

# THE GLOBAL POINT PREVALENCE SURVEY

## on Antimicrobial Consumption and Resistance



Results on the 2017 Global-PPS  
Posters presented at the ECCMID congress

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Madrid, Spain

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**Laboratory of Medical Microbiology  
Vaccine & Infectious Disease Institute**  
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*Dear colleague,*

*The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS), is an innovative and user friendly tool, designed for the rapid assessment of antimicrobial prescribing and resistance in hospitalized patients worldwide. Launched globally in 2015, the method was used during the first Global-PPS in over 335 hospitals from 53 countries of six global regions and led to the establishment of a global surveillance network of antimicrobial prescribing and resistance. Hospitals in Low and Middle Income Countries (LMIC) were for the first time able to measure and compare antimicrobial use patterns at local, national and regional level.*

*The Global-PPS uses a standardized and validated protocol and is characterized by the simplicity of execution. Data are collected on paper forms, and subsequently entered onto a database using the Global-PPS programme, a web-based application for data-entry, validation and reporting. The online system for data entry is easy to use and requires minimal training, guarantees consistency and reproducibility of data entry, and offers an immediate feedback (Excel and report in pdf). All patient data is entered completely anonymously, and stored at the University of Antwerp, Belgium. The data remain the property of the participating hospital. Participation of hospitals and all fieldwork at the hospital level was done on a voluntary basis.*

*The critical benefits for the hospitals are numerous. The Global-PPS provided, amongst others, a tool to:*

- Evaluate antimicrobial prescribing practices in hospitals*
- Compare data locally, nationally, regionally and worldwide*
- Identify feasible targets to improve antimicrobial prescribing*

*Above all, the Global-PPS aids changing prescribing practises and can measure the impact of interventions through repeated PPSs.*

*The database is hosted at the University of Antwerp, Belgium. The Global-PPS team encourages local, country or regional specific analysis after mutual agreement for data-sharing. A publication policy is available on request.*

*This poster booklet includes results on 17 out of the 51 countries who participated to the second Global-PPS conducted in 2017, and that have been presented at the 2018 ECCMID congress. The booklet further includes overall 2017 results, results on colistin prescribing, clostridium difficile acute diarrhea; and on the management of urinary tract infections. We hope you will enjoy reading these country specific as well as overall reports on antimicrobial use that were presented at the ECCMID congress in April 2018.*

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Hundreds of healthcare professionals who were voluntarily collecting and submitting their hospital data

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

## Disclosures



bioMérieux is the sole private sponsor of the GLOBAL-PPS. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funders have no role in study design, data collection, data analysis and data interpretation. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp.

Countries with a poster presented during the 2018 ECCMID congress or elsewhere.



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ECCMID 2018 (poster P0345A)



# The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS) in 391 hospitals worldwide

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## INTRODUCTION AND PURPOSE

The Global-PPS ([www.global-pps.com](http://www.global-pps.com)) assesses variation of antimicrobial prescribing worldwide using a standardized and validated method. We report on the second Global-PPS conducted in 2017. bioMérieux provided unrestricted funding support for the survey.

## METHODS

Data were collected in January-December 2017 from 391 hospitals (H) in 51 countries (C), including Europe (East-EU:4C,12H; North-EU:3C,5H; South-EU:8C,32H; West-EU:4C,113H); Africa (5C,33H); East-South Asia (10C,76H); West-central Asia (5C,39H); Latin-America (8C,56H); North-America (2C,18H); and Oceania (2C,7H). A total of 13 low middle income (99H), 16 upper middle income (64H) and 22 high income countries (228H) were included. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

## RESULTS

**Table 1. Most prescribed antibacterials for systemic use (ATC J01) by region**

	Africa (%) (n=4,567)	Australia (%) (n=372)	North EU (%) (n=678)	East EU (%) (n=2,028)	South EU (%) (n=6,013)	West EU (%) (n=8,928)	E-South Asia (%) (n=14,290)	W-Central Asia (%) (n=3,666)	North AM (%) (n=2,127)	Latin AM (%) (n=5,811)	Total (%) (n=48,480)
Ceftriaxone	15.1	16.1	2.1	20.8	15.3	4.3	13.0	16.3	12.6	17.4	12.8
Co-amoxiclav	8.5	6.2	15.0	7.0	9.2	21.9	5.8	2.7	3.2	0.9	8.7
Pip/tazo	2.0	9.7	5.9	0.3	6.3	8.9	7.9	5.5	14.4	6.0	6.9
Metronidazole	12.0	8.3	4.4	6.2	7.6	2.3	5.4	7.1	4.1	8.2	6.2
Cefazolin	1.3	13.7	-	8.0	6.2	8.6	4.2	4.4	8.6	9.0	5.9
Ciprofloxacin	6.7	1.9	3.5	9.6	7.6	8.0	3.6	3.8	5.5	3.7	5.5
Meropenem	2.9	1.9	4.3	2.3	4.8	3.7	5.7	7.1	3.9	5.0	4.7
Cefuroxime	5.1	1.1	11.8	3.7	2.6	4.1	7.3	5.2	1.0	0.6	4.5
Vancomycin	1.9	3.8	2.9	2.4	3.1	2.8	3.1	6.5	9.1	8.0	4.0
Co-trimoxazole	2.3	3.5	4.7	2.2	2.3	3.7	3.5	1.1	5.5	4.3	3.3
Cefotaxime	6.1	-	3.5	5.1	0.8	0.8	1.5	3.1	0.9	2.2	2.1
Amp/enz.inh.	4.1	-	-	5.5	0.8	0.2	2.3	1.6	0.5	1.3	1.7
Benzylpenicillin	0.7	1.3	5.2	-	0.2	0.5	1.0	-	0.6	0.1	0.6
Doxycycline	0.3	2.7	5.5	-	0.4	0.4	0.6	0.1	1.8	0.2	0.5

**Table 2. Antimicrobial quality indicators by region**

Missing data: Australia, Malta & 33 Belgian hospitals: data collected were based on ECDC-PPS protocol \*prophylactic prescribing excluded, Targeted treatment: based upon microbiology result with relevant clinical specimen (not screening test)

	Reason written in notes (%)	Stop/review date written in notes (%)	No guidelines available (%)	Prescribed according to guidelines (%)	Prolonged SP (>24hour, J01 only, %)	Targeted treatment (J01 only, %)*
Africa	65.8	24.4	44.7	68.3	88.2	8.8
East & Southern Asia	61.2	26.8	24.0	70.5	82.6	21.3
Western Central Asia	64.8	40.3	17.1	71.5	76.0	21.8
Northern America	85.2	64.3	17.6	82.7	51.0	33.9
Latin America	84.5	44.0	17.6	76.4	41.5	25.9
Eastern Europe	86.9	41.1	5.5	72.4	80.3	12.4
Northern Europe	91.0	63.8	11.9	90.9	40.2	19.4
Southern Europe	70.4	25.9	28.8	65.7	68.0	21.1
Western Europe	82.0	40.1	11.5	82.1	26.5	34.4
<b>Total</b>	<b>71.7</b>	<b>34.2</b>	<b>22.6</b>	<b>73.6</b>	<b>68.9</b>	<b>21.9</b>

**Table 3. Proportion of patients (%) receiving an antibiotic treatment targeting a MDRO.**

Denominator=total N patients receiving a therapeutic treatment for community or healthcare associated infection (CAI or HAI) with at least one antibacterial for systemic use (J01)

	MRSA (%)	MRCoNS (%)	VRE (%)	ESBL (%)	3-ceph (%)	CRE (%)	ESBL-NF (%)	CR-NF (%)	Other MDRO (%)	Total (%)
Africa	0.8	0.3	0.1	1.2	1.5	0.4	0.9	0.7	1.9	7.0
East & Southern Asia	1.1	0.6	0.1	2.8	1.4	0.6	0.7	1.1	1.7	8.6
Western Central Asia	3.4	0.7	0.1	3.5	0.4	1.0	1.3	0.6	5.8	14.8
Northern America	3.4	0.6	0.9	1.7	1.0	0.2	0.2	0.2	1.8	8.7
Latin America	2.7	1.2	1.0	5.7	1.3	1.0	1.1	2.8	1.7	15.7
Europe	1.0	0.9	0.1	2.2	1.1	0.5	0.8	0.6	2.5	8.4

- In total, 103,268 patients admitted to 6,259 wards were surveyed.
- Antimicrobial prevalence was 36.0% (n=37,172 patients receiving a least one therapeutic and/or prophylactic prescription), which varied between continents (range: 23.6% in East Europe to 56.6% in Africa), countries (range: 22.1% in Armenia to 77.9% in Egypt), hospital type (range: 29.1% in primary care to 40.4% in tertiary care hospitals) and ward types (range: 31.9 in adult medical wards (AMW) to 81.0% in transplant AMW; and 18% in neonatal MW to 61% in transplant paediatric MW).
- Among all antimicrobials (n=53,991); systemic antibacterials (J01), antifungals for (J02) and drugs to treat tuberculosis (J04) represented 89.9%, 3.5% and 2.4%.
- Out of 48,480 antibiotics for systemic use, 65.6% (n=31,799) were prescribed for treatment (among which 22.9% for a hospital acquired infection); and 29.0% (n=14,073) for medical or surgical prophylaxis.
- Table 1** provides the most prescribed antibacterial substances by region.
- Table 2** provides antimicrobial quality indicators by region.
- Table 3** provides prevalence of patients (%) with multidrug resistant organisms (MDRO) by region.

## CONCLUSION

The tool provided quantifiable outcome measures to assess and compare quantity and quality of antibiotic prescribing in hospitalized patients worldwide. Highest broad-spectrum prescribing and higher prevalence of MDRO are observed in Western Central Asia and Latin America. These data serve to identify targets for quality improvement of antibiotic prescribing, the development of local prescribing guidelines, education and practice changes, and for measuring the impact of interventions through repeated PPS.

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ECCMID 2018 (poster E0030)

Laboratory of Medical Microbiology  
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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS) in 2015 and 2017: variation of colistin prescribing

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### INTRODUCTION AND PURPOSE

The Global-PPS ([www.global-pps.com](http://www.global-pps.com)) assesses antimicrobial prescribing worldwide with a standardized and validated method. Since colistin is recognized as one of the last treatment options for infections caused by multidrug-resistant Gram-negative pathogens (MDR-GNP), we used the variation of colistin prescribing and dosing worldwide as one measure of the prevalence of MDR-GNP.

### METHODS

We analysed 2015 and 2017 Global-PPS data (53 countries/335 hospitals and 51 countries/391 hospitals, respectively) to assess colistin systemic use (ATC code J01XB01). Analyses on parenteral dosing are performed in patients aged  $\geq 15$  years only.

### RESULTS

**Table 1.** Prevalence (%) of colistin prescribing worldwide

United Nation Region	N treated patients (denominator)		colistin (%) (J01XB01)		polymyxins (%) (J01XB01 & 02)	
	2015	2017	2015	2017	2015	2017
Africa	1,365	2,975	0.29	0.54	0.29	0.57
Australia	1,008	269	0.10	0.74	0.10	0.74
East & Southern Asia	5,889	10,594	0.70	0.76	0.88	0.98
Western Central Asia	2,323	2,736	1.59	2.49	1.59	2.49
Northern America	2,386	1,799	0.21	-	0.21	-
Latin America	1,769	4,151	2.37	1.35	2.43	2.12
Eastern Europe	950	1,686	0.74	0.30	1.16	0.42
Northern Europe	3,438	540	0.47	1.11	0.47	1.11
Southern Europe	6,617	4,499	0.83	0.96	0.83	0.96
Western Europe	9,017	7,923	0.34	0.24	0.34	0.24
<b>Total</b>	<b>34,762</b>	<b>37,172</b>	<b>0.69</b>	<b>0.77</b>	<b>0.73</b>	<b>0.93</b>

- Overall targeted prescribing for colistin was 75.1% (401/534) with highest rates observed in Northern America (100%, 5/5 patients), Western Central Asia (91.4%; 96/105 patients) and Western Europe (80.0%, 40/50 patients).
- Targeted prescribing against carbapenem resistant organisms was 45.7% (244 patients).
- Worldwide mean parenteral daily dosing of colistin was 5.4MU (n=416, median=4MU) (**Figure 1**). Conversion factors used are provided in **Table 2**.
- The number of IV-administrations per day varied from every two days up to 4 times/day (2 times= 45.3%; 3 times= 41.9%; 1 time= 9.3%).

Potency IU	≈ mg CBA	≈ mass of CMS (mg)*
12.500	0.4	1
150.000	5	12
1.000.000	34	80
4.500.000	150	360
9.000.000	300	720

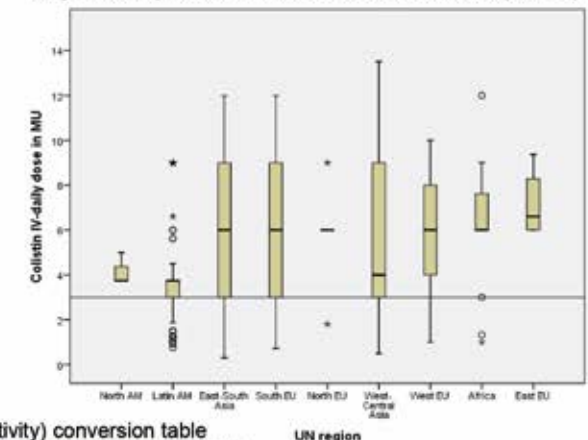
Nominal potency of the drug substance = 12.500 IU/mg

**Table 2.** CMS (colistimethate sodium), CBA (colistin base activity) conversion table

([ref=http://www.ema.europa.eu/docs/en\\_GB/document\\_library/References/document/Polyimyxin\\_31/WC500176332.pdf](http://www.ema.europa.eu/docs/en_GB/document_library/References/document/Polyimyxin_31/WC500176332.pdf); see page 4)

- Overall worldwide proportion of patients treated with colistin was 0.69% in 2015 (239/34,762) and 0.77% (295/37,172) in 2017 (total of 534 patients). **Table 1** provides details of colistin use by region and includes overall polymyxin use.
- Patients treated with colistin were mainly admitted to ICU (53.9%) followed by adult medical wards (15.9%).
- Top 3 indications for colistin use were pneumonia (36.9%), sepsis (13.3%) and intra-abdominal sepsis (7.3%).
- 74.0% of patients were treated with colistin for a healthcare associated infection (HAI), among which 52.4% non-intervention related (e.g. VAP, catheter related), 34.7% intervention related and 12.9% related to treat a surgical site infection.
- Colistin was intravenously administered in 453 patients (84.8%) and for inhalation in 81 patients (15.2%).

**Figure 1.** Variation in daily parenteral colistin dosing among patients  $\geq 15$  year, by region. Reference=WHO Defined Daily Dose expressed in Million International Units (=3 MU)



### CONCLUSION

Global use of systemic colistin increased in 2017 as compared to 2015 mainly affecting patients with HAI admitted to ICU. The big variation in colistin prescribing (dose, frequency) observed worldwide probably reflects the confusion about optimal dosing of colistin in critically ill patients. Analyses on colistin dosing are indicative of worldwide colistin IV dosing. Due to uncertainties between CMS and CBA encoding in the database, caution is needed in interpreting these data. There is a need to add MU as option, beside IU and mg, to report colistin dosing.

