Global Point Prevalence Survey of Antimicrobial Consumption and Resistance

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University of Antwerp
Belgium
Disclosures

Global PPS, a strong partnership

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.”
Outline

• Introduction to PPS

• Support: method – tool

• Communication: various ways!

• Networking: seek support for your efforts

• Discussion
Surveillance

If You Can't Measure It, You Can't Improve It

(William Thomson, Lord Kelvin)

(Lord Kelvin, 1824-1907)
Point Prevalence Survey

“one-day” cross-sectional PPS (each ward within the hospital surveyed one once)
Global PPS background

- Extension of Point Prevalence Surveys (PPS) to assess antimicrobial prescribing practices in European hospitals
  - ARPEC-PPS 2011, 2012 (children and neonates)
  - Global-PPS in 2015, 2017

- Outcome of the 4th session of the World HAI/Resistance Forum on healthcare-associated infections and antimicrobial resistance, June 2013 - Annecy, France


Ansari et al., Clin Infect Dis, 2009; Zarb et al., J Antimicrob Chemother, 2010; Amadeo et al., J Antimicrob Chemother 2010
Versporten et al., PIDJ, 2013; Versporten et al., JAC, 2015
Global PPS Evolution

- 2014 (pilot)
- 2015
  - 335 hospitals
  - 53 countries
  - 6 continents
- 2017
  - Over 400 hospitals
- 2018
  - Possibility to join 3 different time periods
    - January – April; May – August; September - December

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

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

- Monitor rates of antimicrobial prescribing and resistant bugs in the hospital
- **Benchmark** between hospitals, countries, regions
- Identify targets to improve quality of antimicrobial prescribing
- Help designing hospital interventions to promote prudent antimicrobial use (Antibiotic Stewardship) and improve patient health
- **Assess effectiveness of interventions** through repeated PPS
- Increase public health capacity

http://www.global-pps.com/ourproject/
Organization at hospital level

- Creation of multidisciplinary team
- Allocation of local Global-PPS administrator – a lead
- Ethics approval if necessary
- Guarantee of data privacy
  - Hospital names will never be revealed in any report or publication unless official written approval (e.g. as co-author for peer reviewed article)
  - Completely anonymous patient data-entry
- Data are property of the respective hospital
- Publication policy available on request
- Get in touch: global-pps@uantwerpen.be
Outline

• Introduction to PPS

• Support: method – tool

• Communication : various ways !

• Networking : seek support for your efforts

• Discussion
What do we offer: Full support to hospitals

- Supply of materials to conduct the survey
  - Translated protocol or data collection forms
    (English, French, other 6 languages)
  - The antimicrobial list following the WHO ATC/DDD classification system (excel file) (ref: [https://www.whocc.no/](https://www.whocc.no/))
  - 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)


- Help desk, people at University of Antwerp (Coordination, IT, statistics, administrative support): [global-pps@uantwerpen.be](mailto:global-pps@uantwerpen.be)

- All of the above = freely available
Departments concerned

- All wards (units/departments) of the hospital are to be included only once!

  ➢ We have foreseen **three surveillance periods in 2018**:
    - Jan-April 2018
    - May-August 2018
    - September-December 2018

- Data collection is done on a weekday, not on the weekend or a holiday.

- Surgical departments are not to be surveyed after a weekend or holiday in order to allow retrospective data collection on surgical prophylaxis.
## Predefined ward categorization

### Adult departments

<table>
<thead>
<tr>
<th>Adult departments</th>
<th>Paediatric departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>AMW (Adult Medical Ward)</td>
<td>PMW (Paediatric Medical Ward)</td>
</tr>
<tr>
<td>HO-AMW (Haematology-Oncology AMW)</td>
<td>HO-PMW (Haematology-Oncology PMW)</td>
</tr>
<tr>
<td>T-AMW (Transplant (BMT/solid) AMW)</td>
<td>T-PMW (Transplant (BMT/Solid) PMW)</td>
</tr>
<tr>
<td>P-AMW (Pulmonary AMW)</td>
<td></td>
</tr>
<tr>
<td>ASW (Adult Surgical Ward)</td>
<td>PSW (Paediatric Surgical Ward)</td>
</tr>
<tr>
<td>AICU ([Adult] Intensive Care Unit)</td>
<td>PICU (Paediatric Intensive Care Unit)</td>
</tr>
</tbody>
</table>

### Neonatal departments

<table>
<thead>
<tr>
<th>Neonatal departments</th>
</tr>
</thead>
<tbody>
<tr>
<td>NMW (Neonatal Medical Ward)</td>
</tr>
<tr>
<td>NICU (Neonatal Intensive Care Unit)</td>
</tr>
</tbody>
</table>
Global-PPS data collection, entry and management

1. **Data collection on paper forms:**
   - Department (Ward) form (denominator data)
   - Patient form (numerator data)

2. **Web-based data entry**, verification, validation and reporting with the help of the Global-PPS program.

