Clinical Leadership
Training Course

DATE I Feb 18, 19, 20, 2025
VENUE I 2F Chrysanthemum, Grand InterContinental Seoul Parnas Hotel

TACE ASIA Technical Assistance for Clinical Engagement
The Fleming Fund Regional Grants
UKaid from the British people
MOTT MACDONALD
International Vaccine Institute

Setting goals and developing strategic plans for AMR initiatives

Kamini Walia,
Indian Council of Medical Research

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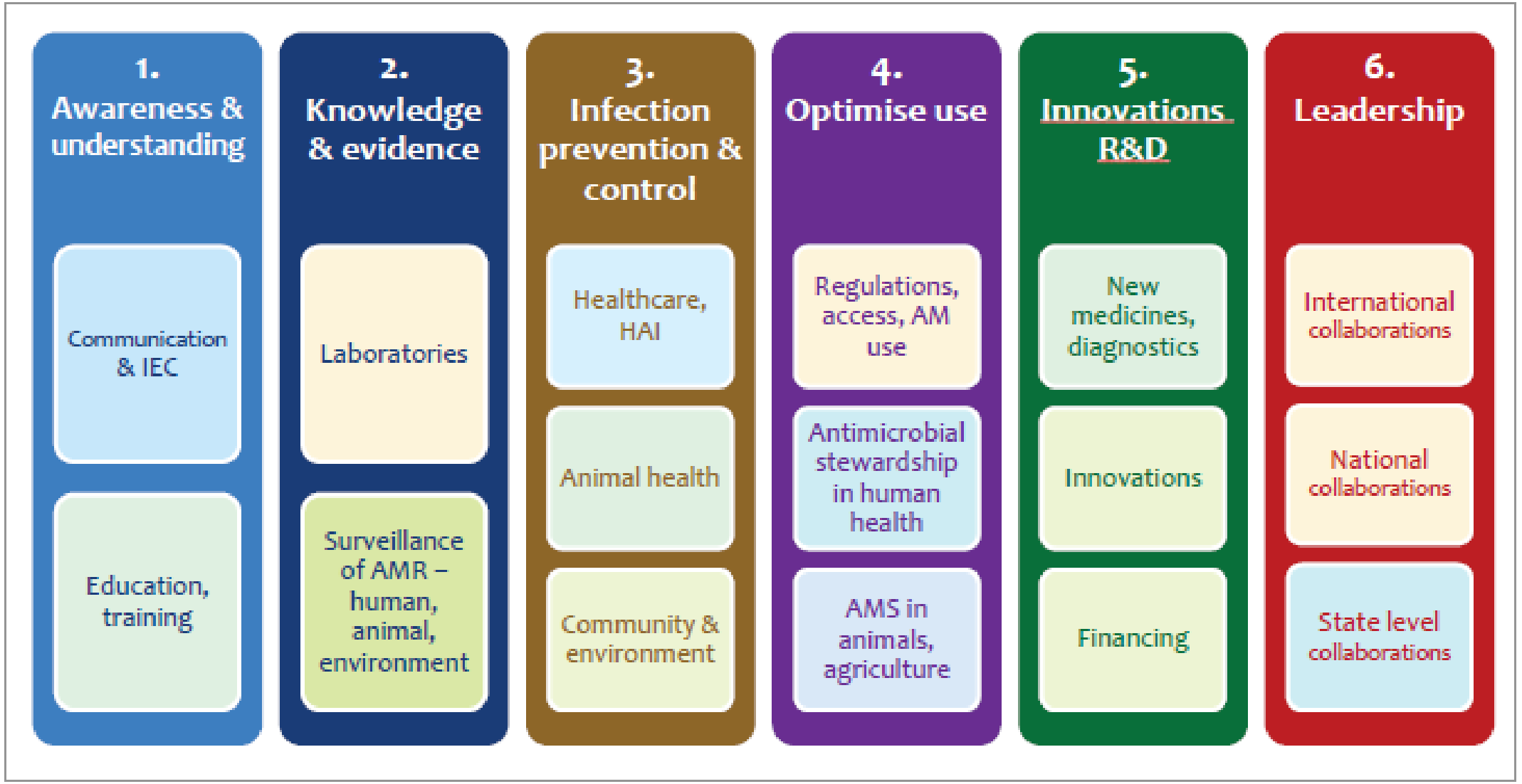
General Goals

- **Reduce the rate of antibiotic-resistant infections:** Aim to achieve a measurable decrease in the incidence of infections caused by multi-drug resistant organisms (MDROs) within a specified timeframe.
- **Improve appropriate antibiotic use:** Increase the percentage of patients receiving the right antibiotic at the right dose for the right duration, minimizing unnecessary antibiotic prescriptions.
- **Enhance surveillance and data collection:** Establish robust systems to monitor AMR trends, including tracking resistant organisms and antibiotic usage patterns to identify areas for improvement.
- **Promote awareness and education:** Educate healthcare providers, patients, and the public about the dangers of AMR and the importance of responsible antibiotic use.

National Action Plan-AMR India



Strategic Plan

Stakeholder Engagement:

- Identify key stakeholders
- Establish a multidisciplinary team involving healthcare professionals, researchers, policymakers, farmers, and community leaders.
- Foster collaboration across different sectors (human health, animal health, agriculture, environment).

Goal Setting:

- Clearly define specific, measurable, achievable, relevant, and time-bound (SMART) goals for each priority area.

Action Plan Development:

- Identify key interventions and strategies to achieve each goal.
- Assign responsibilities and timelines for implementation.

Monitoring and Evaluation:

- Establish robust surveillance systems to track progress towards goals.
- Develop indicators to measure the impact of interventions.
- Regularly review and adapt strategies based on data and emerging trends.

Important Considerations

- **Collaboration:** Establish strong partnerships with diverse stakeholders including healthcare providers, public health officials, pharmaceutical companies, and researchers to implement a comprehensive AMR strategy.
- **Performance Monitoring:** Regularly evaluate the effectiveness of AMR interventions using established metrics and make necessary adjustments to optimize program impact.
- **Sustainability:** Develop long-term strategies to ensure the continued implementation and success of AMR initiatives beyond initial funding periods.

Benefits of setting goals and developing plans

- **Sense of direction**: Goals can help you create a sense of direction

- **Motivation**: Goals can help you stay motivated to achieve your ideal future.

- **Efficiency**: Action plans can help you organize your work and monitor your progress.

Example Goals and Targets

- **Reduce inappropriate antibiotic use in hospitals by 20% within 5 years .**
- **Increase the proportion of healthcare providers adhering to AMS guidelines to 80% within 3 years .**
- **Develop and implement a national AMR surveillance system to monitor resistance trends within 2 years .**
- **Increase public awareness about AMR through educational campaigns reaching 75% of the population within 2 years .**

Measuring Progress on Goals

Challenges

- Absence of baselines
- Technical guidance
- Indicators: Performance versus outcome indicators?
- Tools to capture progress
- Resource constraints
- Data sharing and coordination

Potential solutions

•**Standardized surveillance protocols:**evelop globally agreed-upon methods for data collection, laboratory practices, and reporting of AMR data.

•**Capacity building in low-income countries: P**rovide technical support and training to strengthen AMR surveillance capabilities in resource-limited settings.

•**Integrated surveillance systems:** Design systems that link human, animal, and environmental data to better understand the transmission dynamics of AMR.

•**Investment in research and development:** Support research on new diagnostics, therapeutics, and preventative strategies for AMR.

•**International collaboration:**Foster global partnerships to share knowledge, expertise, and resources to combat AMR effectively.

PARTNERSHIPS AND COLLABORATIONS

- **Expanded reach:** One of the most significant benefits of collaborations and partnerships is that they can help you extend your reach to add new populations, geographies, patient types etc.
- **Cost savings**: Reduce costs by sharing resources and expertise.
- **Increased credibility:** When you collaborate with other respected partners, it can help to boost your credibility and authority within your niche. This can help you to attract more collabration and funding opportunities.
- **Access to new resources:** Collaborations and partnerships can also provide access to new resources that you might not have had access to on your own. This could include things like expertise and technology.
- **More diversity:** New perspectives and ideas, multidisciplinary teams

GOALS AND DEVELOPING STRATEGIC PLANS FOR ANTIMICROBIAL RESISTANCE (AMR) INITIATIVES

KEY ELEMENTS

- Strengthening surveillance and research capabilities
- Optimizing antimicrobial usage across sectors (human, animal, agriculture)
- Implementing robust infection prevention and control practices
- Promoting development of new antimicrobials
- Fostering strong intersectoral collaboration
- Increasing awareness and understanding of AMR
- Measurable targets and timelines to track progress effectively

Strengthening surveillance and research capabilities

Enhance Surveillance and Research

- Establish robust AMR surveillance systems to monitor resistance patterns across different pathogens and settings.
  - Identify the questions proposing to address
  - What is available
- Invest in research to understand resistance mechanisms, develop new diagnostics, and identify novel antimicrobial agents.
- Communication of information to all stake holders

Strategic Plan

Key stakeholders

Hospitals/Laboratories

Microbiologists

National program managers

Goal Setting:

National Network

State level networks

Monitoring and Evaluation:

Process indicators:

Number of labs enrolled or reporting

Number of isolates

Outcome indicators

MDR Rates

Need for National Response on AMR

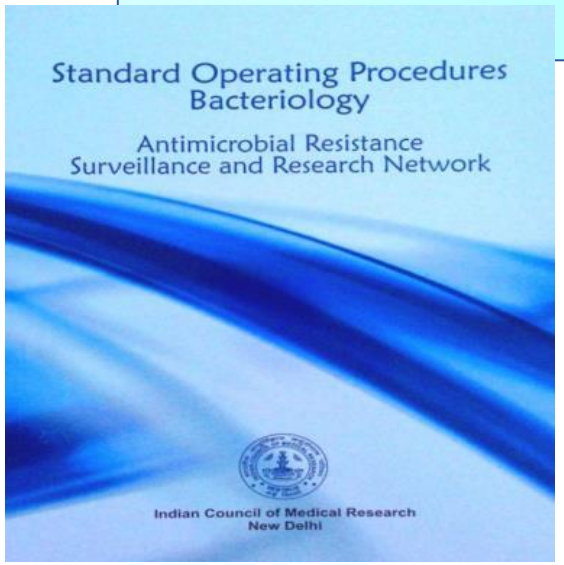
- Surveillance data in real time necessary for understanding trends and patterns, monitor outbreaks
- Surveillance data should form basis for syndromic management
- Data from both hospital and community needs to be correlated with antimicrobial consumption data

Lack of Evidence (hospital and community)

