World Health Organization SE Asia
The South-East Asia Region Antimicrobial Stewardship 2022, Webinar Series

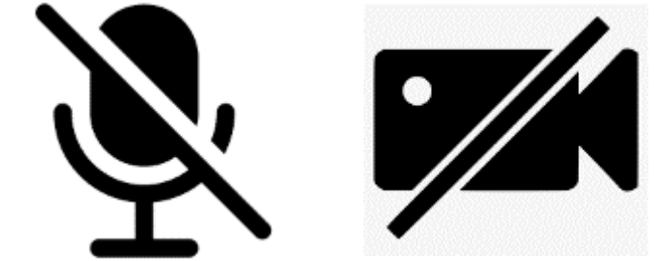
Rational Use of Medicines and Anti-Microbials

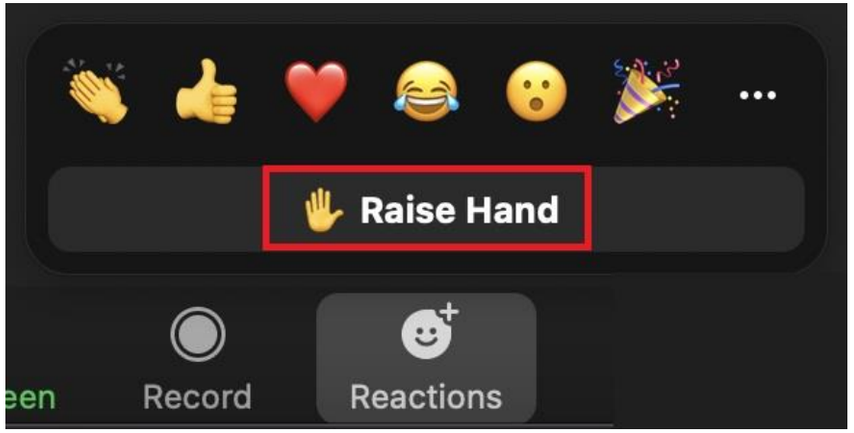
Empower School of Health

‘House keeping’ Announcements

- Kindly mute your mic and turn off video
- Please TYPE questions using the chat box
- You may ask questions in the chat box at any time.
- If you wish to ask a question by voice during the QA sessions, please raise your hand
- When – and only when you are invited to speak – please remember to Unmute and turn on your video

- The slide deck will be shared to participants





Agenda

Topic	Session Time	Elapsed Time
Introduction, Housekeeping	5	5
Agenda, Webinar Objectives, Speakers	5	10
Presentation: Introduction to Rational Use of Medical products Prof. Andy Barraclough	30	40
First Q & A Session	10	50
How to address AMR and RMU Dr. Sangeeta Sharma	30	80
Second Q & A session	10	90

Webinar Objective

- Antimicrobial Stewardship programs are critical in optimizing antimicrobial use for better health outcomes.
- This webinar will discuss the importance, role and operational of Rational Use of Medicine approaches and programs within an overall Antimicrobial Stewardship function.

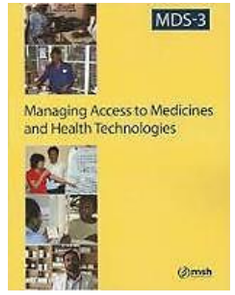
Speaker:

Dr. Sangeeta Sharma

- **Working as Professor, Dept. of Neuropsychopharmacology, Institute of Human Behaviour & Allied Sciences (IHBAS)**
- **President, Delhi Society for Promotion of Rational Use of Drugs (DSPRUD).**
- **Qualification & Certification: *M.D (Pharmacology), QM&AHO, MBA (HCA); The Harvard Medical School Quality Leadership Program (HQUAL); The Balridge Excellence Framework for Health Care Award; Certified External Assessor NQAS***
- **Actively working in the forefront of promoting rational use of medicines esp antimicrobial use, medication safety, quality in health care.**
- **Rich and diversified professional and managerial experience in healthcare.**
- **She has conducted ~300 workshops to build capacity for doctors, nurses and pharmacists.**
- **One of her pioneering work is a book "Standard Treatment Guidelines: a Manual for Medical Therapeutics" which is in its 6th edition. First edition was published in 2002. Several Indian states have adopted/adapted this book.**
- **She is serving on the Ethics Committee of several national and academic institutions.**
- **She is State Nodal Officer for AMR Containment, Delhi State**

Speaker:

Prof. Andy Barraclough
Global Public Health Expert



He is the Professor of Public Health and Director of Training at the Empower School of Health.
Andy is one of the co- authors of the 'Yellow Book', Managing Drug Supplies by MSH and WHO, and the e-Handbook of Health Systems in Action for Managing Medicines.

He has over 30 years of experience of working with major International Funding Institutions, bilateral donors and the private sector in low and middle income countries. The main focus of previous experience includes effective management of pharmaceuticals, vaccines and medical commodities, and especially the implementation of programs for the introduction of new medicines and rapid diagnostics for neglected tropical diseases.

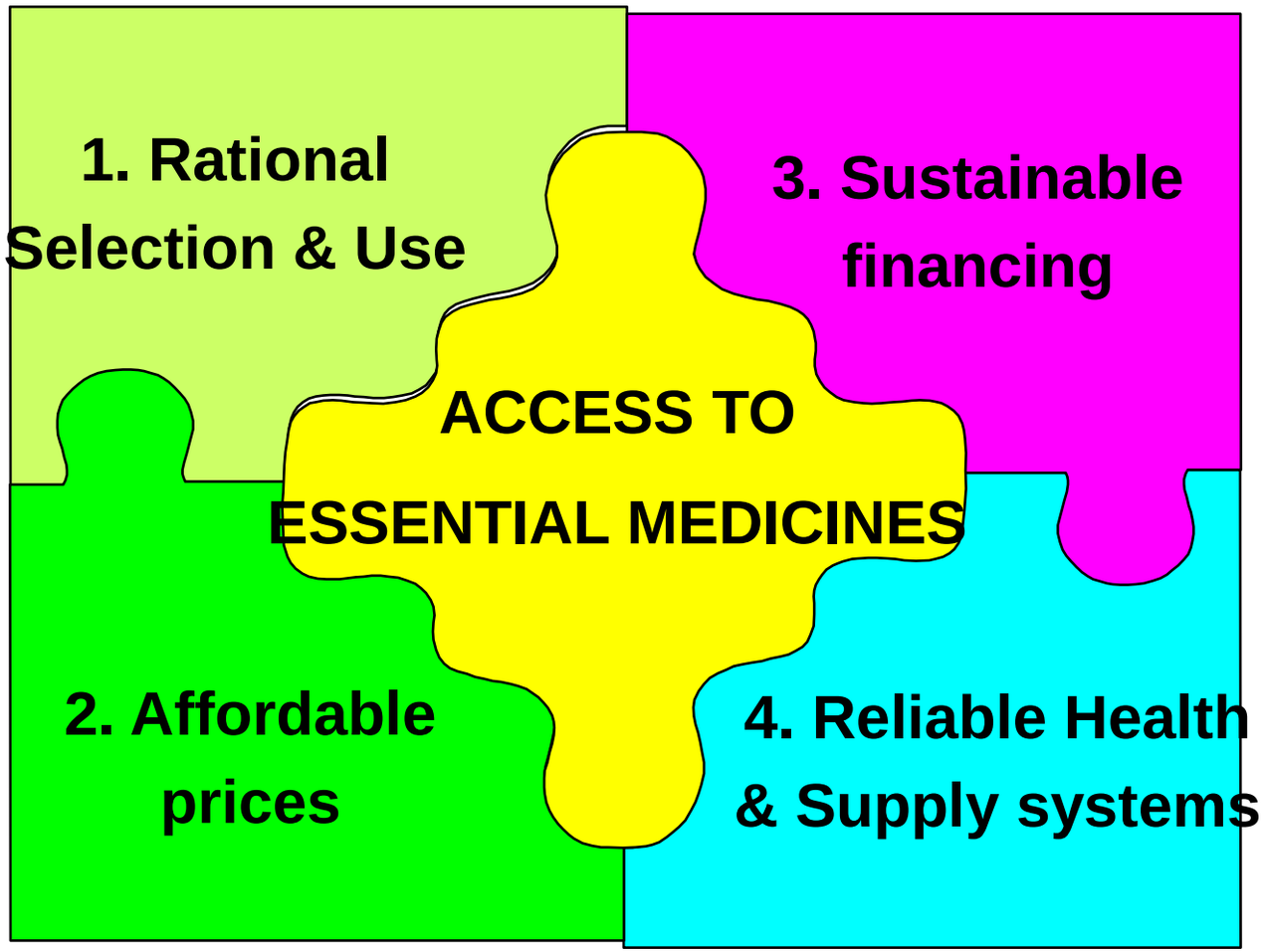
He has presented on Rational Use of Medicines at many conferences, seminars and webinars in the SE Asia region, and has authored the RUM training courses for the Empower School of Health Master's Degree Course in Healthcare Procurement and Supply Chain Management.

Most recently, he has authored the GOARN Supply Chains for Emergency Response Covid-19 Platform, pandemic preparedness training modules and presented at the series of webinars on AMR in the era of Covid-19.