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# Results on Clostridium Difficile Acute Diarrhea



ECCMID 2018 (poster E0018)

Laboratory of Medical Microbiology  
Vaccine & Infectious Disease Institute  
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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): results on *Clostridium difficile* infections (CDI)

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### INTRODUCTION AND PURPOSE

The Global-PPS ([www.global-pps.com](http://www.global-pps.com)) assesses antimicrobial prescribing worldwide using a standardized and validated method. *C. difficile* Acute Diarrhea (CDAD) is observed in hospitals (healthcare-associated infection) but also in the community, particularly in nursing homes. All antibiotics can lead to CDAD, but cephalosporins, fluoroquinolones and clindamycin, are considered as important risk factors. We aimed to analyse hospital acquired CDAD prevalence, the prescribed antibiotics for patients with CDAD as well as a set of quality indicators.

### METHODS

We analysed 2015 (53 countries/335 hospitals) and 2017 Global-PPS data (51 countries/391 hospitals) to study antibiotic prescribing for CDAD. CDAD was defined as an healthcare-associated infection if diagnosed >48 hours post-admission or diagnosed <30 days after discharge from previous admission episode. Denominator used are the number of patients with antimicrobials for those hospitals reporting at least 1 CDAD case. Analyses are performed per year of survey (2015 versus 2017). Merged data are used to report antibiotic quality indicators for CDAD.

### RESULTS

Table 1. Prevalence (%) and antibiotic (AB) quality indicators for CDAD by region

	2015 PPS				2017 PPS				Quality indicators - merged data 2015-2017 PPS				
	N patients with CDAD	N AB	N treated patients	% patients with CDAD	N patients with CDAD	N AB	N treated patients	% patients with CDAD	Reason written in notes (%)	Stop/review date written in notes (%)	No guidelines available (%)	Prescribed according guidelines (%)	Targeted prescribing (%)
Africa	4	6	1,365	0.3	9	10	2,975	0.3	56.3	6.3	25.0	83.3	37.5
East & Southern Asia	68	72	5,889	1.2	63	67	10,594	0.4	90.6	49.6	17.3	95.4	67.6
Western Central Asia	20	24	2,323	0.9	15	2	2,736	0.5	67.4	37.2	14.0	62.9	53.5
Northern America	49	54	2,386	2.1	59	64	1,799	3.3	94.9	68.6	5.9	85.6	76.3
Latin America	31	36	1,769	1.8	49	4	4,151	1.2	97.9	63.2	17.9	85.1	75.9
Eastern Europe	1	1	950	0.1	2	59	1,686	0.1	66.7	66.7	/	100	66.7
Northern Europe	31	33	3,438	0.9	4	89	540	0.7	78.4	54.1	/	97.3	70.3
Southern Europe	88	117	6,617	1.3	62	19	4,499	1.4	44.2	18.0	14.1	97.1	85.4
Western Europe	78	89	9,017	0.9	24	24	4,603	0.5	90.3	43.4	6.2	90.3	85.8
Total	372	432	34,646	1.1	288	338	33,852	0.9	76.8	43.4	12.2	90.5	76.0

Targeted treatment (T) = based upon microbiology result with relevant clinical specimen (not screening test)  
N AB=number of antibiotics.

- Overall, CDAD was reported in 126 hospitals of 32 countries in 2015 (n=372 patients) and in 108 hospitals of 28 countries in 2017 (n=288 patients).
- CDAD patients were most often admitted on adult medical wards (50.8%), followed by adult surgical wards (17.9%). Out of all patients with CDAD, 4.5% were admitted on paediatric wards.
- Table 1** provides prevalence of CDAD by region for the 2015 and 2017 PPS separately, number of antibiotics prescribed to treat CDAD and a summary of antibiotic quality indicators by region.
- Top prescribed antibiotics are provided in **Figure 1**.

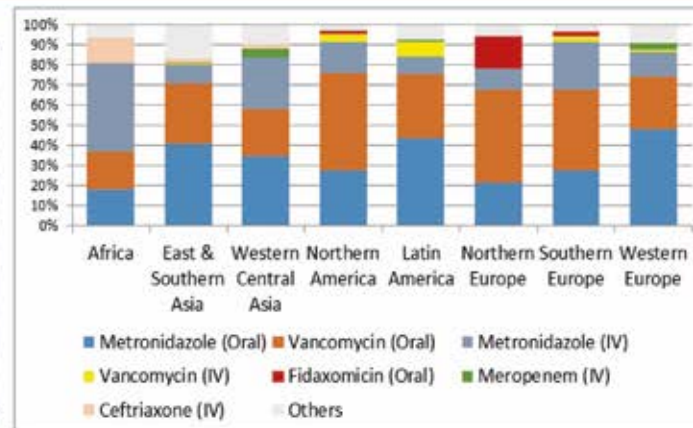


Figure 1. Most prescribed antibiotics for CDAD by region

### CONCLUSION

Reported prevalence of CDAD, antibiotic choice, route of administration, as well as antibiotic quality indicators varied between regions. The use of meropenem, ceftriaxone and parenteral vancomycin were identified as targets for antimicrobial stewardship interventions; these substances are contra-indicated to treat CDAD.

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# Management of patients with urinary tract infections



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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Management of patients with urinary tract infections (UTIs)

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### INTRODUCTION AND PURPOSE

The GLOBAL-PPS ([www.global-pps.com](http://www.global-pps.com)) aimed to assess variations of antimicrobial prescribing and resistance worldwide through Point Prevalence Surveys (PPS). We describe antimicrobial treatment of urinary tract infections (UTIs) globally, treatment indications, prevalence of nosocomial UTIs and multidrug-resistant organisms (MDROs), and quality indicators.

### METHODS

Global-PPS data were collected from February to September 2015 in 327 hospitals across 51 countries, of all inpatients receiving antimicrobials on the day of PPS. We analysed antimicrobial (ATC J01;antibacterials for systemic use) prescriptions, treatment indications & quality indicators.

### RESULTS

100,504 patients were admitted during the survey, of which 86,689 were in adult wards. 34,652 patients were treated with antimicrobials, including 3,524 (10.2%) for UTIs and 894 (2.6%) for UTI prophylaxis (**Table 1**). 1,903 (5.5%) had treatment for lower UTIs, and 1,623 (4.7%) for pyelonephritis, upper and catheter-associated UTIs (CAUTIs).

**Table 1. Number of patients (%) on antimicrobials for UTIs / UTI prophylaxis**

Ward type	All	Adult	Paediatric
Admitted patients	100,504	86,689	13,815
Admitted patients on antimicrobials (%)	34,652 (34.5%)	29,878 (34.5%)	4,774 (34.6%)
Patients on antimicrobials with UTIs (%)	3,524 (10.2%)	3,245 (10.9%)	279 (5.8%)
Lower UTIs	1,903 (5.5%)	1,823 (6.1%)	80 (1.7%)
Upper UTIs, CA-UTIs, pyelonephritis	1,623 (4.7%)	1,424 (4.8%)	199 (4.2%)
Patients on antimicrobials for UTI prophylaxis (%)	894 (2.6%)	776 (2.6%)	118 (2.5%)

Table 2. UTI quality indicators by UN Region / Subregion	Europe	North America	South America	Africa	West & Central Asia	East & South Asia	Oceania	Total
<b>Infection prevention quality indicators</b>								
% of admitted patients with HAI-UTIs	1.32%	1.93%	1.68%	0.40%	1.32%	1.37%	1.62%	1.37%
% with intervention/ CA-UTIs	0.50%	0.79%	0.23%	0.12%	0.37%	0.48%	0.47%	0.48%
% of UTI surgical prophylaxis that were >1 day (SP3)	58.2%	36.8%	82.5%	92.0%	70.4%	65.4%	33.3%	62.6%
<b>Antimicrobial prescription quality indicators</b>								
Number of prescriptions for UTIs	2,282	386	221	46	257	510	134	3,836
No guidelines available	12.3%	18.7%	28.1%	30.4%	46.7%	14.1%	11.9%	16.6%
Guideline compliant prescribing	77.9%	84.5%	69.2%	50.0%	68.1%	80.8%	63.6%	77.3%
Reasons documented in notes	83.3%	93.0%	95.0%	73.9%	82.5%	90.6%	94.0%	86.2%
Stop / review date documented	42.5%	39.6%	50.2%	47.8%	19.5%	56.9%	37.3%	42.9%
Targeted antimicrobial prescription	46.4%	52.3%	55.2%	26.1%	38.1%	39.8%	53.7%	46.1%

### Antimicrobial prescription patterns & MDRO treatment

Antimicrobial prescriptions for UTIs/UTI prophylaxis were analysed by the Anatomical Therapeutic Chemical (ATC) classification system 2015. Among all systemic antimicrobial classes (ATC4) used for UTI and prophylaxis, fluoroquinolones were commonest (20.6%), followed by 3rd-generation cephalosporins (16.8%), and penicillin combinations (including beta-lactamase inhibitors) (15.8%).

Of 1,659 patients on targeted antibiotic treatments, 425 were treated for MDROs – of these, 55.3% were for extended-spectrum beta-lactamase-producing *Enterobacteriaceae*, 3.5% for carbapenem-resistant *Enterobacteriaceae*, and 2.8% for carbapenem-resistant non-fermenting Gram-negative bacilli.

### Quality indicators (Table 2)

Overall proportion of admitted patients with hospital acquired UTIs (HAI-UTIs) was 1.37%, and intervention-related / CA-UTIs was 0.484%. Proportions were highest in North America (1.93% and 0.79%). Overall proportions of prolonged surgical UTI prophylaxis of >1 day (SP3) was 62.6%, and was highest in Africa (92.0%), South America (82.5%) and Asia (67.9%). This is despite most guidelines recommending shorter durations of surgical prophylaxis.

3,524 patients treated for UTIs received 3,836 antimicrobial prescriptions. Antimicrobials were guideline compliant in 77.3% of prescriptions, but guidelines were not available in 16.6%. Reasons for antimicrobials were generally well documented (86.2%), but stop/review dates and targeted antimicrobials were present in only 42.9% and 46.1%. Quality of antimicrobial prescriptions were generally lower in Africa, and West & Central Asia. UN regions / subregions with poorer quality indicator proportions are highlighted in red.

### CONCLUSION

Global-PPS data provide valuable surveillance data and insights into global patterns of UTI antimicrobial prescription, burden of UTIs due to MDROs, and quality of antimicrobial prescribing practices for UTI. Quality of infection prevention and antimicrobial surgical prophylaxis practices may also be assessed.

This highlights the utility of the Global-PPS methodology not only in surveillance of antimicrobial prescription and MDRO infections worldwide, but also in identifying targets of intervention for participating hospitals to improve antimicrobial use and infection prevention.

Disclosures: "bioMérieux is the sole sponsor of the GLOBAL Point Prevalence Survey. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp."  
Leyland Chuang would like to acknowledge and thank the Singapore Infectious Diseases Initiative (SIDI) for its fellowship award and support for this work.





Albania

ECCMID 2018 (poster ED051)



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of Antimicrobial prescribing in Albanian hospitals in 2017

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### INTRODUCTION AND PURPOSE

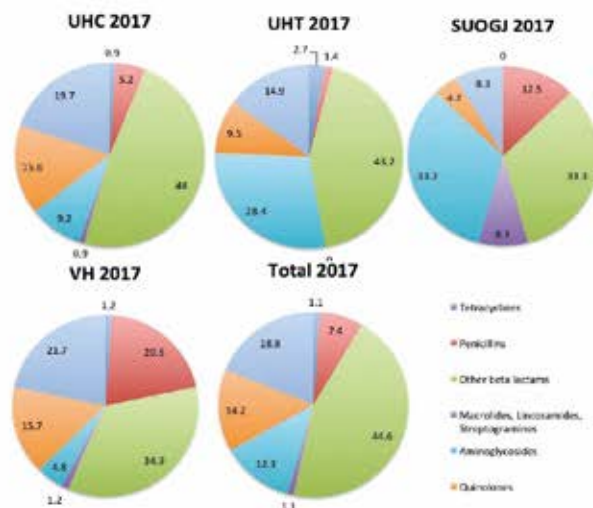
Albania is a small country in Southeastern Europe, on facing the Adriatic and Ionian Seas within the Mediterranean Sea. Albania shares borders with Montenegro in the northwest, Kosovo in the northeast, Macedonia in the east and Greece in the south. A standardized Point Prevalence Survey (PPS) method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing. This methodology is a well established surveillance method for monitoring antimicrobial prescribing in hospitals.

### METHODS

The Global-PPS was conducted between 01/02/2017 – 30/09/2017. The survey included all inpatients receiving antimicrobials on the survey day. Data collected included antimicrobial agents, reasons and indications for treatment and a set of quality indicators. Four hospitals participated: University Hospital Centre "Mother Theresa" (UHC), University Hospital Of Trauma (UHT), Obstetric and Gynaecology Hospital "Koco Gjozheni" (SUOGJ) all three in Tirana; and Vloja Hospital (VH) a Regional Hospital in Vloja. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp, Belgium : [www.global-pps.com](http://www.global-pps.com)

### RESULTS

Figure 1 Antibiotic prescribing patterns in four Albanian hospitals



The PPS included 662 patients of which 531 admitted in adult wards, 113 in paediatric wards, and 18 in neonatal wards. Overall AM use was highest in children (58.4%), followed by neonates (50.0%) and adults (48.6%). In adult wards the prevalence of AM use ranged from 43.2% in medical wards to 75.6% in ICU. In pediatric wards AM Ranged from 80.7% in medical wards to 75.0 % in ICU and in neonates wards the range goes from 0.0 % in medical wards to 50.0 % in ICU.

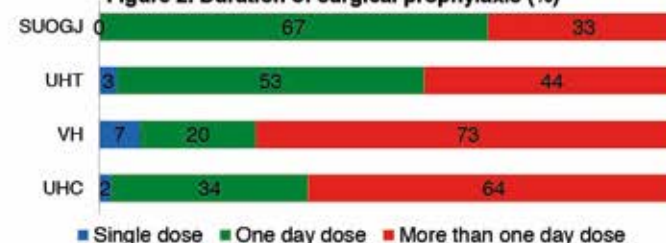
Top 3 antibiotic subclasses subscribed in those hospitals were other Beta lactams (44.6%) (mainly cefazolin), Quinolones (14.2%) (mainly ciprofloxacin) and Aminoglycosides (12.3%) (mainly gentamicin) (Figure 1).

Most antibiotics for systemic use (ATC J01) were for medical prophylaxis (34.3%), surgical prophylaxis (30.4%) and health care associated infections (25.8%). Overall, prolonged surgical prophylaxis (more than one day) was very common in 60% of surgical prophylactic prescriptions (Figure 2).

Nearly all antibiotics were not prescribed according to the guidelines (99.9%). The reason of the antibiotic prescription was mostly recorded in the notes (99%), while a stop/review date was rarely recorded (1%).

Overall antimicrobial prevalence in UHC and VH in 2017 (57.3%) was lower as compared to 2015 (78.8%). The pattern (types) of antimicrobial prescribing remained the same (results not shown).

Figure 2. Duration of surgical prophylaxis (%)



### CONCLUSION

Antimicrobial prescribing is very high in Albanian hospitals. The Global PPS is an excellent tool to evaluate the current situation of antimicrobial consumption in Albania, to identify areas for improved prescribing (e.g. develop guidelines) and to monitor the outcome of antimicrobial stewardship initiatives. We aim to implement policy actions which need to be obtained at national and hospitals level. Although the Global PPS data is only from a small number of Albanian hospitals, they showed differences in the agents and reason of the prescribing reflecting differences in hospitals prescribing guidelines. Participation of a larger number of Albanian hospitals will provide additional detail on the comparative epidemiology of antimicrobial use in Albania compared to other countries and regions of the world.

