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# Rational Use of Antibiotics in Hospital- and Community-Acquired Infections

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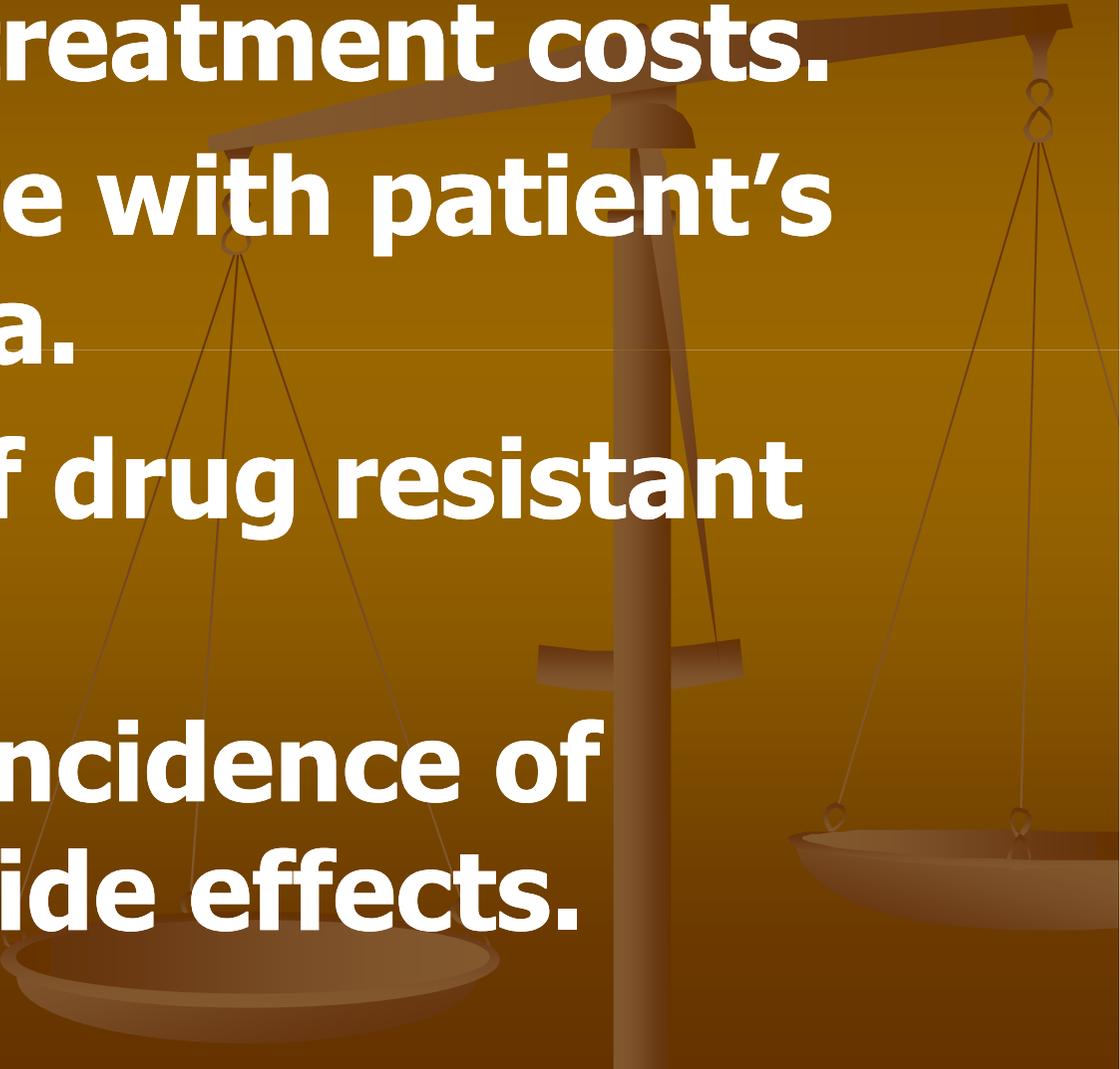
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**Antibiotics are the most important weapons for the treatment of many infectious diseases caused by bacteria.**



