Global Point Prevalence Survey of

Antimicrobial Consumption and Resistance

(2023 GLOBAL-PPS)

URL : www.Global-PPS.com

PROTOCOL to collect inpatient prescribing data

-version April 2023 -

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Timeline: three surveys will be available each year to allow investigating seasonal variation:

Data should be "collected" within 3 predefined time frames/year:
- January–April 2023
- May-August 2023
- September-December 2023

Herewith, data collection should be finished within the period it was started. Data entry into the Global-PPS tool is possible at least up to one month after the predefined period.

**Any hospital from any country worldwide is welcome to participate.
Hospitals can choose one or more appropriate periods of participation.**

April 2023 version of protocol :
- Addition of a fully integrated outpatient module
- Minor changes to the inpatient module (e.g. reason missed doses: addition "declined")

February 2022 version of protocol : changes with respect to the January 2021 version of the protocol:
- Addition of intramuscular (IM) administration of antimicrobials next to intravenous (IV) administration.
- Addition of optional variable "missed doses" and "reason of missed doses" in the basic patient form.
- More in-depth clarification on how to include patients on surgical prophylaxis.
- Addition of 'stool' in list of sample types for 'cultures sent to the lab'.
- Addition of 'IS-AMW (isolation ward)' and 'AHDU (High Dependency Unit)' in ward form.

January 2021 version of the protocol : changes with respect to the May 2020 version of the protocol:
- Clarification 'Non-invasive positive and negative mechanical ventilation (CPAP, BiPAP, CNEP,...)' in the denominator and numerator.

May 2020 version of the protocol : changes with respect to February 2020 version of the protocol:
- addition of 'COVID-19' in Appendix II – diagnostic codes of the data collection templates p 7.
- addition of 'Non-invasive mechanical ventilation (CPAP, BiPAP, CNEP)' in the denominator (ward form, see data collection templates p1) and numerator (HAI patient form, see data collection templates p4).
- update of the antimicrobial list with Remdesivir. All other drugs currently used to treat COVID-19 were already on our antimicrobial list available at https://www.global-pps.com/documents/

Contents

THE DATA COLLECTION FORMS AND APPENDICES ARE AVAILABLE AS A SEPARATE DOCUMENT TO THIS PROTOCOL:

FORMS:
- ➢ WARD FORM
- ➢ PATIENT FORM
- ➢ HAI- PATIENT FORM - ADDITIONAL VARIABLES FOR HAI MODULE (Optional)
- ➢ HOSPITAL PROFILE (Optional)

APPENDICES:
- ➢ APPENDIX I: Combination anti-infective agents
- ➢ APPENDIX II : Diagnostic codes
- ➢ APPENDIX III : Type of Indication
- ➢ APPENDX IV: List of micro-organisms by resistance type

- **Print one ward form for each different ward.**
- **Print one patient form <u>for each patient on antimicrobials.</u>**
- **Print one patient form "additional variables for HAI module" <u>for each patient on antimicrobials.</u>**
- **No need to fill in the basic and the HAI patient form for patients <u>not</u> on antimicrobials !**

BACKGROUND - AIMS

The Global Point Prevalence Survey (Global-PPS or G-PPS) is a simple, freely available web-based tool to measure and monitor antimicrobial prescribing and resistance in hospitals worldwide (www.global-pps.com). The Global-PPS has established a global network of hospitals conducting point prevalence surveys and provides quantifiable measures to assess and compare quantity and quality of antimicrobial prescribing, prevalence of health-care associated infections (HAI) and resistance in hospitalized adults, children and neonates worldwide

The Global-PPS was first piloted in 2014, with worldwide studies conducted in 2015[1] and 2017. Since 2018, three survey a year are available. The Global-PPS is coordinated at the University of Antwerp, Belgium and sponsored through an unrestricted grant given to them annually by bioMérieux.

Over 1300 institutions from more than 90 different countries worldwide have participated at least once in the Global-PPS. As a result, the database now includes more than 500,000 patients allowing benchmarking of hospitals from similar settings (hospital types or departments such as intensive care, hemato-oncology, internal medicine and surgery), in the same country, region and time periods.

We observed many interesting findings following these Global-PPS. For instance, penicillin with β-lactamase inhibitors, third-generation cephalosporins, and fluoroquinolones were the three most prescribed antimicrobials worldwide, reflecting high rates of prescribing of mainly broad-spectrum antibiotics. Carbapenems were most frequently prescribed in Latin America and West- and Central Asia. Most of these antibiotics were prescribed for empirical use, illustrating the lack of diagnostics to document infections. Local antibiotic guidelines were missing for 7,050 (19.2%) of the 36,792 antibiotic prescriptions. Guideline compliance was 77.4%. Finally, one of the main problems of prolonged antibiotic use was peri-operative prophylaxis (overall, duration of antibiotic peri-operative prophylaxis was more than one day in about 80% of surgical patients in low-and middle-income countries (LMIC)).[2]

The Global-PPS complies with the WHO global action plan on antimicrobial resistance as requested by the Health Assembly in resolution WHA67.25, May 2014[2]. The goal of the global action plan was to ensure continuity of successful treatment and prevention of infectious diseases with effective and safe medicines that are quality-assured, used in a responsible way, and accessible to all who need them. The Global-PPS responds to its strategic objectives in order to meet the goal: (1) improve awareness and understanding of antimicrobial resistance; (2) strengthen knowledge through surveillance and research; (3) reduce the incidence of infection; (4) optimize the use of antimicrobial agents; and (5) ensure sustainable investment in countering antimicrobial resistance. As such, the Global-PPS has been instrumental in informing stewardship activities in many participating hospitals[3]. By providing all hospitals with a personalised feedback report, the Global-PPS allows local teams to identify targets for antimicrobial stewardship without the need to invest time and resources in complex data analyses.

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[1] Versporten A, Zarb P, Caniaux I, Gros MF, et al. Antimicrobial consumption and resistance in adult hospital inpatients in 53 countries: results of an internet-based global point prevalence survey. Lancet Glob Health. 2018;**6**:e619-e629.
[2] World Health Organization, 2015. Global Action Plan on Antimicrobial Resistance. ISBN 978 92 4 150976 3. http://www.wpro.who.int/entity/drug_resistance/resources/global_action_plan_eng.pdf
[3] Pauwels I, Versporten A, Vermeulen H, et al. Assessing the impact of the Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS) on hospital antimicrobial stewardship programmes: results of a worldwide survey. Antimicrob Resist Infect Control. 2021 Sep 28;10(1):138.