- Most of available data from small studies in labs or medical institutes
- Methodology, uniformity issues
- Not representative of trends and patterns in general population as data from hospital patients and very sick patients
- Lack of patient safety programs
- OneHealth approach needed

Antimicrobial Research & Surveillance Network at ICMR

- *Enterobacteriaceae* / sepsis
- Gram negative non-fermenters
- Enteric fever organisms
- Diarrhoeagenic organisms
- MRSA, Enterococcus
- Fungal pathogens



- *Standardisation*
- *Harmonisation*
- *SOPs*
- *EQAS*

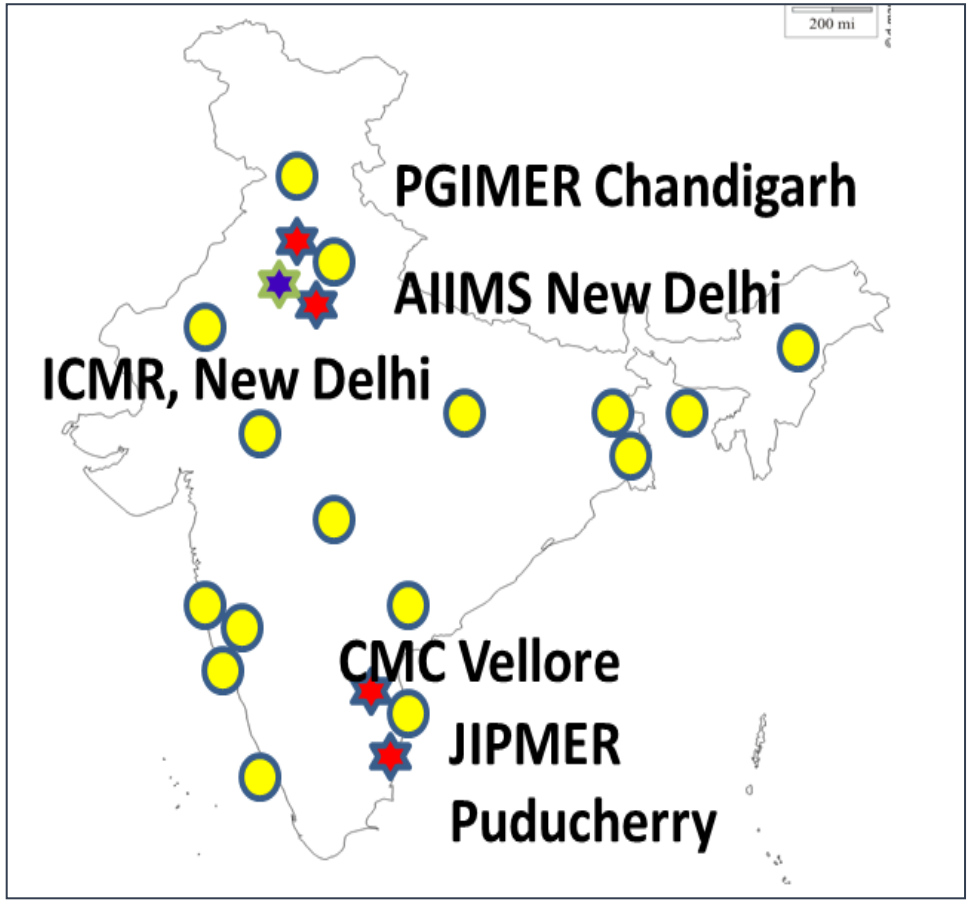


Table I: Difficult to treat drug resistant pathogens in Indian hospitals

	Group I	Group II	Group III
Pathogens	• Carbapenem Resistant Enterobacterales • Carbapenem Resistant *A. baumannii* • Drug resistant *Salmonella* Typhi • *Candida auris*	• ESBL producing Enterobacterales • Multidrug resistant *P. aeruginosa* • Vancomycin-resistant enterococci, • Azole Resistant *Candida* spp	• Methicillin Resistant *Staphylococcus aureus* • Azole resistant *Aspergillus fumigatus* • Amphotericin B resistant *Aspergillus flavus* • Drug-resistant *Stenotrophomonas maltophilia* • Colistin Resistant Enterobacterales • Colistin resistant *Acinetobacter* spp.
Action required for containment	Aggressive action	Sustained action	Continuous monitoring and prevention efforts

Very Few new drugs for MBL and CRAB

Possible applications of new antibiotics against Gram-negative bacteria based on resistant mechanisms.

	ESBL and AmpC	KPC	OXA-48	MBL	Carbapenem Nonsusceptible *A. baumanii*	Carbapenem Nonsusceptible *P. aeruginosa*
Plazomicin	++	++	++	+/− [a]	−	−
Eravacycline	++	++	++	+ [b]	++	−
Temocillin	++ (urine breakpoint only)	++ (urine breakpoint only)	−	−	−	−
Cefiderocol	++	++	++	++	++	++
Ceftazidime/avibactam	++	++	++	−	−	+/−
Ceftolozane/tazobactam	++	−	−	−	−	+/− [c]
Meropenem/vaborbactam	++	++	−	−	?	?
Imipenem/relebactam	++	++	−	−	−	+/− [d]

None of these novel BL/BLIs covers MBL-dominated resistance mechanisms prevalent in India

Yusuf E, Bax HI, Verkaik NJ, van Westreenen M. An Update on Eight "New" Antibiotics against Multidrug-Resistant Gram-Negative Bacteria. J Clin Med. 2021 Mar 4;10(5):1068. doi: 10.3390/jcm10051068. PMID: 33806604; PMCID: PMC7962006

Baseline assessments

Resources materials

Implementation plan

Monitoring progress

Quality improvement

Sustainability

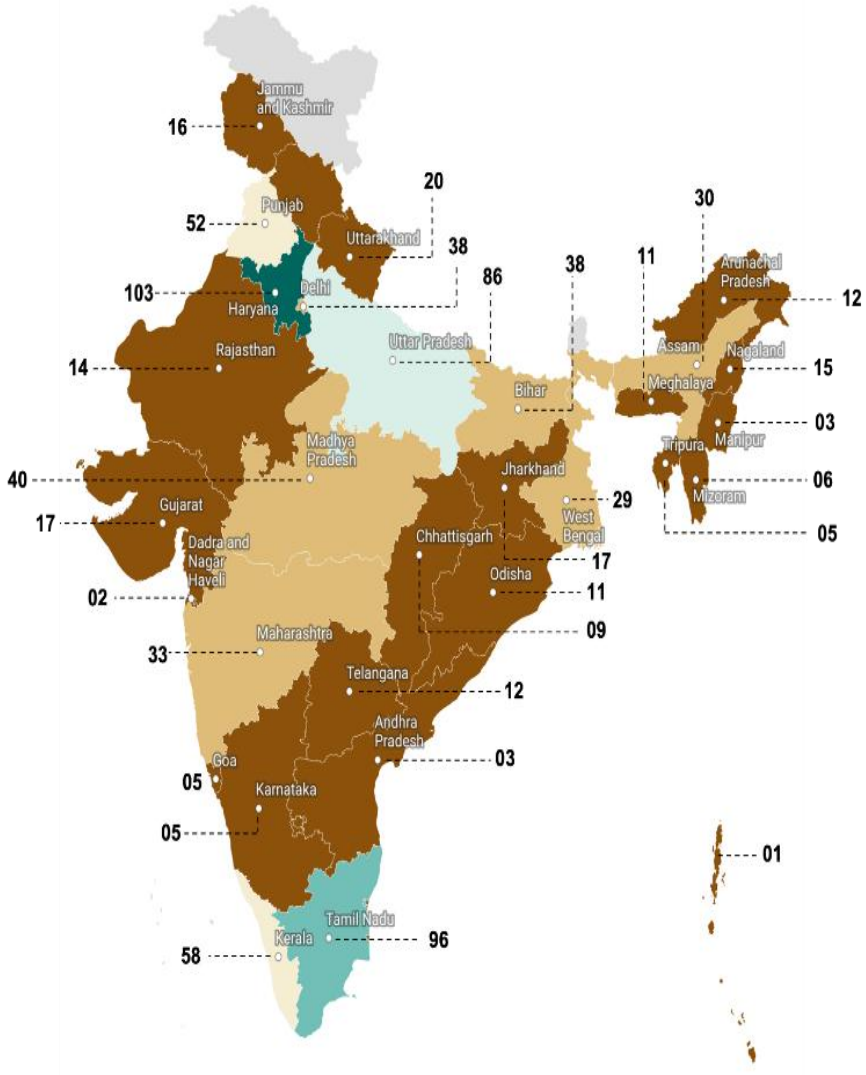
Strengthen Infection Prevention and Control (IPC):

- Promote good hygiene practices, including hand hygiene, in healthcare facilities and communities.
- Implement effective infection control measures like isolation and cohorting of infected patients.

Indian Health-care Associated Infections (HAIs) Surveillance Network

Objectives

- Implement a standardized system of surveillance for HAIs in a network of Indian hospitals
- Develop capacity to prevent HAIs and contain Antimicrobial Resistance (AMR) in network hospitals by improving Infection Prevention and Control (IPC) Practices
- Create a Center of Excellence for IPC in India



HAI Surveillance Training Outreach across India

Outcomes - Healthcare Facilities Trained/Enrolled

- Network sites in States/UTs: **28** States and **6** Union Territories
- Number of Healthcare Facilities (trained): **1,506**
- Number of Medical Colleges (trained): **110**
- HCFs enrolled: **90**
- No. of Healthcare Workers (trained): **7,558**
- **Being expanded to District Hospitals**

HAI Rates, May, 2017 to April, 2024

Total BSI Rate (per 1000 patient days)	**6.28**
CLABSI Rate (per 1000 central line days)	**8.93**
Sec. BSI Rate (per 1000 patient days)	**1.06**
NON-CLABSI Rate (per 1000 patient days)	**2.36**

Total UTI Rate (per 1000 patient days)	**1.86**
CAUTI Rate (per 1000 urinary catheter days)	**3.0**
NON-CAUTI Rate (per 1000 patient days)	**0.16**

Total VAP Rate (per 1000 ventilator days)	**7.9**
CS-SSI Rate (per 100 operative procedures)	**5.3**

BSI: Bloodstream Infection , **CLABSI**: Central Line Associated BSI ,**UTI**: Urinary Tract Infection, **CAUTI**: Catheter Associated UTI, **VAP**: Ventilator Associated Pneumoniae, **CS-SSI**: Caesarean Section Surgical Site Infection

THE LANCET
Global Health

Health-care-associated bloodstream and urinary tract infections in a network of hospitals in India: a multicentre, hospital-based, prospective surveillance study

