Global PPS in South Africa

Surveillance of IPC and AMS metrics

Heather Finlayson

Paeds Infectious Diseases Specialist TBH

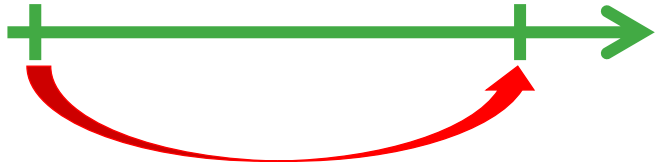
For the MAC for AMR IPC TWG

What is a Point Prevalence Study

- Collection of data used to identify the number of people with a disease or condition at a **specific point in time**." CDC definition

- Easy to conduct, relatively inexpensive and are not time-consuming

- **Incidence surveys**, sequential are more difficult to perform and more expensive

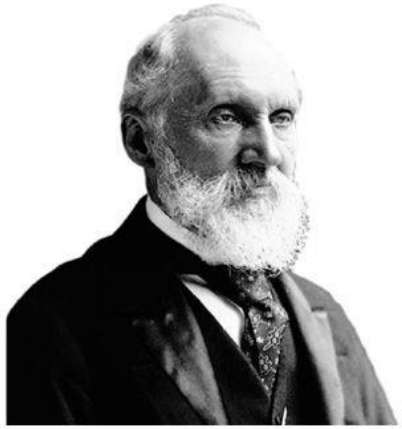


H. Humphreys, E. T.M. Smyth **Prevalence surveys of healthcare-associated infections: what do they tell us, if anything?** Clinical Microbiology and Infection, 12, 1, 1 2006

Why do a PPS?

- Driven by the IPC task working group on the MAC on AMR
- Attempt to get good HAI data
  - Show burden of HAI
  - Buy in from managers
  - Set targets for improvement

- But the Global PPS gives us so much more data!
  - AMS and Quality Assurance
- Use data in order to bring about improvement



To measure is to know. If you can not measure it, you can not improve it.

– Lord Kelvin

What is the Global PPS?

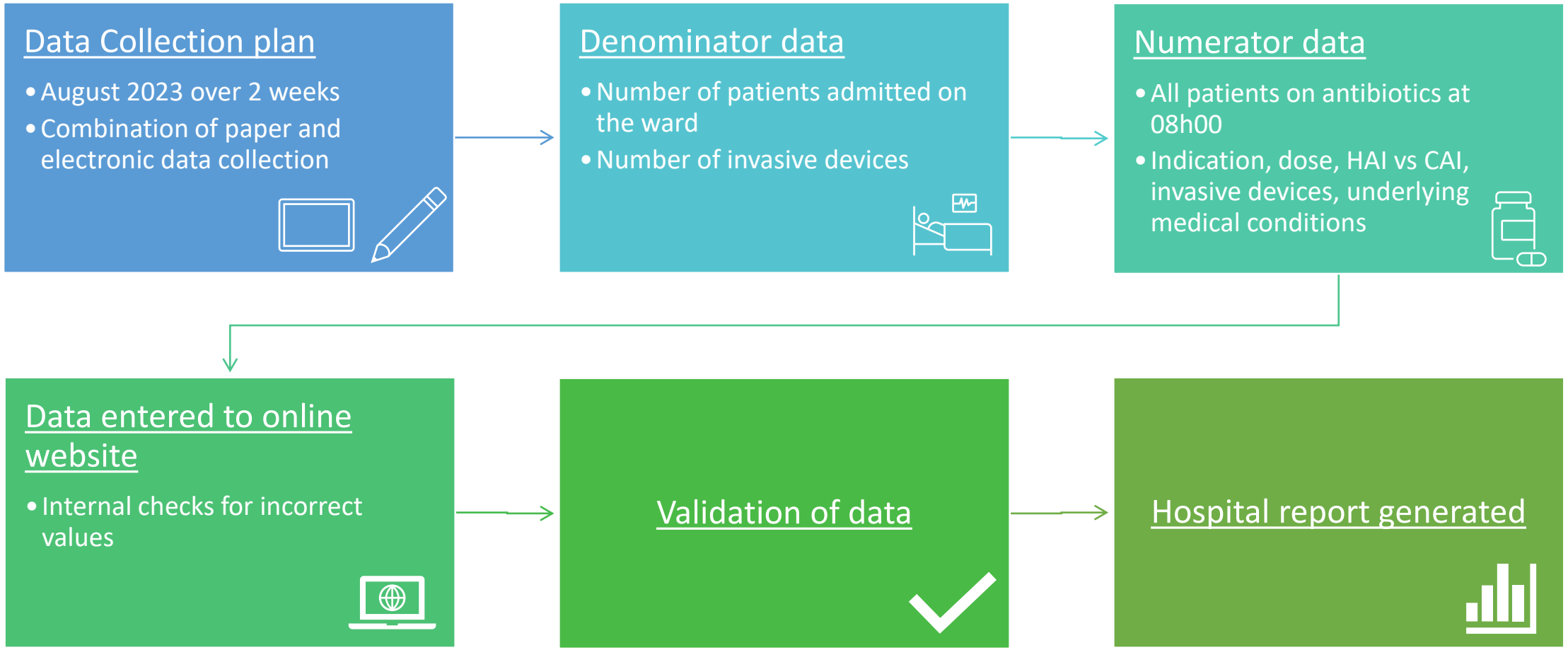
- Simple, freely available web-based tool https://www.global-pps.com/
- Measure and monitor antimicrobial prescribing and resistance in hospitals and healthcare centers worldwide.

✓Evaluate antimicrobial prescribing practices and survey performance indicators in healthcare centers (**identify burden**),

✓Help designing local interventions and identifying targets for quality improvement of antimicrobial prescribing and the prevention of Healthcare-Associated Infections (HAI) (**change practice**),

✓Assess the effectiveness of the interventions through repeated PPSs (**measure impact**).

How is a point prevalence study done?



