



Contact :
doc.glzdiaz@gmail.com

THE GLOBAL POINT PREVALENCE SURVEY OF ANTIMICROBIAL CONSUMPTION AND RESISTANCE: 2018-2019 RESULTS FOR HOSPITAL-ACQUIRED PNEUMONIA IN 8 MEXICAN HOSPITALS



Esteban Gonzalez-Diaz¹; Ann Versporten²; Suria Loza³; Juan Corona⁴; Ines Pauwels²; Javier Araujo⁵; Daniel Basurto⁶; Norma Hernández⁷; Martín Almaraz⁸; Julio Molina⁹; Darwin Torres¹⁰; Herman Goossens²

¹ Unidad de Vigilancia Epidemiológica Hospitalaria & Medicina Preventiva, Hospital Civil de Guadalajara Fray Antonio Alcalde, Guadalajara, Mexico; ² Laboratory of Medical Microbiology, Vaccine & Infectious Disease Institute (VAXINFECTIO), Faculty of Medicine and Health Science, University of Antwerp, Antwerp, Belgium; ³ Hospital de Especialidades CMN Siglo XXI, IMSS, Mexico City; ⁴ Hospital Angeles del Carmen, Guadalajara; ⁵ Hospital Central Dr. Morones Prieto, San Luis Potosí; ⁶ Hospital General Regional 200 IMSS, Estado de Mexico; ⁷ bioMérieux, Guadalajara; ⁸ HGR 1 IMSS Dr. Carlos McGregor Sánchez, HGR 1 IMSS Dr. Carlos McGregor Sánchez, Ciudad de Mexico; ⁹ Hospital Cardiología IMSS, Monterrey; ¹⁰ HR de Alta Especialidad de la Península de Yucatán, Mérida, Mexico

INTRODUCTION AND PURPOSE

Despite advances in treatment of hospital-acquired pneumonia (HAP) and ventilator-associated pneumonia (VAP) they continue to account for 22% of all hospital-associated infections (HAIs)[1]. In an effort to minimize patient harm and unnecessary antibiotic use and to reduce development of antibiotic resistance, a recommendation is to generate local antibiograms to guide healthcare professionals to the optimal choice of antibiotics and to support implementation of antimicrobial stewardship programs [2-4]. The Global-PPS (www.global-pps.com) [G-PPS] aims to assess the variation of hospital antimicrobial prescribing worldwide. We describe antibiotic treatment for hospital-acquired pneumonia (HAP) in Mexico.

METHODS

A standardized surveillance study of antimicrobial use assessed HAP prevalence and variation in antimicrobial therapy in 8 Mexican hospitals. The survey included all inpatients receiving an antimicrobial on the day of the point prevalence survey. The G-PPS was conducted from May 2018 to April 2019, in 6 tertiary and 2 secondary care hospitals. Data collected included details on the antimicrobial agents, reasons and indications for treatment as well as a set of quality indicators. A web-based application was used for data-entry, validation and reporting as designed by the University of Antwerp.

RESULTS

The G-PPS included a total of 2,181 patients with antimicrobial therapy amongst the wards; 1,930 were in adult, 193 in paediatric and 58 in neonatal wards. Of all treated adults, 315 patients (16.3%) were diagnosed with pneumonia (**Figure 1**), 133 had community-acquired pneumonia and 181 patients were registered with HAP (57.5%) (**Figure 2**). Up to 36.5% of prescriptions for adult HAP patients were targeted, of which 49.1% was against at least one multidrug resistant organism (MDRO). Thirty-seven per cent of the targeted antimicrobial therapy were targeting extended spectrum beta-lactamase (ESBL)-producing bacteria (**Figure 3**). ESBL *Enterobacteriaceae* were reported in 17 cases (15.7%) and ESBL non-fermenters in 23 (21.3%) of the MDRO-targeted prescriptions.

