

# Global Point Prevalence Survey of Antimicrobial Consumption and Resistance hospitals worldwide



**Tunisia Point Prevalence Survey  
Habib Bourguiba Hospital  
Tertiary hospital  
2017**

Basma MNIF

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ASLM 2018

Habib Bourguiba University Hospital, Sfax, Tunisia



# Disclosures



"biMérieux 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."



# Outline

- Background
- Methods
- Results
- Targets and actions
- Conclusion

# Global-PPS : an innovative worldwide accessible web-based tool



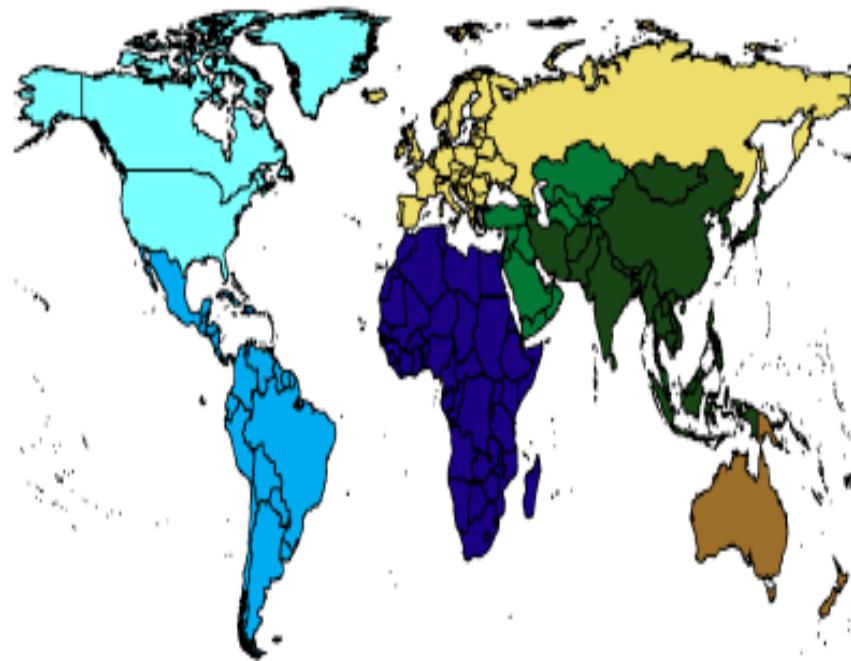
designed by the University of Antwerp, Belgium ([www.global-pps.com](http://www.global-pps.com))

- Standardized and simple approach
  - Data collection on antibiotic prescription patterns and resistance in the hospital
  - Data comparison, nationally and worldwide
- 
- Identify targets to improve antibiotic prescribing
  - Combat antibiotic resistance
  - Continually improve healthcare quality



# Participation to Global-PPS according to UN macro-geographical regions (2017)

	Number of countries	Number of hospitals
North America	2	18
South America	7	52
Africa	4	31
Europe	18	115
West & Central Asia	5	37
East & South Asia	9	71
Australia & New Zealand	0	0





# G-PPS

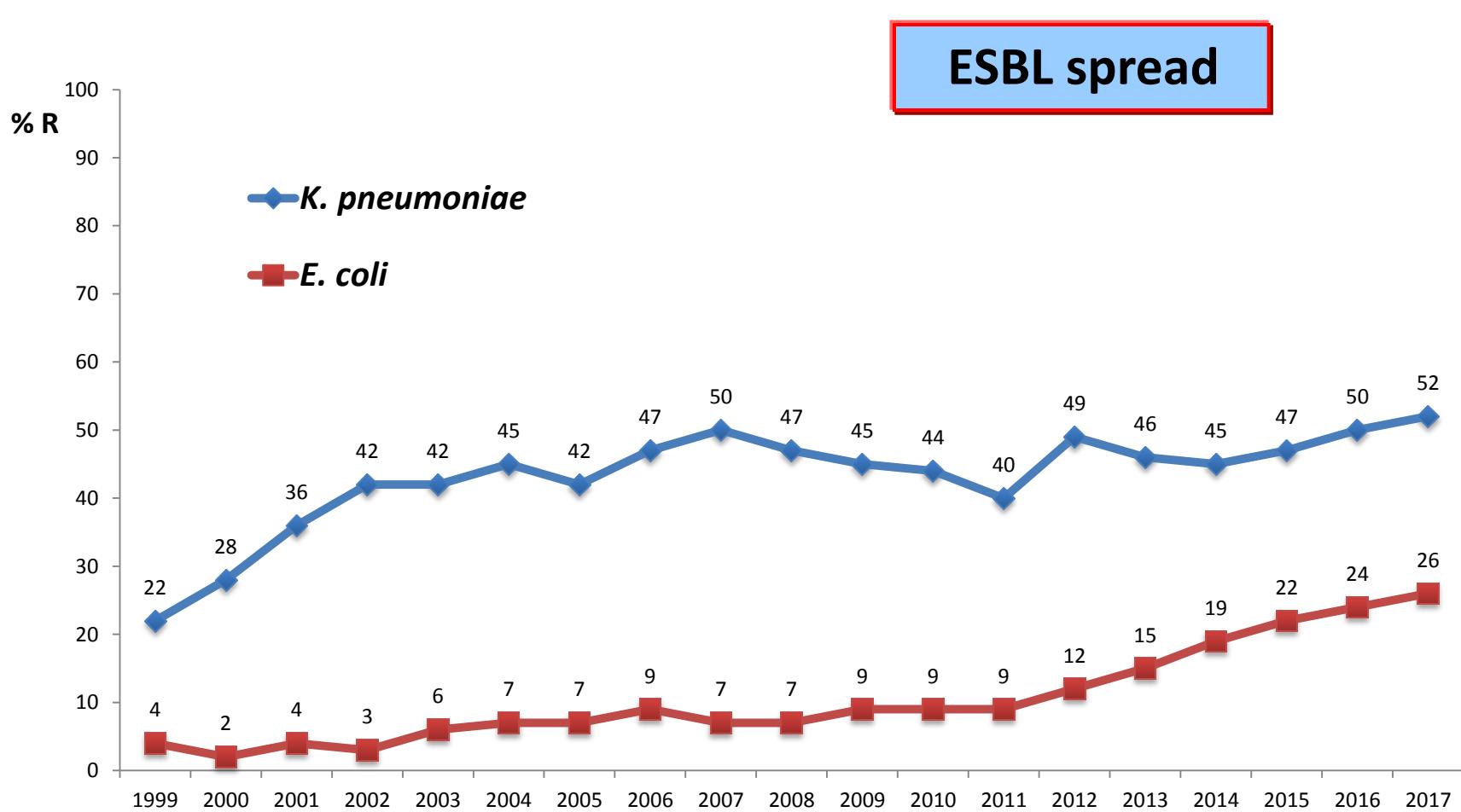
## Habib Bourguiba Hospital (HBH), Sfax, Tunisia