Purva Mathur, Paul Malpiedi*, Kamini Walia, Padmini Srikantiah, Sunil Gupta, Ayush Lohiya, Arunaloke Chakrabarti, Pallab Ray, Manisha Biswal, Neelam Taneja, Priscilla Rupali, Veeraraghavan Balaji, Camilla Rodrigues, Vijaya Lakshmi Nag, Vibhor Tak, Vimala Venkatesh, Chiranjay Mukhopadhyay, Vijayshri Deotale, Kanne Padmaja, Chand Wattal, Sanjay Bhattacharya, Tadepalli Karuna, Bijayini Behera, Sanjeev Singh, Reema Nath, Raja Ray, Sujata Baveja, Bashir A Fomda, Khumanthem Sulochana Devi, Padma Das, Neeta Khandelwal, Prachi Verma, Prithwis Bhattacharyya, Rajni Gaind, Lata Kapoor, Neil Gupta, Aditya Sharma, Daniel VanderEnde, Valan Siromany, Kayla Laserson, Randeep Guleria, on behalf of the Indian Healthcare Associated Infection Surveillance Network collaborators†*

- ✓ Health-care-associated bloodstream infections and urinary tract infections are common in Indian ICUs
- ✓ 10% of all admissions
- ✓ Pooled rates
  - BSI (7·3 per 1000 patient days),
  - CLABSI (12·1 per 1000 central line days),
  - UTIs (2·8 per 1000 patient days)
- ✓ Pathogens that cause them often exhibit high levels of antimicrobial resistance
- ✓ Pathogens that cause them often exhibit high levels of antimicrobial resistance
- ✓ *Klebsiella* spp (24·8%), most common
- ✓ Carbapenem resistance - 72% of bloodstream infections

	All bloodstream infections*		CLABSI*		All UTIs†		CAUTI†	
	Rank	Pathogens (n=2828)	Rank	Pathogens (n=1341)	Rank	Pathogens (n=809)	Rank	Pathogens (n=773)
Klebsiella spp‡	1	701 (24·8%)	1	295 (22·0%)	4	108 (13·3%)	4	99 (12·8%)
Acinetobacter spp	2	601 (21·3%)	2	252 (18·8%)	6	42 (5·2%)	6	41 (5·3%)
Candida spp	3	333 (11·8%)	3	165 (12·3%)	1	238 (29·4%)	1	229 (29·6%)
Staphylococcus spp	4	248 (8·8%)	7	85 (6·3%)	14	3 (0·4%)	14	3 (0·4%)
Enterococcus spp	5	208 (7·4%)	6	100 (7·5%)	2	147 (18·2%)	2	141 (18·2%)
Pseudomonas spp	6	190 (6·7%)	5	107 (8·0%)	5	64 (7·9%)	5	64 (8·3%)
Escherichia spp	7	143 (5·1%)	8	61 (4·5%)	3	142 (17·6%)	3	133 (17·2%)
Burkholderia spp	8	122 (4·3%)	4	110 (8·2%)	15	1 (0·1%)	15	1 (0·1%)
Enterobacter spp	8	84 (3·0%)	9	51 (3·8%)	10	9 (1·1%)	10	9 (1·2%)
Citrobacter spp	10	41 (1·4%)	11	20 (1·5%)	8	11 (1·4%)	10	9 (1·2%)
Proteus spp	14	11 (0·4%)	14	5 (0·4%)	8	11 (1·4%)	8	11 (1·4%)
Providencia spp	27	1 (<0·1%)	18	1 (0·1%)	7	14 (1·7%)	7	14 (1·8%)
All other pathogens	..	145 (5·1%)	..	89 (6·6%)	..	19 (2·3%)	..	19 (2·5%)

Data are n (%). ICU=intensive care unit. UTI=urinary tract infection. CLABSI=central-line-associated bloodstream infection. CAUTI=catheter-associated UTIs. *Includes adult, paediatric, and neonatal ICUs. †Includes adult and paediatric ICUs. ‡Includes *Klebsiella aerogenes* (formerly *Enterobacter aerogenes*).

Table 5: **Commonly reported pathogens in bloodstream infections and UTIs**

Commonly reported pathogens in BSI and UTIs

Open access Original research

BMJ Open

Incremental cost of treating antimicrobial-resistant infections among hospitalised patients in India: a cohort study

Abhijit Kadam,[1] Megha Mamulwar ,[1] Gayatri Bhambure ,[1]
Shilpa Bembalkar ,[1] Shraddha Bapat ,[2] Arati Mane,[1] Shobha Rajure,[1]
Jayanthi Mathaiyan ,[3] Nusrat Shafiq,[4] Shankar Prinja ,[4]
Yamunadevi Ramanathan ,[5] Sanjay M Mehendale,[6]
Vijayshri Suresh Deotale ,[7] Sagar Khadanga,[8] Sanjay Bhattacharya,[9]
Gourangie Gogoi ,[10] Kamini Walia,[11] Samiran Panda ,[11]
Raman Gangakhedkar,[12] Ruchita Attal,[7] Jharna Mandal,[3]
Venkateswaran Ramanathan ,[3] Pallab Ray,[4] Susmita Chatterjee[13]

- Important findings:
- There was a 40.4% IC of treating critical and high priority AMR pathogens in GH setting.
- The financial burden created by AMR infection affects the family budget leading to financial indebtedness.
- The pattern of AMR pathogens in BSI cases commonly seen in GH, PH and THs was different.
- LOS, pharmaceuticals and supplies drove most of the IC to treat AMR in GH.

COMMONEST PATHOGENS WITH HIGHER INCREMENTAL COSTS

- Acinetobacter baumanii, MRSA, Enterobacteriaceae, Enterococuus
- Acinetobacter: highest incremental cost of treating AMR pathogens in a government hospital
- Enterobacteriaceae family pathogens, highest incremental cost across all private and trust hospitals
- Cost of hospital stay, medicines and antibiotics contributed significant proportion to the total hospitalisation cost cross all study sites
- Incremental cost of treating AMR pathogens was found to be higher as compared to nonresisitant pathogens for all sites

Optimize Antimicrobial Use

- Implement antimicrobial stewardship programs in healthcare settings to promote rational antibiotic prescribing.
- Baseline assessments
- Guidance material: treatment guidelines, AMS guidelines
- Identify champions in the field
- Plan for stepwise incremental progress

Strategic Plan

Key stakeholders

Clinicians

Administrators

Hospitals

Goal Setting:

Hospital

State level

National level

Monitoring and Evaluation:

Process indicators:

Number of hospitals enrolled

Constitution of AMS committees

Numbers with Antibiotic policy

Outcome indicators

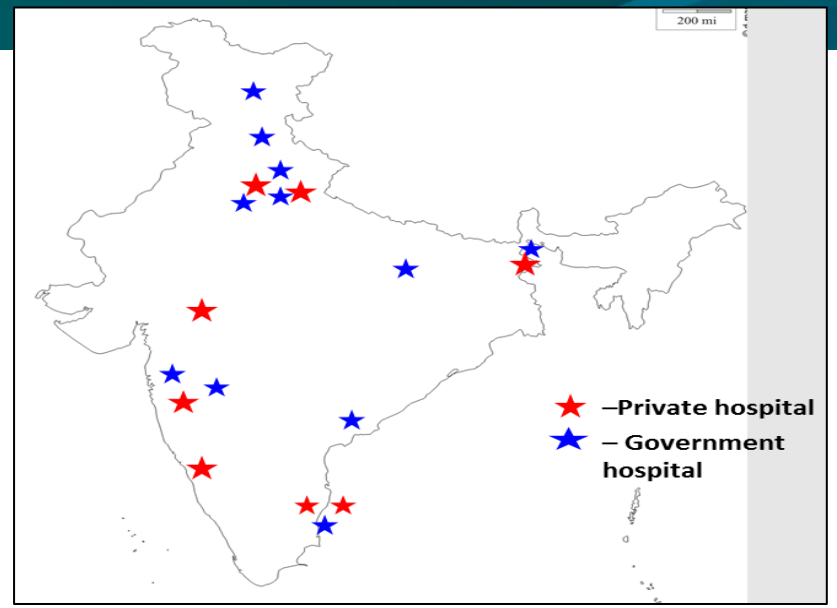
Reduction in AM consumption

Increase in Access prescriptions

Clinical outcomes

Survey of AMSP Practices 2013

- 20 Hospitals: 13 public and 7 private
- Accreditations better in private hospitals
- AMSP documents in 4/20 hospitals
- Infection control document in 20/20
- Most hospitals did not have infectious disease physicians and clinical pharmacists
- Antimicrobial Resistance Data Analysis 20/20
- Antimicrobial agents usage data analysis 5/20
- HIC guidance compliance audit performed by 12/20



Special Report

Indian J Med Res 142, August 2015, pp 130-138
DOI:10.4103/0971-5916.164228

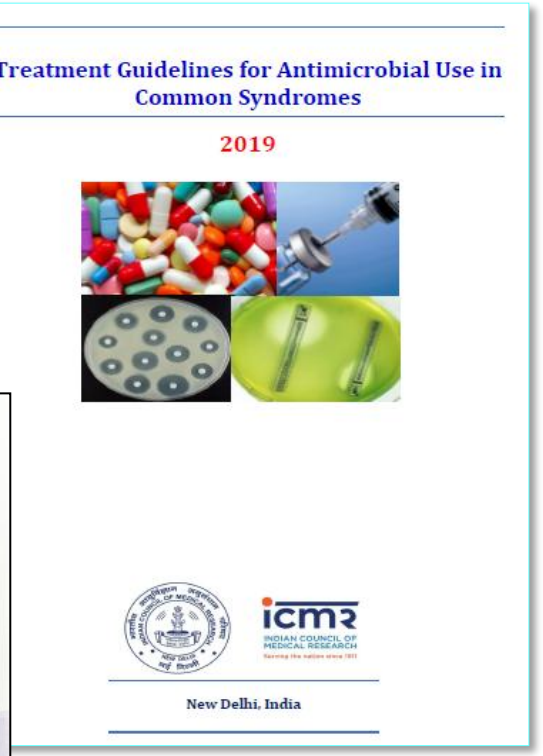
Antimicrobial stewardship programme (AMSP) practices in India

