AMS in Bhutan
“Introduction into health facility, lessons learned and way forwards”

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NATIONAL ACTION PLAN

NAP 2018-2022

- *Launched 9th May 2017 during 130th National Parliament*
- *Align to the Global Action Plan to combat AMR (GAP)*
- *Endorsed/ launched by highest decision making body in the country*
- *One health concept & human and animal health and food safety involved stakeholders*
- *2023 plans to revise the NAP with involvement of more stakeholders such as Environment and wild life*

AMR GOVERNANCE

- Inter-ministeral committee on One Health (IMCOH)
  - *Ministry of health & ministry of agriculture and livestock*
  - *One health secretariat*
- *National AMR Technical committee (NATC)*
- *Technical Working group (TWG)*
  - *Human and animal health Fleming fellows*
  - *Surveillance sites for Laboratory AMR (4 human & 3 animal) & AMSU Sites (3 sentinel sites)*

AMS IN BHUTAN

Introduction

- Established in 2017 in the National Hospital (Jigme Dorji Wangchuck National Referral Hospital, 380 bedded tertiary care hospital)
- AMS committee
- AMS team (sub team from AMS Committee)
  - Weekly AMS rounds

GOALS OF ANTIMICROBIAL STEWARDSHIP

- Improved patient outcomes
- Improved patient safety
- Reduced resistance
- Reduced cost

INTERVENTIONS/ ACTIONS

- Development of guidelines/ SOPs
  - National Antibiotic Guideline (2007, 2012, 2018)
  - Reviewed based on Local susceptibility/ antibiogram
  - AWaRe Classifications incorporated in our National Essential medicine list (NEML) & in National antibiotic guideline (2019)
- Surgical prophylaxis SOP developed and sensitized to all surgical departments
  - One of the KPI of all surgical departments
  - Ownership given to the departments

ACTIONS: INTERVENTIONS

Active interventions are most effective

- Prospective audit
- Formulary restriction and preauthorization
- Antibiotic ‘Time Out’
- IV to oral switch
- De-escalation therapy
- Dose optimization

WHO Aware Categorization of Antibiotics

ACCESS GROUP (29 antibiotics)

First and second choice antibiotics for the empiric treatment of most common/relevant infectious syndromes (21 syndromes).

First choices are usually narrow spectrum agents with positive benefit-to-risk ratios, and low resistance potential, whereas second choices are generally broader spectrum antibiotics with higher resistance potential, or less favorable benefit-to-risk ratios.

WATCH GROUP (7 antibiotic classes)

Antibiotics with higher resistance potential whose use as first and second choice treatment should be limited to a small number of syndromes or patient groups .

These medicines should be prioritized as key targets of stewardship programs and monitoring.

RESERVE GROUP (8 antibiotics or classes)

Antibiotics to be used mainly as 'last resort' treatment options that could be protected and prioritized as key targets of high-intensity stewardship programs.

ACCESS GROUP

Amikacin	Cefalexin	Clarithromycin*	Nitrofurantoin
Amoxicillin	Cefazolin	Clindamycin	Phenoxymethylpenicillin
Amoxicillin + clavulanic acid	Cefixime*	Cloxacillin	Piperacillin + tazobactam*
Ampicillin	Cefotaxime*	Doxycycline	Procaine benzyl penicillin
Azithromycin*	Ceftriaxone*	Gentamicin	Spectinomycin
Benzathine benzylpenicillin	Chloramphenicol	Meropenem*	Sulfamethoxazole + trimethoprim
Benzylpenicillin	Ciprofloxacin*	Metronidazole	Vancomycin*

WATCH GROUP

Quinolones and fluoroquinolones (e.g. ciprofloxacin, levofloxacin, moxifloxacin, norfloxacin)

3rd-generation cephalosporins (with or without beta-lactamase inhibitor, e.g. cefixime, ceftriaxone, cefotaxime, ceftazidime)

Macrolides (e.g. azithromycin, clarithromycin, erythromycin)

Glycopeptides (e.g. teicoplanin, vancomycin)

Anti-pseudomonal penicillins with beta-lactamase inhibitor (e.g. piperacillin + tazobactam)

Carbapenems (e.g. meropenem, imipenem + cilastatin) and Penems (e.g. faropenem)

