

# The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS)

-

## From data collection to antimicrobial stewardship

Ines Pauwels

Global-PPS coordination centre  
University of Antwerp, Belgium

15th Professor Alborzi International  
Congress of Clinical Microbiology

14-15, 21-22 and 28-29 October 2021



[www.global-pps.com](http://www.global-pps.com)



# Agenda

---

 **Point Prevalence Surveys – a brief introduction**

 **What is Antimicrobial Stewardship?**

 **From data collection to quality improvement**

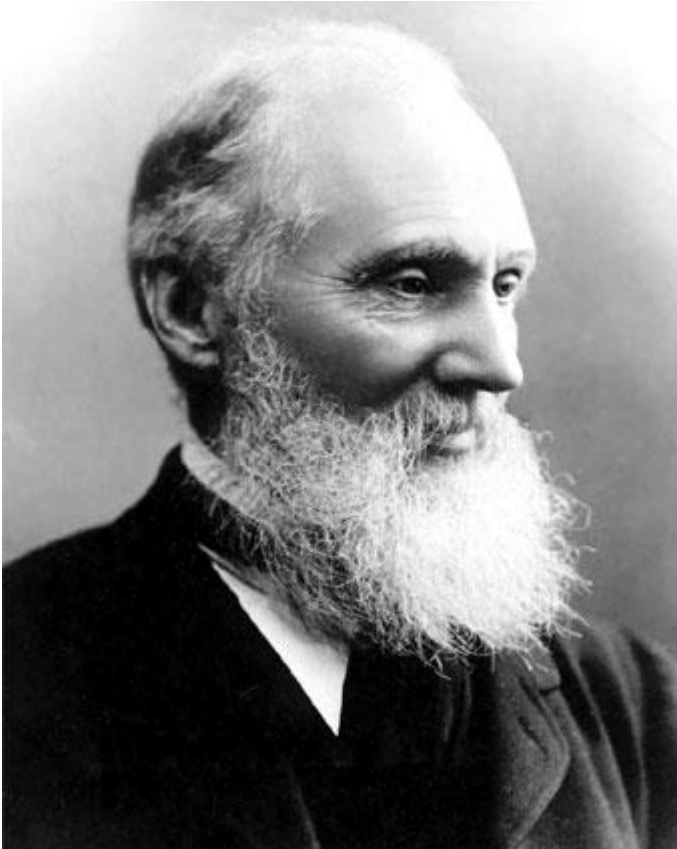
 **A few examples from around the world**

 **The WHO AWaRe classification**





# Why measure antimicrobial use?



Lord Kelvin  
Physician (1824-1907)

**“If you can’t  
measure it, you  
can’t improve it”**

## TACKLING ANTIMICROBIAL RESISTANCE ON TEN FRONTS



Public  
awareness



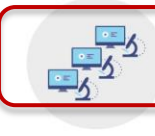
Sanitation  
and hygiene



Antibiotics in  
agriculture and  
the environment



Vaccines and  
alternatives



Surveillance



Rapid  
diagnostics



Human capital



Drugs



Global  
Innovation Fund



International  
coalition for action



# Why measure antimicrobial use?



**Describe current prescribing practices**



**Monitor trends over time**



**Compare (different wards, hospitals)**



**Motivate health care providers**



**Design targeted interventions**



**Evaluate impact of interventions**





# The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS)

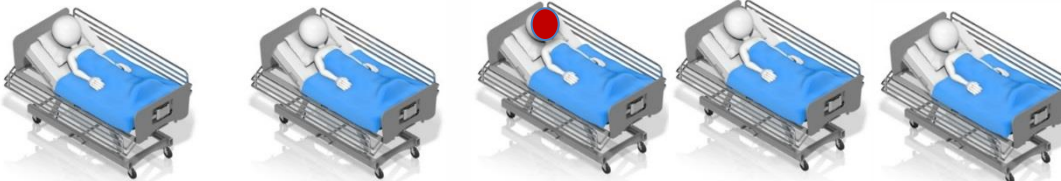
## Surgery



## ICU



## Medicine



## A snapshot of antimicrobial use in the ward/hospital

- count all **admitted patients** at 8 am on the day of the PPS
- count all **patients on antimicrobials** at 8 am on the day of the PPS
- collect detailed data for the patients on antimicrobials





biomarker data

**GLOBAL-PPS PATIENT Form** (Mandatory: Fill in one form per patient with an ongoing antimicrobial at 8am on the day of the PPS)

cultures taken?

antimicrobial & diagnosis information

quality indicators

microbiology information

Ward Name/code	Activity <sup>1</sup> (M, S, IC)	Patient Identifier <sup>2</sup>	Survey Number <sup>3</sup>	Patient Age <sup>4</sup>			Current Weight* In kg	Neonate only (optional)		Sex M, F, U	
				Years (if ≥ 2 years)	Months (1-23 month)	Days (if < 1 month)		Gestational age*	Birth weight* (kg)		
Ward B	IC	987654		84						F	
Treatment based on biomarker data or WBC		0 Yes – X No		Culture(s) sent to the lab to document infection* (Tick if yes)							
If yes, which: CRP, PCT, other or WBC <sup>5</sup>	Type biological fluid sample (Blood/urine/ other)	Most relevant value close to start antimicrobial Value Unit <sup>6</sup>		<input type="checkbox"/> Blood	<input type="checkbox"/> Cerebrospinal fluid	<input type="checkbox"/> BAL (protected resp. specimen)					
				<input type="checkbox"/> Urine	<input type="checkbox"/> Wound (surgery/biopsy)	<input checked="" type="checkbox"/> Sputum/bronchial aspirate					
				<input type="checkbox"/> Other type of specimen							
Antimicrobial Name <sup>7</sup>		1. cefepime		2.		3.		4.		5.	
Start date of the antimicrobial* (dd/mm/yyyy)		23/02/2021									
Single Unit Dose <sup>8</sup>	Unit (g, mg, IU, MU) <sup>9</sup>	2	g								
Doses/ day <sup>10</sup>	Route (P, O, R, I) <sup>11</sup>	3	P								
Diagnosis <sup>12</sup> (see appendix II)		Pneu									
Type of indication <sup>13</sup> (see appendix III)		HAI2-VAP									
Reason in Notes (Yes or No) <sup>14</sup>		Yes									
Guideline Compliance (Y, N, NA, NI) <sup>15</sup>		NA									
Is a stop/review date documented?(Yes/No)		Yes									
Treatment (E: Empirical; T: Targeted) <sup>16</sup>		T									
The following resistance data is to be filled in only if the treatment choice is based on microbiology data (Treatment=T) available on the day of the PPS											
Maximum 3 microorganisms (MO) to report Maximum 1 Resistance type by MO to report		MO	R type**	MO	R type**	MO	R type**	MO	R type**	MO	R type**
Insert codes (see Appendix IV, page 9)	MO 1	PSEAER									
	MO 2										
	MO 3										