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ECCMID 2018 (poster E0036)

Argentina



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Quality of antimicrobials indications in Two different Health Care Centres of Buenos Aires, Argentina

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### INTRODUCTION AND PURPOSE

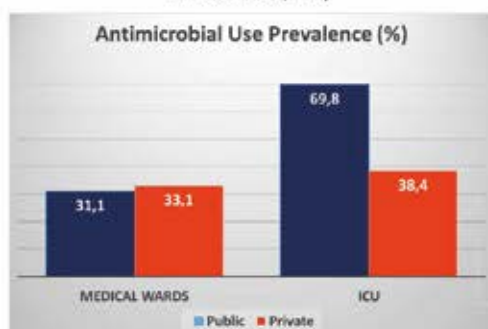
A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing in 2 different Health Institutions (one public: PuH, one private: PrH) in Buenos Aires, Argentina. Only in the PrH an Infectious Diseases Unit is available with 3 doctors and 2 nurses having an active role in infection control and antimicrobial stewardship. The aim of this study was to compare the quality of antibiotic prescribing in these 2 different Health Care Centres. BioMérieux provided unrestricted funding support for the survey.

### METHODS

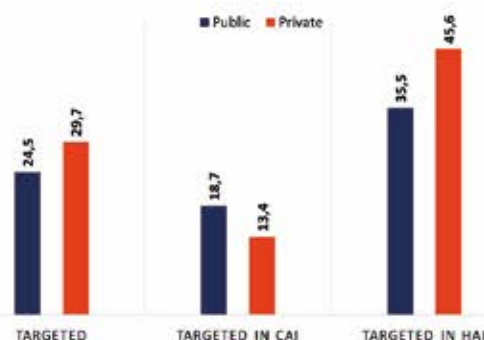
Global-PPS was conducted in 2015 and 2017, collecting data from 161 ( PuH) and 212 patients ( PrH). The survey included all inpatients receiving antimicrobials on the day of PPS. Data collected included details on antimicrobial agents, reasons and indications for treatment and quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)). We analysed merged 2015-2017 results by institution.

### RESULTS

Antimicrobial prevalence in adult wards was in the Public Hospital (PuH) of 41,1% and of 35,9% in the Private one (PrH)

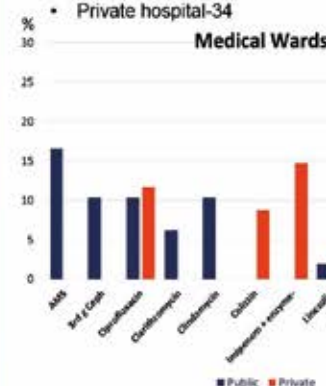


TYPE OF ANTIMICROBIAL TREATMENT (%)



Denominators used:  
• Public hospital-48  
• Private hospital-34

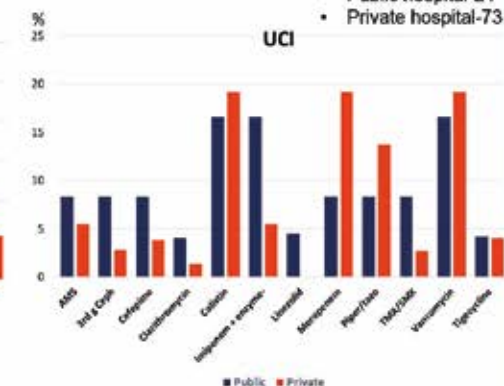
Medical Wards



Most prescribed antibiotics (%)

Denominators used:  
• Public hospital-24  
• Private hospital-73

UCI



### CONCLUSION

Antimicrobial prevalence was higher in PuH compared with PrH, mostly related to higher use in UCI. The PrH scored better on several quality indicators, such as targeted antibiotic use, compliance with guidelines and presence of stop/review date, most likely due to the presence of an Infectious Diseases Unit working focusing on de-escalation of antibiotics where indicated. The presence of an Infectious Diseases Unit with personnel working in Infection Control and Antimicrobial stewardship is crucial to reduce inappropriate antibiotic prescribing.

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	Public hospital		Private hospital	
Quality Indicators for antibiotic use	Medical wards	ICU	Medical wards	ICU
Reasons for antimicrobial indication in notes	88.5%	72.2%	88.5%	81.1%
Guidelines compliance	38.8%	56.3%	54.6%	67.4%
Stop/review date present	6.4%	15%	37.8%	15%





ECCMID 2018 (poster n° 6319)



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): 2017 Results of antimicrobial prescribing in 18 Brazilian hospitals

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### INTRODUCTION AND PURPOSE

The inappropriate use of antibiotic and increased rates of antimicrobial resistance is a big concern and challenge all over the world. According to national epidemiologic reports by the National Health Surveillance Agency (ANVISA) with data on primary bloodstream infection confirmed by laboratory exams obtained in 2015, Gram-negative bacteria were responsible for approximately 50% of the isolates with high rates of resistance to carbapenems (77.4% of *Acinetobacter* spp, 39.1%, *Pseudomonas* spp and 43.3% of *Klebsiella pneumoniae*). Although stewardship is recommended by the Brazilian government, antimicrobial consumption data in Brazilian hospitals is scarce. This study aimed to evaluate antibiotic use in Brazilian hospitals.

### METHODS

A standardized method for surveillance of antimicrobial prescribing (Global-PPS) was used to assess the variation in antimicrobial (ATM) use in 18 Brazilian hospitals (Figure 1). BioMérieux provided funding support for the survey. The survey included inpatients receiving an ATM in adults and pediatric ICU, medical and surgical wards on the day of PPS. Data collected included details on the ATM agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

1801 patients were evaluated from 152 units from 18 hospitals. A total of 941 (52.2%) patients hospitalized on the day of the PPS were on antibiotics. Specialized and intensive care units showed higher prevalence of antibiotic use (Table 1). Community acquired infections were the indication for antibiotic use in 367 patients (39%), health care acquired infections in 348 patients (37%) and prophylactic antimicrobial use in 226 patients (24%). Antibiotics were used mainly parenterally (92.2%). In general, the most frequent antibiotics prescribed were ceftriaxone (12.7%), meropenem (12.5%), vancomycin (10.2%), and piperacillin and enzyme inhibitor (9.2%) and accounted for more than 40% of all antibiotics (ATC J05) prescribed. (Figure 2). The more common sites of infections were pneumonia (27.8%), intraabdominal sepsis (9.4%) and bone joint infections (8.6%). The type of antibiotics and site of infections did not differ comparing intensive care units and nurseries. Guideline compliance was observed  $\pm 80\%$  of antibiotic prescriptions. The only biomarker used was CRP in 26.6% of antimicrobial prescriptions. Excluding prophylactic indication, the empirical use accounted for 80.1% of the antibiotic treatments. ESBL, carbapenem-resistant enterobacteriaceae and non-fermentative gram-negative were identified respectively in 28 (4.1%); 20 (2.9%) and 37 (5.4%) patients (denominator=total N patients receiving a therapeutic treatment with at least one antibacterial for systemic use (ATC J01)).

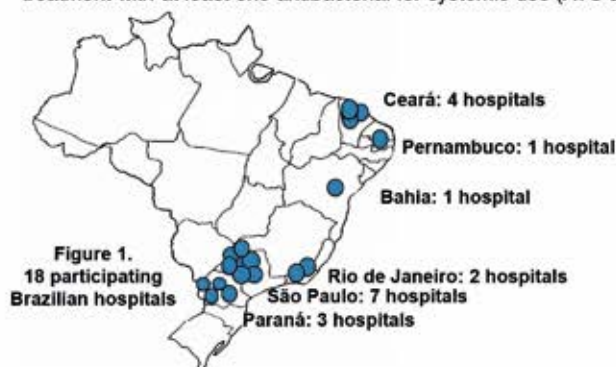


Figure 1. 18 participating Brazilian hospitals

Ward type	N patients	Prevalence (%)
Adult medical wards (AMW) (n=49)	579	53.9
Adult surgical wards (n=29)	452	41.6
Adult Intensive Care Units (n=44)	468	60.3
Transplant AMW (n=1)	13	61.5
Pneumology AMW (n=1)	27	51.9
Haematology-Oncology AMW (n=7)	83	45.8
<b>Total adult wards</b>	<b>1622</b>	<b>51.9</b>
Pediatric medical wards (PMW) (n=9)	67	58.2
Pediatric surgical wards (n=1)	9	11.1
Pediatric Intensive Care Units (n=6)	45	71.1
Haematology-Oncology PMW (n=2)	18	55.6
Neonatal Intensive Care units (n=3)	40	42.5
<b>Total child/neonatal wards</b>	<b>179</b>	<b>55.3</b>

Table 1. Overall antimicrobial prevalence among adult and child wards in Brazil in 2017

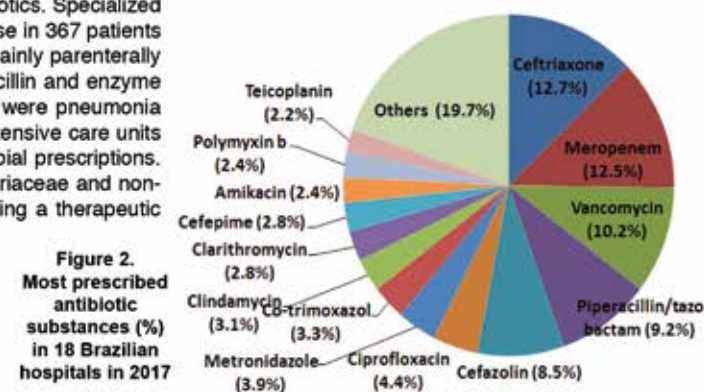


Figure 2. Most prescribed antibiotic substances (%) in 18 Brazilian hospitals in 2017

### CONCLUSION

- Although the compliance to guideline was high, there was a predominance of empirical use of antimicrobial and lack of biomarkers to guide this use in the Brazilian hospitals. Pneumoniae was the most common site of infection.
- Meropenem and vancomycin were the second and third most frequently used antimicrobials, showing that reinforcement of de-escalation strategy is needed. The GPPS data can be very useful for further intervention

Disclosures: "bioMérieux is the sole private sponsor of the GLOBAL Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp."





Bulgaria

ECCMID 2018 (poster n° 6170)



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): 2015 and 2017 Results of Antimicrobial Prescribing in Medical Institute – Ministry of the Interior, Sofia, Bulgaria.

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### INTRODUCTION AND PURPOSE

A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the quality of antimicrobial prescribing in the Medical Institute – Ministry of the Interior, Sofia, Bulgaria. BioMérieux provided unrestricted funding support for the survey.

### METHODS

PPS was conducted in 1 week in April 2015 and 2017, in the national tertiary care 310-bed hospital. The survey included all inpatients receiving an antimicrobial on the day of PPS. Data collected included details on the antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

Out of 215 and 224 admitted adult inpatients in 2015 and 2017, 23.7% and 29.5% were treated with antibiotics respectively. Commonest diagnoses were pneumonia (pneu), pyelonephritis (pye), genito-urinary infections (GUM), skin and soft-tissue infections (SST), intra-abdominal sepsis (IA) (Table 1). HAI rate was 4.5%. Empiric therapy accounted for 74.6% of CAI and 18.8% of HAI. There was an overall decrease of ceftriaxone in 2017 as compared to 2015 on the study day (Figure 1). Third-generation cephalosporins and carbapenems were most prescribed on ICU. The duration of surgical prophylaxis in 2015 was mainly 1 day, whereas in 2017 >1 day. A stop/review date was more frequently documented in the notes in 2017 (Figure 2).

Table 1. Main diagnostic indications of antibiotic prescribing in 2015 and 2017

Diagnosis	2015	2017
SST	9.1	25.0
IA	3.0	16.1
Pneu	24.2	16.1
Pye	18.2	16.1
Cys	3.0	8.9
Bron	9.1	5.4
ENT	6.1	1.8
FN	3.0	
GI	9.1	
GUM	12.1	

Figure 1. Therapeutic antibiotic prescribing (ATC J01) in 2015 and 2017

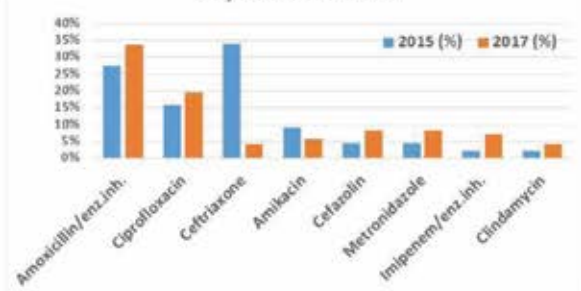
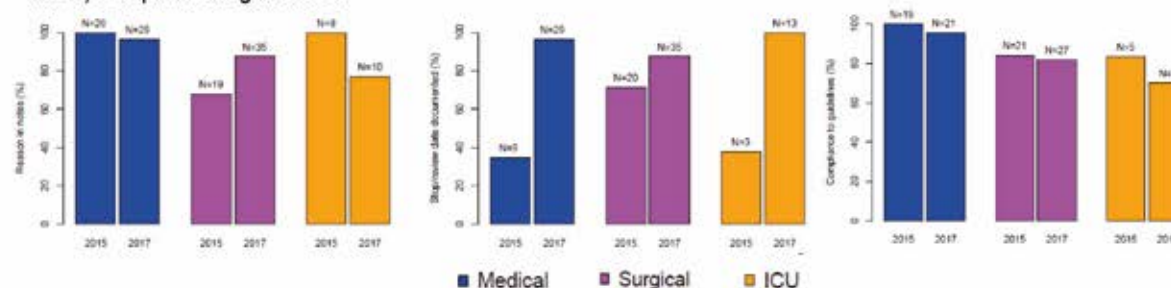


Figure 2. Antibiotic quality indicators in 2015 and 2017: 1) Reason in notes and 2) Stop/review date documented in notes; and 3) Compliance to guidelines.



**Antibiotic therapy of pneumonia** at MI in 2015 showed a substantial usage of amoxicillin/clavulanic acid – in 50 %, ceftriaxone – 25 % and ciprofloxacin – 25 %. In 2017 the first 3 top prescribed antibiotics were ciprofloxacin – 36 %, amoxicillin/clavulanic acid – 25 %, amikacin – 18 %. This treatment represents a deviation from the accepted Guidelines for pneumonia.

Global-PPS also identified a deviation from the accepted Guidelines for **antibiotic prophylaxis in surgery**. In 2017, the majority of prophylaxis courses lasted more than 1 day and the antibiotic choice included often the second/third choice amoxicillin/clavulanic acid (45%).

### CONCLUSION

Global-PPS revealed in 2017 an increased rate of antibiotic consumption, carbapenem use and prolonged surgical prophylaxis. Government involvement in Antimicrobial stewardship is necessary, including appropriate policy and guidelines, funding, control; and implementation of rapid diagnostic methods in order to support appropriate antibiotic prescribing.

