Global Point Prevalence Survey of Antimicrobial Consumption and Resistance



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Supporting healthcare professionals in the fight against resistance





"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."





What is Surveillance

World Health Organization:

Systematic ongoing collection, collation, and analysis of data and the timely dissemination of information to those who need to know so that action can be taken.

U.S. Centers for Disease Control and Prevention:

The ongoing systematic collection, analysis, and interpretation of health data, essential to the planning, implementation, and evaluation of public health practice, closely integrated with the timely dissemination of these data to those who need to know.

Antimit rampton and

Steps in surveillance

Recording of data
 Data accumulation
 Data analysis
 Judgment and action



If You Can't Measure It, You Can't Improv<u>e</u> It

(William Thomson, Lord Kelvin)

Antibiotic prescribing in hospitals -What does the literature offers ?



Different approaches for data collection; analysis and reporting of antibiotic use:

- proportions (%) of patients on antibiotics using a 1day PPS design, retrospective, mixed retroprospective or prospective design with
- different time periods or intervals of data collection within a single hospital/between hospitals
- billing data to compare proportions of antibiotic use

Antibiotic prescribing in hospitals -What does the literature offers ?



Wide range of methods, with different numerators and denominators, which makes comparison difficult

Nominators

Denominators



What are the determinants of (in)appropriate antibiotic use?

- Patient related (diagnosis, age, underlying disease,)
- Prescriber related (training)
- Institutional factors (national/local policy, availability of drugs on market, existing guidelines, hospital type,)
- Social and cultural factors, custums, economic factors,
- Empowerment

Influences the quantity and quality of antibiotic prescribing



What do we need in hospitals ?



A standardized approach to uniformly report and compare data on antibiotic prescribing and resistance amongst adults, children and neonates and to analyze trends over time.

And... it should be a simple method

Why do we need a standardized approach ?

Collecting consistent, valid and comparable antimicrobial prescribing data is valuable !

Good news : What we need exists !

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



What is it all about ?

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

Why?

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

Contact person: "enter name and/or department"

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Background - History



European Surveillance of Antimicrobial Consumption (ESAC)

- 1. Outpatient AMU: national wholesales data, now ESAC-Net
- 2. Inpatient antimicrobial use:
 - ESAC-PPS in acute care hospitals (2006, 2008, 2009)
 - ESAC-PPS in nursing homes (2007, 2009)
 - Now HAI-Net=ECDC-PPS on health care associated infections (2012-2017) (see: <u>https://ecdc.europa.eu/en/about-us/partnerships-and-networks/disease-and-laboratory-networks</u>)
 - ARPEC-PPS in 2011-2012 (children/neonates); GARPEC in 2015-2017
 - 4th edition World HAI Forum on healthcare-associated infections and antimicrobial resistance, June 2013 - Annecy, France
 - 10 priority actions among which "worldwide PPS on antibiotic use in hospitals" <u>http://www.biomerieux.com/en/4th-world-hai-</u> <u>forum-antimicrobial-resistance</u>

Global-PPS 2014 (pilot), 2015 & 2017

See: https://www.thelancet.com/journals/langlo/article/PIIS2214-109X(18)30186-4/fulltext

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

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

Summary

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

Methods We used a standardised surveillance method to collect detailed data about antimicrobial prescribing and resistance from hospitals worldwide, which were grouped by UN region. The internet-based survey included all inpatients (adults, children, and neonates) receiving an antimicrobial who were on the ward at 0800 h on one specific day between January and September, 2015. Hospitals were classified as primary, secondary, tertiary (including infectious diseases hospitals), and paediatric hospitals. Five main ward types were defined: medical wards, surgical wards, intensive-care units, haematology oncology wards, and medical transplantation (bone marrow or solid transplants) wards. Data recorded included patient characteristics, antimicrobials received, diagnosis, therapeutic indication according to predefined lists, and markers of prescribing quality (eg, whether a stop or review date were recorded, and whether local prescribing guidelines existed and were adhered to). We report findings for adult inpatients.



Lancet Glob Health 2018:

Published Online April 19, 2018 http://dx.doi.org/10.1016/ S2214-109X(18)30186-4 *Members listed at the end of the paper

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6:e619-29

Aims Global-PPS



- Determine the variation in drug, dose and indications of antimicrobial prescribing in hospitalized adults, children and neonates locally and regionally across countries & continents.
- Identify targets to improve quality of antimicrobial prescribing
 → improve healthcare quality and promote prudent antimicrobial use.
- Assess effectiveness of interventions through repeated PPS.
- Increase public health capacity.
- Combat antimicrobial resistance.



