



# FROM THE SURVEILLANCE OF ANTIBIOTICS PRESCRIPTIONS TO LIMITATION OF MULTIDRUG RESISTANT BACTERIA STRAINS: THE ROLE OF THE HOSPITAL PHARMACY IN DEFINING A CARBAPENEM-SPARING-STRATEGY

L Gambitta\*, E Galfrascoli, E Calzavara, V Curci, MLA Medaglia.

ASST Fatebenefratelli-Sacco- Fatebenefratelli and Ophthalmic Hospital, Hospital Pharmacy Operative Unit, Milan, Italy

## BACKGROUND

The anti-microbial resistance (AMR) situation in Italy is worse than in many other EU Member States. The latest EARS-Net 2015 report confirms a high percentage of invasive bacterial isolates with disturbing AMR characteristics, significantly above the EU/EEA average. *Klebsiella pneumoniae* blood isolates resistant to carbapenems increased from 1.3% in 2006 to 33.5% in 2015. For *Escherichia coli*, combined resistance increased from 0.8% in 2002 to 14.6% in 2015. *Acinetobacter* blood isolates resistant to carbapenems is very high: 83% (2012) and 78.3% (2015). The hospital pharmacy plays a major role in monitoring antibiotic prescriptions, in order to limit selection of the resistant bacteria strain.

## PURPOSE

Describe the pattern of antimicrobial prescribed with motivated request: focus on critical bacteria strains in order to define strategic intervention programmes.