English Français Español Русский العربية 日本語

HOME PROJECT DOCUMENTS NEWS DISSEMINATION EVENTS OUR NETWORK DRIVE-AMS CONTACT US

SHARING
GLOBAL KNOWLEDGE

SUPPORTING
LOCAL ACTIONS

Read more

Español
Français
العربية
日本語
Русский

New feature: the outpatient module

Welcome heathfin, current survey: May - August 2023 Global-PPS current institution: Tygerberg Hospital

Home | User Management | My institutions | Departments | Surveys | Instructions | My profile

- Methodology
- Tutorial video
- IT manual

Your current institution is now : Tygerberg Hospital

My Institutions

Find institution...

Id	Name	E-mail	Country code	Type	Action
374	Tygerberg Hospital	finlayson@sun.ac.za	ZA	Tertiary care hospital	✔

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

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

Ward Name/code	Activity [1] (M, S, IC)	Patient Identifier [2]	Survey Number [3]	Patient Age [4]			*Current Weight**	*Neonates (optional)*		Sex M, F, U
				Years ≥ 2 years	Months 1-23 month	Days <1 month		*Gestational age**	*Birth weight**	

Date of admission in the hospital *(dd/mm/yyyy)* ***(optional)***				
Previous hospitalization < 3 months ***(optional)***	☐ Yes, ICU	☐ Yes, other	☐ No	☐ UNK

Surgical procedure during current admission in hospital	☐ Yes	☐ No	☐ UNK
Previous antibiotic course < 1 month ***(optional)***	☐ 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)	☐ Yes	☐ No	☐ UNK	__/__/____
Peripheral Vascular / intravenous Catheter (PVC)	☐ Yes	☐ No	☐ UNK	__/__/____
Central Vascular Catheter (CVC)	☐ Yes	☐ No	☐ UNK	__/__/____
Non-invasive pos. & neg. mechanical ventilation (CPAP, BiPAP, CNEP, …)[i]	☐ Yes	☐ No	☐ UNK	__/__/____
Invasive respiratory endotracheal intubation (IRI)[ii]	☐ Yes	☐ No	☐ UNK	__/__/____
Inserted tubes and drains (T/D)[iii]	☐ Yes	☐ No	☐ UNK	__/__/____

McCabe score	
	☐ 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	☐ 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[iv]
	☐ Chronic Renal Disease (all stages)	☐ High dose steroids[v]	☐ Other
	☐ Active tuberculosis	☐ Malnutrition[vi]	☐ None
		☐ Long COVID	☐ Unknown

Participation 2023

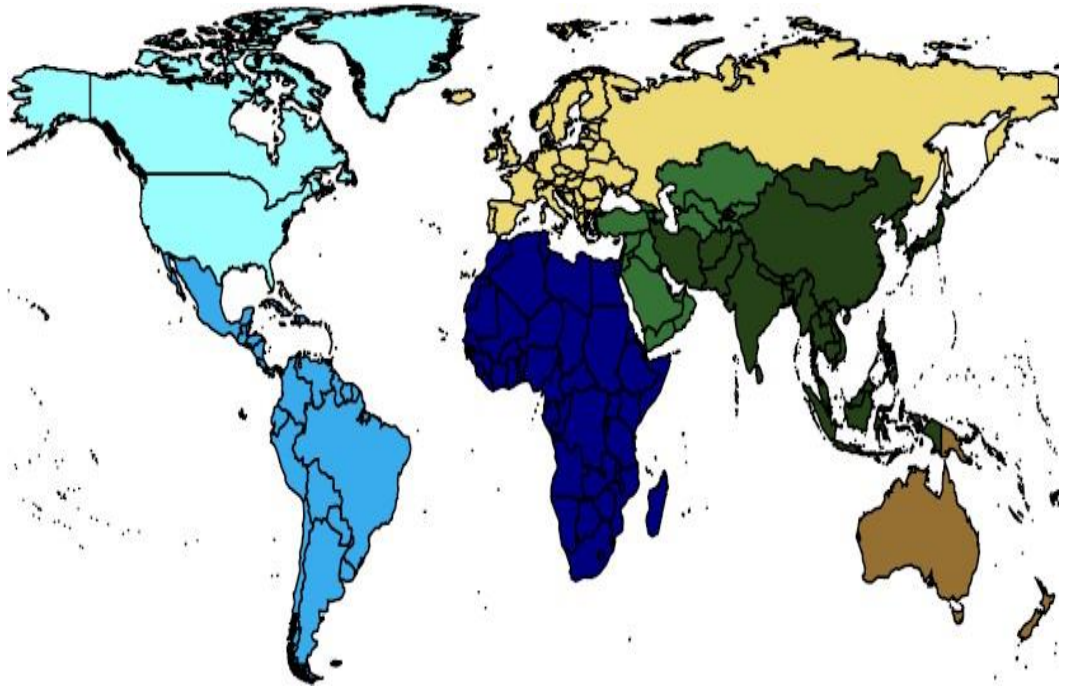
Province	Validated data
Eastern Cape	5
Free State	3
Gauteng	4
KwaZulu-Natal	26
Limpopo	2
Mpumalanga	1
North West	1
Northern Cape	2
Western Cape	8
Total	52

Additional 26 unvalidated
67% validation rate

Participation to Global–PPS by UN macro–geographical regions, year 2023

	Number of countries	Number of hospitals
North America	1	3
South America	2	2
Africa	10	71
Europe	6	17
West & Central Asia	1	2
East & South Asia	6	37
Australia & New Zealand	0	0

73% of Africa participation = South Africa



Prevalence of patients prescribed at least one antimicrobial on day of survey

	Country		Continent		Europe	
	N	%	N	%	N	%
N admitted patients (=denominator)	7136		10766		16454	
N patients on antimicrobials	2300	32.2	4250	39.5	4888	29.7
N patients with antibacterials for systemic use	2226	31.2	4107	38.1	4687	28.5
N patients with antimycotics or antifungals for systemic use	168	2.4	197	1.8	226	1.4
N patients with drugs for treatment of tuberculosis	33	0.5	90	0.8	45	0.3
N patients with antivirals for systemic use	42	0.6	67	0.6	216	1.3
N patients with antibiotics used as intestinal anti−infectives	27	0.4	35	0.3	135	0.8
N patients with nitroimidazole derivatives	50	0.7	288	2.7	57	0.3
N patients with antimalarials	0	0.0	55	0.5	6	0.0

Reference data: country − 2023 (N = 44), continent − 2023 (N = 71), EU − 2022 (N = 67).