   **URL:**

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

http://app.globalpps.uantwerpen.be/globalpps_webpps/
**Global Point Prevalence Survey (2018 GLOBAL-PPS)**

**Ward Form**

Please fill in one form for each ward included in the PPS

<table>
<thead>
<tr>
<th>Date of survey (dd/mm/year)</th>
<th>15 / 03 / 2018</th>
</tr>
</thead>
<tbody>
<tr>
<td>Person completing form (Auditor code)</td>
<td>Ann</td>
</tr>
<tr>
<td>Hospital name</td>
<td>UZA</td>
</tr>
<tr>
<td>Ward Name</td>
<td>Hemato -D4</td>
</tr>
</tbody>
</table>

**Department Type:**
Place a tick against the type of department

- **Paediatric departments:**
  - PMW (Paediatric Medical Ward)
  - HO-PMW (Haematology-Oncology PMW)
  - T-PMW (Transplant (BMT/Solid) PMW)
  - PSW (Paediatric Surgical Ward)
  - PICU (Paediatric Intensive Care Unit)

- **Neonatal departments:**
  - NMW (Neonatal Medical Ward)
  - NICU (Neonatal Intensive Care Unit)

**Mixed Department**

- X Yes
- □ No

**Activity:** Tick as appropriate.

- X Medicine
- X Surgery
- □ Intensive Care

**Total number of admitted patients** on the ward present at 8:00 am on day of PPS split up by activity.

- For mixed departments, fill the total number of patients corresponding to each of the encountered activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>12</td>
</tr>
<tr>
<td>Surgery</td>
<td>3</td>
</tr>
</tbody>
</table>

**Total number of beds** on the ward present at 8:00 am on day of PPS split up by activity.

- For mixed departments fill in the total number of beds corresponding to each of the encountered activities.

<table>
<thead>
<tr>
<th>Activity</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Medicine</td>
<td>15</td>
</tr>
<tr>
<td>Surgery</td>
<td>5</td>
</tr>
</tbody>
</table>

Include only inpatients “admitted before 08:00 hours” on the day of the PPS!

**Description of ward:**

* Total N of inpatients present on the ward before 8:00 am and
* Total N of beds on the ward at 8:00 am on the day of the survey.
Numerator – Inclusion criteria

Patients

Include all in-patients receiving an “active/ongoing” antimicrobial prescription at 8 am on the day of survey

In practice, this means 1) For an observed national average antimicrobial prevalence rate of 29% and 2) For a hospital with on average 500 admitted inpatients a day;

The number of inpatients for which one need to collect detailed data will be on average 145 inpatients for the entire hospital.
Numerator – Inclusion criteria

- **Definition of an antimicrobial agent – Which one and when to include?**
  - *Prescribed* at 8 am the day of the survey
  - Include active and ongoing antimicrobials: include an ongoing antimicrobial prescribed e.g. 3 times/week but not on the day of the survey

- **Antimicrobials under surveillance** (according to WHO ATC classification; this is done automatically during data-entry by the Global-PPS programme)
  - Antibacterials for systemic use: J01
  - Antimycotics and antifungals for systemic use: J02 and D01BA
  - Antibiotics and other drugs used for treatment of tuberculosis: J04A
  - Antibiotics used as intestinal anti-infectives: A07AA
  - Antiprotozoals used as antibacterial agents, nitroimidazole derivatives: P01AB
  - All antivirals: J05
  - Antimalarials: P01B

- **Antimicrobials for topical use are excluded**
Exclusion criteria: to be applied in the numerator and denominator

- Day hospitalizations and ambulatory care patients
- Patients admitted to the ward after 8 am on the day of the survey

➤ Those patients are NOT counted in the numerator nor in the denominator!
Essential data to collect: numerator

At the patient level:
- Age, gender and weight
- Treatment based on biomarker; which one (CRP, PCT or other lab-based biomarker), type of sample and most relevant value

At the antimicrobial prescription level:
- Antimicrobial agent/s (substance level - generic name)
- Dose per administration - N doses/day - route of administration
- Reasons for treatment (anatomical site of infection)
  What the clinician intends to treat!
- Indication for therapy (Community Acquired or Healthcare Associated Infection; Medical or Surgical Prophylaxis)
Essential data to collect: numerator

At the level of the antimicrobial prescription, next:

- **Quality indicators**
  - Reason for therapeutic or prophylactic prescription written in notes?
  - Stop and review date of prescription written in notes?
  - Prescription compliant with local guidelines?
- **“Empiric” or “Targeted” treatment**
- **If targeted:** complete microbiology data (if one of the following):
  - MRSA
  - Methicillin-resistant coagulase-negative staphylococci
  - VRE
  - ESBL-producing Enterobacteriaceae
  - 3rd generation cephalosporin resistant Enterobacteriaceae non-ESBL producing or ESBL status unknown
  - Carbapenem-resistant Enterobacteriaceae
  - ESBL-producing nonfermenting Gram-negative bacilli
  - Carbapenem-resistant nonfermenting Gram-negative bacilli
  - MDR organisms
Reporting in case of product combination

Combinations of an antibiotic and an enzyme inhibitor:
- Ampicillin and enzyme inhibitor: report only ampicillin dose
- Amoxicillin and enzyme inhibitor: report only amoxicillin dose
- Ticarcillin and enzyme inhibitor: report only ticarcillin dose
- Piperacillin and enzyme inhibitor: report only piperacillin dose
- Imipenem and enzyme inhibitor: report only imipenem dose
- Panipenem and betamipron: report only panipenem

