

How to organize an AMS program in hospitals

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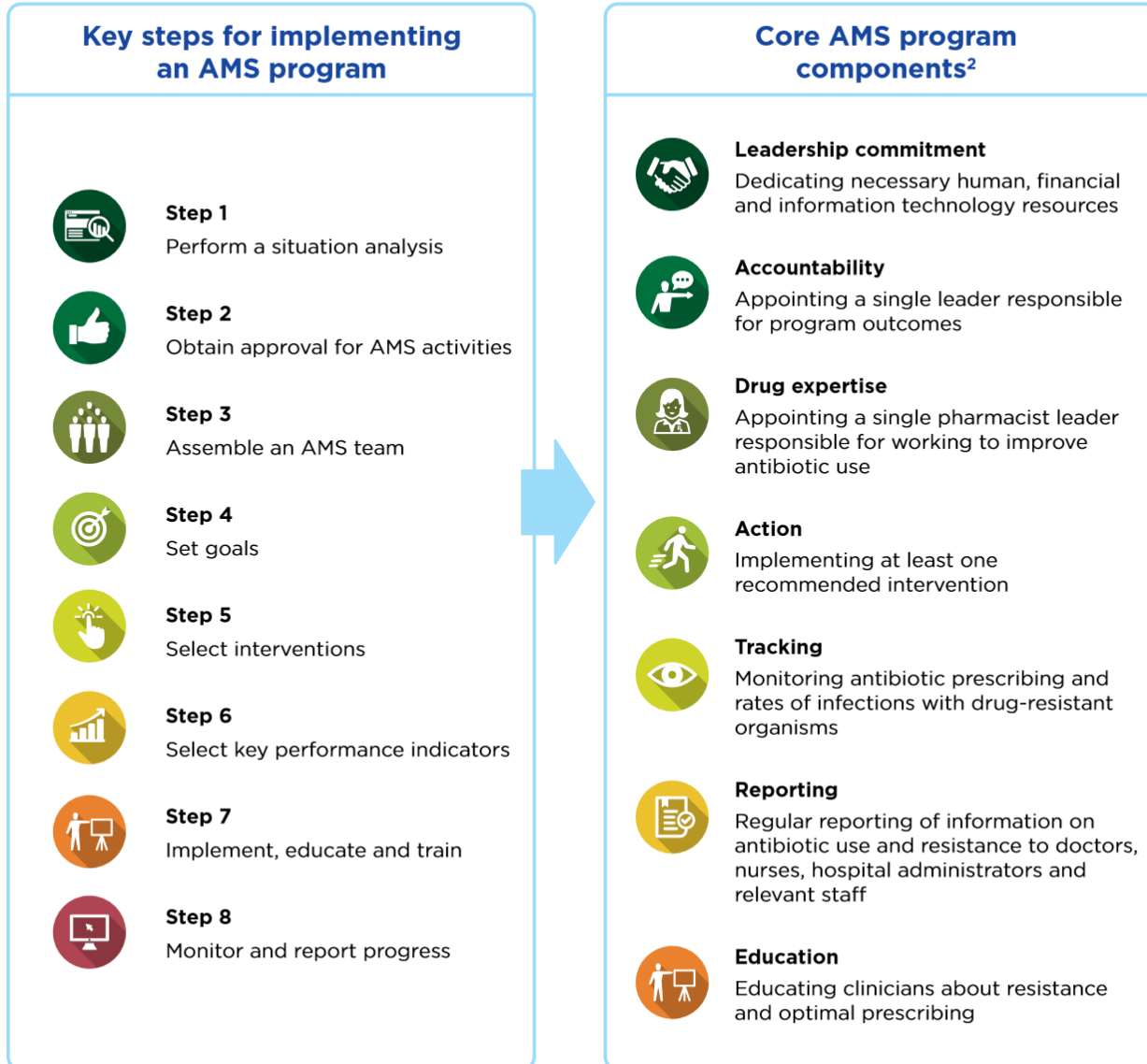
DISCLOSURES

Grants support and/or honoraria from:

- Pfizer Inc.
- MSD
- West Química
- OpGen
- GPC Pharma

Figure 1

Key steps towards implementing the core components of AMS programs

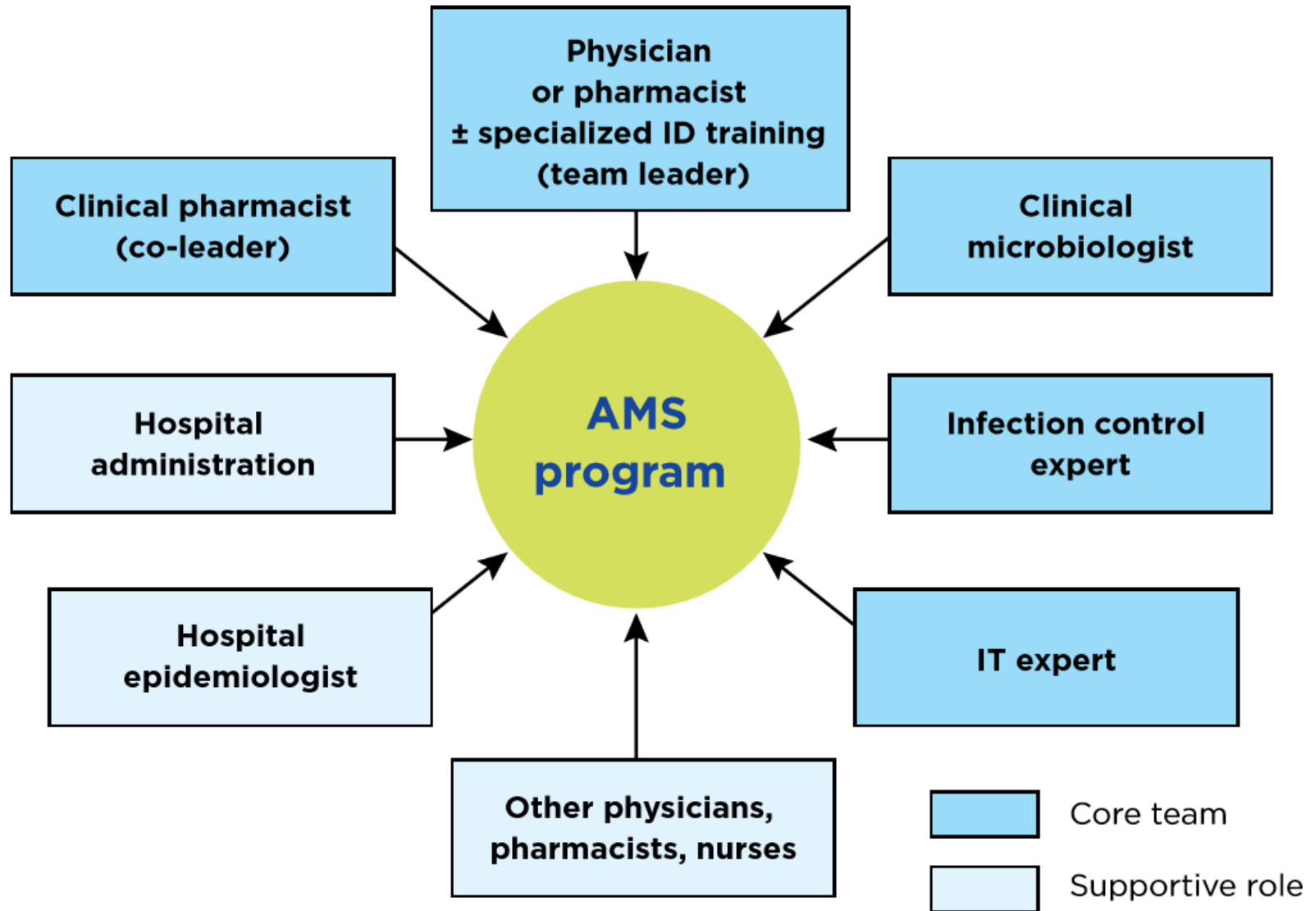


1 step

Assemble an AMS team:

From the ideal to the real AMS team

Suggested hospital AMS team structure³²



2. Step

Set goals

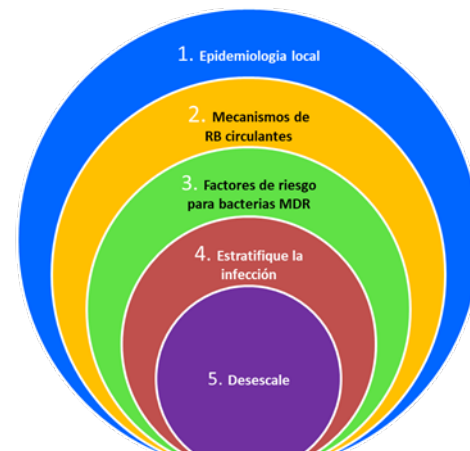
Creating Antimicrobial Guidelines

Prophylactic

- Widespread **evidence** of its impact
- **Little controversy** about the choice and administration of antibiotics to use
- **It is safe** for patients, so it becomes a priority for its implementation.
- Its impact can be **measured** in decline of SSI.