Excluded TB Medication and Antiretrovirals

Antimicrobial prevalence (%) by activity

	Country	Continent	Europe
Adults			
Medical	28.8	34.1	26.3
Surgical	24.6	35.5	34.3
ICU	56.8	58.4	51.9
Children			
Medical	51.2	57.4	34.8
Surgical	20.9	35.8	33.9
ICU	78.4	80.4	64.2
Neonates			
GNMW	32.9	37.6	11.5
NICU	44.8	48.9	20.0

Antimicrobial prevalence = 100*(number of treated patients/number of admitted patients)
Antimicrobial prevalence by activity for adults, children and neonates separately for the hospital, country, continent to which the hospital belongs; and the continental results for the hospital type to which the hospital belongs (possible types are primary + secondary level, tertiary level, paediatric and infectious diseases + specialized hospital).

Country: SOUTH AFRICA ; Continent: Africa ; Hospital type:

Key prescription patterns (adults and children)

	Country		Continent		Europe	
	N	%	N	%	N	%
All patients						
IV therapy	2140	80.1	3791	78.3	3367	72.4
Multiple ATB diagnosis	744	26.5	1655	32.5	531	11.1
Multiple ATB patient	829	31.0	1796	37.1	654	14.1
Medical						
IV therapy	1242	69.0	2127	69.8	1905	62.1
Multiple ATB diagnosis	485	28.4	910	31.4	279	9.1
Multiple ATB patient	543	33.7	999	36.6	367	12.4
Surgical						
IV therapy	670	79.0	1370	71.3	1075	81.3
Multiple ATB diagnosis	181	21.5	624	33.5	161	12.3
Multiple ATB patient	195	23.7	659	36.4	186	14.6
ICU						
IV therapy	228	91.2	294	90.2	387	90.2
Multiple ATB diagnosis	78	30.5	121	36.4	91	21.2
Multiple ATB patient	91	38.4	138	45.4	101	24.3

- High IV use
- 25% more than one antibiotic for a diagnosis
- A third getting more than one antibiotic

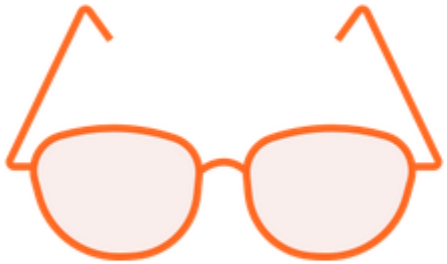
Analyses at patient level. Patients admitted on a NMW and NICU are excluded.
Multiple ATB diagnosis is defined as receiving > 1 antibiotic (J01) for a single identified reason to treat (=diagnose code) at patient level.
Multiple ATB patient is defined as receiving > 1 antibiotic (J01) at patient level.

Country: SOUTH AFRICA ; Continent: Africa ; Hospital type: Tertiary/Spec/Inf.dis. hosp.

AWaRe is a useful tool to reduce antimicrobial resistance and ensure access.

ACCESS

Which indicates the antibiotic of choice for each of the 25 most common infections. These antibiotics should be available at all times, affordable and quality-assured.



WATCH

Which includes most of the "highest-priority critically important antimicrobials" for human medicine and veterinary use. These antibiotics are recommended only for specific, limited indications

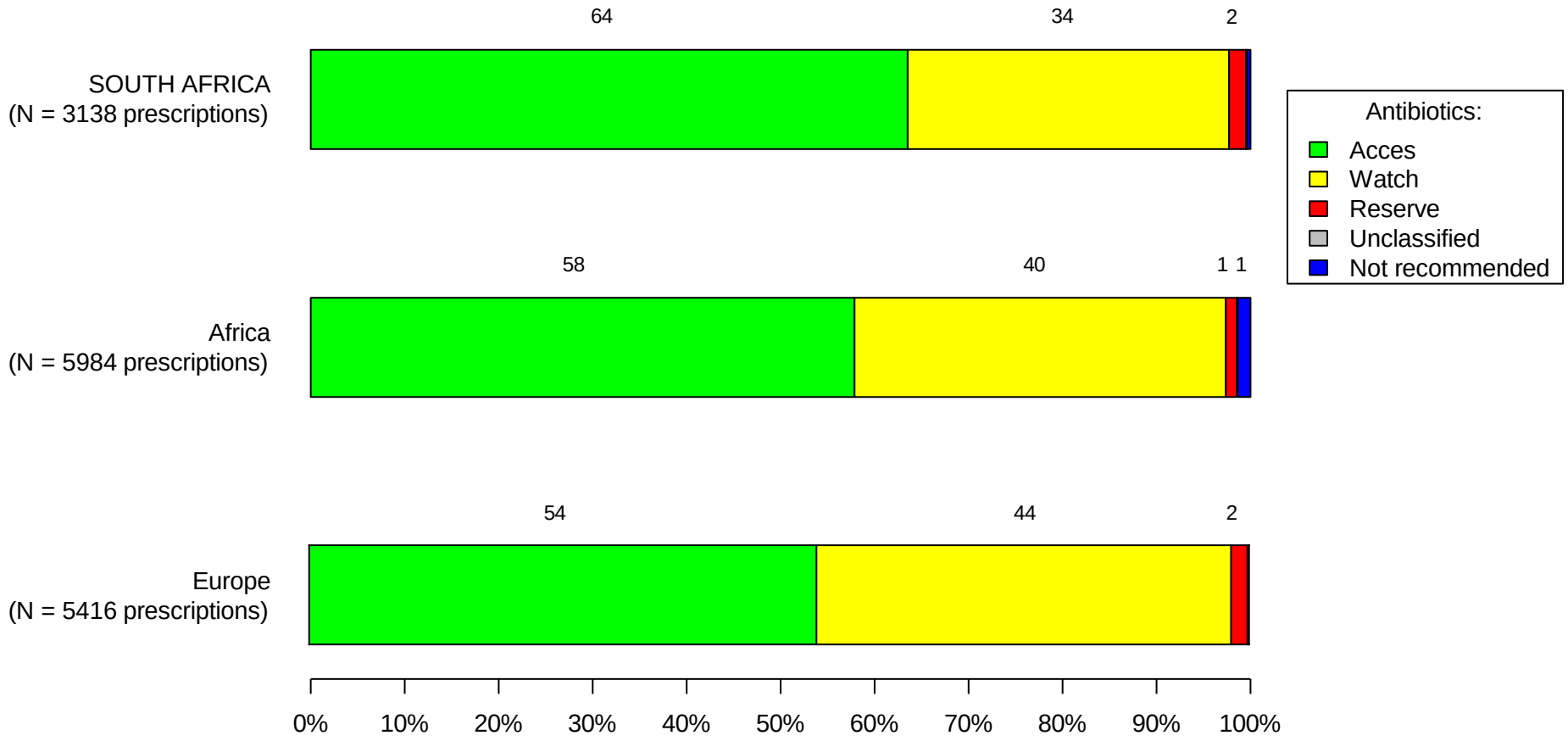
RESERVE

Antibiotics that should only be used as a last resort when all other antibiotics have failed.