Examples:
Augmentin® 1.2g IV → 1g (amoxicillin) + 200mg (clavulanic acid): report only 1 g
Piperacillin® 4.5g IV → 4g (piperacillin) + 500mg (tazobactam), report only 4 g

Other combinations of multiple antimicrobial substances:
Sulfamethoxazole and Trimethoprim: report total amount of both sulfamethoxazole and trimethoprim
Example:
Cotrimoxazole 960mg: (sulfamethoxazole 800mg + trimethoprim 160mg), report 960mg

See antimicrobial list
Survey number will be provided to you after saving the patient onto the Global-PPS tool for data entry: **do not forget to write down this number on the paper form**!
### Appendix II - Diagnostic codes (what the clinician aims at treating)

<table>
<thead>
<tr>
<th>Site</th>
<th>Codes</th>
<th>Example</th>
</tr>
</thead>
<tbody>
<tr>
<td>CNS</td>
<td>Proph CNS</td>
<td>Prophylaxis for CNS (neurosurgery, meningococcal)</td>
</tr>
<tr>
<td></td>
<td>CNS</td>
<td>Infections of the Central Nervous System</td>
</tr>
<tr>
<td>EYE</td>
<td>Proph EYE</td>
<td>Prophylaxis for Eye operations</td>
</tr>
<tr>
<td></td>
<td>EYE</td>
<td>Therapy for Eye infections e.g., Endophthalmitis</td>
</tr>
<tr>
<td>ENT</td>
<td>Proph ENT</td>
<td>Prophylaxis for Ear, Nose, Throat (Surgical or Medical prophylaxis) SP/MP</td>
</tr>
<tr>
<td></td>
<td>ENT</td>
<td>Therapy for Ear, Nose, Throat infections including mouth, sinuses</td>
</tr>
<tr>
<td>RESP</td>
<td>Proph RESP</td>
<td>Pulmonary surgery, prophylaxis for Respiratory pathogens e.g., IG</td>
</tr>
<tr>
<td></td>
<td>LUNG</td>
<td>Lung abscesses including aspergillosa</td>
</tr>
<tr>
<td></td>
<td>URTI</td>
<td>Upper Respiratory Tract viral Infections including influenza but not TB</td>
</tr>
<tr>
<td></td>
<td>Bron</td>
<td>Acute Bronchitis or exacerbations of chronic bronchitis</td>
</tr>
<tr>
<td></td>
<td>Pneu</td>
<td>Pneumonia or LRTI (lower respiratory tract infections)</td>
</tr>
<tr>
<td></td>
<td>TB</td>
<td>Pulmonary TB (Tuberculosis)</td>
</tr>
<tr>
<td>CVS</td>
<td>Proph CVS</td>
<td>Cardiac or Vascular Surgery, endocarditis prophylaxis</td>
</tr>
<tr>
<td></td>
<td>CVS</td>
<td>CardioVascular System infections: endocarditis, endovascular prosthesis or device e.g. pacemaker, vascular graft</td>
</tr>
<tr>
<td>GI</td>
<td>Proph GI</td>
<td>Surgery of the Gastro-Intestinal tract, liver or biliary tree, GI prophylaxis in neutropaenic patients or hepatic failure</td>
</tr>
<tr>
<td></td>
<td>GI</td>
<td>GI infections (salmonellosis, Campylobacter, parasitic, C.difficile, etc.)</td>
</tr>
<tr>
<td></td>
<td>IA</td>
<td>Intra-Abdominal sepsis including hepatobiliary, intra-abdominal abscess etc.</td>
</tr>
<tr>
<td>SSTBJ</td>
<td>Proph BJ</td>
<td>Prophylaxis for SST, for plastic or orthopaedic surgery (Bone or Joint)</td>
</tr>
<tr>
<td></td>
<td>SST</td>
<td>Skin and Soft Tissue: Cellulitis, wound including surgical site infection, deep soft tissue not involving bone e.g., infected pressure or diabetic ulcer, abscesses</td>
</tr>
<tr>
<td></td>
<td>BJ</td>
<td>Bone/Joint Infections: Septic arthritis (including prosthetic joint), osteomyelitis</td>
</tr>
<tr>
<td>UTI</td>
<td>Proph UTI</td>
<td>Prophylaxis for urological infection (SP) or recurrent Urinary Tract Infection (MP)</td>
</tr>
<tr>
<td></td>
<td>Cys</td>
<td>Lower UTI</td>
</tr>
<tr>
<td>GUOB</td>
<td>Proph OBGY</td>
<td>Prophylaxis for OBstetric or Gynaecological surgery</td>
</tr>
<tr>
<td></td>
<td>OBGY</td>
<td>Obstetric/Gynaecological infections, Sexual Transmitted Diseases (STD) in women</td>
</tr>
<tr>
<td></td>
<td>GUM</td>
<td>Genito-Urinary Males + Prostatitis, epididymo-orchitis, STD in men</td>
</tr>
<tr>
<td>No defined</td>
<td></td>
<td></td>
</tr>
<tr>
<td>site (NDs)</td>
<td>BAC</td>
<td>Bacteraemia with no clear anatomic site and no shock</td>
</tr>
<tr>
<td></td>
<td>SEPSIS</td>
<td>Sepsis, sepsis syndrome or septic shock with no clear anatomic site</td>
</tr>
<tr>
<td></td>
<td>Malaria</td>
<td></td>
</tr>
<tr>
<td></td>
<td>HIV</td>
<td>Human Immunodeficiency virus</td>
</tr>
<tr>
<td></td>
<td>PUO</td>
<td>Pyrexia of Unknown Origin - Fever syndrome with no identified source or site of infection</td>
</tr>
<tr>
<td></td>
<td>PUO-HO</td>
<td>Fever syndrome in the non-neutropaenic Haematology–Oncology patient with no identified source of pathogen</td>
</tr>
<tr>
<td></td>
<td>FN</td>
<td>Fever in the Neutropenic patient</td>
</tr>
<tr>
<td></td>
<td>LYMHP</td>
<td>Infection of the lymphatics as the primary source of infection e.g suppurative lymphadenitis</td>
</tr>
<tr>
<td></td>
<td>Other</td>
<td>Antibiotic prescribed with documentation for which there is no above diagnosis group</td>
</tr>
<tr>
<td></td>
<td>MP-GEN</td>
<td>Drug is used as Medical Prophylaxis in general, without targeting a specific site, e.g. antifungal prophylaxis during immunosuppression</td>
</tr>
<tr>
<td></td>
<td>UNK</td>
<td>Completely Unknown Indication</td>
</tr>
<tr>
<td></td>
<td>PROK</td>
<td>Antimicrobial (e.g. erythromycin) prescribed for Prokinetic use</td>
</tr>
<tr>
<td>Neonatal</td>
<td>MP-MAT</td>
<td>Drug is used as Medical Prophylaxis for MATERNAL risk factors e.g. maternal prolonged rupture of membranes</td>
</tr>
<tr>
<td></td>
<td>NEO-MP</td>
<td>Drug is used as Medical Prophylaxis for NEWBORN risk factors e.g. VLBW (Very Low Birth Weight) and IUGR (Intrauterine Growth Restriction)</td>
</tr>
</tbody>
</table>