What do we offer

Antime consumption sta

- 1. Protocol
- 2. Data collection templates paper forms
 ➢ Department (Ward) form (denominator data)
 ➢ Patient form (numerator data)

Uniform data collection : Pre-defined variables

Standardised data management and analyses

What do we offer, next



- 3. Web-based data-entry, verification, validation and reporting through the Global-PPS programme.
 - Structured data-entry (step by step) using drop down boxes
 In-built checks to ensure valid data-entry
 Continued verification on site through excel (raw data)
 Validation procedure providing warnings and/or errors

URL:

http://app.globalpps.uantwerpen.be/globalpps_webpps/

What do we offer: Real-time feedback of results to the sites



- A comprehensive feedback report (45 pages) is provided to each hospital
 - Compares hospital results to average results for the country (if at least 3 participating hospitals), region (e.g. Africa) and Europe
 - Anonymous feedback available at <u>http://www.global-pps.com/documents/</u>)
- Sites participating for the second or third time receive longitudinal results for the time points in 2015, 2017 & 2018
- Your raw own hospital data in Excel (verification, validation, analyses purposes)

What do we offer: Full support to hospitals

Supply of materials to conduct the survey

- Translated protocol or data collection forms (English, French, Japanese, Portugese, Russian, Serbian, Spanish, Arabic, Persian, ...)
- The antimicrobial list following the WHO ATC/DDD classification system (excel file) (ref: <u>https://www.whocc.no/</u>)
- > PPT slides on the method used (EN, FR)
- The Frequently Asked Questions list
- The IT-manual
- Global-PPS poster and leaflet : promote the study in the participating hospital (different versions, easy to translate)

Available at http://www.global-pps.com/

- O Help desk : global-pps@uantwerpen.be
- All of the above = freely available

What we continuously do:

- Guarantee of data privacy
 - Complete anonymous patient data-entry
 - Data are property of the respective hospital
 - Hospital names will never be revealed in any report or publication
- Promotion of study, recruitment of hospitals
- Evaluation questionnaire
- Continuous support towards participating networks and partners regarding writing abstracts, presentations, communications, writing articles.
- Publication policy available on request



What needs to be done at hospital level - Organizational process -

- Allocation of local Global-PPS administrator
- Creation of multidisciplinary team
 - bring together clinicians from different specialties, pharmacist, (data)nurses, ...
- Ethical approval if necessary
- Spend some time to learn "this feasible and easy to implement method"
- Get in touch : <u>global-pps@uantwerpen.be</u>



Degree of participation 2017 Global-PPS

	Number of countries	Number of hospitals
North America	2	18
South America	7	52
Africa	5	45
Europe	19	118
West & Central Asia	5	37
East & South Asia	9	71
Australia & New Zealand	1	5









Overall antimicrobial prevalence (%) by region and type of adult ward, year 2017

		Total	AMW	HO-AMW	T-AMW	P-AMW	ASW	AICU
	North America	35.0	29.3	41.4	79.7	53.7	38.5	45.2
	South America	43.7	40.9	41.9	77.3	51.9	39.9	60.5
	Africa	59.1	60.8	69.3	66.7	50.0	55.3	73.8
	North Europe	31.5	25.0	29.1	69.2	42.9	35.9	51.4
	West Europe	27.1	22.5	44.3	85.0	43.7	28.1	51.0
	South Europe	37.4	31.5	42.3	91.7	50.1	37.9	65.5
	East Europe	23.1	12.8	33.7	75.0	44.3	26.7	58.6
Wes	t & Central Asia	37.2	30.0	45.9	0.0	0.0	36.6	58.9
Ea	ist & South Asia	47.7	45.2	43.0	85.3	48.9	47.5	64.2
Australia	& New Zealand	33.5	30.4	60.0	0.0	0.0	45.9	0.0

Antimicrobial prevalence (%): 100*(number of treated patients/number of registered patients according to UN macro-geographical subregions). Total = Overall antimicrobial prevalence in adult wards; AMW = Adult Medical Ward; HO-AMW = Haematology-Oncology AMW; T-AMW = Transplant (BMT/solid) AMW; P-AMW = Pneumology AMW; ASW = Adult Surgical Ward; AICU = Adult Intensive Care Unit.