Therapeutic

- **Guidelines by infection** and not by individual antimicrobial
- **Include the 5 Golden Rules** in your Guideline
- **Have a consensus with specialists** to increase acceptance and adherence



A selection of evidence-based AMS interventions^{1,32}

Interventions	Comments and recommendations
<i>Core interventions</i>	<i>Include one or both strategies in all AMS programs</i>
Preauthorization	<ul style="list-style-type: none"> • Certain antibiotics must be approved by an AMS physician or pharmacist before they can be prescribed
Prospective audit and feedback	<ul style="list-style-type: none"> • Prescriptions for audited antibiotics are reviewed by a clinical pharmacist or an ID physician after antibiotic therapy has started, with direct feedback and recommendations to continue, adjust, change or discontinue therapy
<i>Standard interventions</i>	<i>Use any of these strategies in conjunction with core interventions</i>
Facility-specific guidelines for common ID syndromes	<ul style="list-style-type: none"> • Helps to standardize prescribing practices based on local AMR patterns, evidence-based guidelines and relevant clinical factors • Use to guide and assess empiric treatment choices, de-escalation and duration of therapy
IV-to-oral conversion	<ul style="list-style-type: none"> • Change antibiotics with good oral bioavailability from the IV to oral route as soon as possible • Relatively simple strategy applicable to many settings • Integrate into routine pharmacy activities
De-escalation	<ul style="list-style-type: none"> • Change empiric therapy to as narrow a spectrum treatment as possible as soon as possible • Choice of antibiotics for de-escalation during empiric therapy can be based on hospital guidelines, while that for pathogen-directed therapy is based on microbiology results • Integrate into routine pharmacy activities
Pharmacokinetic monitoring and adjustment	<ul style="list-style-type: none"> • Integrate into routine pharmacy activities in relation to certain agents (ie, aminoglycosides and vancomycin)
Dose optimization	<ul style="list-style-type: none"> • Make recommendations to optimize dose based on patient characteristics, microorganism, site of infection and pharmacokinetic/pharmacodynamic principles of antibiotic agents • Integrate into routine pharmacy activities

3. step
Identify key measurements
for improvement

“If you cannot measure it, you cannot improve it”

Lord Kelvin 1824-1907

Identify key measurements for improvement

1. **Measurement** is essential to evaluate the impact of stewardship interventions on clinical practice and demonstrate benefits for patients.
2. **Define** with your AMS program
 - what to measure,
 - the frequency of measurement and
 - how the data will be communicated and acted upon.
3. **Start from the easy to the complex measurements** . Ex :
 - **Diagnostic Stewardship** : use any diagnostic technique in your lab and take the result to the primary physician for therapeutic impact
 - **Impact of a common disease** using any clinical pathway (ex:UTI)
 - **Clinical and Economic impact** of the AMS program (more complex)

A selection of potential performance indicators for AMS programs¹

Process measures	Outcome measures
<p>Quantity of antibiotic use</p> <ul style="list-style-type: none"> • Defined daily dose • Days of therapy • Length of therapy <p>Quality of antibiotic use</p> <ul style="list-style-type: none"> • Rate of appropriate antibiotic prescription in accordance with hospital guidelines • Rate of acceptance of interventions • Proportion of patients with revision of antibiotics based on microbiology data • Proportion of patients converted to oral therapy • Time to conversion to oral therapy 	<p>Microbiological</p> <ul style="list-style-type: none"> • MDR bacterial infection and colonization rates • <i>Clostridium difficile</i> infection rates <p>Clinical</p> <ul style="list-style-type: none"> • Length of hospital stay • Infection-related mortality • Readmission and reinfection rates <p>Financial</p> <ul style="list-style-type: none"> • Antibiotic cost per patient per day • Antibiotic cost per patient per admission



Other performance indicators for AMS programs

- **Adherence of Antimicrobial Guidelines** on specific hospital units (ex: the intensive care unit –ICU, ER, specific ward)
- **Adherence of Antimicrobial Guidelines** by Infection syndromes (ex: skin and soft tissue, UTI , CAP)
- **Use of specific classes of antibiotics** (higher price and/or selective pressure) in one unit(s) , ward(s) or hospital wide
- **Antibiotics used for MDR bacteria** (ex: carbapenems, quinolones , cephalosporins , vancomycin vs carbapenem-resistant *A. baumannii*, XDR *P.aeruginosa* , CRE, VRE , MRSA)
- **Use of quick diagnostic tests and time to change empiric therapy**

General advice

There is no 'one size fits all' approach to implementing an AMS program, but some general rules should apply.^{2,6}



Do's

- Design your program to fit the hospital's prescribing culture, clinical needs and resources
- Start small and aim to build capacity over time
- Implement an AMS program in conjunction with effective infection prevention and control measures
- Implement an AMS program that includes preauthorization and/or prospective audit of antibiotic use
- Monitor use of at least one class of antibiotic that is thought to be misused in at least one unit of the hospital
- Provide regular feedback to stakeholders to ensure continued support and increase the scope of the program



Don'ts

- Start if there is no commitment from hospital management
- Try to implement an intervention until you have sufficient resources to do it effectively
- Try to address every problem at once

Successful implementation of an AMS program will ultimately depend on strong leadership and a coordinated multidisciplinary team approach to planning and implementation.

Thanks

