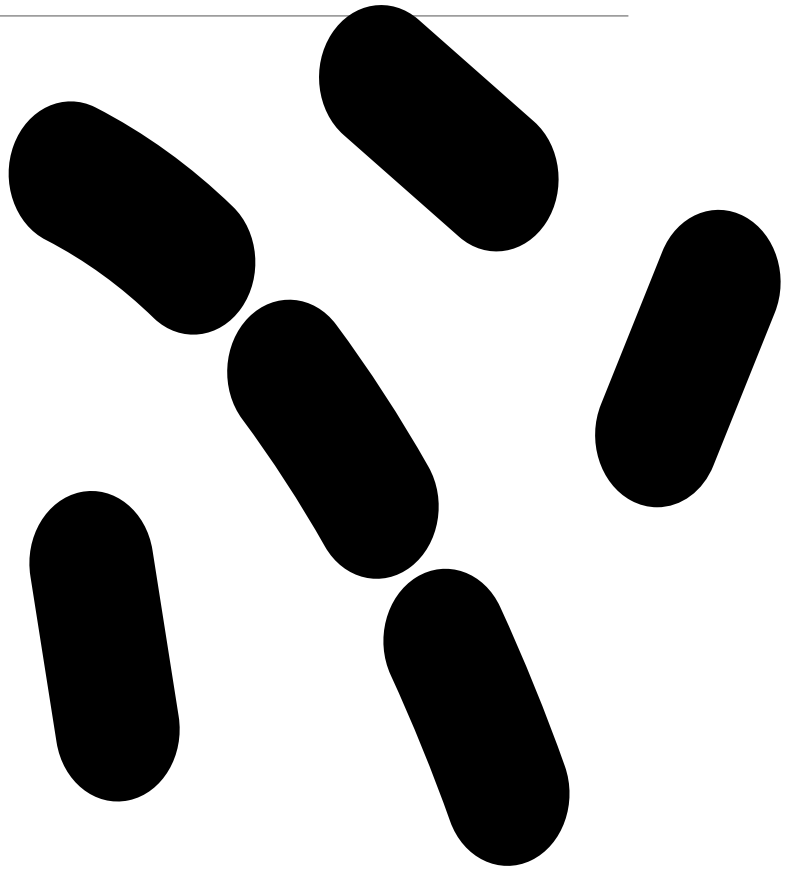
KEY PERFORMANCE INDICATORS OF ANTIMICROBIAL STEWARDSHIP PROGRAM

Dr Rahul S Kamble

MBBS, MD Microbiology

Diploma Infectious Diseases (UNSW, Australia) Infection Control course(Harvard Medical School, USA) International Tropical Medicine &Vaccinology course(CMC Vellore) Six Sigma Black Belt (Govt of India certified) Auditor :JCI, NABH, NABL, CSSD, RBNQA, Texila university PGDBA,PGDHM,PGDCR,PGDMR,PGDOM, PGDMLS,PGDIM,PGDHI,PGDBI,PGDHA, CCDHHO Consultant Clinical Microbiologist &Infectious Diseases Project Lead -Antimicrobial Stewardship at Americares India Foundation



Objectives

- Discuss the challenges in the implementation of AMS in resource limited settings

- Antibiotic Policy formulation and Lab-report interpretation Diagnostic Stewardship & Pharmacokinetics and Pharmacodynamics of Antibiotics

- Nursing Protocols, Molecular approach to antibiotic selection & National and International guideline on Implementation of AMS programme

Antimicrobial Stewardship Team and its Responsibilities

Team	Responsibilities
▪ Infectious Disease (ID) Physician ▪ Clinical Pharmacist with ID training ▪ Clinical Microbiologist ▪ Support from hospital administration ▪ Hospital epidemiologist ▪ Infection control professional	▪ Establish an antibiotic formulary ▪ Produce antibiotic guidelines ▪ Develop and implement educational programs ▪ Audit, surveillance of antibiotic use ▪ Review of interventions and monitor compliance