## ***IF USED IRRATIONALLY:***

- **Increased treatment costs.**
  - **Interference with patient's normal flora.**
  - **Selection of drug resistant organisms.**
  - **Increased incidence of untoward side effects.**
- 



# Rational Use of Antibiotics

The conference of experts on the rational use of drugs, convened by the WHO in Nairobi in 1985 defined that

**“Rational use of drugs requires that patients receive medications appropriately to their clinical needs, in doses that meet their own individual requirements for an adequate period of time, at the lowest cost to them and their community”**



**Efforts directed towards rationalizing antibiotic use focused primarily on hospitals, however:**

- **Problems related to the overuse of antibiotics outside hospitals e.g., RTI, AOM, UUTI, diarrhea, dental complaints.**
- **Alarming reports of community-onset infections by resistant bacteria, e.g., MRSA infections.**

***have necessitated the urgency of promoting appropriate antibiotic use in community-settings.***

# Interventions



*For both hospitals and community*

- **Continuous surveillance of bacterial infections (HA and CA infections).**
- **Identification of the pathogenic flora.**
- **Systemic monitoring and surveillance of antibiotic susceptibility and resistance of bacterial pathogens.**



## ■ **knowledge of antibiotic prescribing trends.**

### ■ **Information collected includes**

- Indication for use (definitive, empirical, prophylaxis)
- Route of administration, dosage regimen, duration of treatment, adverse effects, if any
- Drug combinations
- If the drug was on a reserved list
- Was C/S testing performed
- Whether it had been approved by a microbiologist.

## ■ **Development of treatment guidelines**

# Hospitals



## *Antibiotic policies*

### AIM

- To upgrade the quality of patient care by promoting the best practice in antibiotic prophylaxis and therapy.

### OBJECTIVES

- To make better use of resources by using cheaper drugs wherever/whenever possible.
- To retard the emergence and spread of multiple antibiotic-resistant bacteria.
- To improve education of doctors in appropriate use.
- To eliminate the use of unnecessary or ineffective antibiotics and restrict the use of expensive or unnecessarily powerful ones.