# Information obtained from Global-PPS

- Prevalence of antimicrobial use
- Classes of antimicrobials being used: broad spectrum or narrow spectrum?
- Indications for antimicrobials: community- or hospital-acquired infections, medical or surgical prophylaxis?
- Which antimicrobials are being used for particular infections?
- Are the antimicrobials prescribed in line with local guidelines?
- Duration of antibiotics for surgical prophylaxis?
- Has a clear duration of treatment or stop date been recorded?
- Has a clear reason for prescription been recorded?
- Has treatment been changed in light of microbiology results?



# What is the next step? And where to get started?

"Identify the low-hanging fruit first!"

"We need guidelines!"

"We need to restrict carbapenem use!"



We need to shorten the duration of surgical prophylaxis!





# Agenda

---

- Point Prevalence Surveys – a brief introduction
- **What is Antimicrobial Stewardship?**
- From data collection to quality improvement
- A few examples from around the world
- The WHO AWaRe classification





# What is antimicrobial stewardship?

Coordinated **interventions** designed to **measure and improve** the **appropriate use** of [antibiotic] agents by **promoting** the selection of the **optimal** [antibiotic] drug regimen including dosing, duration of therapy, and route of administration (*IDSA guideline 2016*)

A **set of activities** meant to optimize the use of antibiotics (in a health care facility)

## Aims:

- **Improve patient outcomes**
- Decrease/optimize antimicrobial use
- Decrease antimicrobial resistance
- Decrease health care costs



# The importance of local context

## Antimicrobial stewardship → not a one-size-fits-all solution

⬡ Differences in healthcare processes, healthcare workers involved

⬡ Differences in available resources

- Human resources
- Laboratory capacity, surveillance
- Paper-based records vs. electronic health records
- ..

⬡ Different drivers for prescribing antimicrobials: habits, relation to peers, hierarchical factors etc..



# Agenda

---

- Point Prevalence Surveys – a brief introduction
- What is Antimicrobial Stewardship?
- **From data collection to quality improvement**
- A few examples from around the world
- The WHO AWaRe classification



# From data collection to AMS activities

The **PDSA** cycle for continuous quality improvement



**Commitment** from hospital administration

Map possible **enablers** and **barriers**

Study available **data**

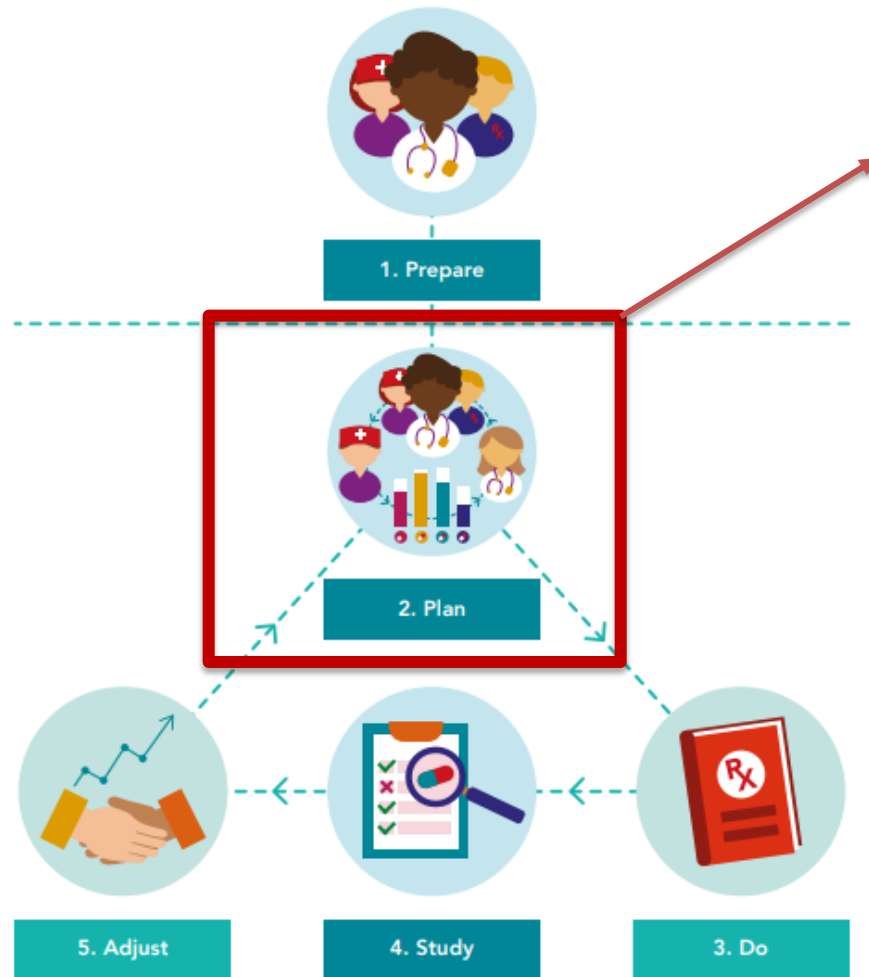
**Results from baseline PPS**  
**(quality indicators)**

e.g. “% of antimicrobial prescriptions with a documented stop/review date”