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ECCMID 2018 Poster E0033

## The global point prevalence survey of antimicrobial consumption and resistance in Canadian hospitals (2017)

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1-McGill University Health Center, Montreal; 2-Sinai Health System, University of Toronto; 3-Vancouver General Hospital, Coastal Health, Vancouver; 4-Richmond Hospital, British Columbia; 5-Hamilton Health Sciences, McMaster University; 6-Montreal Children Hospital, Montreal, McGill University; 7-Fraser Health, University of British Columbia; 8 - The Hospital for Sick Children, University of Toronto; 9-Health PEI, Charlottetown, Dalhousie University; 10- Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute, University of Antwerp, Belgium.



### INTRODUCTION AND PURPOSE

The Global Point Prevalence Survey (PPS) is a well established worldwide initiative for monitoring antimicrobial usage and resistance in hospitals initiated in 2015. After a pilot study in two hospital systems in 2016 the survey was offered on a voluntary basis to all Canadian hospitals staffed with an Infectious Diseases/ Microbiologist specialist in Canada. Fourteen hospitals completed the survey across the country in 2017.

### METHODS

The standard PPS questionnaire was completed on line by each site for all patients receiving antimicrobials on a selected day of their choice between February and November 2017. Detailed data collected included inpatient unit type, age, sex, antimicrobial (AB) prescribed, dose, route, indications, compliance with local guidelines, origin of infection and presence of targeted antimicrobial resistant organisms. A web based application was used for data entry validation and reporting ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

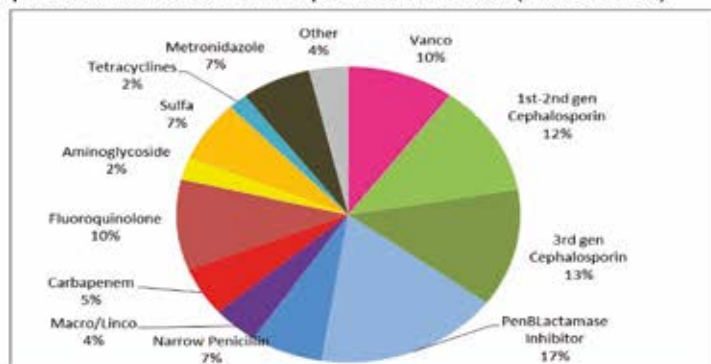
#### Hospital characteristics :

- 10/14 were teaching hospitals, 7/14 were tertiary/specialized hospitals
- 2/14 were paediatric centers.
- 4118 patients admitted on 237 units

#### Antimicrobial usage : 2041 AB given in 1400 patients

- 34.4 % of adults patients and 31.7% paediatrics were on AB (site ranges 18.6 - 46.2%)
- Usage by type of unit was lowest in neonatal ICU (18.6%) and highest in adult transplant wards (78%) and paediatrics hem-oncology wards (86.5%).
- Usage by departments was highest in ICU (45%) followed by surgical ward (38.5%), medical wards (30.7%) in adults.
- Of all antimicrobials used Community Acquired Infections (CAI) accounted for 40.6% and Health Care Associated Infections (HAI) for 34.6%; prophylaxis accounted for 24.8 %.
- Targeted therapy was present in 40.4 % and more frequent in HAI than CAI (47% vs 34.8%)

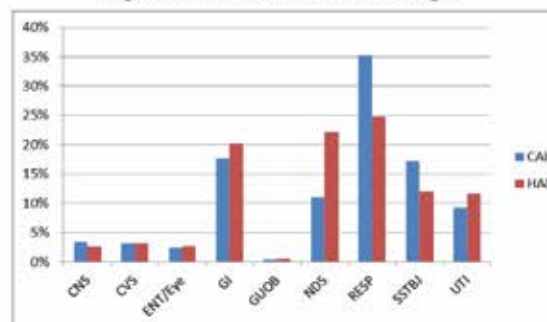
**Figure1 :** Relative frequency of Antibacterial classes (% , n=1762, excludes systemic antivirals, antifungals, exclusive anti TB and antiparasitics drugs)



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**Top 5 AB** were : piperacillin/tazobactam (12.4%), vancomycin (10%), ceftriaxone (9.2%), cefazolin (7.5%), ciprofloxacin (7.5%). Relative frequency amongst antibacterial classes is illustrated in Figure 1.

**Figure 2. Indications for AB usage**



#### Antibiotic Stewardship

- Justification of AB present in 84 % (1720/2041)
- Local guidelines present in 79 % (1362/1720)
- Compliance with guidelines 82 % (1113/1362)
- Stop/review date present in 62 %
- Surgical prophylaxis given >24hours in 52 %, and single dose in only 11%.

#### Prescription patterns :

- IV therapy was given in 69.4% of cases
- Multiple AB given for single diagnosis in 18.3%
- Multiple AB in a single patient in 24.5%
- Multidrug Resistant Organisms (MDRO)**  
denominator=all patients receiving therapeutic treatment (CAI-HAI) with at least 1 antibiotic (J01)
- MDRO were targeted in 8.5% of patients

- ESBL 1.9 %
- MRSA 2.8 %
- VRE 1.0 %
- CRE/CPE 0
- ESBL/CR-NF 0.4 %
- Other MDRO 1.8 %

### CONCLUSION

Survey provides interesting benchmarks for national and international comparisons. Respiratory Tract Infections are the most common cause of AB usage and more so in CAI. Non-defined sites are second most frequent in HAI. Antimicrobial prophylaxis, medical and surgical, makes up a fair amount of AB usage and surgical prophylaxis seem to be continued longer than it should.

Disclosures: BioMérieux is the sole private sponsor of the GLOBAL Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating center of the University of Antwerp.\*





CHILE

ECOMID 2018 (poster n° E-0038)

PONTIFICIA  
UNIVERSIDAD  
CATÓLICA  
DE CHILE

## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in 26 Chilean hospitals

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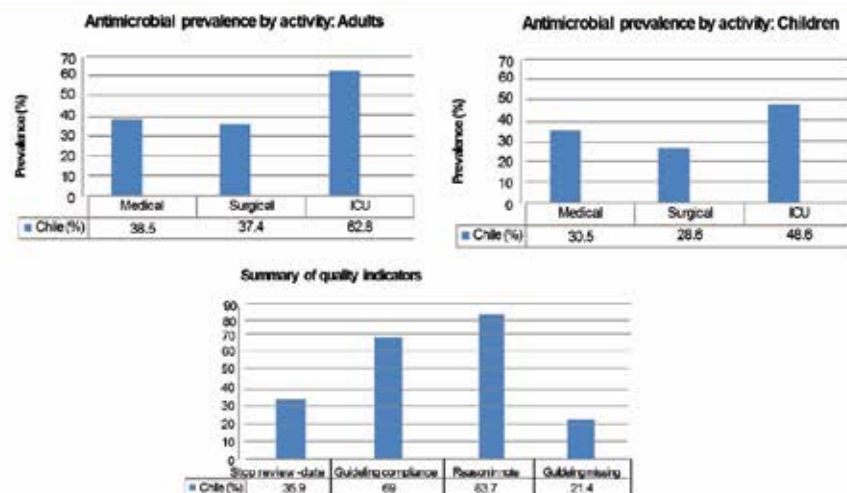
### INTRODUCTION AND PURPOSE

A uniform Information related to antimicrobial prescribing is critical for the implementation of antibiotic stewardship program. A standardized method for surveillance of antimicrobial use in hospitals was used to assess variation in antimicrobial prescribing in 26 Chilean hospitals.

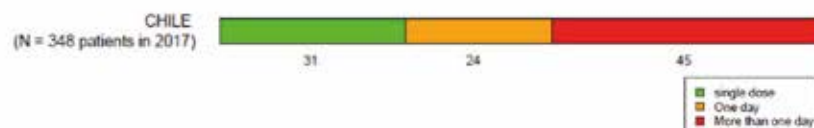
### METHODS

Global-PPS was conducted from June to September 2017 in 26 tertiary care hospitals. The survey included all inpatients receiving antimicrobial (AM) on the day of PPS. Data collected included antimicrobial agents and a set of quality indicators. Data was entered using a web-based application, validation and reporting designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS



Duration of surgical prophylaxis in adults and children



Global-PPS included 6,524 patients; 5,442 from adult wards, 534 paediatric, and 290 neonatal. Overall hospital AM prescribing was 39.5% (range: 29.5%-60.7%). AM use was highest in adults (41.5%), than children (33.5%) and neonates (18.4%). Prescribing in adults ranged from 37.4% in surgical wards to 62% in ICU. Therapeutic use of AM was 63.1% for community acquired infections (CAI) and 36.9% for healthcare associated infections (HAI). Most AM treatment was empiric (65%). The three most common reasons of antibiotic treatment were pneumonia (28.2%), skin/soft tissue infection (15.3%), and intra-abdominal infections (11.3%). The antibiotic used most frequently for pneumonia was ceftriaxone (35%), followed by vancomycin and piperacillin/tazobactam (5-10%). Out of all prophylaxis, 60% were surgical and 40% medical. The antibiotic used most frequently for surgical prophylaxis was cefazolin (58%) and sulfamethoxazole/trimethoprim (33%) for medical prophylaxis. Reason for AM prescribing was documented in 90% of medical and ICU ward and 73.5% of surgical clinical records. A stop review-date was provided in 35.9%, compliance with guidelines in >60%, and guidelines were missing in 21.4%. Prolonged prophylaxis prescribing (>24 hours) was common (45%). Out of all targeted treatments, 15% of patients were prescribed an antibiotic to address a multi-drug resistant microorganism (MDRO). Enterobacterales producing extended spectrum beta-lactamase was the most common MDRO (6.5%).

### CONCLUSION

This Global-PPS evaluated antimicrobial prescribing in Chilean hospitals. Use of AM is high but varies among hospitals. Most treatment for CAI and HAI were empirical. AM prescribing is frequent for MDROs. We identified areas to improve antibiotic prescribing: absence of guidelines, low reporting of stop review-date, and prolonged surgical prophylaxis.

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ECCMID 2018 (poster n° 3035)

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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS 2017): Impact of Antibiotic Stewardship Program in one Costa Rican Hospital

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### INTRODUCTION AND PURPOSE

In Costa Rica, Mexico's Hospital introduced the first national program on antimicrobial use in 2014. Our hospital participated in 2015 to the standardized and validated Global-PPS. The tool allowed us to assess antibiotic prescribing, start developing antibiotic quality target indicators and acquire knowledge on bacterial resistance as well as prevalence of hospital acquired infections (HAI).

### METHODS

Global-PPS was conducted February 2015 and June 2017. Detailed data was collected for all inpatients receiving at least one antimicrobial treatment on the day of the survey and completely anonymously entered online using a web-based tool for data-entry, validation and reporting as designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)). Denominator included all admitted inpatients, collected at ward level.

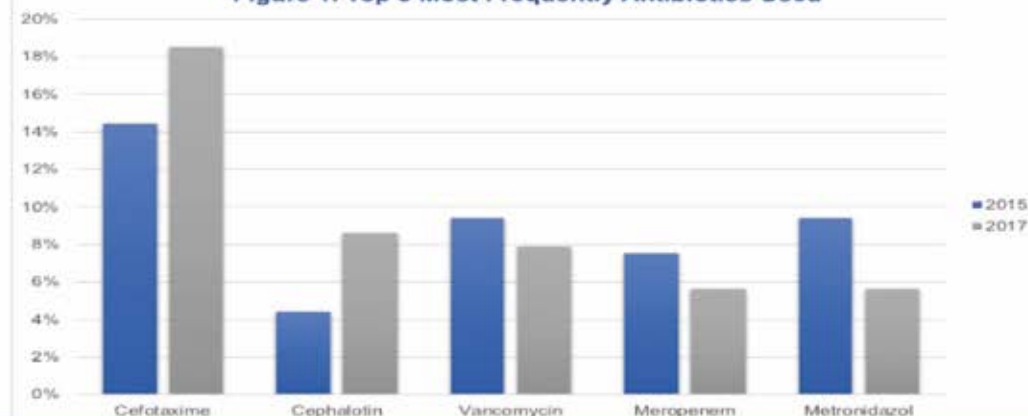
### RESULTS

Data included 362 (2015) and 325 (2017) patients admitted in our hospital on the day of the PPS. Overall antimicrobial prevalence rate in adult wards remained almost the same in 2017 as compared to 2015 (36.8% & 37.0%). Prophylaxis was prescribed in 26.8% of all prescriptions. Out of all therapeutic indications (73.2%), targeted treatments represented 47.4%. The prevalence of hospital acquired infections (HAI) was 29% accounting for 44.7% of all antibiotic prescribing (46.0% in 2015). Both bacteraemia and sepsis were the most prevalent nosocomial infections (32.6%). The majority of HAI prescriptions were targeted treatments (56.8%) mainly catheter related (52.2%). From all targeted prescribing Gram positives organisms were most prevalent isolated, especially MRSA (Table 1). The most common antibiotics used in 2017 were cefotaxime (18.5%) and cephalotin (8.6%). Interestingly, the prescription of cefotaxime increased but meropenem decreased from 7.5% (2015) to 5.6% (2017) (Figure 1).

Table 1. Distribution of the resistant pathogens (ESKAPE and ESBLs) with targeted treatment  
Costa Rica

Pathogen	2015	2017
MRSA	9.1%	7.6%
MRCoNS	1.7%	4.6%
VRE	0%	0%
ESBLs	5.0%	5.3%
Cephalosporin resistant non ESBLs	1.7%	1.5%
CRE	0%	0%
ESBL non fermenters	1.7%	2.3%
Carbapenem resistant non fermenters	0.8%	0%
Other MDR	0.8%	0%
<b>Total</b>	<b>19.8%</b>	<b>19.8%</b>

Figure 1. Top 5 Most Frequently Antibiotics Used



### CONCLUSION

The Global-PPS was an important tool to evaluate the first national program on antimicrobial use in our hospital. Results demonstrate that the use of antibiotic stewardship program seems to decrease the consumption of meropenem and vancomycin, as well as MRSA and MDR isolations. It should be reinforced with aggressive policies in order to prevent HAI. We aim to repeat the Global-PPS on regular intervals to evaluate the implemented strategies.

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ECCMID 2018 (poster E0335)



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in the University Hospital Centre Zagreb, Croatia

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### INTRODUCTION AND PURPOSE

A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing in the University Hospital Centre Zagreb, Croatia (UHC Zagreb). UHC Zagreb is a tertiary teaching hospital in Croatia with 1795 beds. bioMérieux provided unrestricted funding support for the survey.

### METHODS

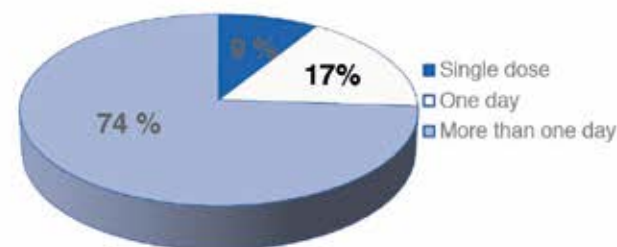
PPS was conducted in May 2017 including all inpatients on 115 wards receiving an antimicrobial on the day of PPS. Data collected included details on the antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp [www.global-pps.com](http://www.global-pps.com)

### RESULTS

Out of 1517 hospitalized patients, 412 (27.1%) were treated with antimicrobials. Antimicrobial prevalence rates were 26.4%, 37.3% and 34.2% on adult, paediatric and neonatal wards, respectively, with highest rates observed in adult intensive care units (52.0%) and paediatric intensive care units (58.3%). The most frequent indications were pneumonia or lower respiratory tract infection in 85 (38.3%), lower urinary tract infection in 29 (13.1%), and bacteraemia in 23 (10.4%) patients. Overall top three most frequently used antibiotics were ciprofloxacin (12.5%), meropenem (12.4%) and cefuroxime (6.8%). Figure 1 shows the five most frequently used antibiotics for pneumonia. Out of all antimicrobials, 46.7% (283/606) were prescribed for prophylactic use and 53.3% (323/606) for therapeutic use. Out of all therapeutic antimicrobials, 39.9% (129/323) were prescribed to treat a healthcare associated infection (HAI). The number of patients treated for at least one HAI was 4.9% (75/1517) patients of which 24% were treated with meropenem and 21.3% with vancomycin. Regarding prophylactic use, 80.9% (229/283) of antimicrobials were used for medical and 19.1% (54/283) for surgical prophylaxis. Duration of surgical prophylaxis was more than one day in 74% of patients (Figure 2). In 79% of patients antimicrobials were administered parenterally. In more than half of cases reason in notes and stop date for antimicrobial administration were documented. Guideline compliance was not evaluated.



