RESULTS OF THE GLOBAL-PPS AND ECDC PPS 2017

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Background

PPS on HAIs and antimicrobial use in European acute care hospitals ⟶ 2011 (52 hospital sites)

Prevalence AM use	28.9%
Prevalence HAI	7.1%

PPS on Antimicrobial Consumption and Resistance (worldwide) ⟶ 2015 (100 hospital sites)

Prevalence AM use	27.4%
Prevalence HAI*	7.5%

⇨ 2017: Second ECDC and Global-PPS

AM = antimicrobial; HAI = Healthcare-Associated Infections; PPS = Point-Prevalence Study
* Based on the indication of antimicrobials

Methodology

- Invitation sent to all acute-care Belgian hospitals
  → choice to participate in ECDC or Global-PPS
  → representative sample (N=34): encouraged to participate in ECDC PPS

- ECDC's patient-based PPS protocol

- Data collection on one day for each ward, maximum 2-3 weeks per hospital

- Hospital-level, ward-level, patient-level data
  → all patients present at the ward at 8h00 a.m. + not discharged at time of PPS
  → use of antimicrobial agents and presence of active HAI

- Training in September 2017
  Inclusions between September and November 2017

- Data collection → Sciensano → ECDC: Tessy
  All data converted to the Global-PPS database

HAI = Healthcare-Associated Infections; PPS = Point-Prevalence Study

Background

Definition healthcare-associated infection (HAI) in acute-care hospitals:

- Signs and symptoms have started on Day 3 of the current admission or later (day of admission = Day 1).

OR

- Signs and symptoms were present at admission or became apparent before Day 3 and
  - the patient was readmitted less than 48h after previous admission;

  OR
  - in case of a surgical site infection (SSI): symptoms occured within 30 days of the operation (surgery involving implant: 90 days);

  OR
  - an invasive device was placed on Day 1 or 2 of the admission;

  OR
  - in case of a *Clostridioides difficile* infection: onset less than 28 days after discharge from an acute-care hospital.

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Methodology

- Global-PPS protocol (www.Global-PPS.com)

- One day survey on all wards

- Ward-level and patient-level data
  → all patients present at the ward at 8h00 a.m.
  → use of antimicrobial agents, AMR, antimicrobial quality indicators

- Inclusions between September and November 2017

- Data collection: internet-based application of the Global-PPS based at University of Antwerp

- No training as most hospitals were already trained in February 2015 for the 2015 Global-PPS

AMR = antimicrobial resistance; PPS = Point-Prevalence Study

Results

Participation

Total: 110 hospital sites (83 mergers)

Number of included	Global-PPS 2017		ECDC PPS 2017		Degree of participation*	
	sites	mergers°	sites	mergers°	sites	mergers°
Total	64	51**	47	33**	57.6%	81.4%
Per type						
Primary hospitals	48	40	33	23	56.3%	81.8%
Secondary hospitals	12	7	12	8	85.2%	82.4%
Tertiary hospitals	3	3	2	2	55.6%	71.4%
Specialized hospitals	1	1	0	0	9.1%	100.0%
Per region						
Brussels	11	6	7	6	73.9%	91.7%
Flanders	33	30	16	12	48.5%	77.8%
Wallonia	20	15	24	15	65.7%	83.3%

* Based on the total number of hospital sites in Belgium in 2017 (total merger hospitals: N=102; total sites; n= 191)
° At least one site of the merger participated
** One hospital participated both in the Global and ECDC PPS 2017

PPS = Point-Prevalence Study

Results

Included patients

	Global-PPS 2017	ECDC PPS 2017	Total
Total number of included patients	**16207**	**11800**	**28007**
Adults (%)*	15139 (93.4%)	11008 (93.3%)	26147 (93.4%)
Children (%)*	722 (4.5%)	606 (5.1%)	1328 (4.7%)
Neonates (%)*	346 (2.1%)	186 (1.6%)	532 (1.9%)
Ward specialty (%)			
Medicine	11067 (68.3%)	8837 (74.9%)	19904 (71.1%)
Surgery	4293 (26.5%)	2432 (20.6%)	6725 (24.0%)
ICU	847 (5.2%)	531 (4.5%)	1378 (4.9%)

* Based on ward specialty

PPS = Point-Prevalence Study; ICU = Intensive Care Unit

Results

Antimicrobial consumption: Crude prevalence

ECDC + Global-PPS 2017

	Patients with at least one AM		
	N	**Crude prevalence (%)**	**95% CI**
All patients	**7577**	**27.1**	**26.5-27.6**
Hospital type			
Primary	4866	27.0	26.3-27.6
Secondary	1768	26.1	25.0-27.1
Tertiary	907	29.5	27.9-31.1
Ward speciality			
Medicine	4886	24.6	24.0-25.2
Surgery	1988	29.6	28.5-30.7
ICU	703	51.0	48.4-53.7

AM = antimicrobial; CI = confidence interval; ICU = Intensive Care Unit; N = number of patients with at least one AM

Results

Antimicrobial consumption: indication

ECDC + Global-PPS 2017

Indication	Percentage of AM prescriptions
CAI	51.7%
HAI	25.3%
LAI	2.7%
MP	5.9%
SP	11.2%