# From data collection to AMS activities

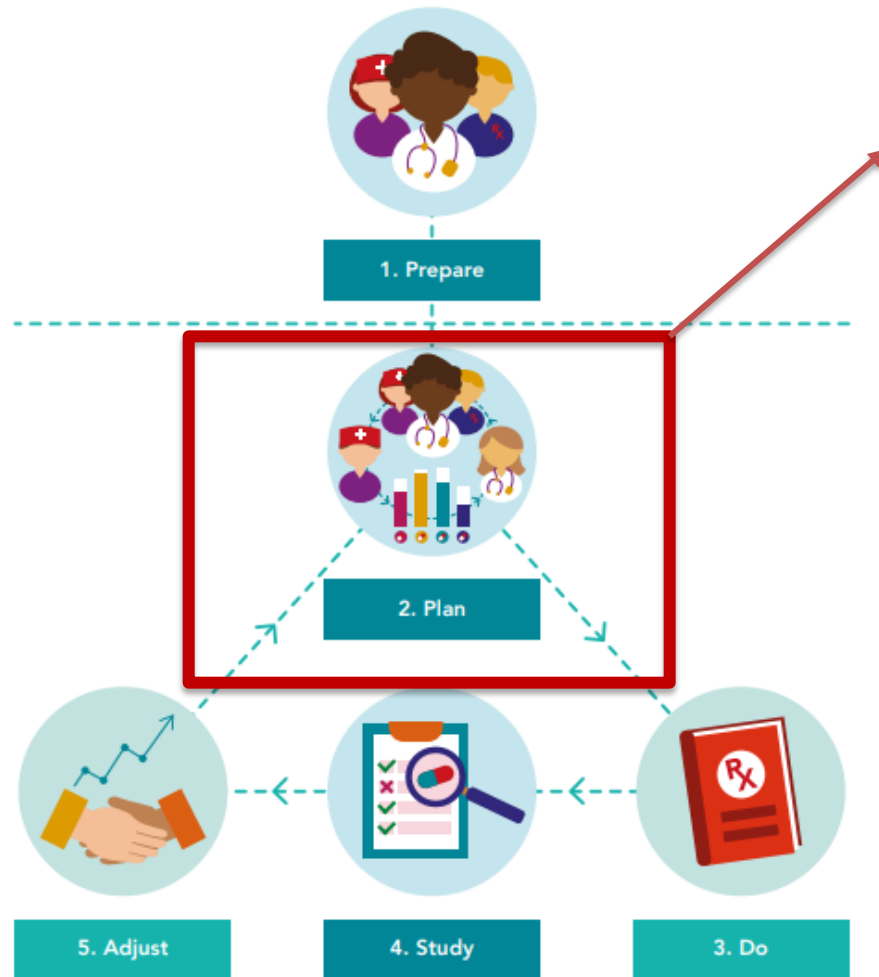
The **PDSA** cycle for continuous quality improvement





# From data collection to AMS activities

The **PDSA** cycle for continuous quality improvement



Plan **interventions** to reach your goal:

For example:

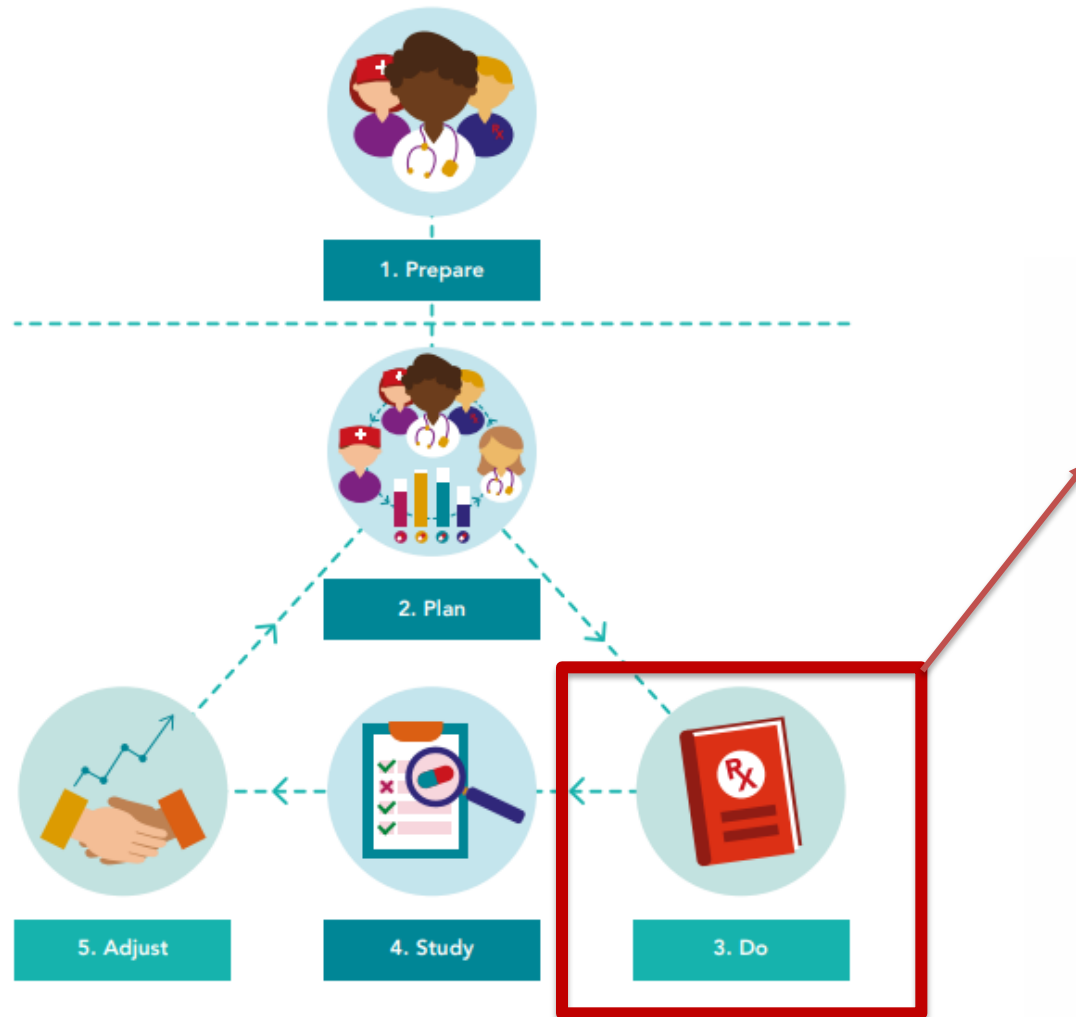
- Education, workshops
- Stop/review policies
- Communication plan, report to hospital management
- ...