Figure 2. Duration of surgical prophylaxis in adults and children



### CONCLUSION

Higher antimicrobial prevalence rates in ICU's, paediatric and neonatal wards, indicate the patient populations in the focus of antimicrobial stewardship. Prolonged surgical prophylaxis should be a quality indicator to work on. PPS has a great value regarding monitoring prescribing habits and the collected data are a solid ground for the future actions in the context of antimicrobial stewardship.

Figure 1. Top five most frequently used antibiotics for pneumonia in adults and children (n=119)

Disclosures: "bioMérieux is the sole private sponsor of the GLOBAL Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymous at the coordinating centre of the University of Antwerp."





EGYPT



Ministry of Health

## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in Lower Respiratory Tract Infections in Egypt

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### INTRODUCTION AND PURPOSE

Lower respiratory tract infection (LRTI) is common in Egypt and may result in death if untreated, especially in infections with multi-drug resistant organisms (MDROs). A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing for LRTI in order to identify possible improvement strategies for antimicrobial prescribing practices.

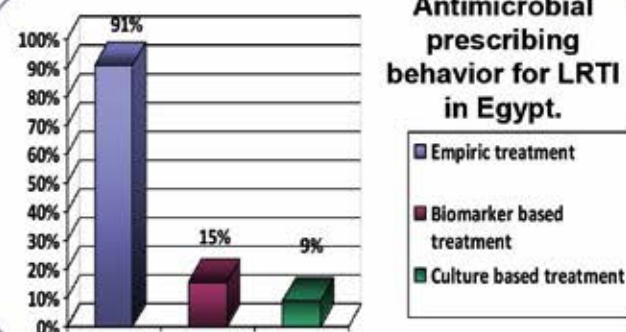
### METHODS

The Global-PPS was conducted in May-July 2017 in 17 hospitals from different governorates (Cairo, Giza, Qalyoubia and Alexandria). Data on patients with LRTI were analysed including details on antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the university of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

The prevalence of antimicrobial agents used for LRTI in Egypt was 30.7% of which community acquired infection (CAI) represented 63.1%, while hospital acquired infection (HAI) 36.9%. Prescribing quality indicators showed that about half of the prescriptions for a LRTI had followed the guidelines and had reasons in notes documented, but the stop/review date was rarely documented.

Ninety one percentage of patients were treated empirically, 14.1% of which were treated based on biomarker results. (15% of total treatment indications). Only 9.1% of the patients received culture based treatment, where Methicillin - resistant *Staphylococcus aureus* (MRSA) was the most commonly detected organism (17.9 %).

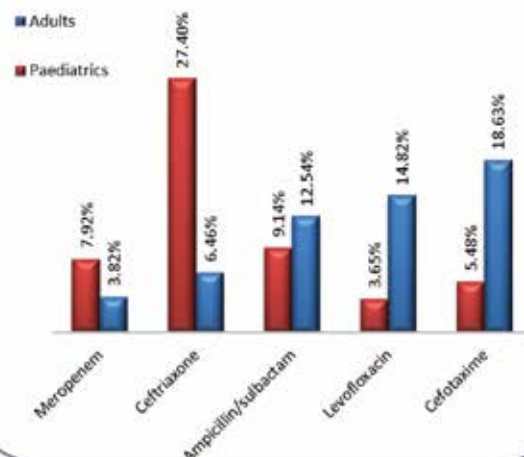


### CONCLUSION

The Global-PPS tool allowed us to assess different areas where antibiotics were irrationally prescribed, like high use rate of beta-lactams and double coverage. We identified several priorities to improve antibiotic prescribing through antimicrobial stewardship programs. The Global-PPS tool was very beneficial to set targets and we recommend to conduct the Global-PPS periodically to follow up interventions that have been taken, such as IV to oral shift checklist and prospective audits for guidelines compliance and stop/review date documentation.

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### The Most Prevalent Antibiotics for LRTI In Egypt





ECCMID 2018 (poster E0022)

INDIA



## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in India

Sanjeev K Singh<sup>1</sup>; Ann Versporten<sup>2</sup>; Yamuna; Suneeta Sahu; Suhas Nirkhilwale; Sweta Gupta; Anita Sharma; Anusha; Sunil Sharma; Valdehl; Sharmila Sengupta; Purabi Barman; Chiranjoy Mukherjee; Smrita Sood; Dhruv Mamtara; Sukhanya; Herman Goossens<sup>2</sup>; Sanjay Bhattacharya

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### INTRODUCTION AND PURPOSE

- Point prevalence surveys (PPS) is a tool to understand antimicrobial consumption and its resistance pattern in healthcare organizations.
- Antimicrobial resistance (AMR) is a global concern, more so for developing countries like India, where the burden of AMR and infectious diseases are very high.

### METHODS

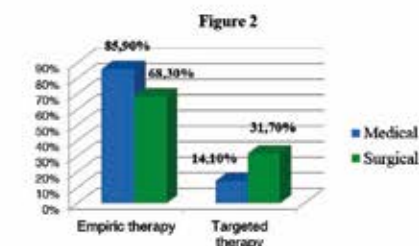
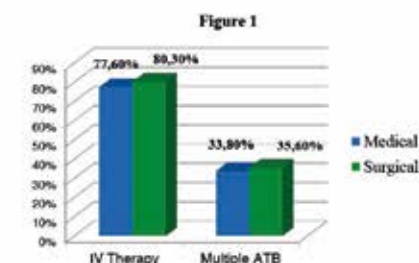
- A web based PPS(Global-PPS) developed by University of Antwerp, Belgium for Antibiotic Resistance and Prescribing, was used to enter data from adult medical and surgical wards from 16 tertiary care and specialized centres across India.
- All patients who were receiving systemic antibacterial treatments on the day of the survey inclusive of antibacterial prophylaxis for surgery were included.

### RESULTS

- 1715 patients were surveyed across India - 720 (42%) medical and 273 (16%) surgical patients in the adult wards.
- 250 (77.6%) patients received intravenous therapy and 99 (33.8%) patients received multiple antibiotics in the medical wards. 220 (80.3%) patients received intravenous therapy and 95 (35.6%) patients received multiple antibiotics in the surgical wards (**Figure 1**).
- 225 (85.9%) patients received empiric therapy and 37 (14.1%) patients received targeted therapy in the medical wards. 43 (68.3%) patients received empiric therapy and 20 (31.7%) patients received targeted therapy in the surgical wards (**Figure 2**).
- Community acquired infections were most common (N=418;24.3%) followed by surgical prophylaxis (N=326;19%) and healthcare acquired infections (N=302;17.6%).
- Ceftriaxone (24%), Piperacillin-tazobactam (8%), Meropenem (8%) were the commonest antimicrobial prescribed for medical prophylaxis.
- Antibiotic quality indicators such as reason in notes and post prescription review score low (**Table 1**).
- Prolonged surgical prophylaxis (SP) was most common (77%) (**Figure 3**). Cefuroxime (36%), Amikacin (10%) and Ceftriaxone (8%) were most common prescribed for SP.

	N	%
<b>Medical</b>		
Reason in notes	188	45.5
Guidelines missing	85	20.6
Guideline compliant	167	70.2
Stop/review date documented	78	18.9
<b>Surgical</b>		
Reason in notes	178	47.3
Guidelines missing	91	24.2
Guideline compliant	142	70.0
Stop/review date documented	181	48.1
<b>ICU</b>		
Reason in notes	245	37.9
Guidelines missing	103	15.9
Guideline compliant	276	79.5
Stop/review date	315	48.7

**Table 1.**  
Antibiotic quality indicators by type of activity (medical, surgical, ICU) in 16 hospitals in India in 2017



**Figure 3. Duration of surgical prophylaxis in adults and children in India in 2017**



### CONCLUSION

The Web based PPS suggests widespread antibiotic usage among adult patients in select tertiary care Indian hospitals and underscores the need for antibiotic stewardship in order to promote rational and evidence based practice to limit the emergence of antibiotic resistant microbes.

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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Paediatric antimicrobial prescribing in Kyrgyzstan in 2015

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### INTRODUCTION AND PURPOSE

A uniform and standardized method for surveillance of antimicrobial use in hospitals (the Global-PPS) was used to assess the variation in antimicrobial (AM) prescribing in Kyrgyzstan and identify targets for improving AM prescribing. BioMérieux provided unrestricted funding support for the survey.

### METHODS

PPS was conducted in February 2015, in two paediatric hospitals. The survey included all inpatients receiving an AM on the day of PPS. Data collected included details on the AM agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

On the day of the PPS there were 684 inpatients of which 599 were admitted on a paediatric wards. Out of all admitted children, 38.9% (233) received at least one antibiotic. Highest prevalence was found on paediatric intensive care units (66.7%) (Table 1). The most common anatomic sites of infection for which AM were prescribed were: pneumonia (15%), ear, nose, throat (ENT) (14%), and prophylaxis for orthopaedic surgery (Proph BJ) (13.4%) (Figure 1). The most commonly used antibiotics were ampicillin (19.5%), ceftriaxone (15.8%) and cefazolin (13.4%) (Figure 2). Top 3 antibiotics to treat pneumonia were: ampicillin (24.4%), ceftriaxone (22.2%) and gentamicin (13.3%) (Figure 3). Ampicillin was combined with gentamicin in accordance with WHO handbook on Integrated management of childhood illness for children under five. Antibiotics were commonly empirically prescribed (99.9%). The indication for treatment was recorded in 98% of the prescribing episodes. In total, 77% of the surgical prophylactic antibiotic prescriptions were for >24 h. Overall, 55% of the prescribed antibiotics were in compliance with the national guidelines. Physicians were not following guidelines for management of ENT diseases, acute bronchitis and osteomyelitis.

Wards	N patients	N beds	N treated patients	Prevalence %
Haematology-Oncology PMW	23	30	7	30.4
Neonatal Intensive Care Unit	6	9	2	33.3
Neonatal Medical Ward	91	95	24	26.4
Paediatric Intensive Care Unit	18	29	12	66.7
Paediatric Medical Ward	167	232	59	35.3
Paediatric Surgical Ward	294	363	129	43.9
Total	599	758	233	38.9

Table 1.  
Antimicrobial  
prevalence by  
type of ward

Fig. 1 Top -10 indications for antibiotic (ATC J01) prescribing in hospitals

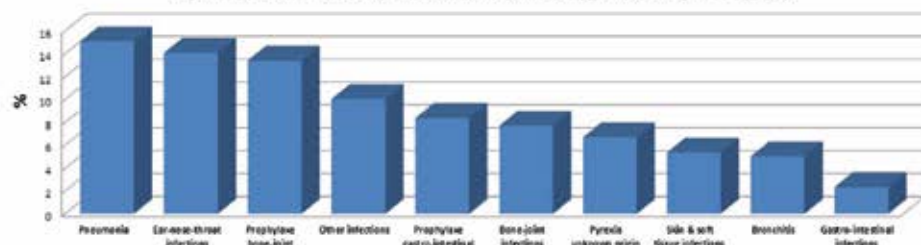


Fig. 2 Top-10 prescribed antibiotics for therapeutic and surgical prophylactic use

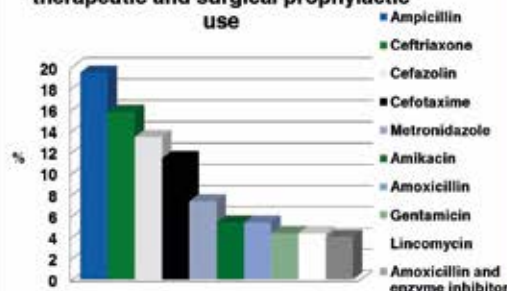
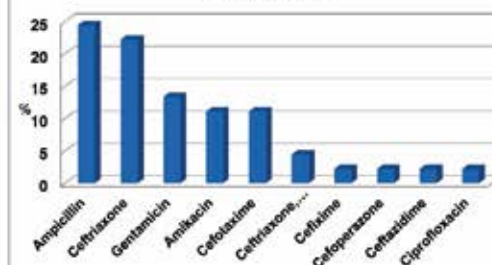


Fig. 3 Top-10 prescribed antibiotics for pneumonia



### CONCLUSION

This Global-PPS identified the following indicators as targets for quality improvement: indication recorded in patient notes, the duration of surgical prophylaxis and compliance with national guidelines. We are planning to perform repeated PPS in all hospitals for regular monitoring of AM prescribing and decision making, after implementing antibiotic stewardship initiatives.

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ECCMID 2018 (poster E0047)

The Netherlands



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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Longitudinal Results of Antimicrobial Prescribing in the Netherlands

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### INTRODUCTION AND PURPOSE



The Netherlands is located in West-Europe and has a population of approximately 17 million. Antibiotic consumption and resistance in the Netherlands remains low. The Global Point Prevalence Survey, an uniform and standardized method for surveillance of antimicrobial use in hospitals, was used to assess trends in antimicrobial consumption in the Dutch hospital setting.

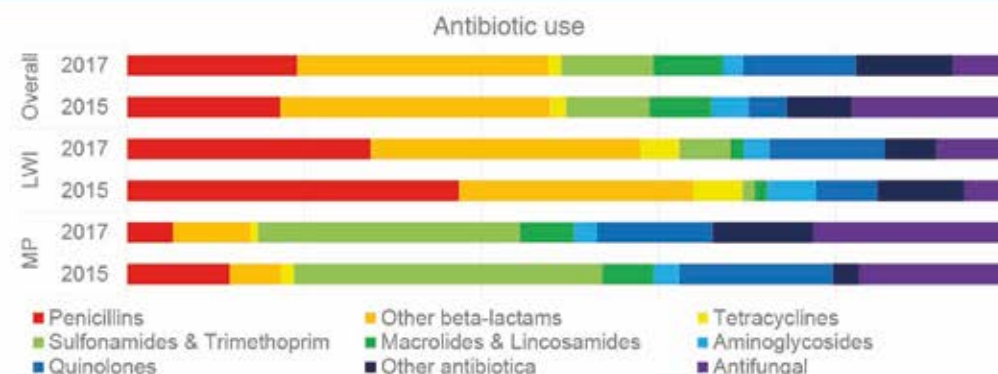
### METHODS

The Global-PPS was conducted in 2015 and 2017 in 1 general, 1 teaching and 1 university hospital located in the Netherlands. The survey included hospitalized patients receiving an antimicrobial (AM) on the day of PPS. Data collected included patient characteristics, antimicrobial agents, indications for treatment and a set of quality indicators. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

A total of 1517 admitted patients were included in 2015 and 2017. Patients on antimicrobials on the day of the PPS (n= 541) were comparable in age, gender and number of antimicrobials per person. Although both surveys were performed in similar seasonal periods, the most frequently registered indication changed from lower respiratory tract infections (LRTI) to medical prophylaxis (MP). Co-amoxiclav was the most prescribed antimicrobial in 2015 with 11.2%, but decreased to 5.9% in 2017, while ciprofloxacin increased from 9.9% to 11.2%. Furthermore, guideline adherence and the registration of stop dates increased, while reasons for starting antimicrobials remained stable.