Main aims of the Global-PPS

➢ Survey performance indicators and *identify targets for quality improvement of antimicrobial prescribing and HAI* (e.g. duration of peri-operative prophylaxis; compliance with local hospital guidelines; prevalence of HAI amongst invasive procedures) *(identify burden!)*

➢ Helps in designing hospital interventions that aim at *promoting prudent use of antimicrobials as well as the prevention of HAIs (change practice!)*

➢ Allows to assess the effectiveness of such interventions, through repeated PPS *(measure impact!)*

The Global-PPS tool supports the concept of "simplicity and feasibility". Moreover, detailed information on patients, antimicrobial use and indicators with respect to HAI is only requested from patients receiving at least one antimicrobial on the day of the PPS; and denominator data is collected separately at ward level. In practice, this means that for a 400-bed hospital (and 100% bed occupancy) and an estimated antimicrobial prevalence of 40%, detailed information only needs to be collected for 160 patients (and not for 400 patients). In this way, the Global-PPS provides an easy hands-on tool that can be repeated easily to support stewardship programs.

This tool has illustrated many core benefits:

➢ The web-based tool is easy to use, requiring minimal training for data entry;
➢ The hospital is able to download a real-time one-point and longitudinal feedback report which can be used for local communications and presentations;
➢ There is evidence of consistency and reproducibility with the data entry using this tool;
➢ Participation in the survey has encouraged thorough engagement and feedback, enhancing communication between prescribers and the local infection community;
➢ The Global-PPS enables sharing best practices and raises awareness of inappropriate antimicrobial prescribing with broad adaptability and suitability for a range of health care resource settings.

GLOBAL-PPS PROTOCOL SPECIFICS

1.   Time planning for the PPS

Any participating hospital must complete the Point Prevalence Survey (PPS) within a maximum of *4 consecutive weeks* from the time when the hospital starts data collection.

Data should be collected within three proposed time frames a year:

> o   January–April 2023
> o   May-August 2023
> o   September-December 2023

2.   Departments involved

The departments are grouped into medical and surgical adult departments, adult intensive care units, paediatric and neonatal departments (see page 12: "Prepare hospital department list" and in the data collection forms (Page1, ward form)).

All wards (or units/departments) within the participating hospital should preferably be included if you participate for the very first time. Bigger hospitals who have participated to one or more of the previous surveys can *participate with a number of wards (subsample)* of the hospital, but they need to include all wards for a certain "main" activity (medical, surgical, ICU): for example include all adult ICU wards, all adult surgical wards, all adult medical wards or all child medical wards. This is needed to allow the collection of sufficient data by "activity" and subsequently the calculation of valid rates by activity. For smaller hospitals (± <200 to 250 beds), it remains advisable to survey the whole hospital!

Each ward included into the survey has to be surveyed **only once on a single day** in order to calculate correctly the denominator (number of admitted patients). However, different wards can be surveyed on different days.

Each hospital shall decide on which days data collection shall take place (depends on the size of the hospital and own organization) as long as it is within the stipulated time frame.

3.   Inclusion criteria

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 are to be included in the numerator (i.e., a patient form is to be filled in for these patients only).

➤ Definition of "*on antimicrobial agents"* :

o   A patient receiving an antibiotic e.g. every 48 hours but not receiving this antibiotic on the survey day must be included = ongoing antimicrobial treatment.

o   An antibiotic prescribed at one o'clock (during the ward round or when results become available or for surgical prophylaxis) in the afternoon on the day of the survey must **not** be included (not active or ongoing at 8 o'clock in the morning).

➤ Include **new-born healthy children** on a maternity ward. Encode this ward as a supplementary neonatal medical ward (NMW).

How to encode antibiotics for surgical prophylaxis (SP) ?

Surgical Wards (PSW, ASW) **should be surveyed on the day following the day when most elective surgical interventions usually take place or have been planned**; in order to capture information about surgical prophylaxis in the previous 24 hours. (e.g. If a surgical ward mainly has surgeries planned on Tuesdays, then the ward should be surveyed on Wednesday).

The administration of antibiotics for SP **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 in one day) or >1 day. This means that patients admitted on the ward at 8am on the day of the PPS, and who received SP '**before**' 8am on the day of the PPS, will be included in the survey. For those patients, a patient data collection form needs to be completed to capture information on the antibiotic(s) prescribed for SP!

1. **include all prescribed antimicrobials not stopped at 8am or initiated on the dot at 8am** for all therapeutic or prophylactic indications including surgical prophylaxis (SP still ongoing on the day of the PPS = SP>1 day (SP3)).

2. **include also those antimicrobials prescribed for SP and administered the day before the PPS** (=the day most interventions were planned) to allow capturing whether the SP was one dose (SP1) or multiple doses and stopped the day before the PPS (SP2), in addition to SP>1 day (SP3).

All these antimicrobials need to be added on the patient form.

For more detailed examples of how to encode antimicrobials for SP, see also table below**:**

Patients who receive surgical prophylaxis after 8am on the day of the PPS are NOT included in the survey (see exclusion criteria).

Include patients on surgical prophylaxis marked in green:

>1 day before PPS	Day before PPS	Day of PPS at 8am	Real Total duration	How to Code
SP	SP	SP	>1 day (24 h)	SP3
SP	SP	/	>1 day (24 h)	SP3
/	SP	SP (not being stopped at 8 am)	>1 day (24 h)	SP3
SP	/	/	no SP in the previous 24h	/
/	1 dose SP	/	1 dose	SP1
/	>1 dose SP	/	1 day (24h)	SP2
/	Total doses = 24h cover [part on day before PPS and part on day of PPS] (e.g. 3 doses each 8h or 4 doses each 6h)		1 day (24h)	SP2
/	/	1 dose SP between midnight and 8 am	1 dose	SP1
/	/	SP started today after 8 am irrespective of whether there is a stop-date or not	no SP	/

Intensive Care and Medical wards (all other wards) can be surveyed at any weekday except on weekends or bank holidays.

4. Exclusion criteria

➢ Exclude day hospitalizations and outpatients. These are defined as ambulatory care patients. So, data from "day" surgery and "day" hospital units should be excluded from the survey.

➢ Exclude patients admitted after 8 o'clock on the day of the survey (even though these would be present by the time the survey is carried out). All patients/wards falling in the exclusion criteria must be excluded from BOTH the numerator and denominator data.

