GLOBAL POINT PREVALENCE SURVEY OF ANTIMICROBIAL CONSUMPTION AND RESISTANCE (GLOBAL-PPS)

Global-PPS and capacity building for antibiotic stewardship Extension with the HAI module

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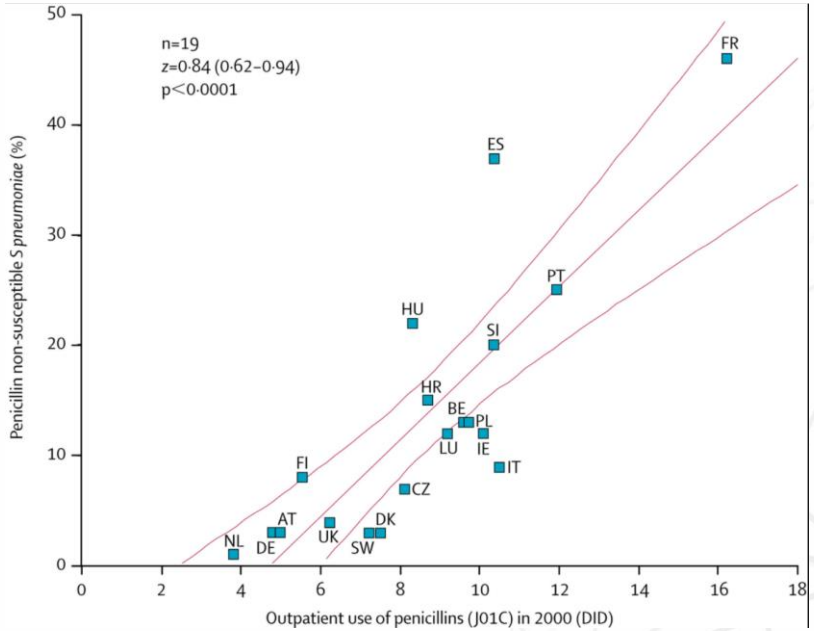
Antibiotic Resistance Infections Affect Millions of People

- Combatting antimicrobial resistance is one of the most pressing challenges in medicine today.
- The more we use antibiotics, the higher the prevalence of antimicrobial resistance, e.g. relation between outpatient use of penicillins and penicillin non-susceptible *S. Pneumoniae* (Goossens *et al.*, Lancet, 2005)



Capacity building for Antimicrobial Stewardship

Goals of the WHO global action plan on antimicrobial resistance[1]

- Improve awareness and understanding of antimicrobial resistance;
- Strengthen knowledge through surveillance and research;
- Reduce the incidence of infection;
- Optimize the use of antimicrobial agents;
- Ensure sustainable investment in countering antimicrobial resistance.

The Global-PPS has a role to play !

[1]World Health Organization, 2015. Global Action Plan on Antimicrobial Resistance. https://www.who.int/antimicrobial-resistance/global-action-plan/en/

WHO : Year of the NURSE !

World Health Organization https://www.who.int/campaigns/year-of-the-nurse-and-the-midwife-2020

The nurse has an essential role as an antimicrobial “resistance fighter”!

What is Antimicrobial Stewardship (AMS) ?

*"… **coordinated interventions** designed to improve and measure 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)*

"… an organisational or healthcare-system-wide approach to promoting and monitoring judicious use of antimicrobials to preserve their future effectiveness" (UK, NICE guideline, 2015)

*"…the right antibiotic for the right **patient**, at the right **time**, with the right **dose**, and the right **route**, causing the least harm to the patient and future patients" (BSAC, Antimicrobial stewardship, from principles to practice, 2018)*

The need to partner with nurses to promote effective antibiotic stewardship (1)

Five nurse-driven antibiotic stewardship practices:

- Questioning the need for urine cultures;
- Ensuring early and proper culturing technique;
- Recording an accurate penicillin drug allergy history;
- Encouraging the prompt transition from intravenous (IV) to oral (PO) antibiotics;
- Initiating an antibiotic timeout.

Ref: E.J. Carter et al., Exploring the nurses' role in antibiotic stewardship: A multisite qualitative study of nurses and infection preventionists. Am J Infect Control, 2018.

The need to partner with nurses to promote effective antibiotic stewardship (2)

Some more nurse-driven antibiotic stewardship practices:

- Appropriate triage and isolation
- Timely antibiotic initiation and follow up (right time)
- Patients progress reporting (laboratory, radiology reports, …)
- Reporting adverse events (e.g. diarrhea)
- Review antibiotic orders (changes in medications)
- Monitor isolation precautions (resistant infection)
- Patient and family education, discharge teaching
- …..

Ref: White paper: **Redefining the Antibiotic Stewardship Team: Recommendations from the American Nurses Association/Centers for Disease Control and Prevention Workgroup on the Role of Registered Nurses in Hospital Antibiotic Stewardship Practices**.
https://www.cdc.gov/antibiotic-use/healthcare/pdfs/ANA-CDC-whitepaper.pdf

Overview

- The birth of the Global-PPS
- Purpose
- Method
- Global-PPS results worldwide
- Global-PPS results Nigeria
- The WHO AWaRe tool for AMS (Ines Pauwels)

Global-PPS – How it started

University of Antwerp, Belgium → European Surveillance of Antimicrobial Consumption (ESAC-PPS)

The 4th Edition of the World HAI Forum on HAI and Antimicrobial Resistance - Annecy, France

bioMérieux funding

1st worldwide Global-PPS

Three Surveys/year

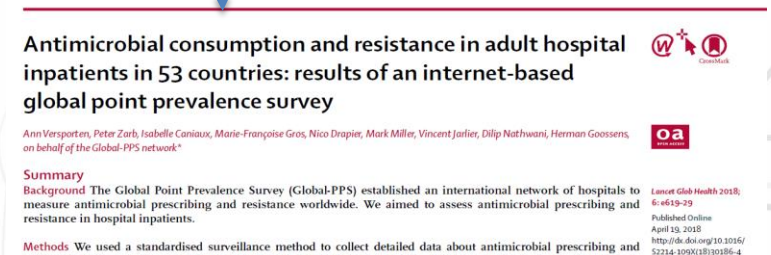
2006-2009 | **2011-2012** | **June 2013** | **2014** | **2015** | **2017** | **2018-2020 ...**

Antimicrobial resistance and prescribing in European children (ARPEC-PPS)

European funding

Global-PPS pilot

Any hospital admitting inpatients is welcome to participate



Antimicrobial consumption and resistance in adult hospital inpatients in 53 countries: results of an internet-based global point prevalence survey

Ann Versporten, Peter Zarb, Isabelle Caniaux, Marie-Françoise Gros, Nico Drapier, Mark Miller, Vincent Jarlier, Dilip Nathwani, Herman Goossens, on behalf of the Global-PPS network*

Summary

Background The Global Point Prevalence Survey (Global-PPS) established an international network of hospitals to measure antimicrobial prescribing and resistance worldwide. We aimed to assess antimicrobial prescribing and resistance in hospital inpatients.

Methods We used a standardised surveillance method to collect detailed data about antimicrobial prescribing and

Lancet Glob Health 2018; 6: e619–29

Published Online April 19, 2018 http://dx.doi.org/10.1016/S2214-109X(18)30186-4

Amadeo B. et al, JAC 2010, Zarb P. et al, JAC 2011, Drugs 2011, CMI 2012, Drugs Aging 2012; Versporten A. et al, PIDJ 2013, JAC 2016; Jafar Soltani et al, Erciyes Med J. 2019.

Global-PPS purpose

- Monitor rates of antimicrobial prescribing in hospitalized adults, children and neonates.
- Determine the variation in drug, dose and indications of antimicrobial prescribing across continents.
- Identify targets to improve quality of antimicrobial prescribing and to prevent Healthcare Associated Infections (HAI)
- Help designing stewardship interventions to promote prudent antimicrobial use and improve patient health
- Assess effectiveness of interventions through repeated PPS
- Analyze epidemiological trends

Global-PPS surveillance tool

- On a voluntary basis
- Implementing a uniform standardized methodology
- Using a simple web-based tool : quality assurance, data validation process and feedback reporting
- Hospital builds up & remains owner of own database
- Data storage on server at University of Antwerp, Belgium
- Guarantee of data privacy
  - Hospital names will never be revealed in any report or publication
  - Complete anonymous patient data-entry
- Publication policy available on request

Global-PPS & the optional HAI module
Method

- Point Prevalence Survey = “snapshot at a particular time”
- All wards of the hospital are included “once”
- **Data collection on 3 paper forms**
  - ✓ Ward form for the collection of denominators
    - N patients admitted
    - N available beds
    - N patients with an invasive device (HAI module only)
  - ✓ Patient basic form (numerator)
  - ✓ Patient HAI form (numerator, optional)

Collection of denominators on the ward form

- Total N of **patients** present on the ward before 8:00 am
- Total N of **beds** on the ward at 8:00 am
- Total N of **invasive devices** = extra denominators for the « optional » HAI module

✓ All wards (units/departments) of the hospital have to be included once

Global-PPS & optional HAI module Ward form

Ward Form (Mandatory : Fill in one form for each ward included in the PPS)

Include only inpatients "admitted before and present at 08:00 hours" on the day of the PPS!