### Diagnostic codes

**Following anatomical site of infection**

For each site choose between:
- Therapeutic
- Prophylactic
  - Surgical
  - Medical

**Specific codes for neonates are available**
### APPENDIX III - Type of Indication

<table>
<thead>
<tr>
<th>Type of Indication</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>CAI</strong> Community acquired infection</td>
<td>Symptoms started &lt;48 hours from admission to hospital (or present on admission).</td>
</tr>
<tr>
<td><strong>HAI</strong> Healthcare-Associated Infection</td>
<td></td>
</tr>
<tr>
<td>- Symptoms start 48 hours after admission to hospital</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI1</strong> Post-operative surgical site infection (within: 30 days of surgery OR; 1 year after implant surgery)</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI2</strong> Intervention related infections including CR-BSI, VAP and C-UTI</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI3</strong> <em>C. difficile</em> associated diarrhoea (CDAD) (&gt;48 hours after admission or &lt;30 days after discharge from previous episode).</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI4</strong> Other hospital acquired infection (includes HAP, etc)</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI5</strong> Infection present on admission from another hospital (patient with infection from another hospital)</td>
<td></td>
</tr>
<tr>
<td>- <strong>HAI6</strong> Infection present on admission from long-term care facility (LTCF) or Nursing Home*</td>
<td></td>
</tr>
<tr>
<td><strong>SP</strong> Surgical prophylaxis</td>
<td><strong>SP1</strong> Single dose</td>
</tr>
<tr>
<td>For <em>surgical patients</em>, administration of prophylactic antimicrobials should be checked in the previous 24 hours in order to encode the duration of prophylaxis as either one dose, one day (= multiple doses given within 24 hours) or &gt;1 day.</td>
<td>See more explanation in protocol page 6 and 7!</td>
</tr>
<tr>
<td><strong>MP</strong> Medical prophylaxis</td>
<td>For example long term use to prevent UTI's or use of antifungals in patients undergoing chemotherapy or penicillin in asplenic patients etc.</td>
</tr>
<tr>
<td><strong>OTH</strong> Other</td>
<td>For example erythromycin as a motility agent (motilin agonist).</td>
</tr>
<tr>
<td><strong>UNK</strong></td>
<td>Completely unknown indication</td>
</tr>
</tbody>
</table>

Select 1 possibility for each reported antimicrobial

- Community acquired
- Nosocomial
- Prophylaxis
  - Surgical
  - Medical
- Other
Global-PPS data collection, entry and management

1. Data collection on paper forms:
   – Department (Ward) form (denominator data)
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URL:

http://app.globalpps.uantwerpen.be/globalpps_webpps/
Welcome Ann Verspotten, current survey: 2018 Global-PPS (May - Aug) current institution: University Hospital of Antwerp