5. Denominator data

> ***Total number of admitted <u>inpatients</u> at 8 am*** of the ward surveyed. Do not collect data from patients discharged before 8 o'clock and/or patients admitted after that time. In the Ward Form, the denominator refers to the total number of eligible admitted patients on the ward at 8 o'clock.

> ***Total number of available <u>beds</u> attributed to inpatients <u>at 8 am</u>*** of the ward surveyed. This means the number of total inpatient beds at the time of the survey. Total number of beds includes occupied beds + empty beds.
> N beds should always be ≥ N admitted inpatients present at 8 o'clock (=occupying a bed) on the survey day.

> For the optional HAI-module add also the "***Total number of admitted inpatients having an invasive device inserted at 8 am*** on the survey day". Denominators for 6 different devices need to be completed (see data collection 'Ward form').

6. Included antimicrobial agents.

- ***Antibacterials for systemic use***: J01
- ***Antimycotics and antifungals for systemic use***: J02 & D01BA (including griseofulvin and terbinafine)
- ***Drugs for treatment of tuberculosis***: J04A (these are the antibiotics as well as all other drugs to treat tuberculosis)
- ***Antibiotics used as intestinal anti-infectives***: A07AA
- ***Antiprotozoals used as antibacterial agents, nitroimidazole derivatives:*** P01AB
- ***Antivirals for systemic use***: J05
- ***Antimalarials***: P01B

Antimicrobials for topical use are excluded from the survey.

The Global-PPS tool provides the list of all antimicrobials to be surveyed according to the WHO ATC classification[4]. The antimicrobial list (excel) is available at www.global-pps.com/documents. The file contains all substances with their route of administration. The file also provides information on the antimicrobial (sub)classes. In case a drug is not in the provided list, contact Global-PPS@uantwerpen.be

7. Multidisciplinary team

The hospitals are invited to create a multidisciplinary team of colleagues familiar with reading patient notes and having adequate knowledge on local guidelines (e.g., infectious disease specialists, microbiologists, pharmacists, infection control specialists, nurses or other healthcare professionals). A ***<u>local administrator</u>*** has to be assigned and he/she will be the main contact person for the Global-PPS Coordinating Centre & Technical Support team at the University of Antwerp, Belgium.

The local administrator is responsible for:
- the online registration of the hospital(s),
- entering patient-specific data into the *Global-PPS tool*,
- the data validation and
- the production of the local feedback reports.

Extra hospital users may, however, be registered within the Global-PPS tool in order to help the local administrator with data entry (see IT manual – add supplementary hospital users, for more information with respect to centralized data entry by a network coordinator; available at www.global-pps.com/documents).

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[4] http://www.whocc.no/atc_ddd_index/

8. Data Privacy

A sequence number will be assigned to each *hospital* after registration in the Global-PPS tool. Hospital names will never be revealed in any report or publication without approval from the participant (e.g. for peer-reviewed articles).
Patients are completely anonymised in the Global-PPS tool. Every patient record will be given a unique not identifiable survey number. This number is automatically generated by the computer program, based on several internal codes. This number identifies the patient uniquely in the *GLOBAL-PPS* database. For more information, consult the data privacy excerpt (contact global-pps@uantwerpen.be).

9. Data ownership

- Data are the property of the respective hospital.
- The Global-PPS Coordinating Centre & Technical Support team at the University of Antwerp, Belgium is guardian of the data within the database;
  - ➢ will analyse the data and generate reports. These analyses and reports are property of the Global-PPS;
  - ➢ encourages country- and/or region-specific analyses.

For more information, consult the data privacy excerpt (contact global-pps@uantwerpen.be).

10. Ethical approval

For approval by ethical committee & privacy legislation requirements, the Global-PPS Coordinating Centre & Technical Support team can provide, on request, a letter that can be submitted to hospitals ethical committees (contact Global-PPS@uantwerpen.be).

11. Technical support

The Global-PPS Coordinating Centre & Technical Support team at the University of Antwerp provides a "help desk" for software or any other issues encountered and/or questions during the data collection and data entering (Global-PPS@uantwerpen.be). They will continually be available for general queries about the project.

The Global-PPS tool https://app.globalpps.uantwerpen.be/globalpps_webpps/ offers:

1. internal checks in order to avoid invalid or erroneous figures (e.g. for out-of-range values)
2. boxes popping up in order to guide you to fill out a field
3. help functions which provides supplementary information on each screen (on top, left side of screen)
4. Help pages, IT manual, "FAQ" list.

Web page layout for the forms will be similar to the paper version.

Regular backups of the database will guarantee the integrity of data.
The format to export data is Microsoft Excel®.

The software and database are hosted on a server at the University of Antwerp in Belgium, Europe. The Global-PPS Coordinating Centre & Technical Support team can provide more details on ensured data protection and safeguarding (contact global-PPS@uantwerpen.be) .

12. **Publication policy**

The Global-PPS Coordinating Centre & Technical Support team should look for opportunities for dissemination and encourage country-specific analyses. For publications at national or regional level, **participants need to comply with the publication strategy** as designed by the Global-PPS Coordinating Centre & Technical Support team. The publication strategy will guide you on how to proceed. The publication policy is available at www.global-pps.com/documents.

13. **The optional Healthcare-Associated Infection (HAI) module**

This module enables to survey healthcare-associated infections in more detail, allowing analyses of additional quality indicators. The main focus lies on the presence of invasive devices.

The module is optional, but once a participating hospital decides to sign up for this module, **an HAI form needs to be completed for each patient receiving an antimicrobial on the day of the PPS**. This additional patient form includes 4 mandatory variables and 3 optional variables. All variables referring to a date are also optional to complete (see this protocol p 20; and data collection templates p 4).

The additional denominators, collected at ward level, are available on the ward form and are mandatory to be completed if a hospital chooses to include the optional HAI module (see data collection templates, ward form, page 1).

The Global-PPS collects information about the indication for antimicrobial prescriptions. This is to be interpreted as <u>what the clinician aims at treating</u>. To obtain this information the investigator should be looking at all [medical, nursing and drug prescription chart] patient records. If the information available is not sufficient, surveyor/s may request additional information from nurses, pharmacists or doctors caring for the patient. Searching for information from other sources such a laboratory computer systems, phoning laboratories *etc.,* is not required.

**At no point shall there be any discussion about the appropriateness
(or lack thereof) of the prescribed medication.
The ward staff MUST NOT feel evaluated at the individual level**.