450 beds

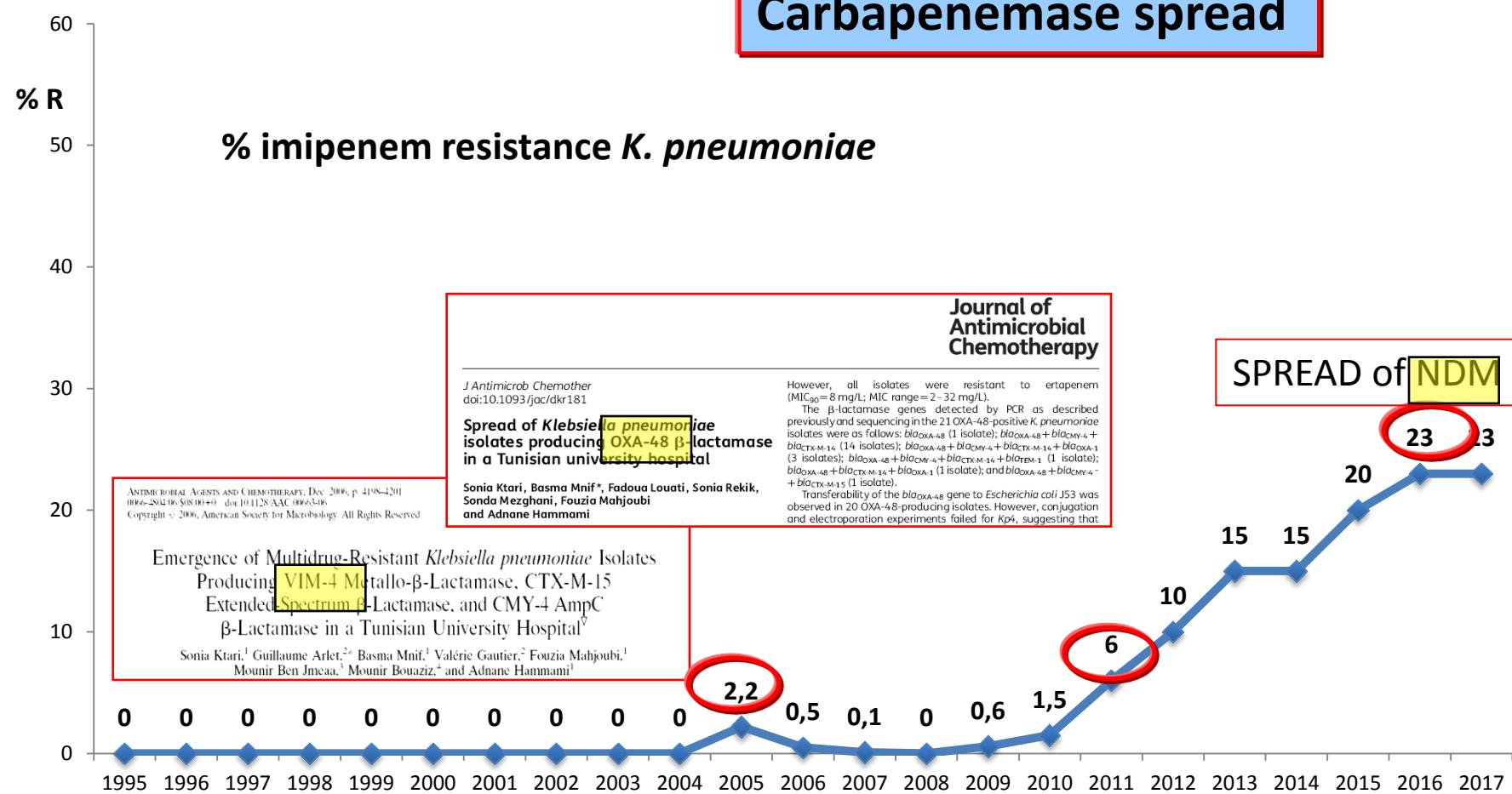


# Evolution of third-generation cephalosporin resistance in Enterobacteriaceae in HB hospital



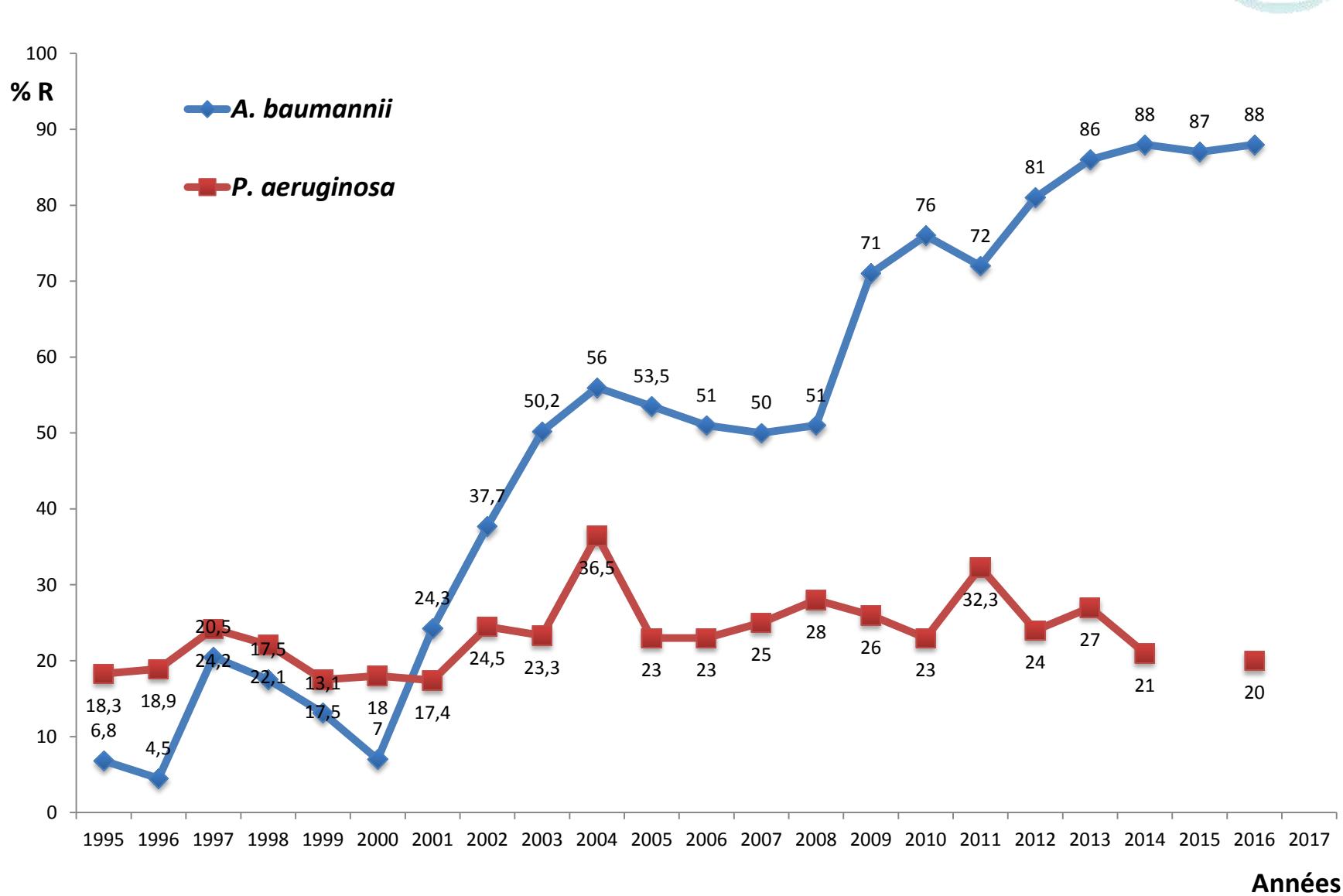


# Evolution of carbapenem resistance in Enterobacteriaceae in HB hospital





# Evolution of carbapenem resistance in non fermenter Gram-negative bacilli in HB hospital





## Poor hygiene Antibiotic misuse

A black and white portrait of William Thomson, Lord Kelvin, a man with a full, bushy white beard and receding hairline, wearing a dark suit and tie.

If You Can't  
Measure It,  
You Can't  
Improve It

(William Thomson, Lord Kelvin)



# Methods

- Global-PPS was carried out in Habib Bourguiba university hospital in Tunisia between November and December 2017
- Protocol ([www.global-PPS.com](http://www.global-PPS.com))
- Data collection templates-paper forms : ward and patient forms
- All inpatients receiving an antimicrobial on the day of the point prevalence survey were included
- Informations collected :
  - patients' demographics
  - antimicrobial agents
  - indications for treatment
  - quality indicators : Reason in note, Targeted treatment, use of biomarkers, microbiological data and MDROs
- Web-based data-entry, verification, validation and reporting through the G-PPS program