Figure 1. Number of pneumonia patients by ward type

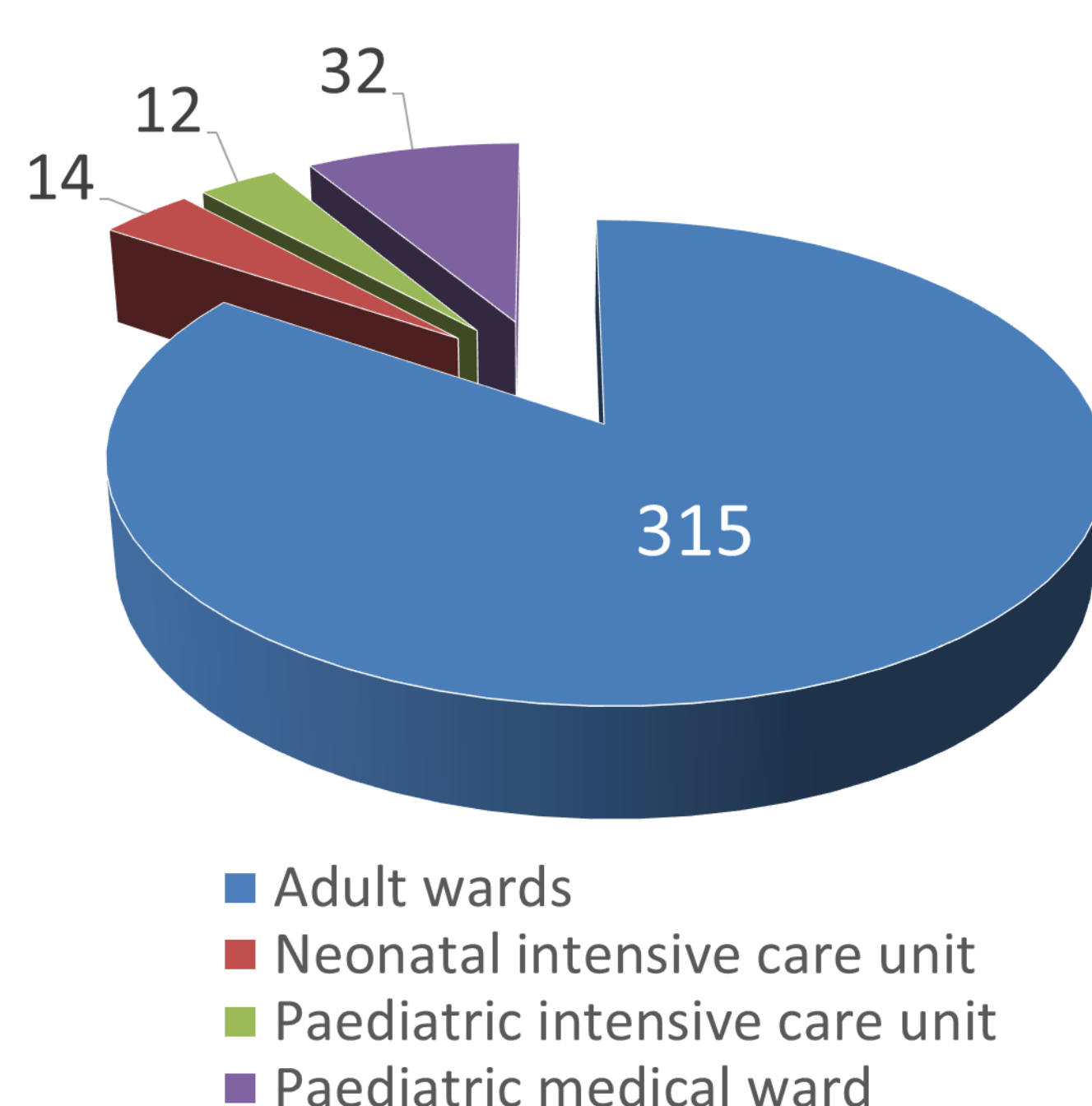


Figure 2. Classification