# Components of antibiotic policy

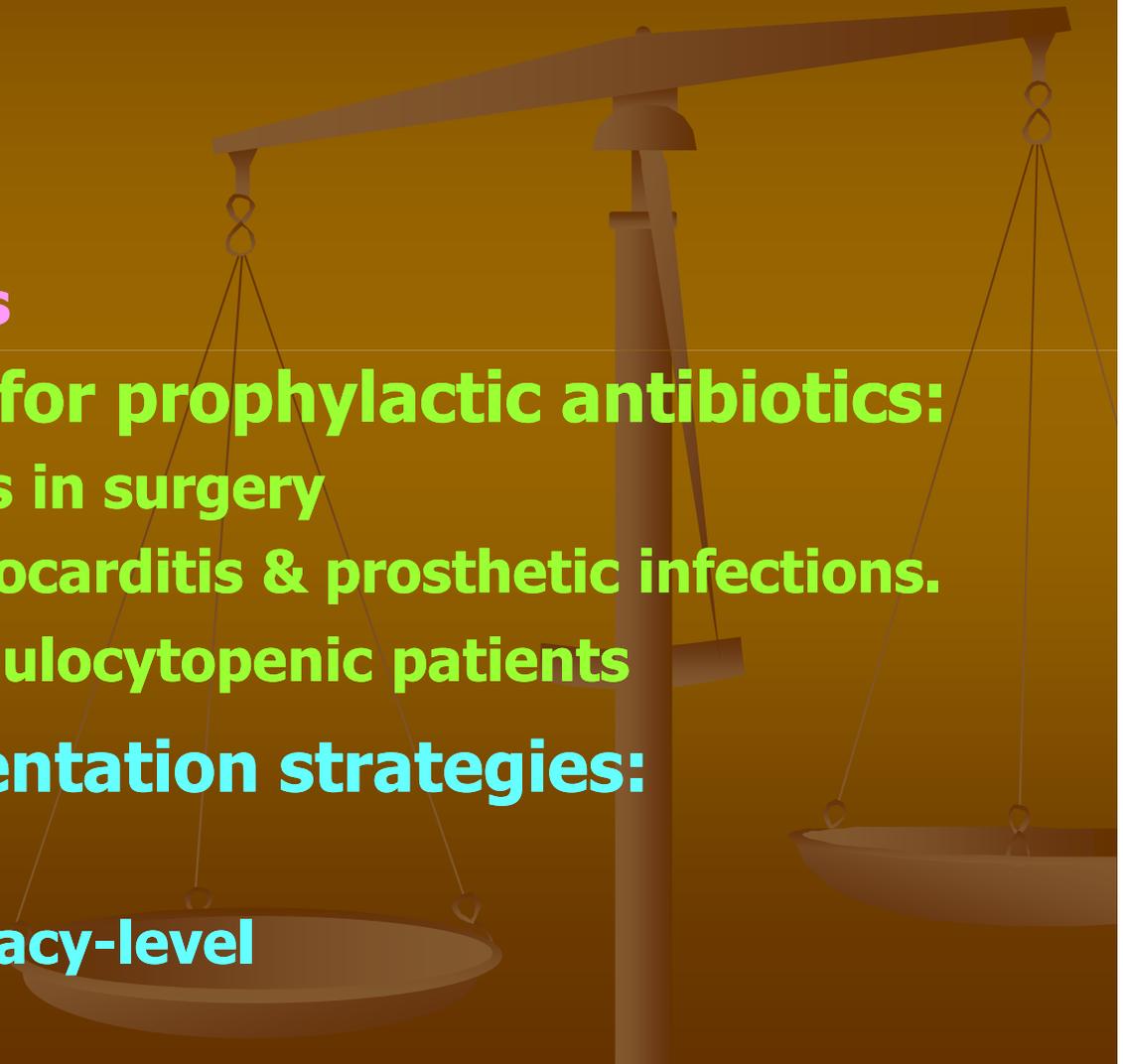
- **Direction**
- **Education**
- **Monitoring & evaluation**