	Year 2015 (n=735)	Year 2017 (n=782)
Patients on AM (%)	256 (34.8)	285 (36.4)
Age (sd)	49.1 (28.7)	53.1 (26.8)
Male (%)	140 (54.7)	156 (54.7)
AM per person	1.5	1.6
Most frequent indication (%)	LRTI (16.8) Medical prophylaxis (15.8) Intra-abdominal infect (6.7)	Medical prophylaxis (14.9) LRTI (12.3) Intra-abdominal infect (9.7)
CAI / HAI (%)	112 (43.8) / 70 (27.4)	113 (39.6) / 80 (28.1)
Guideline adherence %	61.0	78.0
Reason in notes %	75.9	74.7
Stop date registered %	33.7	42.6



### CONCLUSION

The PPS shows few changes in antimicrobial consumption between 2015 and 2017 in participating hospitals. Ciprofloxacin use increased, which was most often prescribed for medical prophylaxis. The improvement in guideline adherence and registration of stop dates could be due to the formation of antibiotic stewardship teams, which are mandatory in Dutch hospitals since 2014. These results can be used to develop new antibiotic stewardship interventions.

Disclosures: "bioMérieux is the sole private sponsor of the GLOBAL Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymous at the coordinating centre of the University of Antwerp."





Nigeria

ECCMID 2018 (poster n° 3307)

## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of Antimicrobial Prescribing in Nigerian Hospitals

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### INTRODUCTION AND PURPOSE

Stewardship interventions primarily seek to influence prescribing practices of doctors thereby promoting rational antimicrobial use in healthcare. Efforts to improve antimicrobial prescribing have resulted in identification of quality indicators which help to identify problems of antibiotic use and to selectively solve prescribing issues. A uniform and standardized method for surveillance of antimicrobial use in hospitals was employed to assess the variation in antimicrobial prescribing in the North Central, South East and South West regions of Nigeria (**Figure 1**). BioMerieux provided unrestricted funding support for the survey.

### METHODS

A Point Prevalence Survey (PPS) was conducted in October and November 2017, in four Nigerian tertiary hospitals. The survey included all inpatients receiving an antimicrobial (AM) on the day of PPS. Data collected included age, gender, weight, antimicrobial agents, doses, indications for treatment, microbiological data, compliance to guidelines, documentation of reasons and stop/review date of prescription. Denominators included the total number of inpatients. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

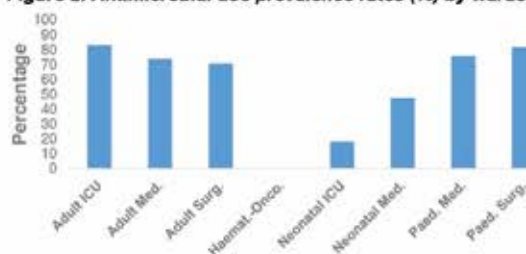
The survey included 701 inpatients admitted to 79 wards, of which 494 (70.5%) received at least one antimicrobial on the day of the PPS. Highest antimicrobial prevalence rates were in adult intensive care units (83.3%), paediatric surgical wards (81.8%) and medical wards (66.7%) (**Figure 2**). Out of 983 antimicrobials prescribed, antibiotics for systemic use (ATC code J01) accounted for 85.6%. The top three antibiotics prescribed were beta-lactams (53%), quinolones (12.9%) and aminoglycosides (4.1%). **Table 1** shows the top 10 antimicrobials prescribed for therapeutic and prophylactic use. Most often reported diagnoses were skin and soft tissue infections (21.5%) and sepsis (12.0%). Out of the 525 (53.4%) therapeutic indications for antimicrobial use, 81.7% were community acquired infections (**Figure 3**). Four hundred (40.7%) prescriptions were for prophylaxis; mainly surgical prophylaxis (79.5%) of which most >1 day (96%). Parenteral antibiotic use was common (78.9%). While 56.8% of patients were receiving multiple antibiotics, use was targeted in 2.3% of prescriptions. Table 2 provides an overview of important antibiotic quality indicators.

**Figure 1: Map of Nigeria showing the location of participating hospitals**



Prophylactic Antimicrobial Use				Therapeutic Antimicrobial Use			
Medical Prophylaxis (%)		Surgical Prophylaxis (%)		Therapeutic Use (%)			
Ceftriaxone	25.6%	Metronidazole	35.5%	Metronidazole	20.2%		
Metronidazole	19.5%	Ceftriaxone	28.6%	Ceftriaxone	17.4%		
Cefuroxime	6.1%	Cefuroxime	6.3%	Ciprofloxacin	7.4%		
Amoxicillin/enz. Inh.	4.9%	Ciprofloxacin	5.7%	Amoxicillin/enz. Inh.	5.7%		
Ampicillin/enz. inh.	4.9%	Cefpodoxime	4.4%	Levofloxacin	4.8%		
Ceftazidime	4.9%	Amoxicillin/enz. Inh.	3.8%	Cefuroxime	3.6%		
Amoxicillin	3.7%	Levofloxacin	3.1%	Amikacin	2.7%		
Cefoperazone, comb.	3.7%	Cefixime	2.2%	Artesunate /pyronaridine	2.3%		
Co-amoxiclav	3.7%	Amikacin	1.9%	Ceftazidime	2.1%		
Levofloxacin	3.7%	Chloramphenicol	1.9%	Fluconazole	2.1%		

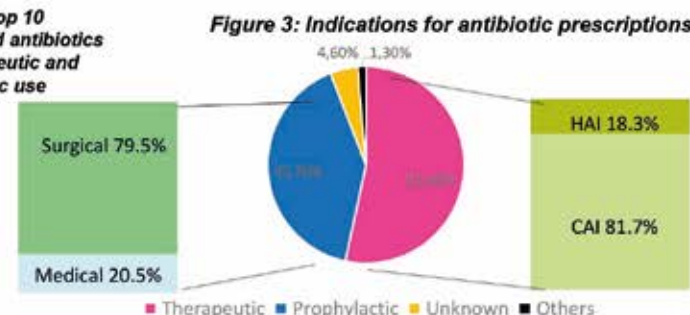
**Figure 2: Antimicrobial use prevalence rates (%) by wards**



**Table 2: Quality indicators of antibiotic prescribing**

	Medical %	Surgical %	Intensive Care %
Reason in note	64.4	78.7	42.9
Guideline Compliant	7.4	13.0	9.5
Guideline missing	89.2	84.2	76.2
Stop/Review date	51.5	55.7	31.0
Targeted treatment	3.7	2.0	0.0

**Table 1: Top 10 prescribed antibiotics for therapeutic and prophylactic use**



### CONCLUSION

Antimicrobial prescribing practices have been evaluated in Nigerian hospitals. Very high antimicrobial prevalence rates were observed, especially in children's and neonatal wards. Areas to improve antibiotic prescribing remain: absence of guidelines and antibiotic prescribing according to guidelines, low reporting of a stop/review date and prolonged surgical prophylaxis. We need to create awareness at the national level for targeted prescribing of antimicrobials and use of evidence based antibiotic guidelines.

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## GLOBAL POINT PREVALENCE SURVEY OF ANTIMICROBIAL CONSUMPTION AND RESISTANCE (GLOBAL-PPS): LOW-HANGING FRUIT IN THE IMPLEMENTATION OF NIGERIAN NATIONAL PLAN ON ANTIMICROBIAL RESISTANCE

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### INTRODUCTION AND PURPOSE

In response to the concerning threat of antimicrobial resistance (AMR) to healthcare and sustainable development, Nigeria developed her AMR plan ([http://www.ncdc.gov.ng/themes/common/docs/protocols/77\\_1511368219.pdf](http://www.ncdc.gov.ng/themes/common/docs/protocols/77_1511368219.pdf)) anchored on five core strategic elements using a one-health approach in April, 2017. As an initial step towards implementation of one of these strategic objectives, we took advantage of current Global-PPS of antimicrobial consumption and resistance surveillance tool, developed at the University of Antwerp, Belgium, to benchmark hospital antibiotic prescription in Osun state, Nigeria.

### METHODS

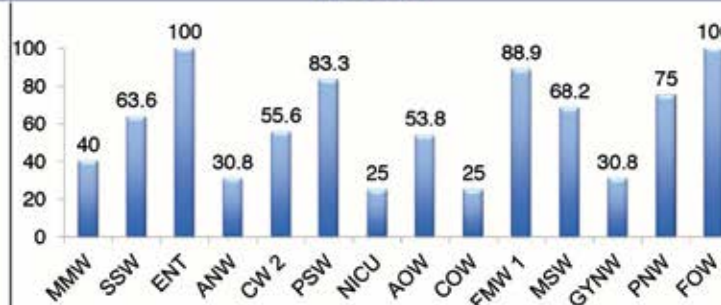
The three tertiary health institutions in Osun State namely, Ife Hospital Unit (IHU), Wesley Guild Hospital (WGH), and LAUTECH Teaching Hospital (LTH) registered for Global-PPS. The survey was conducted between May and November, 2017. It included all in-patients receiving antimicrobials on the day of PPS. Data collected included details on antimicrobial agents, reasons, indications for treatment and quality indicators. Data entry, validation and reporting were by web-based application designed for Global-PPS ([www.global-pps.com](http://www.global-pps.com)). Data was analysed with Microsoft Excel®.

### RESULTS

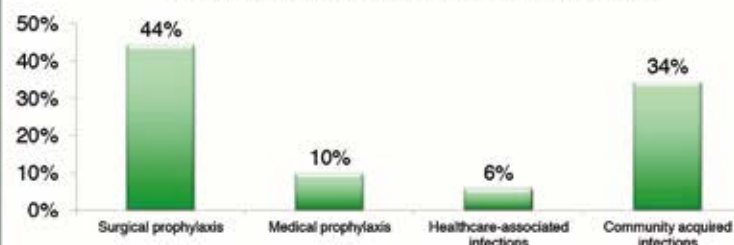


A Map of Nigeria with Osun State Highlighted

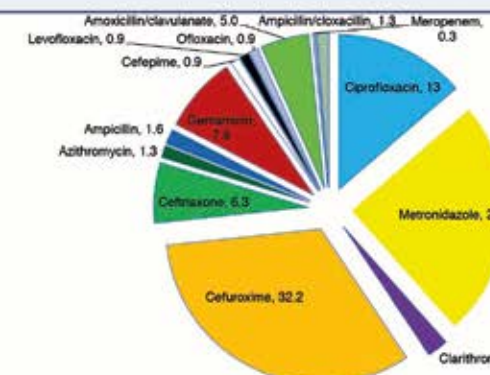
- A total of 285 inpatients in 28 wards had 320 prescriptions.
- Antimicrobial prevalence in the hospitals was 53.7%.
- The Antimicrobial prevalence rates within the wards ranged from 25%-92% in 16 wards and 100% in seven wards.
- Surgical prophylaxis given for more than 24 hours was 97% (n=137).
- In most cases (98.75%, n=316), treatment was empiric.
- Parenteral route was the preferred route of drug administration (72.19%, n=231).
- There were mostly no guidelines for antibiotic use in 93.44% (n=299) of cases.
- No stop review was written for 74.06% (n=237) of the antibiotic prescriptions



Wards  
Prevalence of antibiotic use in the wards



Indications for antibiotic use



Prevalence of commonly used antibiotics

### CONCLUSION

More than half of patients were on antibiotics and inappropriate surgical prophylaxis was highly prevalent. There were no guidelines for antibiotics use neither were there stop reviews for prescriptions. The necessity of institutional antibiotic stewardship programmes is highlighted by poor source indices in Global-PPS.

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Philippines



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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in 15 Government and Private Hospitals in the Philippines

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### INTRODUCTION AND PURPOSE

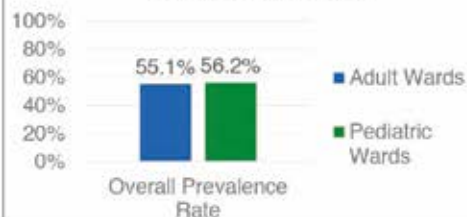
Rational prescribing, dispensing and use of antimicrobials are important approaches in Antimicrobial Stewardship (AMS) program in health facilities. There is no data on the prevalence of antibiotic use in the Philippines. Fifteen private and government level 3 hospitals participated in the Global-PPS, using a uniform and standardized method. We aimed to determine the prevalence of antimicrobial use in children and adults in Philippines hospitals and to identify targets for improvement to help hospitals in designing interventions for prudent antibiotic use.

### METHODS

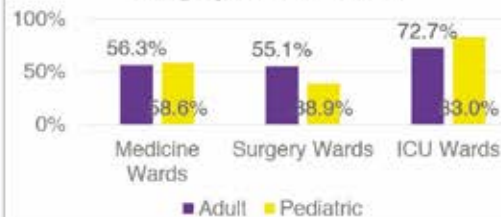
A point prevalence survey (Global-PPS) was conducted between September-November 2017 in all wards of the participating tertiary hospitals. All inpatients receiving an antimicrobial on the day of survey were included. Data were manually completed on paper forms and then transferred into the web-based Global-PPS application designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

### RESULTS

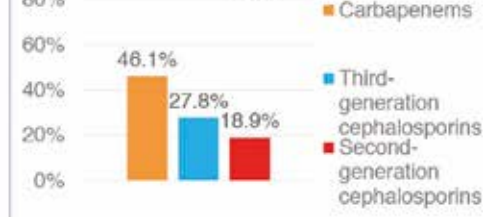
Overall Prevalence Rate in Adult and Pediatric Wards



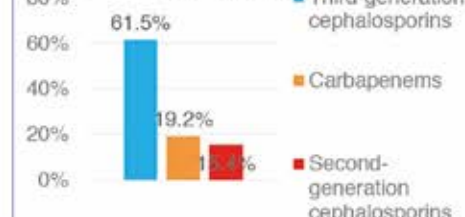
Prevalence Rate in Medicine, Surgery and ICU Wards



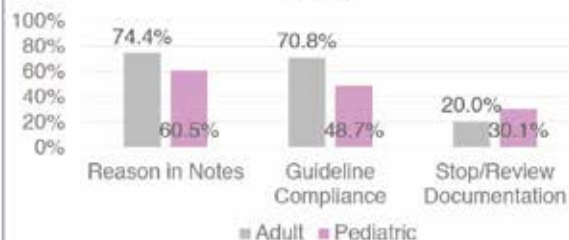
Top 3 Antimicrobial Used in Adult ICU



Top 3 Antimicrobial Used in Pediatric ICU



Quality Indicators in Adult and Pediatric Wards



- The most common antibiotics used for treatment of sepsis in adults and children was Piperacillin and enzyme inhibitor.
- Majority of prescriptions were empiric.
- 84% of patients were given surgical prophylaxis for more than 1 day.