example: “by June 2022, 90% of the antibiotic prescriptions on the medical wards should have a documented stop/review date”



# From data collection to AMS activities

The **PDSA** cycle for continuous quality improvement



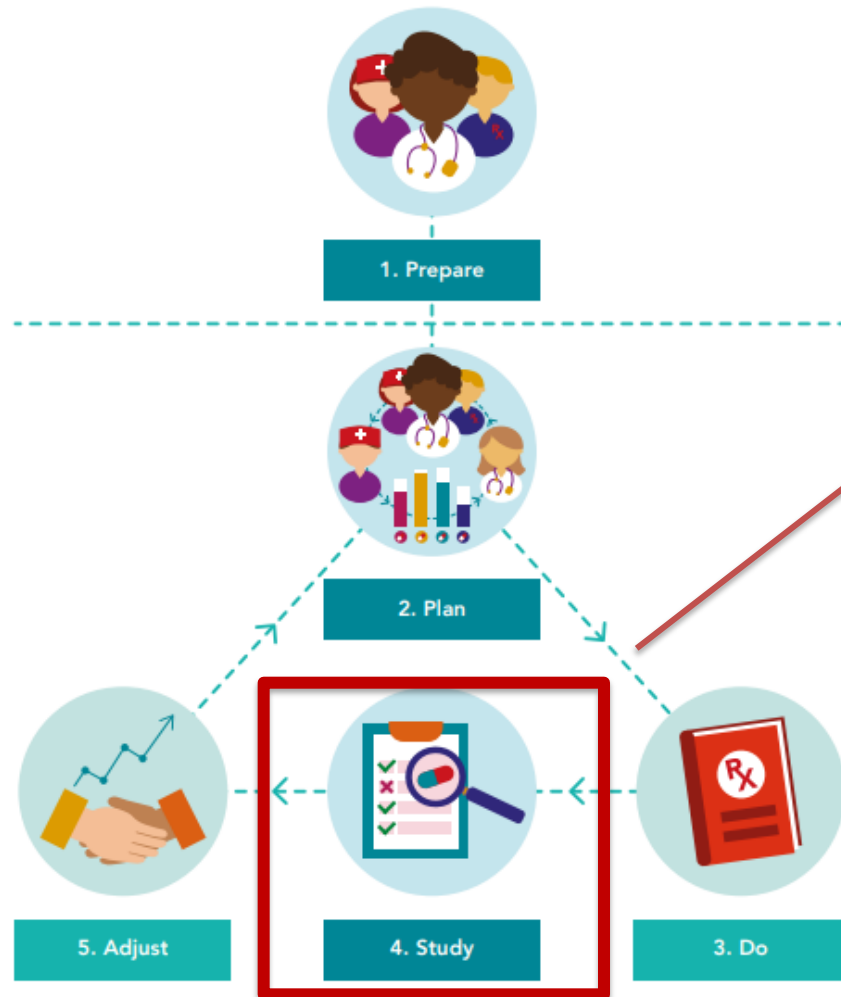
Roll out AMS **interventions**