Dellit TH, et. al. Clin Infect Dis. 2007;44:159-177

Two Basic Approach towards AMS

Front End approach: At the time of prescribing antimicrobial

- Formulary restriction, Pre-authorisation
- Interactive decision support
- Guidelines, order sets

Back End approach: After antimicrobial has been prescribed

- Prospective audit and feedback
- De-escalation
- Dose-optimisation
- IV to Oral conversion

Current Opinion in Infectious Diseases 2011,24 (suppl 1):S11–S20

Key Elements for Successful AMS Programme

- Establish compelling need and goals for AMS.
- Senior leadership support (both at hospital and country level).
- Effective local physician champion.
- Adequate resources (pharmacy, infection preventionist [IP], microbiology, information technology [IT]).
- Primary objectives: optimize clinical outcomes and reduce adverse events, not reduce costs.
- Agreed upon process and outcome measures.

Antibiotic Anarchy in Developing Country! Is AMS Possible ??

Antibiotic Anarchy

Hospital environment not conducive

- Antibiotic protocols not available or at rudimentary stage or Not followed.
- Minimal antibiotic surveillance data & microbiology infrastructure.

Antibiotic usage not based on evidence

- Only a few qualified ID specialists.
- Empiric antibiotic use not based on microbiology data or evidence.
- Multiple antibiotic prescriptions are common.

Crowded market and Lax regulations

- Many generic copies of antibiotics *(>125 Pip/Tazo , > 50 meropenems)* & irrational combinations.
- Indiscriminate promotion by pharma companies.
- Over the counter availability of broadspectrum antibiotics.

Antibiotic Resistance Very High

- ESBL rates in community 40%, Nosocomial ESBL : 60-80%.
- Carbapenem resistant Pseudomonas and Acinetobacter: 20%-60%.
- MRSA – 30-50%.

Main Challenge in Framing Antimicrobial Stewardship Project

Understand

Simplify

Operationalise the Guidelines

To take AB Stewardship from Paper to Patient Bedside.

Key Performance Indicators (KPIs) of an AMS Programme

Structural Indicators

Process Indicators

Clinical/cost Outcome Indicators

Structure Indicators

Structure Indicatorsdecribe organisation and resources, communication and evaluation tools available at hospital level for implementing a multi- modal, multi-disciplinary stewardship programme.

Top 5 Structrural Indicators are:

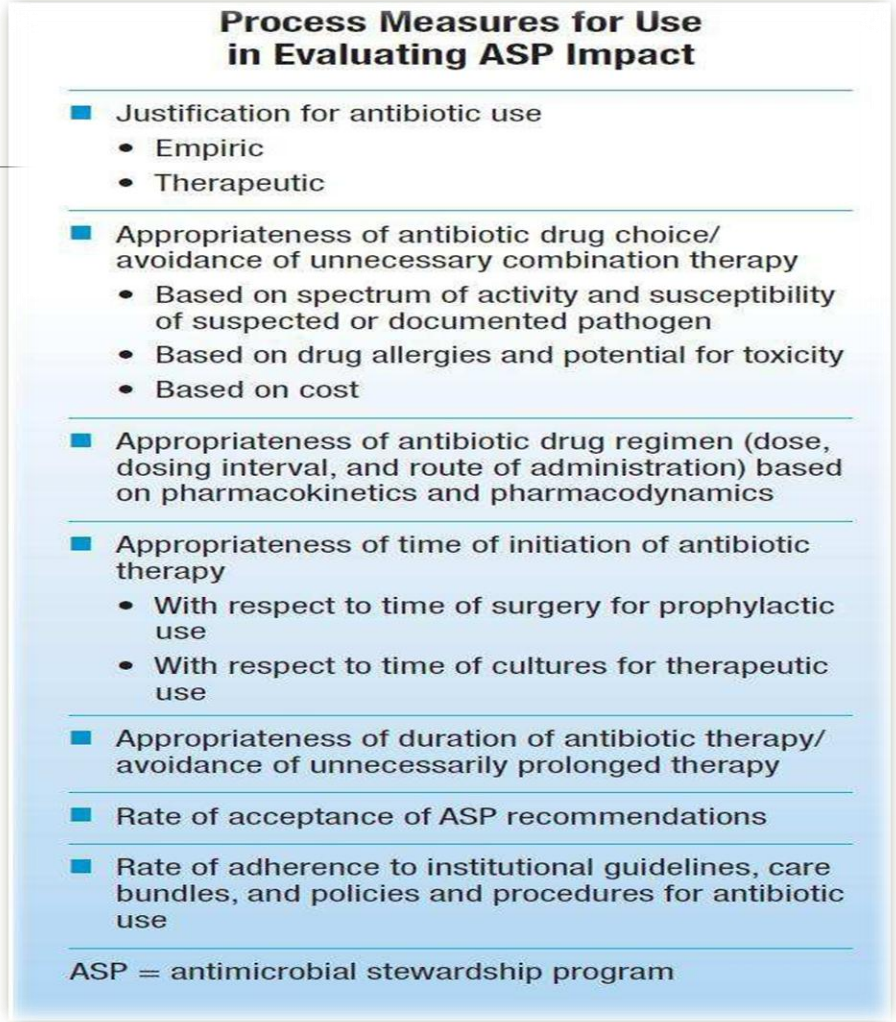
- Hospital multi-disciplinary antibiotic management team (AMT)
- Antimicrobial Drug formulary with annual updates
- Annual update of local clinical guidelines for empirical therapy based on review of local resistance data
- Local clinical guidelines for surgical antibiotic prophylaxis
- Clinical guidelines for IV to oral switch

Buyle FM etal. Eur J Clin Microbiol Infect Dis (2013) 32:1161-1170
Antibiotic Strategy International (ABS) Quality Indicators Team- EU

Process Indicators

Process measures are direct measures of the quality of antibiotic prescription. Eg: AB therapy and prophylaxis (including choice, timing, dose and duration) adherence to treatment guidelines.

