Global Point Prevalence Survey of Antimicrobial Consumption and Resistance in hospitals worldwide

Ann Versporten
prof. Oyinlola Oduyebo
prof. Herman Goossens
University of Antwerp, Belgium
College of Medicine, Lagos, Nigeria

Dedicated to the entire Global-PPS network !

Call to Action on Antimicrobial Resistance 2018

Accra, Ghana

In partnership with the

IACG | Interagency Coordination Group on Antimicrobial Resistance

Ghana Government

Royal Thai Government

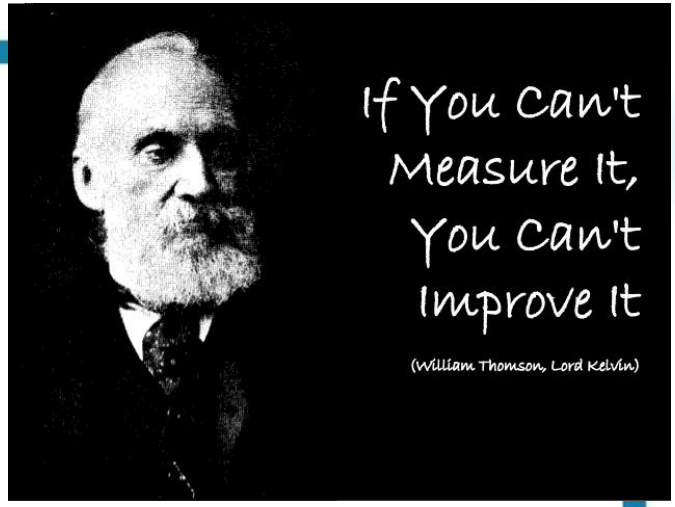
UK Government

UNITED NATIONS FOUNDATION

WORLD BANK GROUP

wellcome

What is Surveillance



World Health Organization:

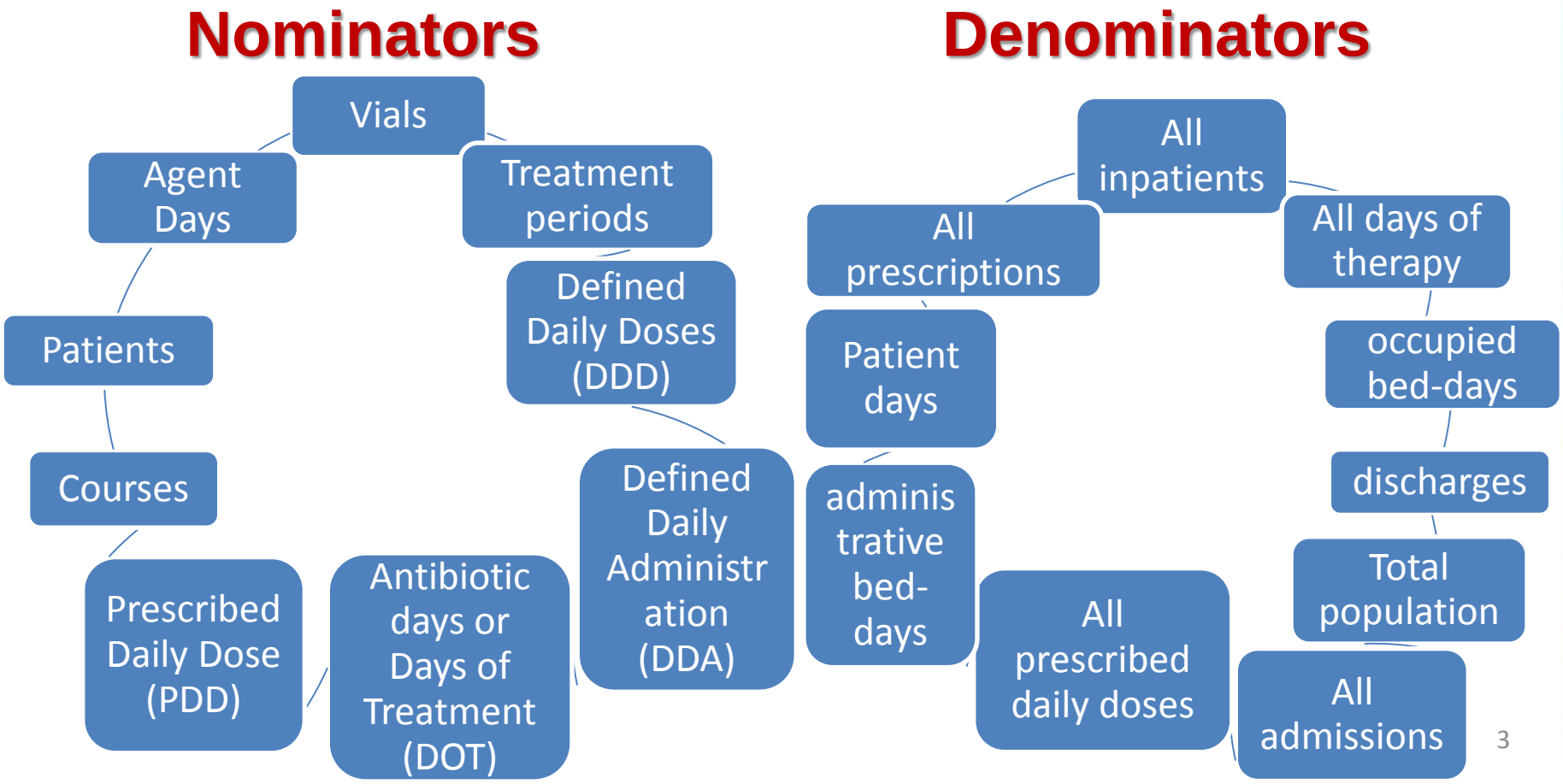
Systematic ongoing collection, collation, and analysis of data and the timely dissemination of information to those who need to know so that action can be taken.