### CONCLUSION

This is the first time the Philippines participated in the Global-PPS survey. The prevalence of antimicrobial prescribing in the Philippines is high. We identified many areas for quality improvement such as guideline compliance and documentation of stop/review dates that needs to be addressed. A repeated PPS survey need to be done to assess the effects of our intervention.

Disclosures: \* The Philippine initiative is funded by the Pharmaceutical Division, Department of Health while bioMérieux is the sole sponsor of the GLOBAL Point Prevalence Survey. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymous at the coordinating centre of the University of Antwerp.

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Russian  
Federation

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# The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): 2017 Results of Antimicrobial Prescribing in Russian Hospitals

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## INTRODUCTION AND PURPOSE

Systemic antimicrobials (AM) are one of the most commonly used groups of drugs in hospitals. It was calculated in previous studies that about 30% of patients in multi-field hospitals were treated with AM agents. They accounted for up to 30-50% of total hospital expenditures for pharmacotherapy. It is well known that AM use and overuse is one of the main factors of increasing of antimicrobial resistance among inpatients. To assess the variability of antimicrobial use in Russian hospitals, a unified and standardized method for monitoring the use of AM was used.

## RESULTS

The main results of the survey are presented in Table 1 and Figures 2-3.



Figure 1. Geographical location of participated hospitals

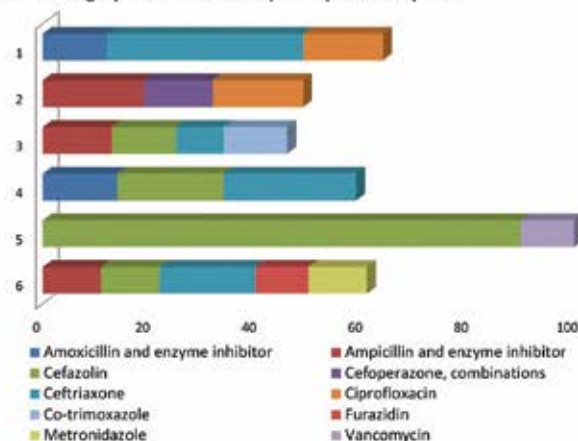


Figure 3. Top 3 AM used share (%) in the total consumption

## METHODS

Global-PPS was conducted in September-November 2017 in 4 secondary hospitals (Krasnodar, Moscow, Omsk, Tomsk), 1 tertiary hospital (Ulan-Ude) and 1 specialized hospital (Smolensk) (Fig. 1). The survey included all inpatients receiving AM on the day of PPS. The collected data included detailed information on AM agents, the causes and indications for treatment, and a set of quality indicators. The Web application is used for data entry, verification and reporting, as developed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)).

Table 1. Patterns of AM use in Russian hospitals

Site #	1	2	3	4	5	6
N of patients admitted/ N of wards surveyed	1002 / 27	945 / 28	902 / 24	786 / 29	163 / 6	663 / 14
Community-acquired vs nosocomial infections, %	75.3 vs 24.7	77.5 vs 22.5	49.6 vs 50.4	76 vs 24	0 vs 100	86.3 vs 13.7
Therapeutic vs prophylactic use of AM, %	83.4 vs 16.6	63.7 vs 36.3	66.1 vs 33.9	60.9 vs 39.1	10.3 vs 89.7	69.8 vs 30.2
Medical vs surgical prophylaxis, %	0 vs 100	9.7 vs 90.3	50.6 vs 49.4	3 vs 97	17.4 vs 82.6	21.3 vs 78.7
Duration of surgical prophylaxis	1 dose - 5% 1 day - 4% >1 day - 91%	1 dose - 1% 1 day - 1% >1 day - 98%	1 dose - 28% 1 day - 10% >1 day - 62%	1 dose - 9% 1 day - 17% >1 day - 73%	1 day - 100%	>1 day - 100%
Empirical vs targeted AM therapy, %	95.2 vs 4.8	85.6 vs 14.4	90.2 vs 9.8	84.9 vs 15.1	93.1 vs 6.9	96.8 vs 3.2
Guidelines compliance, %	91.1	63.2	69.1	44.5	100	53.2
Reason in notes, %	97.9	77.3	79.4	92.9	100	86.9
Documented stop/ review AM use date, %	98.5	64.5	36.5	15.4	100	7

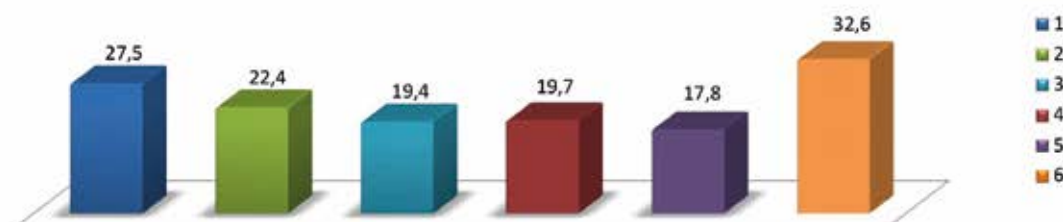


Figure 2. AM prevalence rate in Russian hospitals, %

## CONCLUSION

The prevalence of the use of AM, as well as prescription schemes, vary considerably, in part because of the different types of hospitals and patient profiles. PPS is an effective tool for identifying targets for improving quality and measuring the impact of local AM stewardship programs. Interventions are needed to promote the reasonable use of AM in participating hospitals.

Disclosures: bioMérieux is the sole private sponsor of the GLOBAL-PPS. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funders have no role in study design, data collection, data analysis and data interpretation. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp.





ECCMID 2018 (Poster 4592)



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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Longitudinal Results of Antimicrobial Prescribing in a Tertiary Care Institution in Saudi Arabia

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### INTRODUCTION AND PURPOSE

A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing in a governmental tertiary care hospital in Riyadh, Saudi Arabia. bioMérieux provided unrestricted funding support for the survey.

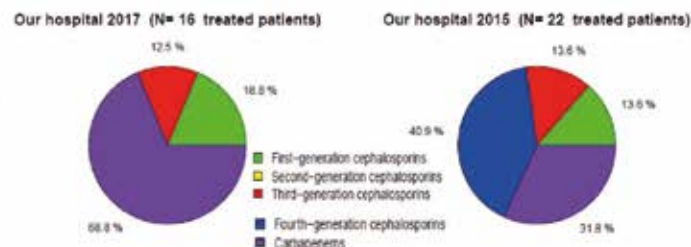
### METHODS

The Global-PPS was conducted in 2015 and 2017, in King Fahad Medical City, a 1200 bed tertiary care hospital. The survey included all inpatients receiving an antimicrobial on the day of PPS. Data collected included details on the antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com)).

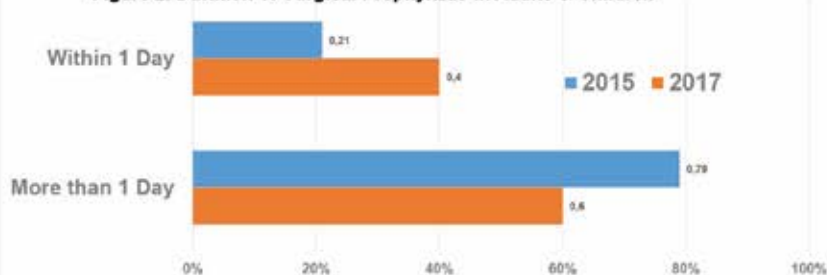
### RESULTS

Total number of admitted inpatients in 2015 and 2017 was 822 and 573 respectively. Antimicrobial (AM) prevalence in adult wards in 2015 and 2017 was 24.2% and 32.4% while in children 45.3% and 48.1% respectively. We observed a clear variation of AM prevalence between wards in both 2015 and 2017; the lowest AM prevalence was in adult medical wards (15.7% and 17.4%) while the highest was in pediatric intensive care (66.7% and 83.3%). Top 3 reported indications for AM use in 2015 were pneumonia (25.3%), sepsis (14.7%), and febrile neutropenia (12.6%); while in 2017 pneumonia was still the highest (20.7%), followed by urinary tract infection (19.5%) and sepsis (15.6%). Top antibiotics used across the hospital in 2015 and 2017 were beta-lactams which constituted 59% and 51.2% respectively of total AM consumed. Comparing adult intensive care unit in 2015, 4<sup>th</sup>-generation cephalosporins constituted 40.9% while carbapenems was the most frequently used in 2017 (68.8%) (Figure 1). Prolonged surgical antibiotic prophylaxis has improved in 2017 (60%) as compared to 2015 (79%) (Figure 2). A stop/review date was more frequently documented in the notes in 2017 (Figure 3).

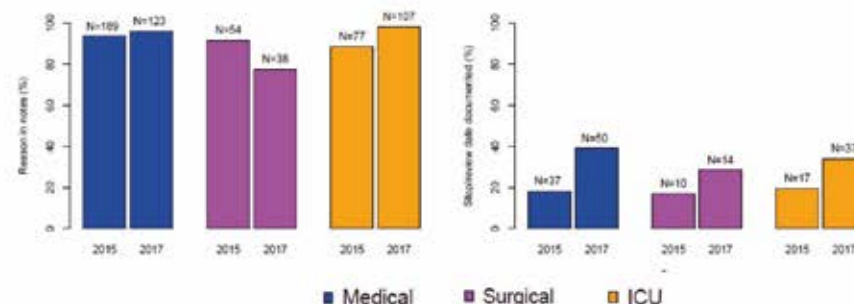
**Figure 1.** Proportional use of other beta-lactam antibacterials in adult ICU patients in 2015 and 2017



**Figure 2.** Duration of Surgical Prophylaxis in Adults & Children



**Figure 3.** Antibiotic quality indicators in 2015 and 2017:  
1) Reason documented in notes,  
2) Stop/review date documented in notes.



### CONCLUSION

We conclude that despite the overall increase in prevalence of antimicrobial use in both adults and pediatric patients, some of the quality indicators have improved such as prolonged surgical prophylaxis and documentation of reasons for antimicrobial use. The global PPS tool has helped us identify targets for quality improvements to focus our intervention and further optimize the antimicrobial stewardship program (e.g. carbapenem use).

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ECCMID 2018 (poster 5054)

## The Global Point Prevalence(PPS) Survey of Antimicrobial Consumption and Resistance (Global-PPS): Results of antimicrobial prescribing in United States (US) hospitals in 2017

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### INTRODUCTION AND PURPOSE

Studies estimate that up to 50% of antimicrobial prescribing is inappropriate. Overuse and misuse of antibiotics is the most important factor in selecting for antimicrobial resistance. The Centers for Disease Control and Prevention (CDC) estimate over 2 million people are infected with antibiotic resistant organisms yearly in the US. 4 hospitals were surveyed across the US. The purpose of the study is to quantify the quality of antimicrobial prescribing and to evaluate the determinants of inappropriate antimicrobial prescribing in the US in hospitalized adults, children and neonates. Results will identify targets to improve antimicrobial prescribing based on local needs assessment.

### METHODS

A uniform and standardized method for surveillance of antimicrobial use in hospitals was used to assess the variation in antimicrobial prescribing in the US. Global\_PPS was conducted from March to September 2017, in 4 hospitals. The survey included all inpatients receiving an antimicrobial on the day of PPS. Data collected included details on the antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application is used for data-entry, validation and reporting as designed by the University of Antwerp ([www.globalpps.com](http://www.globalpps.com)).

### RESULTS

Ward type	N patients	Prevalence (%)
Adult medical wards (AMW)	527	32.6
Adult surgical wards	170	38.2
Adult Intensive Care Unit (ICU)	144	43.8
Transplant AMW	9	88.9
Haematology-Oncology AMW	93	44.1
<b>Total</b>	<b>943</b>	<b>37.0</b>

Table 1. Overall antimicrobial prevalence among adult wards in 2017 (n=4 US hospitals)

The overall antimicrobial (AM) prevalence in adults was 37% with highest rates observed in transplant units and acute intensive care units (ICUs) (Table 1). Overall antibiotic prevalence in children or neonatal units was 28.9%. Empiric prescribing was most prevalent (82%).

Overall most prescribed antibiotic substances include ceftriaxone (16.6%), piperacillin/tazobactam (13.1%) and vancomycin (11.9%) (Figure 1). The considerable use of vancomycin and piperacillin/tazobactam was mainly seen for treatment of sepsis despite increasing information about the potential for acute kidney injury. In addition, only 5.7% of patients had documented MRSA.

In terms of quality indicators, the documentation of the reason for antibiotic use was >80%. There has been an improvement in documentation of antibiotic review up to over 60% as compared to 2015 ( $\pm 30\%$ ; results not shown). Compliance with guidelines is lowest among ICU (Table 2).

With respect to the duration for surgical prophylaxis (SP): 45% of patients received a single dose, while 55% of patients received SP more than one day.

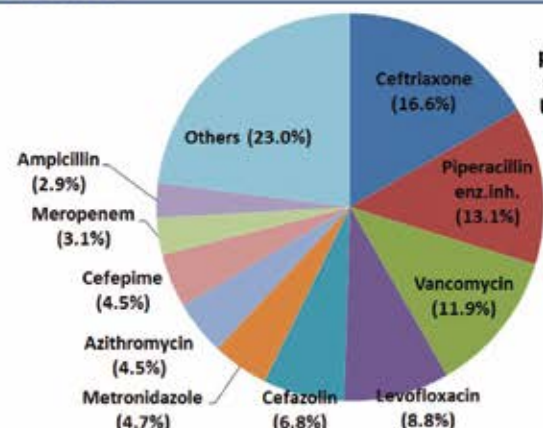


Figure 1. Most prescribed antibiotic substances (%) in 4 US hospitals in 2017

Table 2. Antibiotic quality indicators by type of activity (medical, surgical, ICU) in 4 US hospitals in 2017

	N	%
<b>Medical</b>		
Reason in notes	219	87.3
Guidelines missing	12	4.8
Guideline compliant	123	87.9
Stop/review date documented	164	65.3
<b>Surgical</b>		
Reason in notes	69	83.1
Guidelines missing	8	7.2
Guideline compliant	39	84.8
Stop/review date documented	53	63.9
<b>ICU</b>		
Reason in notes	83	94.3
Guidelines missing	2	2.3
Guideline compliant	35	77.8
Stop/review date documented	56	63.6

### CONCLUSION

We continue to have high prevalence of AM use in the US especially in transplant and adult ICUs. Broad spectrum prescribing is common. Vancomycin continue to be over prescribed, especially considering low MRSA rates. Prolonged surgical prophylaxis is common in 2017. This is contrary to the recent World Health Organization (WHO) and Centers for Diseases and Prevention (CDC) guidelines on prevention of surgical infections which does not recommend antibiotics after closure of the incision. The scores on antibiotic quality indicators were satisfactory. These results highlight areas for continued improvement.

Disclosures: "bioMérieux is the sole private sponsor of the GLOBAL Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp."



ECTMIH 2017 (poster n°SP78)

Costa Rica



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

### Results of prescriptive antimicrobials in a Costa Rican Hospital

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#### INTRODUCTION AND PURPOSE

The knowledge of antimicrobial consumption is critical in all medical centers. It gives the information of how effective the prescriptions are made as well as the clues to establish antibiotic stewardship programs that can correct the course of bacterial resistance and nosocomial infections. The aim is to establish the prevalence of antimicrobial consumption in Hospital México during the period of time between February 14-15, 2015, and to give clues on how to improve it.

