveillance and monitoring systems
- Inadequate systems to ensure quality and uninterrupted supply of medicines
- Poor infection prevention and control practices

Dr Dilip Mathai quoted a study which showed 44% of OP (operative) antibiotics were sold without a prescription which was really alarming.

He suggested the following practical and implementable solutions to the problem:

- Sociocultural behavior changes, e.g. hand hygiene culture to be introduced into schools
- National public health policy, e.g. ensured availability of water, improved sanitation and providing safe drinking water
- To allocate more funds to develop public health infrastructure
- Medical teachers MCI, NBE, universities to emphasize appropriate principles of antibiotic use in medical education at the under and postgraduate level
- Drug policy should be made more streamlined and stringent, e.g. acceptable generic substitutions—by quality testing
  - Avoid irrational dual antibiotic combination
  - Ban over the counter (OTC) sales of schedule drugs.
- Hospital administrators should encourage:
  - Antibiotic use policy in hospital—restriction through peer education and also aid in monitoring compliance to the policy
  - Step up hospital infection control
- Regulatory bodies like NABH, NABL should seek active reporting of surveillance, and they must tighten norms for accreditation
- Recertification and self-regulation by doctors through CME
- Public awareness and public pledge—“Doctor, why are you prescribing me an antibiotic” campaign?
- Societies and professional bodies like ASI, IMA should introduce a system of peer review to reduce antimicrobial overuse in the name of surgical prophylaxis
- National will to change is essential and one must realize the fact that “No action today, no cure tomorrow”. He also stressed the importance of responsible pharmaceutical promotion.

DR ARJUN SRINIVASAN, ASSOCIATE DIRECTOR FOR HEALTH CARE ASSOCIATED INFECTION PREVENTION PROGRAMS, CENTERS FOR DISEASE CONTROL AND PREVENTION

He suggested that there was an urgent need to improve laboratory detection, improve public health, laboratory infrastructure to detect new threats and perform reference testing to support clinical laboratories.

- Need for rapid communication within facilities and between facilities
- Need to improve antibiotic use
- Need for regional, interfacility collaboration
- He also was of the opinion that an ongoing research, development and implementation of current and improved phenotypic and genotypic test methods for current pathogens was the need of the hour.
UK APPROACH TO ANTIMICROBIAL STEWARDSHIP: DR DILIP NATHWANI, CHAIR, EUROPEAN STUDY GROUP ON ANTIBIOTIC POLICIES (ESGAP) AND SCOTTISH ANTIMICROBIAL PRESCRIBING GROUP (SAPG)

Start Smart
- Effectively initiate antibiotic at the earliest for serious infections
- Send appropriate specimens prior to starting treatment
- Use local and national guidance
- Document in notes
- Shortest course
- Choose narrow spectrum with least ecological damage
- Therapeutic drug monitoring (TDM) when relevant to reduce toxicity
- Single dose for surgical prophylaxis
- Consult local infection experts in difficult cases.

Then Focus
- At 48–72 hours review
- Stop if no infection
- Streamline according to micro results
- Intravenous (IV) to oral switch
- If continuing IV, consider outpatient antibiotic therapy (OPAT).

Dr Nathwani emphasized the need for stewardship and infection prevention to be strategically and operationally aligned:
- Partnership and team working with infection prevention teams is key “shared vision and goals”
- There needs to be political, managerial and clinical will and leadership
- Success factors for implementation include a combination of accountability and improvement measures
- Data collection, dissemination and execution are pivotal to this process.

TACKLING RESISTANCE: INITIATIVES IN THE PACIFIC REGION—DAVID PATerson, CONSULTANT IN INFECTIOUS DISEASES, AUSTRALIA

MedTrx: State-wide antibiotic usage is monitored with control limits established for usage of antibiotic classes. Letters are sent to hospital CEOs when usage of individual antibiotics is outside control limits.

OrgTrx: State-wide cumulative antibiogram with hospital specific antibiogram availability
- It is now a requirement for all Australian hospitals to have an antibiotic stewardship program
- This forms part of hospital accreditation
- The Australian commission for healthcare safety has produced a 120 page booklet on implementing antibiotic stewardship
- The Australian Health Research Commission (NHMRC) has funded a $900,000 grant for investigation of optimizing antibiotic stewardship in small rural hospitals and private hospitals.