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.

Antibiotic prescribing in hospitals - What does the literature offer ?

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



An innovative worldwide accessible web-based Global-PPS TOOL

- Standardized approach
  - Collect and report consistent, valid and comparable antimicrobial prescribing & resistance data amongst hospitalized adults, children and neonates
  - Compare and analyze trends over time in a uniform way
- Above all: a simple method
  - Feasible, achievable surveillance

Aims Global-PPS and impact on AMR

- **Evaluate the situation in your hospital : determine quantity and quality of antimicrobial prescribing in hospitals**
- **Identify targets to improve quality of antimicrobial prescribing**
- **Assess effectiveness of interventions through repeated PPS.**
- **Increase public health capacity.**
- **Combat antimicrobial resistance.**

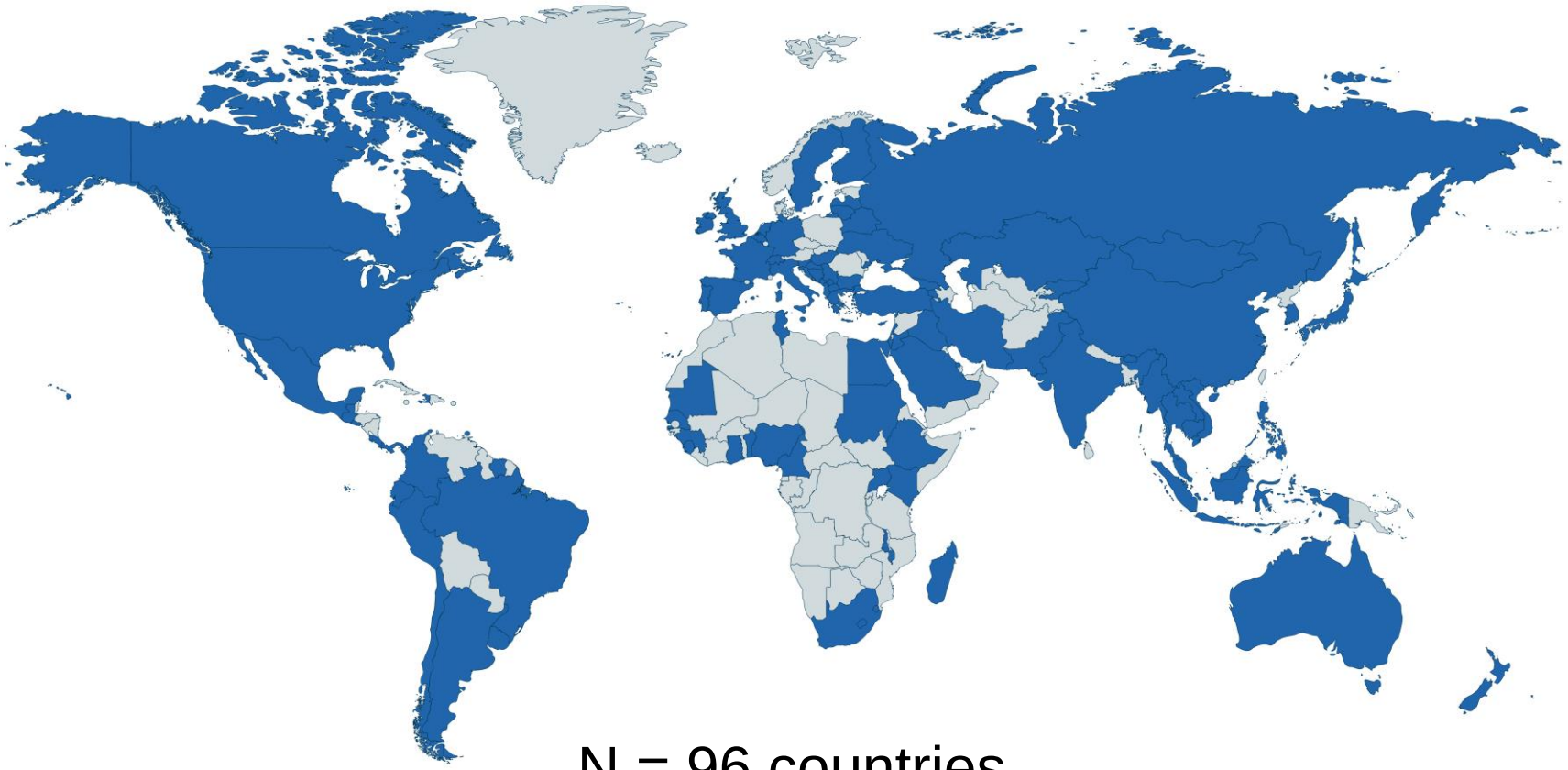
What we freely offer:

- **Protocol**, different languages
- **Data collection templates** : ward and patient form (paper)
- **Web-based data-entry and verification** through the Global-PPS programme, including validation (**quality assurance**) and reporting (**real-time feedback with benchmarking national and worldwide**) (http://www.global-pps.com/documents/)