My institution information

name: University Hospital of Antwerp

Address:
street: Wilrijkstraat
zip: 2650
city: Antwerp

Please don't forget to select your country, region, county and district, otherwise an error will be shown!!! You need to complete county, region, county and district. If your region, county or district are missing: contact: global-pps@uantwerpen.be

country: BELGIUM
region: VLAAMS GEWEST
county: Prov. Antwerp
district: Arr. Antwerpen
email: Global-PPS@uantwerpen.be

✓ teaching hospital
institution type: Tertiary

Save
Register each institution one by one. Ensure that the correct institution is activated during data entry (see black bar at the top of the page).
First define ‘each’ department within the hospital; these will appear later in the drop-down list during entry of survey data.
Each department “must have a unique name”
Activate your survey:
Go to Surveys/Available and select the appropriate Survey
For subsequent data-entry go to Surveys/Subscribed and click “select” for the appropriate Survey
Define your denominators by ward, one by one.

You will only be able to enter detailed patient data after completing the denominators in the ward form.
Here you see an overview of your wards. You can also edit the information if needed.
For combination products with an enzyme inhibitor: report ONLY the dose of the main antibiotic substance, NOT the enzyme inhibitor.

**Patient Form**

<table>
<thead>
<tr>
<th>Ward name</th>
<th>Activity (M, S, IC)</th>
<th>Survey Number</th>
<th>Patient Age</th>
<th>Weight in Kg</th>
<th>Gender (M or F)</th>
</tr>
</thead>
<tbody>
<tr>
<td>hawk</td>
<td></td>
<td>surveyNumber</td>
<td>40 Years</td>
<td>age</td>
<td>Male</td>
</tr>
</tbody>
</table>

**Antimicrobial Name**

Amoxicillin and enzyme inhibitor

**Single Unit Dose**

1 Unit (g, mg, or IU) g

**Doses/day**

3 Route (P, O, R, I) [P]-Parenteral

**Diagnosis**

[Pneu] - Pneumonia or ILRTI (lower respiratory tract infection)

**Indication**

[CAI] - Community acquired infection

**Reason In Notes**


**Guideline Compliance**

Yes

**Is a stop/review date documented**

No

**Treatment**

[E]-Empirical

**Treatment based on biomarker data**

No

---

Patient form
Survey number is provided after saving the patient onto the Global-PPS tool.

Do not forget to write down this number on the paper form!
Register extra users who will help you with data-entry for one, more or all hospitals.
Feedback of results to the sites

- Extraction of your own raw data allowing in-depth verification and analysis of your hospital results (excel file)
- **Comprehensive feedback report** ready to use for local presentations comparing the hospital results to average results for the country (if at least 3 participating hospitals) and region (continental results)
- Sites participating to multiple surveys receive a **longitudinal feedback report** integrating all time points (2015, 2017, three surveys in 2018)
## Antimicrobial prevalence in adult wards

<table>
<thead>
<tr>
<th></th>
<th>Total</th>
<th>AMW</th>
<th>HO-AMW</th>
<th>T-AMW</th>
<th>P-AMW</th>
<th>ASW</th>
<th>AICU</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Our hospital</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients (N)</td>
<td>286</td>
<td>153</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>115</td>
<td>18</td>
</tr>
<tr>
<td>treated patients (%)</td>
<td>45.5</td>
<td>34.6</td>
<td>0</td>
<td>0</td>
<td>0</td>
<td>56.5</td>
<td>66.7</td>
</tr>
<tr>
<td><strong>Country</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients (N)</td>
<td>2504</td>
<td>1333</td>
<td>57</td>
<td>0</td>
<td>0</td>
<td>888</td>
<td>226</td>
</tr>
<tr>
<td>treated patients (%)</td>
<td>36.9</td>
<td>31.9</td>
<td>17.5</td>
<td>0</td>
<td>0</td>
<td>39.2</td>
<td>62.8</td>
</tr>
<tr>
<td><strong>Continent</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients (N)</td>
<td>4122</td>
<td>1942</td>
<td>92</td>
<td>41</td>
<td>8</td>
<td>1571</td>
<td>468</td>
</tr>
<tr>
<td>treated patients (%)</td>
<td>36.7</td>
<td>31.8</td>
<td>28.3</td>
<td>65.9</td>
<td>50</td>
<td>37</td>
<td>55.1</td>
</tr>
<tr>
<td><strong>Hospital type</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients (N)</td>
<td>4069</td>
<td>1910</td>
<td>92</td>
<td>41</td>
<td>8</td>
<td>1571</td>
<td>447</td>
</tr>
<tr>
<td>treated patients (%)</td>
<td>36.7</td>
<td>31.8</td>
<td>28.3</td>
<td>65.9</td>
<td>50</td>
<td>37</td>
<td>55.5</td>
</tr>
<tr>
<td><strong>Europe</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>patients (N)</td>
<td>54690</td>
<td>29625</td>
<td>1947</td>
<td>192</td>
<td>1878</td>
<td>18084</td>
<td>2964</td>
</tr>
<tr>
<td>treated patients (%)</td>
<td>31.9</td>
<td>26.1</td>
<td>40.6</td>
<td>74.5</td>
<td>52</td>
<td>33.4</td>
<td>59.3</td>
</tr>
</tbody>
</table>

Patients (N) = number of admitted adults.
Treated patients (%) = 100*(number of adults treated with at least one antimicrobial/number of admitted adults).