RESERVE GROUP

Aztreonam	Daptomycin
4th generation cephalosporins (e.g. cefepime)	5th generation cephalosporins (e.g. ceftaroline)
Fosfomycin (IV)	Oxazolidinones (e.g. linezolid)
Polymyxins (e.g. polymyxin B, colistin)	Tigecyline

AMU Surveillances/ Audits

- Point prevalence surveys on AMR and AMU
- Surgical Prophylaxis audits
- Prospective audit data collection for analysis and sensitization of staffs
- Guideline compliance

Point Prevalence Surveys

- Snapshot survey
- Twice a year to show seasonal variation
- WHO PPS protocol
- Global PPS protocol
- National antimicrobial prescription survey (NAPs) Australia

Prospective Audits

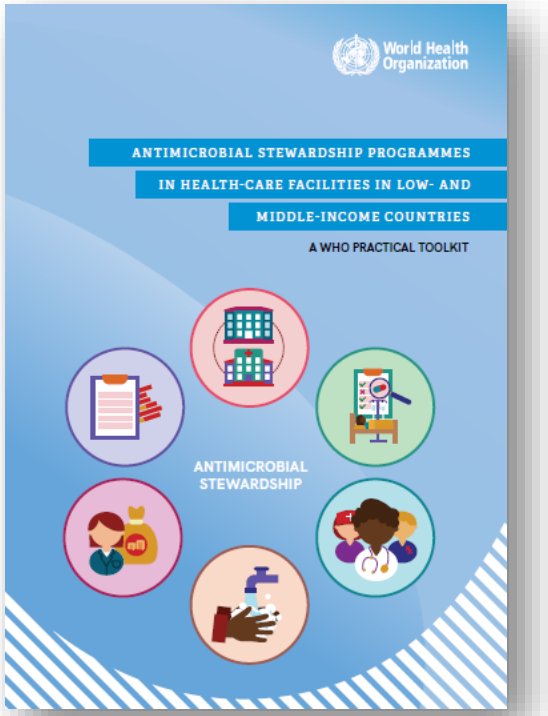
- *“ Start Smart and Then Focus”*

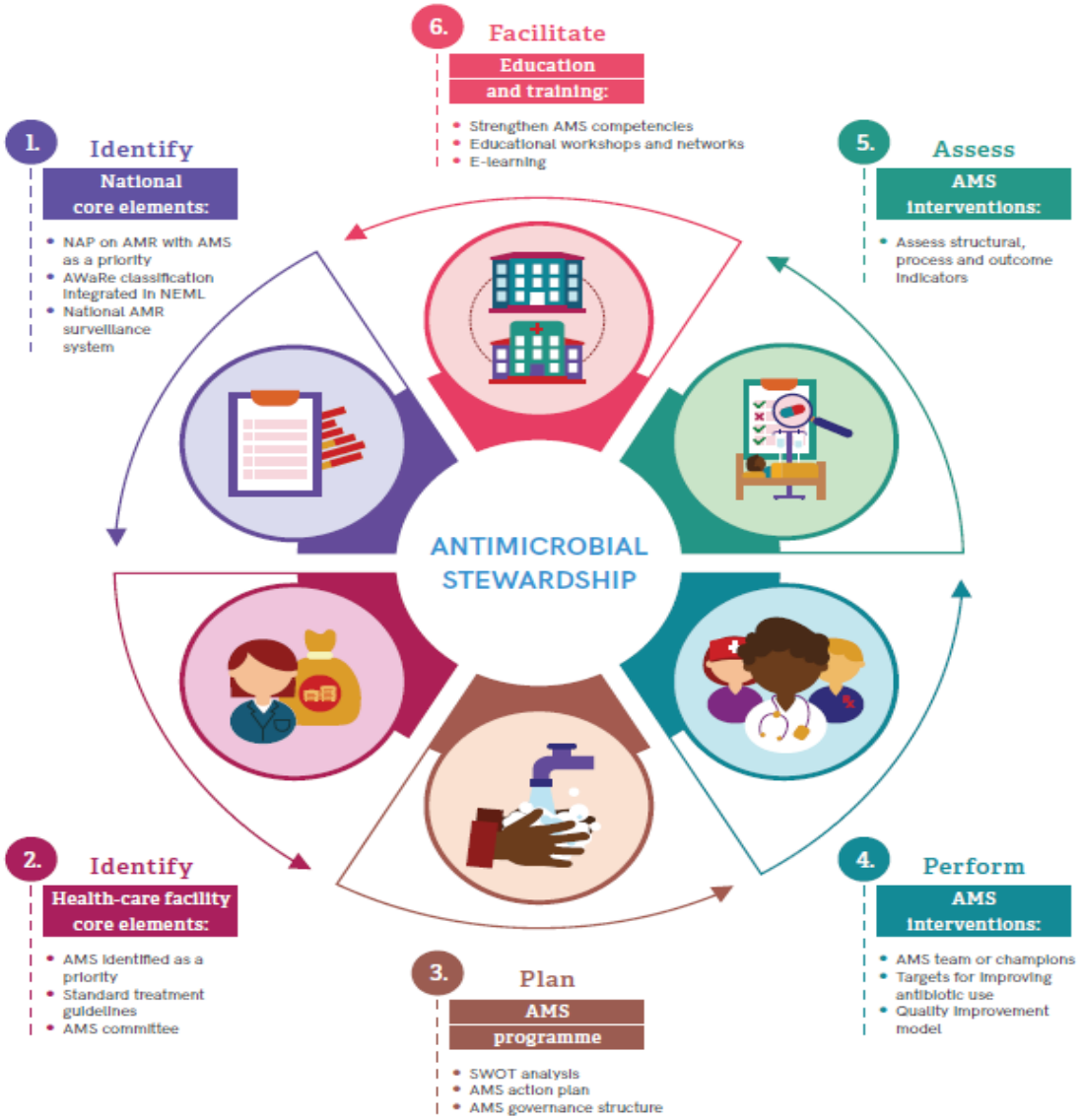
1. Documentations of indications
2. Culture of Culture
3. Allergy mismatch
4. Mismatch “ bug and drug”
5. Surgical prophylaxis, choice and timing (Plan on duration of surgical prophylaxis)

