AMR STATUS REPORT IN MP
PATHS COVERED MOVING FORWARD

Dr. Pankaj Shukla
State Nodal officer Quality Assurance
NHM Madhya Pradesh
PRESENTATION OUTLINE

Achievements so far will be covered in

A) Policy
   1. Antibiotic policy of MP for Health care providers.
   2. State action plan on AMR

B) SENSETIZATION ON AMR
   1. Training teaching of all HCF doctors.

C) Public awareness
   1. Wide media coverage.
   2. Development of mobile app for rational use of antibiotic.
Antimicrobial resistance is the broader term for resistance in different types of microorganisms and encompasses resistance to antibacterial, antiviral, antiparasitic and antifungal drugs.

Antimicrobial resistance occurs when microorganisms such as bacteria, viruses, fungi and parasites change in ways that render the medications used to cure the infections they cause ineffective. When the microorganisms become resistant to most antimicrobials they are often referred to as “superbugs”.

This is a major concern because a resistant infection may kill, can spread to others, and imposes huge costs to individuals and society.
ANTIMICROBIAL RESISTANCE: The role of animal feed antibiotic additive.

- 48% of all antibiotics by weight is added to animal feeds to promote growth. Results in low, sub therapeutic levels which are thought to promote resistance.
- Farm families who own chickens feed tetracycline have an increased incidence of tetracycline resistant fecal flora.
Chemists real threat
Soaring sales of antibiotics at Indian pharmacies are compounding drug-resistance
Scarcity of New Antibiotics

Drying up
Antibiotics approved by US Food and Drug Administration

Source: Infectious Diseases Society of America
*To March

1983-87
1988-92
1993-97
1998-2002
2003-07
2008-11*
Carbapenems a real threat
Source: Nature (International Journal of Science)

**ANTIBIOTICS FOR ALL**

Carbapenem antibiotics are increasingly available without prescription in India, compared with Western nations. This is driving the emergence of microbial resistance to the drugs in the country.

<table>
<thead>
<tr>
<th>Year</th>
<th>United States</th>
<th>India</th>
</tr>
</thead>
<tbody>
<tr>
<td>2005</td>
<td>0.5</td>
<td>0.3</td>
</tr>
<tr>
<td>2006</td>
<td>0.6</td>
<td>0.4</td>
</tr>
<tr>
<td>2007</td>
<td>0.7</td>
<td>0.5</td>
</tr>
<tr>
<td>2008</td>
<td>1.0</td>
<td>1.1</td>
</tr>
<tr>
<td>2009</td>
<td>1.2</td>
<td>1.5</td>
</tr>
<tr>
<td>2010</td>
<td>1.5</td>
<td>2.0</td>
</tr>
</tbody>
</table>
A) STATE ACTION PLAN ON AMR AND ANTIMICROBIAL STEWARDSHIP PROGRAMME

Antibiotic Policy
“We are committed to provide high standard preventive, promotive, curative & rehabilitative Healthcare services to the people in the state”

Antimicrobial Resistance and its Containment in M.P.


Development of mobile app - On Rational Use Of Antibiotic Uses.
<table>
<thead>
<tr>
<th>Tasks</th>
<th>Output</th>
<th>Timeline</th>
</tr>
</thead>
<tbody>
<tr>
<td>State Action Plan for Containment of AMR</td>
<td>SAPCAR developed and approved</td>
<td>February 2019</td>
</tr>
<tr>
<td>AMR surveillance network (health)</td>
<td>15 microbiology (health) labs</td>
<td>May 2019</td>
</tr>
<tr>
<td>AMR surveillance network (food &amp; animals)</td>
<td>15 micro. labs in veterinary/fisheries</td>
<td>June 2019</td>
</tr>
<tr>
<td>AMR surveillance network (environment)</td>
<td>5-10 labs (environment)</td>
<td>June 2019</td>
</tr>
<tr>
<td>Surveillance of AM use (health)</td>
<td>State level and 10-15 (health) facilities</td>
<td>June-Aug 2019</td>
</tr>
<tr>
<td>Surveillance of AM residues (food &amp; animals)</td>
<td>10-15 labs</td>
<td>June-Aug 2019</td>
</tr>
<tr>
<td>Surveillance of AM residues (environment)</td>
<td>5-10 labs</td>
<td>June 2019</td>
</tr>
<tr>
<td>IPC strengthened</td>
<td>At least 100 facilities</td>
<td>June 2019</td>
</tr>
<tr>
<td>Raising awareness</td>
<td>IEC resources</td>
<td>June-Sep 2019</td>
</tr>
</tbody>
</table>
AMR STATE ACTION PLAN