# Antibiotic prevalence rates

## Overall antimicrobial prevalence by region and type of adult ward (2017)

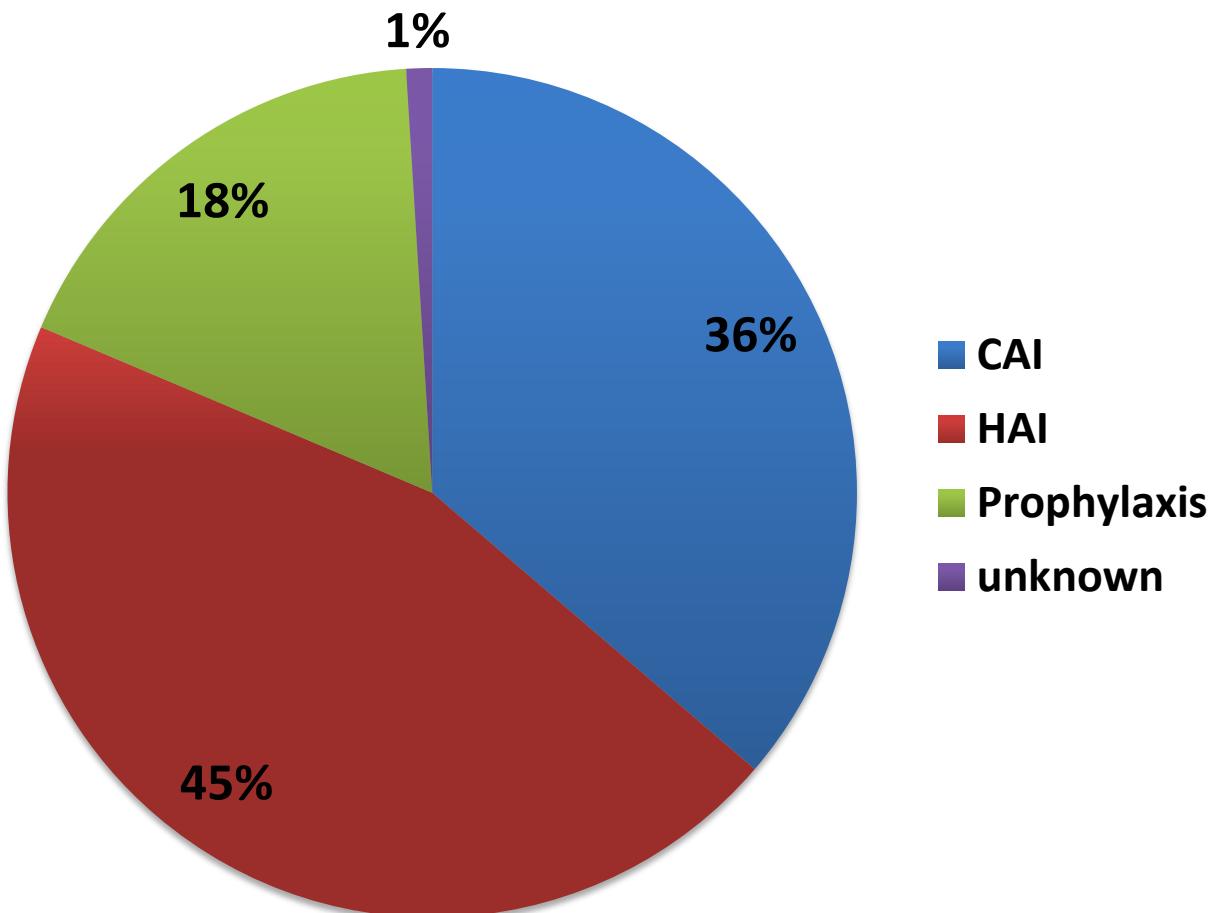
	Total	AMW	HO-AMW	T-AMW	P-AMW	ASW	AICU
<b>North America</b>	35.0	29.3	41.4	79.7	53.7	38.5	45.2
<b>South America</b>	43.7	40.9	41.9	77.3	51.9	39.9	60.5
<b>Africa</b>	<b>57.8</b>	59.1	68.3	66.7	50.0	53.7	<b>72.8</b>
<b>North Europe</b>	31.5	25.0	29.1	69.2	42.9	35.9	51.4
<b>West Europe</b>	27.3	22.7	45.1	85.0	45.3	28.4	51.3
<b>South Europe</b>	37.3	31.4	42.3	91.7	50.1	37.2	65.4
<b>East Europe</b>	23.1	12.8	33.7	75.0	44.3	26.7	58.6
<b>West &amp; Central Asia</b>	37.2	30.0	45.9	0.0	0.0	36.6	58.9
<b>East &amp; South Asia</b>	47.7	45.2	43.0	85.3	48.9	47.5	64.2
<b>Australia &amp; New Zealand</b>	0.0	0.0	0.0	0.0	0.0	0.0	0.0
<b>Our hospital</b>	<b>39.7</b>	<b>9.1</b>	25.0	0.0	0.0	37.1	<b>71.4</b>
<b>TUNISIA</b>	<b>127 among 320 hospitalized patients</b>						

Antimicrobial prevalence (%): 100\*(number of treated patients/number of registered patients according to UN macro-geographical subregions).

Total = Overall antimicrobial prevalence in adult wards; AMW = Adult Medical Ward; HO-AMW = Haematology–Oncology AMW;  
T-AMW = Transplant (BMT/solid) AMW; P-AMW = Pneumology AMW; ASW = Adult Surgical Ward; AICU = Adult Intensive Care Unit.

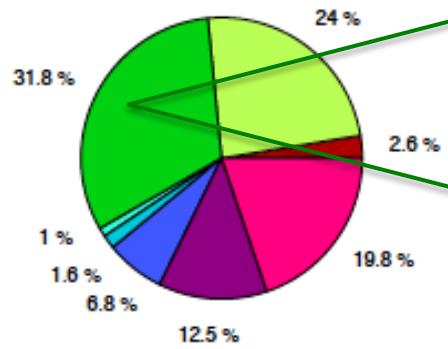


# Type of indication

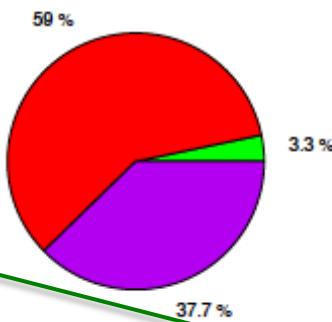


# Overall proportional antibiotic use (2017)

Our hospital (N= 123 treated patients)



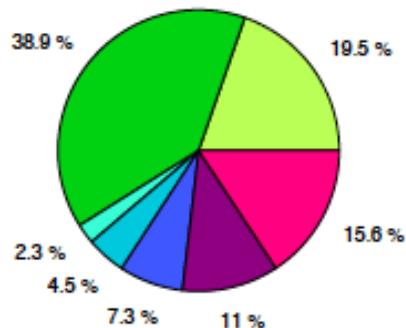
Our hospital (N= 61 treated patients)



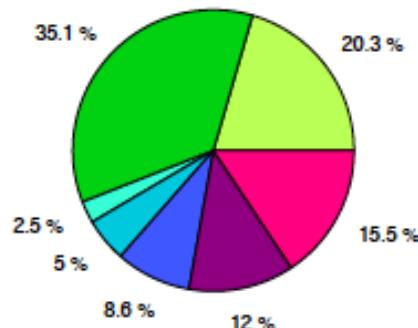
other beta-lactams

- First-generation cephalosporins      □ Fourth-generation cephalosporins
- Second-generation cephalosporins    □ Carbapenems
- Third-generation cephalosporins

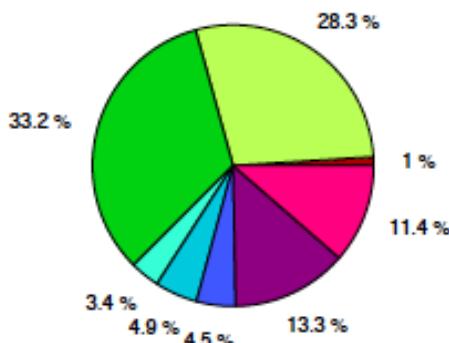
Continent (n= 31 hospitals)