Overall proportional antibiotic use (ATC J01)

Our hospital (N= 102 treated patients)





Country (n= 14 hospitals)



Continent (n= 45 hospitals)







Penicillins

Other beta-lactams

Sulfonamides and Trimethoprim





- Macrolides, Lincosamides and Streptogramins
- Aminoglycosides

Quinolones

Other antibacterials



Propotional use of other beta-lactam antibacterials (2017)



Key prescription patterns for adults and children, 2017



- Higher % of patients on IV therapy in Africa
- Higher % of patients receiving multiple antibacterials

Prolonged surgical prophylaxis is very common in Africa, year 2017



2015 Global-PPS results in one hospital of Ghana presented as poster at the 10th European **Congress on Tropical Medicine** and International Health See: www.globalpps.com/dissemination/

ECTMIN 2017 (poster n°5795) The Global Point Prevalence Survey of Antimicrobial Consumption and Chana Resistance (Global-PPS): Implications for Antibiotics Stewardship Programme for Komfo Anokye Teaching Hospital in Ghana Enimil A.3-3, Versporten A.4, Goossens H.4, Frimpong J.A.3, Agbedinu K.3, Nkyi C.A.3, Yeboah M.3, Ansong D.3-3 *Kwame Nkrumah University of Science and Technology, Kumasi, Ghana; *Komo Anokye Teaching Hospital, Kumasi, Ghana; *Laboratory of Medical Microbiology, Faculty of Medicine and Health Science, University of Antwerp, Antwerp, Belgium. TENIMIL@UVE.COM INTRODUCTION AND PURPOSE METHODS Antibiotic use may be abused in a developing economy such as Ghana The PPS was conducted across adult and child Directorates and Units in April 2015. Detailed where state-of-the-art diagnostics are difficult to come by Komfo Anokya Teaching Hospital (KATH) took part in the 2015 Global Point Prevalance Survey of Antimicrobial Consumption and Resistance (www.globalpps.com). Aims: Monitor quantity and quality of antimicrobial prescribing in hospitalized patients admitted to 4 main Directorates of clinical care at included day admissions and out-patients; admission after \$.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 words (69.8%) followed by neonatal wards (68.8%). Top 2 reason to prescribe antibiotics in adults was prophylaxis for obstatrics-gynaecology (23.4%) and presumonia (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 metronidatole (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) reportional use of othe Duration of surgical prophylaxis in adults and children Komfo Anokyc 2000 Hospital Chana Europe

	Hospital		Co	Continent		Hospital type		Europe	
	14		N	5	N	5	N	5	
Medical									
Research in notes	85	98.8	362	80.6	318	82.8	8805	81.3	
Guidelines missing	12	14.0	107	22.6	29	5.2	1499	13.8	
Guideline compliant	6	13.0	106	\$3.5	106	54.4	5810	79.7	
Stophysics date	69	80.2	149	31.4	129	32.0	3992	36.9	
documented									
Surgical									
Research in poten-	98	52.1	453	61.2	407	63.2	5053	69.1	
Guidelines missing	90	47.9	196	26.4	NDE	15.7	1400	19.1	
Guideline compliant	64	91.4	182	70.8	181	71.0	3209	71.0	
Stophysics date	151	80.3	299	40.4	205	41.3	3176	43.5	
decomposited									

prophylaxis. Diagnostic tools would be very helpful to guide dinicians in their decision to start and continue antibiotic treatment

DISCUSSION - CONCLUSION This was the first ever large scale of PPS on antimicrobial use and resistance done by a hospital in It offered a first opportunity to sample antibiotic use at a particular point and to company

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

As compared to European countries, our hospital prescribed many more antibiotics as compared to

We concluded that stewardship programs should target prolonged use of antibiotics for surgical

antibiotic use across selected countries worldwide

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cultures of semples often negative.

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FIGURE OF BALANCE

KOMIC AND/OR TRACKING HOSPITAL

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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





information was collected for inpatients "on antimicrobial agents" at 8 am on the day of survey. All inpatients admitted on a word (excluding day admissions such as endoscopy or renal units) at 8 o'clock in the moming on the day of survey count in the denominator. All inpatients "on antimicrobial azents" 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

2015 Global-PPS results in one hospital of Guinea presented as poster at the 10th European **Congress** on **Tropical Medicine** and International Health See: www.globalpps.com/dissemination/



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

Sow M 5.1, Versporten A.2, Goossens H.2, Sylla AO1.

¹Service des Maladies Infectieuses, Hôpital National Donka, CHU Conakry ²Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), Faculty of Medicine and Health Science, University of Antwerp, Antwerp, Belgium.

INTRODUCTION AND PURPOSE

ECTMIH 2017 (poster nº 3P30

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. BioMerieux provided unrestricted funding support for the survey

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

METHODS

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 antimalarials (8.1%) and drugs to treat tuberculosis (6.5%) (Figure 2).





Most frequent prescribed antibacterials 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 antibacterials 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

antimicrobials in Guinea.

- · Organizational interventions would improve appropriate use of
- It is planned to organize a national day to raise awareness among health It is aimed to create an antibiotic committee in each hospital and to put referents in antibiotherapy in the various hospitals of Guinea .