Adoptaware.org

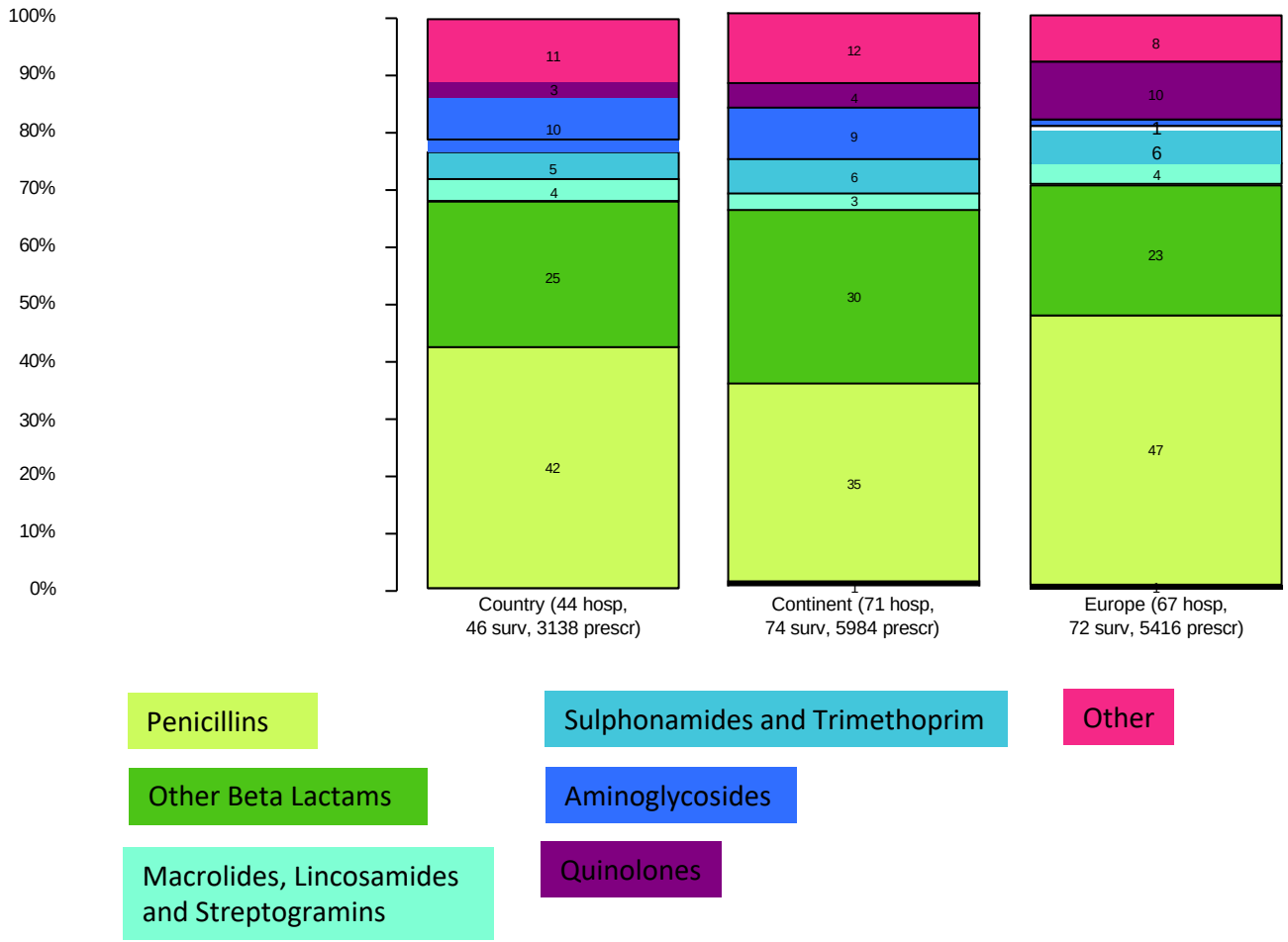
Overall antibiotic use (ATC J01) according to the WHO AWaRe classification

WHO goal: 60% all antibiotics used at a country level are from the ACCESS group by 2030



HANDLE ANTIMICROBIALS WITH CARE

Overall proportional antibiotic use



Percentage of antibacterials for systemic use (ATC J01) at ATC3 level (pharmacological subgroup). Proportional antibiotic use below 0.5% is not reported.

hosp = hospitals, surv = surveys, prescr = prescriptions.

Proportional antibiotic use (% of prescriptions)

ATC4	Antibiotics Subgroup	Country	Continent	Europe	
J01CA	Penicillins with extended spectrum	14.8	11.4	5.9	Amoxicillin/Ampicillin
J01CE	Beta−lactamase sensitive penicillins	1.3	2.8	0.9	
J01CF	Beta−lactamase resistant penicillins	3.2	3.0	2.9	
J01CR	Penicillins incl. beta−lactam. inh.	22.3	17.1	37.3	Amoxicillin Clavulanate
J01DB	First−generation cephalosporins	4.5	2.7	9.6	
J01DD	Third−generation cephalosporins	13.3	20.7	6.2	Ceftriaxone/Cefotaxime
J01DH	Carbapenems	7.0	4.8	3.4	
J01EE	Comb. Sulfonamides/trimethoprim	3.6	2.8	3.7	
J01FA	Macrolides	4.0	3.7	3.8	
J01FF	Lincosamides	0.7	2.3	2.6	
J01GB	Other aminoglycosides	9.6	9.0	1.1	
J01MA	Fluoroquinolones	2.6	4.3	10.1	
J01XA	Glycopeptide antibacterials	3.1	2.2	2.8	
J01XD	Imidazole derivatives	6.1	8.9	2.0	
J01XX	Other antibacterials	0.3	0.2	1.4	