- One-point feedback report
- Longitudinal feedback report
- Raw data in excel

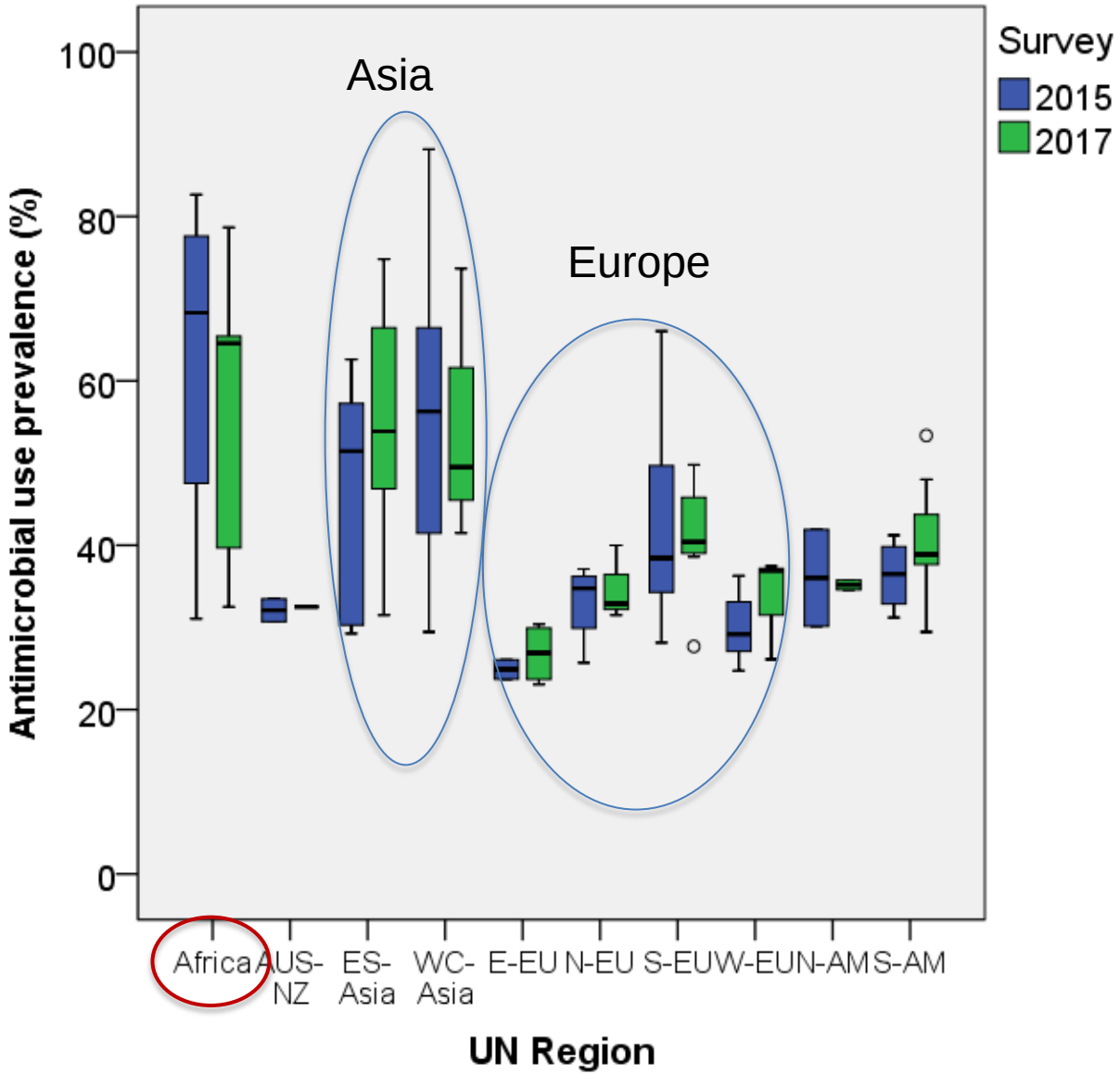
- **Full support to the hospitals** : all materials, PPT slides on the method used (EN, FR), FAQ list, IT manual, posters, leaflets to promote the study, …, and help desk !

Degree of participation or enrollment as of today



N = 96 countries
N ≈ 1000 hospitals
N ≈ 220,000 admitted patients

Antimicrobial use prevalence (%) by UN-region, 2015 and 2017 (country-ranges)