Rational Use of Medicines - Focus on Antimicrobials

Sangeeta Sharma
Professor & Head
IHBAS
&
President, DSPRUD

Practical implications of the access framework

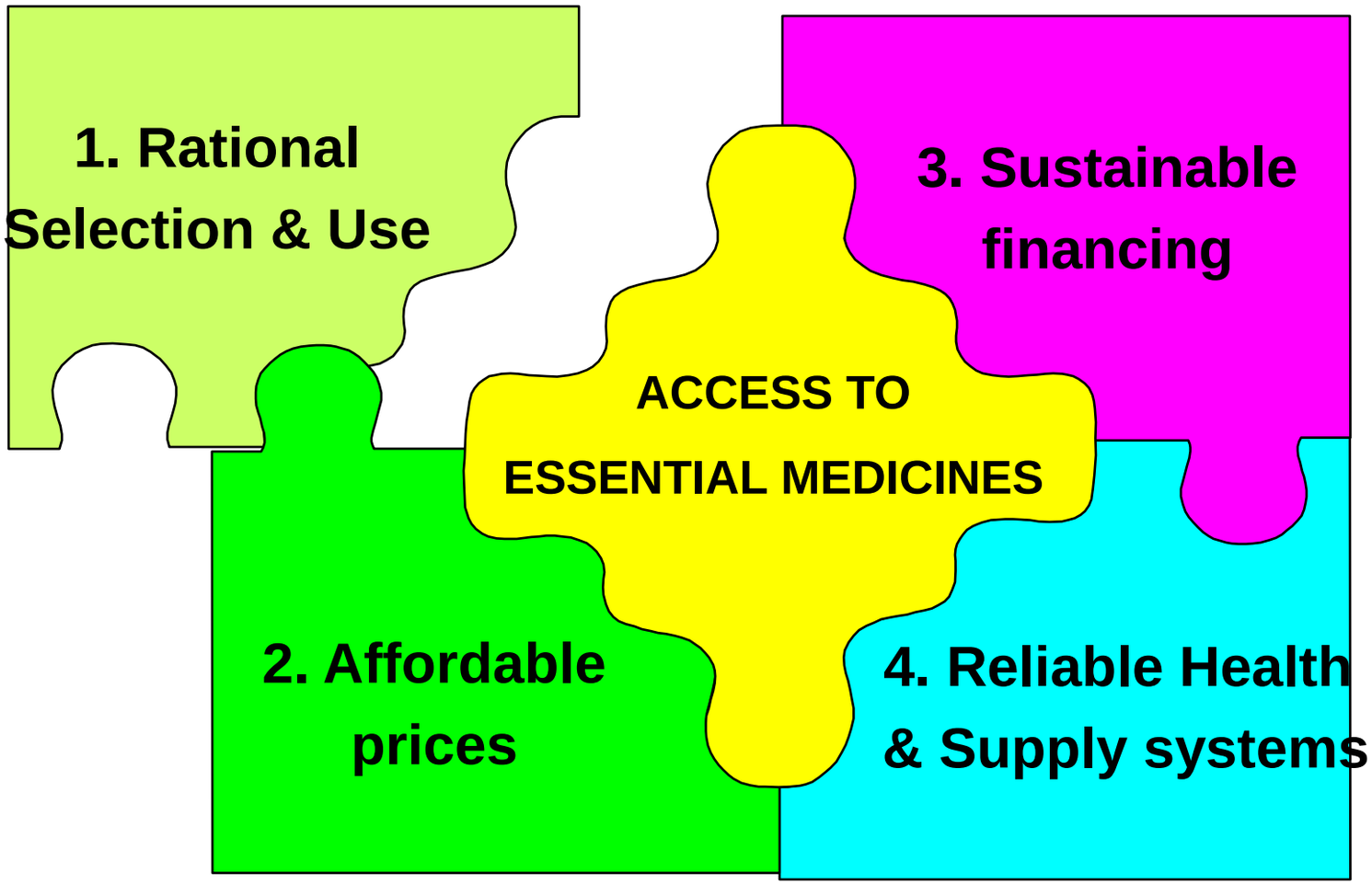


What is the problem?

- People are dying because
  - the drugs are not there.....
  - are poor quality.....
  - are used irrationally.....

- Limited resources only do not explain the shortage of drugs

Practical implications of the access framework

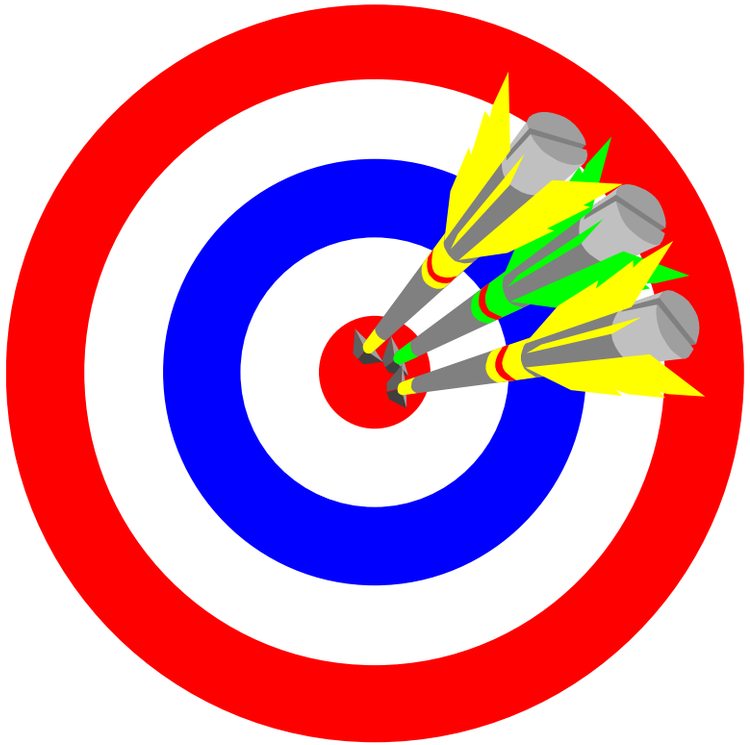


What is rational use of drugs?

The rational use of drugs requires that patients receive medicines appropriate to their clinical needs, in doses that meet their own individual requirements, for an adequate period of time, and at the lowest cost to them and the community (WHO 1985)

Access vs Excess Paradox

Goal of a Healthcare system



Universal and equal access to reasonable health care

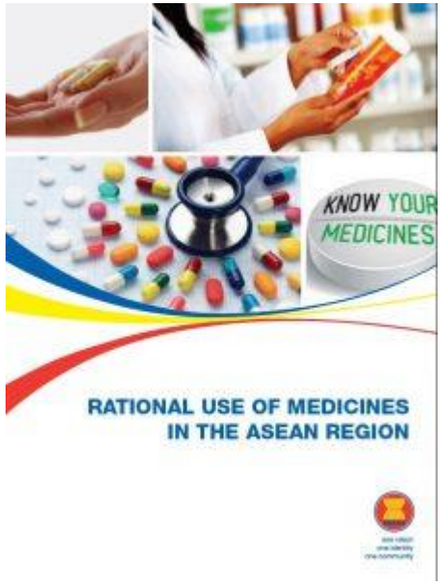
Too many different types Pills available

- **One molecule – several brands available for the same drug- manufactured by different companies.**
- **Thousands of formulations available.**

Public health system unsatisfactory

Table 9. Comparison of RUM practices of public health facilities among ASEAN Member States

Strategy/ Intervention	BRN	KHM	IDN	LAO	MYS	MMR	PHL	SGP	THA	VNM
Average number of medicines prescribed per patient contact in public health facilities (mean)	2	2.5	3.51	2	3	No data	2	No data	No data	No data
% of medicines prescribed in outpatient public health care facilities that are in the national EML (mean)	100%	99%	78%	78%	No data	No data	93.10%	85%	No data	No data
% of patients in outpatient public health care facilities receiving antibiotics (mean)	No data	55%	48%	53%	No data	No data	63.30%	No data	No data	No data



https://asean.org/book/rational-use-of-medicines-in-the-asean-region/

KEY POINT

lack of reliable up-to-date data.
Much is over 10 years old.
Little regular reporting of RUM indicators
Need for Prescription Audits

Change in Distribution of DALYS by Broad Cause Group, developing regions

Though non-communicable diseases is a growing challenge but communicable diseases burden is still not over

	1990	2020
Group I Communicable, maternal, perinatal and nutritional conditions	41.9%	17.6%
Group II Non-communicable diseases	47.4%	68.7%
Group III Injuries	10.7%	13.7%

Growing dependence on private sector

- 50-90% of all drug purchases are private
  - 25% to 75% illness episodes self-medicated
  - 1/2 consumers buy 1-day supply at a time
  - 50% of people worldwide fail to take drugs correctly

Global epidemic of irrational use of medicines

Irrational prescribing = pathological prescribing

- **Extravagance in prescribing (Over prescribing, newer expensive drugs, using multiple drugs)**

Overuse vs. underuse paradox

Underuse (at lesser doses or not providing a medical intervention that could have been helpful to the patient).

Irrational use of drugs = pathological prescribing

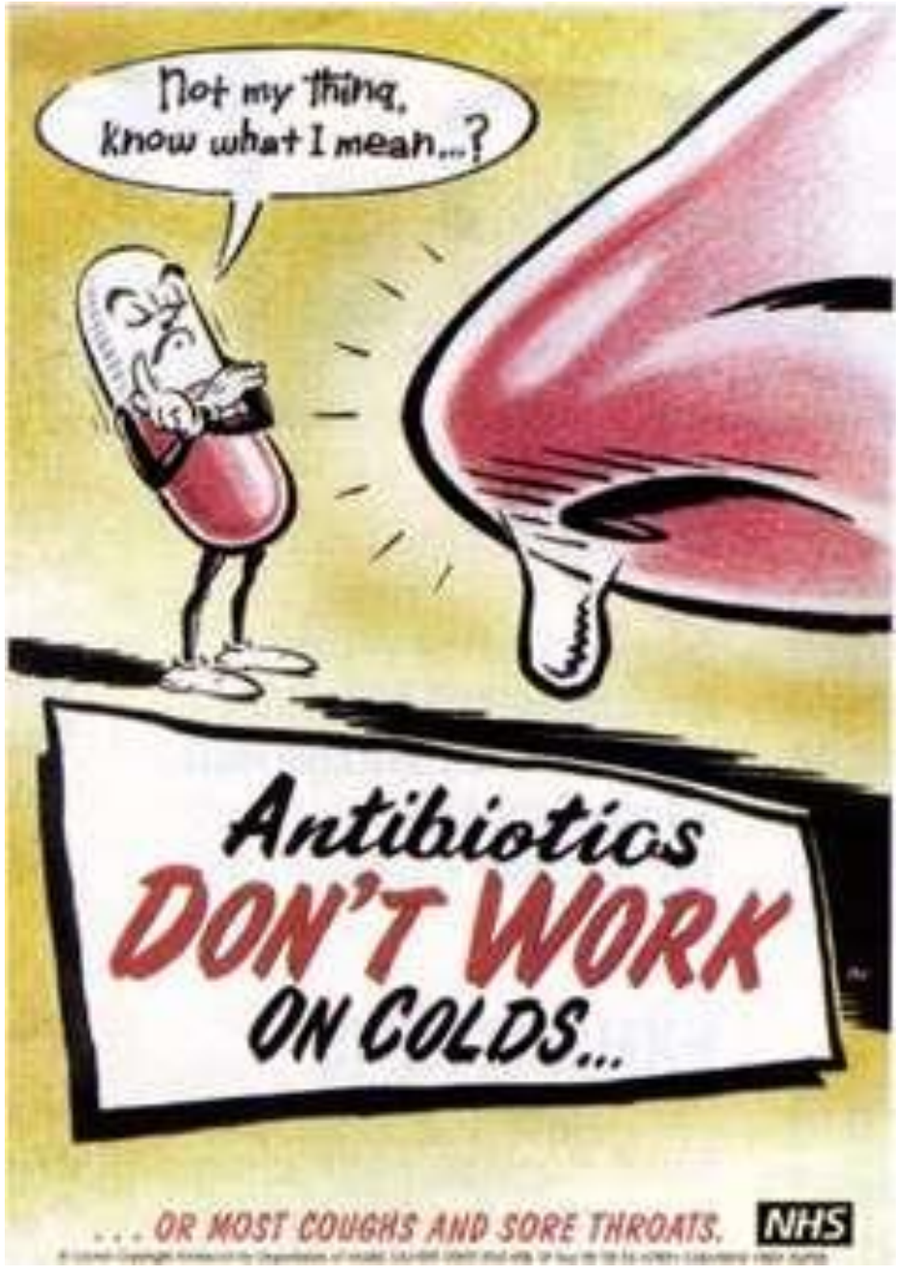
- **Failure of provide available, safe and effective drugs/vaccines**
  - **Polio, measles vaccines**
- **Incorrect administration, dosages or duration**
- **Use of drugs including FDCs of doubtful, unproven efficacy, uncertain safety status**
    - **Use of loperamide for acute diarrhoea**