of pneumonia in adult patients

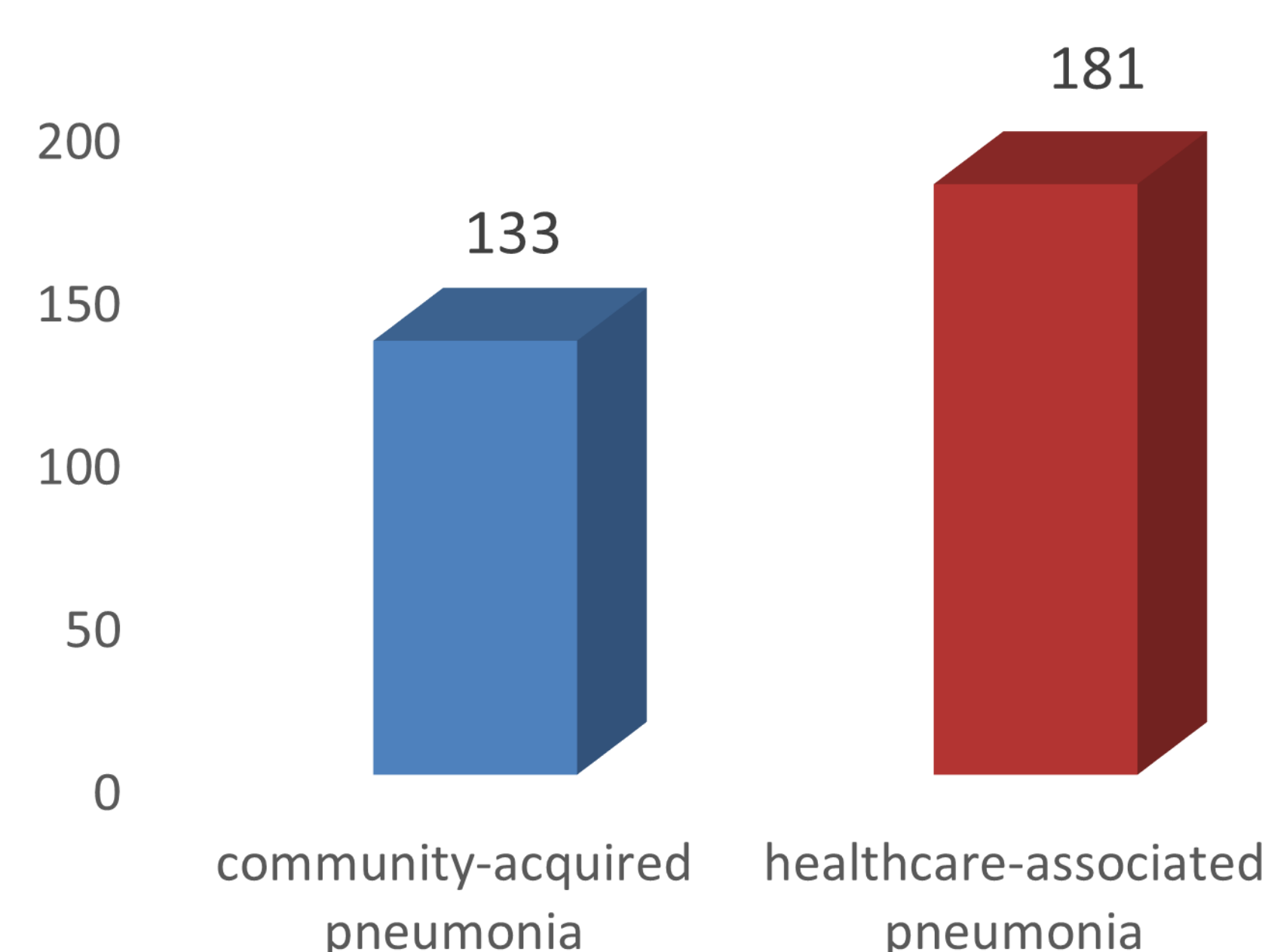
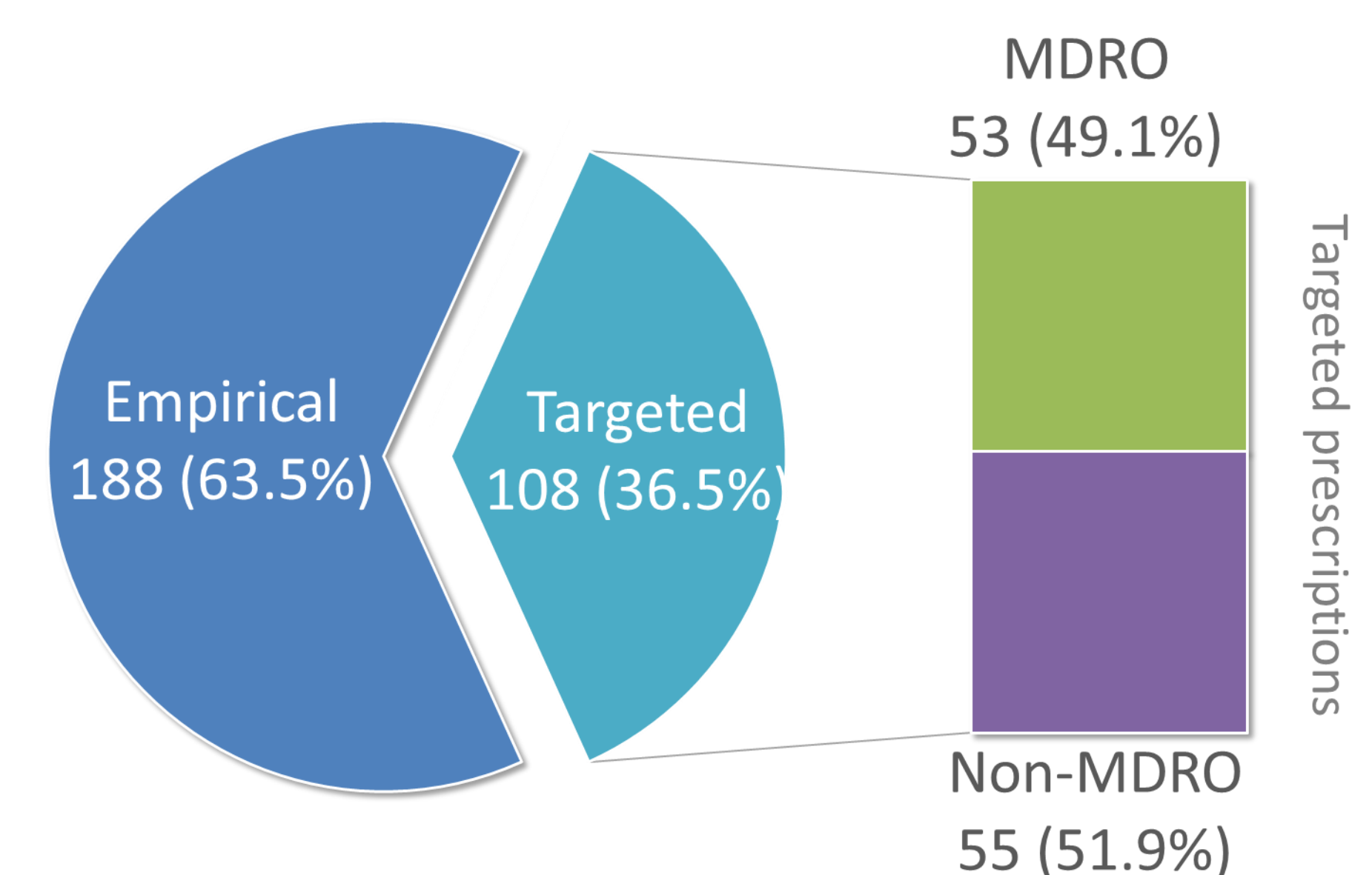