www.ashpadvantage.com/stewardship



Process Measures for Use in Evaluating ASP Impact

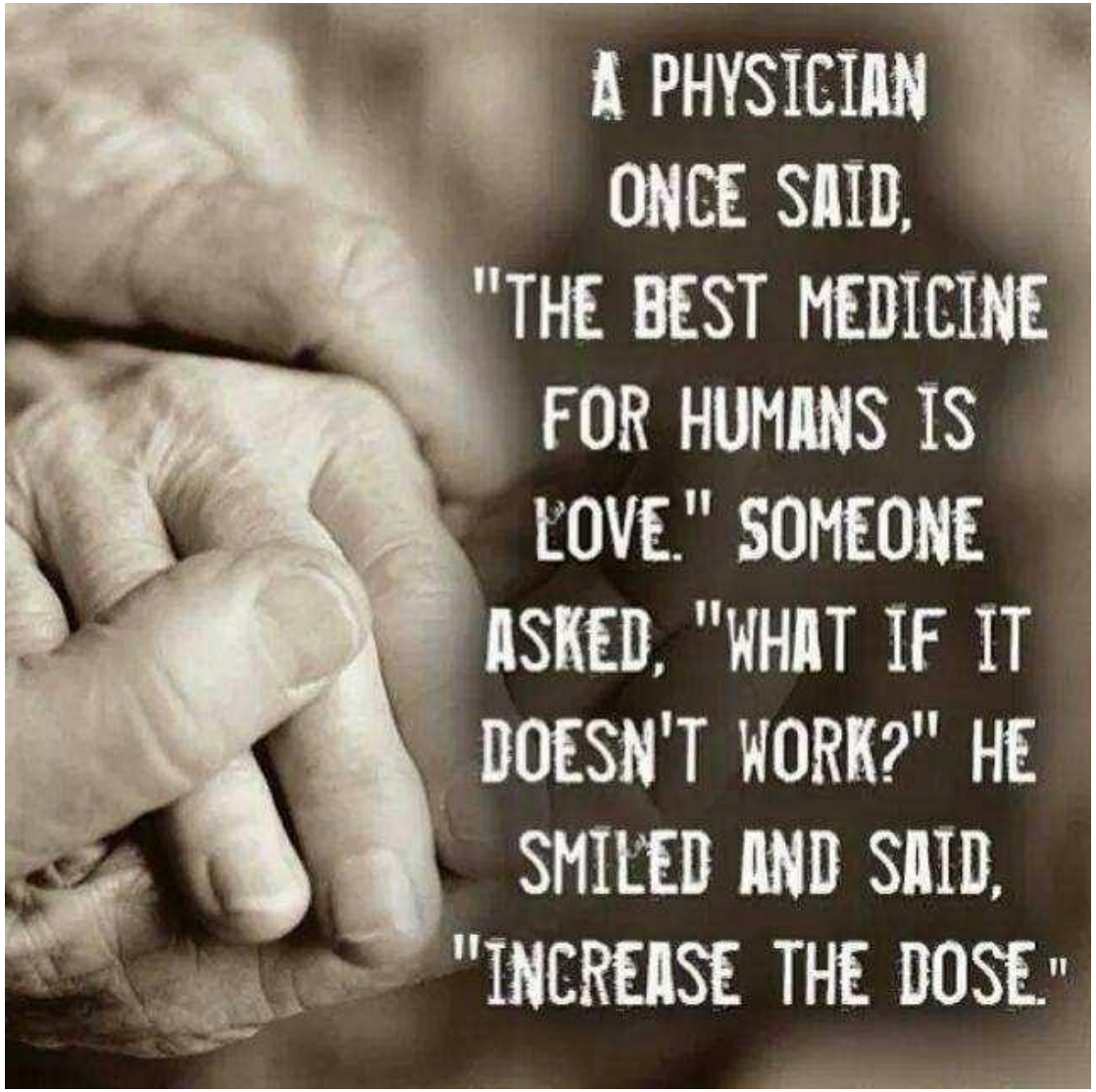
- Justification for antibiotic use
  - Empiric
  - Therapeutic
- Appropriateness of antibiotic drug choice/ avoidance of unnecessary combination therapy
  - Based on spectrum of activity and susceptibility of suspected or documented pathogen
  - Based on drug allergies and potential for toxicity
  - Based on cost
- Appropriateness of antibiotic drug regimen (dose, dosing interval, and route of administration) based on pharmacokinetics and pharmacodynamics
- Appropriateness of time of initiation of antibiotic therapy
  - With respect to time of surgery for prophylactic use
  - With respect to time of cultures for therapeutic use
- Appropriateness of duration of antibiotic therapy/ avoidance of unnecessarily prolonged therapy
- Rate of acceptance of ASP recommendations
- Rate of adherence to institutional guidelines, care bundles, and policies and procedures for antibiotic use

ASP = antimicrobial stewardship program

Clinical / Cost Outcome Indicators

- Clinical Outcomes
- Change in resistance patterns outcome
- Utilization and Cost outcomes

The best way to showcase the difference in these outcome measures is to show the Pre-AMS and Post AMS difference.


A PHYSICIAN
ONCE SAID,
"THE BEST MEDICINE
FOR HUMANS IS
LOVE." SOMEONE
ASKED, "WHAT IF IT
DOESN'T WORK?" HE
SMILED AND SAID,
"INCREASE THE DOSE."

If Implemented Properly....

Antibiotic Stewardship : “The Aspirin of 21st Century”

Ref: Steven Martin. Expert rev. AntiInfec Ther (2007) 5 (2). 159-161

THANK YOU

ANTIBIOTICS
USE - RESPONSIBLY