Our hospital: 494 prescriptions, 379 treated patients; Country: 3138 prescriptions, 44 hospitals, 46 surveys

Continent: 5984 prescriptions, 71 hospitals, 74 surveys

Europe: 5416 prescriptions, 67 hospitals, 72 surveys

10 most prescribed ATC4 at country level plus 5 extra ATC4 at hospital level which do not fall within top 10 at country level

Proportional antibiotic use (% of prescriptions) – [Adult] Intensive Care Unit

ATC4	Antibiotics Subgroup	Country	Continent	Europe
J01CA	Penicillins with extended spectrum	6.3	5.2	3.2
J01CF	Beta−lactamase resistant penicillins	0.9	0.7	1.7
J01CR	Penicillins incl. beta−lactam. inh.	22.9	19.9	41.5
J01DB	First−generation cephalosporins	4.9	4.1	8.7
J01DD	Third−generation cephalosporins	11.7	14.4	9.0
J01DE	Fourth−generation cephalosporins	3.6	3.0	0.7
J01DF	Monobactams			0.7
J01DH	Carbapenems	18.4	17.3	7.8
J01EE	Comb. Sulfonamides/trimethoprim	4.5	5.2	2.2
J01FA	Macrolides	2.7	2.6	3.9
J01GB	Other aminoglycosides	4.5	4.4	1.9
J01XA	Glycopeptide antibacterials	4.9	4.1	4.4
J01XD	Imidazole derivatives	4.0	7.4	0.7

Our hospital: 26 prescriptions, 18 treated patients; Country: 223 prescriptions, 22 hospitals, 24 surveys

Continent: 271 prescriptions, 32 hospitals, 34 surveys

Europe: 412 prescriptions, 55 hospitals, 56 surveys

10 most prescribed ATC4 at country level plus 5 extra ATC4 at hospital level which do not fall within top 10 at country level

Ten most common diagnoses treated with therapeutic antimicrobials

	Country		Continent		Europe	
Diagnosis	**N**	**%**	**N**	**%**	**N**	**%**
Pneumonia	396	25.0	666	24.3	1034	25.9
Skin and Soft Tissue	220	13.9	369	13.5	401	10.0
CNS	104	6.6	161	5.9	56	1.4
Intra Abdominal	76	4.8	113	4.1	386	9.7
Lower UTI	55	3.5	99	3.6	329	8.2
Bone and Joint	50	3.2	82	3.0	209	5.2
TB	40	2.5	99	3.6	20	0.5
Gastrointestinal	67	4.2	119	4.3	121	3.0
OBS and GYNAE	58	3.7	111	4.1	17	0.4
Bacteraemia	25	1.6	29	1.1	58	1.5

Top ten diagnoses in our hospital. Count on the number of diagnoses treated with at least one antimicrobal.
This implies that a patient with multiple diagnoses can be counted several times. Prophylactic prescribing and patients admitted on NICU or NMW are excluded from this analysis.

Prevalence (%) of Healthcare Associated Infections: Hospital−wide

	Country	Continent	Europe
Numerator (N patients)	534	796	1228
Denominator (N admitted patients)	7136	10766	16454
HAI rate (%)	7.5	7.4	7.5
Post−operative surgical site infection (%)	1.5	1.6	1.5
Intervention related infection (%)	1.6	1.4	1.4
CDAD (%)	0.2	0.2	0.1
Other HAI (%)	3.8	3.9	3.6
HAI from another hospital (%)	0.6	0.6	0.2
HAI from LTCF or nursing home (%)	0.0	0.1	0.8

Prevalence (%) of Intervention−related versus Other Hospital−Associated Infections Hospital−wide

	Country	Continent	Europe
Numerator (N patients)	534	796	1228
Denominator (N admitted patients)	7136	10766	16454
HAI rate (%)	7.5	7.4	7.5
Intervention−related infections (%)			
Mixed origin	0.9	0.7	0.4
CVC−BSI	0.2	0.1	0.2
PVC−BSI	0.1	0.1	0.0
Ventilator−Associated Pneumonia (VAP)	0.3	0.3	0.2
CAUTI	0.2	0.2	0.5
Other Hospital−Associated Infections (%) HAI of mixed or undefined origin	2.1	1.8	1.7
Blood Stream Infection (BSI)	1.2	1.3	0.2
Hospital−Acquired Pneumonia (not VAP)	0.3	0.5	1.1
Urinary Tract Infection (UTI)	0.3	0.4	0.7

CVC−BSI = Central Venous Catheter−related Blood Stream Infection
PVC−BSI = Peripheral Vascular Catheter−related Blood Stream Infection
CAUTI = Catheter−Associated Urinary Tract Infection

Intervention−related infections are scored by code HAI2 and Other Hospital−Associated Infections by HAI4 of the variable Indication

Invasive device use hospital−wide

	Country		Continent		Hospital type		Europe	
	N	%	N	%	N	%	N	%
N total admitted patients	9465		11093		6245		5369	
N admitted patients with:								
PVC	3855	40.7	4901	44.2	2859	45.8	2309	43.0
CVC	448	4.7	523	4.7	451	7.2	443	8.3
Indwelling UC	1400	14.8	1594	14.4	971	15.5	753	14.0
Tubes/Drains	488	5.2	535	4.8	415	6.6	410	7.6
IRI	288	3.0	316	2.8	278	4.5	101	1.9
CiPAP−BiPAP	210	2.2	250	2.3	186	3.0	59	1.1

CVC = Central Venous Catheter; PVC = Peripheral Vascular Catheter;
UC = Urinary Catheter; IRI = Invasive endotracheal Respiratory Intubation;
CiPAP, BiPAP = Non−invasive mechanical ventilation

Therapeutic antimicrobial use for community acquired and healthcare associated infections by type of treatment

	CAI Empiric		CAI Targeted		CAI Total	
	N	%	N	%	N	%
Country	1596	92.4	132	7.6	1728	67.7
Continent	2969	92.6	238	7.4	3207	71.6

High rate of empiric prescription
CAI>HAI

	HAI Empiric		HAI Targeted		HAI Total	
	N	%	N	%	N	%
Country	541	65.7	282	34.3	823	32.3
Continent	942	74.2	328	25.8	1270	28.4

HAI Rate 7.5%

HAI drives antibiotic Prescribing

CAI= Community Acquired Infections; HAI=Healthcare Associated Infections
Type of treatment= empiric versus targeted treatment.
For each subgroup of therapeutic use (CAI or HAI) the number of antimicrobials and proportion (%) for empiric versus targeted prescribing is reported.