Hospital type (n= 13 hospitals)



Europe (N= 115 hospitals)



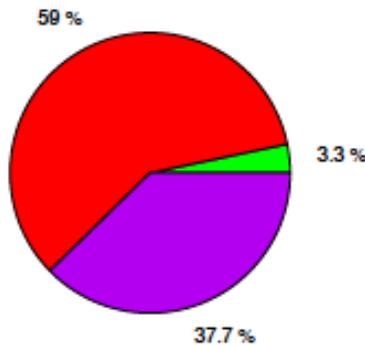
- Tetracyclines
- Penicillins
- Other beta-lactams
- Sulfonamides and Trimethoprim

- Macrolides, Lincosamides and Streptogramins
- Aminoglycosides
- Quinolones
- Other antibacterials



# Proportional use of other beta-lactam antibiotics (2017)

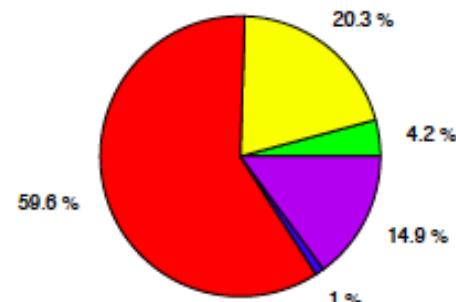
Our hospital (N= 61 treated patients)



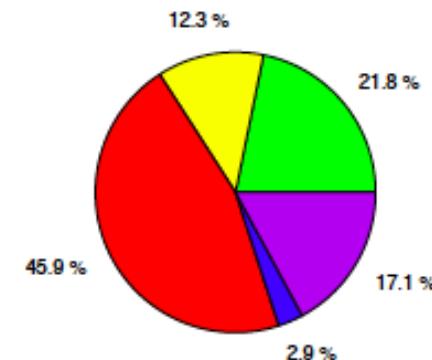
Continent (n= 31 hospitals)



Hospital type (n= 13 hospitals)



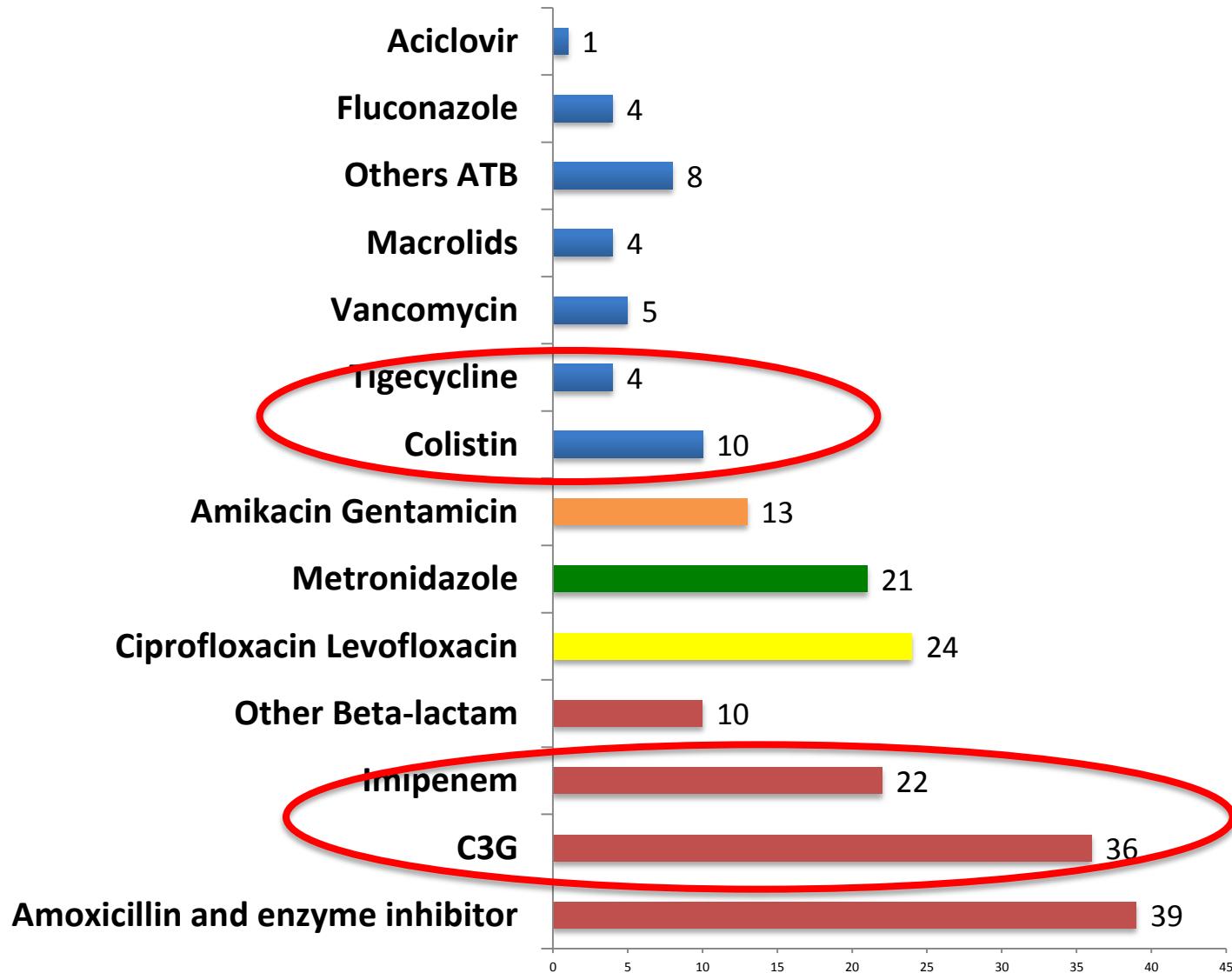
Europe (N= 113 hospitals)