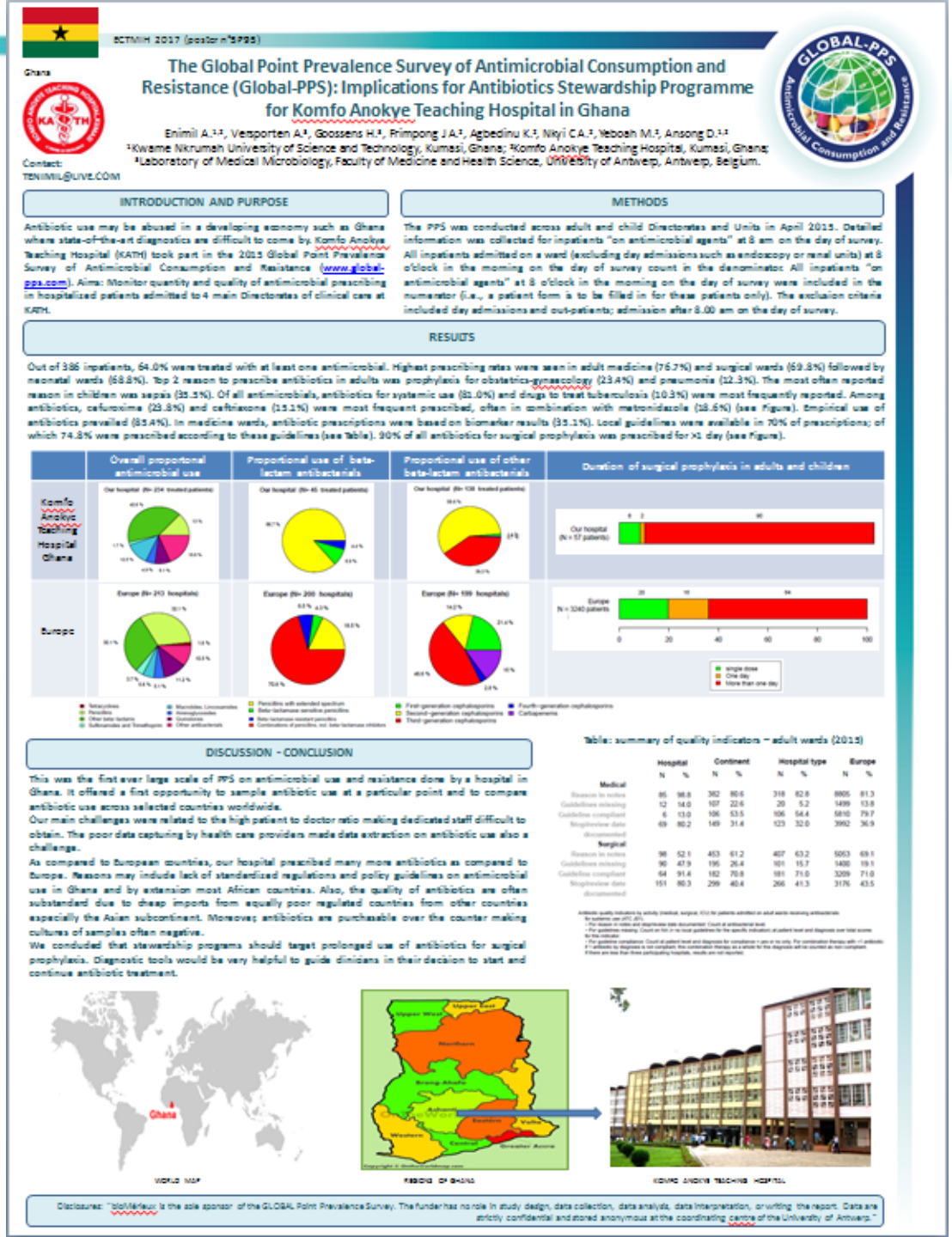



Continuous work towards sustainability and scale up through COMMUNICATION and NETWORKING
ECCMID 2016

Support towards analyses and communication of own results

Global-PPS in Ghana presented as **poster** at the 10th European Congress on Tropical Medicine and International Health

See: www.global-pps.com/dissemination/



ECTMIH 2017 (poster n°SP88)

Ghana

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

Enimil A.[1,2], Versporten A.[3], Goossens H.[3], Frimpong J.A.[2], Agbedinu K.[2], Nkyi C.A.[2], Yeboah M.[2], Ansong D.[1,2]
[1]Kwame Nkrumah University of Science and Technology, Kumasi, Ghana; [2]Komfo Anokye Teaching Hospital, Kumasi, Ghana; [3]Laboratory of Medical Microbiology, Faculty of Medicine and Health Science, University of Antwerp, Antwerp, Belgium.

Contact: TENIMIL@LIVE.COM

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.global-pps.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 (29.8%) 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).

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 conduded 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.

Table: summary of quality indicators – adult wards (2015)

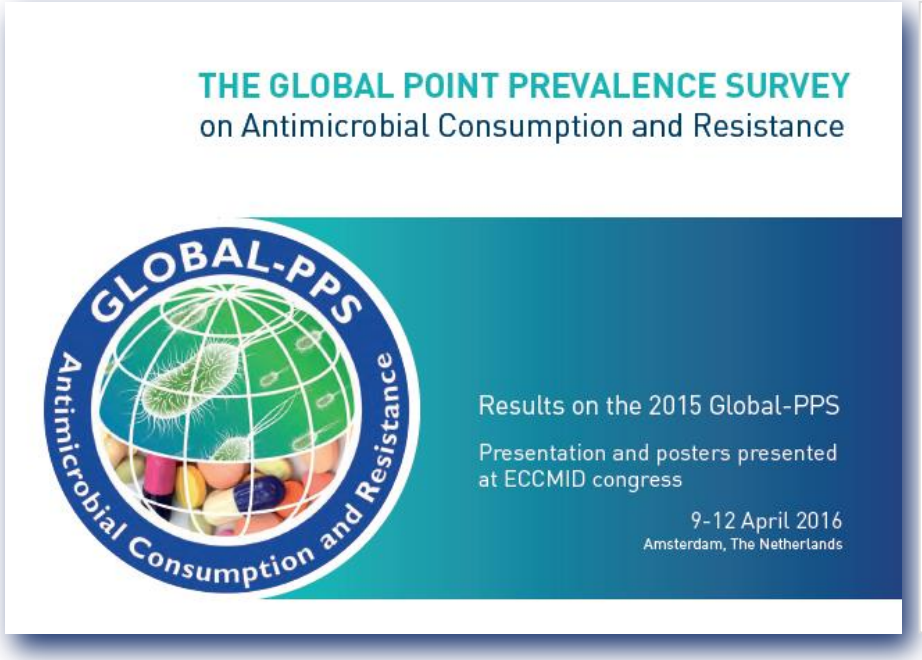
	Hospital		Continent		Hospital type		Europe	
	N	%	N	%	N	%	N	%
Medical								
Reason in notes	85	98.8	382	80.6	318	82.8	8905	81.3
Guidelines missing	12	14.0	107	22.6	20	5.2	1499	13.8
Guideline compliant	6	13.0	106	53.5	106	54.4	5810	79.7
Stopreview date documented	69	80.2	149	31.4	123	32.0	3992	36.9
Surgical								
Reason in notes	98	52.1	453	61.2	407	63.2	5053	69.1
Guidelines missing	90	47.9	195	26.4	101	15.7	1480	19.1
Guideline compliant	64	91.4	182	70.8	181	71.0	3209	71.0
Stopreview date documented	151	80.3	299	40.4	266	41.3	3176	43.5