# From data collection to AMS activities

The **PDSA** cycle for continuous quality improvement



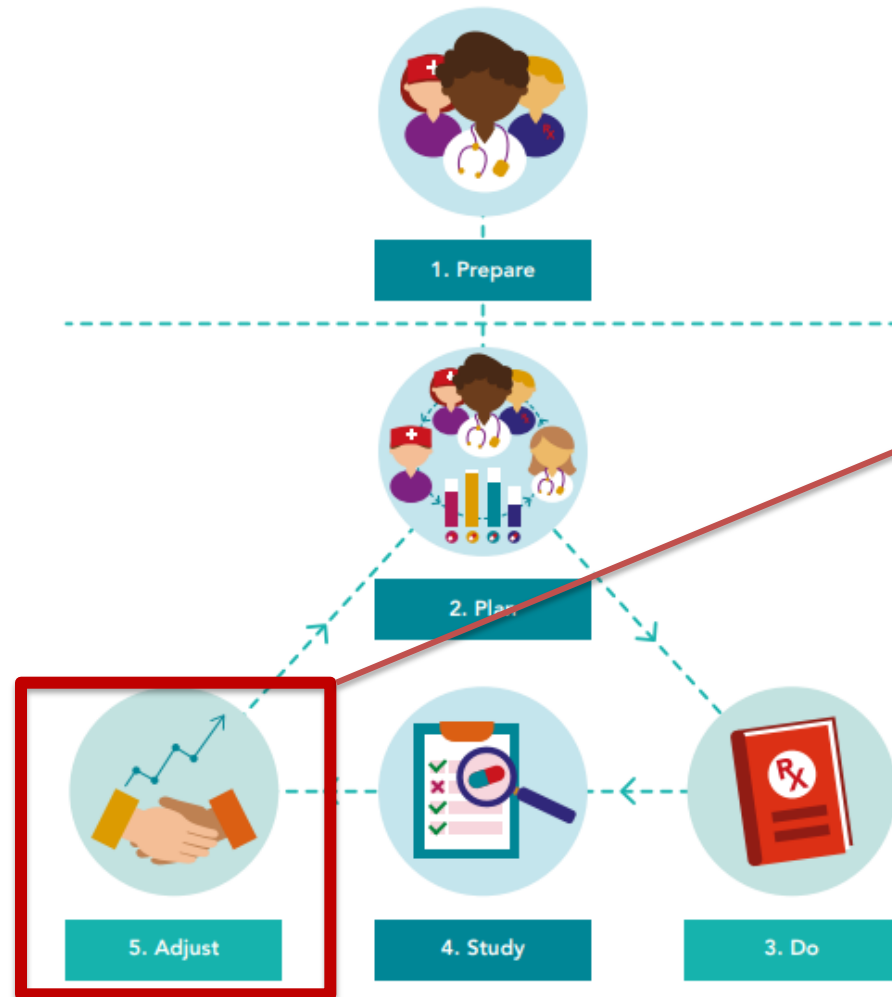
**Measure the impact of your interventions**  
→ **Repeated PPS**





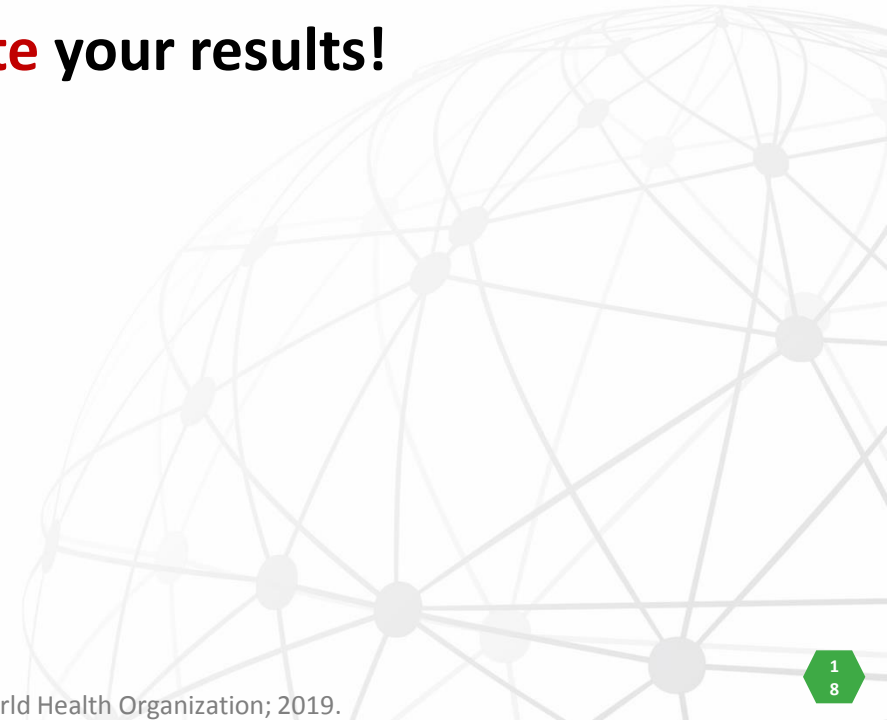
# From data collection to AMS activities

