



The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS): Characteristics of Antimicrobial Prescribing in Cancer Patients

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INTRODUCTION AND PURPOSE

A standardized and validated surveillance system is crucial for evaluating antimicrobial stewardship in cancer patients. Yet to date no antimicrobial prescribing patterns for febrile neutropenia have been published because global surveillance data was still lacking. The aim of this study is to describe and assess the baseline characteristics of antimicrobial prescribing for promoting prudent use of antimicrobials in cancer patients worldwide.

METHODS

A one-day point prevalence survey (PPS) was conducted between February and September 2015 in 335 hospitals in 53 countries. Data on patients admitted to adult haematology-oncology wards on the day of the survey were extracted and analysed to assess worldwide variation in antimicrobial drug utilization for pneumonia and febrile neutropenia, the indication for prescription, and quality indicators such as guideline compliance.

RESULTS

A total of 3298 patients admitted to 149 wards were included in the analysis. Overall antimicrobial prevalence rate was 45.1% (Table 1). In addition, 43.9% of patients received multiple antimicrobial prescriptions. Among all antimicrobial prescriptions (n=2464), antibiotics and antimycotics were most often prescribed (73.0% and 20.6%, respectively). Broad-spectrum antibiotics were highly used in most regions, mainly penicillins with beta-lactamase inhibitors (19.5%), fluoroquinolones (16.1%), sulfonamides and trimethoprim (14.7%), and carbapenems (12.0%) (Table 2). Of note, 89.4% of sulfonamides and trimethoprim and 46.4% of fluoroquinolones were prescribed for medical prophylaxis. Therapeutic antimicrobials were most often prescribed for pneumonia (17.1%; range 5.3% in West and Central Asia to 20.4% in West Europe) and febrile neutropenia (13.3%; range 8.5% in East and South Asia to 26.9% in South America). Most commonly used antimicrobials were penicillins with beta-lactamase inhibitors (30.8%), fluoroquinolones (10.9%), and carbapenems (8.8%) for pneumonia; penicillins with beta-lactamase inhibitors (25.1%), carbapenems (22.9%), and glycopeptides (10.3%) for febrile neutropenia. High rates of carbapenem use were observed in hospital-acquired infections compared to community-acquired infections (Figure 1 & Figure 2). Guideline compliance for both prophylactic and therapeutic use was high (95.2% and 85.9%, respectively) and reasons for prophylactic use were less frequently noted (58.2% of prescriptions).

Table 1. Antimicrobial prevalence by region

UN region	Number of patients	Antimicrobial prevalence rates -Overall-	Antimicrobial prevalence rates -Pneumonia-	Antimicrobial prevalence rates -Febrile Neutropenia-
Australia & New Zealand	46	54.3%	8.7%	8.7%
East & South Asia	847	54.0%	8.4%	4.5%
West & Central Asia	156	48.1%	1.9%	6.4%
North America	202	55.4%	5.4%	7.9%
South America	92	28.3%	2.2%	7.6%
North Europe	242	49.6%	8.7%	7.9%
South Europe	646	33.6%	6.3%	4.8%
West Europe	1048	43.1%	8.7%	5.8%

Note. Africa and East Europe were excluded in the analysis due to the limited number of patients.

Table 2. Most prescribed antibiotics (J01, ATC 4 level) by region

	Australia & New Zealand % (n=27)	East & South Asia % (n=591)	West & Central Asia % (n=99)	North America % (n=137)
Penicillins with BLIs	37.0	20.1	27.3	24.8
TMP-SUL	18.5	18.4	17.2	16.1
3 rd generation Ceph	14.8	15.9	12.1	11.7
BL-resistant penicillins	7.4	15.4	8.1	10.2
FQs	7.4	7.6	6.1	9.5
GPs	7.4	6.6	5.1	7.3
Others	7.4	15.9	24.2	20.4

	South America % (n=34)	North Europe % (n=144)	South Europe % (n=278)	West Europe % (n=482)
3 rd generation Ceph	20.6	33.3	21.6	28.6
TMP-SUL	17.6	10.4	11.5	13.7
Carbapenems	11.8	8.3	11.2	13.1
Penicillins with BLIs	8.8	6.9	11.2	7.7
AGs	8.8	6.3	10.8	6.4
FQs	8.8	5.6	7.6	6.2
GPs	8.8	5.6	26.3	24.3
Others	14.7	23.6		

Figure 1. Most prescribed therapeutic antimicrobials for pneumonia worldwide (%)

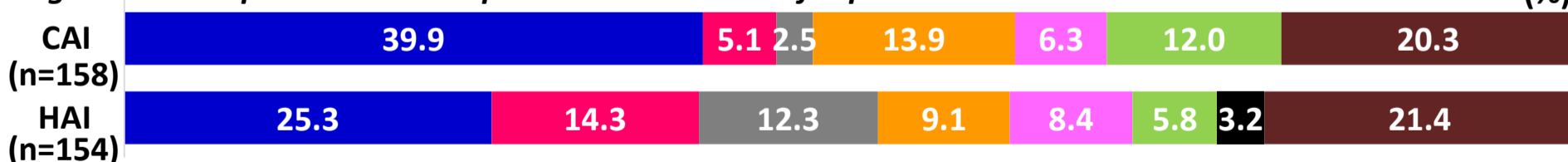
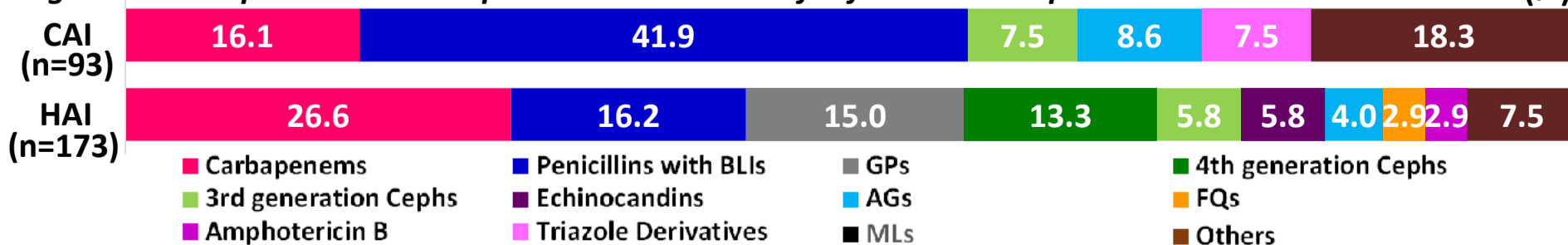


Figure 2. Most prescribed therapeutic antimicrobials for febrile neutropenia worldwide (%)



*Abbreviations. CAI, community-acquired infection; HAI, hospital-acquired infection; BLIs, beta-lactamase inhibitors; TMP-SUL, sulfonamides and trimethoprim; BL, beta-lactamase; FQs, fluoroquinolones; GPs, glycopeptides; Ceph, cephalosporins; AGs, aminoglycosides; MLs, macrolides

CONCLUSION

Distinct features of antimicrobial prescriptions were shown among cancer patients including high rates of antimicrobial prevalence, wide use of broad-spectrum antibiotics, and heavy burden of pneumonia and febrile neutropenia. This global study provides basic data for promoting antimicrobial stewardship in cancer patients.