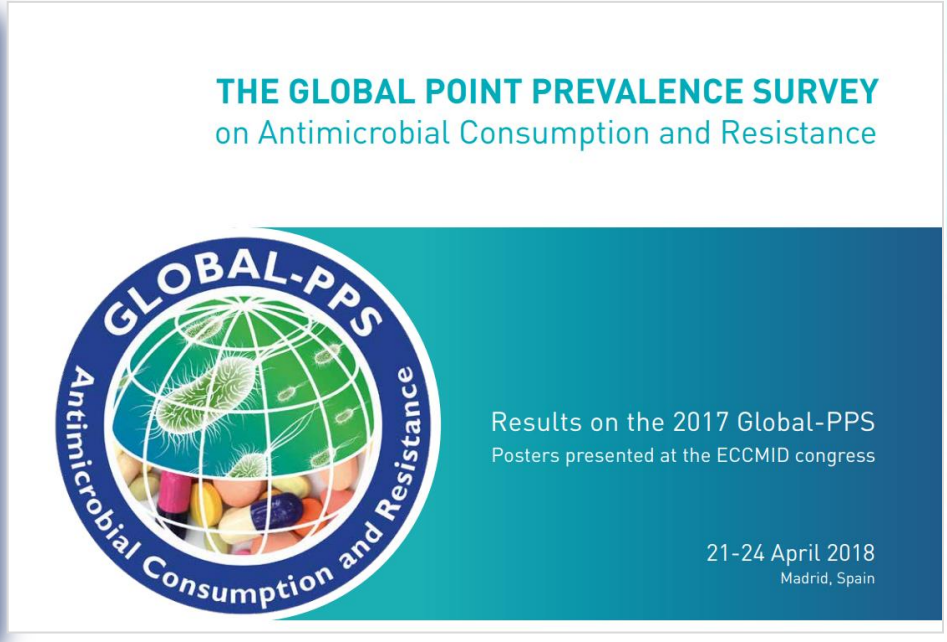
WORLD MAP — REGIONS OF GHANA — KOMFO ANOKYE TEACHING HOSPITAL

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 anonymous at the coordinating centre of the University of Antwerp."

Global PPS 2015 and 2017

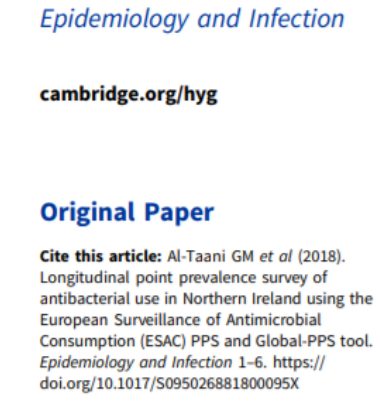
- **Final results presented during ECCMID 2016 and ECCMID 2018**
- **Brochure including each 22 communications**





- **Global and local publications and communications on-going**

Scientific papers using Global-PPS data



Epidemiology and Infection

cambridge.org/hyg

Original Paper

Cite this article: Al-Taani GM *et al* (2018). Longitudinal point prevalence survey of antibacterial use in Northern Ireland using the European Surveillance of Antimicrobial Consumption (ESAC) PPS and Global-PPS tool. *Epidemiology and Infection* 1–6. https://doi.org/10.1017/S095026881800095X

Longitudinal point prevalence survey of antibacterial use in Northern Ireland using the European Surveillance of Antimicrobial Consumption (ESAC) PPS and Global-PPS tool

G. M. Al-Taani[1], M. Scott[2], D. Farren[3], F. Gilmore[3], B. Mccullagh[4], C. Hibberd[4], A. Mccorry[5], A. Versporten[6], H. Goossens[6], P. Zarb[7] and M. A. Aldeyab[8]

[1]Faculty of Pharmacy, Yarmouk Universi
and Medicines Management Centre, Nor
UK; [3]Northern Health and Social Care Tr

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

Original Article

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

...u KC[2], Versporten A[3], Goossens H[3], Nwajiobi-Princewill PI[2], Jimoh O[1], Ige TO[1], Aigbe AI[2], Ola-Bello OI,

RESEARCH ARTICLE Open Access

Comparative point prevalence survey of antimicrobial consumption between a hospital in Northern Ireland and a hospital in Jordan

Feras Darwish Elhajji[1*], Ghaith M. Al-Taani[2], Lana Anani[3], Sahar Al-Masri[4], Haneen Abdalaziz[1], Su'a Abdel Qader Al Bawab[6], Michael Scott[7], David Farren[7], Fiona Gilmore[7], Ann Versporten[8], Herman Goossens[8] and Mamoon A. Aldeyab[9]

Abstract

Background: To assess antimicrobial prescribing in a Northern Ireland hospital (Antrim Area Hospital compare them with those of a hospital in Jordan (Specialty Hospital).