- First-generation cephalosporins
- Second-generation cephalosporins
- Third-generation cephalosporins
- Carbapenems
- Fourth-generation cephalosporins



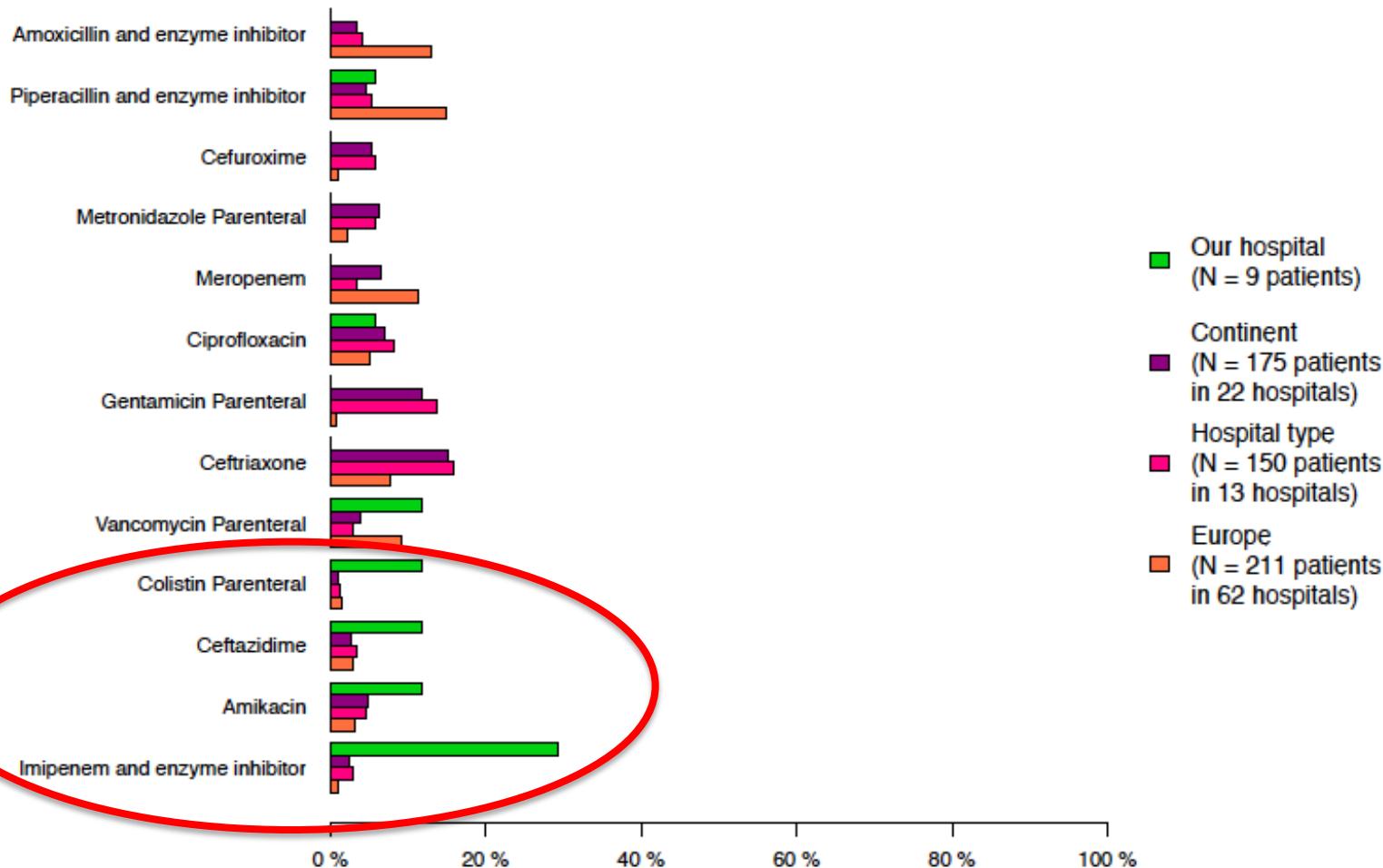
# The main antimicrobials prescribed





# Frequently used antibiotics for sepsis

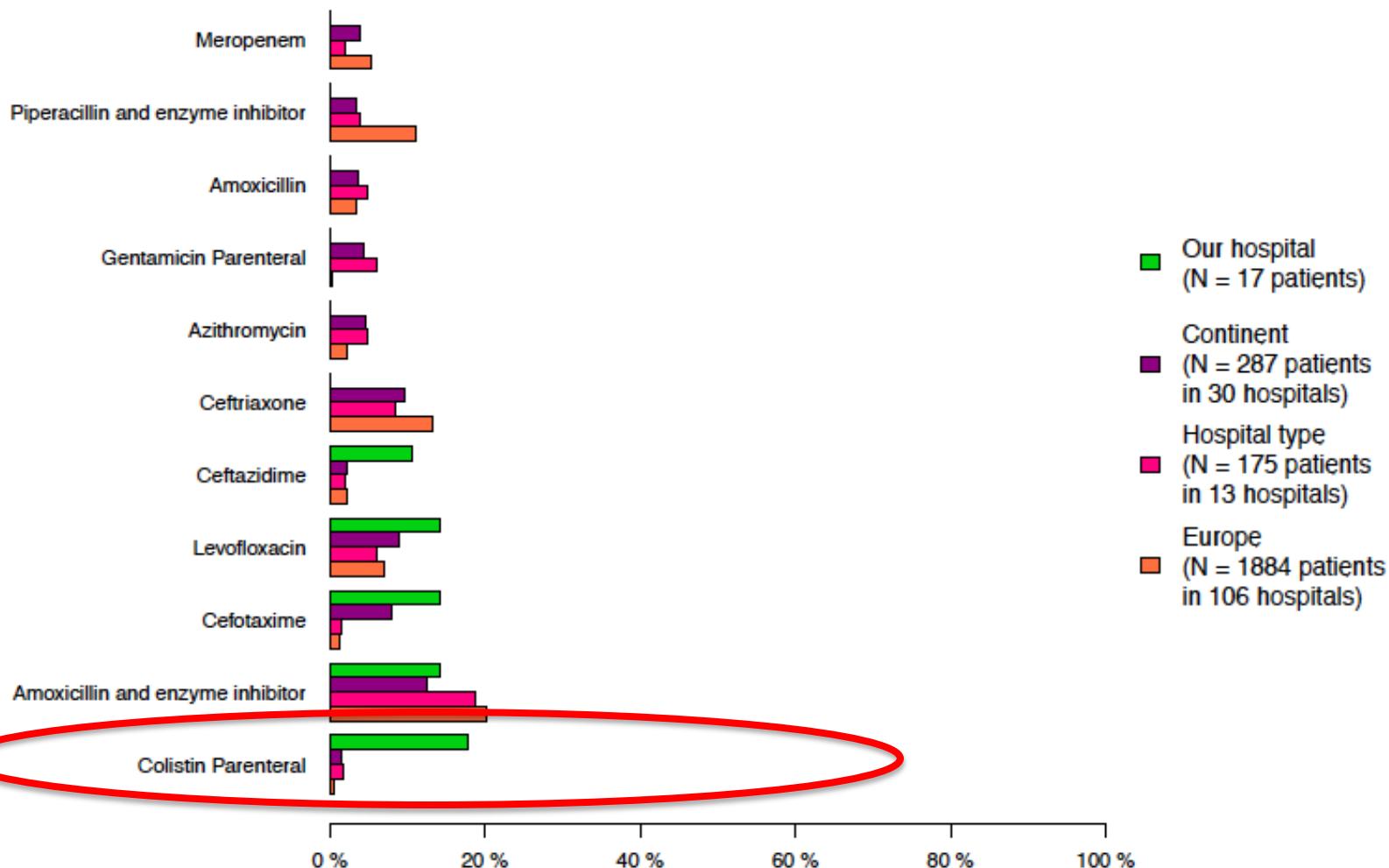