Date of survey (dd/mm/year)	____/____/_____	**Person completing form** (Auditor code) :	
Hospital name :		**Ward Name :**	

Ward Type: Tick the most appropriate type of department/ward

Adult wards		Paediatric wards
☐ **AMW** (General or mixed **Adult Medical Ward**)	☐ **ASW** (General or mixed **Adult Surgical Ward**)	☐ **PMW** (Paediatric Medical Ward)
☐ **HO-AMW** (Haematology-Oncology)	☐ **DIG-ASW** (Digestive tract surgery)	☐ **HO-PMW** (Haematology-Oncology)
☐ **T-AMW** (Transplant (BMT/solid))	☐ **ORT-ASW** (Orthopaedics-Trauma surg.)	☐ **T-PMW** (Transplant (BMT/Solid))
☐ **P-AMW** (Pneumology)	☐ **URO-ASW** (Urological surg.)	☐ **PSW** (Paediatric Surgical Ward)
☐ **CAR-AMW** (Cardiology)	☐ **CV-ASW** (Cardio-vascular surg.)	☐ **PICU** (Paediatric Intensive Care Unit)
☐ **NEU-AMW**(Neurology)	☐ **NEU-ASW** (Neurosurgery)	☐ **ID-PMW** (Infectious Disease PMW)
☐ **REN-AMW** (Nephrology)	☐ **ONCO-ASW** (Oncology-cancer surg.)	
☐ **ID-AMW** (Infectious Disease)	☐ **PLAS-ASW** (Plastic, reconstructive surg.)	**Neonatal wards:**
☐ **DB-AMW** (Dermatology-burn wards)	☐ **ENT-ASW** (Ear-nose-throat surg.)	☐ **NMW** (Neonatal Medical Ward)
☐ **PSY-AMW** (Psychiatry)		☐ **NICU** (Neonatal Intensive Care Unit)
☐ **REH-AMW** (Rehabilitation)	☐ **AICU** (General or mixed **Adult Intensive Care Unit**)	
☐ **GER-AMW** (Geriatrics)	☐ **MED-AICU** (Medical AICU)	
☐ **LTC-AMW** (Long-Term care)	☐ **SUR-AICU** (Surgical AICU)	
☐ **OBG-AMW** (gynaecology-obstetrics)	☐ **CAR-AICU** (Cardiac AICU)	

Mixed Ward ☐ **Yes** ☐ **No**

Activity: Tick as appropriate. In case of mixed wards, tick all encountered activities/specialities	☐ **Medicine**	☐ **Surgery**	☐ **Intensive Care**
Total number of admitted inpatients (=all patients whether they receive an antimicrobial or not !) on the ward present at 8.00 am on day of PPS. For mixed departments, fill the total number of patients corresponding to each of the encountered activities.			
Total number of beds on the ward present at 8:00 am on day of PPS split up by activity. For mixed departments fill in the total number of beds corresponding to each of the encountered activities.			

The next section is to be filled in 'only' if you are participating in the Healthcare-Associated Infections (HAI) module

Total number of "admitted" inpatients with one of the following "inserted" invasive devices at 8:00 am on day of PPS				
	Indwelling Urinary Catheter (UC)			
	At least one peripheral vascular catheter (PVC)			
	Central vascular catheter, no implantable venous port (CVC)			
	Non-invasive mechanical ventilation (CPAP, BiPAP)			
	Invasive respiratory endotracheal intubation (IRI)[1]			
	Inserted tubes and drains (T/D)[2]			

Optional field for HAI module

[1] Include tracheostomy

[2] Inserted tubes and drains: include patients with nephrostomy tubes, intra-abdominal tubes and drains, cerebrospinal fluid shunts etc.

Global-PPS & optional HAI module Patient form

- Detailed data (Numerator) collected only for patients on at least one antimicrobial (**Basic Global-PPS**)
  - ✓ Patient data : age, gender, weight
  - ✓ Antimicrobial prescription data : agent, dose, RoA, diagnosis, indication
  - ✓ Set of quality indicators: reason in notes, stop/review date written in notes, guideline compliance
  - ✓ Microbiology data : targeted versus empiric use, AMR data (micro-organism and resistance type)

- Patient HAI form (**optional HAI module**)
  - ✓ Presence of invasive devices : use of vascular & urinary catheters, endotracheal intubation, tubes & drains
  - ✓ Comorbidity

Numerator - Inclusion criteria

Include all admitted inpatients receiving an "active/ongoing" antimicrobial prescription at 8 am on the day of survey

In practice, this means 1) For an observed national average antimicrobial prevalence rate of 50% and 2) For a hospital with on average 200 admitted inpatients a day and a bed occupancy of 100%

- **Global-PPS : collects detailed data for on average 100 inpatients for the entire hospital.**

Global-PPS & optional HAI module
Patient basic form

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

Ward Name/code	Activity [1] (M, S, IC)	Patient Identifier [2]	Survey Number [3]	Patient Age [4] Years (if ≥ 2 years)	Months (1-23 month)	Days (if <1 month)	Current Weight* In kg	Neonate only (optional) Gestational age*	Birth weight* (kg)	Gender M, F, U
ICU-2	IC	123456789		65			78.3			M

Treatment based on biomarker data or WBC			X Yes – 0 No		Culture(s) sent to the lab to document infection* (Tick if yes)		
If yes, which: CRP, PCT, other or WBC[5]	CRP	Type biological fluid sample (Blood/urine/ other)	Blood	Most relevant value close to start antimicrobial: Value / Unit[6]	X Blood	☐ Cerebrospinal fluid	☐ BAL (protected resp. specimen)
					X Urine	☐ Wound (surgery/biopsy)	☐ Sputum/bronchial aspirate
				196 / mg/L			☐ Other type of specimen

Antimicrobial Name [7]		1. Daptomycin		2. Fluconazole		3. Metronidazole		4. Meropenem		5.	
Start date of the antimicrobial* (dd/mm/yyyy)		19/10/2019		19/10/2019		19/10/2019		20/10/2019			
Single Unit Dose [8]	Unit (g, mg, IU, MU) [9]	500	mg	200	mg	400	mg	1	g		
Doses/ day [10]	Route (P, O, R, I) [11]	1	P	1	P	3	O	3	P		
Diagnosis [12] (see appendix II)		IA		IA		IA		IA			
Type of indication [13] (see appendix III)		HAI1		HAI1		HAI1		HAI1			
Reason in Notes (Yes or No) [14]		Yes		yes		Yes		Yes			
Guideline Compliance (Y, N, NA, NI) [15]		Y		Y		Y		Y			
Is a stop/review date documented?(Yes/No)		No		No		No		No			
Treatment (E: Empirical; T: Targeted)[16]		T		T		E		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	ENCFAE	VRE	CANSPP				ESCCOL	3GCREB		
MO 2										
MO 3										

Resistance type - choose between: **MRSA**[17]; **MRCoNS**[18]; **PNSP**[19]; **MLS**[20]; **VRE**[21]; **ESBL** (ESBL-producing Enterobacterales[22]); **3GCREB** (3rd generation cephalosporin resistant Enterobacterales); **CRE** (Carbapenem-resistant Enterobacterales[23]); **ESBL-NF** (ESBL-producing non fermenter Gram-negative bacilli[24]); **CR-NF** (Carbapenem-resistant non fermenter Gram-negative bacilli[25]); **other MDRO**[26]; **Azoles**[27]. Encode Microorganism also if resistance type is unknown.

Note: * ***Current weight***, **Gestational age (in number of weeks)**, ***Birth weight***, ***Start date of the antimicrobial*** and ***Cultures sent to the lab*** are optional variables.

Appendix II - Diagnostic codes (what the clinician aims at treating)