Global epidemic of irrational use of medicines

Irrational prescribing = pathological prescribing

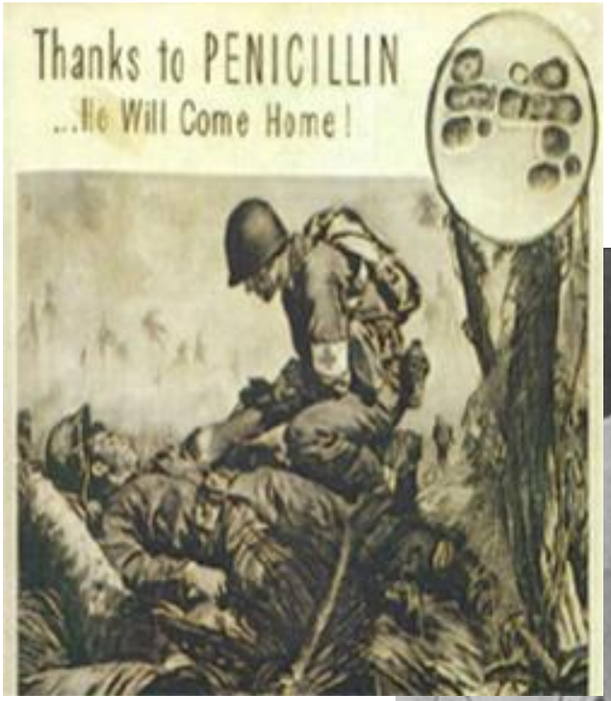
Overuse (using Drugs for conditions where they are ineffective)

- **Misuse of antibiotics**
- **Overuse of injections**



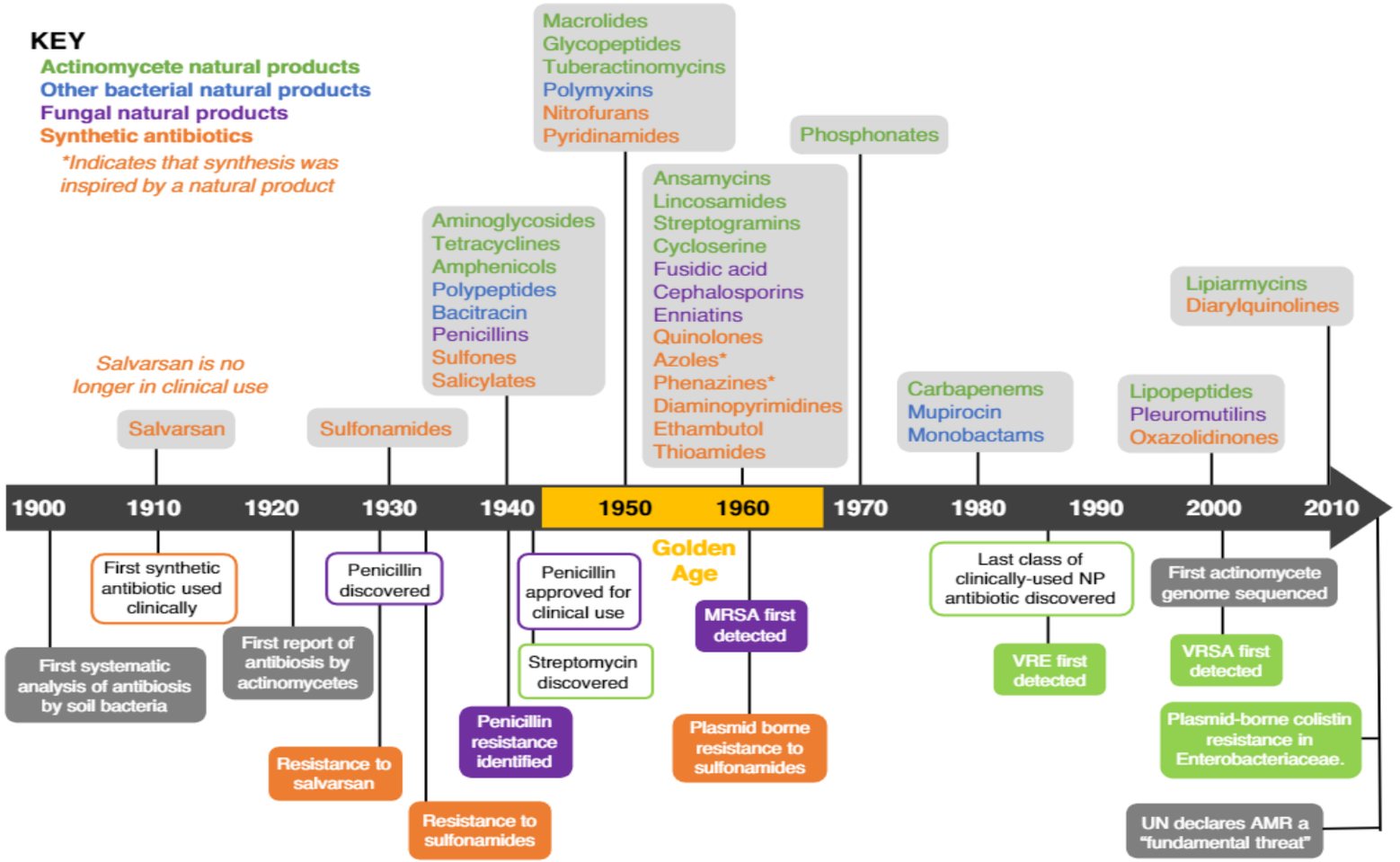
Foundation of the Antibiotic Era – Penicillin in 1940

- **Antibiotics are the most important weapons for the treatment of many infectious diseases caused by bacteria**.



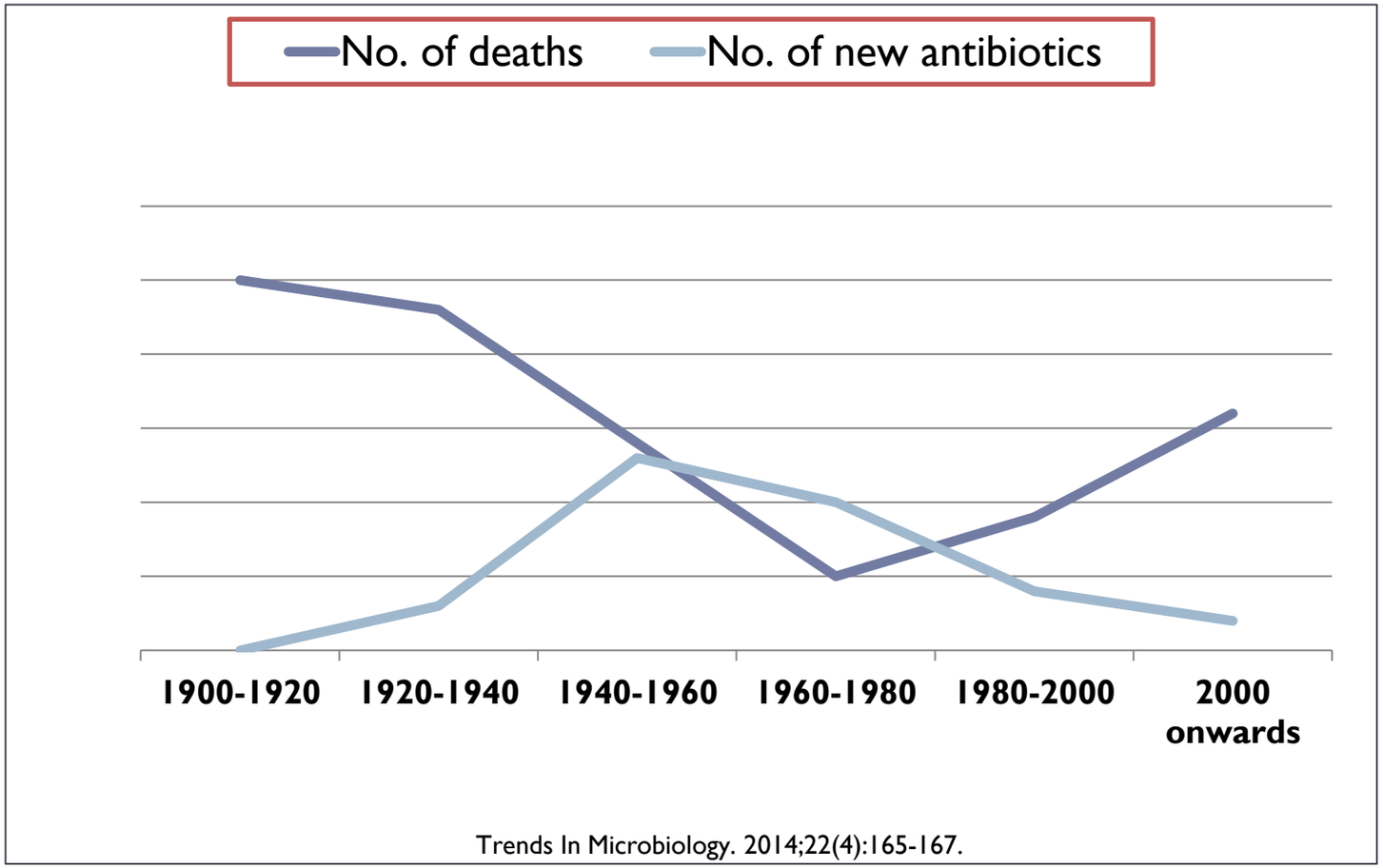
A number of subsequent antimicrobial discoveries quickly followed changed the history of medicine

The Golden Age of Antimicrobials



Current Opinion in Microbiology 2019, 51:72–80

The Rise & Fall of Antibiotics



Trends In Microbiology. 2014;22(4):165-167.