Guideline Compliance

a) Appropriate (Optimal & Adequate)
b) Inappropriate (Suboptimal & inadequate)
c) Not assessable

WHO AMS TOOLKIT & POLICY GUIDANCE





SITUATIONAL ANALYSIS USING POLICY GUIDANCE

1. Leadership commitments
   - Priority in NAP
2. Accountability and responsibility
   - Identified focal and ToRs
3. AMS Actions
   - Workplans and routine activities and 6 monthly reports
4. Education & training
   - Plan to incorporare into medical university curriculum
5. Monitoring & surveillance
   - PPS on AMU & National AMC Surveillance using WHO Tool
6. Reporting feedback
   - TWG, NATC, IMCOH

LESSONS LEARNED

- Well documented Healthcare antimicrobial stewardship programme/strategy
- Clear terms of references
- Antimicrobial stewardship competency is lacking and regular updating
- Written hospital policy that requires prescribers to document antimicrobial use

ENABLERS

DOMAINS	ENABLERS
1. National plan & strategy	• NAP has AMSP as a priority • AMSP TEAM available • One health strategy to combat AMR Adopted •Budget identified
2. Regulation & guidelines	• Antibiotic guideline updated with AWaRe & AMS principle integration • Prescription only sales • Prescription only dispenses • Mutual communication on use of critical antimicrobials in vet
3. Awareness & training	• Periodic CME for healthcare staffs • awareness for both public & health care staffs
4. Supporting technologies and data	• laboratory surveillance (WHONET, GLASS) • PPS on AMR/AMU

Maki G, Chuki P, Zervos MJ et al, Antibiotics 2020;9:556

BARRIERS

DOMAINS	BARRIERS
1. National plan & strategy	• Finalize implementation plan, monitor impact •Implement training and capacity building
2. Regulation & guidelines	• Compliance to guidelines/policies
3. Awareness & training	• need to increase awareness
4. Supporting technologies and data	• continued support of laboratory • POC diagnostic • IT Supports

WAY FORWARD

- *Training on AMS competency*
- *Incorporation of AMS principles in pre and in service curriculums*
- *Development of AMS Guideline*
- *Use of WHO Tool for AMC In health care levels and WHO PPS tools*
- *AMS outcome assessments*
- *Incorporation of AMR & AMU/C Surveillance data*
- *Build regional network on AMS (SEARO)*