Before the hospital submits any patient data to the WebPPS, the following steps must be completed:

Hospitals who have participated in the Global-PPS previously need to login with their existing password which is linked to an email address! Only then, you will be able to activate a new survey using the same hospital number as the one which was attributed to you previously. Only then, you will be able to download a longitudinal feedback including results on previous surveys you conducted.

If you lost your login, or if you are a new participant/member for a hospital who participated in previously, contact Ann/Ines at global-pps@uantwerpen.be

Applicable for hospitals who participate for the very first time:

1. *Register yourself and the hospital on the Global-PPS website :*

First-time participants **for "hospitals who never participated" to the Global-PPS** need to register themselves on https://app.globalpps.uantwerpen.be:8443/globalpps_webpps/register. They will receive an email to confirm their email address (in order to avoid spam registration). Thereafter they can login on the Global-PPS tool (do not forget to tick the captcha): https://app.globalpps.uantwerpen.be:8443/globalpps_webpps/login.

Thereafter the participant needs to **register the hospital(s) on the Global-PPS tool** (see IT manual available online: www.global-pps.com/documents). The person who registers the hospital for the very first time will be the local administrator. He/she has access to all functionalities of the program. Included hospital types[5] are primary, secondary, tertiary, specialized, infectious diseases and paediatric hospitals.

The local administrator can **add extra users** in order to give other person(s) the rights to enter data as well for his hospital (see IT manual at www.global-pps.com/documents).

Applicable for hospitals who participated at least once to any of the previous Global-PPS:

Second and subsequent participations to GLOBAL-PPS when the hospital has already been registered with the GLOBAL-PPS:

➢ The already registered and known participant needs to use their existing login (username) and password ! If this information has been lost, contact Global-PPS@uantwerpen.be
➢ New participants belonging to a hospital who participated before need to contact the local administrator of the hospital. If the local administrator is not working any more at the hospital, please contact Ann or Ines (Global-PPS@uantwerpen.be). They will do the necessary to link you up with the existing hospital. Important, do not create a new hospital (with another ID number) as you will then not be able to download a longitudinal feedback report!

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[5] **Primary level:** often referred to as a district hospital or first-level referral. The hospital has few specialities, mainly internal medicine, obstetrics-gynaecology, paediatrics, and general surgery, or only general practice; limited laboratory services are available for general, but not for specialized pathological analysis. Often corresponds to general hospital without teaching function. **Secondary level:** often referred to as provincial hospital. A hospital highly differentiated by function with five to ten clinical specialities including some haematology, oncology, renal and ICU beds; takes some referrals from other (Primary) hospitals. Often corresponds to general hospital with teaching function. **Tertiary level:** often referred to as central, regional or tertiary-level hospital. A hospital with highly specialized staff and technical equipment, e.g., ICU, Haematology, Transplantation, cardio-thoracic surgery, neurosurgery and specialized imaging units; clinical services are highly differentiated by function; provides regional services and regularly takes referrals from other (primary and secondary) hospitals. Often correspond to University hospital. **Specialized hospital:** Single clinical specialty, possibly with sub-specialties; highly specialized staff and technical equipment.

2. Prepare the hospital department list.

Hospitals who participated before **need to review the hospital department list and make necessary updates if needed (e.g. adding a new department, change the name of the department).**

New participating hospitals:

After login, one first needs to define <u>ALL</u> the hospital's wards (units/departments) as these will afterwards appear in the drop down lists when entering patient information.

The definition of a department follows a hierarchical structure. For each department, the following information is needed:

- The **NAME** of the department. This field is mandatory and identifies the department uniquely in the database. This uniquely defined name will be used in the drop down lists in the *Global-PPS tool*. **All** inpatient adult, paediatric and neonatal departments must be included (i.e., no hospital sampling).
- Code and description = optional. It allows you to describe the department name in more detail if needed
- Department **GROUP** (Adult medical, surgical or intensive care ward, paediatric ward)
- Specify **TYPE** of department/ward. Mandatory field. Choose, if available in the hospital, between the following specialties:

➤ 15 different **Adult medical wards (AMW)**	➤ 9 different **Adult surgical wards (ASW)**
☐ **AMW** (General or mixed specialties)	☐ **ASW** (General or mixed specialties)
☐ **HO-AMW** (Haematology-Oncology)	☐ **DIG-ASW** (Digestive tract surgery)
☐ **T-AMW** (Transplant (BMT/solid))	☐ **ORT-ASW** (Orthopaedics-Trauma surg.)
☐ **P-AMW** (Pneumology)	☐ **URO-ASW** (Urological surg.)
☐ **CAR-AMW** (Cardiology)	☐ **CV-ASW** (Cardio-Vascular surg.)
☐ **NEU-AMW**(Neurology)	☐ **NEU-ASW** (Neurosurgery)
☐ **REN-AMW** (Nephrology)	☐ **ONCO-ASW** (Oncology-cancer surg.)
☐ **ID-AMW** (Infectious Disease)	☐ **PLAS-ASW** (Plastic, reconstructive surg.)
☐ **DB-AMW** (Dermatology-burn wards)	☐ **ENT-ASW** (Ear-nose-throat surg.)
☐ **PSY-AMW** (Psychiatry)	➤ 5 different **Adult Intensive Care Units (AICU)**
☐ **REH-AMW** (Rehabilitation)	☐ **AICU** (General or mixed specialties)
☐ **GER-AMW** (Geriatrics)	☐ **MED-AICU** (Medical AICU)
☐ **LTC-AMW** (Long-Term care)	☐ **SUR-AICU** (Surgical AICU)
☐ **OBG-AMW** (gynaecology-obstetrics)	☐ **CAR-AICU** (Cardiac AICU)
☐ **IS-AMW** (Isolation ward, e.g. COVID patients)	☐ **AHDU** (High Dependency Unit)
➤ 6 **Paediatric wards**	➤ 2 **neonatal wards**
☐ **PMW** (Paediatric Medical Ward)	☐ **NMW** (Neonatal Medical Ward)
☐ **HO-PMW** (Haematology-Oncology PMW)	☐ **NICU** (Neonatal Intensive Care Unit
☐ **T-PMW** (Transplant (BMT/Solid) PMW)	
☐ **PSW** (Paediatric Surgical Ward)	
☐ **PICU** (Paediatric Intensive Care Unit)	
☐ **ID-PMW** (Infectious Disease PMW)	

Examples of a difficult case:

- ➤ A mixed PICU and NICU department should be split up if the number of NICU and PICU assigned beds for the mixed NICU-PICU ward is reasonably stable. Thus, define the ward into 2 different wards (a PICU and NICU ward).