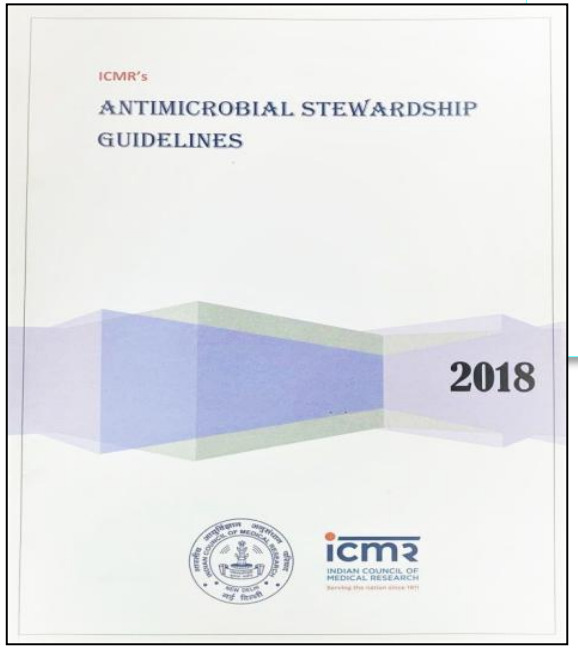
Kamini Walia, V.C. Ohri & Dilip Mathai* for Antimicrobial Stewardship Programme of ICMR

*Division of Epidemiology & Communicable Diseases, Indian Council of Medical Research, New Delhi & *Apollo Institute of Medical Sciences & Research, Hyderabad, India*

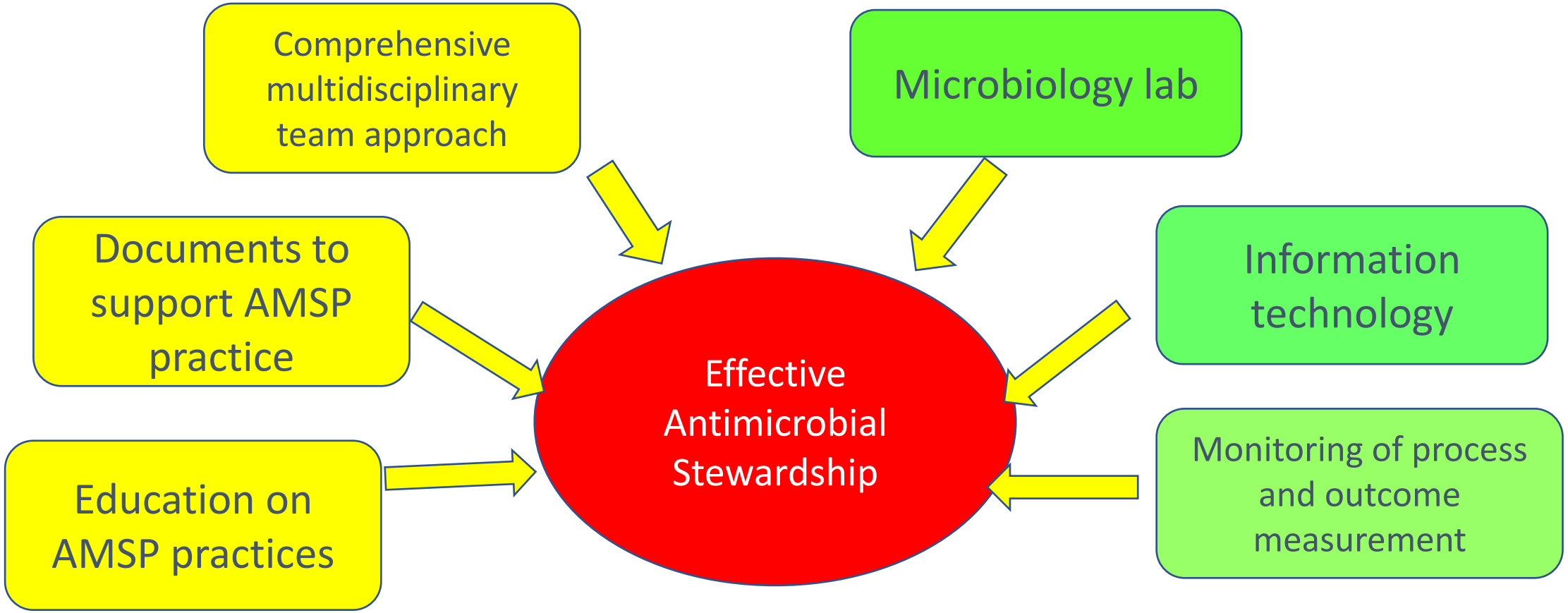
Capacity building for Antimicrobial Stewardship

- Using evidence for treatment guidelines
- Infection control guidelines
- Antimicrobial Stewardship guidelines
- AMSP workshops led by ID physicians
- 60 medical colleges/hospitals both Govt and Private
- More than 300 staff trained
- One year AMSP projects initiated in ICMR-AMR network hospitals





Essential elements of AMSP

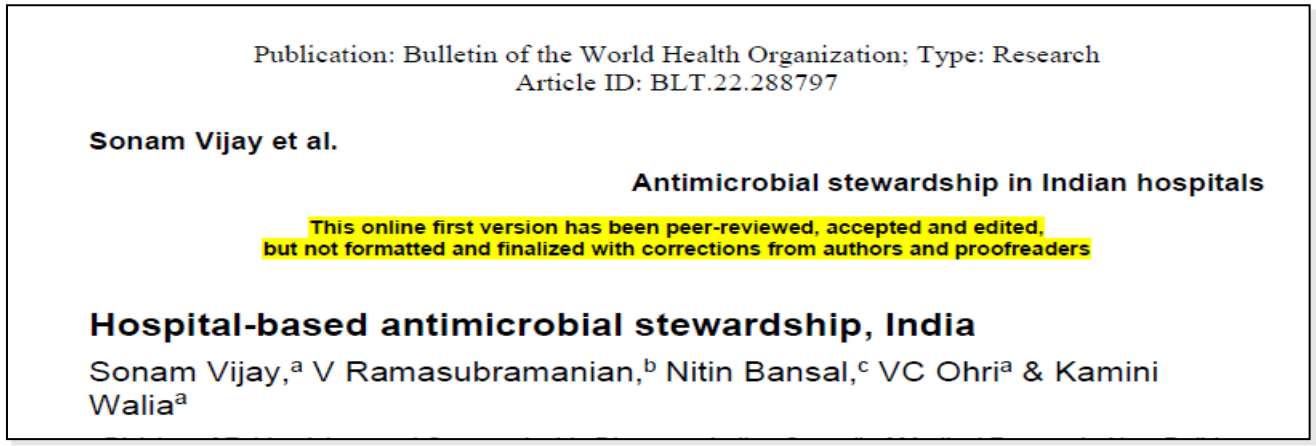


Initiating Antimicrobial Stewardship activities in tertiary care hospitals in India

- Twenty tertiary care hospitals supported to create structure and process of AMSP in hospital
  - Creating antibiogram and antibiotic policy for the hospital
  - Establish AMS committee
  - Point prevalence of cultures
  - Measure antibiotic consumption in ICUs
  - Initiate prescription audit : Carbapenem, Polymyxin prescriptions
  - Initiate Formulary restriction for selected antimicrobials
  - Education and awareness on AMSP
- Five member team trained administrator, physician, microbiologist, clinical pharmacist, infection control nurse
- Led by Clinician/intensivist/ID physician: A clinical pharmacist and nurse supported with project funds

Lessons from the ICMR AMS study

- Significant improvement in implementation of AMS activities was seen in tertiary care health institutes
- Structured training programs and allocating resources are necessary for initiating AMSP activities in hospitals
- Leadership can be provided by intensivists or physicians with passion for AMSP



Publication: Bulletin of the World Health Organization; Type: Research
Article ID: BLT.22.288797

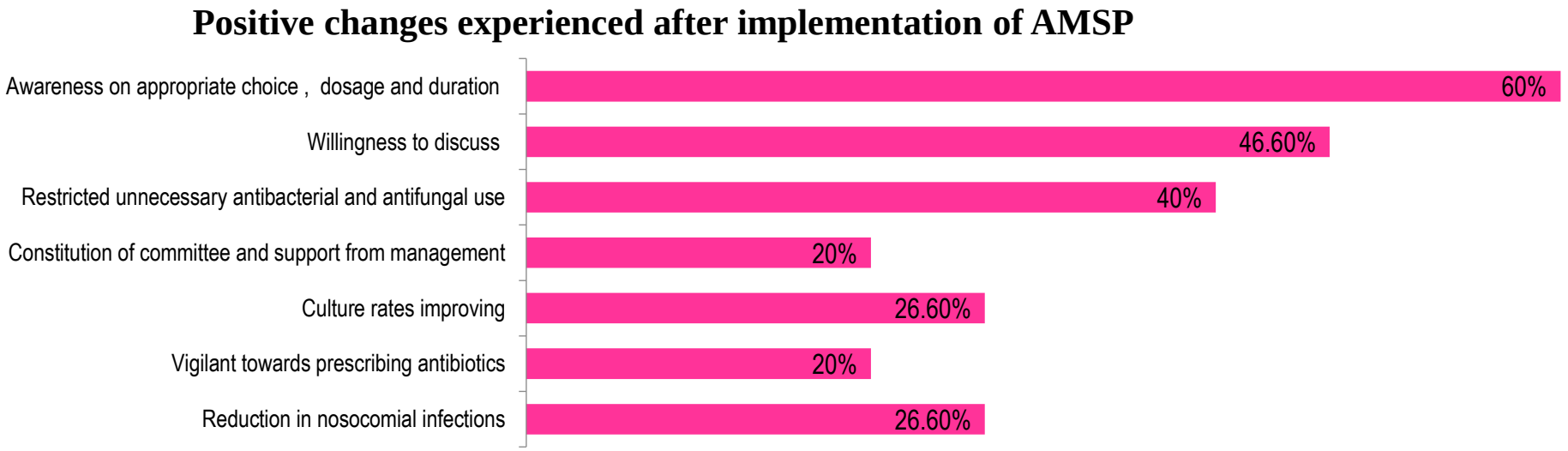
Sonam Vijay et al.