→ SP single dose: 35.1%
SP one day: 39.7%
SP > one day: 25.2%

CAI = community-acquired infections, HAI = healthcare-associated infections, LAI = Infection present on admission from long-term care facility or Nursing Home, MP = medical prophylaxis, SP = surgical prophylaxis; AM = antimicrobial

Antibiotic consumption: indication   ECDC + Global-PPS 2017

CAI = community-acquired infections, HAI = healthcare-associated infections, LAI = Infection present on admission from long-term care facility or Nursing Home, MP = medical prophylaxis, SP = surgical prophylaxis; N = number of antibiotic prescriptions
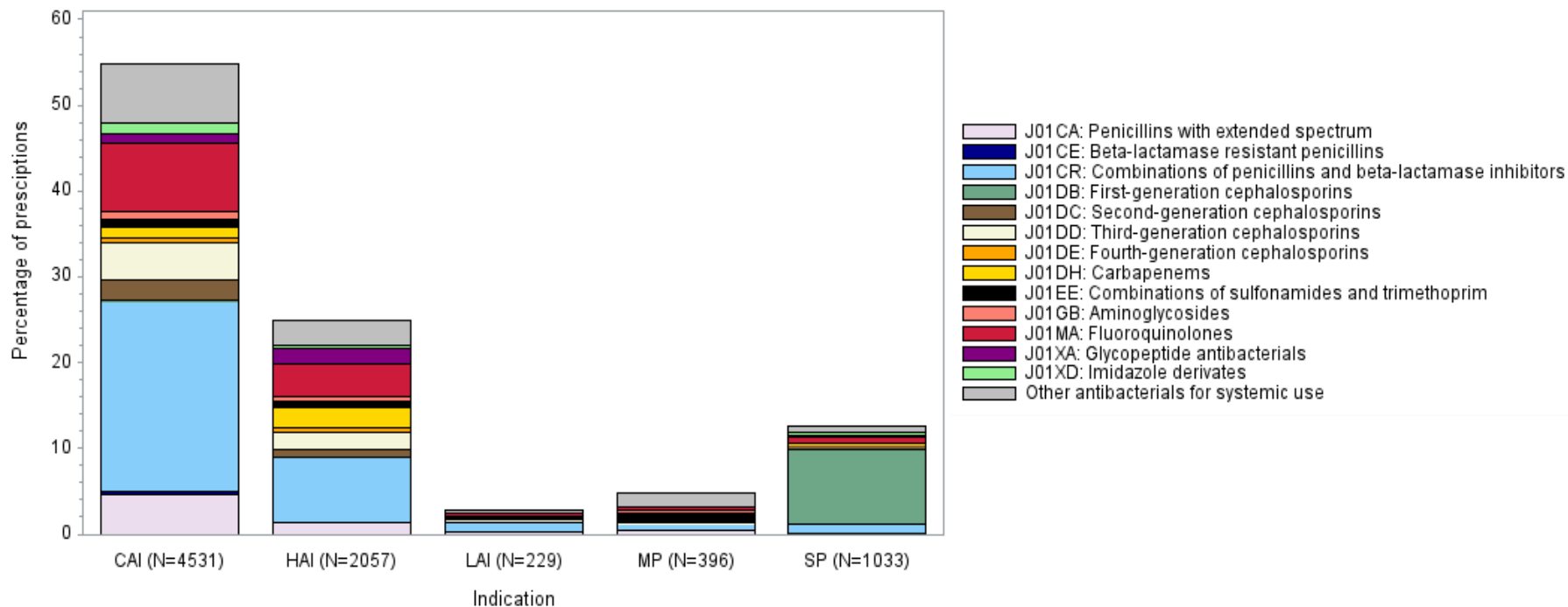
Results

Antimicrobial consumption: AM / diagnoses   ECDC + Global-PPS 2017

Top 5 most used AM (%)
Amoxicillin in combination with a beta-lactamase inhibitor (J01CR02, 21.0%)
Piperacillin in combination with a beta-lactamase inhibitor (J01CR05, 8.5%)
Cefazolin (J01DB04, 7.9%)
Ciprofloxacin (J01MA02, 7.2%)
Ceftriaxone (J01DD04, 3.8%)