GL: Continent: South America; Hospital type: Tertiary hospital
Overall proportional antibiotic use (2017)

Our hospital (N= 170 treated patients)
- 40.9%
- 13.2%
- 2.1%
- 1.5%
- 5%
- 2.6%
- 12.6%

Country (n= 9 hospitals)
- 37.3%
- 13.6%
- 20%
- 0.8%
- 3.7%
- 8.9%
- 15%

Africa
- Continent (n= 30 hospitals)
- 40.2%
- 19.7%
- 2.4%
- 3.6%
- 7.4%
- 10.2%

Tertiary care hospitals Africa
- Hospital type (n= 12 hospitals)
- 36.6%
- 20.7%
- 2.6%
- 3.8%
- 8.9%
- 10.8%

Europe (N= 102 hospitals)
- 26.9%
- 35%
- 4.3%
- 4.7%
- 3.3%
- 13.5%

Legend:
- Tetracyclines
- Amphenicols
- Penicillins
- Other beta-lactams
- Sulfonamides and Trimethoprim
- Macrolides, Lincosamides and Streptogramins
- Aminoglycosides
- Quinolones
- Other antibacterials

Percentage of antibacterials for systemic use (ATC J01) at ATC3 level (pharmacological subgroup). Proportional antibiotic use below 0.5% is not reported. ICU patients refers to patients treated on an ICU department recorded with activity IC.

Country: ; Continent: Africa ; Hospital type: Tertiary hospital If there are less than three participating hospitals, results are not reported.
Top 5 most frequently used antibiotics for surgical prophylaxis in adults and children (2017)

- Cefazolin
- Amoxicillin and enzyme inhibitor
- Cefuroxime
- Cefixime
- Ciprofloxacin
- Cefpodoxime
- Metronidazole Parenteral
- Ceftriaxone

Top 5 most prescribed antibacterials for systemic use (ATC code J01) for surgical prophylaxis use at hospital level, supplemented with the most prescribed antibiotics at country, continent and hospital type level if they do not fall within the top 5 of the hospital. Selection on indication = SP; All patients are included with exception of patients admitted on NMW and NICU.

Continent: Africa; Hospital type: Tertiary hospital there are less than three participating hospitals, results are not reported.

Example of Feedback
### Antibiotic quality indicators – adult wards (2017)

<table>
<thead>
<tr>
<th></th>
<th>Hospital</th>
<th>Country</th>
<th>Continent</th>
<th>Hospital type</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>Medical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason in notes</td>
<td>74</td>
<td>96.1</td>
<td>281</td>
<td>66.3</td>
<td>649</td>
</tr>
<tr>
<td>Guidelines missing</td>
<td>66</td>
<td>85.7</td>
<td>271</td>
<td>63.9</td>
<td>429</td>
</tr>
<tr>
<td>Guideline compliant</td>
<td>3</td>
<td>37.5</td>
<td>17</td>
<td>48.6</td>
<td>221</td>
</tr>
<tr>
<td>Stop/review date documented</td>
<td>75</td>
<td>97.4</td>
<td>129</td>
<td>30.4</td>
<td>238</td>
</tr>
<tr>
<td><strong>Surgical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason in notes</td>
<td>173</td>
<td>100.0</td>
<td>658</td>
<td>80.3</td>
<td>1015</td>
</tr>
<tr>
<td>Guidelines missing</td>
<td>169</td>
<td>97.7</td>
<td>553</td>
<td>67.5</td>
<td>739</td>
</tr>
<tr>
<td>Guideline compliant</td>
<td>0</td>
<td>0.0</td>
<td>29</td>
<td>45.3</td>
<td>242</td>
</tr>
<tr>
<td>Stop/review date documented</td>
<td>173</td>
<td>100.0</td>
<td>357</td>
<td>43.6</td>
<td>505</td>
</tr>
<tr>
<td><strong>ICU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reason in notes</td>
<td>4</td>
<td>100.0</td>
<td>20</td>
<td>76.9</td>
<td>139</td>
</tr>
<tr>
<td>Guidelines missing</td>
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<td>6</td>
<td>23.1</td>
<td>71</td>
</tr>
<tr>
<td>Guideline compliant</td>
<td>0</td>
<td>0.0</td>
<td>2</td>
<td>66.7</td>
<td>100</td>
</tr>
<tr>
<td>Stop/review date documented</td>
<td>4</td>
<td>100.0</td>
<td>6</td>
<td>23.1</td>
<td>48</td>
</tr>
</tbody>
</table>

**Need to develop antibiotic guidelines!**

Antibiotic quality indicators by activity (medical, surgical, ICU) for patients admitted on adult wards receiving antibacterials for systemic use (ATC J01).