EUROPEAN INITIATIVES TO CONTROL ANTIBIOTIC USE AND RESISTANCE: HERMAN GOOSSENS, CHAIR OF THE TECHNICAL ADVISORY COMMITTEE OF THE EAAD (EUROPEAN ANTIBIOTIC AWARENESS DAY), ECDC (EUROPEAN CDC)

Why is Europe (Partially) Successful in Controlling Antimicrobial Resistance?
- Bottom up member states initiatives (e.g. rotating European presidencies) resulting in top down political support and commitment at European level (e.g. council recommendations)
- Successful surveillance programs on antimicrobial use and resistance
- Strong leadership with close link between opinion leaders, policy makers and politicians
- Support of AMR research projects by the European Commission (EC), providing evidence for public health interventions.

European Antibiotic Awareness Day was Launched in 2008
- The United States and Canada joined in 2010
- Australia will join in 2012
- India could join in 2013 and make it a Global Day!!

European antibiotics awareness day is a success because of
- Strong upfront political support and commitment at European and national level;
- Planning well ahead;
- Building on existing success stories of countries;
- Early establishment of a Technical Advisory Committee with dedicated experts;
- Briefing of national communications contact points prior to the campaign and sharing contact information;
- Initiation of a broad stakeholder contact program to inform interest groups and invite contributions;
- Good support from professional organizations
- Development of campaign key messages and visuals with the support of experts in social marketing.

Control of Multidrug-Resistant Bacteria in Europe: Stephan Harbarth, University of Geneva Hospitals
- Europe is winning the fight against MRSA, but not all other multi drug resistant organisms (MDROs)
- Challenge—increasing spread of ESBL and carbapenem-resistant gram-negative bacilli
- Successful initiatives and coordination at national level
- Further action and research required.

APOCALYPSE DELAYED? LESSONS FROM ASIA: PAUL ANANTH TAMBYAH, NATIONAL UNIVERSITY OF SINGAPORE

Paul Ananth Tambyah discussed the special circumstances in Asian countries, to be considered, while formulating plans to tackle the resistance.

ROLE OF NATIONAL ACCREDITATION BOARD OF HOSPITALS IN TACKLING RESISTANCE—DR SANJEEV SINGH, MEMBER, TECHNICAL COMMITTEE AND CHAIRMAN, RESEARCH COMMITTEE, NABH

The following is the experience of NABH assessments:
- All good corporate health care organizations have antibiotic policy
- Ninety percent of them have prepared the policy without antibiograms
- Most policies are ctrl c, ctrl v policies (cut and paste)
- Ninety percent of those have policies are not adhering
- All faculty and management have shown their inclination to follow
- Significant progress at public hospitals.

Role of National Accreditation Board of Hospitals in containing antibiotic resistance through following options:
- Option 1: Comprehensive attack
- Standardization of laboratories, pharmacy, trainings, IC practices, IC and ASP culture.
Section 11

**Therapeutics**

Option 2: Experimenting stepwise policy
- Step 1: Formulation of universal policy of developing antibiograms
- Step 2: Formulation of a collaborative—15–20 accredited HCOs share antibiograms
- Step 3: Analyze the burden of disease
- Step 4: Formulate an antibiotic policy of a collaborative
- Step 5: Share results and scale up.

Option 3: Mandate antibiotic policy (HIC 2)
- Step 1: Universal antibiogram
- Step 2: Universal antibiotic stewardship
- Step 3: Universal training
- Step 4: Universal antibiotic policy
- Step 5: Universal audit checklist.

Option 4: Universalizing processes
- Preparing antibiograms
- Reading and implementing microbiology reports
- Justification of antibiotics
- Audits of antibiotic use/prescription
- Restricting dispensing of reserve antibiotics.

Option 5: Working on select manpower
- Mandatory Medical Microbiologists (NABL; 15189)
  - Intent: Standardization of formats and reporting
  - Outsource
- Clinical pharmacists
- Phlebotomists (pre-analytical concerns)
- Infectious disease trained faculty—fellowship program.

**Program of Implementation (ASP Perspective)**
- National capacity building workshop
- Revision in edition of NABH standards (raising the bar)
- Refresher course for assessors
- Advisory to all HCOs (applicants)
- Increasing the depth of assessment toward antibiotic stewardship
- Working toward OTC governance and stopping spurious medicine supply
- Run and own by GOI (comprehensive coverage and scaling up)
- National accreditation board of hospitals could own ASP workshop
- Participation from private sector will be decent.