Figure 3. Empirical vs. targeted therapy in adult HAP patients (number of prescriptions, %)



On adult wards, a reason for antimicrobial prescription was documented in 95.6% of 296 prescriptions for HAP and 83% complied with local guidelines. Biomarkers were used to progress treatment in only 41.4% of all cases (**Figure 4**). Overall, the most commonly prescribed antibiotics were carbapenems, followed by oxazolidinones, tetracyclines, fluoroquinolones, glycopeptides and penicillins (**Figure 5**). Of all antimicrobial prescriptions for HAP, 23% was for meropenem, 13.5% for piperacillin with or without beta-lactamase inhibitor, 8.8% for linezolid, 7.4% for vancomycin and 7.1% for tigecycline.

Figure 4. Antimicrobial treatment for adult HAP patients based on biomarker data (% of patients)

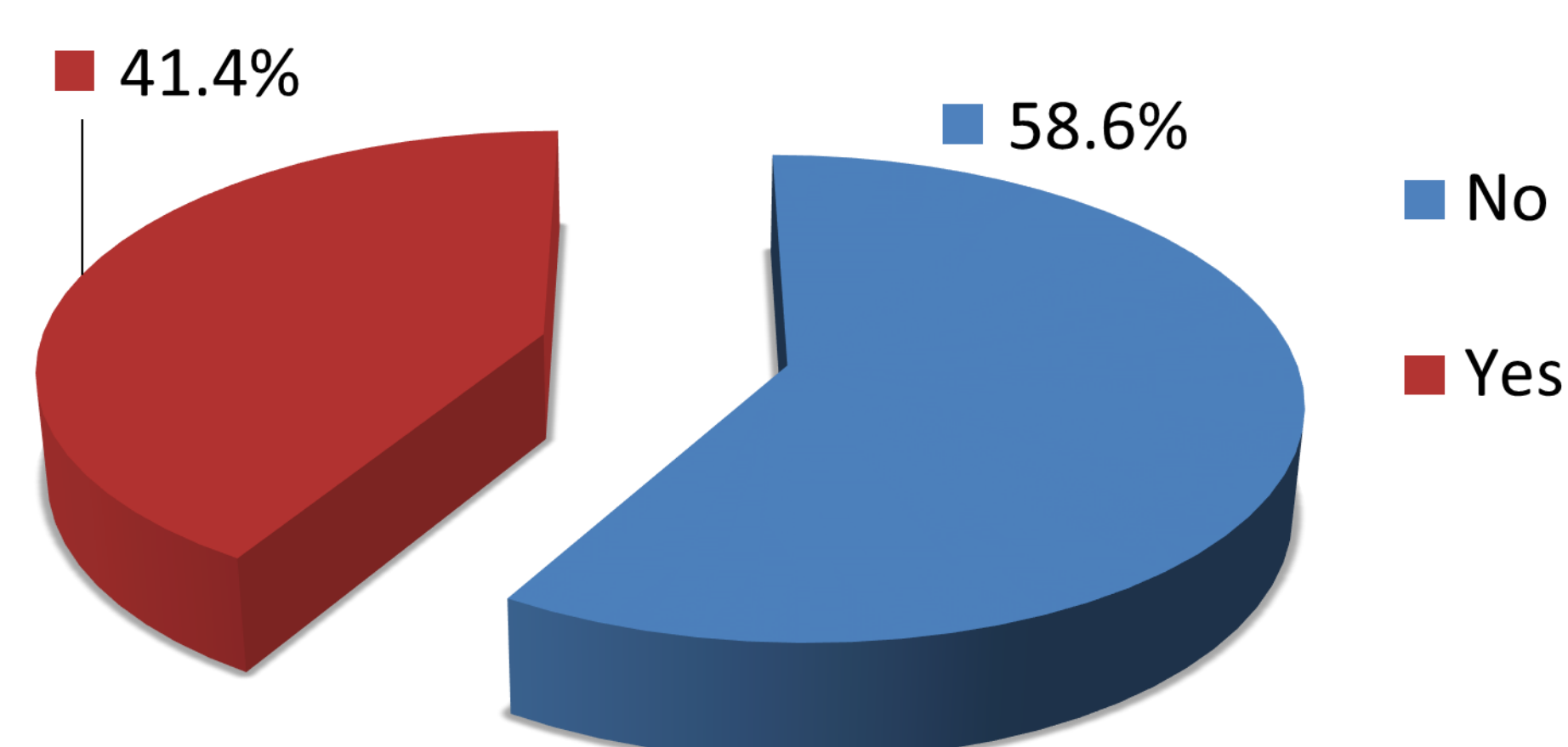
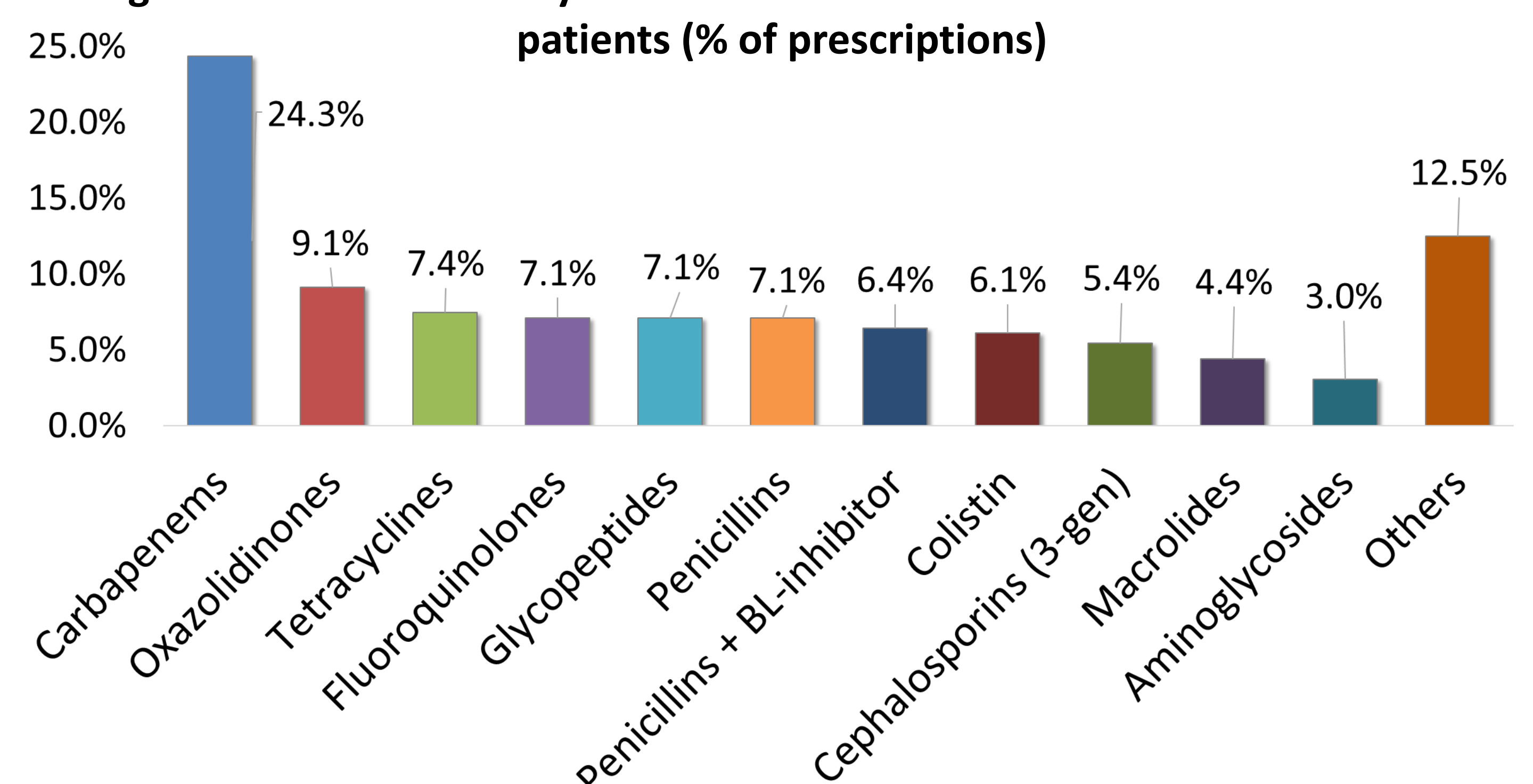


