

The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (Global-PPS) in 2015 and 2017: variation of colistin prescribing



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INTRODUCTION AND PURPOSE

The Global-PPS (www.global-pps.com) assesses antimicrobial prescribing worldwide with a standardized and validated method. Since colistin is recognized as one of the last treatment options for infections caused by multidrug-resistant Gram-negative pathogens (MDR-GNP), we used the variation of colistin prescribing and dosing worldwide as one measure of the prevalence of MDR-GNP.

METHODS

We analysed 2015 and 2017 Global-PPS data (53 countries/335 hospitals and 51 countries/391 hospitals, respectively) to assess colistin systemic use (ATC code J01XB01). Analyses on parenteral dosing are performed in patients aged ≥ 15 years only.

RESULTS

Table 1. Prevalence (%) of colistin prescribing worldwide

United Nation Region	N treated patients (denominator)		colistin (%) (J01XB01)		polymyxins (%) (J01XB01 & 02)	
	2015	2017	2015	2017	2015	2017
Africa	1,365	2,975	0.29	0.54	0.29	0.57
Australia	1,008	269	0.10	0.74	0.10	0.74
East & Southern Asia	5,889	10,594	0.70	0.76	0.88	0.98
Western Central Asia	2,323	2,736	1.59	2.49	1.59	2.49
Northern America	2,386	1,799	0.21	-	0.21	-
Latin America	1,769	4,151	2.37	1.35	2.43	2.12
Eastern Europe	950	1,686	0.74	0.30	1.16	0.42
Northern Europe	3,438	540	0.47	1.11	0.47	1.11
Southern Europe	6,617	4,499	0.83	0.96	0.83	0.96
Western Europe	9,017	7,923	0.34	0.24	0.34	0.24
Total	34,762	37,172	0.69	0.77	0.73	0.93

- Overall worldwide proportion of patients treated with colistin was 0.69% in 2015 (239/34,762) and 0.77% (295/37,172) in 2017 (total of 534 patients). **Table 1** provides details of colistin use by region and includes overall polymyxin use.
- Patients treated with colistin were mainly admitted to ICU (53.9%) followed by adult medical wards (15.9%).
- Top 3 indications for colistin use were pneumonia (36.9%), sepsis (13.3%) and intra-abdominal sepsis (7.3%).
- 74.0% of patients were treated with colistin for a healthcare associated infection (HAI), among which 52.4% non-intervention related (e.g. VAP, catheter related), 34.7% intervention related and 12.9% related to treat a surgical site infection.
- Colistin was intravenously administered in 453 patients (84.8%) and for inhalation in 81 patients (15.2%).