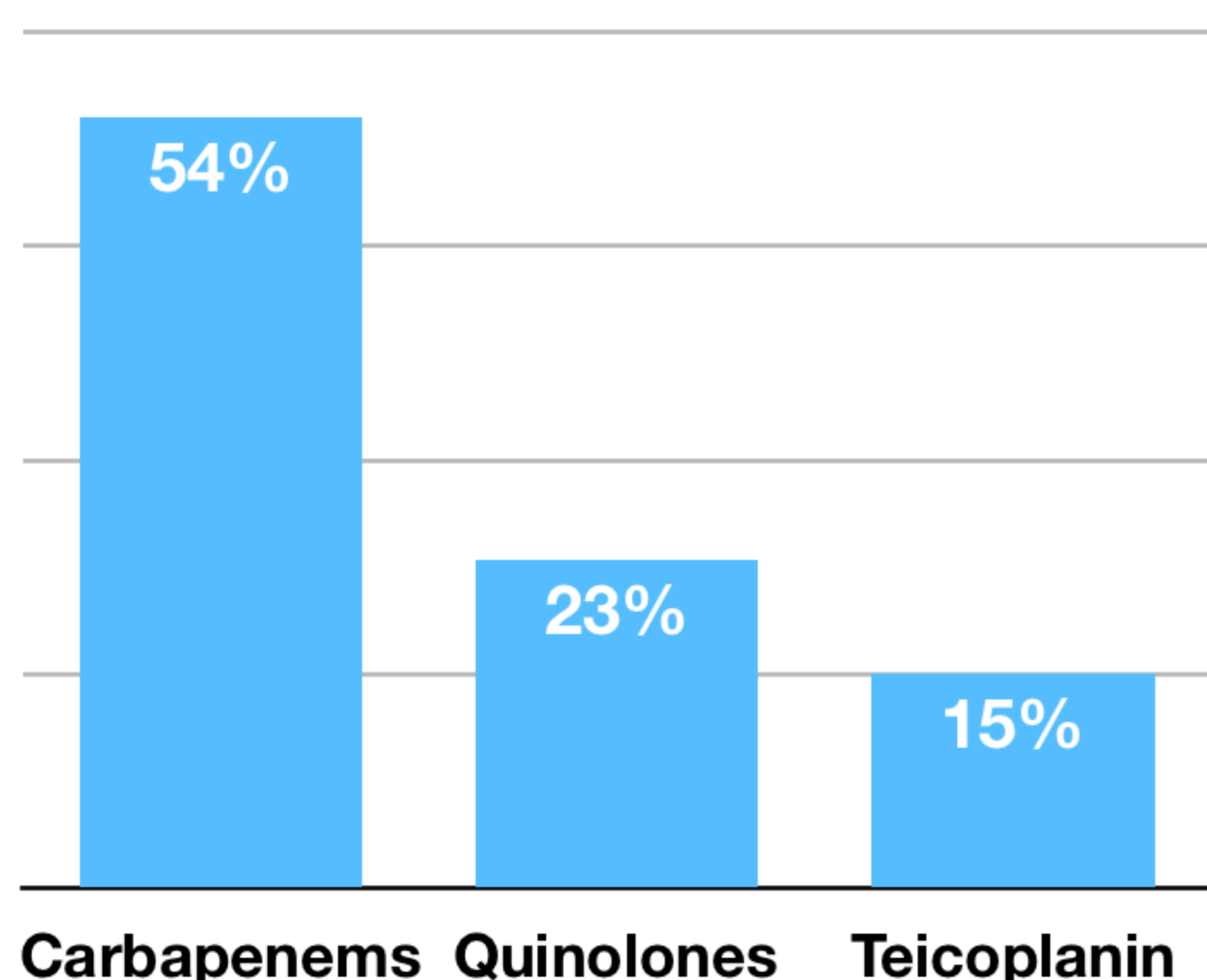
## MATERIALS AND METHODS

We collected data from the antibiotic prescriptions from June to September 2018. An Excel database was created. We focused on length of therapy, type of infection, antibiotic used, empiric versus target therapy and resistant bacteria strains.