#### METHODS

The information was collected retrospectively in February, 2015 using the standardized and validated forms. Detailed data was collected for all inpatients receiving at least one antimicrobial treatment on the day of the survey and completely anonymously entered online using a web-based tool for data-entry, validation and reporting as designed by the University of Antwerp ([www.global-pps.com](http://www.global-pps.com)). The denominator included all admitted inpatients, collected at ward level.

#### RESULTS

Data included 438 patients who were admitted in our hospital. The overall antimicrobial prevalence rate was 37.7%, which is higher than the rate Eastern Europe reported (27.4%), but is lower when it's compared with North America (38.6%). From the 133 prescriptions reported, 25.4% for medical/surgical prophylaxis were prescribed; the nosocomial infections were 46% (n=60), and the community acquired were 28.4% (n=37). The surgical prophylaxis applied was one single dose or for only 24 hours in 53% of the cases, this compliance was superior compared to Europe and South America. (Figure 1). When excluding prophylaxis, 45% (n=60) of the treatments were empiric and 54.1% (n=72) were targeted (Table 1).

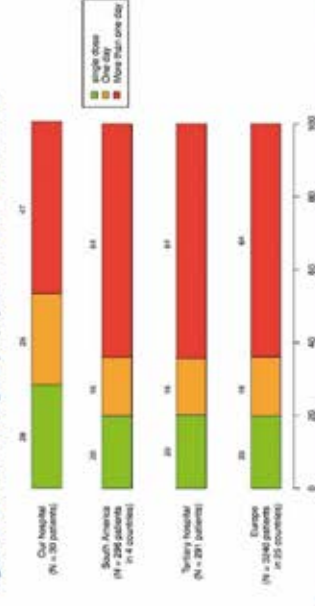
Table 1. Distribution of the antimicrobial prescriptions in wards and type of indication

Ward	N Prescriptions	N Empiric	Tx % Empiric	N Target	Tx % Target
Emergency room	3	3	100%	0	0
Neonates	5	4	80%	1	20%
Obstetrics/Gyn	4	2	50%	2	50%
Hematology	11	7	63.6%	4	36%
Oncology	5	2	40%	3	60%
Surgery	39	15	38.5%	24	62%
Medicine	48	21	43.8%	27	56%
ICU	18	6	33.3%	11	61%
<b>Total</b>	<b>133</b>	<b>60</b>	<b>45.1%</b>	<b>72</b>	<b>54.1%</b>

Table 2. Distribution of the Resistant pathogens (ESKAPE and ESBLs) with targeted treatment

Pathogen	Costa Rica				Europe			
	N patients	%	N patients	%	N patients	%	N patients	%
MRSA	11	9.1%	164	1.2%				
MRCoNS	2	1.7%	79	0.6%				
VRE	0	0	44	0.3%				
ESBLs	6	5%	332	2.4%				
Cephalosporin resistant non ESBLs	2	1.7%	102	0.7%				
CRE	0	0	37	0.3%				
ESBL non fermenters	2	1.7%	59	0.4%				
Carbapenem resistant non fermenters	1	0.8%	92	0.7%				
Other MDR	1	0.8%	143	1.0%				
Total	25	20.8%	943	6.8%				

Figure 1. Duration of surgical prophylaxis in adults and children.



#### CONCLUSION

We identified several targets to improve: number of nosocomial treatments that could be prevented, number of empiric treatments that could be overtreated and the excess of selective pressure made to our microorganisms with the third-generation cephalosporins. We aim to make policies from these three important issues in order to improve antibiotic prescribing and reduce hospital acquired infections. Also, strong efforts have to be made to educate colleagues to search tissue samples intensively. This is important to guide treatment and minimize the impact of treatment in patients' microbiota as well as in hospital's microorganism resistance.

Disclosures: "BioMérieux is the sole sponsor of the GLOBAL Point Prevalence Survey. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp."

Figure 2. Distribution of the pathogens treated by Resistant or non resistant

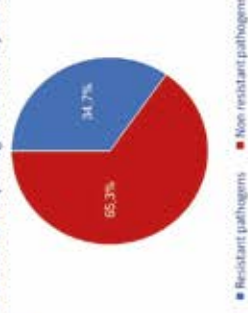


Figure 3. Antibiotic distribution for all the treatments prescribed





The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Implications for Antibiotics Stewardship Programme for Komfo Anokye Teaching Hospital in Ghana

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## INTRODUCTION AND PURPOSE

Antibiotic use may be abused in a developing economy such as Ghana where state-of-the-art diagnostics are difficult to come by. Komfo Anokye Teaching Hospital (KATH) took part in the 2015 Global Point Prevalence Survey of Antimicrobial Consumption and Resistance ([www.globalpps.com](http://www.globalpps.com)). Aims: Monitor quantity and quality of antimicrobial prescribing in hospitalized patients admitted to 4 main Directorates of clinical care at KATH.

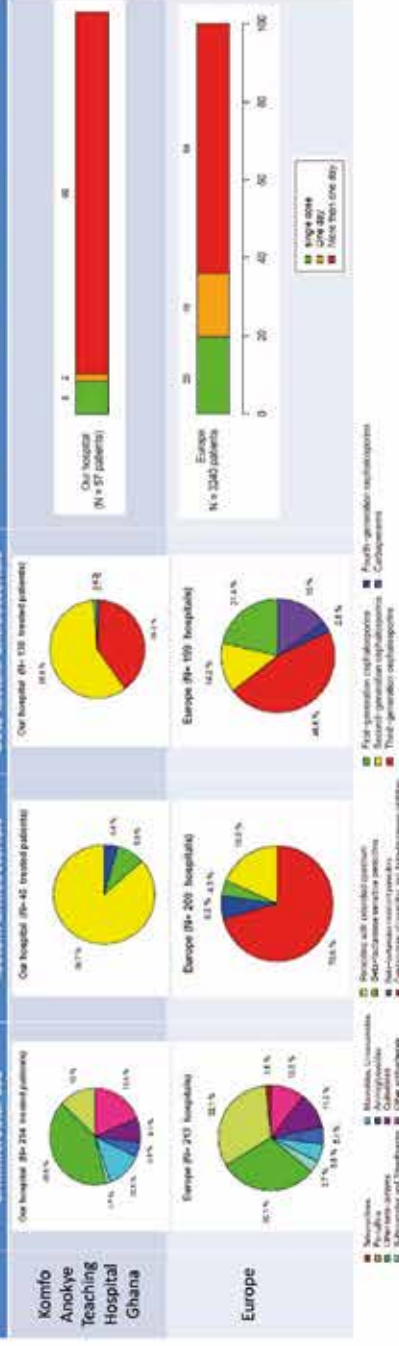
## METHODS

The PPS was conducted across adult and child Directorates and Units in April 2015. Detailed information was collected for inpatients "on antimicrobial agents" at 8 am on the day of survey. All inpatients admitted on a ward (excluding day admissions such as endoscopy or renal units) at 8 o'clock in the morning on the day of survey count in the denominator. All inpatients "on antimicrobial agents" at 8 o'clock in the morning on the day of survey were included in the numerator (i.e., a patient form is to be filled in for these patients only). The exclusion criteria included day admissions and out-patients; admission after 8.00 am on the day of survey.

## RESULTS

Out of 386 inpatients, 64.0% were treated with at least one antimicrobial. Highest prescribing rates were seen in adult medicine (76.7%) and surgical wards (69.8%) followed by neonatal wards (68.8%). Top 2 reason to prescribe antibiotics in adults was prophylaxis for obstetrics-gynaecology (23.4%) and pneumonia (12.3%). The most often reported reason in children was sepsis (35.5%). Of all antimicrobials, antibiotics for systemic use (81.0%) and drugs to treat tuberculosis (10.3%) were most frequently reported. Among antibiotics, cefuroxime (23.8%) and ceftriaxone (15.1%) were most frequent prescribed, often in combination with metronidazole (18.6%) (see Figure). Empirical use of antibiotics prevailed (85.4%). In medicine wards, antibiotic prescriptions were based on biomarker results (35.1%). Local guidelines were available in 70% of prescriptions; of which 74.8% were prescribed according to these guidelines (see Table). 90% of all antibiotics for surgical prophylaxis was prescribed for >1 day (see Figure).

## Duration of surgical prophylaxis in adults and children



## DISCUSSION - CONCLUSION

This was the first ever large scale of PPS on antimicrobial use and resistance done by a hospital in Ghana. It offered a first opportunity to sample antibiotic use at a particular point and to compare antibiotic use across selected countries worldwide.

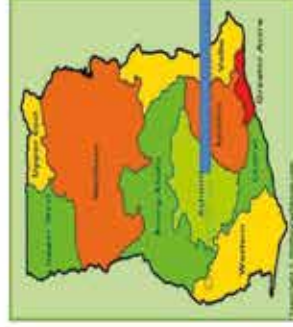
Our main challenges were related to the high patient to doctor ratio making dedicated staff difficult to obtain. The poor data capturing by health care providers made data extraction on antibiotic use also a challenge.

As compared to European countries, our hospital prescribed many more antibiotics as compared to Europe. Reasons may include lack of standardized regulations and policy guidelines on antimicrobial use in Ghana and by extension most African countries. Also, the quality of antibiotics are often substandard due to cheap imports from equally poor regulated countries from other countries especially the Asian subcontinent. Moreover, antibiotics are purchasable over the counter making cultures of samples often negative.

We concluded that stewardship programs should target prolonged use of antibiotics for surgical prophylaxis. Diagnostic tools would be very helpful to guide clinicians in their decision to start and continue antibiotic treatment.



WANG CHANG



REGIONES DE COLUMBIA



KONIGSBERG TEACHING HOSPITAL

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ECTMIH 2017 (poster n° 3p30)

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## The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS) Results of antimicrobial prescribing in Guinea

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### INTRODUCTION AND PURPOSE

A uniform and standardized method for surveillance of antimicrobial use in hospitals was used in order to assess the quantity and quality of antimicrobial prescriptions and resistance at Donka National Hospital, CHU Conakry, Republic of Guinea. Donka is a University Teaching Hospital, one of two in Conakry, with a hospital size of 260 beds. BioMérieux provided unrestricted funding support for the survey.

### METHODS

A cross-sectional Point Prevalence Survey (PPS) was conducted in April 2015 including all adult and paediatric medical and surgical services. Detailed data were collected for all patients receiving anti-infective agents present at 8:00 am on the day of the survey. Information was retrieved from the patient's medical and nursing records as well as the prescription books. Data-entry was done using a web-based tool made available by the University of Antwerp, Belgium. See [www.global-pps.com](http://www.global-pps.com)

### RESULTS

Among adults (n=83), 74.7% were on antimicrobial agents, 59.6% in medicine and 100% in surgery. All children (n=12) and neonates (n=26) received at least one antimicrobial (Figure 1). Antibacterials for systemic use (ATC J01) were most often prescribed (81.7%, Figure 1), followed by antimicrobials (8.1%) and drugs to treat tuberculosis (6.5%) (Figure 2).

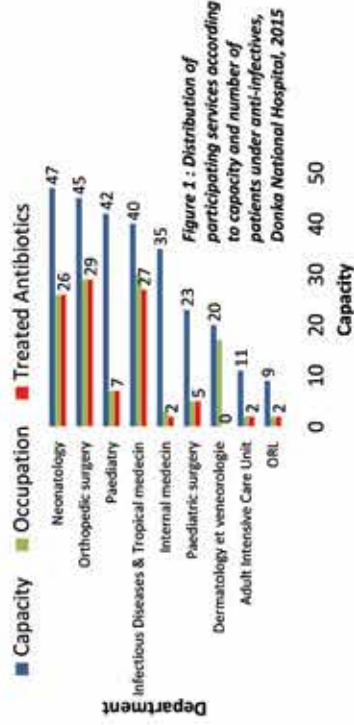
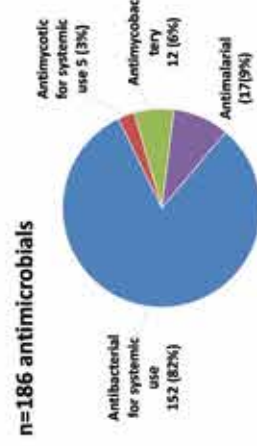
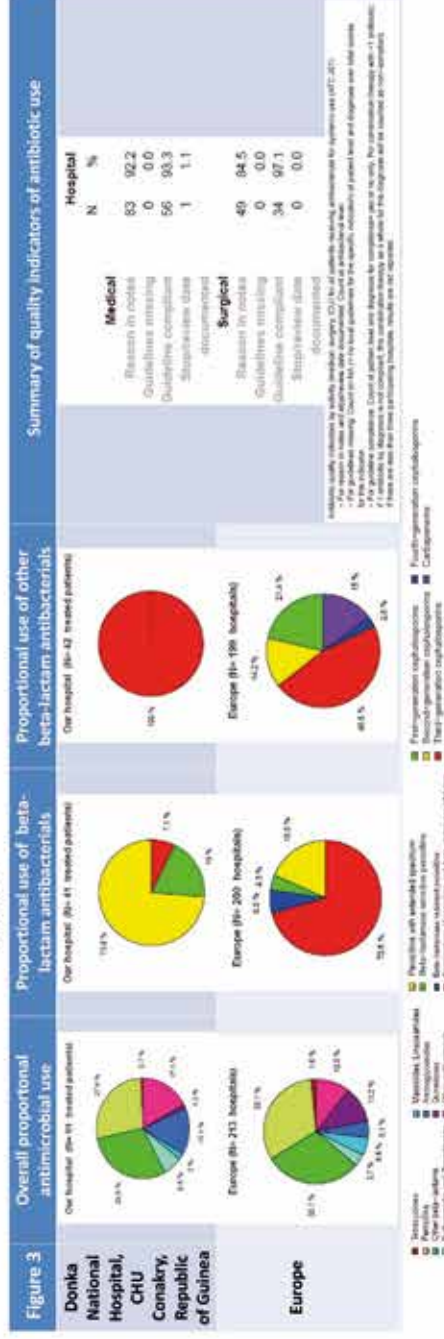


Figure 1 : Distribution of participating services according to capacity and number of patients under anti-infectives, Donka National Hospital, 2015



n=186 antimicrobials

Figure 2: Overall proportional antimicrobial use



Most frequent prescribed antimicrobials were cephalosporins of which all third generation cephalosporins. These encompassed ceftriaxone and sefsulodin prescribed in combination with metronidazole for mainly bone and joint infections to patients admitted on an orthopedic surgery ward. Penicillins were the second most often prescribed antimicrobials of which most ampicillin, mainly prescribed for skin and soft tissue infections (Figure 3). Quality indicators: The reason for prescription was commonly documented in the medical charts, in contrast to a stop or review date which was never documented. Most antibiotics were prescribed according to local guidelines (Figure 3).

### DISCUSSION - CONCLUSION

- This study supports the excessive use of antimicrobials at the Donka National Hospital in Guinea.
- There is a need to assess the appropriateness of broad-spectrum antibiotic use.
- Organizational interventions would improve appropriate use of antimicrobials in Guinea.

### FUTURE

- It is planned to organize a national day to raise awareness among health care providers about appropriate use of antibiotics.
- It is aimed to create an antibiotic committee in each hospital and to put referents in antibiotherapy in the various hospitals of Guinea.
- The challenge remains to extend this Global-PPS to the administrative region of Conakry and to all regions of Guinea.

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