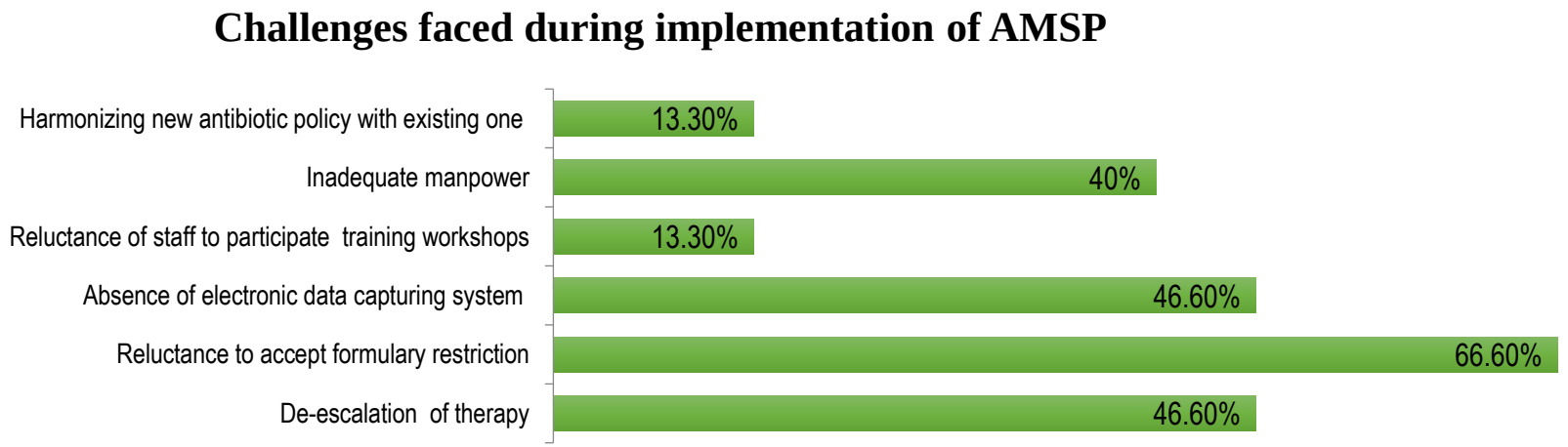
Antimicrobial stewardship in Indian hospitals

Hospital-based antimicrobial stewardship, India

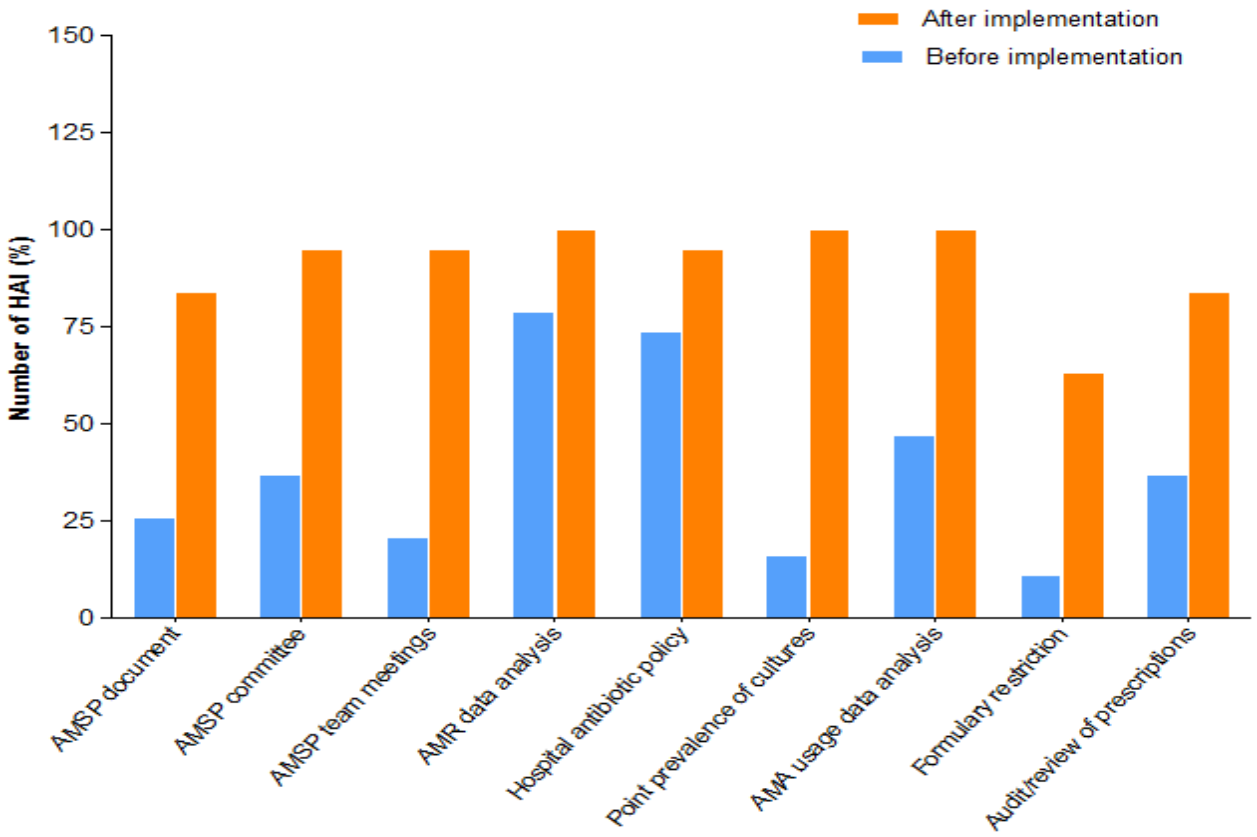
Sonam Vijay,[a] V Ramasubramanian,[b] Nitin Bansal,[c] VC Ohri[a] & Kamini Walia[a]

Facilitators and Barriers





Comparison of AMSP interventions in heath care institutes before and after implementation



Research

Hospital-based antimicrobial stewardship, India

Sonam Vijay,[a] V Ramasubramanian,[b] Nitin Bansal,[c] VC Ohri[a] & Kamini Walia[a]

Objective To establish a framework for implementing antimicrobial stewardship in Indian tertiary care hospitals, and identify challenges and enablers for implementation.
Methods Over 2018–2021 the Indian Council of Medical Research followed a systematic approach to establish a framework for implementation of antimicrobial stewardship in Indian hospitals. We selected 20 Indian tertiary care hospitals to study the feasibility of implementing a stewardship programme. Based on a questionnaire to lead physicians before and after the intervention, we assessed progress using a set of process and outcome indicators. In a qualitative survey we identified enablers and barriers to implementation of antimicrobial stewardship.
Findings We found an improvement in various antimicrobial stewardship implementation indicators in the hospitals after the intervention. All 20 hospitals conducted monthly point prevalence analysis of cultures compared with three hospitals before the intervention. The number of hospitals that initiated formulary restrictions increased from two to 12 hospitals and the number of hospitals that started practising prescription audit and feedback increased from six to 16 hospitals. Respondents in 15 hospitals expressed their willingness to expand the coverage of antimicrobial stewardship implementation to other wards and intensive care units. Six hospitals were willing to recruit the permanent staff needed for antimicrobial stewardship activities.
Conclusion Antimicrobial stewardship can be implemented in Indian tertiary hospitals with reasonable success, subject to institutional support, availability of trained manpower and willingness of hospitals to support antimicrobial stewardship-related educational and training activities.

Two hospitals created hospital funded clinical pharmacist positions for AMS

Challenges faced during implementation

- Time
- Funding
- Manpower
- Support from peers
- Data capturing

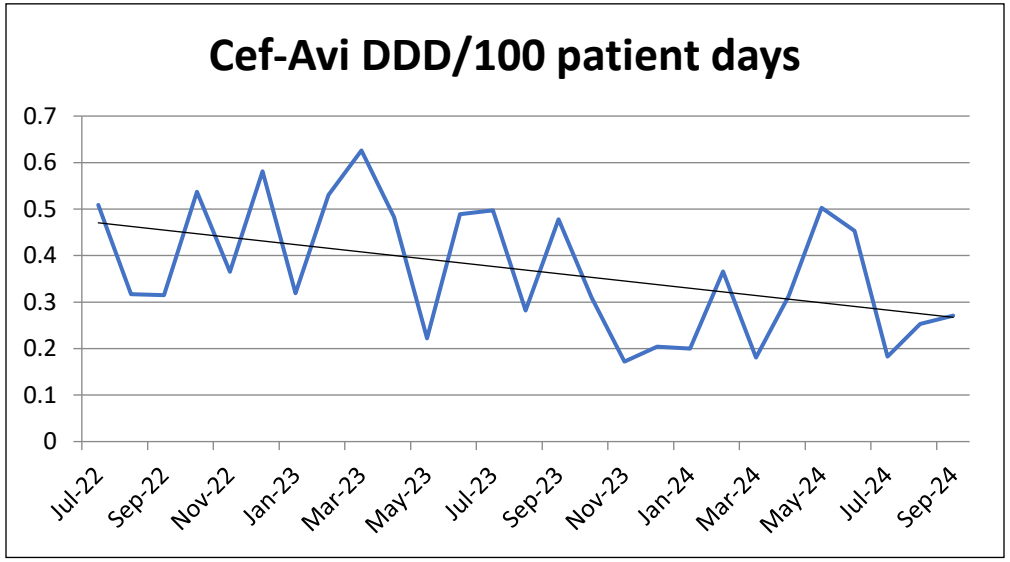
Implementation of AMSP in various tertiary care centres across India(2022-25)

Objectives

- To implement AMSP interventions (audit and feedback)
- To study the impact of AMSP interventions in resistance patterns
- To study the impact of AMSP interventions in clinical outcomes

Expected outcome

- To achieve 5% reduction in consumption of carbapenems, Polymixins, glycopeptides, ceftazidime-avibactam at the end of 1 year.


