

The global point prevalence survey of antimicrobial consumption and resistance (Global-PPS): first results of antimicrobial prescribing in University Medical Centre Ljubljana (UMCL), Slovenia

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INTRODUCTION AND PURPOSE

UMCL was the only hospital in Slovenia which participated in the Global-PPS. UMCL is the biggest state hospital which represents approximately one third of hospital beds in the country. UMCL has more than 100.000 admissions per year. With multifaceted antimicrobial stewardship programme and infectious diseases specialist consultations antimicrobial resistance and consumption in UMCL is relatively stable. The purpose of PPS in UMCL was to use a uniform and standardized method to assess antimicrobial (AM) use in the hospital and to compare it with other hospitals in Europe and worldwide.

METHODS

The Global-PPS in UMCL was conducted in March and April 2015. The survey included all inpatients receiving an AM on the day of PPS. Data collected included age, gender, weight, antimicrobial agents, doses, reasons and indications for treatment, microbiological data, compliance to guidelines, documentation of reasons and stop/review date of prescription. Denominators included the total number of inpatients per ward. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp.

RESULTS

On the day of PPS a total of 1763 patients were hospitalized at UMCL and a total of 60 wards were surveyed. The hospital does not have a dedicated transplant unit which precluded the assessment of AM use in transplant wards. The AM prevalence was the highest in hematology and intensive care wards for adults. A similar pattern can be seen for pediatric and neonatal wards with AM prevalence in haematology-oncology ward being 100%. (Table 1)

In UMCL antibiotics were used slightly more often for healthcare associated infections (HAI) than community acquired infections (CAI) (Figure 3).

In UMCL the quality of prescribing was better in documenting reason for AM in notes and guidelines compliance, and worse in documenting the stop/review date. Guidelines were available for almost every patient (Figure 5).

Adult wards								Pediatric wards						
	Total	AMW	HO-AMW	T-AMW	P-AMW	ASW	AICU		Total	PMW	HO-PMW	T-PMW	PSW	PICU
Our hospital patients (N)	1496	673	31	0	12	702	78	Our hospital patients (N)	173	99	14	0	49	11
treated patients (%)	29.5	27.8	64.5	0	25	26.1	61.5	treated patients (%)	28.9	20.2	100	0	22.4	45.5

Neonatal wards			
	Total	NMW	NICU
Our hospital patients (N)	94	65	29
treated patients (%)	5.3	3.1	10.3

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

Table 1: Overall AM prevalence in adult, pediatric and neonatal wards for UMCL

Top 3 most common diagnoses treated with AM were pneumonia/lower respiratory tract infection, intra-abdominal sepsis and upper urinary tract infection. (Table 2).

The most frequently prescribed AM were penicillins, together with other β-lactams they summed up for more than 70% of AM. Fluoroquinolones were third most prescribed antibiotics (Figure 1). Among other β-lactams we use predominately first generation cephalosporins (surgical prophylaxis) and carbapenems (Figure 2).

Diagnosis	N	%
Pneu	97	26.6
IA	47	12.9
Pye	36	9.9
SST	33	9.1
SEPSIS	28	7.7
BJ	22	6.0
Other	16	4.4
FN	14	3.8
GI	11	3.0
Bron	10	2.7

Top ten diagnoses in our hospital. Count on the number of diagnoses treated with at least one antimicrobial. This implies that a patient with multiple diagnoses can be counted several times. Prophylactic prescribing and patients admitted on NICU or NMW are excluded from this analysis.

CNS=infection of central nervous system; Eye=eye infections; ENT=ear, nose and throat infections; URTI=upper respiratory tract infection; Bron=bronchitis; Pneu=Pneumonia or lower respiratory tract infection; TB=tuberculosis; CVS=cardiovascular system infections; GI=gastro-intestinal infections; IA=intra-abdominal sepsis; SST=skin and soft tissue; BJ=bone/joint infections; Cys=lower urinary tract infection; Pye=Upper urinary tract infection; OBGY=obstetric/gynaecological infections; GUM=genito-urinary males; BAC=bacteraemia; PUO=pyrexia of unknown origin; PUO-HO=fever syndrome in non-neutropaenic haematology-oncology patient; FN=fever neutropaenic patient; LYMPH=infection lymphatics