The **PDSA** cycle for continuous quality improvement



Make **adjustments** if needed

**Communicate** your results!





# Agenda

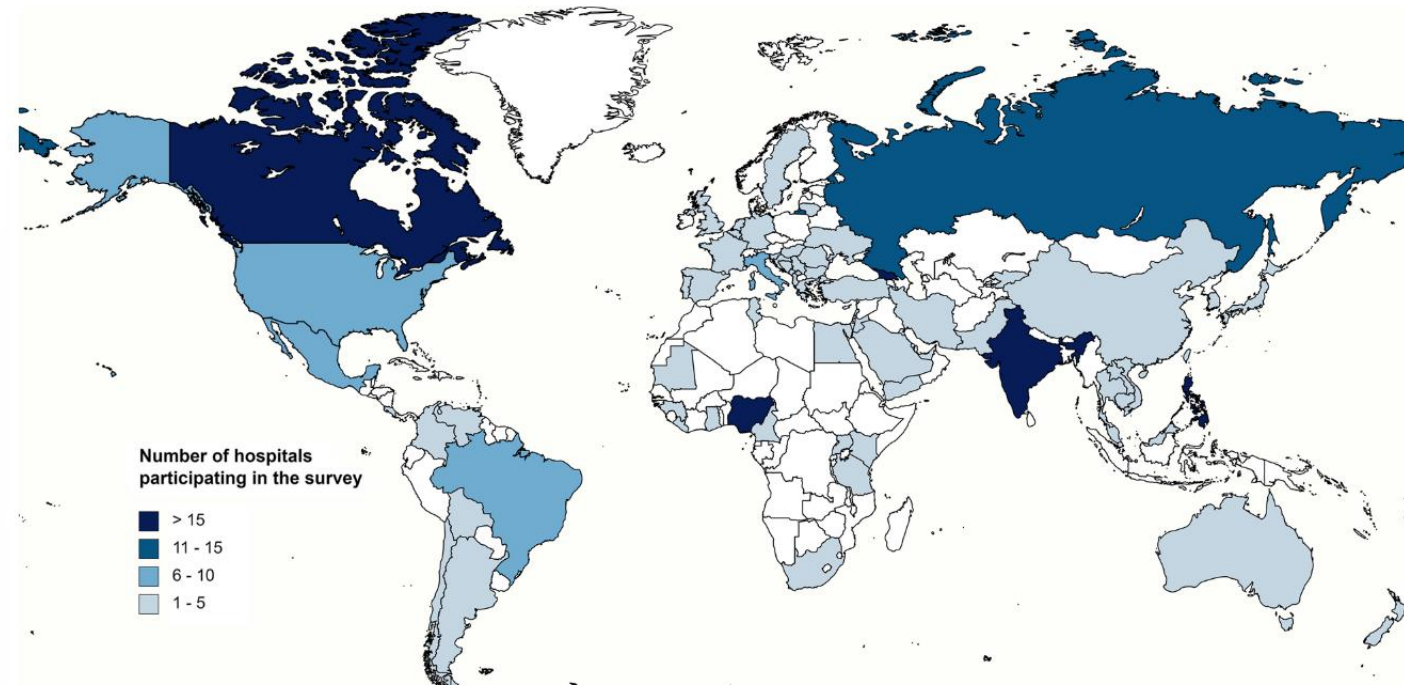
---

- Point Prevalence Surveys – a brief introduction
- What is Antimicrobial Stewardship?
- From data collection to quality improvement
- **A few examples from around the world**
- The WHO AWaRe classification



# A worldwide survey on AMS in hospitals in the Global-PPS network

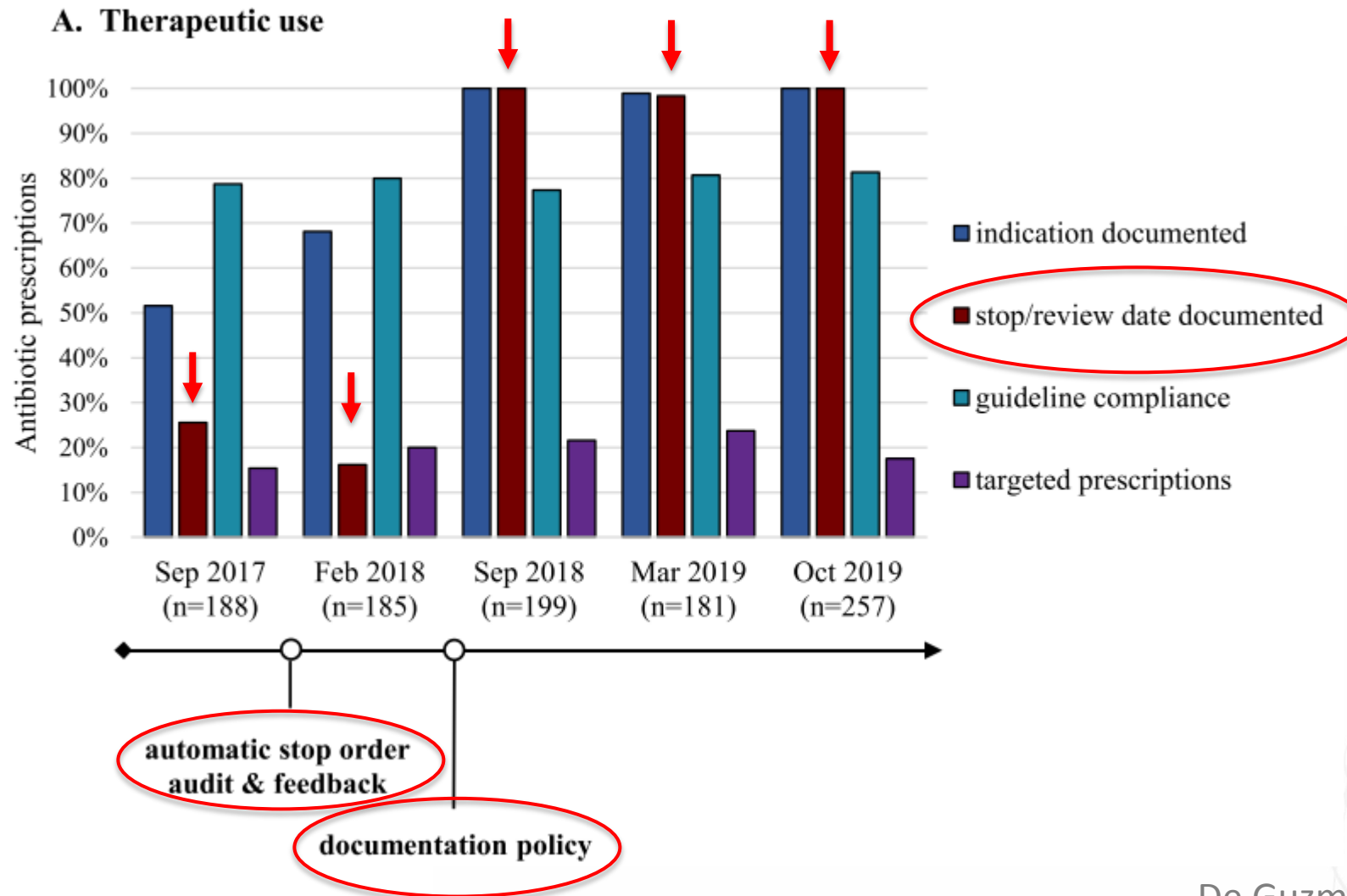
- An online survey, conducted in 248 hospitals from 74 countries
- In 96.9% of hospitals: targets for improvement of prescribing were found
- In 69.3% of hospitals: AMS components initiated as a result of Global-PPS findings
- 43.1% of hospitals had a formal AMS strategy