Methods: Using the Global-PPS approach, the present study surveyed patients admitted to the hosp the prescribed antibiotics, and a set of quality control indicators related to antibiotics.

Results: Ultimately, 444 and 112 inpatients in the AAH and the Specialty Hospital, respectively, were the medical group, 165 inpatients were prescribed 239 antibiotics in the AAH, while 44 patients in th

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; 6: e619–29

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

*Members listed at the end of the paper

Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), Faculty of Medicine and Health Science, University of Antwerp, Antwerp, Belgium

Networking : Global-PPS as intermediary

- Regional coordinators !
  - ➢ Connect new partners/participants
    - E.g. Global-PPS expert from Singapore went to the Philippines and Myanmar to train a hospital network under lead of MoH

www.global-pps.com/supporting-organizations/

- Contract signed with

MEDECINS SANS FRONTIERES
DOCTORS WITHOUT BORDERS

Lessons learned

- ✓ **Global-PPS offers a tool to measure AMU, a first step** in the fight against antimicrobial resistance
- ✓ **This simple method** provides a feasible & achievable surveillance
- ✓ Enormous opportunity to stimulate **local networking and collaboration**
- ✓ **Mutual cooperation and feedback** is highly motivating.
- ✓ **Communications** to stakeholders, politicians

Challenges

For the participants:

- Workload and time constraints, manpower, resources (Evaluation of the Global-PPS through Survey Monkey questionnaire)
- Knowledge on interpretation of the feedback report and raw data in excel.
- What next ?? How to enhance practice changes?

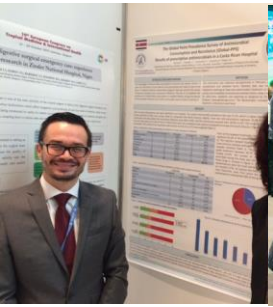
For Global-PPS team:

- Global-PPS continuously grows !

Manpower to deal with requested help from participants !!

Solutions
What we continuously do

- Help making **meaningfull presentations**
- Help searching for **feasible targets** to work on
- Help **writing up** research (abstract, paper, any other communication)
- Help **networking** : link up professionals
- Help making participants to shine, to show their work, **get appreciated** for efforts