Site	Codes	Examples
CNS	Proph CNS	Prophylaxis for CNS (neurosurgery, meningococcal)
	CNS	Infections of the Central Nervous System
EYE	Proph EYE	Prophylaxis for Eye operations
	EYE	Therapy for Eye infections e.g., Endophthalmitis
ENT	Proph ENT	Prophylaxis for Ear, Nose, Throat (**Surgical or Medical prophylaxis=SP/MP**)
	ENT	Therapy for Ear, Nose, Throat infections including mouth, sinuses, larynx
	AOM	Acute otitis media
RESP	Proph RESP	Pulmonary surgery, prophylaxis for **Resp**iratory pathogens e.g. for aspergillosis
	LUNG	Lung abscess including aspergilloma
	URTI	Upper Respiratory Tract viral Infections including influenza but not ENT
	Bron	Acute **Bron**chitis or exacerbations of chronic bronchitis
	Pneu	**Pneu**monia or LRTI (lower respiratory tract infections)
	TB	Pulmonary TB (Tuberculosis)
	CF	Cystic fibrosis
CVS	Proph CVS	Cardiac or Vascular Surgery, endocarditis prophylaxis
	CVS	CardioVascular System infections: endocarditis, endovascular device e.g pacemaker, vascular graft
GI	Proph GI	Surgery of the Gastro-Intestinal tract, liver or biliary tree, GI prophylaxis in neutropenic patients or hepatic failure
	GI	Gastro-Intestinal infections (salmonellosis, *Campylobacter*, parasitic, etc.)
	IA	Intra-Abdominal sepsis including hepatobiliary, intra-abdominal abscess *etc.*
	CDIF	*Clostridioides difficile* infection
SSTBJ	Proph BJ	Prophylaxis for SST, for plastic or orthopaedic surgery (Bone or Joint)
	SST	Skin and Soft Tissue: Cellulitis, wound including surgical site infection, deep soft tissue not involving bone e.g., infected pressure or diabetic ulcer, abscess
	BJ	Bone/Joint Infections: Septic arthritis (including prosthetic joint), osteomyelitis
UTI	Proph UTI	Prophylaxis for urological surgery (**SP**) or recurrent Urinary Tract Infection (**MP**)
	Cys	Lower Urinary Tract Infection (UTI) : cystitis
	Pye	Upper UTI including catheter related urinary tract infection, pyelonephritis
	ASB	Asymptomatic bacteriuria
GUOB	Proph OBGY	Prophylaxis for **OB**stetric or **GY**naecological surgery (SP: section caesarean, no episiotomy; MP: carriage of group B streptococcus)
	OBGY	**Ob**stetric/**Gy**naecological infections, **S**exually **T**ransmitted **D**iseases (**STD**) in women
	GUM	Genito-Urinary **M**ales + Prostatitis, epididymo-orchitis, STD in men
No defined site (NDS)	BAC	Bacteraemia or fungaemia with no clear anatomic site and no shock
	SEPSIS	Sepsis of any origin (eg urosepsis, pulmonary sepsis etc), sepsis syndrome or septic shock with no clear anatomic site. Include fungaemia (candidemia) with septic symptoms
	Malaria	
	HIV	Human immunodeficiency virus
	PUO	**P**yrexia of **U**nknown **O**rigin - Fever syndrome with no identified source or site of infection
	PUO-HO	Fever syndrome in the non-neutropenic Haemato–Onco patient with no identified source of pathogen
	FN	Fever in the **N**eutropenic patient
	LYMPH	**Lymph**atics as the primary source of infection eg suppurative lymphadenitis
	Sys-DI	Disseminated infection (viral infections such as measles, CMV …)
	Other	Antimicrobial prescribed with documentation but no defined diagnosis group
	MP-GEN	Drug is used as **M**edical **P**rophylaxis in **gen**eral, without targeting a specific site, e.g. antifungal prophylaxis during immunosuppression
	UNK	Completely **Unk**nown Indication
	PROK	Antimicrobial (e.g. erythromycin) prescribed for **Prok**inetic use
Neo-natal	MP-MAT	Drug used as **M**edical **P**rophylaxis for **Maternal** risk factors e.g. maternal prolonged rupture membranes
	NEO-MP	Drug is used as **M**edical **P**rophylaxis for **Newborn** risk factors e.g. VLBW (Very Low Birth Weight) and IUGR (Intrauterine Growth Restriction)
	CLD	Chronic lung disease: long-term respiratory problems in premature babies (bronchopulmonary dysplasia)

Diagnostic codes

Following anatomical site of infection

For each site choose between:

- Therapeutic
- Prophylactic
  - Surgical
  - Medical

Specific codes for neonates are available

APPENDIX III - Type of Indication

CAI Community acquired infection	Symptoms started ≤ 48 hours from admission to hospital (or present on admission).		
HAI Healthcare Associated Infection: Symptoms start **48 hours after admission** to hospital	**HAI1** Post-operative surgical site infection (within: 30 days of surgery OR; 90 days after implant surgery)		
	Inter-vention related HAI	**HAI2** ***Intervention*** related infections of mixed origin (mix of CVC-BSI, PVC-BSI, VAP, CAUTI; or related to tubes/drains)	
		HAI2-CVC-BSI (Central Venous **Catheter**-related Blood Stream Infection)	
		HAI2-PVC-BSI (Peripheral Vascular **Catheter**-related Blood Stream Infection)	
		HAI2-VAP (Ventilator Associated **Pneumonia**)	
		HAI2- CAUTI (Catheter Associated **Urinary** Tract Infection)	
	HAI3 *C. difficile* associated diarrhoea (CDAD) (>48 h post-admission or <30 days after discharge from previous admission episode.		
	HAI4 Other hospital acquired infection of mixed or undefined origin (HAP, UTI, BSI)		
	HAI4-BSI **Blood** Stream Infection, not intervention related		
	HAI4-HAP Non-intervention related Hospital Acquired **Pneumonia** (not VAP)		
	HAI4-UTI **Urinary** Tract Infection, not intervention related		
	HAI5 Infection present on admission from another hospital (patient with infection from another hospital)		
	HAI6 Infection present on admission from long-term care facility (LTCF) or Nursing Home*		
SP Surgical prophylaxis**	**SP1** Single dose	**SP2** one day	**SP3** >1 day
For **surgical patients**, administration of prophylactic antimicrobials **should be checked in the previous 24 hours** in order to encode the duration of prophylaxis as either one dose, one day (= multiple doses given within 24 hours) or >1 day. See more explanation and **table** in **protocol page 8 !**			
MP Medical prophylaxis	For example long term use to prevent UTI's or use of antifungals in patients undergoing chemotherapy or penicillin in asplenic patients *etc.*		
OTH Other	For example erythromycin as a motility agent (motilin agonist).		
UNK	Completely unknown indication		

Select 1 possibility for each reported antimicrobial

*Long-term care facilities represent a heterogeneous group of healthcare facilities, with care ranging from social to medical care. These are places of collective living where care and accommodation is provided as a package by a public-agency, non-profit or private company (e.g. nursing homes, residential homes).
**Surgical prophylaxis includes those antibiotics prescribed before and after a surgical intervention (surgery in the operation room). The code SP1, SP2, SP3 goes with a diagnostic code preceded by 'proph' (e.g. 'proph GI')

APPENDIX III - Type of Indication

- Community acquired
- Nosocomial
- Prophylaxis
  - Surgical
  - Medical
- Other

Global-PPS & optional HAI module
Patient HAI form

GLOBAL-PPS PATIENT Form – additional variables for HAI at patient level (optional)

(Fill in one form per patient with an ongoing antimicrobial at 8am on the day of the PPS – more info on definitions in protocol, page 20)

Ward Name/code	Activity [1] (M, S, IC)	Patient Identifier [2]	Survey Number [3]	Patient Age [4] Years (if ≥ 2 years)	Months (1-23 month)	Days (if <1 month)	Current Weight* in kg	Neonate only (optional) Gestational age*	Birth weight* (kg)	Gender M, F, U
ICU-2	IC	123456789		65			78.3			M

Date of admission in the hospital *(dd/mm/yyyy) (optional)*	*16/10/2019*			**Surgical procedure during current admission in hospital**	X Yes	☐ No	☐ UNK
Previous hospitalization < 3 months *(optional)*	☐ Yes, ICU	X Yes, other	☐ No ☐ UNK	**Previous antibiotic treatment <1 month** *(optional)*	X Yes	☐ No	☐ UNK

"Inserted" invasive device present at 8 am on the day of the PPS				Date 1st insertion/start *(optional)*
Indwelling Urinary Catheter (UC)	X Yes	☐ No	☐ UNK	*17/10/2019*
Peripheral Vascular Catheter (PVC)	X Yes	☐ No	☐ UNK	*16/10/2019*
Central Vascular Catheter, no implantable venous port (CVC)	X Yes	☐ No	☐ UNK	*17/10/2019*
Invasive respiratory endotracheal intubation (IRI)[i]	☐ Yes	X No	☐ UNK	__/__/____
Inserted tubes and drains (T/D)[ii]	☐ Yes	X No	☐ UNK	__/__/____

McCabe score	
	X Non-fatal disease
	☐ Ultimately fatal disease
	☐ Rapidly fatal disease
	☐ UNK/Not available

Underlying morbidity *(multiple choice, maximum 3 choices)*			
	☐ Diabetes mellitus, type 1 or 2	☐ Genetic disorder	☐ End-stage Liver Disease, cirrhosis
	☐ AIDS/HIV (only if last CD4 count <500/mm^3)	☐ Congenital heart diseases	X Trauma
	☐ Hematological or solid cancer/ Recent chemotherapy (<3months)	☐ Chronic lung diseases including cystic fibrosis, COPD, bronchiectasis, asthma	☐ Gastroenterological disease (inflammatory bowel disorders, Coeliac disease,...)
	☐ Stem cell or solid organ transplant	☐ Neutropenia	☐ Chronic neurological conditions[iii]
	☐ Chronic Renal Disease (all stages)	☐ High dose steroids[iv]	☐ Other
	☐ Tuberculosis	☐ Malnutrition[v]	☐ None ☐ Unknown

[i] Include tracheostomy
[ii] Inserted tubes and drains: include nephrostomy tubes, intra-abdominal tubes and drains and cerebrospinal fluid shunts.
[iii] Chronic neurological conditions: include Alzheimer's disease, Parkinson's disease, dystonia, ALS (Lou Gehrig's disease), Huntington's disease, neuromuscular disease, multiple sclerosis and epilepsy etc.
[iv] Corticotherapy ≥ 30 days or recent corticotherapy at high doses (> 5 mg/kg prednisolone > 5 days)
[v] Malnutrition refers to dietary deficiency which lead to lack of vitamins, minerals and other essential substances. Score illnesses as kwashiorkor, scurvy, delayed growth, serious underweight, etc.