Top 5 most frequently used antibiotics  
for sepsis in adults and children (2017)





# Frequently used antibiotics for pneumonia

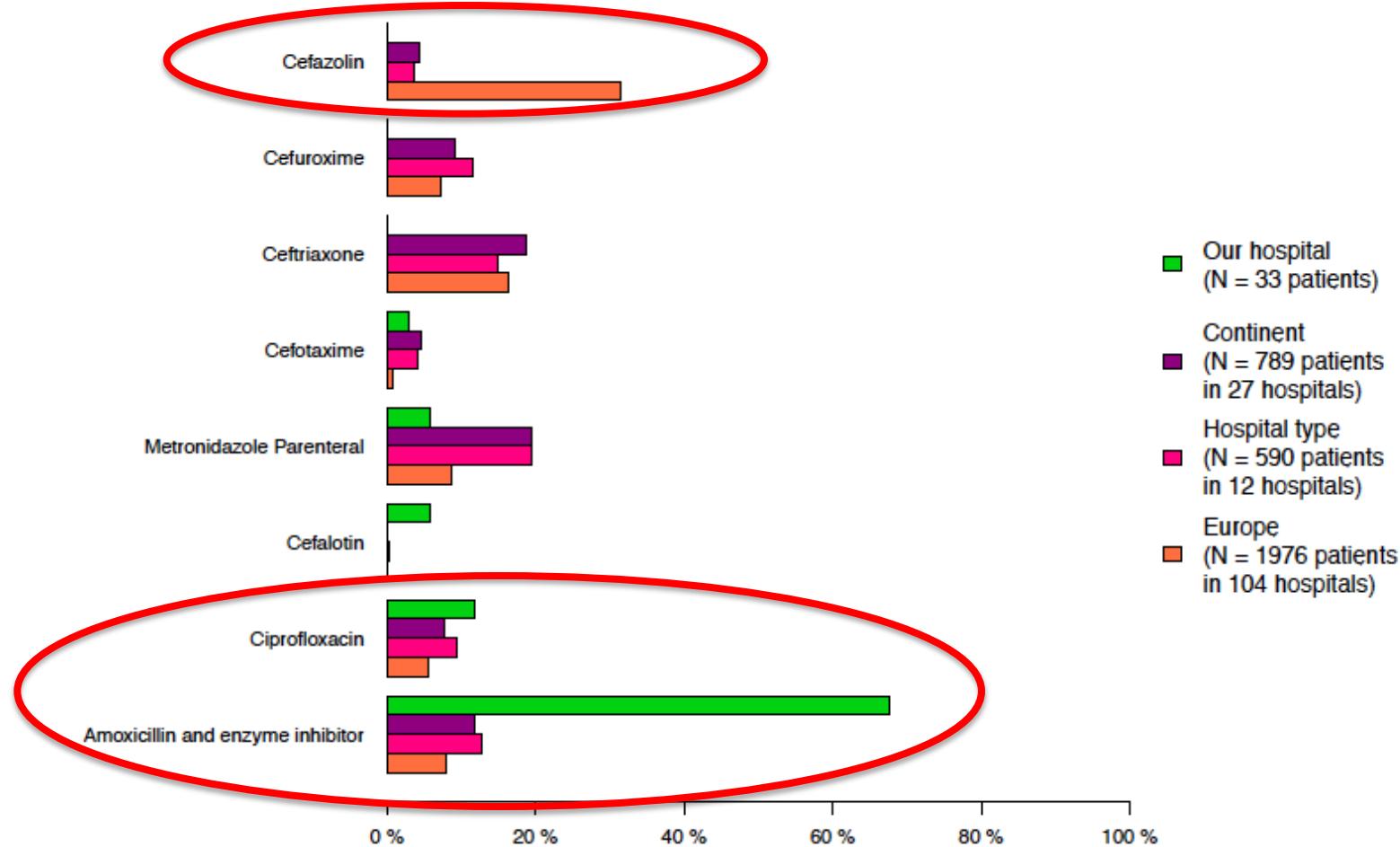
Top 5 most frequently used antibiotics  
for pneumonia in adults and children (2017)