# Direction



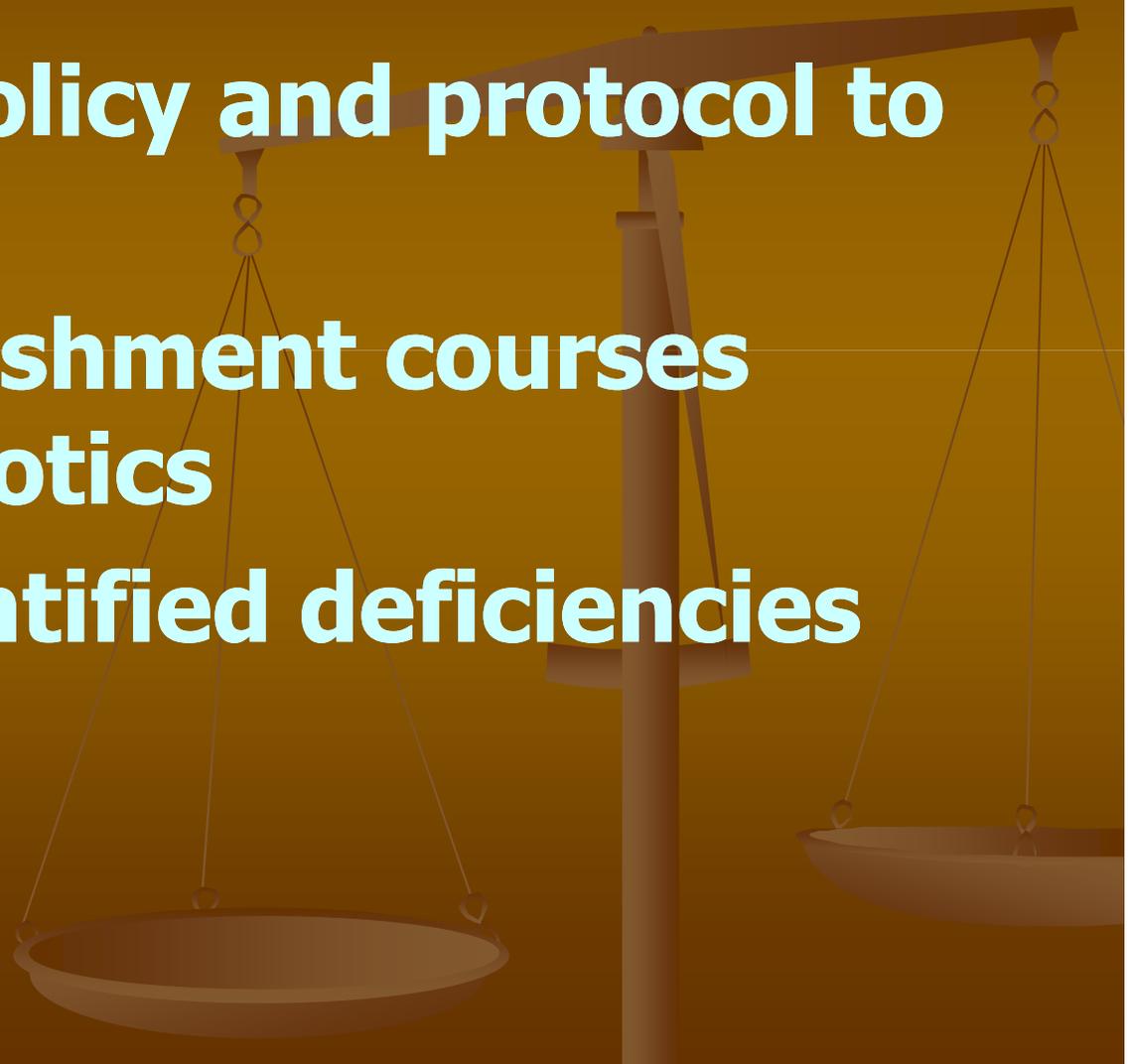
- **Frame the hospital own list of therapeutic antibiotic categories:**
  - **First-line**
  - **Reserved agents**
  - **Restricted agents**
  - **Withdrawn agents**
- **Produce protocol for prophylactic antibiotics:**
  - **Chemoprophylaxis in surgery**
  - **Prevention of endocarditis & prosthetic infections.**
  - **Protection of granulocytopenic patients**
- **Develop implementation strategies:**
  - **At clinicians-level**
  - **At hospital pharmacy-level**





# Education

- **Introduce policy and protocol to clinicians**
- **Formal refreshment courses about antibiotics**
- **Address identified deficiencies**





# Monitoring & Evaluation

## Monitoring

- **Antimicrobial audits: surveys to determine appropriate and inappropriate usage of antimicrobials**

## Evaluation

- **Impact on cost (easiest)**
- **Impact on bacterial resistance (more difficult)**
- **Improvement of patient care (most difficult)**



# ■ Organizational structure of antibiotic policy

## ANTIBIOTIC COMMITTEE

- The hospital pharmacist
- The microbiologist
- Clinical doctors
- Administrative key person
- Other members co-opted as necessary

*Reciprocal membership between infection control committee and antibiotic committee should be ensured*