- The **ACTIVITY** for a department (**Medicine, Surgery, Intensive Care**) is automatically assigned by the software based on the selected type of department. This is the <u>"MAIN" attributed activity</u> of a certain department. This main activity can never be changed or deactivated. Besides the "main" activity of a

department, it is still possible to define the department as a mixed department on the day of the survey (if on the day some of the patients are from a different activity). This has to be done when entering the denominator survey data (see data collection templates, ward form, page 1).

The different departments are entered *manually* in the *Global-PPS tool*.

3. Select the appropriate survey

Select the survey online: go to Surveys/available surveys and **register for the correct survey according the appropriate time frame (Jan-Apr; May-Aug; Sept-Dec). Select the module(s) you want to participate in.** Thereafter go to Surveys/subscribed and click on the appropriate survey to activate the survey for data-entry.

4. Complete denominators for ALL wards surveyed

See data collection forms – "Ward form, page 1"

One needs to complete denominator data for each ward surveyed "**before**" entering the first patient. Collected denominators are:
- Total number of admitted patients (count of the total patients on at least one antimicrobial **+** all patients NOT on antimicrobials)
- Total number of beds
- Total number of admitted patients with an inserted invasive device (for the optional HAI module only)

5. Enter patient data

ONLY after all of the steps mentioned above have been carried out (1 to 4), one can start entering patient data*.*

See IT manual and tutorial video's available on the data entry environment to proceed with online data entry step by step : https://app.globalpps.uantwerpen.be:8443/globalpps_webpps/

DATA COLLECTION FORMS

To facilitate the data collection, print one single paper ward form for each ward under surveillance and a number of 'patient forms' depending on the number of patients on the ward who are on antimicrobial therapy. Print also the corresponding appendices. The data collection forms correspond to the online web forms.

- ❖ Ward form
- ❖ Patient form
- ❖ The HAI-Patient form to collect additional variables for the optional HAI module

After data collection for each ward, attach to the ward form all the individual patient forms (those patients with antimicrobial treatment, including prophylaxis) and HAI-patient forms.

❖ *The WARD form*

Date of survey – The date the department/ward is surveyed: dd/mm/yyyy.

Auditor code – Code, initials or else of the person completing the form. The code can be used to track possible bias linked to the auditor.

Hospital name– The hospital name.

Ward name– "Unique" name of the ward.

Ward Type – The official ward type split up for medical and surgical adult wards, adult intensive care units, paediatric and neonatal wards (e.g. if a surgical ward is taking overflow from Medicine it is still to be listed as Surgery). The complete list is available in the data collection templates, page 1.

Mixed ward – If the department is mixed, tick the Yes case, if not, tick the No case.

> **A special case: a mixed ward with mixed activity:** In hospitals with shared beds and mixed wards the denominator is difficult to measure. In fact, there are two separate issues: i) wards which occasionally take patients from a different specialty than their 'official' department and ii) permanently mixed wards with no available data on number of beds for each speciality.
>
> For that reason, during data entry and when necessary, it is possible to define a ward as a mixed ward. In this case, the different *activities* encountered at the day of survey should be specified, in addition to the encountered denominators : the total number of admitted patients; total number of beds and total number of patients with invasive device (HAI optional module) for each activity according to the defined activity. If needed, the auditor should ask a healthcare worker if any patients belonging to another department are present, before starting the ward survey.
>
> A mixed department will be defined based on the activity level.

Activity –Select all the encountered activities (Medicine, Surgery, Intensive Care) based on the activity on the day of the survey. A supplementary ward activity may be defined besides the "main" activity (main activity is automatically attributed by the Global-PPS tool during the department list preparation (see "*Prepare the hospital department list.*"). (e.g. if a surgical ward is taking overflow from Medicine it is still to be listed as Surgery: Define here a mixed department by ticking the box medicine beside surgery as main activity.

Denominators -

1. **Total number (N) of <u>admitted inpatients</u> in the department at 8 am** on the day of the PPS should be entered in the column of the corresponding activity. In case of mixed department, the number of admitted patients corresponding to each of the encountered activities should be entered. Reminder: Do not count patients discharged before 8 o'clock and/or patients with admission planned after that time.

   An admitted inpatient is a patient occupying a bed at 8am on the day of the PPS. It **includes all patients on antimicrobials + all patients NOT on antimicrobials at 8am on the day of the PPS**.

2. **Total number (N) of "available" <u>beds</u> for inpatients in the department at 8 am** on the day of the PPS. In case of mixed department, fill the total number of beds corresponding to each of the encountered activities.

   Total number of beds = total beds in ward (=**occupied + empty beds**). N beds is always ≥ N inpatients present at 8 am.

3. **Total number (N) of <u>admitted inpatients</u> with an "invasive device" present at 8 am** on the day of the PPS **(optional HAI module only).** In case of a mixed department, the number of admitted inpatients with an inserted device should correspond to each of the encountered activity.

   Definition of **"*an (inserted) invasive device*"** :

   ➢ **Count also** patients with a device with intermittent insertion, and "accidentally or intentionally" removed before 8am but planned re-insertion after 8am
   ➢ **Do not count** patients with a device with planned (intentional) removal before 8 am and whereby no re-insertion is planned after 8am.

   Definitions of **the 6 different invasive devices are provided on p 20.**

<u>Examples of challenging denominator attribution:</u>

- *Mixed department surgical-medical*: fill in N surgical and medical patients and; when not exactly defined following formal hospital listing, distribute surgical and medical empty beds proportionally (or evenly) in N surgical and medical beds.

- *An overbooked department*: provide information of the "actual real situation" on the day of the PPS providing e.g. the total number of patients admitted and total N beds on the day of the survey.

- *There are more patients than beds on the ward*: Adapt the number of beds according to the number of inpatients present at 8 am on the day of the PPS. As such, N beds = N inpatients present at 8 am on the day of the PPS.

> *<u>Complete denominator data</u> (=N patients and N beds; and optionally for the HAI module N patients with an invasive device) <u>for wards</u> surveyed "**<u>before</u>**" entering the first patient.*

❖ *The PATIENT form*

Data collected at patient level

Ward (Name/code)– This is the unique **name** of the ward studied. This name is selected using the drop down list in the Global-PPS tool, as this department name has been defined during the preparation of the hospital department list (see step "prepare the hospital department list", page 12)

Activity – When the ward is a **mixed department**, the activity to which the patient belongs must be specified (M: Medicine, S: Surgery, ICU: Intensive Care).