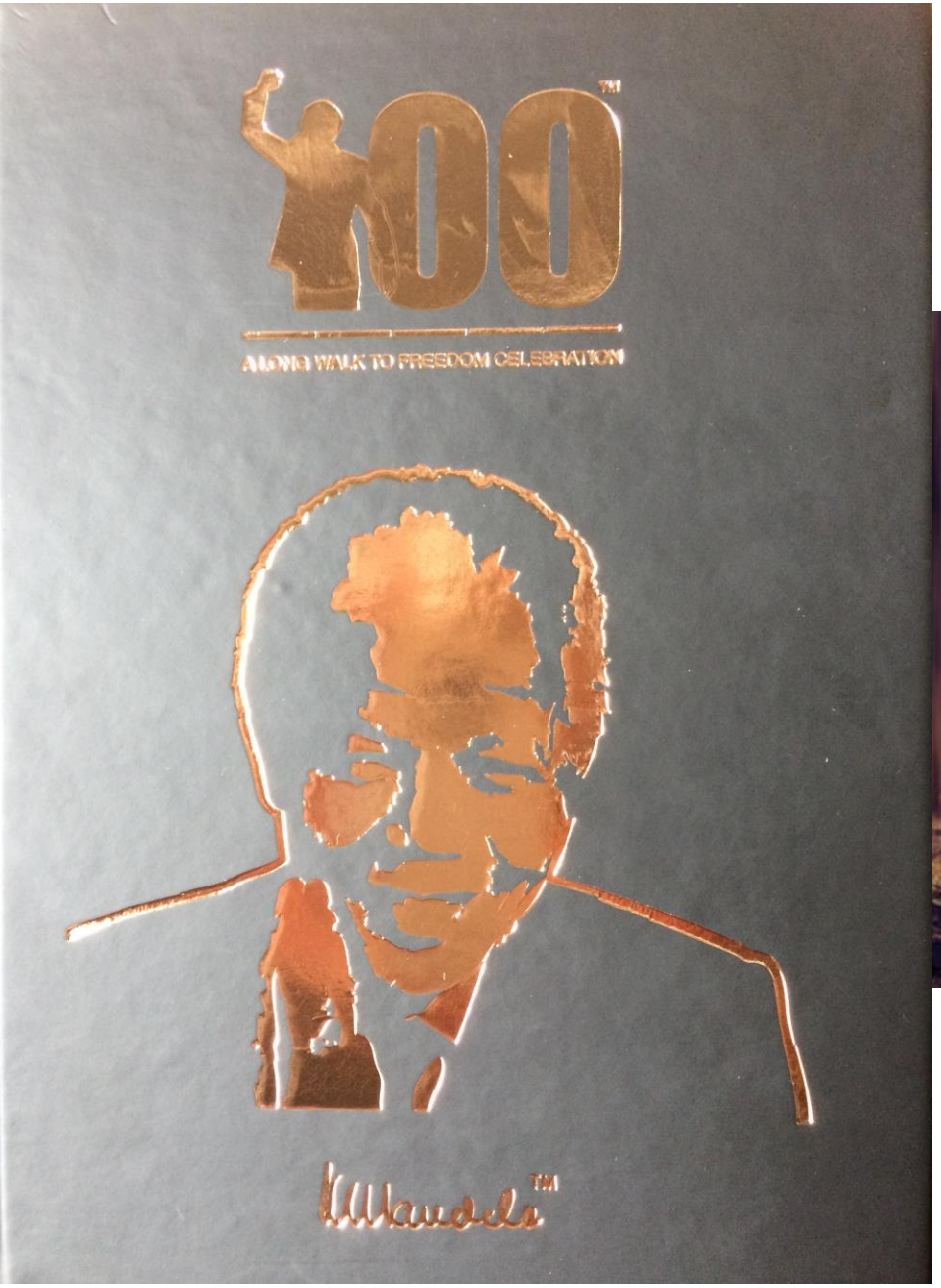

Solutions

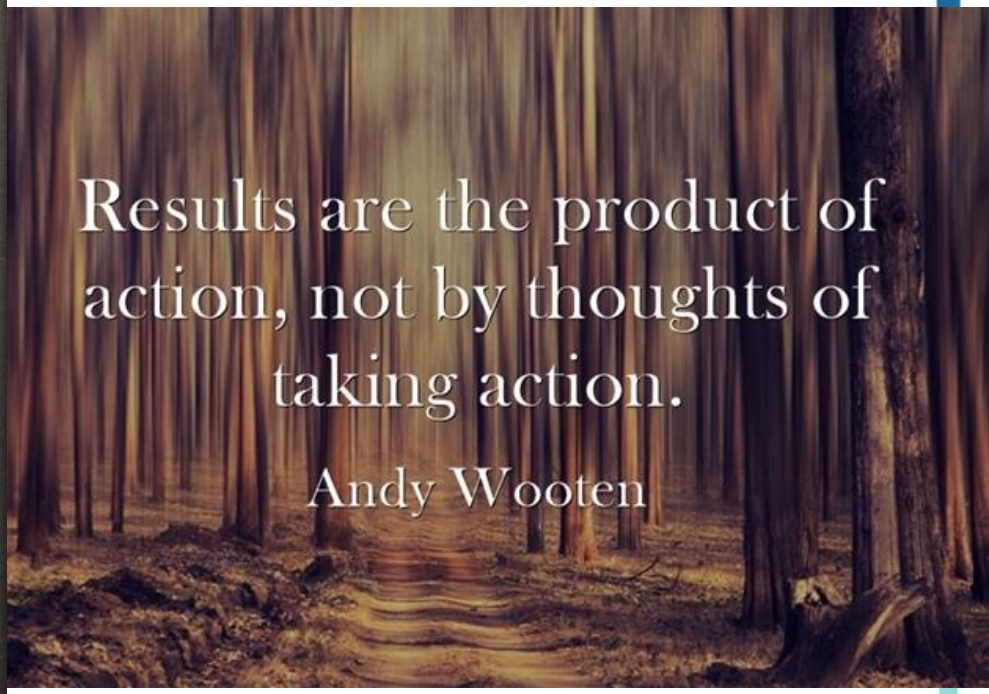
Under development , foreseen for 2019 :

- Health Care Associated Infection (HAI) module
- Aid towards setting up sustainable antimicrobal stewardship activities adapted to local needs
  - ➢ Development of survey to assess impact of Global-PPS on stewardship activities, the needs and barriers with specific focus on LMIC
  - ➢ Practical E-learning module (hands-on cases)
  - ➢ Sharing of experiences, networking, capacity building !

www.global-pps.com

Contact global-PPS@uantwerpen.be


'00
A LONG WALK TO FREEDOM CELEBRATION


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

The Nigerian Global-PPS experience

Global-PPS and Antimicrobial Stewardship (AMS) in NIGERIA

Supporting healthcare professionals in the fight againstresistance

BIOMÉRIEUX
PIONEERING DIAGNOSTICS

What global PPS means to Nigeria

- Tool for a realistic and sustainable AMS
- Entry point and monitoring tool for AMS in Nigeria
- The Nigerian working group on AMS
  - Hospitals participating in Global-PPS
  - Came into being in August 2018
  - Published a communiqué
  - Another meeting in November 2018
  - AMS still young in Nigeria

How it all began

LAGOS UNIVERSITY
TEACHING HOSPITAL

LUTH story till 2015 Global PPS

Plan of our hospital antimicrobial stewardship committee

- 2012: Set up of antimicrobial stewardship program
- Subcommittee to develop a proposal to obtain baseline information for our stewardship program.
- Barrier : There was no funding for the project
  - Situation till the advent of the global point prevalence survey of antimicrobial consumption and resistance (GLOBAL -PPS) in 2015.
- LUTH participated to the 2015 Global-PPS and were able to obtain data we considered enough to start the hospital stewardship program

LUTH story: Global-PPS in 2015, 2017 & (2018)

- We identified issues
  - Very high rates of antimicrobial prescribing
  - Under-utilisation of the clinical microbiology labs
  - No information on MDROs
  - No antibiotic guidelines
  - Negative prescribing habits

→ Hospital antibiotic policy written based on Global-PPS data

LAGOS UNIVERSITY TEACHING HOSPITAL

Similar issues identified in all Global-PPS participating NIGERIAN hospitals !