Problem with new antibiotics

Antibiotics R & D has not responded to the urgent need of new antibiotics

Lack of investment in antibiotics R & D

Falling clinical and preclinical antibiotic pipelines

Development process is not economical as antibiotics are costly to produce, low prices with restricted use

Regulatory hurdles

A Failing Market – Between 1960-2000, No Major Classes were Introduced

Factors responsible for inappropriate use

Patient-parent factors

- Consumer demands
- Time conscious society
- Economic rationalism
- Misconceptions about:
  - What antimicrobials do
  - Fever requiring antibiotics
  - Belief in physician healing power
  - Economic concerns (missing work)

Physician-provider factors

- Real or perceived pressure
- Technological advances
- Self-economic concern (patient loss) economic concern (patient loss)
- Litigation concern
- Physician fallibility:
- Inadequate knowledge
- Cognitive dissonance (i.e., knowledge but failure to act on it)

Factors responsible for inappropriate use

Managed care factors

- Cost -saving pressure to substitute therapy for diagnostic tests
- Reduced appointment time/patient less explanation time
- Responsiveness to patient complaint about “inadequate antibiotic use”

Industry factors

- Misleading or erroneous advertising
- Promotion issues

Social factors

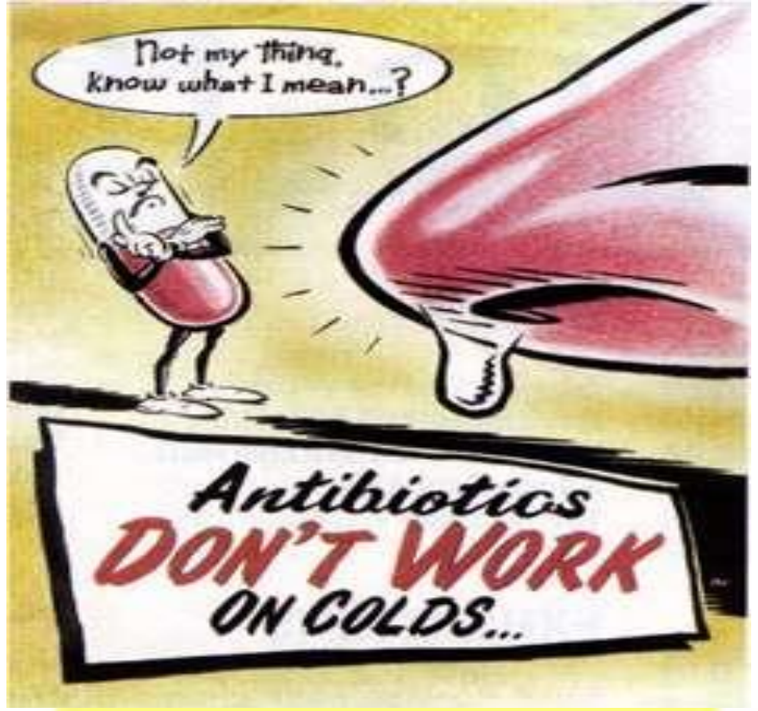
- Poverty
- Unnecessary demand among wealthier popn
- Globalization - travel

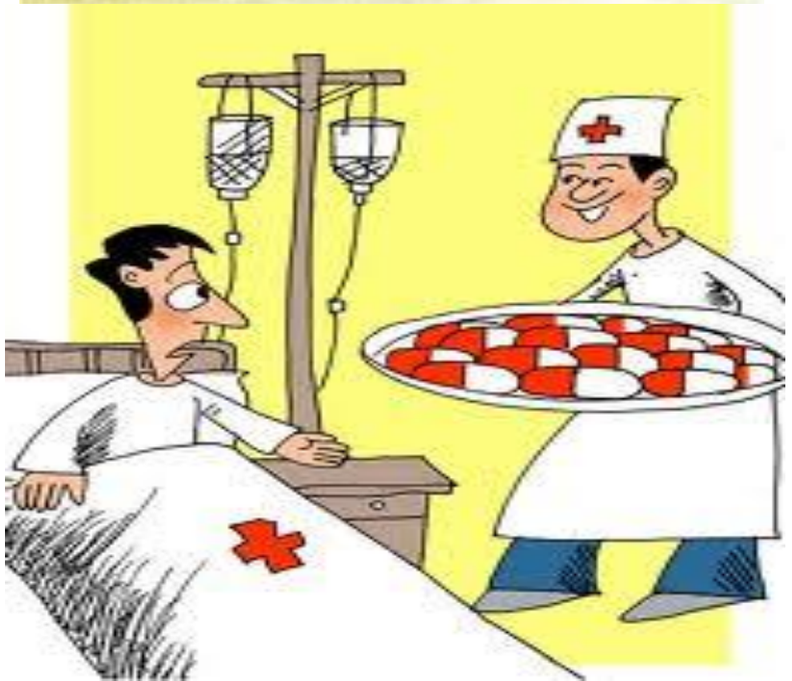
Nine common problems with antibiotic prescribing

Overprescribing	Wrong choice	Overly broad spectrum
Wrong route	Wrong dose	Wrong duration
Irrational combination	Omission/delayed dose	Wrong dose interval

Development & Spread AMR

- **Overuse of antibiotics and injections for non-bacterial/trivial infections**
- **Nearly half of the in-patients receive antibiotics**
- **Use of broad-spectrum antibiotics/Irrational combinations**
- **Failure to prescribe in accordance with clinical guidelines**
- **Inappropriate self-medication.**





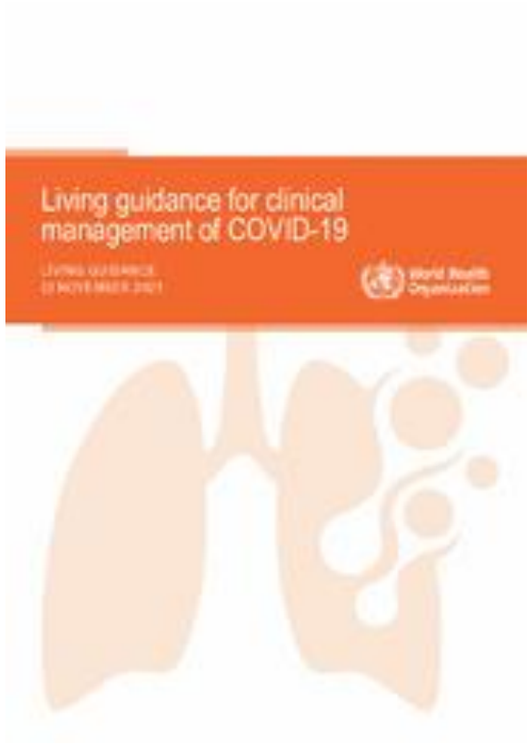
Twelve Core Interventions

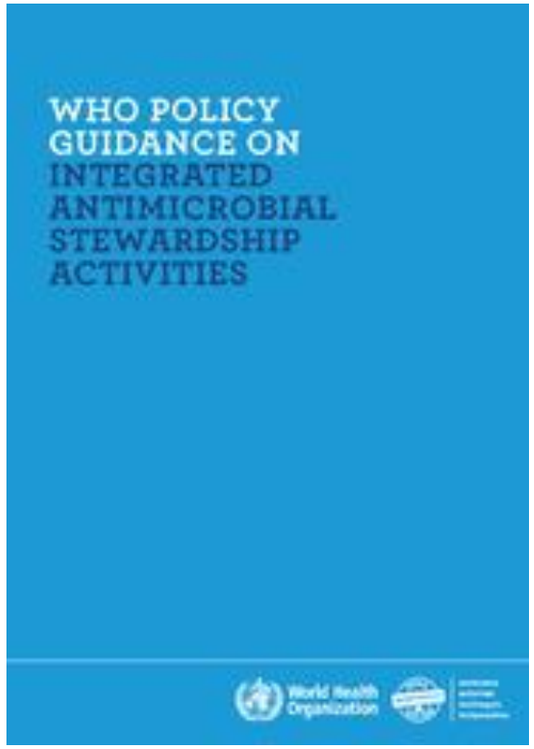
5

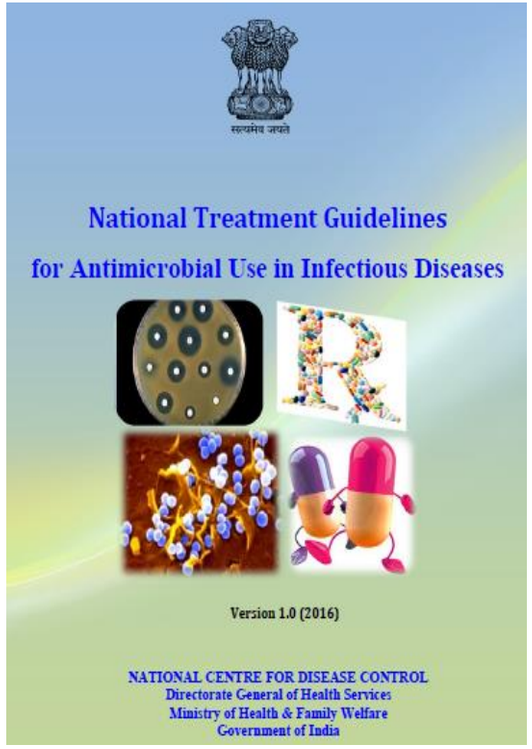
Promoting rational use of medicines: core components

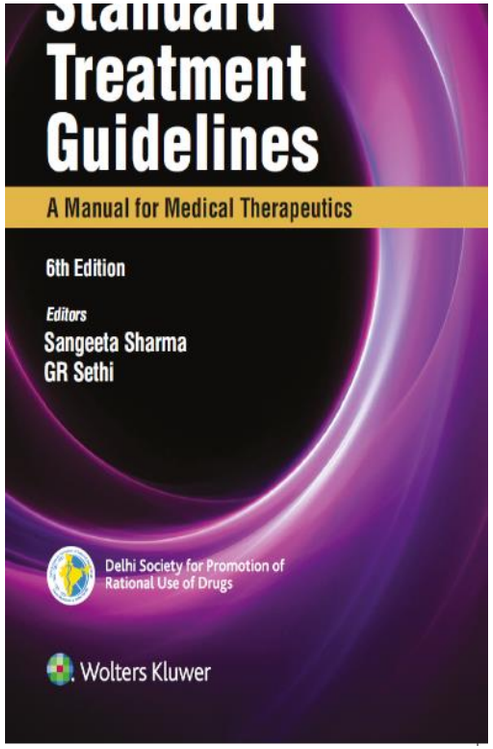
- 1. A mandated multi-disciplinary national body to coordinate medicine use policies
- 2. Clinical guidelines
- 3. Essential medicines list based on treatments of choice
- 4. Drugs and therapeutics committees in districts and hospitals
- 5. Problem-based pharmacotherapy training in undergraduate curricula
- 6. Continuing in-service medical education as a licensure requirement
- 7. Supervision, audit and feedback
- 8. Independent information on medicines
- 9. Public education about medicines
- 10. Avoidance of perverse financial incentives
- 11. Appropriate and enforced regulation
- 12. Sufficient government expenditure to ensure availability of medicines and staff
- https://apps.who.int/iris/bitstream/handle/10665/67438/WHO_EDM_2002.3.pdf

Adopt enabling Treatment Guidelines









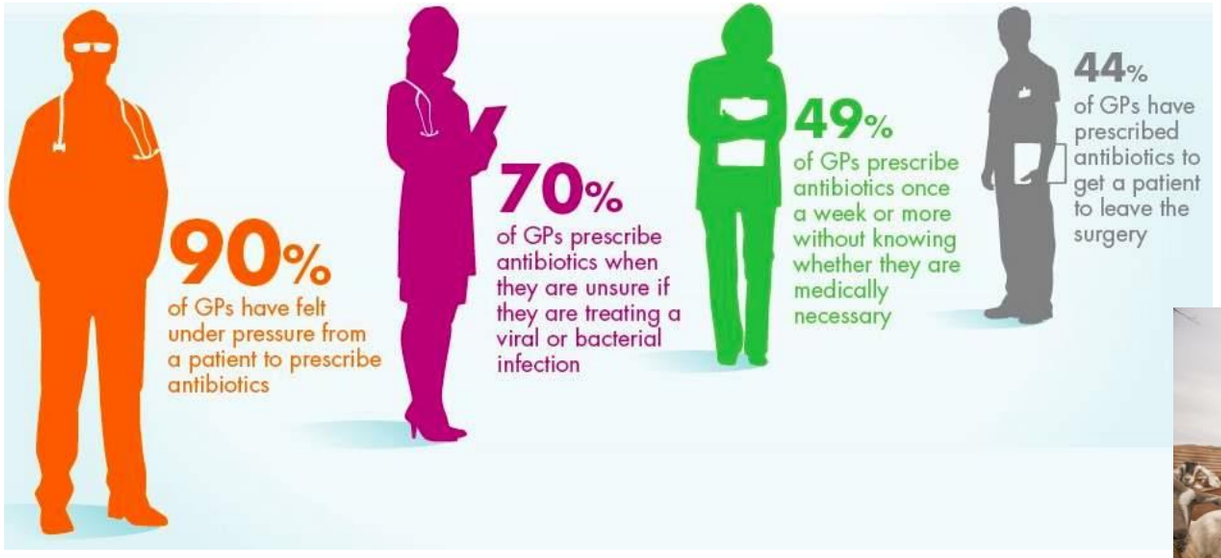
First Q & A session

Settings that favor antimicrobial resistance

Immune compromised patients e.g.