Table 2: Ten most common diagnoses treated with AM in UMCL

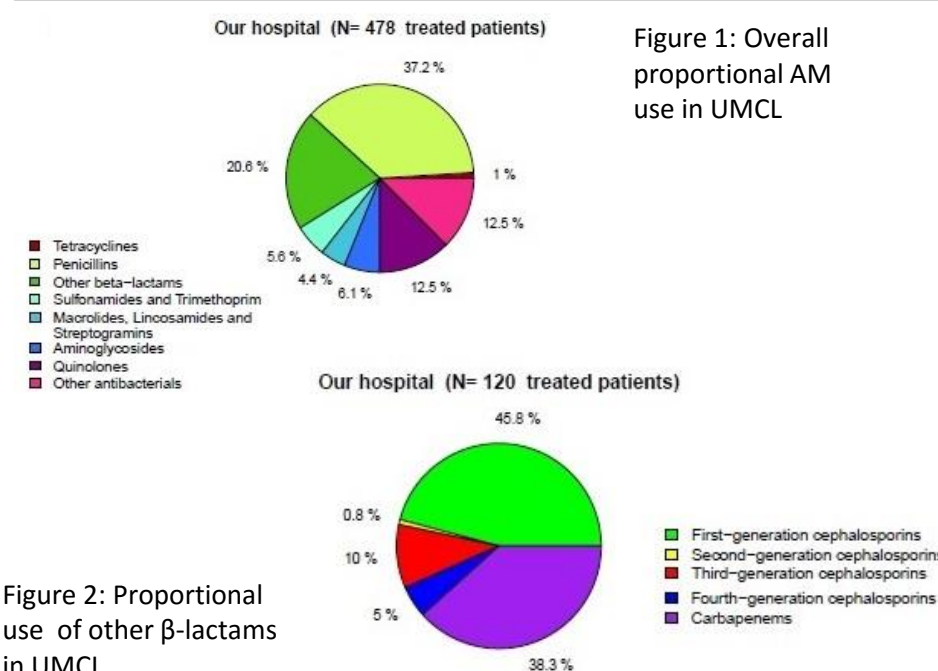
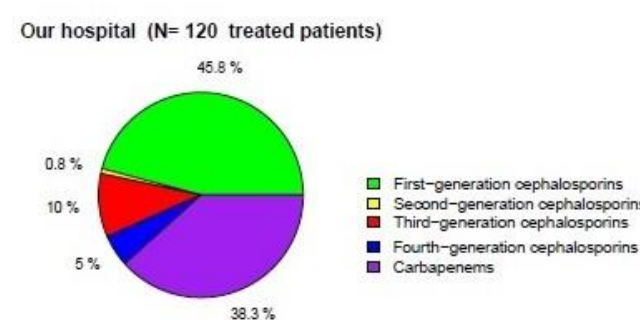


Figure 2: Proportional use of other β-lactams in UMCL



CAI and HAI

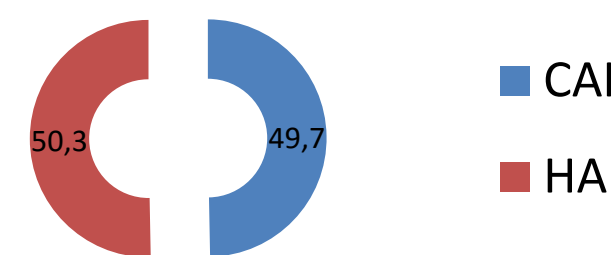


Figure 3: Therapeutic AM use for CAI and HAI

Single dose antibiotic surgical prophylaxis was used in UMCL in slightly less than one third of patients (Figure 4).

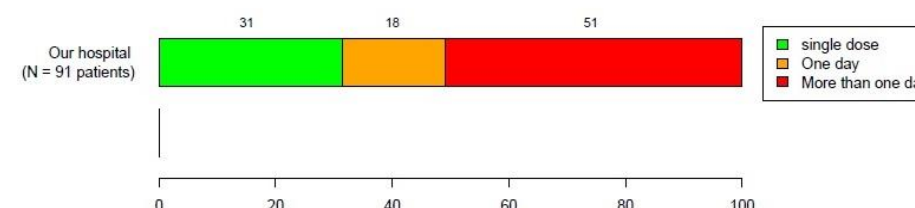


Figure 4: Duration of AM prophylaxis in surgery.

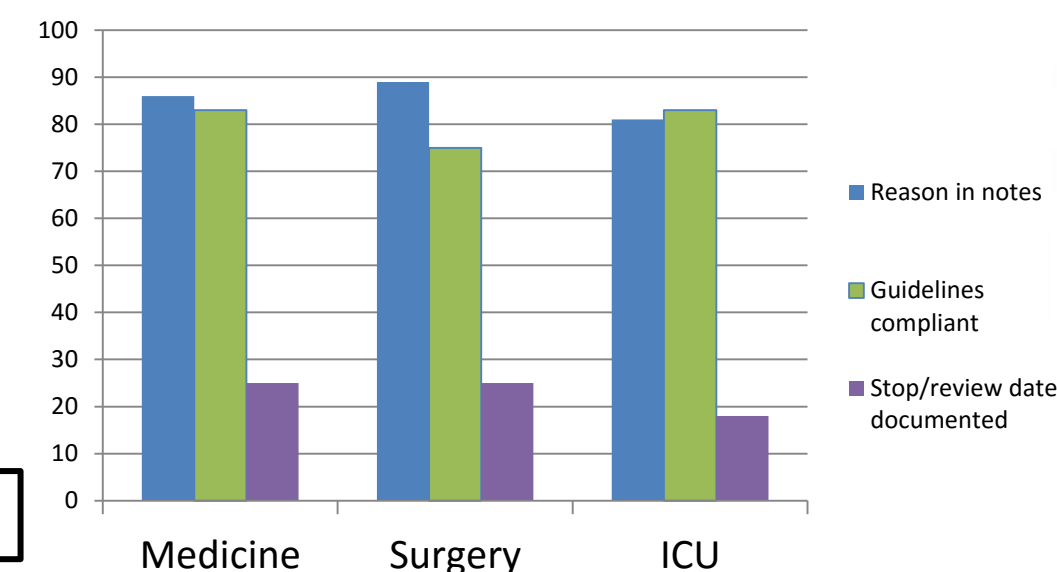


Figure 5: Summary of quality indicators for antibiotic use.

CONCLUSION

Global-PPS provided an insight into antimicrobial prescribing at UMC Ljubljana. According to the results we came to the following conclusions:

- 1.) AM use in hematology and intensive care units should be further analyzed and improved.
- 2.) Improvements should be done to lower the use of fluoroquinolones.
- 3.) Better infection control and antimicrobial stewardship are needed to lower the prevalence of HAI.
- 4.) Stop/review date of prescribed AM should be documented more frequently.
- 5.) We should decrease the duration of surgical prophylaxis.

Disclosures: "bioMérieux is the sole sponsor of the GLOBAL Point Prevalence Survey. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymous at the coordinating centre of the University of Antwerp."