- Collaborated with NCDC and WHO
- Stakeholders meeting on 13th Nov 2017
  - Health care provider,
  - Veterinary and animal husbandry
  - Fishery
  - Poultry
  - Pollution and environment
- Draft copy is ready and in circulation for the state action plan since April 2018
- Reviewed on 14th Nov 18
- Planned for finalization on 25th Jan 2019
At AIIMS Bhopal all stake holders, Private doctors, State Nursing Dept, Pharmacist Assoct., Drug controller, Veterinary & Agriculture representatives were present.

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**PR CELL**

Press Release

Inappropriate Antibiotic use is a major problem. This leads to antibiotic resistance. As a result, the available antibiotics do not work properly.

Each November, World Antibiotic Awareness Week (WAAW) is observed to encourage best practices among the general public, health workers and policy makers to avoid further emergence and spread of antibiotic resistance. This year AIIMS, Bhopal is observing WAAW from 12th -18th Nov 2018.

AIIMS Bhopal in collaboration with ICMR New Delhi, NHM and Dept. of Health, Govt. of Madhya Pradesh is organizing various events from 12th Nov. Doctors, nurses, students and patients are made aware about the misuse of antibiotics. Lecture series is being organized with joint effort of Dept. of General Medicine, Dept. of Microbiology and Resource Center of Tropical and Infectious Diseases (RCTID) of the Institute.

On this occasion, Prof. Sarman Singh, Director, AIIMS, Bhopal said that AIIMS, Bhopal in association with NHM and Dept. of Health, Madhya Pradesh is dedicated to continue the work to train the doctors of District Hospitals of Madhya Pradesh. Apart from this, the Faculty Members of AIIMS Bhopal will also train the doctors selected by NHM, Madhya Pradesh. On this occasion, Dr. Pankaj Shukla, Joint Director, Quality Assurance, NHM, Bhopal said that the trainings will be done at different places of Madhya Pradesh like Jabalpur, Indore, Gwalior and Bhopal. ICMR has already funded for the training of these doctors. These trained doctors in turn will train the doctors, who work in PHCs and CHCs of the Districts.
We did not have sufficient number of isolates to make valid conclusions regarding the antibiogram of *post-operative wound infections*. However, among the antibiotics commonly used for surgical prophylaxis we observed the following susceptibility rates:

<table>
<thead>
<tr>
<th>Antibiotic</th>
<th>Overall Susceptibility</th>
<th>Susceptibility for Gram +ve bacteria</th>
<th>Susceptibility for Gram –ve bacteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cefazolin</td>
<td>14%</td>
<td>Data not available. But 63% of these bacteria were Methicillin-resistant, in which Cefazolin and Amoxycillin-Clavulanic Acid are ineffective</td>
<td>14%</td>
</tr>
<tr>
<td>Amoxycillin-Clavulanic Acid</td>
<td>13%</td>
<td></td>
<td>13%</td>
</tr>
<tr>
<td>3rd Generation Cephalosporins</td>
<td>27% - 44%</td>
<td></td>
<td>27% - 44%</td>
</tr>
<tr>
<td>Amikacin</td>
<td>79%</td>
<td>86%</td>
<td>77%</td>
</tr>
</tbody>
</table>
Almost all antibiotics, for which data was available for both 2015 & 2016, demonstrated a dramatic decline in the susceptibility profile of respiratory ICU isolates in the year 2016.
ACTIVITIES PLANNED BY DEPARTMENT OF VETERINARY, GOVT OF MP TO CONTROL AMR

1) VETERINARY HOSP  1064
2) VETERINARY DISP  1585
3) POULTRY FARMS  10
Antimicrobial are used in Animal Feed as Growth promoter.