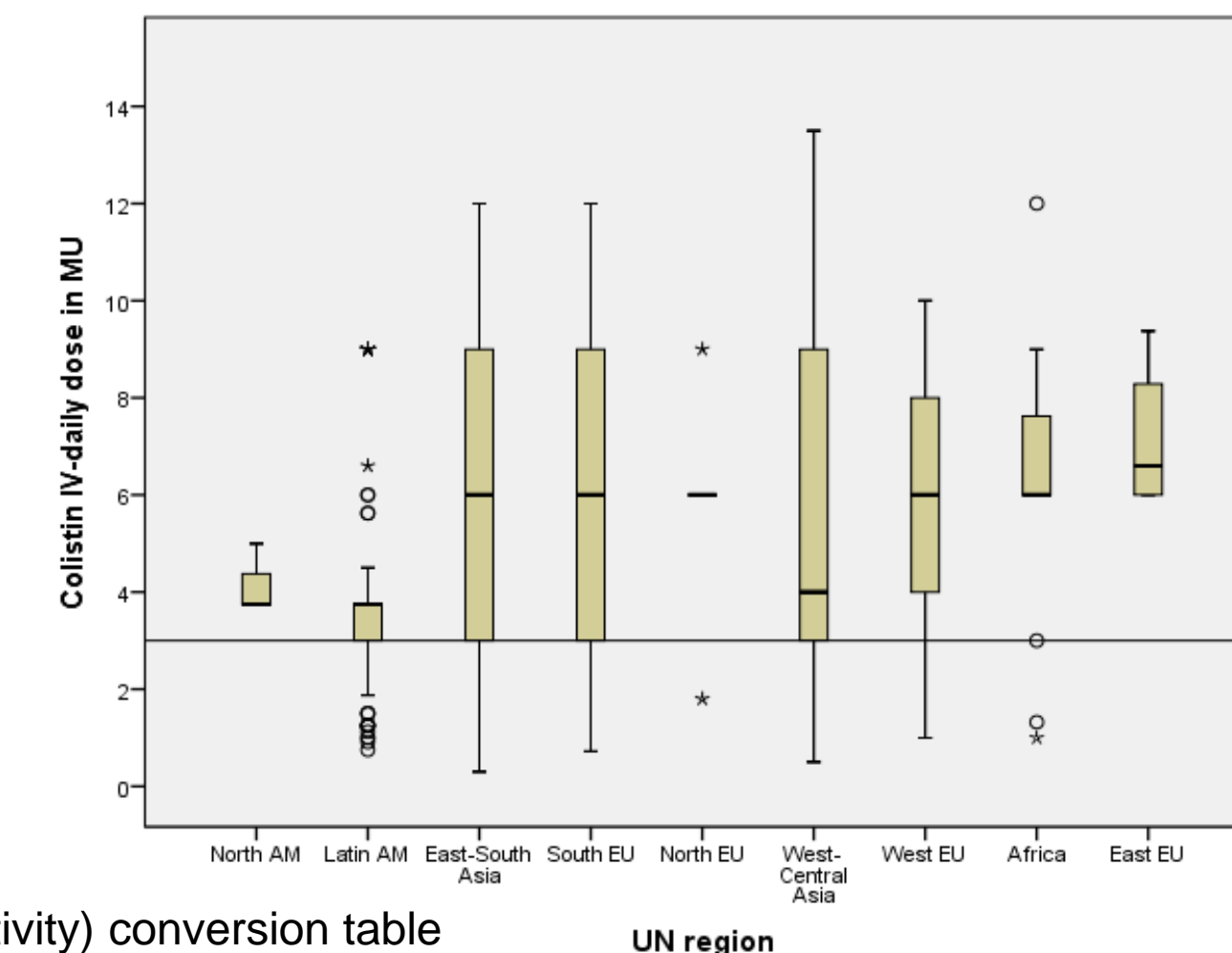
- Overall targeted prescribing for colistin was 75.1% (401/534) with highest rates observed in Northern America (100%, 5/5 patients), Western Central Asia (91.4%; 96/105 patients) and Western Europe (80.0%, 40/50 patients).
- Targeted prescribing against carbapenem resistant organisms was 45.7% (244 patients).
- Worldwide mean parenteral daily dosing of colistin was 5.4MU (n=416, median=4MU) (**Figure 1**). Conversion factors used are provided in **Table 2**.
- The number of IV-administrations per day varied from every two days up to 4 times/day (2 times= 45.3%; 3 times= 41.9%; 1 time= 9.3%).

Potency IU	≈ mg CBA	≈ mass of CMS (mg)*
12.500	0.4	1
150.000	5	12
1.000.000	34	80
4.500.000	150	360
9.000.000	300	720

Nominal potency of the drug substance = 12.500 IU/mg

Table 2. CMS (colistimethate sodium), CBA (colistin base activity) conversion table (ref=http://www.ema.europa.eu/docs/en_GB/document_library/Referrals_document/Polymyxin_31/WC500176332.pdf; see page 4)

Figure 1. Variation in daily parenteral colistin dosing among patients ≥ 15 year, by region. Reference=WHO Defined Daily Dose expressed in Million International Units (=3 MU)



CONCLUSION

Global use of systemic colistin increased in 2017 as compared to 2015 mainly affecting patients with HAI admitted to ICU. The big variation in colistin prescribing (dose, frequency) observed worldwide probably reflects the confusion about optimal dosing of colistin in critically ill patients. Analyses on colistin dosing are indicative of worldwide colistin IV dosing. Due to uncertainties between CMS and CBA encoding in the database, caution is needed in interpreting these data. There is a need to add MU as option, beside IU and mg, to report colistin dosing.