FUTURE

The challenge remains to extend this Global-PPS to the administrative region of Conakry and to all regions of Guinea.

care providers about appropriate use of antibiotics.

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Example of publication on Global-PPS data

Original Article

A Point Prevalence Survey of Antimicrobial Prescribing in Four Nigerian Tertiary Hospitals

Oduyebo OO, Olayinka AT¹, Iregbu KC², Versporten A³, Goossens H³, Nwajiobi-Princewill Pl², Jimoh O¹, Ige TO¹, Aigbe Al², Ola-Bello OI, Aboderin AO⁴, Ogunsola FT

Department of Medical Microbiology, University of Lagos/Lagos University Teaching Hospital, Lagos, ¹Department of Medical Microbiology, Ahmadu Bello University/ Ahmadu Bello University Teaching Hospital, Zaria, ²Department of Medical Microbiology, College of Health Sciences, University of Abuja/National Hospital, Abuja, Nigeria, ³Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), University of Antwerp, Antwerp, Belgium, ⁴Department of Medical Microbiology, Obafemi Awolowo University Teaching Hospitals Complex, Ile-Ife, Nigeria

Abstract

Introduction: Antimicrobial resistance has become a global challenge in health care. Its emergence in previously sensitive bacteria is usually associated with poor antibiotic-prescribing patterns. Methodology: A point prevalence survey was carried out in four tertiary hospitals in Nigeria in 2015 to determine the rate and characteristics of antibiotic prescription. Results: Of 828 patients eligible for the study, 69.7% received antibiotics, with highest rates in the adult Intensive Care Unit. There were therapeutic indications in 51.2% of the prescriptions, of which 89.5% were for community-acquired infections. Third-generation cephalosporins were the most prescribed antibiotics. On the evaluation of surgical prophylaxis, only 4.1% were compliant with institutional guidelines and 39.2% gave a reason for prescribing in patient case notes. Less than 1% of the prescriptions were based on the use of biomarkers. Conclusion: The prevalence of antibiotic prescription in Nigerian hospitals is high with only about 50% of prescriptions based on clear therapeutic indications. We provide evidence that the country needs to institute a cohesive antimicrobial stewardship intervention program.

Keywords: Antimicrobial stewardship, Nigeria, point prevalence, surveillance

http://www.atpjournal.org/temp/AnnTropPathol8142-2882409_080024.pdf

Key messages



- ✓ Global-PPS offers a tool, a first step in the fight against antimicrobial resistance
- VNIFORMITY of data collection common simple method > feasible & achievable surveillance
- ✓ **QUALITY assurance** approach validation process
- Central SUPPORT towards data collection or other
- Real-time feedback : identify areas for quality improvement
- ✓ Monitor interventions repeated PPS
- ✓ Opportunity to stimulate local networking
- ✓ **Communications** to stakeholders, politicians

Key messages



✓ Database for scientific research - Data-sharing
 ✓ Room for improvements, extra modules
 ✓ Continuous search for collaborations
 ✓ Mutual cooperation and feedback is highly motivating.

Nigerian testimonial



- ✓ The online Global-PPS tool to enter data was easy to use.
- We plan to analyze our data provided in excel and also use the feedback report for presentation at our hospital grand round.
- We need support for our lab to be able to cover other MDROs in our routine identification and antibiotic susceptibility testing.
- \checkmark I will participate again to the 2018 PPS.

You want to know more about it ?



Attend the session on the Global-PPS & AMR in Africa

- > Today 10/07, Hall C from 16:30 till 18:30
- Experiences from Egypt, Nigeria, Guinea, South Africa

Attend the AMR workshop between ICAN/BSAC Delivering Education and training on AM stewardship: Global and African challenges & solutions

Thursday 12/07

www.global-pps.com



Home Our project Documents

Dissemination Ack

Acknowledgements

supporting organizations Contact

73 countries are currently participating to the Global-PPS

Data entry

Click here for data-entry, validation and reporting.



Documents

Download here study protocol and other documents.

Global Antimicrobial Stewardship

Learn how to use Point Prevalence Surveys (PPS) to measure antibiotic consumption and fight antimicrobial resistance. "Click here for more information"

Latest news



Global - PPS in the Lancet Global Health Read the first overall Global-PPS results on antibiotic prescribing and resistance in adults, published in the Lancet Global Health. We invite Global-PPS participants to also publish their results.

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The Global-PPS team is happy to provide help with this! [...]

Any hospital can participate!

Nownload the free multimedia e-book on alobal

Contact global-PPS@uantwerpen.be



ALONG WALK TO FREEDOM CELEBRATION

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Results are the product of action, not by thoughts of taking action.

Andy Wooten