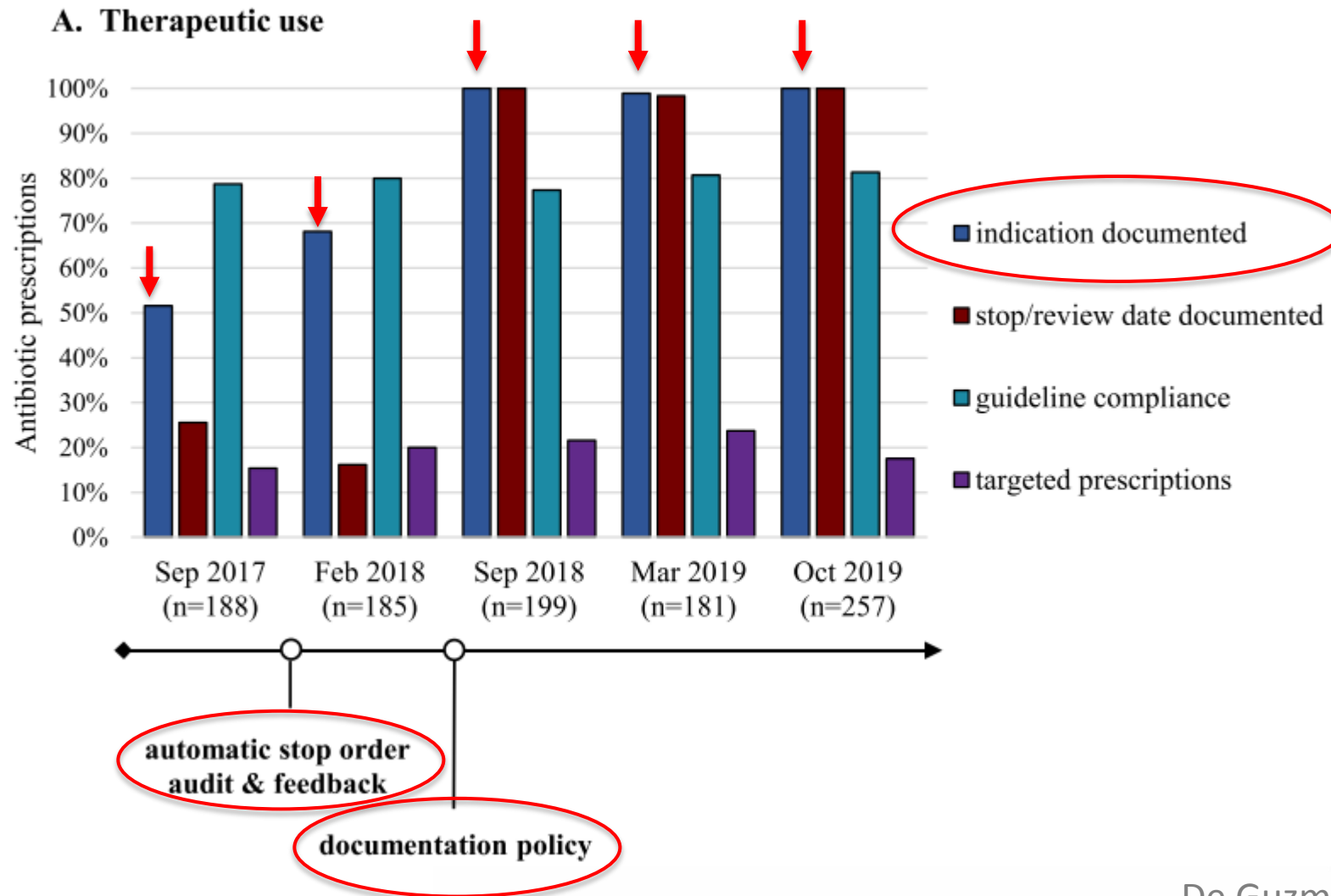
# Implementation of a multidisciplinary antimicrobial stewardship programme in a Philippine tertiary care hospital



**Target for documentation of stop/review date:**  
*“At the end of 2019, 85% of antibiotic prescriptions should have a documented stop/review date.”*



# Implementation of a multidisciplinary antimicrobial stewardship programme in a Philippine tertiary care hospital



**Target for documentation of indication:**  
*“At the end of 2019, 85% of antibiotic prescriptions should have a documented indication.”*



# Agenda

---

- Point Prevalence Surveys – a brief introduction
- What is Antimicrobial Stewardship?
- From data collection to quality improvement
- A few examples from around the world
- **The WHO AWaRe classification**





# The WHO AWaRe classification

## A tool for global antimicrobial stewardship

4 categories

### Access

- 1st or 2nd choice for empiric treatment of the most common infections
- Lower risk of resistance selection
- Amoxicillin, cefazolin, cloxacillin, clindamycin...

### Watch

- 1st or 2nd choice for limited indications only
- Higher risk of resistance selection
- Quinolones, carbapenems, cephalosporins 2<sup>e</sup> / 3<sup>e</sup> gen...

### Reserve

- To be used only as a 'last resort', when all other antibiotics have failed
- Colistin, linezolid, tigecyclin...

### Not recommended (new category 2019)

Mainly fixed-dose combinations of broad-spectrum antibiotics

<b>Access</b>	
• Amikacin	• Cloxacillin
• Amoxicillin	• Doxycycline
• Ampicillin	• Gentamicin
• Amoxicillin–clavulanic acid	• Metronidazole
• Benzathine benzylpenicillin	• Nitrofurantoin
• Benzylpenicillin	• Phenoxymethyl penicillin
• Cefazolin	• Procaine penicillin
• Chloramphenicol	• Spectinomycin
• Clindamycin	• Sulfamethoxazole–trimethoprim
<b>Watch</b>	
• Azithromycin	• Vancomycin (intravenous* and oral)
• Cefixime	• Ciprofloxacin
• Ceftriaxone	• Clarithromycin
• Cefotaxime	• Meropenem*
• Ceftazidime*	• Piperacillin–tazobactam
• Cefuroxime	
<b>Reserve*</b>	
• Fosfomycin (intravenous)	• Ceftazidime–avibactam
• Linezolid	• Meropenem–vaborbactam
• Colistin	• Plazomicin
• Polymyxin B	

**Figure: Antibiotics included in 2019 WHO Essential Medicines List by AWARe group**

\*Antibiotics listed in the complementary list of the 2019 WHO Essential Medicines List, indicating the need for specialist supervision.