Global-PPS & optional HAI module

- Web-based data entry, verification, validation and reporting with the help of the Global-PPS tool
- Protocol and data collection templates available at

https://www.global-pps.com/documents/

Real-time feedback of results to the sites

- **Extraction of raw data allowing verification and analysis of your hospital results (excel file).**

- **Generation of simple, easy to use feedback reports on hospital data ready to use for local presentations: PDF**

  - **One point feedback** comparing the hospital site results to average results for the country (if at least 3 participating hospitals from the country), region (continental results) and Europe.
  - **Longitudinal feedback :** multiple participation
  - **Merged feedback** : merged results for a set of hospital sites

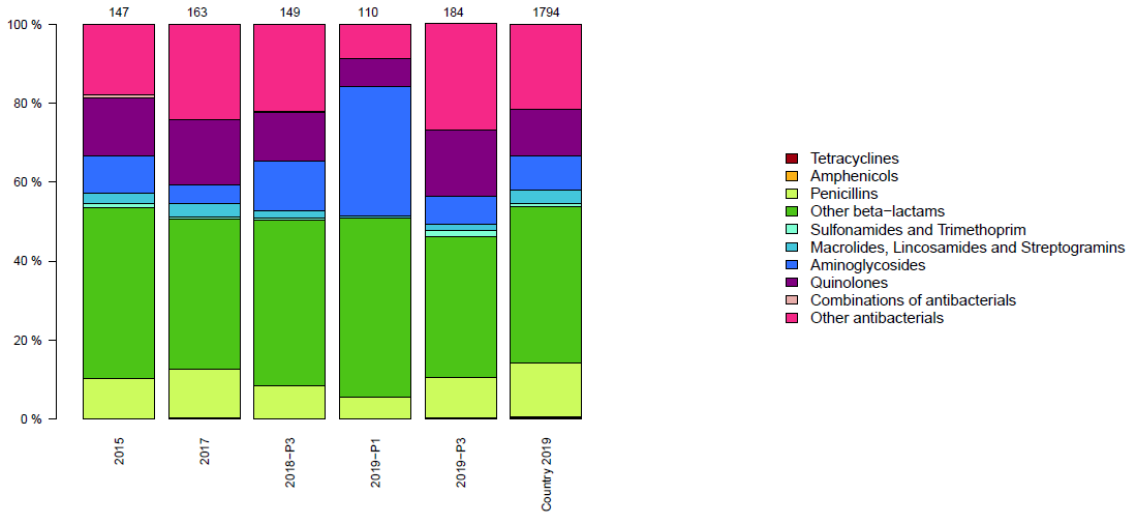
Real-time feedback of results to the sites, an example

Sites participating multiple times receive a **longitudinal feedback report** for the time points of participation (2015, 2017, 2018, 2019, 2020, …).

Overall antimicrobial prevalence by region and type of child or neonatal ward

	Total	PMW	HO-PMW	T-PMW	PSW	PICU	NMW	NICU
Our hospital 2015	89.7	100.0	0.0	0.0	100.0	0.0	78.9	0.0
Our hospital 2017	59.2	54.5	0.0	0.0	84.2	0.0	25.0	100.0
Our hospital 2018-P3	68.2	56.8	0.0	0.0	73.3	0.0	90.9	54.5
Our hospital 2019-P1	79.9	75.9	0.0	0.0	0.0	0.0	92.6	78.8
Our hospital 2019-P3	65.5	67.4	0.0	0.0	44.0	0.0	91.7	85.7
NIGERIA (13 hospitals)								
patients 2019 (N)	859	421	0	0	131	32	170	105
treated patients 2019 (%)	75.7	73.2	0.0	0.0	78.6	93.8	71.8	82.9

Overall proportional antibiotic use



Materials to help you to conduct the survey

- Frequently Asked Qustion list
- IT manual
- Antimicrobial list (excel file)
- Powerpoint slides on the method used
- Global-PPS posters : promote the study in your hospital

Available online at https://www.global-pps.com/documents/

GLOBAL POINT PREVALENCE SURVEY OF ANTIMICROBIAL CONSUMPTION AND RESISTANCE (GLOBAL-PPS)

Promote the Global-PPS in your hospital

Seek support for your efforts !

This hospital is participating in the **worldwide** ‘GLOBAL POINT PREVALENCE SURVEY’ on Antibiotic Consumption and Resistance

What is it all about ?

- ✓ Data collection on antibiotic prescription patterns and resistance in the hospital
- ✓ Surveillance of nosocomial infections
- ✓ Compare data nationally and worldwide
- ✓ Identify targets to improve antibiotic prescribing

Why?

- ✓ Continually improve healthcare quality
- ✓ Improve antibiotic use for better patient health
- ✓ Combat antibiotic resistance

The Global-PPS is coordinated by the University of Antwerp and supported by bioMérieux

Universiteit Antwerpen

BIOMÉRIEUX

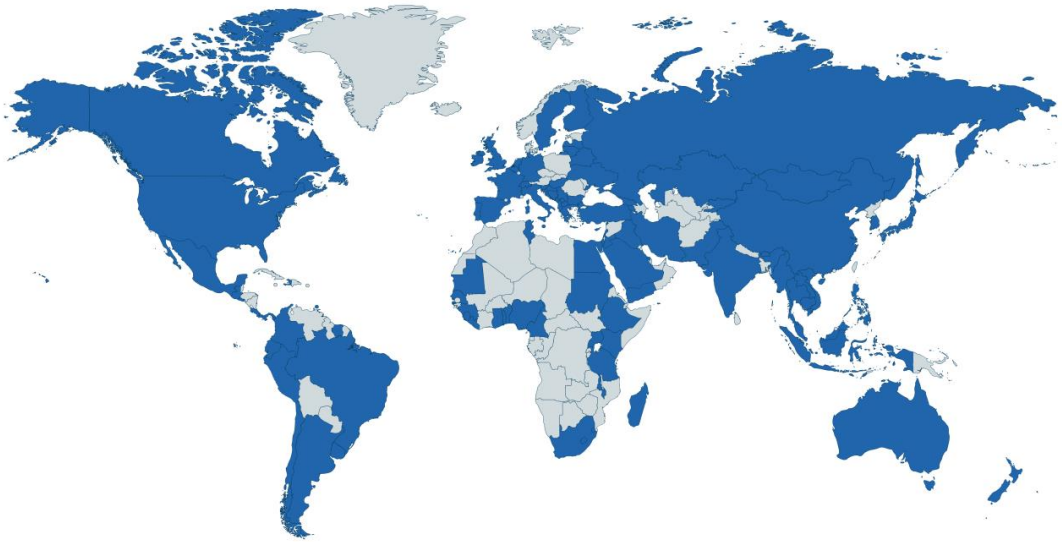
Contact person: “enter name and/or department”

www.global-pps.com

Key messages

- **Common methodology and uniformity of data collection** to collect valid and comparable antimicrobial consumption data
- **Simple protocol and web-based tool** for data entry and validation = feasible & achievable surveillance
- **Quality assurance approach** – implementation of data validation process
- **Free central support** toward data collection or other (helpdesk, FAQ, IT manual, list of antimicrobials)

Results - Main findings of the Global-PPS



Nearly 1,350 hospital participations
85 different countries
± 300,000 patients

Most common observations and conclusions (articles, abstracts, congresses):

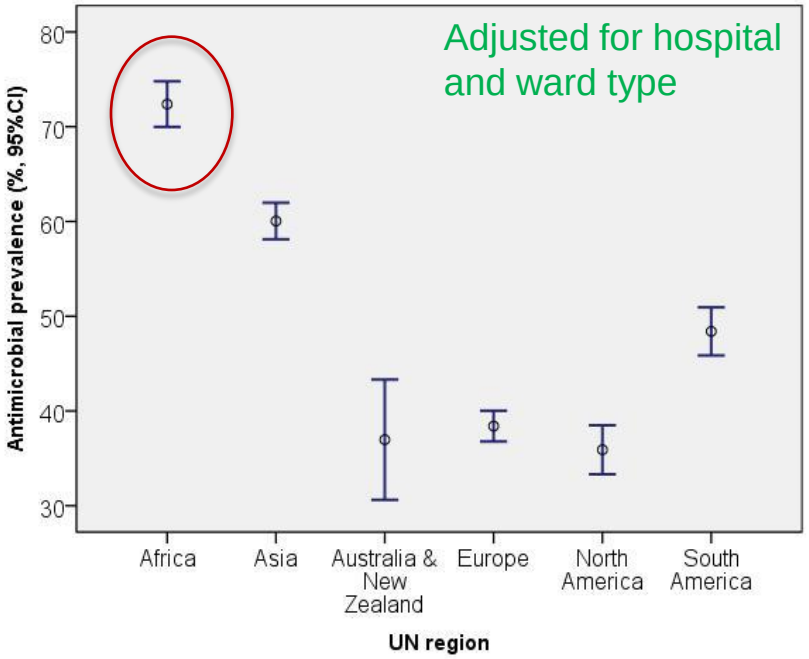
- High rates of antimicrobial prescribing
- Broad-spectrum prescribing
- Mainly empirical use
- Prolonged surgical prophylaxis
- Abscence of guidelines
- Low reporting of stop/review date