Prevalence of patients (%) with previous hospitalisation < 3 months

	Hospital (%)	Adult wards (%)	Paediatric wards (%)
Approx. a quarter patients had a previous hospital admission			
Country SOUTH AFRICA – N patients (denominator)	2774	1870	904
Yes, ICU	3.9	3.5	4.5
Yes, Other	18.6	20.5	14.6
No	62.0	56.3	73.7
Unknown	15.6	19.6	7.2
Continent – N patients (denominator)	3568	2460	1108
Yes, ICU	3.4	3.3	3.9
Yes, Other	19.0	20.4	16.0
No	61.8	57.2	72.2
Unknown	15.7	19.2	7.9
Europe – N patients (denominator)	1528	1380	148
Yes, ICU	2.0	2.1	1.4
Yes, Other	21.1	21.9	13.5
No	57.1	57.2	55.4
Unknown	4.0	2.5	18.2

Prevalence of patients (%) with previous antibiotic treatment < 1 month

	Hospital (%)	Adult wards (%)	Paediatric wards (%)
23% patients had received antibiotics in last month			
Country SOUTH AFRICA – N patients (denominator)	2759	1863	896
Yes	26.5	24.1	31.4
No	48.7	45.5	55.2
Unknown	24.9	30.4	13.4
Continent – N patients (denominator)	3586	2485	1101
Yes	25.1	23.2	29.5
No	46.5	43.2	54.0
Unknown	28.4	33.6	16.4
Europe – N patients (denominator)	1484	1341	143
Yes	28.2	29.3	17.5
No	59.2	59.0	60.8
Unknown	12.7	11.7	21.7

Proportional antibiotic use (% of prescriptions) − Community Acquired Infections

ATC4	Antibiotics Subgroup	Country	Continent	Europe
J01CA	Penicillins with extended spectrum	17.9	13.2	8.0
J01CE	Beta−lactamase sensitive penicillins	1.5	3.6	1.0
J01CF	Beta−lactamase resistant penicillins	3.9	3.6	3.2
J01CR	Penicillins incl. beta−lactam. inh.	24.5	17.3	46.2
J01DB	First−generation cephalosporins	1.4	1.0	0.5
J01DD	Third−generation cephalosporins	18.6	25.3	7.7
J01DH	Carbapenems	2.0	2.0	2.4
J01EA	Trimethoprim and derivatives	0.1	0.0	0.1
J01EC	Intermediate−acting sulfonamides	0.1	0.1	
J01EE	Comb. Sulfonamides/trimethoprim	3.0	2.5	1.5
J01FA	Macrolides	5.9	5.6	2.9
J01GB	Other aminoglycosides	8.7	8.7	1.3
J01MA	Fluoroquinolones	2.3	3.3	11.1
J01XD	Imidazole derivatives	6.2	7.4	2.4
J01XX	Other antibacterials	0.3	0.1	1.4

Our hospital: 294 prescriptions, 231 treated patients; Country: 1577 prescriptions, 42 hospitals, 44 surveys

Continent: 2833 prescriptions, 68 hospitals, 70 surveys

Europe: 2987 prescriptions, 64 hospitals, 69 surveys

10 most prescribed ATC4 at country level plus 5 extra ATC4 at hospital level which do not fall within top 10 at country level

Proportional antibiotic use (% of prescriptions) – Healthcare Associated Infections

Cost?

ATC4	Antibiotics Subgroup	Country	Continent	Europe
J01CA	Penicillins with extended spectrum	7.0	7.2	4.7
J01CF	Beta−lactamase resistant penicillins	3.6	3.6	3.9
J01CR	Penicillins incl. beta−lactam. inh.	15.3	12.1	38.1
J01DB	First−generation cephalosporins	0.6	0.6	0.5
J01DC	Second−generation cephalosporins		0.6	2.2
J01DD	Third−generation cephalosporins	6.1	13.1	6.8
J01DF	Monobactams			0.2
J01DH	Carbapenems	23.5	18.0	8.0
J01EE	Comb. Sulfonamides/trimethoprim	1.7	1.3	3.1
J01FF	Lincosamides	1.1	1.9	2.0
J01GB	Other aminoglycosides	12.8	13.2	1.4
J01MA	Fluoroquinolones	5.2	5.9	12.2
J01XA	Glycopeptide antibacterials	10.2	7.0	7.5
J01XB	Polymyxins	5.1	3.2	0.4
J01XD	Imidazole derivatives	2.6	5.5	1.4

Our hospital: 96 prescriptions, 72 treated patients; Country: 727 prescriptions, 38 hospitals, 40 surveys

Continent: 1142 prescriptions, 62 hospitals, 64 surveys

Europe: 1331 prescriptions, 67 hospitals, 72 surveys

10 most prescribed ATC4 at country level plus 5 extra ATC4 at hospital level which do not fall within top 10 at country level

Type of antibiotic treatment – Summary

	Country		Continent		Europe	
	N	%	N	%	N	%
All patients						
Empiric	2749	88.8	5489	92.8	3724	70.1
Targeted	347	11.2	429	7.2	1587	29.9
Adults (>= 18 years)						
Empiric	1676	89.7	3403	93.1	3179	68.1
Targeted	192	10.3	254	6.9	1492	31.9
Children (< 18 years)						
Empiric	913	89.2	1743	93.3	505	84.7
Targeted	111	10.8	126	6.7	91	15.3
Neonates (NICU)						
Empiric	160	78.4	343	87.5	40	90.9
Targeted	44	21.6	49	12.5	4	9.1

Blood Culture Practices?