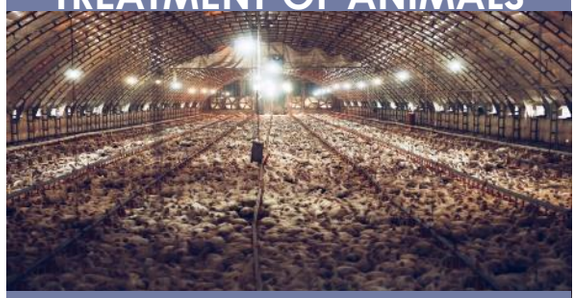
- ICU
- Oncology unit
- Dialysis unit
- Rehabilitation unit
- Transplantation unit
- Burn unit

Human and Non-human use of antibiotics



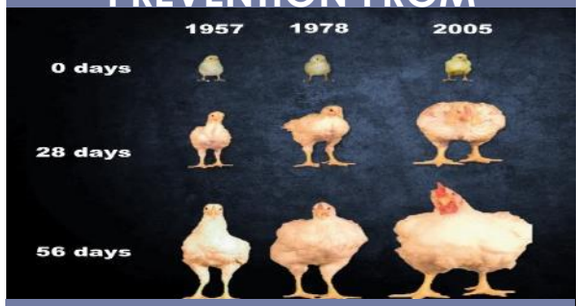
Ensuring veterinary antibiotics remain effective to treat animal diseases is just as important to protect both human and animal health.

TREATMENT OF ANIMALS



CONTROL THE INFECTIONS

PREVENTION FROM



FORCED GROWTH

Antibiotic resistance getting worse globally but fixes could be simple

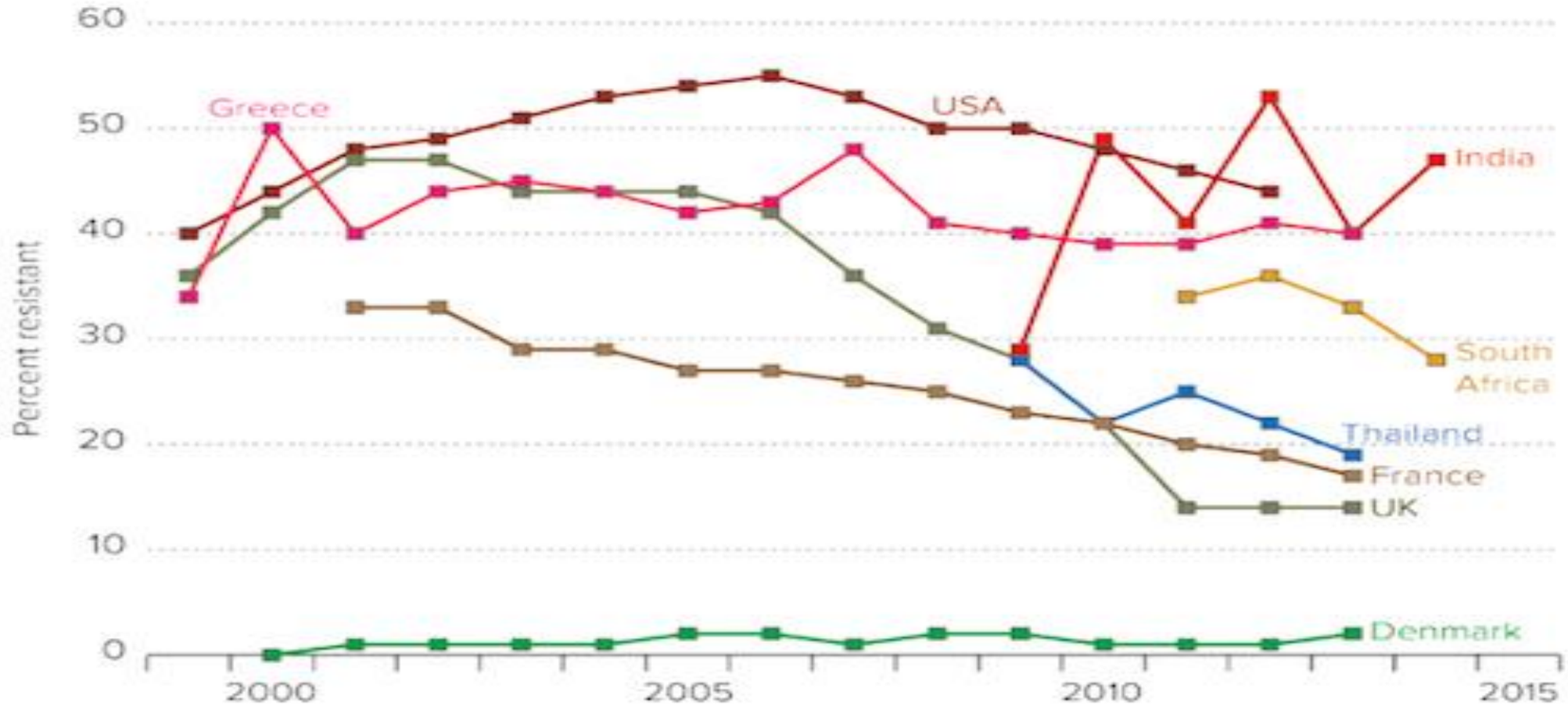
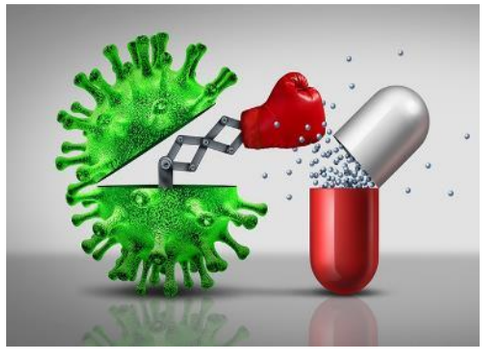


FIGURE ES-1[1]: Percentage of *Staphylococcus aureus* isolates that are methicillin resistant (MRSA) in selected countries, 1999–2014

Development & Spread of AMR

- **Overuse, misuse, and irrational use by doctors**
- **Non-compliance and self medication by patients**
- **Use in animal husbandry, aquaculture and agriculture**
- **Antimicrobial use is a KEY driver of resistance**

COVID-19 Pandemic & Antibiotic Overuse exaggerated the AMR crisis



- Co-existing bacterial infection
- Severe bacterial HAI infections
- Nearly all moderate to severe COVID-19 patients are being treated with broad-spectrum antibiotics, which not only may have limited results but are also associated with higher mortality.
- Use of Watch group antibiotics in mild COVID

No specific therapy

Using broad-spectrum antimicrobials

- HCQ and CQ
- Lopinavir + ritonavir
- Remdesivir

NEW CDC DATA

MORE THAN HALF OF ANTIBIOTIC PRESCRIBING FOR SELECTED EVENTS IN HOSPITALS WAS NOT CONSISTENT WITH RECOMMENDED PRESCRIBING PRACTICES

ANTIBIOTIC PRESCRIBING WAS NOT SUPPORTED IN:

79% OF PATIENTS with community-acquired pneumonia

77% OF PATIENTS with urinary tract infections

47% OF PATIENTS prescribed fluoroquinolone treatment

27% OF PATIENTS prescribed intravenous vancomycin antibiotic

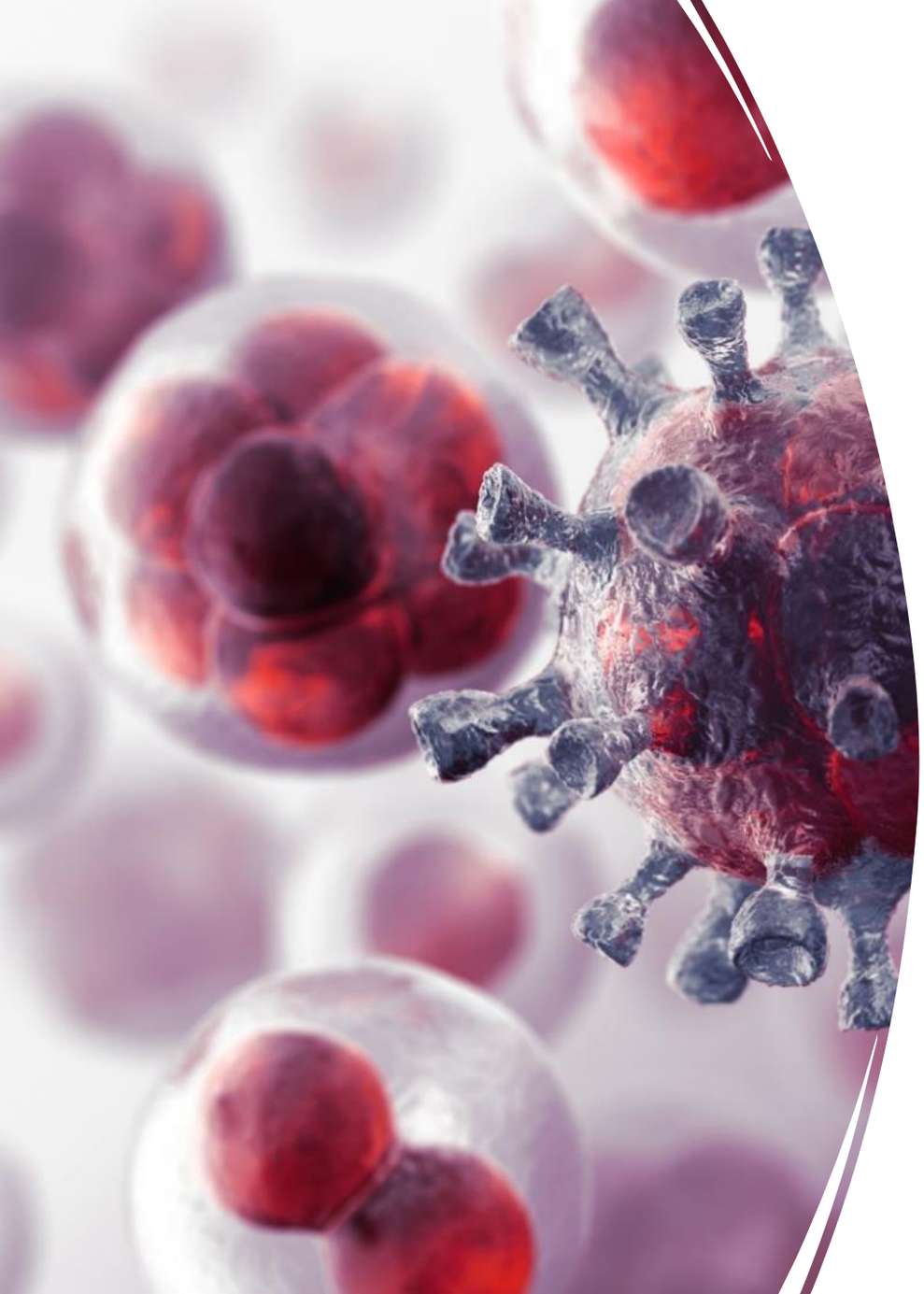
HOSPITAL PRESCRIBERS & PHARMACISTS CAN IMPROVE PRESCRIBING:

- Optimize antibiotic selection
- Re-assess antibiotic treatment when the results of diagnostic testing are available
- Use the shortest effective duration of therapy

AND RESOURCES ON HOW TO IMPROVE HOSPITAL

Multisectoral multidimensional & multifaceted problem

- **Biological**
- **Technical**
- **Economical**
- **Regulation**
- **Education**
- **Behaviour**



AMR – Can it be halted?