https://www.global-pps.com/dissemination/congresses/

and

https://www.global-pps.com/dissemination/peer-reviewed-articles/

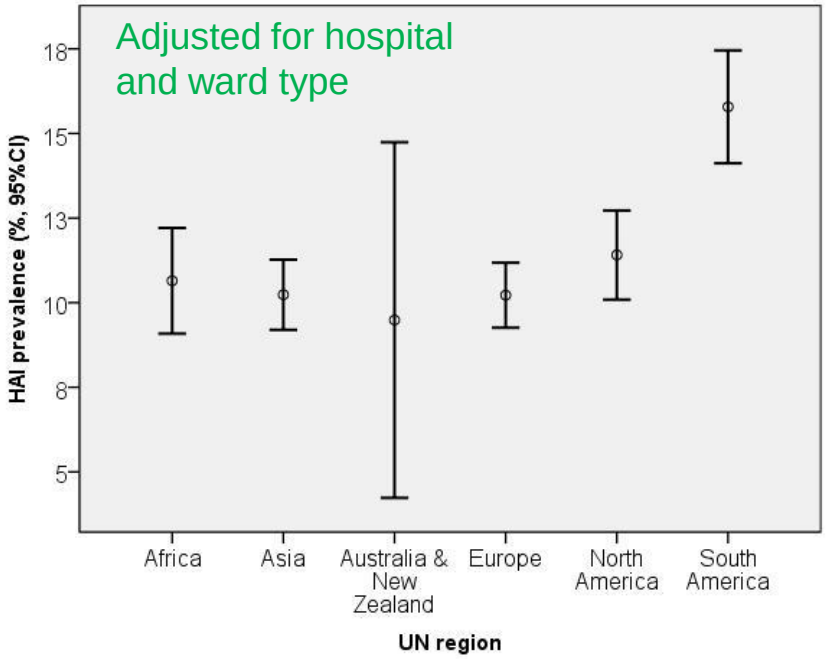
Antimicrobial prevalence (%) worldwide (2017-2018 data)



Average of AMU% Crude prevalence

region	Mean	N	Std. Deviation
Africa	71,478	115	19,3634
Asia	57,159	163	21,6869
Australia & New Zealand	33,045	9	10,4090
Europe	31,580	175	12,6879
North America	32,313	65	9,1142
South America	49,637	84	15,6419
Total	48,496	611	22,7520

HAI prevalence (%) worldwide (2017-2018 data)



Average of HAI% Crude prevalence

region	Mean	N	Std. Deviation
Africa	8,027	115	11,5741
Asia	7,143	163	6,1015
Australia & New Zealand	8,989	9	6,7190
Europe	7,331	175	5,6518
North America	10,324	65	4,1403
South America	15,513	84	11,0272
Total	8,879	611	8,4191

N= number of hospitals

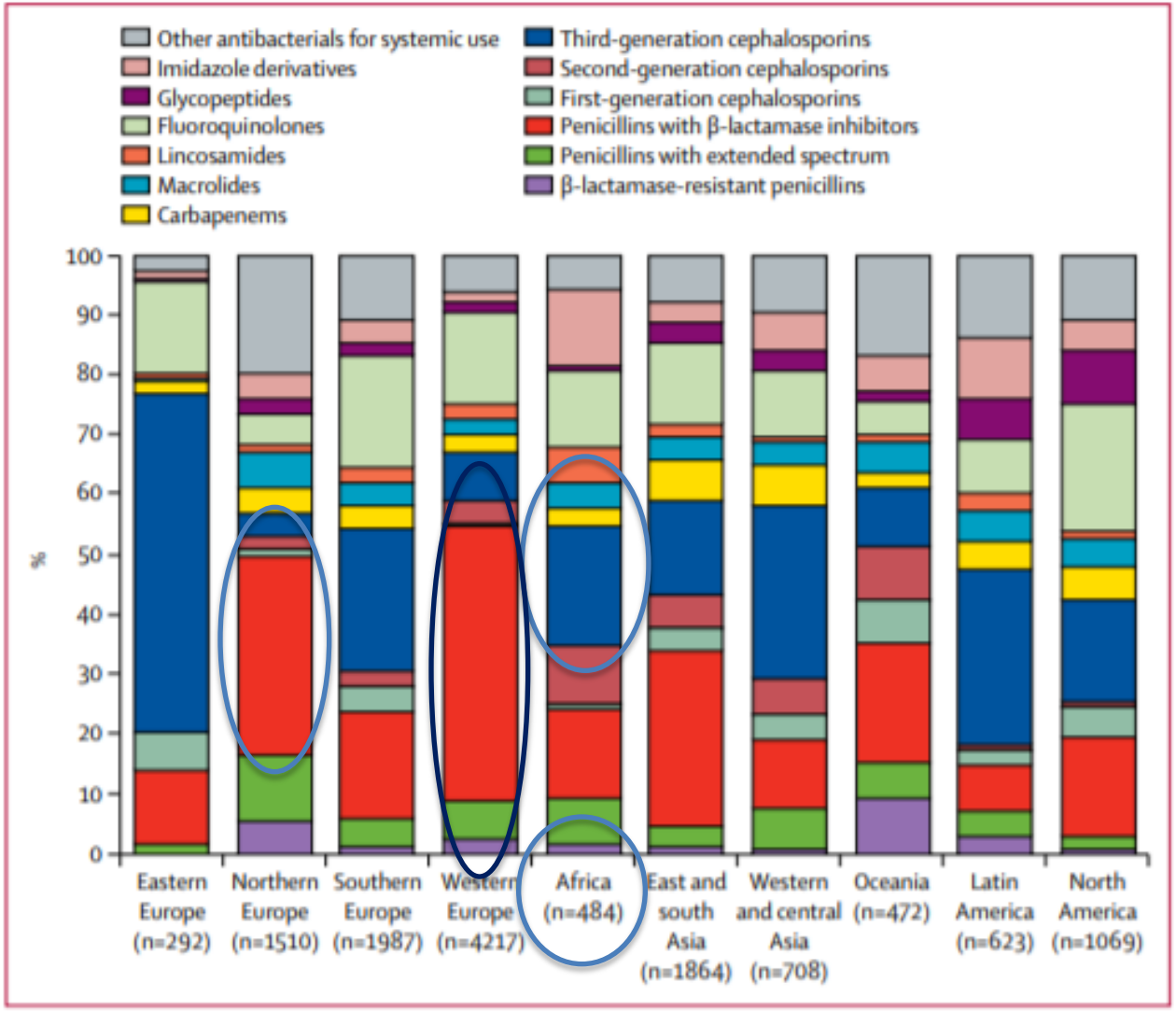


***Figure 2*: Proportion of prescribed antibiotics for systemic use for community-acquired infections among adult inpatients, 2015 (n=13 226)**
East and south Asia includes south, east, and southeast Asia.