**WORLD HEALTH ORGANIZATION REPRESENTATIVE—DR ANUJ SHARMA**

Reasons for drug resistance are as follows:
- No commitment
- Weak surveillance
- Poor drug quality
- Irrational drug use
- No infection control
- Lack of research.

**Role of World Health Organization**
- Policy guidance, support for surveillance, technical assistance, knowledge generation and partnerships (including disease prevention and control programs)
- Essential needs—quality, supply, rational use
- Laboratories—AMR surveillance, quality assurance
- Patient safety, infection prevention and control
- AGISAR-WHO Advisory Group on Integrated Surveillance of Antimicrobial Resistance
- National policy for containment of AMR
- National program in 12th 5 years plan
- Challenges in India—no national AMR surveillance, relatively few quality associated laboratories for AST, scattered data; insufficient analysis
- Data from public health program.

**Indian Network for Surveillance** of AMR started in 2009;
- Policy makers and planners
  - Antimicrobial (AM) policy and STGS
  - Nat surveillance for AMR and use
  - Rationalize non-human use of AM’s
- Pharma industry
  - Development of new AMs
  - Responsible promotion of AM
- Pharmacists and dispensers
  - Stop OTC sale of AMs
  - Dispense AMs only on prescription
- Physicians and prescribers
  - Use AMs only when needed
  - Surveillance of AMR and use
  - Infection prevention and control (IPC) to prevent spread
- Public patient/civil society
  - Take AM as prescribed
  - Avoid self-medication
- Media
  - Catalyst for change
  - Advocacy partners.

**Over the Counter Sale of Antibiotics in India—To Ban or Restrict?**

**Opinion 1: Dr A Muruganathan, President Elect API**

**What should we do?**
- Proper control of the pharmacists by drug controller
- Punishment should be severe
- Proper auditing—monthly
- API member in the advocacy and advisory committee
- Public awareness campaign regarding various problems of counter sales
- TV, news media—celebrity—like a small drama
- Doctors must advise patients. Must explain in TV and media
- Newspaper can publish articles over usage of antibiotics
- Trained pharmacists with authenticated degrees only must be permitted to run the pharmacies. There should be no compromise about this
- There should be credit points for regular orientation programs, which they should compulsorily attend
- Above all, a strong legislation and the will power to execute this legislation are absolutely necessary and have to be undertaken very urgently.
- IMA and API other National Organizations should come forward to alert the Government system about this imminent problem of antibiotic resistance and the havoc it can cause if such measures are not undertaken immediately.

**Opinion 2: Dr JA Jayalal, Honorary General Secretary IMA Tamil Nadu (IMA Representative)**

Dr Jayalal did a detailed discussion on the background of the “National policy for containment of antimicrobial resistance” by the Department of Health and the fact that the policy was later held back by the health minister. Dr Jayalal stressed the importance of formulating a new national policy on containment of antimicrobial resistance, on urgent basis in order to rationalize antibiotic usage in the country.
Antimicrobial Resistance and Oncology Service: Dr Kumar Prabhash, Associate Professor, Medical Oncology, Tata Memorial Hospital, Representative, Oncology Society

He explained that microbial pathogens in oncology were a unique situation because:
- Febrile neutropenic patients pose a diagnostic dilemma
- Keeping track of pathogen trends and susceptibility patterns was of importance
- Establishing the etiology of an infectious episode is difficult in such a population
- He was concerned as high levels of resistance to antimicrobials was in cancer centers in India
- He strongly believed that the clinicians held the key to contain antimicrobial resistance

He suggested a few hospital policies like:
- Educational and persuasive approaches
- Facilitative strategies
  - Clinical specialist or pharmacy clinician to advise
  - Computer help screens when ordering
- Power strategies
  - Formulary control
  - Monitor usage with time limits on prophylactic, empiric, therapeutic uses
- Restriction of drugs classified as:
  - Uncontrolled: Available for all physicians
  - Monitored: Usage monitored through system
  - Restricted: ID specialist only.

ROLE OF MICROBIOLOGY LABORATORY AND MICROBIOLOGISTS IN TACKLING ANTIMICROBIAL RESISTANCE: DR ARTI KAPIL, PROFESSOR, DEPARTMENT OF MICROBIOLOGY, AIIMS, NEW DELHI, INDIAN ASSOCIATION OF MEDICAL MICROBIOLOGISTS (IAMM) REPRESENTATIVE

Loop Holes in the System
- Accreditation of laboratories were voluntary, costly and without incentives
- Limited infrastructure and facilities in most of the government hospital laboratories.