- **NO, it can only be contained**
- **The main priority is to prevent infection**
- **Containment is a next best option**

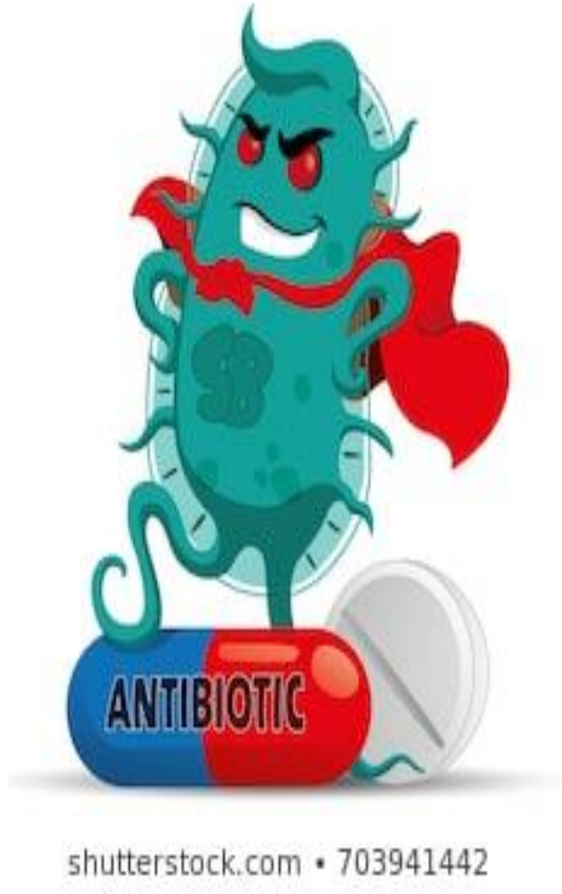
Antibiotics are precious !!

We need to preserve them

timesofindia.indiatimes.com › ... › Civic Issues ▾

Delhi: Last-resort antibiotics fail; 10 die in 22 months in AIIMS ...

Oct 22, 2019 - Between January 2016 and October 2017, AIIMS Trauma Center had 22 patients who didn't even respond to colistin — a **last-resort antibiotic**.



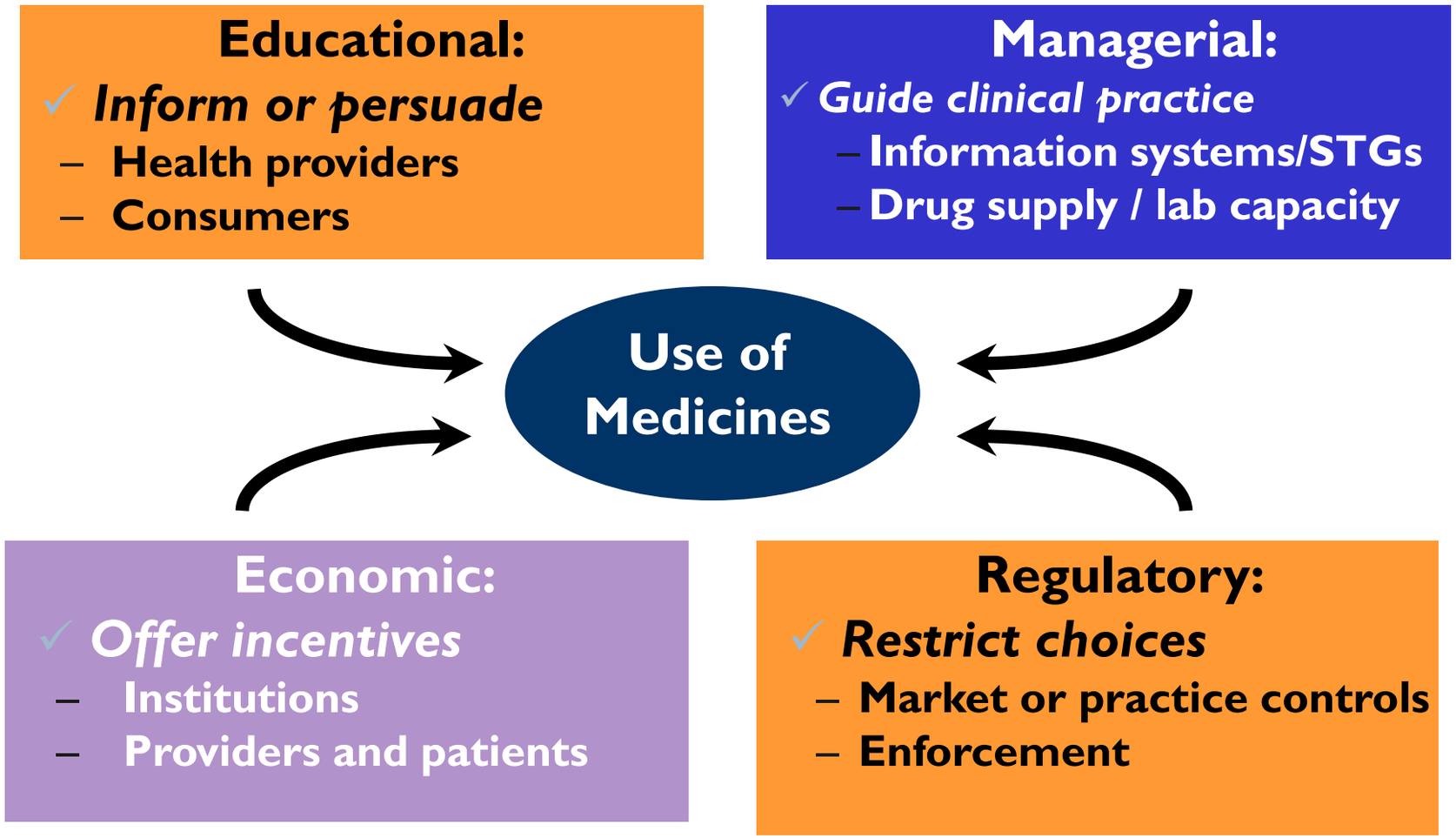
MEDICAL

Superbug gene that resists "last resort" antibiotics detected in US for the first time

BY MICHAEL IRVING
June 14, 2019

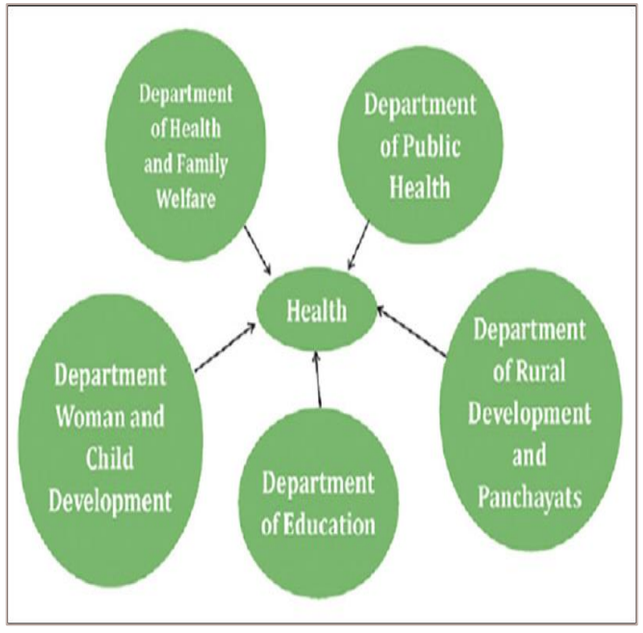
https://newatlas.com/bacteria-antibiotic-resistance-last-resort/60129/