Cef-Avi DDD/100 patient days
0.7
0.6
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0.4
0.3
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0
Jul-22
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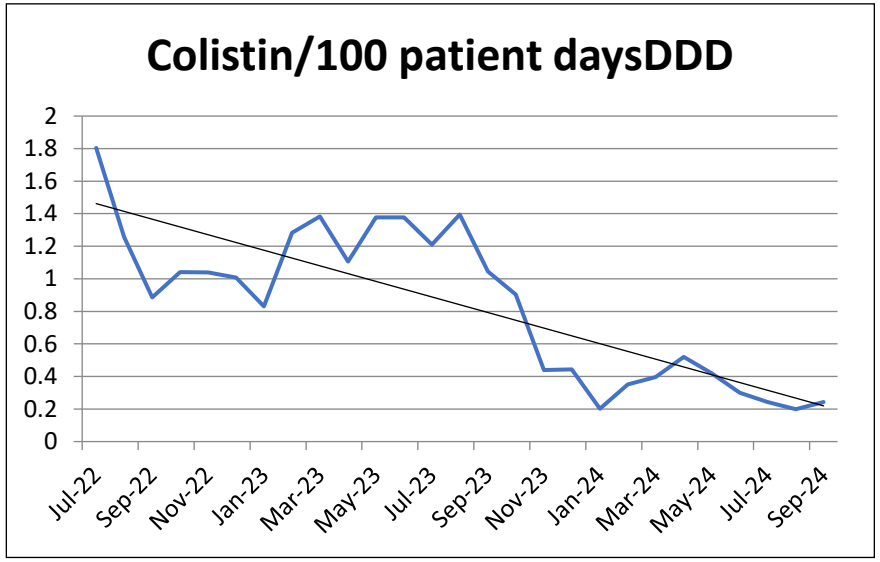
Colistin/100 patient daysDDD
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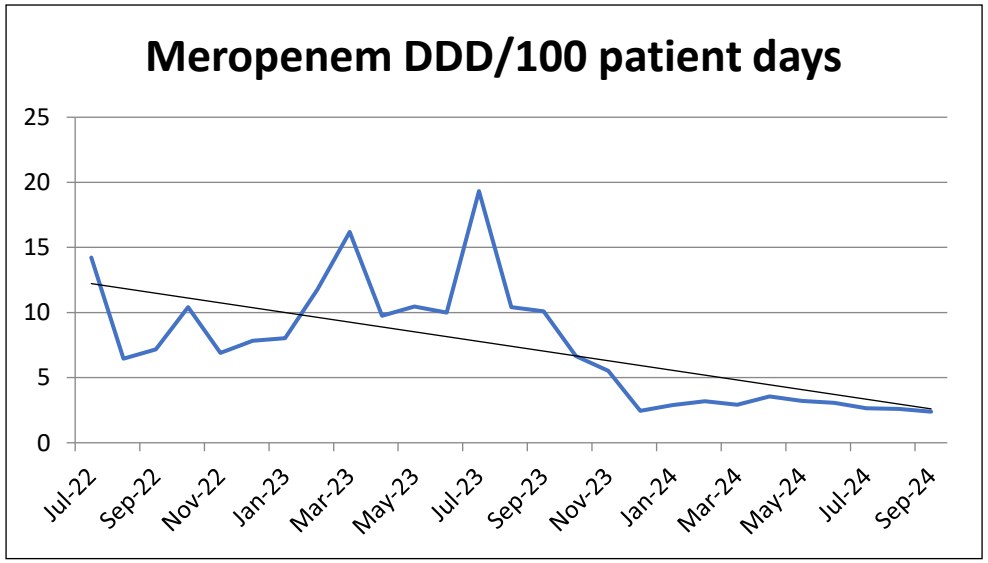
Meropenem DDD/100 patient days
25
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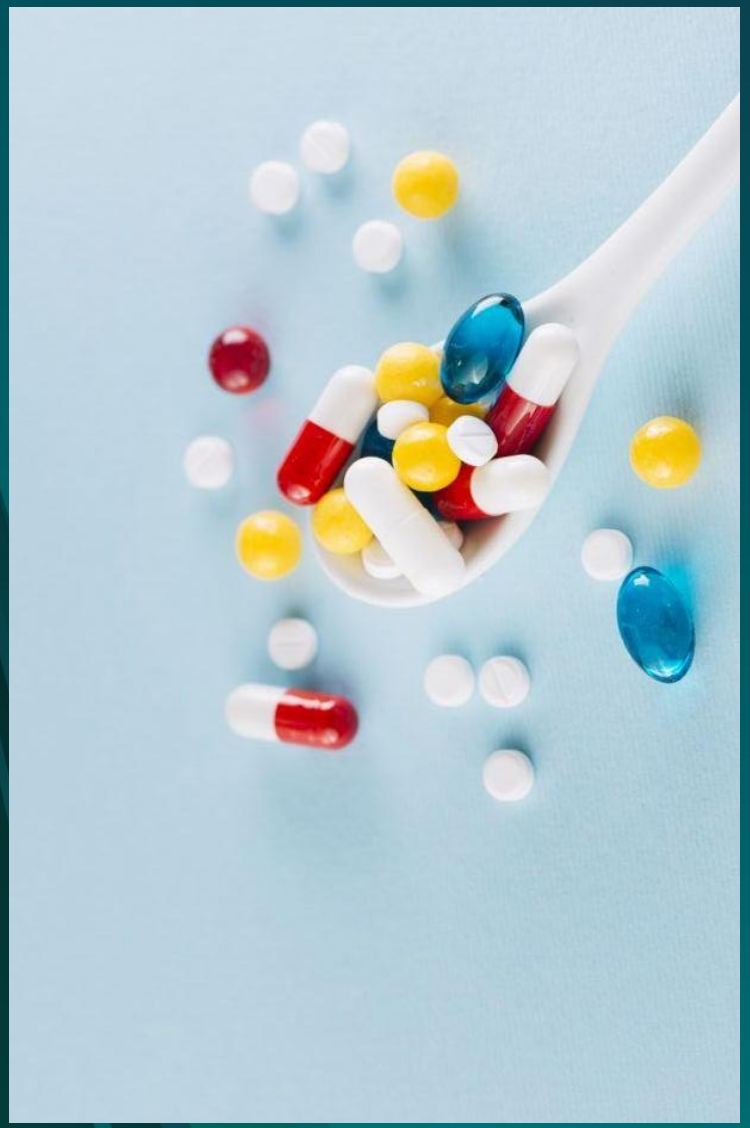
Jul-24
Sep-24



Promote Development of New Antimicrobials

- Incentivize research and development of novel antibiotics, including alternative therapies.
- Facilitate collaboration between pharmaceutical companies, research institutions, and government agencies.
- Researchers, pharma companies, funding agencies national and international

Newer Agents

	Active against	Not Active against
First generation BL/BLI(amox/clav, pip/taz, tic/clav, cfp/sul)	ESBLs	AmpCs, Carbapenemases
Ceftazidime/ avibactam	ESBLs, AmpC, KPC-2, Oxa48 like	KPC-3, MBL (NDM)
Meropenem/ vaborbactam	ESBLs, AmpC, KPC-2,3	MBL(NDM), Oxa-48 like, 23/24/58 like
Imipenem/ relebactam	ESBLs, AmpC, KPC	MBL(NDM), Oxa-48 like,23/24/58 like
Meropenem/ nacubactam	ESBLs, AmpC, KPC	MBL(NDM), Oxa-48 like, 23/24/58 like

ICMR-GARDP MoU

MEMORANDUM OF UNDERSTANDING
BETWEEN
INDIAN COUNCIL OF MEDICAL RESEARCH
AND
GARDP FOUNDATION
ON ANTIMICROBIAL RESISTANCE RESEARCH AND INNOVATION

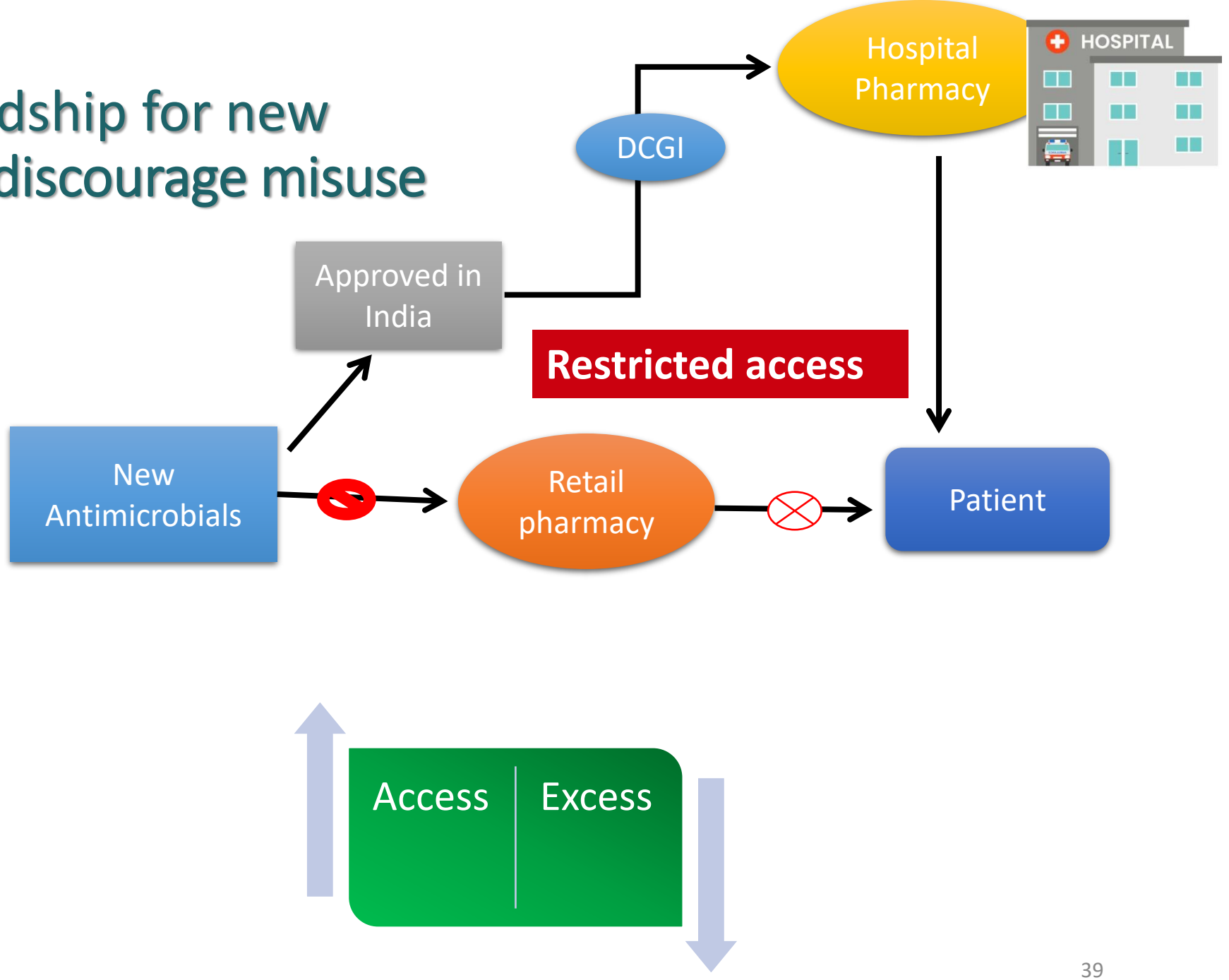
The Memorandum of Understanding (hereinafter referred to as the 'MOU') is being entered into on 31.3.21 (hereinafter referred to as the 'Effective Date') by and between:

GARDP Foundation, a not-for-profit organisation established under the laws of Switzerland having its office at 15 Chemin Camille Vidart (formerly Louis-Dunant), 1202 Geneva, Switzerland, (hereinafter referred to as "**GARDP**"),