# How to integrate AWaRe in stewardship activities?

## Use AWaRe in surveillance of antibiotic consumption

AWaRe categories can be used for evaluation, benchmarking and setting targets

## Update national Essential Medicines List with AWaRe groups

Improve “Access to Access antibiotics”

## Apply AWaRe categories in national and local antibiotic guidelines

Maximise the use of ACCESS antibiotics in empiric treatment guidelines

## Target WATCH and RESERVE groups for stewardship

Focused stewardship interventions (e.g. audit and feedback, formulary restriction)

## Include in health professional curricula

Pre- and in-service training of health care professionals





# How to integrate AWaRe in stewardship activities?

## Use AWaRe in surveillance of antibiotic consumption

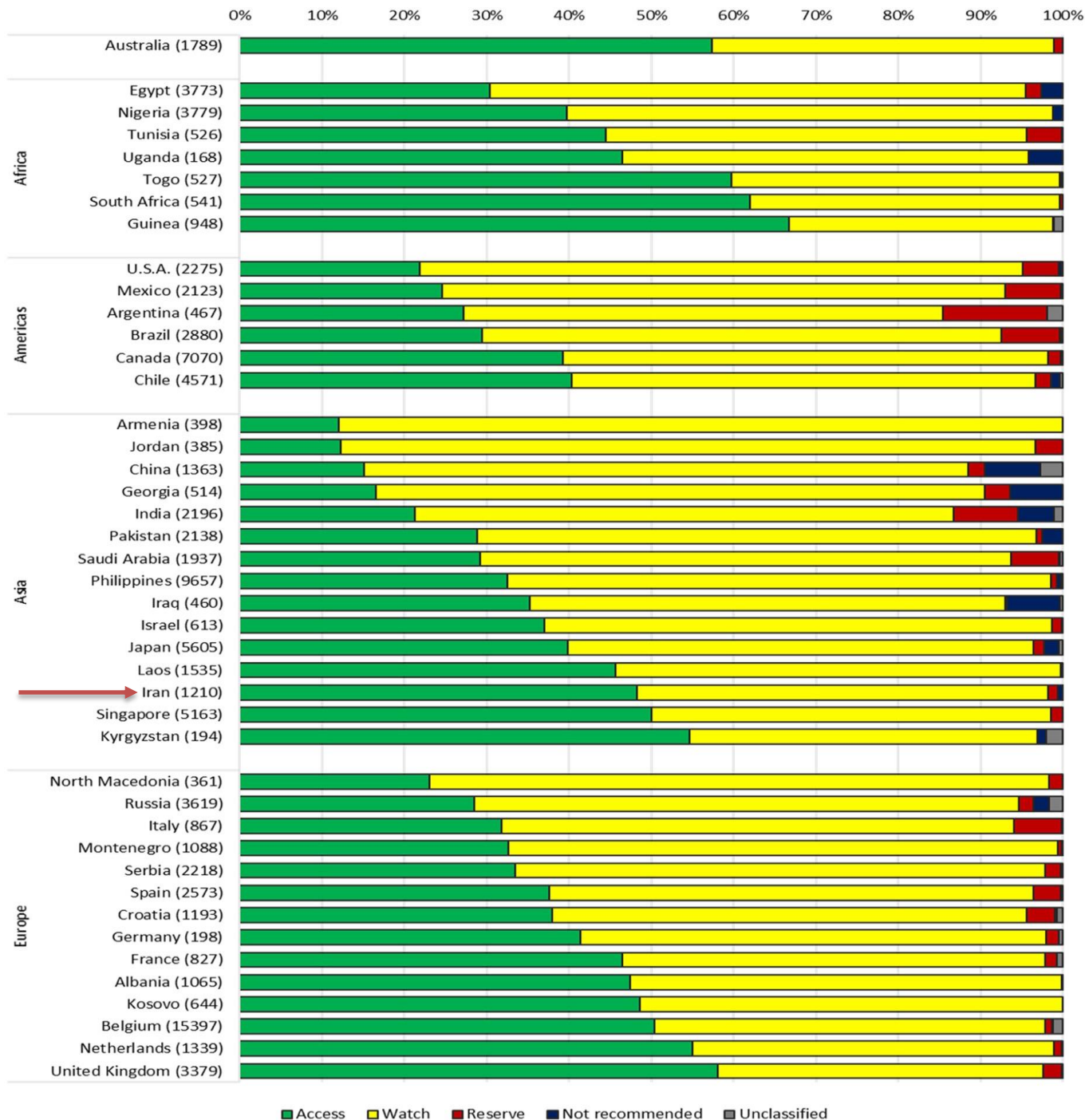
AWaRe categories can be used for evaluation, benchmarking and setting targets



**New, global target, set by WHO:**

***“By 2023, Access antibiotics should make up at least 60% of national consumption”***

**<https://adoptaware.org/>**



**Hospital antibiotic  
prescribing according to  
the WHO AWaRe  
classification: results from  
the 2015-2018 Global-PPS**



# Take home messages

- When implementing antimicrobial stewardship, build on what is already there
- Involve ward staff, pharmacists, microbiologists etc...
- Set SMART goals
- Start small and go step by step
- Follow up using repeated (targeted) measurements
- Communicate your results and report to hospital management





# Thank you !

---



<https://www.global-pps.com/>

[global-PPS@uantwerpen.be](mailto:global-PPS@uantwerpen.be)

**Any hospital is welcome to participate**