- For reason in notes and stop/review date documented: Count at antibacterial level.
- For guidelines missing: Count on NA (= no local guidelines for the specific indication) at patient level and diagnosis over total scores for this indicator.
- For guideline compliance: Count at patient level and diagnosis for compliance = yes or no only. For combination therapy with >1 antibiotic: if 1 antibiotic by diagnosis is not compliant, this combination therapy as a whole for this diagnosis will be counted as non-compliant. If there are less than three participating hospitals, results are not reported.
Duration of surgical prophylaxis in adults and children (2017)

- **Our hospital** (N = 74 patients):
  - Prolonged surgical prophylaxis is very common!

- **Country** (N = 350 patients):
  - Prolonged surgical prophylaxis is very common!

- **Africa** (N = 712 patients in 4 countries):
  - Prolonged surgical prophylaxis is very common!

- **Tertiary hospital** (N = 511 patients):
  - Prolonged surgical prophylaxis is very common!

- **Europe** (N = 1770 patients in 13 countries):
  - Prolonged surgical prophylaxis is very common!

Legend:
- Green: single dose
- Orange: One day
- Red: More than one day

Example of Feedback
## Type of antibiotic treatment by activity

<table>
<thead>
<tr>
<th></th>
<th>Hospital</th>
<th>Country</th>
<th>Continent</th>
<th>Hospital type</th>
<th>Europe</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>N</td>
<td>%</td>
<td>N</td>
<td>%</td>
<td>N</td>
</tr>
<tr>
<td><strong>All patients</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empiric</td>
<td>100</td>
<td>86.2</td>
<td>855</td>
<td>71.1</td>
<td>1316</td>
</tr>
<tr>
<td>Targetted</td>
<td>16</td>
<td>13.8</td>
<td>348</td>
<td>28.9</td>
<td>4509</td>
</tr>
<tr>
<td><strong>Medical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empiric</td>
<td>29</td>
<td>78.4</td>
<td>346</td>
<td>68.1</td>
<td>566</td>
</tr>
<tr>
<td>Targetted</td>
<td>8</td>
<td>21.6</td>
<td>162</td>
<td>31.9</td>
<td>253</td>
</tr>
<tr>
<td><strong>Surgical</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empiric</td>
<td>54</td>
<td>91.5</td>
<td>321</td>
<td>77.9</td>
<td>453</td>
</tr>
<tr>
<td>Targetted</td>
<td>5</td>
<td>8.5</td>
<td>91</td>
<td>22.1</td>
<td>165</td>
</tr>
<tr>
<td><strong>ICU</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Empiric</td>
<td>17</td>
<td>85.0</td>
<td>188</td>
<td>66.4</td>
<td>312</td>
</tr>
<tr>
<td>Targetted</td>
<td>3</td>
<td>15.0</td>
<td>95</td>
<td>33.6</td>
<td>188</td>
</tr>
</tbody>
</table>

Selection on antibiotic treatments (prophylactic prescribing is excluded) by activity.

N = number of antibiotics (J01) included per type of treatment and activity (medical, surgical, ICU).

Country: CL; Continent: South America; Hospital type: Tertiary hospital
Outline

• Introduction to PPS

• Support: method – tool

• Communication: various ways!
  ➢ Local, national, International

• Networking: seek support for your efforts

• Discussion
Communication

• Local – hospital
• National/regional: local meetings, local congresses, MoH
• International : congresses, consolidation of data (ECCMID, ICAN)
This hospital is participating in a worldwide study: ‘The GLOBAL POINT PREVALENCE SURVEY’ on Antimicrobial Consumption and Resistance

What is it all about?

- Data collection on antibiotic prescription patterns and resistance in the hospital
- Comparison of national and worldwide data
- Identification of feasible targets to improve antibiotic prescribing
- Combat antibiotic resistance

Contact person: “enter name and/or department”

Promote and get support for this study in your hospital, modify the posters available at http://www.global-pps.com/documents/ and post them on walls in your hospital
Communication plan example of Nigeria (ECCMID 2016)

- Disseminate findings at local levels
  - Hospital grand round
  - to disseminate PPS findings
  - Set up stewardship teams in various dept
  - Initiate writing of guidelines
  - Choose ASP strategies

- Encourage participation of more hospitals

- Call for awareness at the National level
  - Presentation of results at meetings
Lagos, Nigeria

- The hospital management officially sent an antibiotic policy based on our PPS data to all clinical departments.
- The chosen stewardship strategy in the dept of Paediatrics (prospective audit and feedback) is being implemented now.
- Dept of Surgery has inaugurated an antibiotic team and started writing guidelines.
- A clinical meeting held in internal medicine to raise awareness.
- Other departments are already sensitized and have given invitation to the hospital stewardship committee for interaction.
The results of the 2015 Global-PPS have been communicated during various congresses.