# Role of Microbiology Laboratory

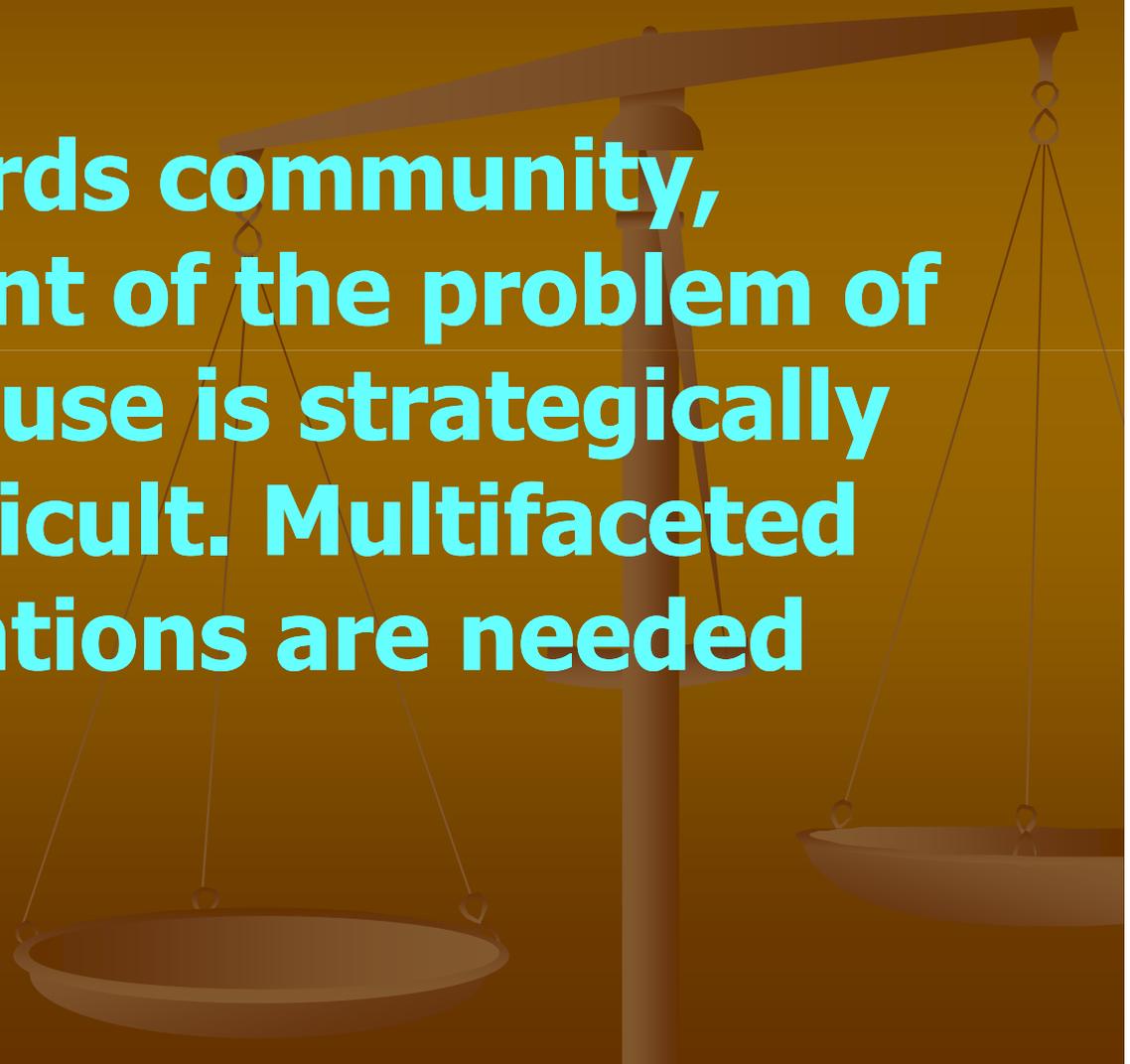


- Provides regular updates on antibiotic susceptibility of bacterial isolates from the local area. This will assist in producing effective guidance for the local patient population.
- Alerts to the emergence of resistance to certain agents so that the inclusion of those agents in the guidelines can be reviewed.
- *When resources for microbiology are scarce, priority given to samples from nosocomial, life-threatening cases, or arrangements should be made for microbiology tests with a referral hospital.*
- *When no local microbiology laboratory exists, antibiotic policy is based upon a basic formulary, if possible established after consultation with regional or national groups.*



# Community

**As regards community, containment of the problem of irrational use is strategically more difficult. Multifaceted interventions are needed**





# Factors responsible for inappropriate use in community

## ■ Patient-parent factors

- \* Anxiety
- \* Misconceptions about:
  - What antimicrobials do
  - Fever requiring antibiotics
  - Belief in physician healing power
  - Economic concerns (missing work)

