



Calgary Participation in the Global Point Prevalence Survey of Antimicrobial Consumption & Resistance: A Tool for Identification of Targets for Quality Improvement in Antimicrobial Stewardship



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INTRODUCTION AND PURPOSE

The Global Point Prevalence Survey of Antimicrobial Consumption and Resistance (GLOBAL-PPS) is an ambitious project that expands the standardised and validated European Surveillance of Antimicrobial Consumption (ESAC) Point Prevalence Surveillance (PPS) method of data collection.

Given the importance of Antimicrobial Stewardship (AS) in acute care hospitals across Canada, and with all hospitals in Calgary participating in GLOBAL-PPS, a unique opportunity was provided to use the data collected to identify targets for quality improvement (QI) at a local level.

METHODS

A point prevalence survey was conducted between February-April 2015, in all wards of all five tertiary hospitals (4 adult/1 paediatric) in Calgary, Alberta (population 1.4 million). The widely adopted ESAC PPS methodology¹ was used, after an initial pilot survey was trialled with a limited scope in 2013.

Within 4 consecutive weeks, all wards in each hospital were surveyed on a single day for bed census, and for inpatients on antimicrobial agents at 0800 hours. Detailed data were collected using a standardized and validated method (www.global-pps.com) for surveillance of all inpatients receiving an antimicrobial on the day of the survey. Antimicrobials were surveyed according to the World Health Organization (WHO) Anatomical Therapeutic Chemical classification.²

Detailed patient data were anonymously entered online using a web-based tool for data-entry, validation and reporting, which was housed and coordinated by the University of Antwerp.

Denominator data included all admitted inpatients, collected at the ward level. Surveyors were comprised of infection control practitioners, and infectious diseases physicians/pharmacists.

Table 1. Prevalence Rates, Adult Patients (n=666), all Calgary Hospitals

Healthcare-associated infection (HAI)	17%	
CDAD	4%	→33% received vancomycin
Cefazolin for surgical prophylaxis	11%	→32% received ≥ 3 days duration
Piperacillin/tazobactam	13%	→39% for HAI; 84% empiric
Meropenem	3%	
Vancomycin IV	8%	
Linezolid (PO/IV)	1.4 %	

Disclosure: "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 anonymously at the coordinating centre of the University of Antwerp."

RESULTS

Worldwide participation in the GLOBAL-PPS is shown in Figure 1. Only two other (non-teaching) hospitals in one other region in Canada participated, which limits a Canadian analysis.³ Furthermore, the other region is located >4,500 km away in eastern Canada.

Overall, 30% of all patients in our hospitals were receiving at least one antimicrobial (31% adult, 24% paediatric) at the time of the PPS. Of 666 adult and 66 paediatric patients, 55% and 33% respectively, were receiving at least one antibiotic via the oral route. For adult and paediatric patients (excluding neonates), the most common indication for antimicrobials was lower respiratory tract infection.

As shown in Table 1, 17% of adult patients were receiving an antimicrobial for a healthcare-associated infection, and 4% of adults were being treated for *C.difficile* associated diarrhea (CDAD). Regarding broad-spectrum drugs, 13% of adult patients received piperacillin-tazobactam (39% for healthcare-associated infections; 84% empiric therapy), while 3% of adult patients received meropenem.

As shown in Figure 2, seventy-four of 666 adult patients (11%) were receiving cefazolin as surgical prophylaxis, and for 24 of the 74 patients (32%), the duration was greater than 3 days.

Finally, in terms of quality indicators, for 84% of adult patients, and 94% of paediatric patients, a reason was given (in the medical record) for at least one of the antimicrobials, and a stop/review date was documented for at least one of the antimicrobials for 66% of adult patients (data not shown). The same data at the antibacterial level is shown in Table 2.



Figure 1. Worldwide distribution³ of countries that participated in the GLOBAL-PPS

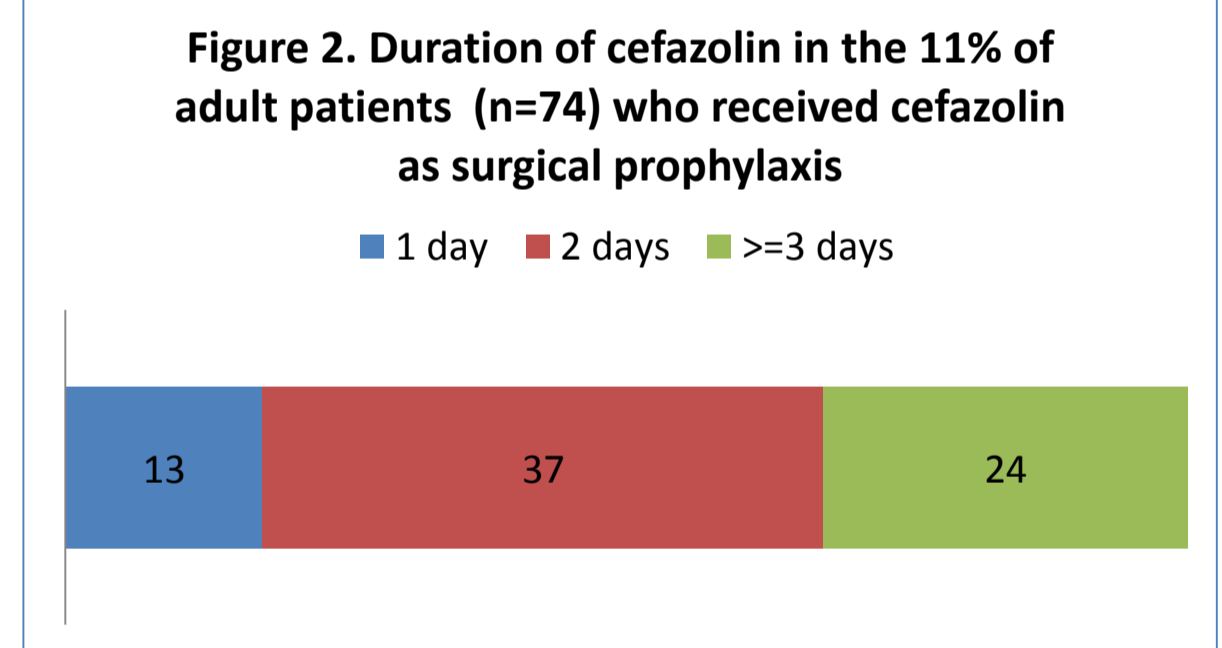


Figure 2. Duration of cefazolin in the 11% of adult patients (n=74) who received cefazolin as surgical prophylaxis

CONCLUSIONS

- The standardized GLOBAL-PPS was a valuable process
- It allows for comparison with other global sites for benchmarking purposes
- It also identified areas for QI initiatives, at the local level including:
 - i) prolonged surgical prophylaxis in adults,
 - ii) parenteral vancomycin use
 - iii) addition of documented stop dates for all patients
 - iv) documentation of antibiotic indication in surgical patients

REFERENCES

¹ Zarb P, ... Davey P, ... Goossens H, et al. *J Antimicrob Chemother* 2011; **66**:443-449.
² The Anatomical Therapeutic Chemical Classification System; 2016 <http://www.who.int/classifications/atcddd/en/>.
³ Personal Communication, A. Versporten

Table 2. Two Quality Indicators, all Calgary Hospitals, count at antibacterial level

	Quality Indicator [ward type]	Medical %	Surgical %	ICU %	Average %
Adult	Reason in Notes	89	71	86	82
	Stop/review date documented	63	66	50	60%
Paediatric & Neonatal	Reason in Notes	98	75	97	90
	Stop/review date documented	53	38	63	51