Strategies to improve use of drugs

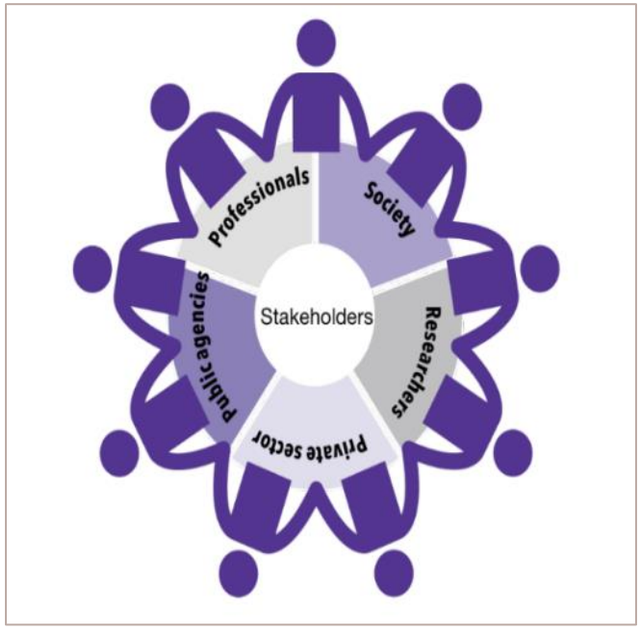


AMR & One Health Actions

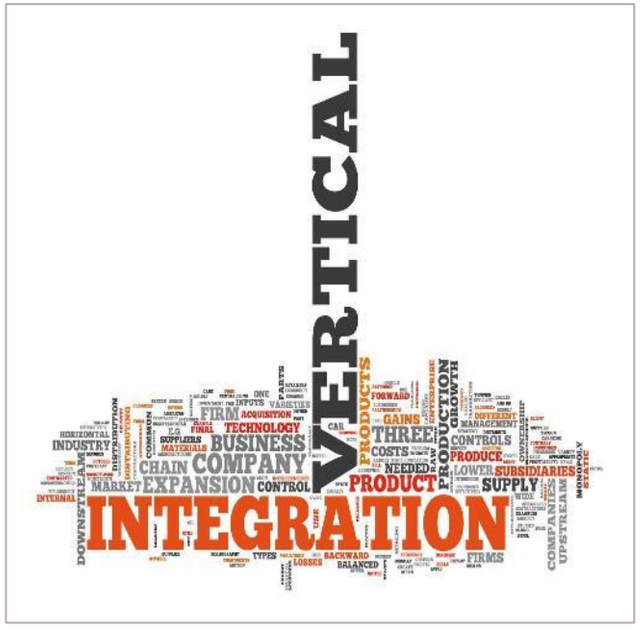
Multisectoral



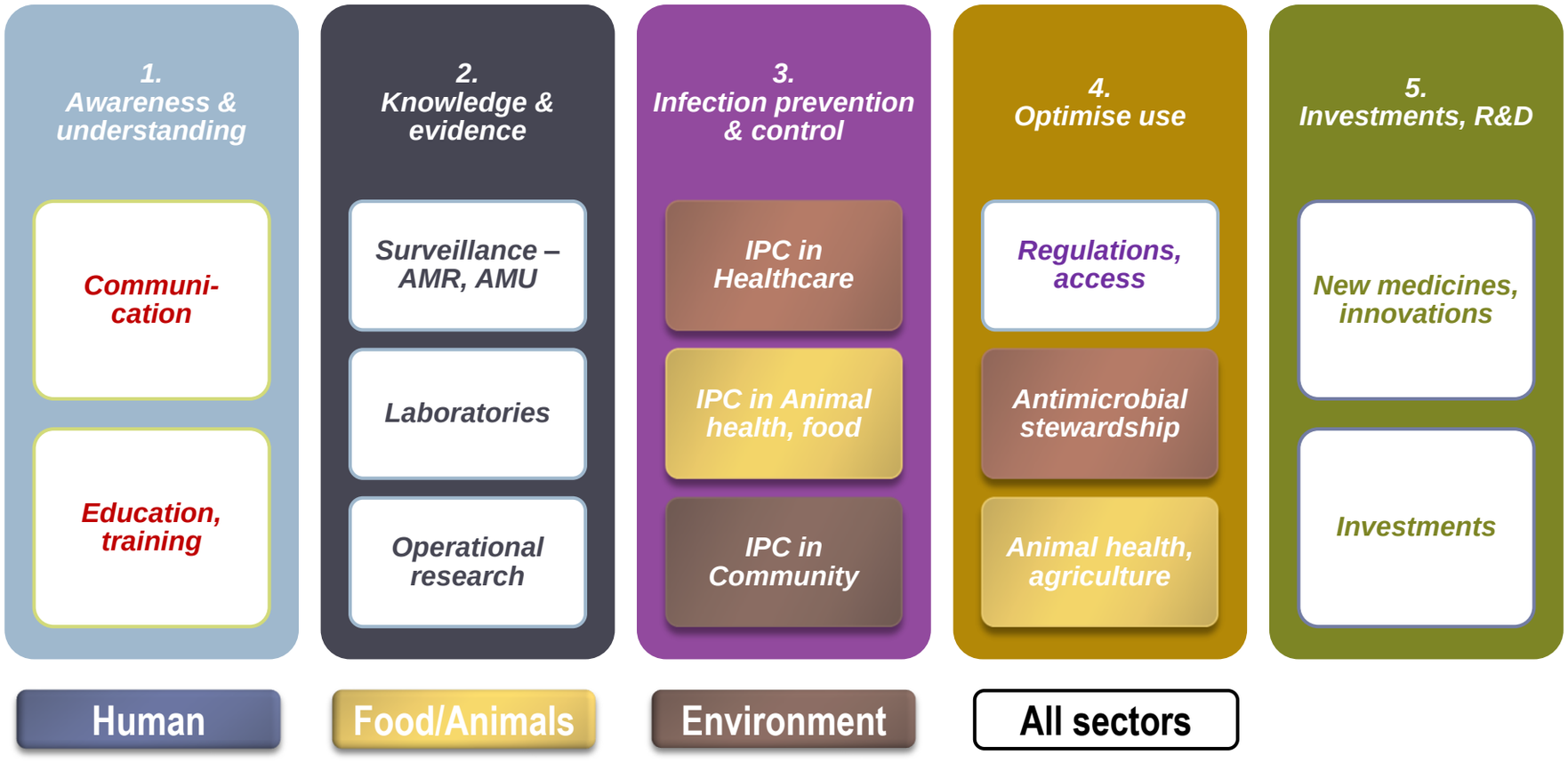
Multistakeholder



Multidisciplinary



Global Action Plan- Antimicrobial Resistance [GAP- AMR]



NAP-AMR strategic priorities

World Health Organization India

1. Awareness & understanding
- Communication & IEC
- Education, Training

2. Knowledge & evidence
- Surveillance of AMR
- Laboratories

3. Infection prevention & control
- Healthcare, HAI
- Animal health
- Community & environment

4. Optimise use
- Regulations, access, AM use
- Antimicrobial stewardship - human
- AMS - animals, agriculture

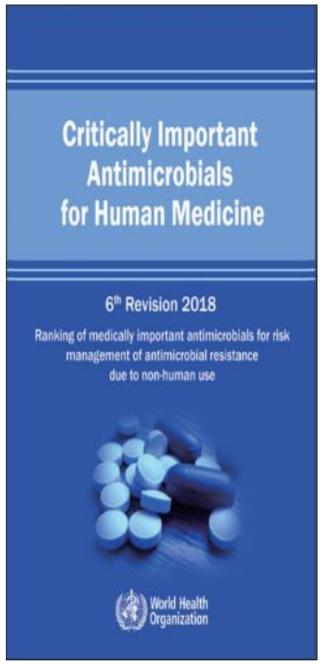
5. Innovations R&D
- New medicines, diagnostics, vaccines
- Innovations
- Financing

6. Leadership
- International collaborations
- National collaborations
- SAPCAR

Human | Food/Animals | Environment | All sectors

Priority 4: Optimise antimicrobial use

- Strengthening regulatory capacity - Central Drugs Standard Control Organization & national drug regulators
- Access to uninterrupted, wide availability of essential medicines of assured quality
- Judicious use of critically important antimicrobials (CIA) - WHO CIA for human medicine



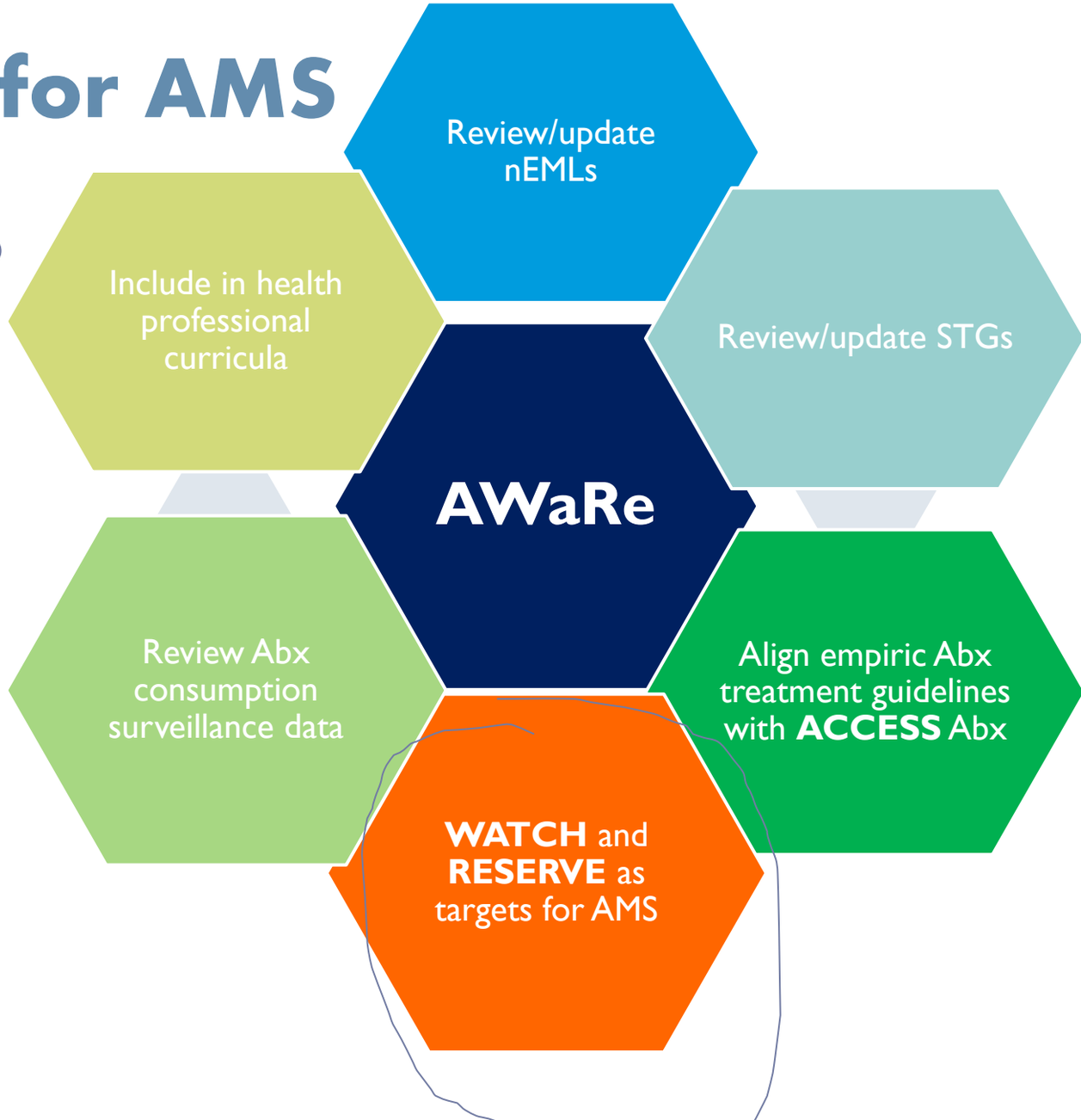
Objectives of antibiotic policy

- **Ensure effective treatment**
- **Rational use of antimicrobials**
- **Recognize trends in AMR within institution**
- **Plan for identifying, admitting, transferring, discharging and readmitting patients**
- **Incorporate detection, prevention, control of antimicrobial resistance into institutional strategic goals**

Adopt AWaRe as target for AMS

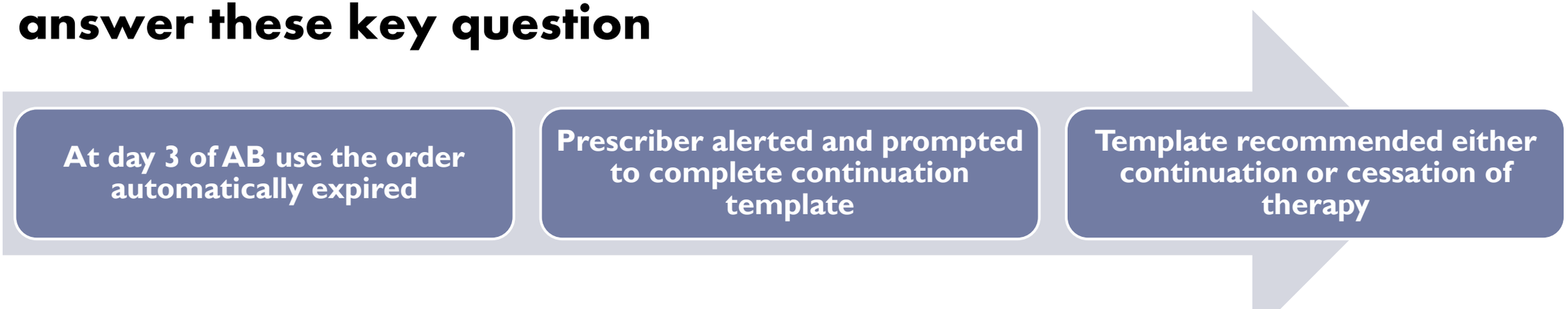
1. **To improve availability & access to antimicrobials**
   - **Access (48) – should be available at all times as treatments for a wide range of common infections**
   - **Watch (110) – includes antibiotics recommended as 1st or 2nd choice treatments for a small number of infections; prioritized targets of AMS & monitoring**
   - **Reserve (22) – includes antibiotics such as colistin and some cephalosporins – last-resort options used only when all other alternatives have failed; Key target for AMS**