Figure 5. Most commonly used antimicrobials for treatment of adult HAP patients (% of prescriptions)



CONCLUSION

The G-PPS was essential in assessing antimicrobial use for hospital-acquired pneumonia in the 8 participating Mexican hospitals. **These data provide important insights into the management of pneumonia in adults and highlight the need to implement antimicrobial stewardship programs in all hospitals to improve antibiotic prescribing by reducing carbapenem use, enhancing compliance to guidelines and performing post-prescription review.** There was a low level of biomarker use in the management of pneumonia with an even lower overall use of targeted treatment for these infections urging the need for more microbial diagnostics, to generate local antibiograms to guide healthcare professionals and use of biomarkers to facilitate medical management. The Global-PPS will be further expanded in more Mexican hospitals in 2019.

REFERENCES

1. International ERS/ESICM/ESCMID/ALAT guidelines for the management of hospital-acquired pneumonia and ventilator-associated pneumonia Antoni Torres, Michael S. Niederman, Jean Chastre, Santiago Ewig, Patricia Fernandez-Vandellos, Hakan Hanberger, Marin Kollef, Gianluigi Li Bassi, Carlos M. Luna, Ignacio Martin-Loeches, J. Artur Paiva, Robert C. Read, David Rigau, Jean François Timsit, Tobias Welte, Richard Wunderink European Respiratory Journal Sep 2017, 50 (3) 1700582; DOI: 10.1183/13993003.00582-2017
2. O'Neill J. Antimicrobial resistance: tackling a crisis for the health and wealth of nations. Rev Antimicrob Resist. 2014;20:1–16.
3. NICE. Antimicrobial stewardship: systems and processes for effective antimicrobial medicine use. United Kingdom: National Institute for Health and Care Excellence; 2015.
4. CDC. Core Elements of Hospital Antibiotic Stewardship Programs. Atlanta, GA: US Department of Health and Human Services, CDC; 2014. Available at <http://www.cdc.gov/getsmart/healthcare/implementation/core-elements.html>.

Disclosures: None Declared. "bioMérieux is the sole private sponsor of the Global Point Prevalence Survey. The Global-PPS is also funded by a personal Methusalem grant to Herman Goossens of the Flemish government. The funder has no role in study design, data collection, data analysis, data interpretation, or writing the report. Data are strictly confidential and stored anonymously at the coordinating centre of the University of Antwerp."