What Needs to Be Done?
- Microbiology laboratories need to be strengthened and microbiologist need to be proactive.

Strengthen Antimicrobial-Resistance Monitoring
- Detecting resistance accurately
- Generating cumulative antibiograms for emerging patterns of resistance
- Determining molecular epidemiology of the resistant strains
- Dissemination of data at a frequent and regular intervals preferable risk stratified, area wise
- Identify “alert” reports, restrictive reporting of antibiotics
- Reconfirming unusual MDR isolates, e.g. colistin resistance, VRSA, etc.
- Develop networking of institutes, state level colleges and private hospitals/laboratories
- Develop standardized laboratory methods and quality control protocols for reliable data

Capacity building at peripheral hospitals, computerized information network, strengthen diagnostics
- Rapid, sensitive, specific and point of care tests—bacterial infections/resistance
- Taking technology to the field—microarray based, ICP based, real time PCR based.

To Monitor Quality Control
- Training in MD Microbiology to take up this role
- Regular CMEs and workshops
- Mandatory NABL accreditation of the clinical laboratories
- Government support for capacity building.

Referral Microbiology Laboratories
- Identify institutions in different regions as referral laboratories
  - Responsible for making a repository of the bacterial strains of interest/rare resistant markers
  - Undertake genotyping of the resistant isolates
  - Study emergence of new mechanism of resistance.

PANEL DISCUSSION 1
It was moderated by Dr HS Rissam, MCI representative.

Representatives of various medical societies, Dr Rama Kant (President, Association of Surgeons of India), Dr Ram E Rajagopalan (ISCCM), Dr Rajendrasing Pardeshi (FOGSI), Dr Raman Sardana (Hospital Infection Society), Dr A Muruganathan, President elect API and Dr JA Jayalal (IMA representative) participated in the discussion. There was a general consensus that urgent measures are needed to rationalize antibiotic usage in the country and medical societies will cooperate in all efforts toward this goal.

PANEL DISCUSSION 2
It was moderated by Professor B M Hegde, Former Vice Chancellor, Manipal Academy of Higher Education.
- Dr Siddharth N Shah, editor, JAPI stressed the role of journals in disseminating information on rational use of antibiotics.
- Dinesh C Sharma, Science editor, Mail Today, pointed out that medical journal should communicate with the press when articles of public health importance are published.
- Dr OC Abraham, Professor of Medicine, CMC Vellore conveyed the message that medical teachers can be role models to students in rational use of antibiotics and infection control practices.
- Dr C Vamsathara, Director of Medical Education, Tamil Nadu stressed on the importance of training undergraduates and postgraduate medical students on rational use of antibiotics and infection control.

PANEL DISCUSSION 3
It was moderated by Dr PV Ramesh IAS, Principal Finance Secretary (R and E), Government of Andhra Pradesh.
- Mr S Manivannan, Deputy Drugs Controller General, enumerated DCGI plans to rationalize over the counter sale of antibiotics in the country.
- Dr JPS Gill, Professor and Head, Veterinary Public Health, GADVASU explained the importance of monitoring usage of antibiotics in the veterinary practice, for prophylactic, therapeutic and growth promoter purpose.
- Dr Subash Todi, Panel member of Ministry of Health expert committee STG on Critical Care discussed on the relevance of a special task group to formulate an antibiotic policy in the country.
**CONCLUSION**

Dr. Abdul Ghafur, coordinator of the road map meeting and the Antimicrobial Stewardship Committee, chairperson of Clinical Infectious Diseases Society (CIDS) summarized the aims, objectives and the future action plan of the road map meeting.

Recommendations by the participating medical societies (Chennai Declaration) will be published in reputed medical journals and be submitted to various stakeholders including Ministry of Health, DCGI office, WHO, MCI and State Departments of Health.

The abstract of the Chennai Declaration will be published in various specialty medical journals with a special stress on specialty specific details.

The “Road map meeting” proved that medical societies in India could come together under one roof to formulate an action plan to tackle the serious menace of antibiotic resistance.

“Where there is a will, there is a way”

“Save Antibiotics, Save Lives”