- **To collaborate on research and development opportunities, including clinical trials, epidemiological, observational and interventional studies, to facilitate the development of new treatments and their registration for use with priority populations.**
- GARDP aims to develop five new treatments by 2025 , sexually transmitted infections, sepsis in newborns and infections in hospitalized adults and children.
- Extensive research and development capacity provides an opportunity for India to play a leading role in the global fight against drug resistance
- Observational study to map neonatal sepsis in three hospital clusters in three cities (Mumbai, Chennai, Delhi)
- Establishment of clinical trial sites in India

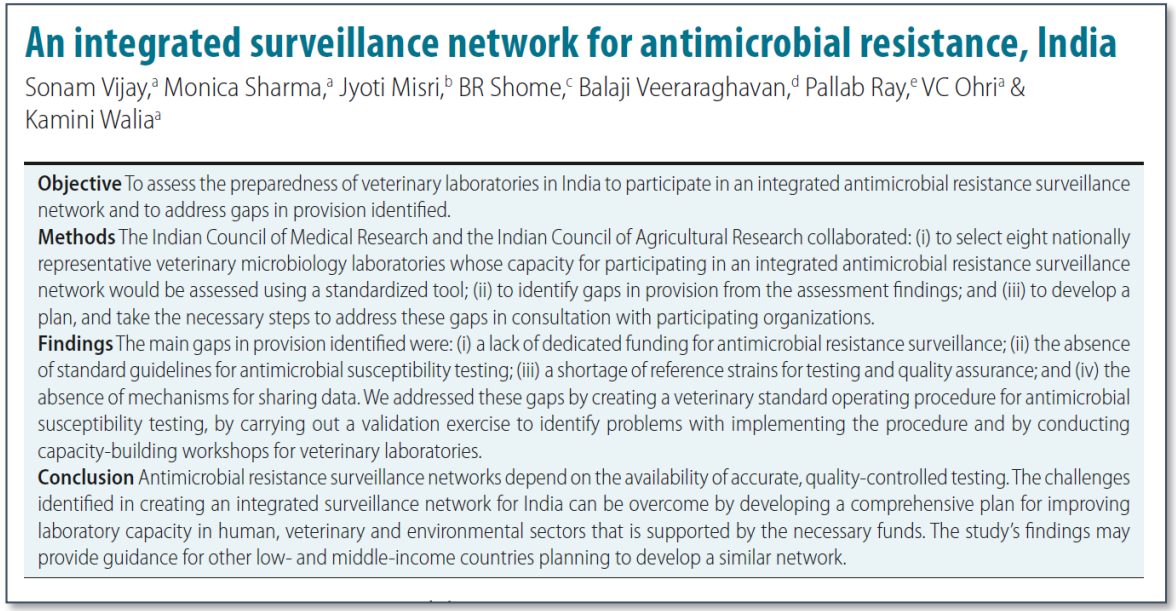
Regulatory stewardship for new antimicrobials to discourage misuse

- Plazomicin,
- Cefiderocol
- Ceftolozane-tazobactam
- Imipenem-cilastatin-relebactam
- Meropenem-vaborbactam
- Ceftazidime-avibactam
- Cefepime/zidebactam
- Cefepime/enmetazobactum



Addressing AMR through integrated surveillance and improved regulations

- ICMR-ICAR collaboration
- Indian network for fisheries and animal antimicrobial resistance (**INFAAR**)



An integrated surveillance network for antimicrobial resistance, India

Sonam Vijay,[a] Monica Sharma,[a] Jyoti Misri,[b] BR Shome,[c] Balaji Veeraraghavan,[d] Pallab Ray,[e] VC Ohri[a] & Kamini Walia[a]

Objective To assess the preparedness of veterinary laboratories in India to participate in an integrated antimicrobial resistance surveillance network and to address gaps in provision identified.

Methods The Indian Council of Medical Research and the Indian Council of Agricultural Research collaborated: (i) to select eight nationally representative veterinary microbiology laboratories whose capacity for participating in an integrated antimicrobial resistance surveillance network would be assessed using a standardized tool; (ii) to identify gaps in provision from the assessment findings; and (iii) to develop a plan, and take the necessary steps to address these gaps in consultation with participating organizations.

Findings The main gaps in provision identified were: (i) a lack of dedicated funding for antimicrobial resistance surveillance; (ii) the absence of standard guidelines for antimicrobial susceptibility testing; (iii) a shortage of reference strains for testing and quality assurance; and (iv) the absence of mechanisms for sharing data. We addressed these gaps by creating a veterinary standard operating procedure for antimicrobial susceptibility testing, by carrying out a validation exercise to identify problems with implementing the procedure and by conducting capacity-building workshops for veterinary laboratories.

Conclusion Antimicrobial resistance surveillance networks depend on the availability of accurate, quality-controlled testing. The challenges identified in creating an integrated surveillance network for India can be overcome by developing a comprehensive plan for improving laboratory capacity in human, veterinary and environmental sectors that is supported by the necessary funds. The study's findings may provide guidance for other low- and middle-income countries planning to develop a similar network.

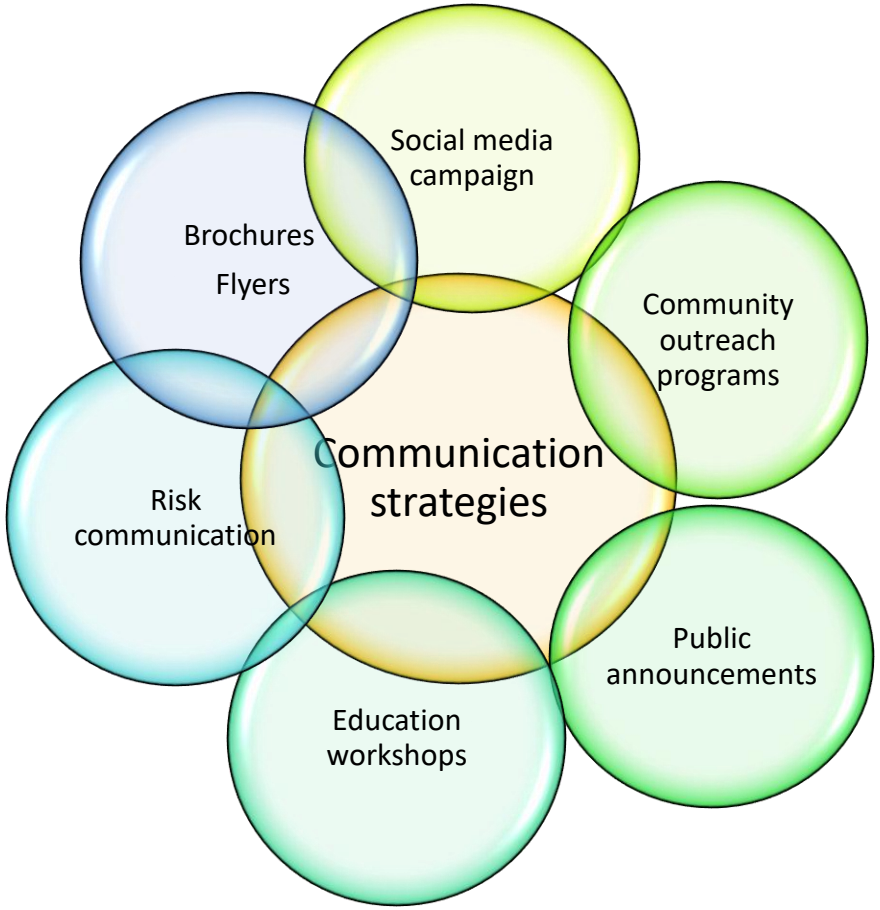
Progress on regulations

- Ban on colistin use as growth promoter
- Mandatory withdrawal period for use of antibiotics in food producing animals
- Specified limits of antibiotics and other pharmacologically actives substances in sea foods
- Restricted antibiotic use in aquatic animals for export
- Monitoring for antibiotic residues in eggs, honey, milk and poultry for export

Increasing awareness and understanding of AMR

Objectives and goals

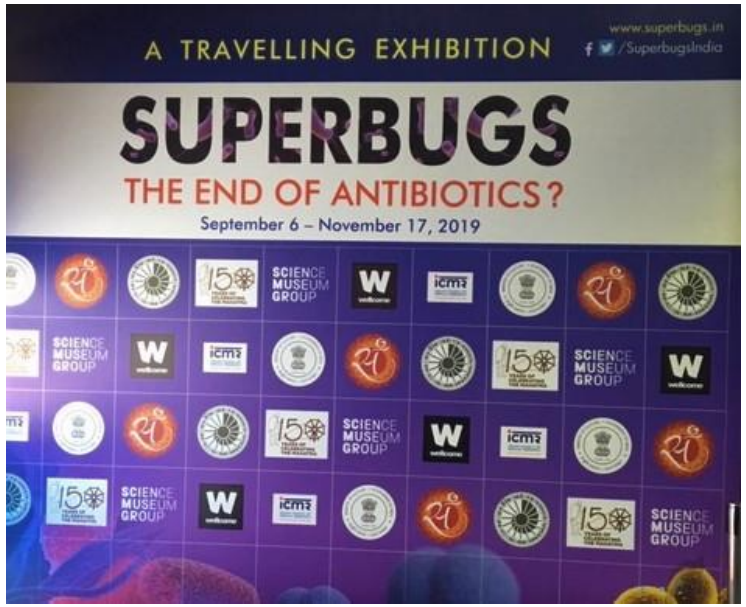
- To create awareness about the problem
- Engage relevant communities and stakeholders
- Right messages
- Highlight the problem, long term impact, provide solutions
- Best and effective communication strategies