Awareness has been created in the country about global-PPS making AMS feasible

LUTH
LAGOS UNIVERSITY
TEACHING HOSPITAL

EDUCATION AND AWARENESS MADE SOME DIFFERENCE IN OUR HOSPITAL

Overview of the quantity and quality of antimicrobial prescribing in two Global-PPS participating Nigerian hospitals

	Tertiary care hospital Lagos **Intervention in 2016**		Tertiary care hospital Abuja **No Intervention**	
	2015	2017	2015	2017
Antibiotic prevalence adult wards	80.6%	**67.0%** ↓	58.7%	61.2%
Antibiotic prevalence in pediatric wards	89.7%	**59.2%** ↓	50.9%	68.3%
Surgical prophylaxis ≥24h	93.0%	100%	90%	100%
Targeted prescribing	8%	1%	22%	3%
Guidelines missing: medical adult wards	96.7%	100%	21.9%	50.0%
surgical adult wards	97.9%	99.2%	6.0%	27.3%
medical pediatric wards	100%	100%	21.2%	70.0%
Reason for prescribing written in notes	42.2%	42.0%	54.3%	52.1%
Stop review date documented	16.2%	16.7%	38.3%	36.3%

Following dissemination of Global-PPS data

- Interventions planned separately for each department because of the large hospital size (761 beds)
- Started with Paediatrics department in 2016

LAGOS UNIVERSITY
TEACHING HOSPITAL

Paediatrics

- Disseminated data at clinical meeting
  - Wrote antibiotic guidelines
    - Took one year to write
  - Chose an antibiotic team
  - Chose a strategy
    - Prospective audit with intervention and feedback
- Challenge: manpower (seen as extra work)
  - Feasibility of prospective audit with intervention and feedback with medical students confirmed

Prospective audit with intervention and feedback in LUTH Paediatrics

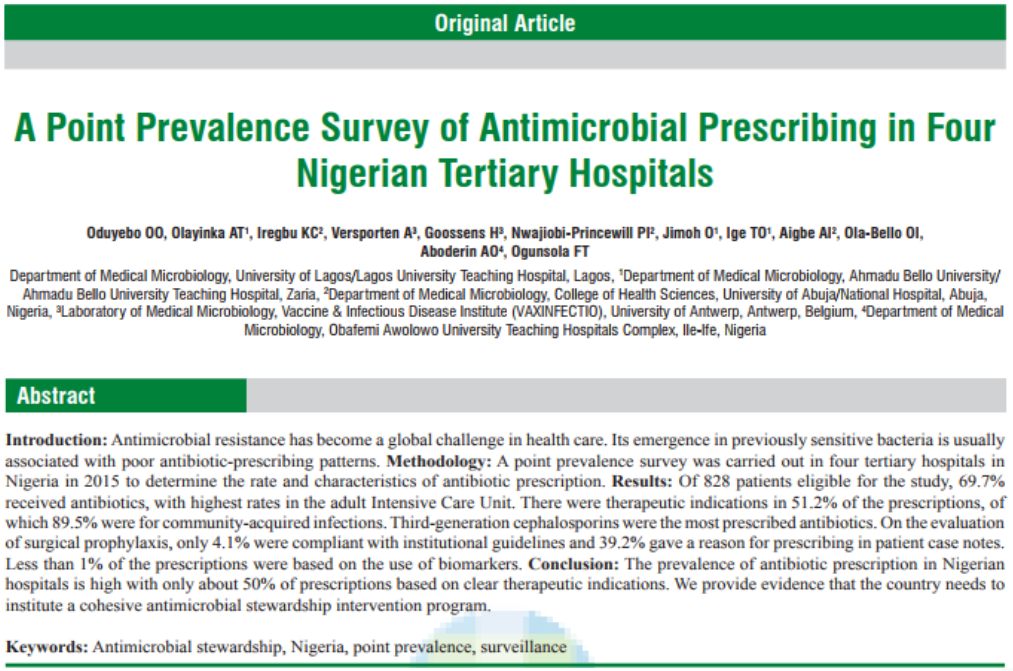
- Every prescription is audited with a checklist
- Checklist is based on hospital antibiotic policy and dept antibiotic guideline
- Checklist completed by
  - Medical students
  - Clinical pharmacologists from the university college
    - decide appropriateness based on checklist
  - Consultants in the ID unit/Stewardship team
    - do the feedback to prescribers
- Monitoring and evaluation by Hospital stewardship committee

LUTH
LAGOS UNIVERSITY TEACHING HOSPITAL

AMS in NIGERIA today

- Participating to global-PPS
  - 4 hospitals in 2015
  - 10 hospitals in 2017
  - 13 hospitals have registered in 2018
- 3 hospitals have started formal stewardship program

- Hospitals doing PPS came together to form the National working group for AMS in Nigeria
  - Communique
  - Working on a plan of action



Original Article

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

Oduyebo OO, Olayinka AT[1], Iregbu KC[2], Versporten A[3], Goossens H[3], Nwajiobi-Princewill PI[2], Jimoh O[1], Ige TO[1], Aigbe AI[2], Ola-Bello OI, Aboderin AO[4], Ogunsola FT

Department of Medical Microbiology, University of Lagos/Lagos University Teaching Hospital, Lagos, [1]Department of Medical Microbiology, Ahmadu Bello University/ Ahmadu Bello University Teaching Hospital, Zaria, [2]Department of Medical Microbiology, College of Health Sciences, University of Abuja/National Hospital, Abuja, Nigeria, [3]Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), University of Antwerp, Antwerp, Belgium, [4]Department 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

LAGOS UNIVERSITY TEACHING HOSPITAL

Benefit of conducting Global-PPS in LMIC

- AMS strategies may be cumbersome for resource poor countries especially those without good laboratories – hence no AMS
- It is a good tool for beginners of AMS
- It allows you to identify prescribing problems and identify solutions tailored for your peculiar issues
- It also makes AMS monitoring possible

LUTH ANTIMICROBIAL STEWARDSHIP COMMITTEE APPRECIATES GLOBAL-PPS

LAGOS UNIVERSITY
TEACHING HOSPITAL

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."