These antibiotics in suboptimal dose are present in milk, livestock eggs, fishes, etc., which is consumed by humans and than this results in AMR.
Establish State level AMR surveillance in animals and food sectors.

Strengthen laboratory capacity for quality assured AMR surveillance.

Raise awareness of AMR among veterinary professionals, farmers, food sectors.

Strengthen infection prevention and control in animals and food sectors.

Review and implement regulations regarding use antimicrobials in food animals.
ACTION PLAN (SAP-AMR) (RECOMMENDATION)

- Establish State surveillance system for antimicrobials use in animal food.
- Improve appropriate use of antimicrobials in animals and agriculture, Specially in fodder and fodder land restrict use of critically important antimicrobials in animals & fisheries & agriculture.
- Promote research to develop new antimicrobials, diagnostics vaccines and alternatives.

FOOD AND DRUG DEPARTMENT HAS AGREED FOR TESTING ANIMAL POULTRY AND FISH FOOD FOR PRESENCE OF ANTIBIOTICS.
Based on the proceedings of the State AMR workshop, the Madhya Pradesh State Action MP Antimicrobial Resistance Containment (MPSAP-ARC) has the following 6 strategic priorities:

1. Improve awareness and understanding of AMR through effective communication, education and training

2. Strengthen knowledge and evidence through surveillance
3. Reduce the incidence of infection through effective infection prevention and control (IPC)

4. Optimize the use of antimicrobial agents in health, animals and food

5. Promote investments for AMR activities, research and innovations for AMR containment

6. Strengthen India’s commitment and collaborations on AMR at international, national and sub-national levels
Objective: To increase awareness and understanding regarding AMR among the students and general public in Madhya Pradesh

Non-professional education for school and college students through role plays, social media, advertisements and radio (FM) (Director Higher Education, Directorate of Health Services)

Timeline: Upto 3 years
FOCUS AREA 2: EDUCATION AND TRAINING

- Objective: Capacity building of key stakeholders regarding AMR in Madhya Pradesh

  Education programs for nodal officers at state and district level  (Directorate of Medical Education, Director Nursing, Department of Animal Husbandry, Medical Council of India, Dental Council of India)

- Timeline: upto 3 years

- Conduct teaching programs, seminars, workshops; audio-visual aids for facilitation of training on AMR (Chief Medical and Health Officer of AIIMS Bhopal & other Medical Colleges, Pollution Control Board)
Professional education programs for doctors and nurses
(Directorate of Medical Education, Director Nursing,
Department of Animal Husbandry, Medical Council of India,
Dental Council of India)

Timeline: upto 3 years

Professional education programs for pharmacists
(Directorate of Medical Education, Director Nursing,
Department of Animal Husbandry, Medical Council of India,
Dental Council of India)

Timeline: upto 3 years

Strategic priority 2: Strengthen knowledge and evidence through surveillance
Role of Medical Council of India

• One of the main reasons for the inappropriate antibiotic usage by Indian doctors is the lack of adequate training on the subject during undergraduate and post-graduate courses. This deficit in the basic training can only be overcome if there is a change in the curriculum.
Objective: To strengthen laboratory capacity and establish quality-controlled systems for the culture and antibiotic sensitivity testing in Madhya Pradesh, which cater to needs of all relevant sectors; to ensure a uniform implementation of quality standards by conducting regular training and monitoring activities throughout Madhya Pradesh.

- Designing SOPs for all activities to be carried out by laboratory for processing samples received (pre-analytical to post-analytical level)

- (Respective teaching institute within sector [Medical/Veterinary Colleges])
Objective: Establish state level AMR surveillance across all sectors, based on WHO priority list of pathogens.