Full Patient Identifier – This is a unique number allowing local tracing to the patient level for eventual clarifications. (For example the clinical record/note number, hospital number, etc.) This information will not (and cannot) be reported or submitted in the *Global-PPS* database.

Survey Number – It's a unique non identifiable number generated by the Global-PPS tool for each patient record. Please ensure that the person entering the data online *writes down this number immediately when it is generated by the tool as it will not be displayed again*. This number identifies uniquely the patient in the *Global-PPS* database.

Age – Three fields, one for the year, one for the month and one for the days are available. *"Only one" of these fields needs to be completed as follows:*

➢ If less than 30 days old, write the exact numbers of days completed.
➢ For patients older than 1 month and younger than 2 years fill in month field. (e.g. 19 months)
➢ If the patient is at least 2 years old then only the year field is to be inputted.

Current weight – Write the <u>current weight</u> <u>in Kg </u>with one decimal number. *Optional field.*

Only for neonates *(optional fields):*

Gestational age - Write the "completed" number of gestational weeks without the number of days. E.g. for 33^{+4} write only 33.

Birth weight – Write the birth weight <u>in Kg </u>with one decimal number.

Sex – M (Male), F (Female), U (Unknown)

Treatment based on biomarker data or white blood cell count (WBC) – Tick 'Yes' or 'No'. It refers to whether or not biomarker results close to the start of the antibiotic treatment are used to initiate the treatment. If yes, next lines should also be completed with 4 possible answers (report the most relevant one):
- **CRP** = in case the treatment is based on results of CRP (*C-reactive protein*)
- **PCT** = in case the treatment is based on results of PCT (*procalcitonin*)
- **Other =** in case the treatment is based on results of another lab-based biomarker than CRP, PCT
- **WBC =** in case the treatment is based on elevated white blood cell count. Normal number of WBCs in the blood is ± 4,500 to 11,000 WBCs per microliter.

Type of biological fluid sample: choose between Blood, Urine or Other.
Complete if available on the day of the PPS also the **most relevant value close to the start of the antibiotic treatment** (numeric optional field) in mg/L, µg/L, ng/L, mg/dL, ng/dL, ng/mL, µg/mL, nmol/L. In thousand per microliter (µL) for WBC count.

For conversion calculator see: http://unitslab.com/node/67 (CRP) and http://unitslab.com/node/103 (procalcitonin).

Culture(s) sent to the lab to document infection – Specify the origin of the sample. *Optional field.*
  8 *multiple choice* answers are possible:
  - Blood culture
  - Cerebrospinal fluid (CSF)
  - Urine : sterile midstream and catheter specimen sample
  - Wound (surgery/biopsy): sample obtained via surgery, incision, soft tissue biopsy, closed abscess, **no** swabs
  - Broncho-alveolar lavage (BAL) – protected respiratory specimen
  - Sputum or bronchial aspirate
  - Stool
  - Other type of specimen

Data collected at antimicrobial level

Antimicrobial Drug Name – This is the generic name (e.g. amoxicillin and beta-lactamase inhibitor and not Augmentin®). Antimicrobials for *topical use* applied on the skin/eye/ear etc are **not** included. The antimicrobial data are automatically recorded in the Global-PPS tool with its ATC5 code following the ATC classification system of the WHO Collaborating Centre for Drug Statistics. (https://www.whocc.no/atc_ddd_index/).

Antimicrobials included in the survey are (see also antimicrobial list available at https://www.global-pps.com/documents/):

1. Antibacterials for systemic use: J01
2. Antimycotics and antifungals for systemic use: J02 and D01BA (including griseovulvine and terbinafine)
3. Drugs for treatment of tuberculosis: J04A (these are the antibiotics as well as all other drugs to treat tuberculosis)
4. Antibiotics used as intestinal anti-infectives: A07AA
5. Antiprotozoals used as antibacterial agents, nitroimidazole derivatives: P01AB
6. Antivirals for systemic use: J05
7. Antimalarials: P01B

Start date of the antimicrobial : *dd/mm/yyyy – Optional field*

Administered "Single Unit Dose" and "Unit" of Dose – Administered dose is the actual prescribed single unit dose per administration, expressed in mg, g, IU or MU. Provide number of times/day given in next variable.

- For combination with one active ingredient as the main antimicrobial agent, like penicillins with beta-lactamase inhibitors, only the content of active ingredient should be recorded and entered in the Global-PPS tool. E.g. amoxicillin and beta-lactamase inhibitor 500/125 (amoxicillin 500 mg and clavulanic acid 125 mg as potassium salt) should be entered as 500 mg. Important: this must still be listed as amoxicillin and beta-lactamase inhibitor and NOT amoxicillin!

- For combinations with two or more active ingredients like sulfamethoxazole and trimethoprim, the total content should be entered in *Global-PPS tool*. For example sulfamethoxazole 200 mg/ trimethoprim 40 mg will be recorded as 240 mg.

  Combinations of an antibiotic and an enzyme inhibitor:

  J01CR01 Ampicillin and beta-lactamase inhibitor: report only ampicillin dose
  J01CR02 Amoxicillin and beta-lactamase inhibitor: report only amoxicillin dose
  J01CR03 Ticarcillin and beta-lactamase inhibitor: report only ticarcillin dose
  J01CR05 Piperacillin and beta-lactamase inhibitor: report only piperacillin dose
Examples can be found on: https://www.whocc.no/ddd/list_of_ddds_combined_products/

Times per Day – This refers to the number of actual prescribed doses per 24 hours. For example every 6 hours = 4; every 8h = 3, every 12h = 2, every 16h = 1.5, every 36h = 0.67, and every 48h = 0.5 doses per day.

Route – Route of Administration. Five routes of administration are included: Intravenous and intrathecal and intraperitoneal=P, Intramuscular=IM, Oral=O, Rectal=R, Inhalation=I. For analyses intravenous, intrathecal and intramuscular are all parenteral use (=P).

Diagnosis – This is the reason to treat the patient (See appendix II, page 7 of data collection templates). Select ONLY ONE of the possibilities. If more categories are possible, write the one most applicable. Request additional information from doctors, nurses or pharmacists if needed.

Type of indication – Refers to whether it concerns therapeutic treatment (Community Acquired Infection=CAI or Healthcare-Associated Infection=HAI) or prophylactic use (Medical or surgical). The indication should be found in the records and/or obtained from ward staff (See appendix III, page 8 of data collection templates for all available codes).