An overview:

- World HAI/Resistance Forum 2015
- Infectious Diseases Society of America 2015
- Baltic Paediatric Congress 2015
- ECCMID Amsterdam 2016
- AMMI Conference Canada 2016
- Gulf Congress of Clinical Microbiology & Infectious Disease, May 2016, Dubai, UAE
- Paediatric Infectious Diseases Meeting – ESPID 2016
- The 10th International Congress on Clinical Microbiology in Sanandaj, Kurdistan, Iran
- The Institut Pasteur International Network Symposium 2016, Paris, France
- The 2017 BSAC Spring conference: The Global Challenge of Multi-drug Resistant Gram Negative Bacterial Infections
- ECCMID congress, Vienna 2017
- 10th European Congress on Tropical Medicine and International Health, Antwerp, Belgium, 2017
- The 11th Professor Alborzi International Clinical Microbiology Congress, 21 – 23 November 2017, Shiraz, Iran
- 29th international Congress of Pediatrics, 26 – 29 October 2017, Tehran, Iran
- ECCMID Madrid 2018
- Congreso SEIMC (Sociedad Española de Enfermedades Infecciosas y Microbiología Clínica), Bilbao, Spain, 2018
Global PPS 2015 and 2017

- Final results presented during ECCMID 2016 and ECCMID 2018
- Global and local publications and communications on-going
- Brochure including all communications
Outline

• Introduction to PPS

• Support: method – tool

• Communication: various ways!

• Networking: seek support for your efforts

• Discussion
Networking

• Regional coordinators!
  – Bring together new partners/participants
    • G-PPS expert from Singapore went to the Philippines to train a hospital network under lead of MoH
  – Possible overseas support (skype or other way of communication)

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

• Contract signed with

• University of Antwerp: connecting people
Networking: Global-PPS is first step towards effective stewardship

- Annual Global-PPS meeting at ECCMID
- New 2018: 3 grants from bioMérieux for training to the University of Antwerp, Belgium
Networking

ONLINE COURSE

Challenges in Antibiotic Resistance: Point Prevalence Surveys

Learn how to use Point Prevalence Surveys (PPS) to measure antibiotic consumption and fight antimicrobial resistance.

Learn now "how to use Point Prevalence Surveys (PPS)
to measure antibiotic consumption and fight antimicrobial resistance".

This module is developed by BSAC, hosted by FutureLearn and consolidated by the University of Antwerp.

This course has been designed for healthcare professionals involved in the management of infection. It aims at educating healthcare professionals in point Prevalence Surveys. It assumes no prior knowledge of the topic.
Outline

• Introduction to PPS
• Support: method – tool
• Communication: various ways!
• Networking: seek support for your efforts
• Discussion
Global PPS – continuous evaluation and improving – Survey results

A simple questionnaire evaluated the Global-PPS (116 answers)

- I will participate again if a second PPS would be organised.

- I will analyse the data provided to me in excel.
Key message: meaningful comparisons

- **Uniformity of data collection** - standardized protocol and data collection templates enabling the collection of valid and comparable antimicrobial consumption data
- **Simple protocol and web-based tool** for data entry and validation = feasible & achievable surveillance
- **Quality assurance approach** – implementation of data validation process
- **Central support** toward data collection or other (helpdesk, FAQ, IT manual)
- **Continuous work on data accuracy**
- **Opportunity to stimulate local networking**
- **Mutual cooperation/feedback** is highly motivating
Key message: toward data interpretation

- **Instant web report** per hospital with quantifiable outcome measures and targets for quality improvement of antibiotic treatment and prophylaxis.

- **Enables in-depth interpretation** of antimicrobial consumption data at different levels (geographical, institutional and patient characteristics).

- **Creation of reference database** for scientific research and hypothesis formulation at national and international level (data are safeguarded at the University of Antwerp, Belgium).

- **Data-sharing** upon agreement with all partners; **publication policy** is available at global-PPS@uantwerpen.be
Features of the Global-PPS

- Tool for assessing interventions to improve antibiotic prescribing in hospitals when PPS is repeated
- Consistency and reproducibility
- Continually improve healthcare quality
- Combat antibiotic resistance
- Improve antibiotic use for better patient health

“sustained awareness”
Pitfalls of the Global-PPS

- 1-day PPS = cross-sectional snapshot of prescribing practice
  - Seasonal variation (but three surveys in 2018)
- No risk factors in denominator data except for institutional factors (hospital and ward type, geographical localization)
- Lack of standardized clinical information
  - Diagnosis refers to what the clinician tends to treat (for example pneumonia)
- Self-training on protocol and web-based data entry; however helpdesk is available
- No information on therapeutic antimicrobial course duration
Global PPS - Testimonials

« Definitely I will participate especially after we apply antimicrobial stewardship in our hospital and this will give us comparative data before and after this intervention, this will be the 3rd survey for my hospital ». (Testimonial from Saudi Arabia)

“We just conducted the Global PPS study. All patients have now also been entered into the database. We wanted to thank the helpdesk for their cooperation, as such this study could run very smoothly.” (Testimonial from Belgium)
Global PPS - Testimonials

“We followed your advice and made a survey team and it was such a nice opportunity for us to develop nice interaction, to further develop our extremely good cooperation. It was extremely useful that we surveyed together most of the wards. It was easier than we expected, staff were very collaborative and efficient, and we were very surprised how well it was achieved, having in mind that we did not opt to distribute posters and other stuff. It seems that people liked and welcomed our action. We hope that we will continue to collaborate with you, we are looking forward for any kind of collaboration!” (testimonial from Serbia)
Contact
global-PPS@uantwerpen.be

Any hospital can participate
Ready to join us?
URL: www.global-pps.com
We can’t change the direction of the wind, but we can adjust the sails.

(Indian proverb)