Most prescribed antibiotics for CAI Adult patients

Versporten et al, Lancet Global Health, 2018

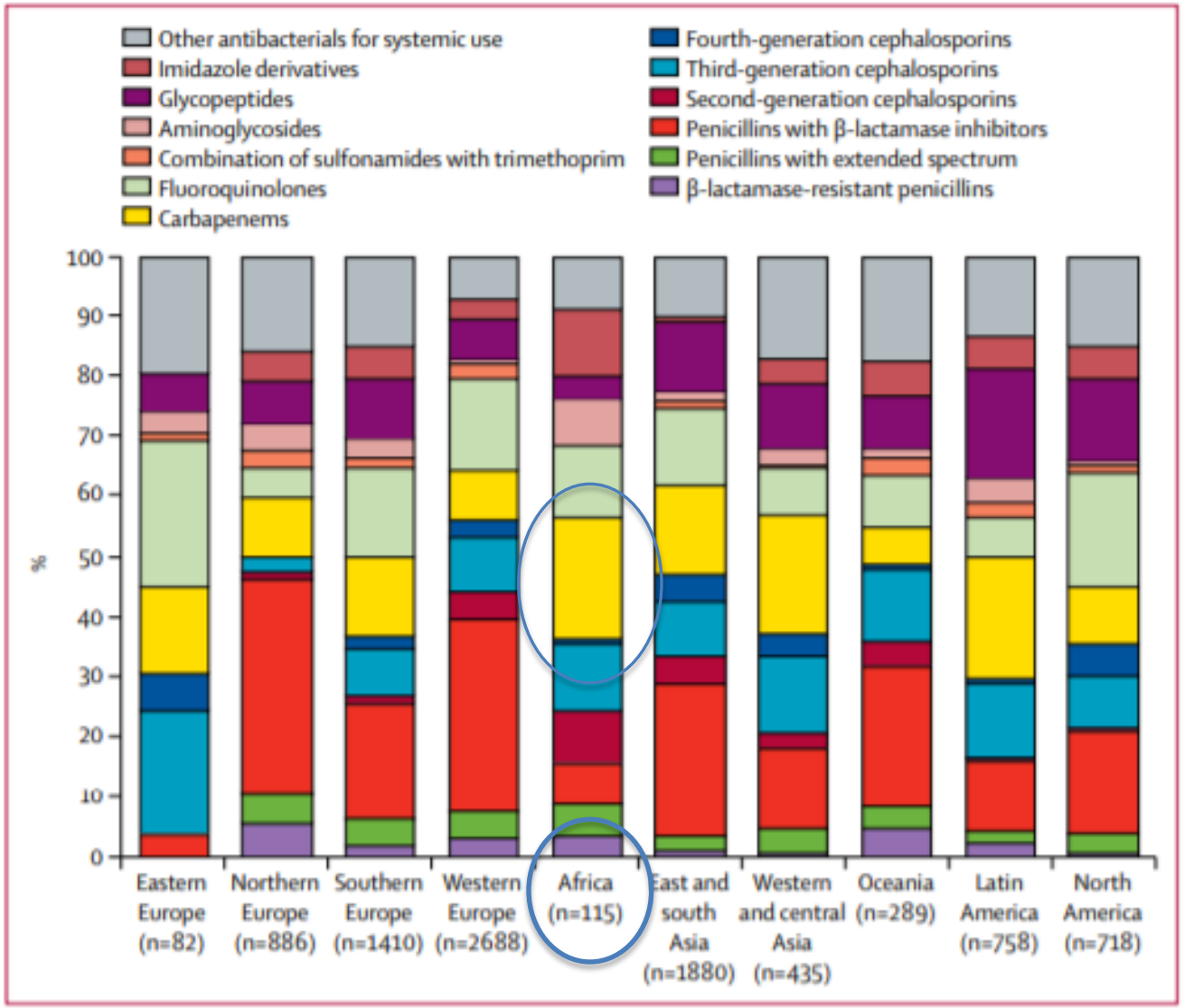


***Figure 1*: Proportion of prescribed antibiotics for systemic use for health-care-associated infections among adult inpatients, 2015 (n=9261)**
East and south Asia includes south, east, and southeast Asia.

Most prescribed antibiotics for HAI Adult patients

Versporten et al, Lancet Global Health, 2018

GLOBAL POINT PREVALENCE SURVEY
OF ANTIMICROBIAL CONSUMPTION
AND RESISTANCE (GLOBAL-PPS)

The Nigerian Global-PPS Database

Participation of Nigerian hospitals to the Global-PPS - 2015 till 2020 -

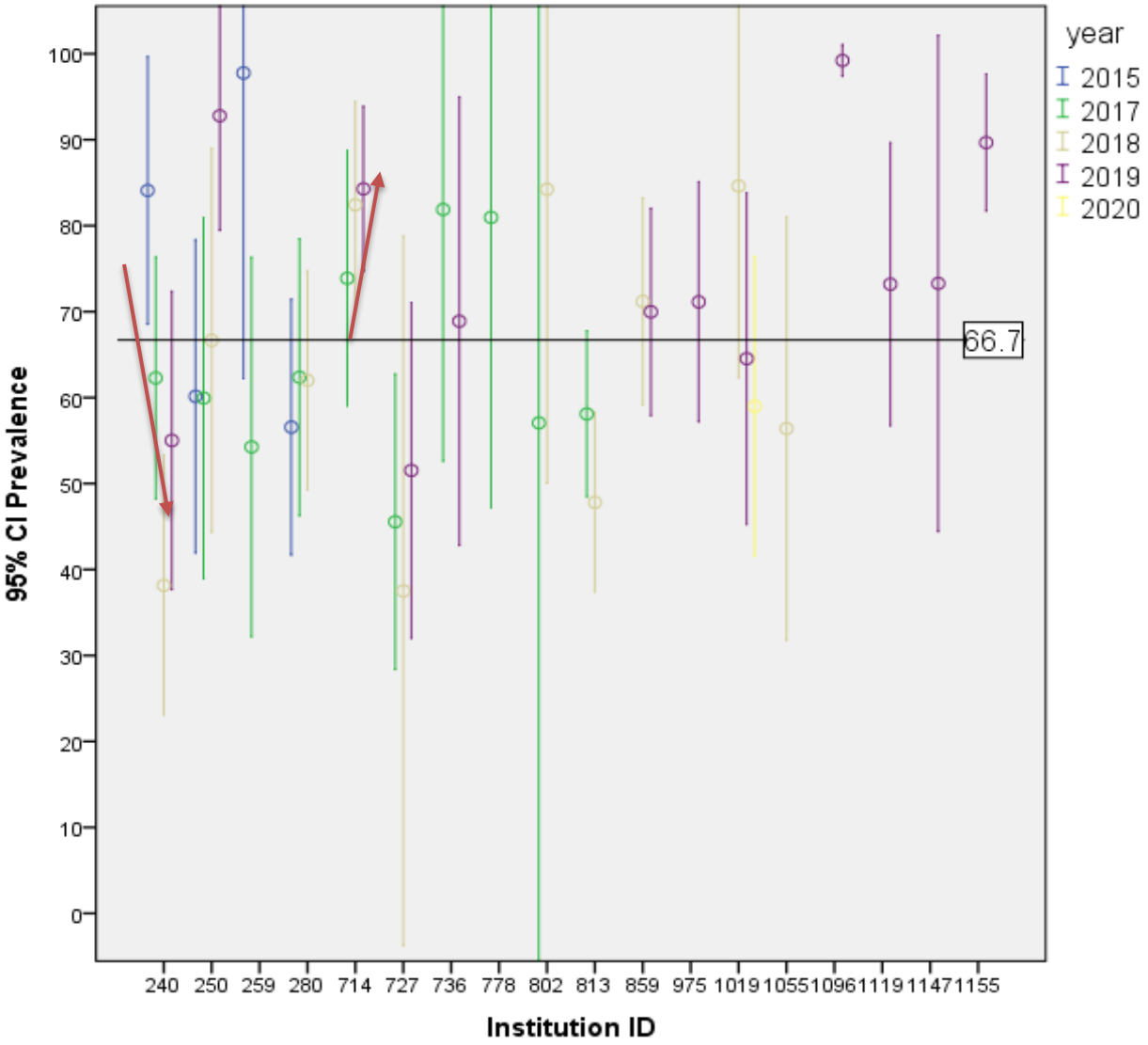
Region	2015		2017		2018		2019		2020		Total participations	
	N hosp	N pat	N hosp	N pat	N hosp	N pat	N hosp	N pat	N hosp	N pat	N hosp	N pat
North Central	1	166	2	357	2	447	2	412			7	1382
North East							2	376			2	376
North West	1	318	1	346	1	398					3	1062
South East			1	220	2	423	3	831			6	1474
South South					1	197	1	226			2	423
South West	2	356	6	1126	4	867	5	842	1	178	17	3369
Total hosp	**4**	**840**	**10**	**2049**	**10**	**2332**	**13**	**2687**	**1**	**178**	**38**	**8086**
Total surveys	**4**		**10**		**10**		**17**		**2**		**43**	

In total 19 unique Nigerian hospitals

N hosp = total number of hospitals

N pat = total number of admitted patients

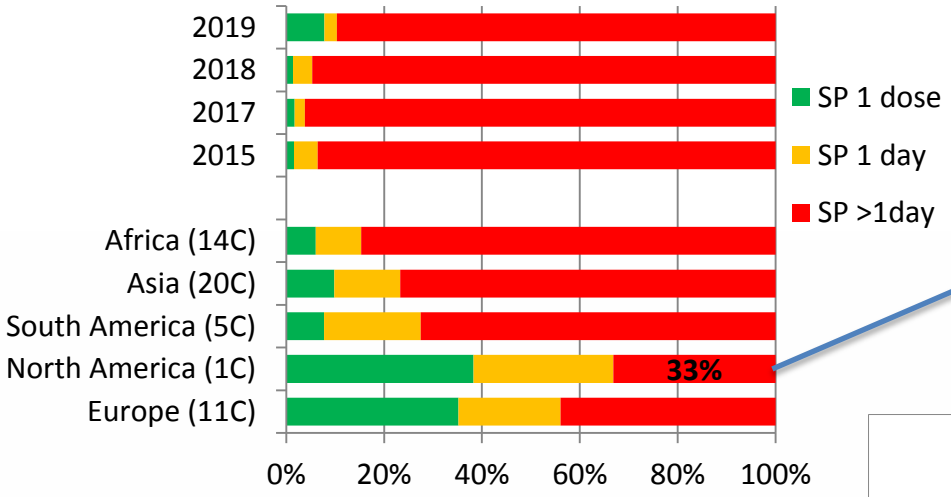
Antimicrobial prevalence (%) in Nigerian adult wards, years 2015 - 2020