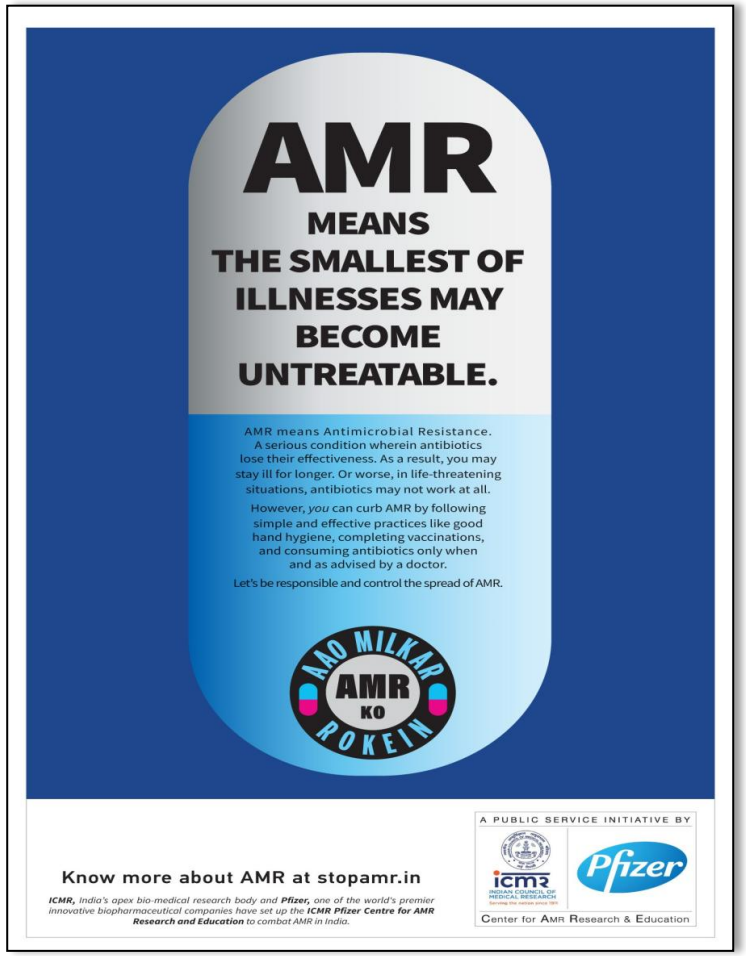
EXHIBITION ON SUPERBUGS

National Council of Science Museums (NCSM),Science Museum Group, London and Wellcome Trust(UK) join hands to create awareness about antibiotic resistance across India

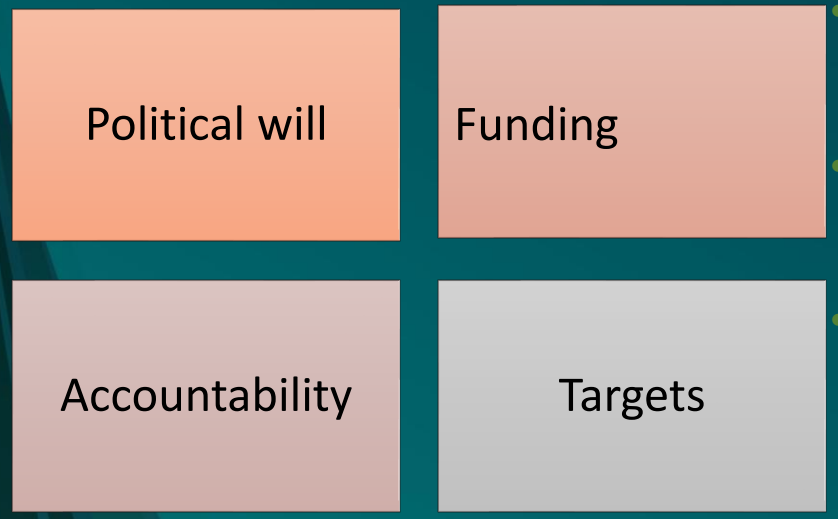
Supported by ICMR



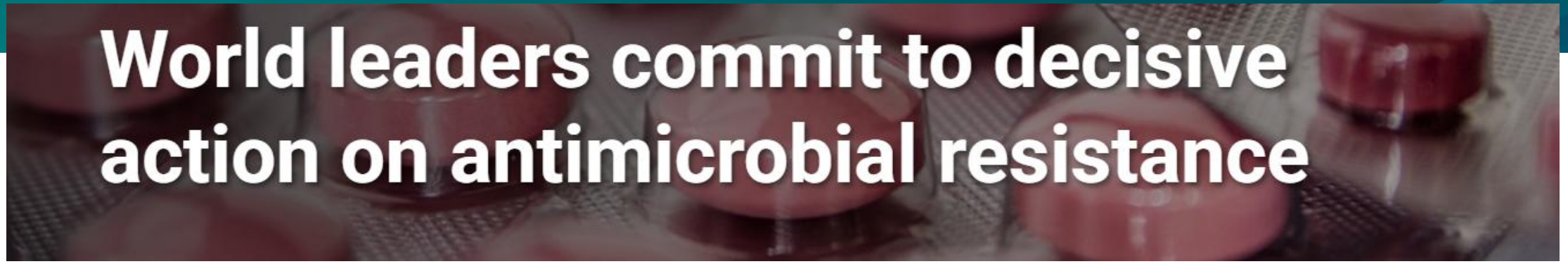
ICMR-PFIZER COLLABORATION ON AMR



What has hampered progress in AMR



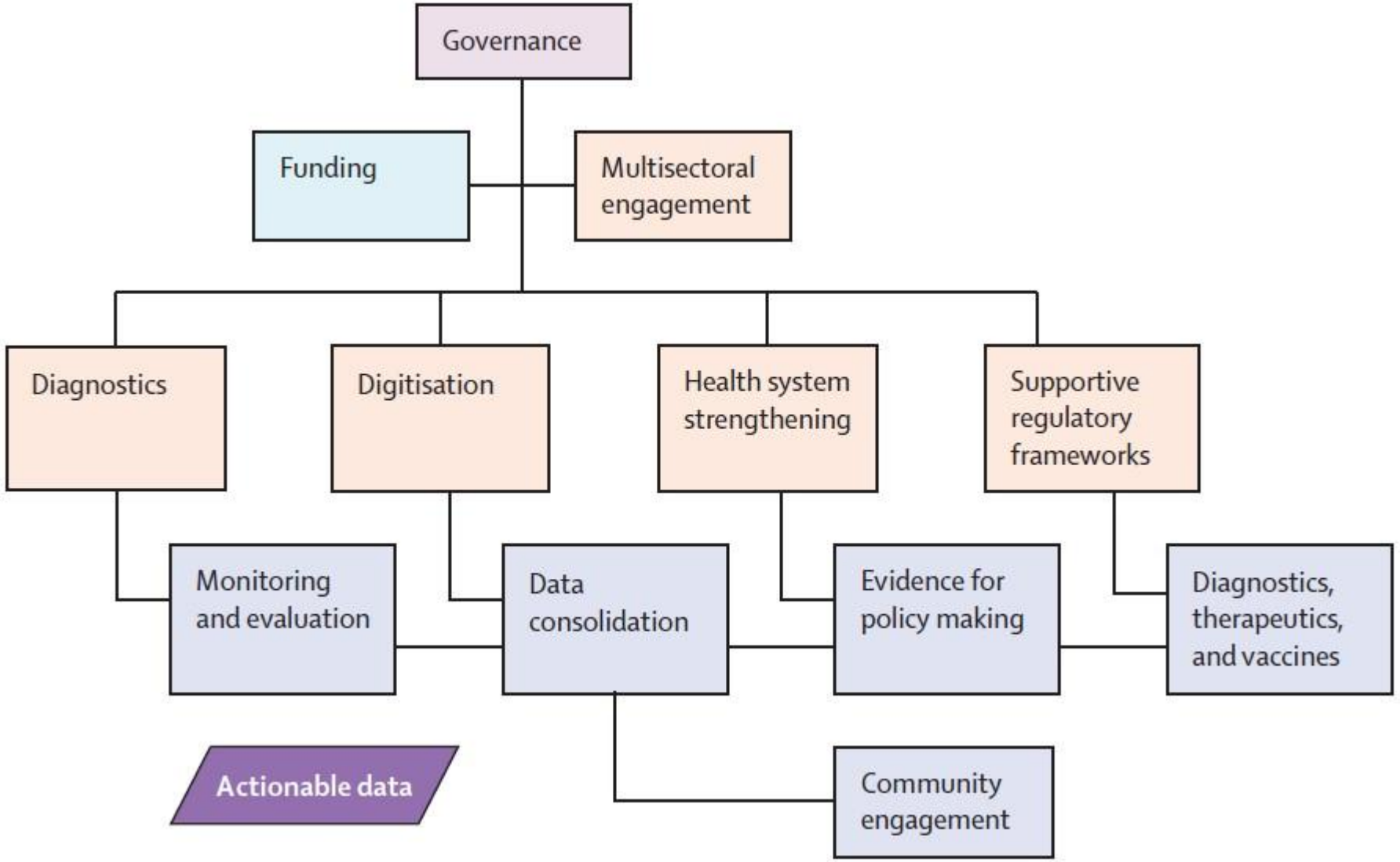
- AMR is a problem that involves the mandate of several sectors and thus government Ministries or departments.
- Sources of the problem are in health, agriculture and livestock, and the environment.
- Obtaining the commitment and coordination among various sectors requires great effort and the commitment of political leaders at the highest level.
- NAP released in 2017, many barriers to implementation of NAP, key among them is lack of prioritization among the long list of possible interventions



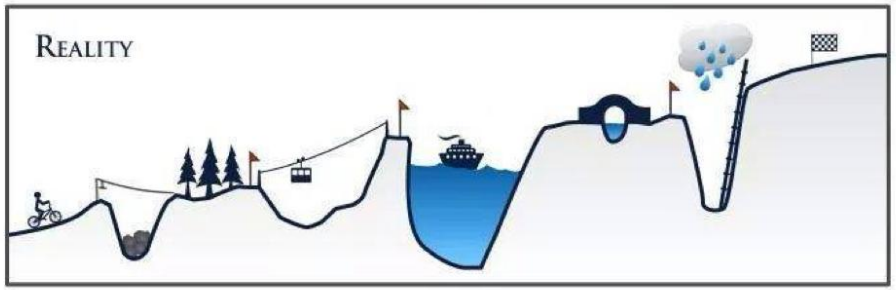
The goals of the UN High-Level Meeting on Antimicrobial Resistance (AMR) include:

- **Reducing deaths**: Reducing the number of deaths from bacterial AMR by 10% by 2030
- **Funding national action plans**: Ensuring that at least 60% of countries have funded national action plans by 2030
- **Boosting R&D**: Increasing research and development for antibiotics, diagnostics, and vaccines, especially in developing countries
- **Innovative financing**: Using innovative financing and public-private partnerships to drive solutions
- **Integrating research**: Incorporating AMR research into national action plans
- **Global solidarity**: Promoting global cooperation and solidarity to achieve sustainable progress
- **Independent science panel**: Establishing an independent global science panel to evaluate evidence on AMR
- **Bold action**: Taking bold and specific action to address AMR

AMR containment needs continued surveillance and functional stewardship frameworks



Walia et al, 2023



WAY AHEAD

- Country level goals and indicators for measuring progress
- Realistic expectations
- Sustaining quality, rigor and funding
- Improvise and revise based on ne knowledge
- Keeping focus, maintaining relevance
- Managing the multidisciplinary teams
- Managing expectations and practical challenges
- Keep going....

Thank you!

TACE ASIA
Technical Assistance for Clinical Engagement

The Fleming Fund
Regional Grants

UKaid
from the British people

MOTT MACDONALD

International Vaccine Institute