- Adapt National AMR surveillance standards/SOPs for Madhya Pradesh
  Timeline: within 1 year

- Establish a network of AMR laboratories in Madhya Pradesh and develop the State AMR data base
  Timeline: within 1 year.

Divisional Level Surveillance lab for microbial Culture in support with CDC and Indian Association of Microbiologist.

- Private Hospitals -10 Hospitals are voluntarily performing AMR surveillance as per their own formulated AMR Policy.
What is WHONET

- **WHONET** is a free software developed by the WHO Collaborating Centre for Surveillance of Antimicrobial Resistance for laboratory-based surveillance of infectious diseases and antimicrobial resistance.
- The principal goals of the software are:
  - 1 to enhance local use of laboratory data; and
  - 2 to promote national and international collaboration through the exchange of data.
Focus area 5: IPC in human health to Reduce the incidence of infection through effective infection prevention and Infection control(IPCC).

Objective: To control infection in healthcare, setup through IPCC activities through constituting unified IP&C committee in all hospitals which shall comprise of - Hospital Medical Superintendents, Sr. Surgeon, Sr. Medicine Specialist, Senior pharmacist, Directorate of Medical Education)

Timeline: within 1 year
Hospital Infection Control Committee (HICC)

- All hospitals must have an *infection control committee* and an *antibiotic policy* and should initiate or augment efforts towards implementation.

- Those hospitals with an existing ICC and an antibiotic policy should augment efforts to increase compliance to the policy. **Hospitals without a policy must initiate efforts to formulate an ICC and an antibiotic policy.**

- ICC should define an annual target for achievement.
Objective: Regulate access to high quality antimicrobials.

- Regulations to be implemented to stop OTC sale of drugs for human/animal use.

(Controller Food and Drugs Administration-Madhya Pradesh, Directorate of Health Services)

- Timeline: up to 3 years
FOCUS AREA 6: REGULATIONS

- State Controller Food & Drugs Madhya Pradesh Department has developed H1 Reporting Module (software based).
- Initially the Module was made for Reporting of TB Patients through Private Chemist & Druggist but now this has been extended for all ailments and being reported.
4 Data Summary Sheet

The application has collected the following data under various categories.

<table>
<thead>
<tr>
<th>Category</th>
<th>Count</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total Number of TB Patients</td>
<td>3893</td>
</tr>
<tr>
<td>Total Number of times Medicines Dispensed</td>
<td>5680</td>
</tr>
<tr>
<td>Total Number of Medical Practitioners</td>
<td>281</td>
</tr>
<tr>
<td>Total Number of Pharmacist, Chemist &amp; Druggist</td>
<td>748</td>
</tr>
</tbody>
</table>
5 Application Flow

The application is designed to have 2 types of users to solve the purpose. The hierarchy of user account is as follows:

- Admin
- Drug Inspector
- District TB Officer
- WHO Person

5.1 Data Flow
6.2 PCD on Boarding Page

Features

- PCD user on-boarding via existing drug sale license number and firm name.
- After submitting the details, verification is done via OTP sent on registered mobile.
- Post successful verification portal credentials are shared on registered mobile number.
GLIMPSE OF MONITORING SOFTWARE

Medical Practitioner Details [Tab 3]

Features

- 3 Stage Data Entry Process
- Stage 1 – Patient Details (Validation’s Applied)
- Stage 2 – Prescribed Medicine Details
- Stage 3 – Medical Practitioner Details
6.11 List of Medical Practitioners

Features

- List of reported medical practitioners
- List can be Sorted & Filtered
- List can also be exported to excel format
### Schedule H1 Drugs