## ■ Physician-provider factors

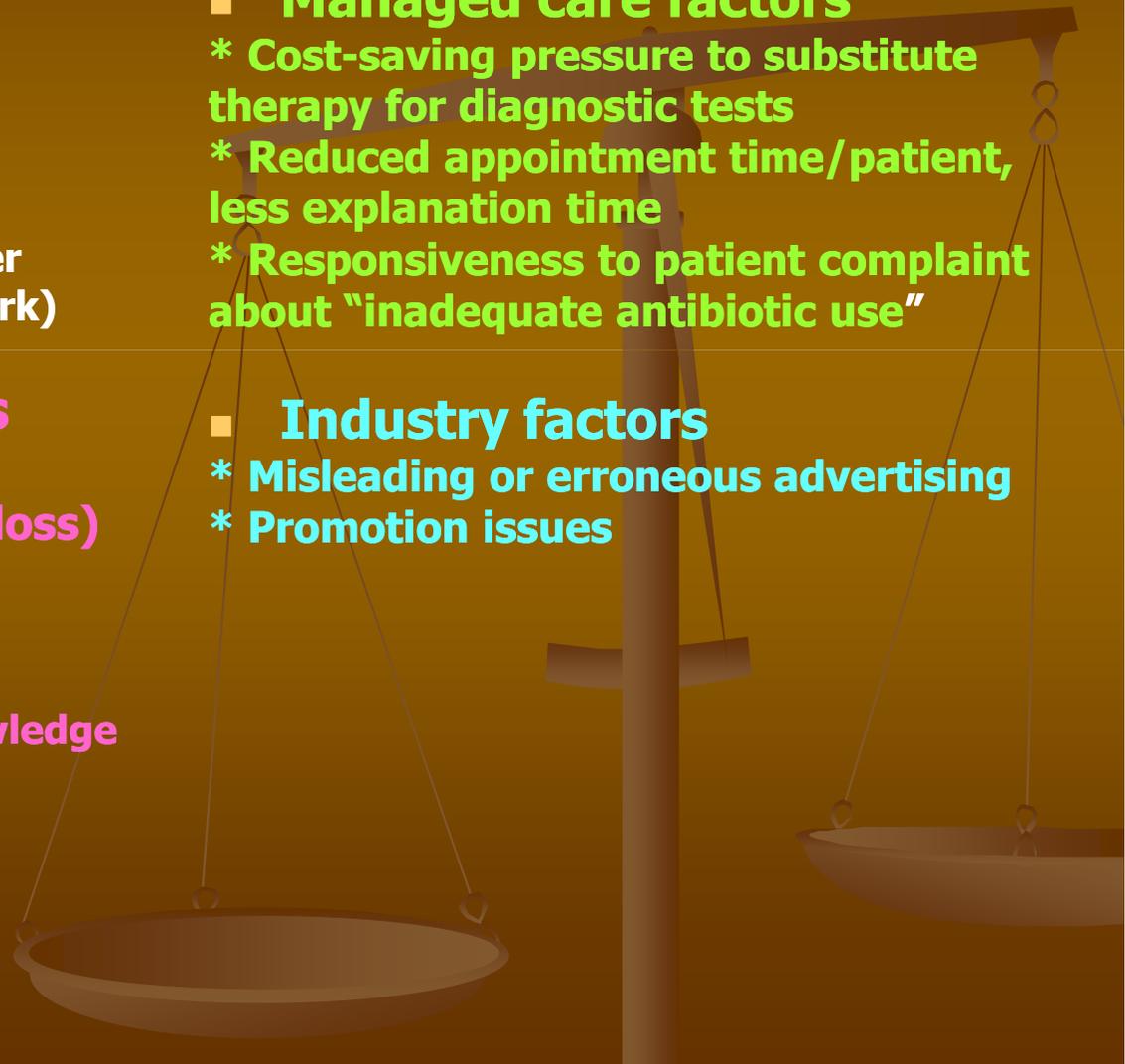
- \* Real or perceived pressure
- \* Self-economic concern (patient loss)
- \* Litigation concern
- \* Physician fallibility:
  - Inadequate knowledge
  - Cognitive dissonance (i.e., knowledge but failure to act on it)