➢ For **surgical patients**, administration of antimicrobial prophylaxis 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 over 24 hours) or >1 day (Important: see protocol p 7-8, inclusion criteria for surgical patients)!

Reason in notes – "Yes" or "No". It refers to whether or not a diagnosis or indication for treatment or prophylaxis was recorded in the medical records when the antimicrobial treatment started; and is based on the information available in the notes. It should be completed without asking anyone, and derived from records only.

Missed Doses - *Optional field* - Number of missed doses from the start date of the current antibiotic treatment until the date of the survey. If no doses missed, report as 0. If unknown, leave field empty.

Reason for missed doses - *Optional field* - due to stock out (S), the patient could not purchase (P), the patient declined/refused the antimicrobial (D), other reason (O), multiple (mixed) reasons (M), unknown (U)

> **Example**: The antibiotic treatment started 2 days before the survey, one tablet 3 times daily. On the second day, the second and third tablets were not administered due to unavailability. Missed doses = 2 and Reason = S (stock out issues).

Guideline compliance – This depends on whether **the antibiotic choice** is in compliance with local guidelines Y=Yes (compliant with local policy or infection specialist advice); N=No; NA=Not Assessable (no local guidelines for the specific indication); NI=No Information (because the indication is unknown). Thus, appropriateness refers EXCLUSIVELY to drug choice, not the dose, route, or duration, as this is more contentious.

· Note: Therapy directed by an infection specialist is "Yes-compliant".
· Note: If the choice of drug agrees only partially with guideline the entire combination therapy or prophylaxis should be classified as non-compliant.

Is a stop/review date documented? "Yes" or "No". It concerns whether a date of review or stop date of the antimicrobial was recorded in the medical records. This has to be filled-in for all included antimicrobials even if it is long term medical prophylaxis where a stop/review day is unlikely.

Type of treatment – E versus T : Note down the information which is "available" at the time of survey. The field is optional for medical prophylaxis (MP) or surgical prophylaxis (SP).
· Empirical treatment (E)
  o when the antibiotic is being used as per a local guideline – as a best guess - treatment by means which experience has proved to be beneficial
  o when a culture or microbiological examination is done, but the result is not yet available on the day of the PPS (e.g. confirmation of positive blood culture arrives a day after the survey); or the result was not assessable (no growth)

- Targeted treatment (T)
    - based upon microbiological result. Microbiology result can be any culture and/or sensitivity result from a relevant clinical (e.g., blood, sputum, etc.,) [BUT not screening] specimen as well as any other microbiology result like for example Legionella Urinary Antigen.
    - Report also Targeted if the micro-organism yielded susceptible results.
    - Report also Targeted if antibiogram is seen (before 8am day of the PPS), but no adaptation of the antibiotic treatment (e.g. according to the sensitivity result de-escalation was possible).

When treatment choice is based on microbiological data (treatment = targeted), complete the detected micro-organisms as well as the resistance type concerned. Maximum 3 micro-organisms; and for each of them 1 resistance type can be recorded.

Report the micro-organism, if available on the day of the PPS, also if the pathogens tested were sensitive! The list of micro-organisms by resistance type are provided in Appendix IV, page 9 of the data collection templates.

Twelve resistance types can be reported:

- **Targeted treatment against MRSA** –It refers to whether the chosen drug is targeting methicillin-resistant *Staphylococcus aureus*.
- **Targeted treatment against MRCoNS** – It refers to whether the chosen drug is targeting methicillin-resistant coagulase-negative staphylococci.
- **Targeted treatment against PNSP** – It refers to whether the chosen drug is targeting Penicillin-nonsusceptible *Streptococcus pneumoniae*.
- **Targeted treatment against MLS** – It refers to whether the chosen drug is targeting macrolide-lincosamide-streptogramin resistance in Streptococcus isolates.
- **Targeted treatment against VRE** – It refers to whether the chosen drug is targeting vancomycin-resistant enterococci.
- **Targeted treatment against ESBL-producing Enterobacterales** – 'Yes' versus 'No'. It refers to whether or not the chosen drug is targeting Enterobacterales producing extended-spectrum beta-lactamase.
- **Targeted treatment against 3rd generation cephalosporin-resistant Enterobacterales.** It refers to whether the chosen drug is targeting 3rd generation cephalosporin-resistant Enterobacterales.
- **Targeted treatment against Carbapenem-resistant Enterobacterales** - It refers to whether the chosen drug is targeting Carbapenem-resistant Enterobacterales.
- **Targeted treatment against ESBL-producing nonfermenter Gram-negative bacilli** – It refers to whether the chosen drug is targeting nonfermenters (*Pseudomonas aeruginosa, Acinetobacter baumannii, Burkholderia spp., Stenotrophomonas maltophilia*) producing extended-spectrum beta-lactamase.
- **Targeted treatment against carbapenem-resistant non fermenter Gram-negative bacilli** – It refers to whether the chosen drug is targeting carbapenem-resistant nonfermenters (*Pseudomonas aeruginosa, Acinetobacter baumannii, Burkholderia spp., Stenotrophomonas maltophilia*).
- **Targeted treatment against other MDR organisms** – It refers to whether the chosen drug is targeting multidrug-resistant (MDR) organisms, other than the ones listed above. An organism can be considered as MDR if it is non-susceptible to at least 3 antimicrobial classes that are usually considered as suitable treatment options for that pathogen. For tuberculosis, consider as MDR if it does not respond to at least isoniazid and rifampicin.[6,7]
- **Targeted against azole-resistant fungi/yeasts** – It refers to whether the chosen drug is targeting **azole** drug resistance.

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[6] Magiorakos AP, Srinivasan A, Carey RB. et al. Multidrug-resistant, extensively drug-resistant and pandrug-resistant bacteria: an international expert proposal for interim standard definitions for acquired resistance. Clin Microbiol Infect. 2012 Mar;18(3):268-81

[7] https://www.who.int/features/qa/79/en/

❖ *The HAI-PATIENT form : Optional HAI module*

Supplementary information can be collected "**for each patient receiving at least one antimicrobial**" to allow investigation of Healthcare-Associated Infections (HAI) in more detail with a specific focus on invasive devices. The following variables need to be completed:

Date of admission in the hospital (optional)*: dd/mm/yyyy*

Previous hospitalization < 3 months (optional): Yes-ICU, Yes-other, No, Unknown

Surgical procedure during current admission in hospital (mandatory): Yes, No, Unknown
> Surgery is defined as the treatment of injuries or diseases by cutting open the body and removing or repairing the damaged part (American dictionary). Diagnostic interventions as such are not scored.