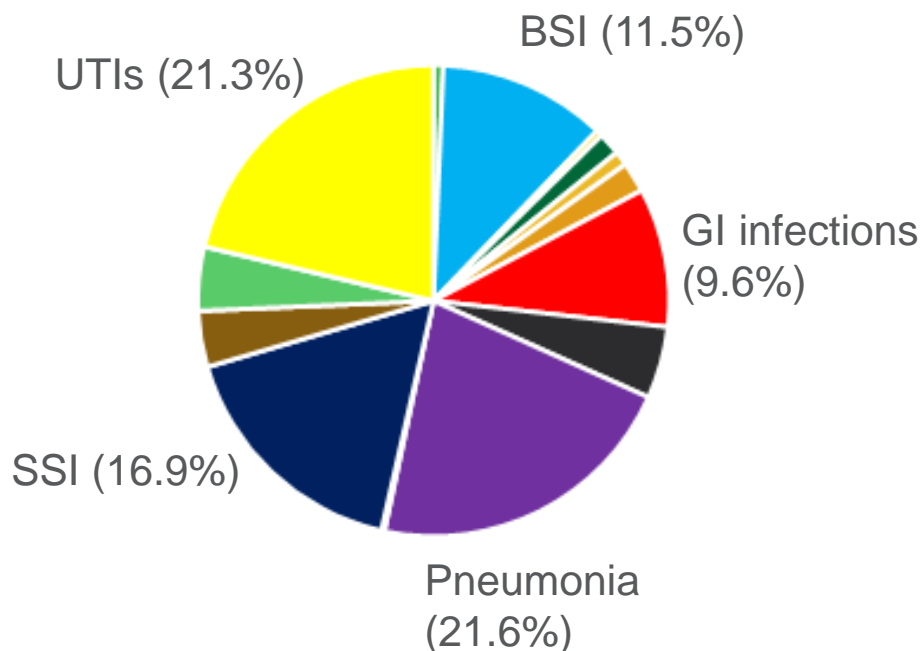| Top 5 most registered diagnoses (%) |
| --- |
| Pneumonia (23.2%) |
| Urinary tract infections (15.2%) |
| Skin and soft tissue infections (11.9%) |
| Intra-abdominal sepsis (10.6%) |
| Acute bronchitis (7.1%) |

* In case of medical treatment (CAI, HAI, LAI)

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AM = antimicrobials; CAI = community-acquired infections, HAI = healthcare-associated infections, LAI = infection present on admission from long-term care facility or nursing home

Results

HAIs: crude prevalence   ECDC PPS 2017

	Patients with at least one HAI		
	N	**Crude prevalence (%)**	**95% CI**
All patients	**856**	**7.3**	**6.8-7.7**
Hospital type			
Primary	489	6.8	6.2-7.4
Secondary	253	7.6	6.7-8.5
Tertiary	114	9.1	7.5-10.7
Patient specialty			
Medicine	265	7.4	6.5-8.2
Surgery	204	8.1	7.0-9.1
ICU	122	20.9	17.6-24.2
Geriatrics	158	8.7	7.4-10.0

HAI = healthcare-associated infections; CI = confidence interval; ICU = Intensive Care Unit; N = number of patients with at least one HAI

Results

HAIs: main groups / isolated MOs

ECDC PPS 2017

Pie chart segments:
- BSI (11.5%)
- UTIs (21.3%)
- GI infections (9.6%)
- SSI (16.9%)
- Pneumonia (21.6%)

Top 8 most isolated MOs (% of total HAIs)
Escherichia coli (17.8%)
Staphylococcus aureus (8.9%)
Pseudomonas aeruginosa (5.2%)
Enterococcus faecalis (4.8%)
Klebsiella pneumonia (4.2%)
Enterobacter cloacae (4.2%)
Staphylococcus epidermidis (4.1%)
Clostridium difficile (3.3%)

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HAI = healthcare-associated infections; MO = micro-organism; BSI = bloodstream infections, GI= gastro-intestinal, SSI = surgical site infections, UTI = urinary tract infections

Results

HAIs: crude prevalence (based on indication) Global-PPS 2017

	Patients with at least one HAI		
	N	Crude prevalence (%)	95% CI
All patients	**1100**	**6.8**	**6.4-7.2**
Hospital type			
Primary	676	6.1	5.7-6.6
Secondary	225	7.0	6.1-7.9
Tertiary	193	10.6	9.2-12.0
Ward specialty			
Medicine	650	5.9	5.4-6.3
Surgery	264	6.2	5.4-6.9
ICU	186	22.0	19.2-24.8

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HAI = healthcare-associated infections; CI = confidence interval; ICU = Intensive Care Unit; N = number of patients with at least one HAI

Discussion

	ECDC PPS 2011 (BE)	Global-PPS 2015 (BE)	ECDC PPS and Global-PPS 2017 (BE)	ECDC PPS 2017 EU countries*
Prevalence AM use (95% CI)	28.9% (26.8%-31.1%)	27.4%	27.1% (26.5%-27.6%)	31.4% (27.7%-35.3%)
Prevalence HAI (95% CI)	7.1% (6.1%-8.3%)	7.5%	ECDC PPS: 7.3% (6.8%-7.7%) Global-PPS: 6.8% (6.4%-7.2%)	6.5% (5.4%-7.8%)

AM = antimicrobial; BE = Belgium; EU = European; HAI = healthcare-associated infections; PPS = point-prevalence study
*EU: Plachouras et al. 2018; Suetens et al. 2018 *weighted and corrected prevalence after validation*

More results…

- Belgian results:

  National report ECDC PPS 2017 (www.nsih.be)

  Reports Global-PPS (www.global-pps.com)

- European results:

  Eurosurveillance → Plachouras et al. 2018, Suetens et al. 2018

  ECDC report 2016-2017 (Expected in Nov 2019)

- Peer-reviewed article, ECDC and Global-PPS combined

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