<table>
<thead>
<tr>
<th>S. No.</th>
<th>Name of Drug</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Alprazolam</td>
</tr>
<tr>
<td>2</td>
<td>Balofoxacin</td>
</tr>
<tr>
<td>3</td>
<td>Buprenorphine</td>
</tr>
<tr>
<td>4</td>
<td>Capreomycin</td>
</tr>
<tr>
<td>5</td>
<td>Cefdinir</td>
</tr>
<tr>
<td>6</td>
<td>Cefditoren</td>
</tr>
<tr>
<td>7</td>
<td>Cefepirime</td>
</tr>
<tr>
<td>8</td>
<td>Cefetamet</td>
</tr>
<tr>
<td>9</td>
<td>Cefixime</td>
</tr>
<tr>
<td>10</td>
<td>Cefoperazone Hydrochloride</td>
</tr>
<tr>
<td>11</td>
<td>Cefotaxime</td>
</tr>
<tr>
<td>12</td>
<td>Cefpirome</td>
</tr>
<tr>
<td>13</td>
<td>Cefpodoxime Hydrochloride</td>
</tr>
<tr>
<td>14</td>
<td>Ceftazidime</td>
</tr>
<tr>
<td>15</td>
<td>Ceftibuten</td>
</tr>
<tr>
<td>16</td>
<td>Ceftizoxime</td>
</tr>
<tr>
<td>17</td>
<td>Ceftriaxone</td>
</tr>
<tr>
<td>18</td>
<td>Chlordiazepoxide</td>
</tr>
<tr>
<td>19</td>
<td>Clofazimine</td>
</tr>
<tr>
<td>20</td>
<td>Codeine</td>
</tr>
<tr>
<td>21</td>
<td>Cycloserine</td>
</tr>
<tr>
<td>22</td>
<td>Diazepam</td>
</tr>
<tr>
<td>23</td>
<td>Diphenoxylate</td>
</tr>
<tr>
<td>24</td>
<td>Doliprane</td>
</tr>
<tr>
<td>25</td>
<td>Ertapenem</td>
</tr>
<tr>
<td>26</td>
<td>Ethambutol</td>
</tr>
<tr>
<td>27</td>
<td>Ethionamide</td>
</tr>
<tr>
<td>28</td>
<td>Feropenem</td>
</tr>
<tr>
<td>29</td>
<td>Gemifloxacin</td>
</tr>
<tr>
<td>30</td>
<td>Imipenem</td>
</tr>
<tr>
<td>31</td>
<td>Isoniazid</td>
</tr>
<tr>
<td>32</td>
<td>Levofloxacin</td>
</tr>
<tr>
<td>33</td>
<td>Meropenem</td>
</tr>
<tr>
<td>34</td>
<td>Midazolam</td>
</tr>
<tr>
<td>35</td>
<td>Moxifloxacin</td>
</tr>
<tr>
<td>36</td>
<td>Nitrazepam</td>
</tr>
<tr>
<td>37</td>
<td>Pentazocine</td>
</tr>
<tr>
<td>38</td>
<td>Prulifloxacin</td>
</tr>
<tr>
<td>39</td>
<td>Pyrazinamide</td>
</tr>
<tr>
<td>40</td>
<td>Rifabutin</td>
</tr>
<tr>
<td>41</td>
<td>Rifampicin</td>
</tr>
<tr>
<td>42</td>
<td>Sodium</td>
</tr>
<tr>
<td>43</td>
<td>Para-aminosalicylate</td>
</tr>
<tr>
<td>44</td>
<td>Sparfloxacina</td>
</tr>
<tr>
<td>45</td>
<td>Thiacemtazone</td>
</tr>
<tr>
<td>46</td>
<td>Tramadol</td>
</tr>
<tr>
<td>47</td>
<td>Zolpidem</td>
</tr>
</tbody>
</table>

**Schedule H1 (See rules 65 and 97)**

<table>
<thead>
<tr>
<th>S.No.</th>
<th>Date</th>
<th>Name of Prescriber Dr. Name and Add.</th>
<th>Patient Name</th>
<th>Name of Drug B.No.</th>
<th>Bill No.</th>
<th>Quantity Sold</th>
</tr>
</thead>
</table>

**Schedule H1** की दवा के यूथक रजिस्टर का प्रारूप
Rationalism in Implementation
Many choices?

- Introduce step-by-step regulation of antibiotic usage, concentrating on higher end antibiotics first and then slowly extending the list to second and first line antibiotics?
The 3 Stratagecies
Will it Work?