## ■ 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



# Interventions



- **Prohibiting the sale of antibiotics without medical prescription**
- **Development and passage of other strict regulations by Ministries of Health & other Ministries regarding responsible prescription and dispensing of antibiotics.**
- **Unambiguous prohibition of advertising of antibiotics in the community by industry and pharmaceutical representatives.**





- The implementation of information, education and communication (IEC) campaigns **with participation of relevant medical associations such as antimicrobial, infectious disease and microbiological societies.** The strategies recommended could be:
  - Peer network to be in charge to prepare the information package and evidence channels through which the intervention could reach the community.
  - Permanent, continuing medical education systems for both **CONSUMERS** and **PRESCRIBERS**, tailored to the circumstances of each country



## ■ **PRESCRIBERS:**

### AIM:

- to upgrade knowledge and skills of rational antibiotic prescription.
- to develop sound capabilities of influencing patients as regards the prudent use of antibiotics.

### INTERVENTIONS, e.g.,

- Academic detailing, through workshops and training courses
- Training of trainers (TOT) programs
- Modify physician order form to encourage rational use



## Prescription Pad

Name: \_\_\_\_\_ Date: \_\_\_\_\_

- Diagnosis:  Cold or flu     Middle ear fluid (otitis media with effusion)  
 Cough             Viral sore throat  
 Other: \_\_\_\_\_

# R<sub>x</sub>

You have been diagnosed as having an illness caused by a virus. Antibiotic treatment does not cure viral infections. If given when not needed, antibiotics can be harmful. The treatments prescribed below will help you feel better while your body's own defenses are defeating the virus.

### General instructions:

- Increase fluids.
- Use cool mist vaporizer or saline nasal spray to relieve congestion.
- Soothe throat with ice chips or sore throat spray; lozenges for older children and adults.

### Specific medicines:

- Fever or aches: \_\_\_\_\_
- Congestion: \_\_\_\_\_
- Cough: \_\_\_\_\_
- Ear pain: \_\_\_\_\_
- \_\_\_\_\_ : \_\_\_\_\_
- \_\_\_\_\_ : \_\_\_\_\_

Use medicines as directed by your doctor or the package instructions. Stop the medicine when the symptoms get better.

### Follow-up:

- If not improved in \_\_\_\_\_ days, if new symptoms occur or if you have other concerns, please call or return to the office for a recheck.
- Other: \_\_\_\_\_

Signed: \_\_\_\_\_

Developed by CDC  
to help physicians  
explain why  
antibiotic is not  
being prescribed  
and recommend  
symptomatic  
treatment



## ■ CONSUMERS:

### AIM

- to sensitize and involve them on the benefits of the correct use of antibiotics.
- to raise awareness about hazards of auto-medication and dosage non-compliance.

### INTERVENTIONS, e.g.,

- Dissemination of relevant videoshows
- Production and broadcasting of radio & TV material, including weekly bulletins, radioprograms and microshows.
- Diffusion of validated messages by posters, panels and presentation easels.
- Meetings with journalists, and other key persons who can influence dissemination of information
- Educational workshops with mothers and families.
- Organization of health fairs and workshops in places in which there are gathering of people, like schools -- etc.



## ■ **Community pharmacist**

- **Pharmacist should be able to prescribe certain antibiotics in appropriate circumstances to patients needing treatment for particular conditions**
- **Advice to patients to ensure that the patient understands that:**
  - **Every consultation about infection, may not lead to antibiotic prescription**
  - **There is difference between bacterial and viral infections**
  - **Antibiotic must be used properly in accordance with the stipulated regimen, completing the course of TTT and avoid potential incompatibilities**
- **Help and encourage Health Authorities to generate antibiotic policies and treatment guidelines. The pharmacist is well positioned to ensure the implementation of the policies and guidelines**



- **Antimicrobials are the great discovery of the 20<sup>th</sup> century.**

**But the miracle seems to come to an end. Inappropriate use of these life-saving instruments has resulted in many problems. On the other hand, not many new antimicrobial molecules have been discovered since the 1980<sup>th</sup> and funding on antimicrobial research is on the decline.**

**Now, we have to fight against the irrational use to save these important discoveries of man from extinction**

**Thank You**