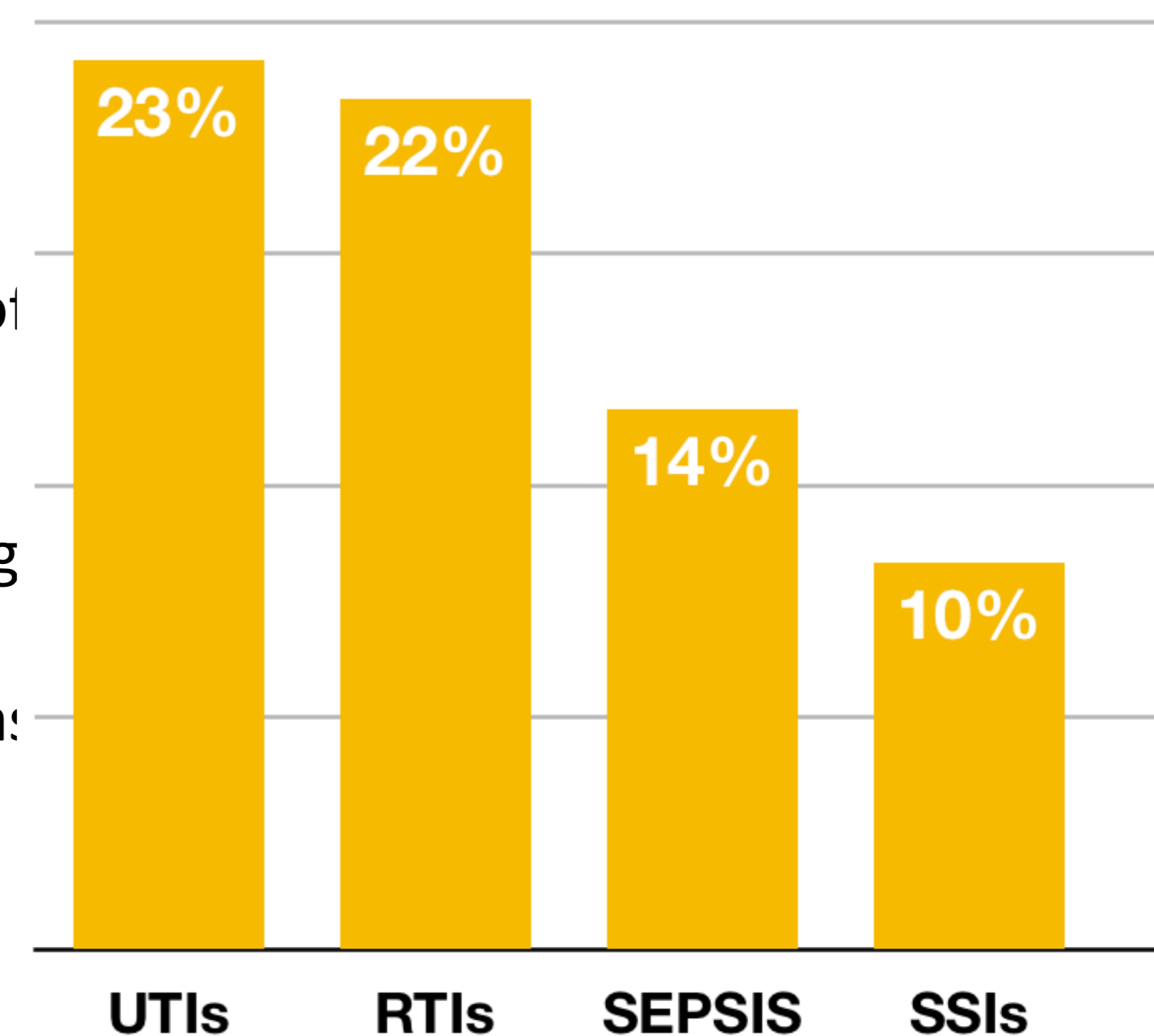
## RESULTS

We collected antibiotic prescriptions for 148 patients (55% male, 45% female) and 172 infections. Average age was 70.5 years' old. Average length of therapy was 10.5 days. Prevalent types of infection were (**Chart 2**): 23% urinary tract infection (UTI); 22% respiratory tract infections (RTI); 14% sepsis; and 10% surgical site infections (SSI). Concerning critical bacteria strains (according to the WHO list) (**Table 1**): in 28% (11/39) of UTI *E. Coli* ESBL+ was isolated and treated with carbapenems; five *Klebsiella pneumoniae* carbapenem-resistant were isolated (four from urine culture treated with tygeciline, one from surgical site infections, which required treatment with ceftolozane/tazobactam 1.5 g x 3 for 2 weeks); one isolation of *Acinetobacter baumannii* MDR, carbapenem-resistant, responsible of complicated pneumonia, was treated with colistin; and three *Pseudomonas aeruginosa* carbapenem-resistant, required treatment with ceftolozane/tazobactam and ceftazidime/avibactam, with clinical benefit. Of the total prescriptions 38% were target therapy and 45% empiric therapy: of 148 patients, 54% were treated with carbapenems, 23% with quinolones and 15% with teicoplanin (**Chart 1**).

■ Chart 1. Percentage of antibiotic use



■ Chart 2. Prevalent types of infections



| Table1.CRITICAL BACTERIA STRAINS                  | Number of isolation (Type of infection) | Treatment  |
|---|---|--|
| <i>E. Coli</i> ESBL+                              | 11 (UTIs)                               | Carbapenems  |
| <i>Klebsiella pneumoniae</i> carbapenem-resistant | 4 (UTIs)<br>1 (SSI)                     | Tygeciline<br>Ceftolozane + tazobactam               |
| <i>Acinetobacter baumannii</i> MDR                | 1 (Complicated pneumonia)               | Colistin   |
| <i>Pseudomonas aeruginosa</i>                     | 3                                       | Ceftolozane + tazobactam;<br>Ceftazidime + avibactam |

## CONCLUSIONS

Our data, although from a short period of time, confirms that carbapenems are the most prescribed antibiotics: their intensive use has contributed to bacteria resistant strains selections. Therefore, actual and future hospital priority is the improvement in a carbapenem-sparing-strategy, through post-prescription review and motivated request.