Previous antibiotic course < 1 month (optional): Yes, No, Unknown

Presence of an invasive device **at 8 am** on the day of the PPS.
> Definition of **"an (inserted) invasive device"**:
> - ➢ **Report also** a patient with a device with intermittent insertion, and "accidentally or intentionally" removed before 8am but planned re-insertion after 8am.
> - ➢ **Do not report** a patient with a device with planned (intentional) removal before 8am and whereby no re-insertion is planned after 8am.

> **Six invasive devices are surveyed** (Mandatory)**:**
> - ➢ Indwelling Urinary Catheter: includes urethral and suprapubic catheters as well as intermittent catheters. Exclude external catheters which do not enter the urethra such as condom catheter
> - ➢ Peripheral Vascular / Intravenous Catheter (at least one)
> - ➢ Central Vascular Catheter[8]. Exclude implantable venous access port
> - ➢ Invasive respiratory endotracheal intubation. Include tracheostomy
> - ➢ Non-invasive positive and negative mechanical ventilation (CPAP, BiPAP, CNEP, ….)
> - ➢ Inserted tubes and drains (T/D): include nephrostomy tubes, intra-abdominal tubes and drains, cerebrospinal fluid shunts. Exclude feeding tubes.
>
> For each device, indicate whether present for the patient (Yes, No, Unknown) and optionally complete the date of 1st insertion/start date of the device.

McCabe Score (mandatory)[9]: Classifies the severity of underlying medical conditions. Disregard the influence of acute infections, e.g. if the patient has an active infection, estimate the score the patient had before the infection. **Choose between the categories**: Non-fatal disease (expected survival at least five years); ultimately fatal disease (expected survival between one and five years); rapidly fatal disease (expected death within one year) or unknown.

Underlying morbidity (multiple choice, mandatory); refers mainly to immunocompromised patients. List of underlying morbidities is provided in the data collection templates, page 4.

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[8] **A central vascular catheter** is an intravascular catheter that terminates at or close to the heart or in one of the great vessels which is used for infusion, withdrawal of blood, or hemodynamic monitoring. The following are considered great vessels: Aorta, pulmonary artery, superior and inferior vena cava, brachiocephalic veins, internal jugular veins, subclavian veins, external iliac veins, common iliac veins, common femoral veins, and in neonates, the umbilical artery/vein (ref:http//www.cdc.gov/nhsn/pdfs/pscmanual/4psc_clabscurrent.pdf)

[9] Examples of diseases for different **McCabe score categories** (ref: https://ecdc.europa.eu/en/healthcare-associated-infections-acute-care-hospitals/surveillance-disease-data/protocol)
Non-fatal (> five years): Diabetes; Carcinoma/haematological malignancy with > 80% five-year survival; Inflammatory disorders; Chronic GI, GU conditions; Obstetrics; Infections (including HIV, HCV, HBV – unless in above categories); all other diseases. **Ultimately fatal (One year to four years):** Chronic leukaemia, myelomas, lymphomas, metastatic carcinoma, end-stage kidney disease (without transplant); Motor neuron disease, multiple sclerosis non-responsive to treatment; Alzheimer-dementia; Diabetes requiring amputation or post amputation. **Rapidly fatal (< one year):** End-stage haematological malignancies (unsuitable for transplant, or relapsed), heart failure (EF < 25%) and end-stage liver disease (unsuitable for transplant with recalcitrant ascites, encephalopathy or varices); Multiple organ failure on intensive care unit – APACHE II score > 30, SAPS II score > 70; Pulmonary disease with cor pulmonale

❖ *HOSPITAL PROFILE : Optional data to collect at hospital level*

Institutional characteristics influence antimicrobial prevalence and the prevalence of HAI. With this optional module we encourage hospitals to collect and evaluate a number of structure and process indicators at the hospital level. The collected data will allow them to examine available workforce, equipment and various support available at hospital level which might facilitate antimicrobial stewardship interventions as well as patient safety.

See data collection forms, Page 5, for an overview of indicators. Information which is not available can be left open; all indicators can optionally be completed. These data can be entered online on a yearly basis.

EXPORT YOUR DATA

Data can be exported to a Microsoft Excel® file. One can do this at any time during the process of data entry. It contains the raw recorded department (denominator) and patient (numerator) data. It allows the user/s to verify own data (correctness and completeness of data). It also enables hospitals to perform analysis on own data.

Data are reported in 3 excel worksheets:
- Institution: provides details on the institution
- Departments: provides details on denominators collected at ward level.
- Patients: provides details at antimicrobial level for each patient receiving at least one antimicrobial on the day of the survey. Attention, each line is one antimicrobial. The information collected at patient level such as age, sex are repeated on the corresponding lines for a certain patient. A unique patient is defined by their survey number.

VALIDATION PROCESS

After the denominator data and all patient data have been entered to the Global-PPS tool, the participant needs to complete the validation process in order to be able to generate a feedback report. The validation process identifies small, basic issues, warnings or errors in the survey.

For example:

- ✓ Surveys without data entry gives an error
- ✓ Incomplete departments (missing values, denominator values) gives an error
- ✓ Patient data without antibiotic treatments or with duplicated antibiotics gives an error
- ✓ Patient data without HAI forms completed (only if one participates in the HAI module) gives an error
- ✓ Warnings about extremely high dosing values.
- ✓ Check on consistency between the diagnostic code and the indication (therapeutic versus prophylactic use): gives a warning
- ✓ Check on Targeted prescribing for surgical prophylaxis and medical prophylaxis: gives a warning

FEEDBACK

The Global-PPS tool is designed to produce an automated feedback for each participating hospital. We anticipate sending data back in a simple, easy-to-use feedback, with own data ready to use for local presentations. The feedback compares hospital data to i] National (if N≥3 institutions) and ii] Continental results. Hospitals participating a second time or more are able to download a longitudinal feedback report. Participants (local administrators) entering data for more than one hospital are able to download merged feedback reports.

Feedback reports can only be produced if the hospital data have been validated. The feedback report includes various tables and charts on the prevalence of antimicrobial use, resistance and healthcare-associated infections; as well as quality indicators of appropriate antimicrobial use. An example is available at https://www.global-pps.com/documents/

**In case of questions or difficulties,
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