- Complete ban on OTC sale of antibiotics without prescription throughout the country.
- Complete ban of OTC sale of antibiotics without prescription in metros and larger cities with a more liberal approach in **smaller cities and villages**.
- A liberal approach throughout the country to start with, with an initial list of antibiotics under restriction and addition of other drugs to the list in a phased manner.
Focus area 7: Animals and Food

Objective: Optimize the use of antimicrobials in veterinary and aquaculture

- Steps to be taken to prevent use of ‘antibiotics for human use’ as ‘antibiotics for growth promotion in veterinary and aquaculture’
- Timeline: 1 year

- Ban colistin usage as a growth promotor at the earliest
  
  **Timeline: upto 6 months**

- Measures to be adopted to rationalize antibiotic usage in veterinary practice- treatment and prophylaxis
B) SENSITIZATION ON AMR

- Collaborated with
  - AIIMS Bhopal
  - ICMR
- Trained 200 Doctors
  At various centers
  - Gwalior
  - Indore
  - Jabalpur
- Next planned at
  - Bhopal
  - Sagar
  - Rewa
  - Ujjain
To evaluate the efficacy of the orientation programme a study through Prescription Audit will be conducted in trained Division’s Districts and in Non Trained Division districts.

This activity will be conducted in support with AIIMS Bhopal Team and Bhopal Medical College Microbiology Team.
एबिएमसी के संस्थापक डॉ. राजेंद्र शर्मा ने कहा कि "बिना पत्ता नहीं मिलेगी एंटीबायोटिक, एक साल में होगा अमल।"

AIIMS spreads awareness on perils of excessive antibiotics

Training to continue for doctors to ensure aggregate meds are prescribed

SOFTWARE TO TRACK PRESCRIPTIONS

- To keep proper record of antibiotic dispersions from govt. hospitals.
- Module will capture information from dispensing unit.

Dr. Jagdish Prasad, Professor of Medicine, AIIMS.

No antibiotic will work after 5 years

"Over use of antibiotics has made people resistant to drugs. As a result, no antibiotic will work after five years," said Dr. Prakash Shukla, the joint director quality assurance of National Health Mission. Talking to mediapersons on Friday, he launched a programme for doctors on antibiotic policy. Dr. Shukla said, "If 90 percent of government hospitals and 70 percent of private hospitals prescribe antibiotics to patients even when not required. Antibiotics are not required in 90 percent of diseases but are given to patients to increase business."

He said overuse of antibiotics is a major concern as people take antibiotics over the counter and pharmacies sell for earning profit.

"No new antibiotics have been made after 2000. Over consumption of existing antibiotics will make people ill instead of curing them," Dr. Sagar Khadanga of AIIMS, Bhopal, remarked. He said use of antibiotic in veterinary has increased due to which having antibiotic is becoming good for health. "Bovine feed is treated with antibiotics for the control of stress and diseases of health," he said.

Experts warn against overuse of antibiotics

‘Superbugs’ Raise Anxiety Across Globe

Policy to check abuse of antibiotics comes in force

"Wholesale use of antibiotics is not only harming people, it is also causing severe damage to the environment," he said. The facts are alarming. "WHO has predicted that antibiotic resistance, a worldwide concern, will cause death of 10 million people by 2050," he said.
Conclusions

- Antibiotic resistance is a major problem world-wide
- Resistance is inevitable with use
  - Penicillin attained resistance before it is used
- No new class of antibiotic introduced over the last two decades
- Appropriate use is the only way of prolonging the useful life of an antibiotic
IT’S NOT ABOUT BEING THE BEST
IT’S ABOUT BEING BETTER THAN YOU WERE YESTERDAY

Thank You