Essential Medicines List 21st Edition, Oct 2019



Strategies to control antibiotic use

- **Antimicrobial cycling** - Scheduled rotation of antimicrobials used in hospital or unit (e.g., OPD, ICU) to reduce resistance by changing selective pressure
- **Computer assistance-** patient-specific recommendations at point of care (order entry).
- **Antibiotic "Time outs"-** reassessment of continuing need & choice of antibiotics 48h after initiation of empirical antibiotics use to answer these key question



Strategies to control antibiotic use

- **Develop & Update facility specific antimicrobial treatment guidelines as per AMR surveillance data.**
- **The golden rules of antimicrobial prescribing**

M	**Microbiology guides therapy wherever possible**
I	**Indications should be evidence based**
N	**Narrowest spectrum required**
D	**Dosage appropriate to the site and type of infection**
M	**Minimise duration of therapy**
E	**Ensure monotherapy in most cases**

Way forward

- **Reduce the need for antimicrobials through vaccines, water & sanitation, and infection prevention.**
- **Preserve the power of antibiotics through RUM**
- **Recognize new antibiotics as a critical unmet need & work on alternatives to antibiotics**
- **Growing AMR burden need to be addressed with new antibiotics**
  - **Antimicrobial innovations**
  - **Drug regulatory approvals**

Delhi Society for Promotion of Rational Use of Drugs (DSPRUD) Activities

Examples of RUM Implementation

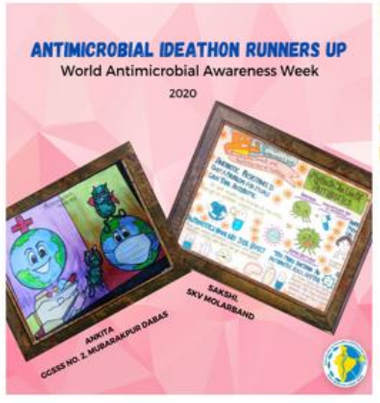
delhi.gov.in

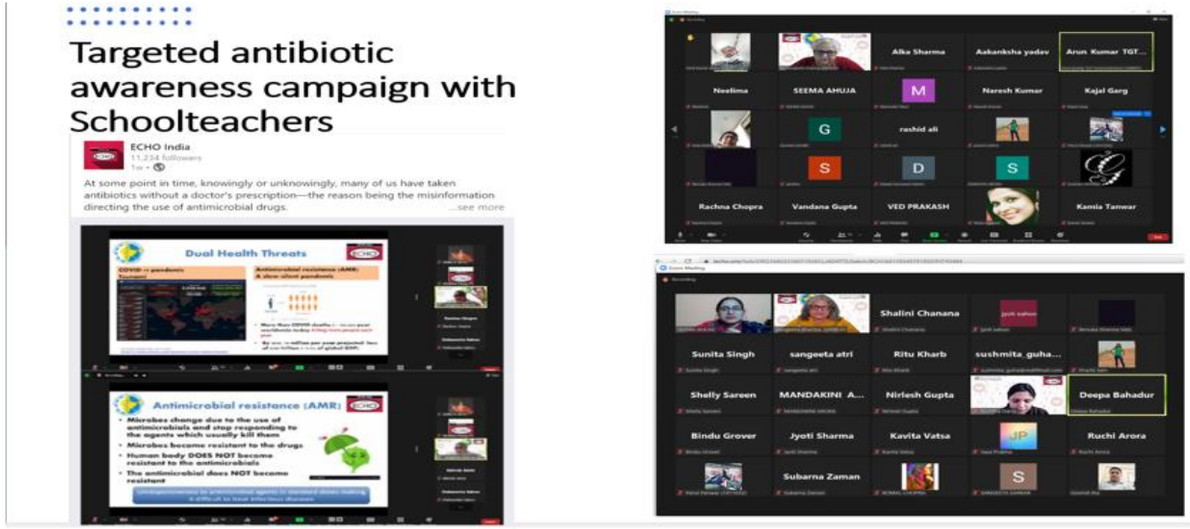
सत्यमेव जयते Govt. of NCT of Delhi

State Action Plan to Combat Antimicrobial Resistance in Delhi (SAP-CARD)

Priority 1: Improve Awareness & Understanding of AMR

Antibiotic Awareness Campaign for School Children, Ideathon 2020





Antimicrobial use surveillance: A core component of RUM

Organizing National Workshops on Antibiotic consumption methodology jointly with USAID, WHO, NCDC & Govt Delhi

National Training of Trainers Workshops

Continuing Professional Development:
The Solution for AMR Men ace

Priority 4: Optimise antimicrobial use

4.
Optimise use

Regulations, access

Antimicrobial stewardship

Animal health, agriculture

Major Thrust areas Capacity Building
> 8000 healthcare professionals trained

Doctors

- **Medication safety**
- **Patient safety & Quality in Healthcare**
- **Clinical audit**
- **Prescription audit**
- **Antibiotic policy & Antimicrobial stewardship**

Nurses

- **Infection prevention & control**
- **Safe nursing practices & Medication safety**
- **Critical care nursing**

Pharmacists

- **Good dispensing practices**
- **Good store management practices**
- **Dispensing errors**
- **Antibiotic rational use**

Pioneering work with 20 years of experience in developing and updating Standard Treatment Guidelines

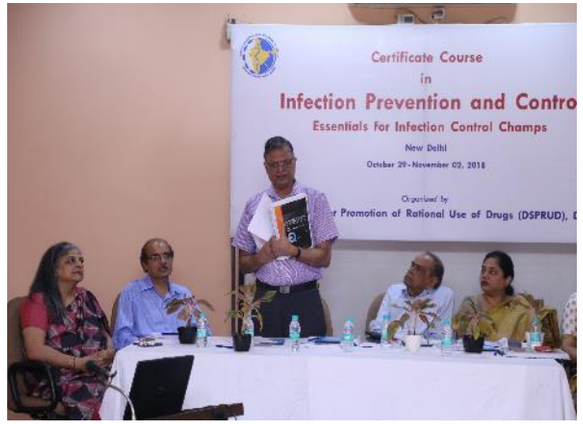
Nurse's role in antimicrobial stewardship in monitoring RUM

Organizing training programmes on

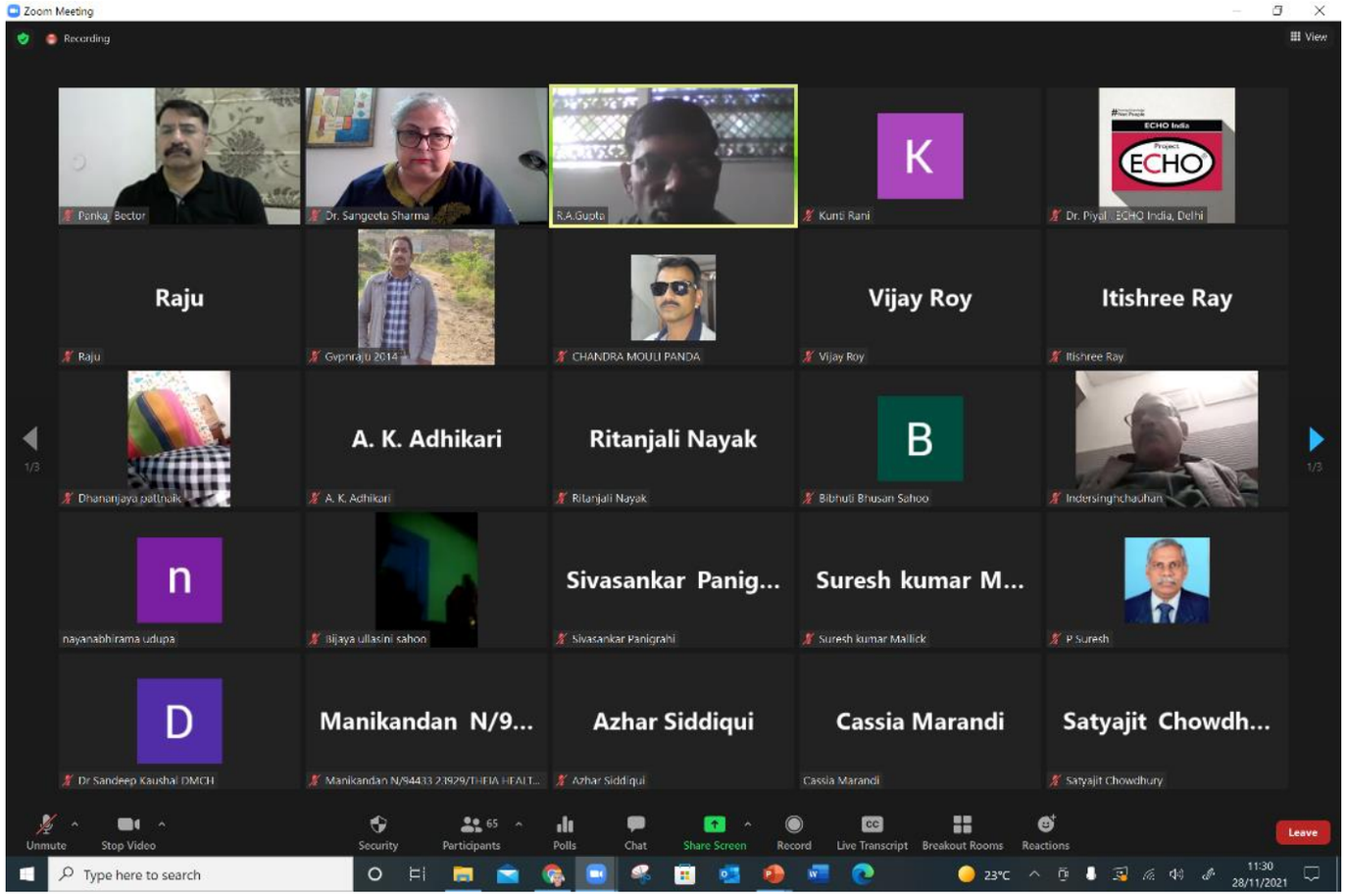
Infection control

Safe nursing practices & Medication safety

Critical care nursing



The Essential Role of Pharmacists in RUM and Combating AMR & Antimicrobial Stewardship activities



Second Q & A session