- Blood volumes

Selection on antibiotic treatments.
N = number of antibiotics (J01) included per type of treatment and subgroup (all patients, adults, children and neonates).

Treatment based on microbiology data

	Country		Continent		Hospital type		Europe	
	N	%	N	%	N	%	N	%
MRSA	22	1.0	27	0.7	20	1.0	16	0.4
MRCoNS	15	0.7	15	0.4	8	0.4	37	1.0
VRE	4	0.2	6	0.2	5	0.3	3	0.1
ESBL	63	2.8	87	2.4	78	4.1	72	1.9
3GCREB	11	0.5	22	0.6	20	1.0	38	1.0
CRE	40	1.8	43	1.2	34	1.8	12	0.3
ESBL−NF	11	0.5	18	0.5	14	0.7	9	0.2
CR−NF	36	1.6	41	1.1	31	1.6	15	0.4
Other MDR	0	0.0	0	0.0	0	0.0	0	0.0
PNSP	0	0.0	0	0.0	0	0.0	0	0.0
MLS	4	0.2	5	0.1	2	0.1	3	0.1
Any of the above	186	8.4	236	6.5	189	9.9	190	5.1

N = the number of patients reported to have received a microbiology−based treatment for the respective pathogen.
% = 100*(the number of patients reported to have received a microbiology−based treatment for the respective pathogen/total number of patients receiving a therapeutic treatment (CAI or HAI) with at least one antibacterial for systemic use (J01)).

Use of laboratory when using antibiotics

Diagnosis	No of prescriptions	%
Pneumonia	1065	63,4
Sepsis	651	74,5
Skin and Soft Tissue	558	50,0
Proph OBGY	305	18,7
CNS	290	59,7

Treatment Based on Biomarker

CRP
PCT
WCC

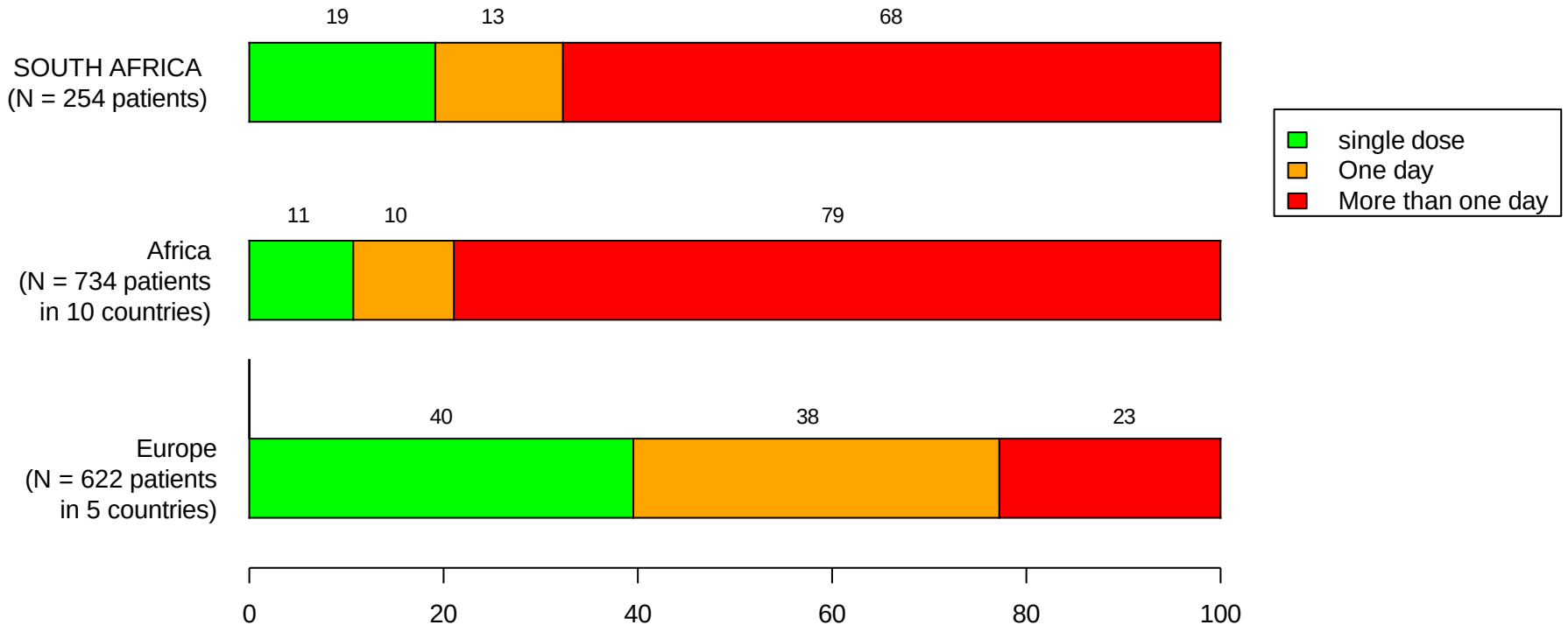
Use of laboratory when using antibiotics

Diagnosis	Number of Prescriptions	Total Cultures to lab (%)	Blood Cultures to lab (%)
Pneumonia	1065	55,1	44,4
Sepsis	651	76,4	70,7
Skin and Soft Tissue	558	37,3	22,4
Proph OBGY	305	4,6	3,3
CNS	290	69,3	41,0

Total Cultures: Blood, urine, stool, CSF, BAL,Sputum, Wound, Other

Duration of surgical prophylaxis in adults and children

Low hanging Fruit?