Median antimicrobial prevalence over time = 66.7%

Prolonged surgical prophylaxis is very common

Prolonged surgical prophylaxis in Nigeria, years 2015-2019

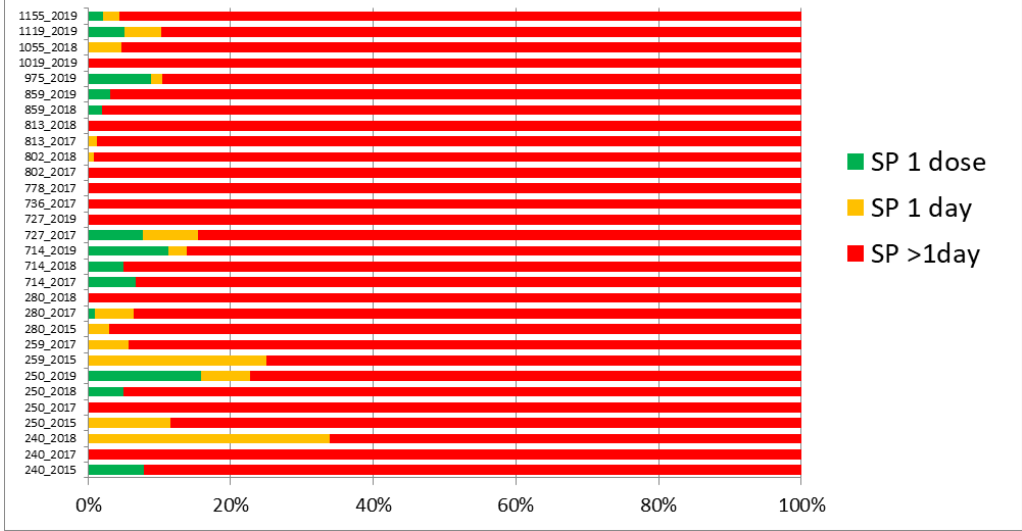


Canada only, 48 hospitals

Selection on ATC J01, adult and child wards, neonatal wards are excluded

Reference data:
Years 2018-2019 (N Countries included)

Prolonged surgical prophylaxis in 16 Nigerian hospitals, years 2015-2019



Most common antibiotics (AB) used for surgical prophylaxis in Nigeria, years 2015-2019

Agent	AWaRE class	2015 (248 AB)	2017 (703 AB)	2018 (763 AB)	2019 (674 AB)	Africa (3759 AB)	Asia (6255 AB)	Europe (1173 AB)	North America (698 AB)
Ceftriaxone	Watch	**27%**	**20%**	**22%**	**25%**	22%	15%	17%	**1%**
Metronidazole	Access	21%	24%	23%	22%	20%	10%	3%	8%
Cefuroxime	Watch	17%	16%	9%	8%	**6%**	19%	**3%**	**0%**
Ciprofloxacin	Watch	13%	12%	12%	7%	7%	2%	5%	4%
Co-amoxiclav	Access	**5%**	**8%**	**8%**	**10%**	**11%**	6%	**10%**	1%
Levofloxacin	Watch	4%	4%	6%	4%	2%	1%	1%	0%
Cefpodoxime	Watch	1%	4%	4%	3%	2%	0%	0%	0%
Cefixime	Watch	0%	1%	4%	4%	1%	1%	0%	0%
Cefazolin	Access	0%	0%	0%	0%	**0%**	**15%**	**43%**	**71%**
Amoxicillin	Access	2%	2%	1%	2%	4%	4%	1%	0%

Selection on ATC J01, adult and child wards, neonatal wards are excluded

Reference data: Years 2018-2019; N Antibiotics (AB) included

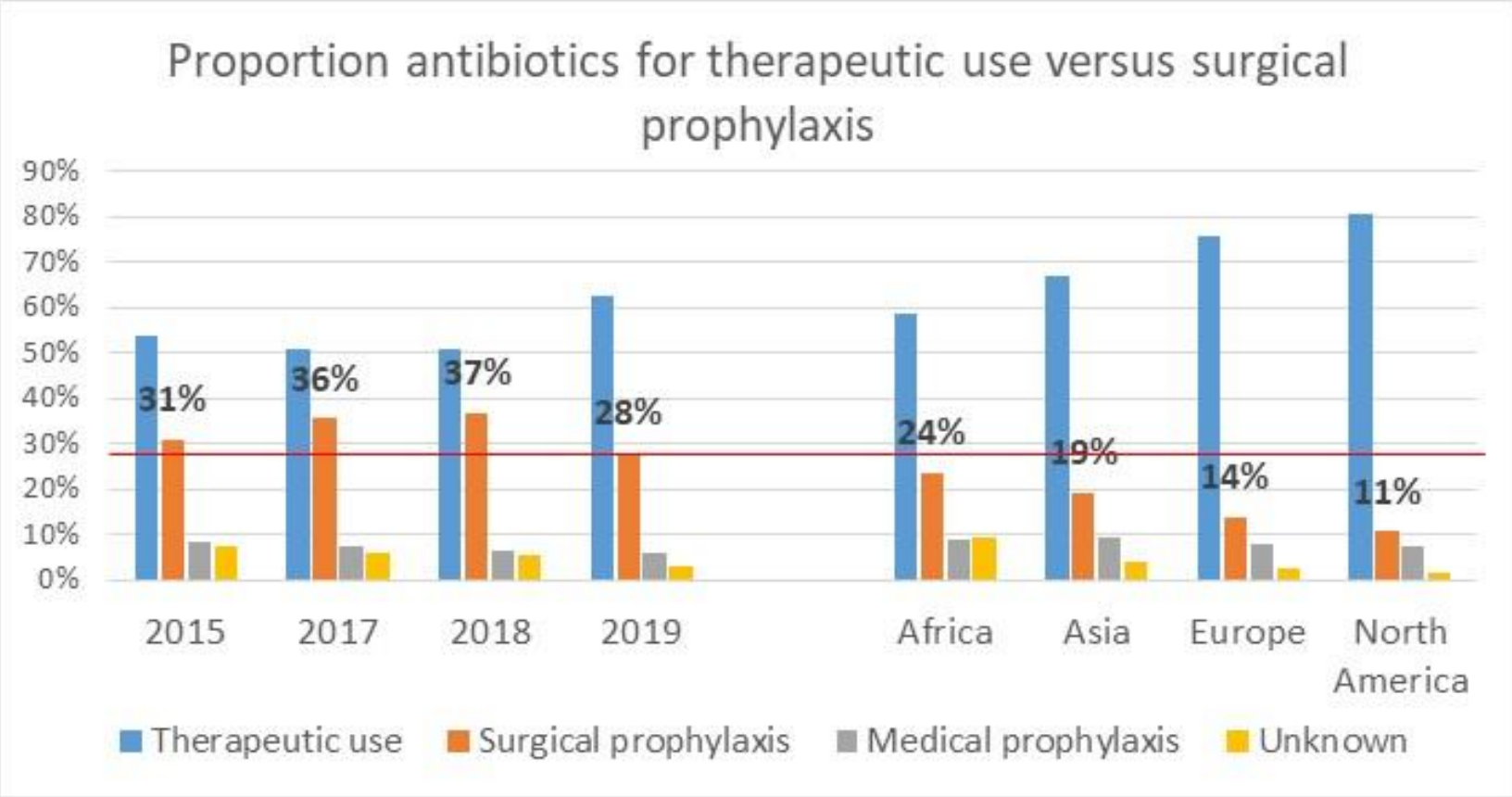
Most common antibiotics (AB) for therapeutic use (CAI and HAI) in Nigeria, years 2015-2019

Agent	AWaRe class	2015 (433 AB)	2017 (1,003 AB)	2018 (1,055 AB)	2019 (1,512 AB)	Africa (9,335 AB)	Asia (21,719 AB)	Europe (6,428 AB)	North America (5,249 AB)
Ceftriaxone	Watch	**21%**	**17%**	**22%**	**22%**	**21%**	17%	**9%**	13%
Metronidazole	Access	**18%**	**15%**	**16%**	**14%**	**11%**	3%	4%	3%
Ciprofloxacin	Watch	**12%**	**11%**	**11%**	**6%**	5%	3%	6%	8%
Co-amoxiclav	Access	6%	9%	7%	9%	6%	6%	**20%**	6%
Cefuroxime	Watch	9%	9%	4%	7%	3%	5%	3%	2%
Levofloxacin	Watch	5%	5%	6%	6%	5%	3%	3%	1%
Gentamicin	Access	3%	7%	5%	5%	6%	3%	2%	1%
Clindamycin	Access	5%	4%	4%	2%	3%	3%	2%	1%
Amoxicillin	Access	3%	3%	2%	3%	2%	1%	5%	2%
Piperacillin/tazobactam	Watch	0%	1%	0%	0%	1%	**8%**	**10%**	**19%**
Meropenem	Watch	2%	1%	2%	1%	3%	6%	4%	5%

Selection on ATC J01, adult and child wards, neonatal wards are excluded

Reference data:
Years 2018-2019; N Antibiotics (AB) included

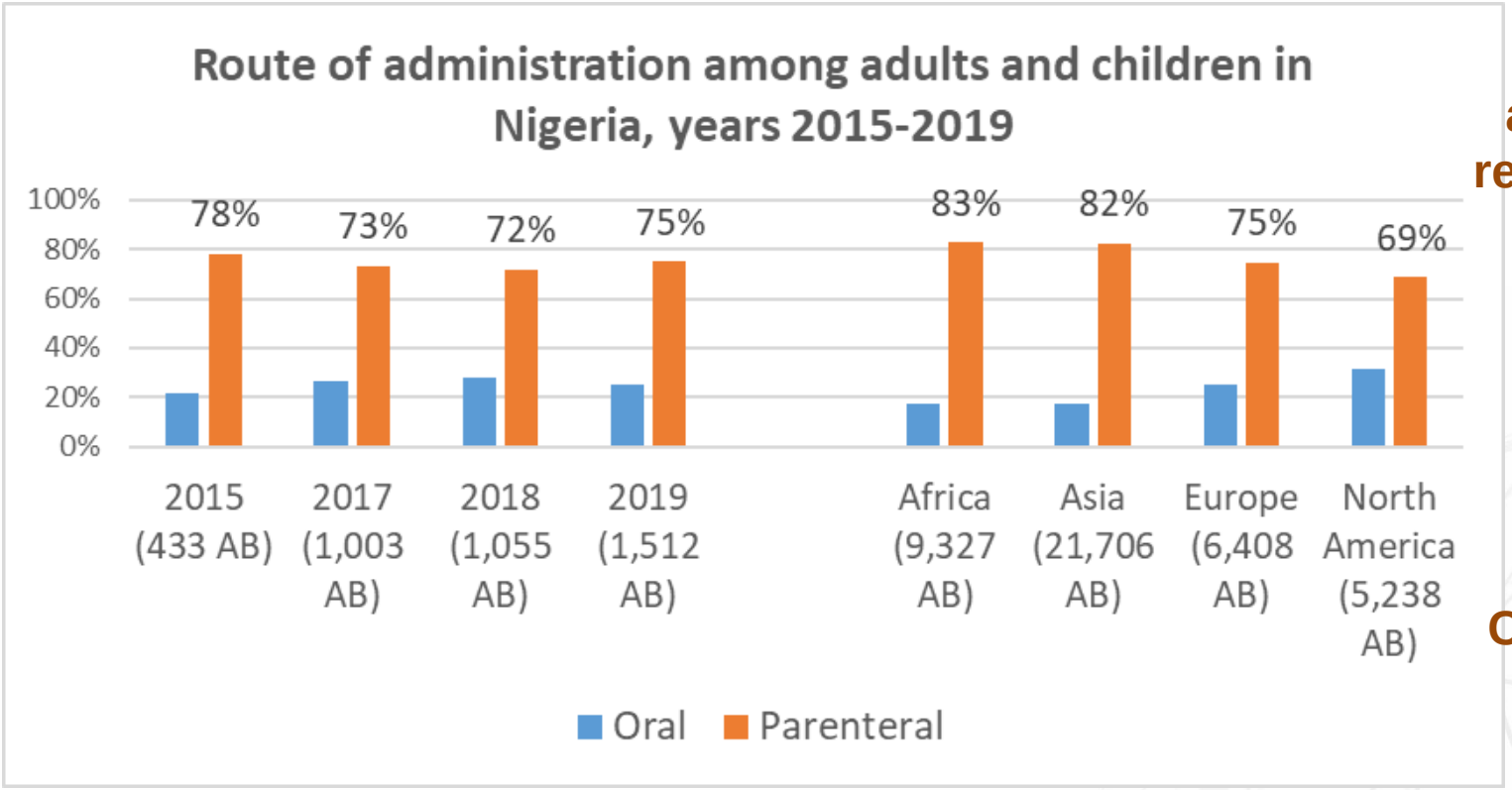
High reporting of antibiotics for surgical prophyaxis reflects prolonged SP



Selection on ATC J01, adult and child wards, neonatal wards are excluded

Reference data:
Years 2018-2019; N Antibiotics (AB) included

Intravenous Route of Administration of antibiotics for therapeutic use (CAI and HAI) prevails



high use of IV antibiotics will result in high use of vascular catheters

Importance of Prevention of Intravascular Catheter-related infections

Selection on ATC J01, adult and child wards, neonatal wards are excluded

Reference data:
Years 2018-2019; N Antibiotics (AB) included

Results - Key messages

- Substantial differences in the prevalence of antibiotic prescribing within regions, with the highest prevalence in Africa and Asia.
- Highest HAI prevalence in Latin America.
- **Nigeria :**
  - High overall prevalence of antimicrobial use
  - High use of broad spectrum antibiotics for therapeutic prescribing and surgical prophylaxis
  - High prolonged surgical prophylaxis

➤ ***These results show the need of monitoring and prioritising targets for stewardship programmes in Nigeria.***

Some final thoughts

- **The Global-PPS enhances the quality of antibiotic prescribing through antimicrobial stewardship activities**
  - Introduce simple antibiotic quality indicators
  - Supports dedicated education and communication
  - Start small & get the whole team on board to implement AMS
  - Seek support for your efforts
  - Initiate or re-write local prescribing guidelines
  - Measure the impact of interventions through repeated PPS
  - Provide feedback to the whole team
  - Change practice (sustainability !)
- **Opportunity to stimulate local networking - share knowledge and experiences**
- **Data sharing upon agreement with all partners**
  - publication policy is available at global-PPS@uantwerpen.be

Any hospital can participate

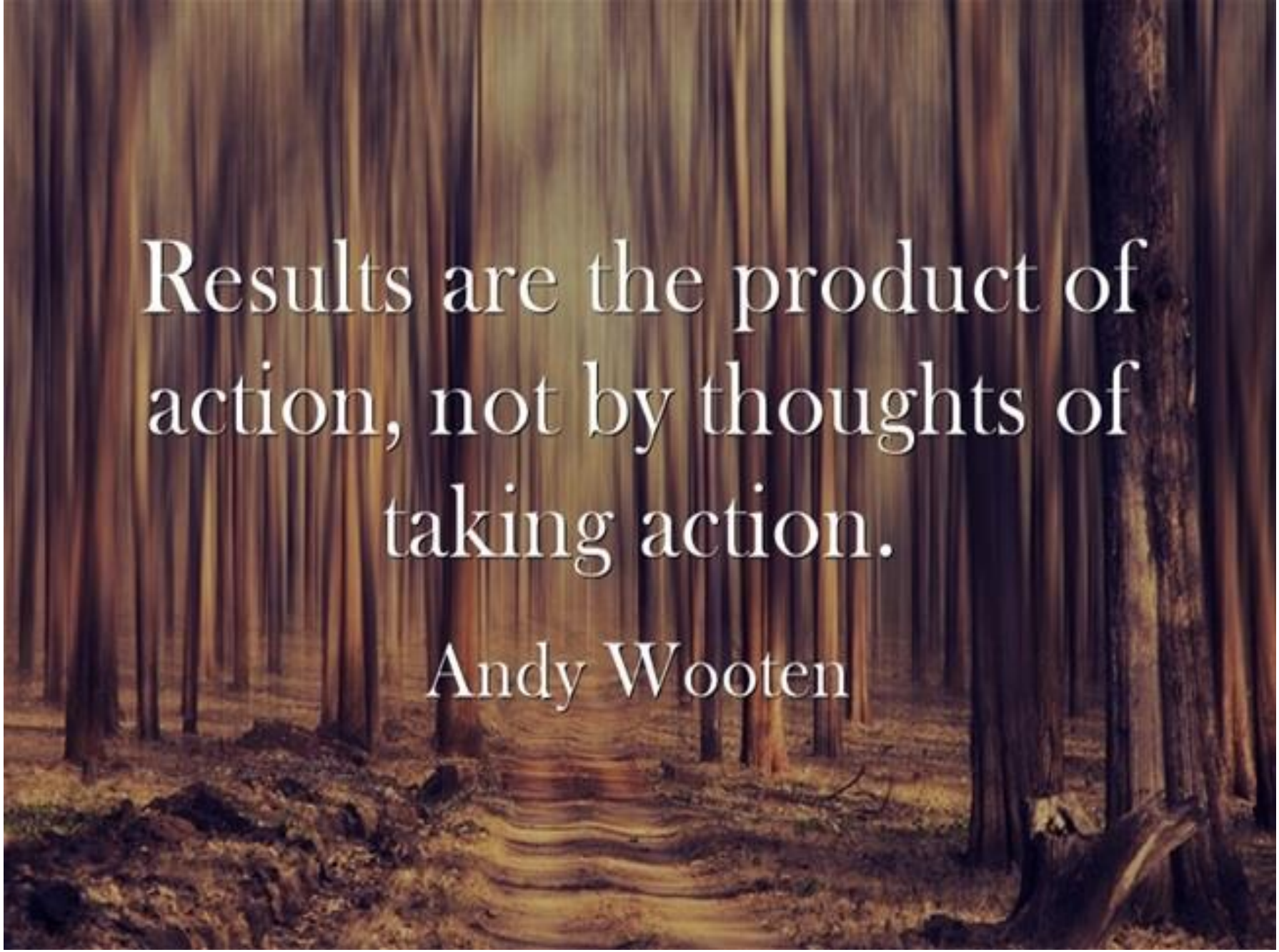
National Nigerian PPS on Antimicrobial Consumption and Resistance

Ready to join us ?

Yes we can!

URL: https://www.global-pps.com/

Contact : global-pps@uantwerpen.be



Contact : **global-pps@uantwerpen.be**