Proportional antibiotic use (% of prescriptions) – Surgical Prophylaxis

ATC4	Antibiotics Subgroup	Country	Continent	Europe
J01CA	Penicillins with extended spectrum	8.4	7.8	0.5
J01CF	Beta−lactamase resistant penicillins	0.9	1.7	0.6
J01CR	Penicillins incl. beta−lactam. inh.	33.7	25.2	8.5
J01DB	First−generation cephalosporins	32.0	11.8	76.1
J01DD	Third−generation cephalosporins	5.2	18.0	0.3
J01DE	Fourth−generation cephalosporins	0.6	0.6	
J01GB	Other aminoglycosides	2.6	3.6	0.2
J01MA	Fluoroquinolones	0.6	5.0	3.1
J01XD	Imidazole derivatives	14.2	16.6	2.3

Our hospital: 20 prescriptions, 19 treated patients; Country: 344 prescriptions, 27 hospitals, 29 surveys

Continent: 1022 prescriptions, 51 hospitals, 53 surveys

Europe: 645 prescriptions, 59 hospitals, 64 surveys

Country: SOUTH AFRICA ; Continent: Africa ; Hospital type:

Original Article

Optimizing prophylactic antibiotic use among surgery patients in Ethiopian hospitals

Getachew Alemkere [a], Hailu Tadeg [a], Workineh Getahun [a], Wendosen Shewarega [b], Asrat Agalu [c], Mohan P. Joshi [d,1], Niranjan Konduri [d,*,2]

[a] *USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, Management Sciences for Health, Addis Ababa, Ethiopia*
[b] *Pharmaceuticals and Medical Devices Lead Executive Office, Ministry of Health, Addis Ababa, Ethiopia*
[c] *Department of Pharmacy, Bahir Dar University, Bahir Dar, Ethiopia*
[d] *USAID Medicines, Technologies, and Pharmaceutical Services (MTaPS) Program, Management Sciences for Health, Arlington, VA, USA*

Table 5
Benefit of the SAP intervention between the baseline and intervention phases.

Variable	Baseline	Intervention	Total	*p value*
Hospital stay, days (mean ± SD)* *	4.57 ± 2.93	↓ 4.48 ± 3.33	4.52 ± 3.14	0.779
Patients developing SSI, n (%)	10 (6.1)	↓ 7 (3.3)	17 (4.5)	0.190
Antibiotic cost (mean ± SD)* *	262.95 ± 268.87	↓ 211.77 ± 204.27	236.94 ± 130.00	0.028 *

Journal of Infection and Public Health

Summary of quality indicators for antibiotic use

	Country		Continent		Europe	
	N	%	N	%	N	%
Medical						
Reason in notes	1632	84.3	2609	78.3	3004	88.9
Guidelines missing	76	3.9	280	8.4	360	10.7
Guideline compliant	1025	79.0	1618	76.6	2249	83.2
Stop/review date documented	642	33.1	1305	39.2	1549	45.8
Surgical						
Reason in notes	562	77.4	1411	73.6	1270	85.2
Guidelines missing	25	3.4	554	28.9	158	10.6
Guideline compliant	377	69.9	658	67.1	938	81.1
Stop/review date documented	284	39.1	955	49.8	912	61.2
ICU						
Reason in notes	409	86.1	637	86.5	500	91.7
Guidelines missing	24	5.1	77	10.5	54	9.9
Guideline compliant	253	79.8	345	79.5	332	83.8
Stop/review date	219	46.1	312	42.4	218	40.0

− For reason in notes and stop/review date documented: Count at antibacterial level.
− For guidelines missing: Count on NA (= no guideline for an indication) at patient level and diagnosis over total scores for this indicator.
− For guideline compliance: Count at patient level and diagnosis for compliance= yes or no only. For combination therapy with >1 antibiotic: if 1 antibiotic by diagnosis is not compliant, this combination therapy as a whole for this diagnosis will be counted as non−compliant.

Prevalence of missed doses hospital wide

	Country	Continent	Europe
Hospital (%)			
N antimicrobials	4796	8986	6392
Percentage missed doses	10.15	13.87	3.25
Mean missed doses	2.31	3.27	1.94
Median missed doses	1	2	1
Reason missed doses (%)			
Stock out	5.1	14.8	7.7
Could not purchase	0.2	7.7	0.0
Declined/refused	0.2	0.3	0.0
Other reason	19.9	13.1	33.2
Multiple reasons	2.5	4.0	2.9
Unknown	72.1	60.1	56.2

Analyses are performed at antimicrobial level.

% AM with missed doses : 100*(number of reported antimicrobials with at least one missed dose/number of all reported antimicrobials (antimicrobials with unknown number of missed doses are also included in the denominator under the assumption that missing doses equals no missed dose).
Mean and median missed doses are calculated using all antimicrobials with at least one missed dose.
Antimicrobials for which no doses were missed (zero) or reported (missing values) are excluded for these analyses.
Reason missed doses (%) : Proportion (%) of reason for missed doses out of all possible reasons for antimicrobials with at least one missed dose.
Unknown reason : Counts those antimicrobials with code U + empty/missing values for antimicrobials for which at least one missed dose was reported.

Insert Hospital logo

[Hospital] Antibiotic Stewardship Programme
Antibiotic Prescription Chart

Ward

Patient Label	Weight	**Allergies**
	eGFR	

Infection Episode 1

Diagnosis ☐ Pneumonia ☐ UTI ☐ Meningitis ☐ Line infection ☐ Cellulitis ☐ Intra-abdominal infection ☐ Other _____

Source* ☐ Community acquired ☐ Hospital acquired

Indication P = Prophylactic E = Empirical D = Definitive

SEND APPROPRIATE CULTURES BEFORE PRESCRIBING ANTIBIOTICS

Cultures ☐ Sent before antibiotics ☐ Sent after antibiotics ☐ Not Sent

*CA = Community acquired: within ≤48h, of admission
HA = Hospital-acquired: >48h after admission or within 30 days of discharge

Antibiotic Day	1	2	3	4	5	6	7	8	9	10
Date → / Time ↓			Review		Review		Review			

Indication	Medicine Approved Name or GE	Dose	Route
☐ P	Start Date / Time	Duration	Frequency
☐ E			
☐ D	Drs Signature & Name	Contact	Pharmacy

Conclusions

- Building on previous pilot
  - Increased and repeated participation will give more robust data
  - Specific Hospitals for quality improvement
- Future participation needs a combined approach
  - IPC and AMS
  - All specialities medical, surgical , ICU, general wards
- HAI's drive antibiotic prescription: Increased Cost
- Identify targets for AMS and IPC QI projects for national implementation
  - Oral to IV switch
  - Surgical Prophylaxis
  - Blood Culture Practices
  - Guideline compliance: IPC and AMS

- Ann Versporten and the Global PPS team
- Ruth and Nasreen from MAC secretariat
- Prof Shaheen Methar
- All the survey participants particularly the hospital “admins”