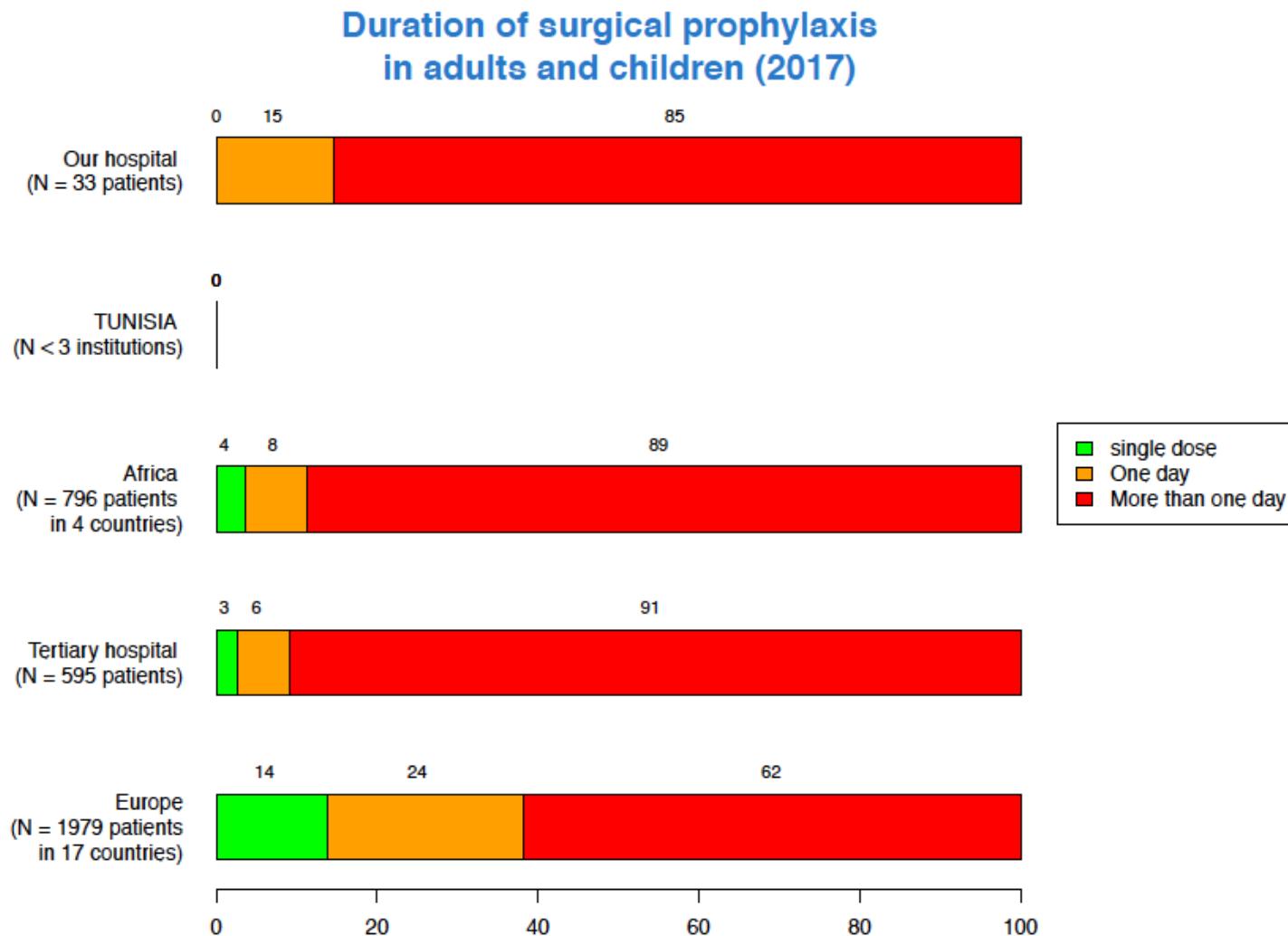
# Frequently used antibiotics for surgical prophylaxis

Top 5 most frequently used antibiotics  
for surgical prophylaxis in adults and children (2017)





# Duration of surgical prophylaxis





# Quality indicators of antibiotic use in HBH

Quality indicators	%
Reason in notes	23,4 %
Stop/review date documented	8,3 %
Guidelines missing	78,1 %
Multiple antibiotics	48,8 %
Targeted treatment	22,0 %
Treatment based on biomarker data (CRP)	74.4 %



# Quality indicators of antibiotic use

## Summary of quality indicators for antibiotic use (2017)

	Hospital		Country		Continent		Hospital type		Europe	
	N	%	N	%	N	%	N	%	N	%
<b>Medical</b>										
Reason in notes	10	76.9			1289	68.1	886	73.2	5506	82.8
Guidelines missing	11	84.6			794	42.0	416	34.4	1081	16.3
Guideline compliant	1	100.0			390	67.7	273	72.2	3298	76.7
Stop/review date documented	0	0.0			437	23.1	282	23.3	2368	35.6
<b>Surgical</b>										
Reason in notes	29	21.5			1298	66.4	996	67.1	3499	75.2
Guidelines missing	108	80.0			1050	53.7	764	51.4	815	17.5
Guideline compliant	18	100.0			272	54.3	207	56.9	2064	68.8
Stop/review date documented	16	11.9			550	28.1	417	28.1	1908	41.0
<b>ICU</b>										
Reason in notes	6	13.6			414	57.7	193	55.6	1406	75.9
Guidelines missing	31	70.5			232	32.3	115	33.1	429	23.2
Guideline compliant	7	100.0			175	68.1	96	76.2	706	79.8
Stop/review date	0	0.0			120	16.7	25	7.2	591	31.9



# MDRO detected

- 8 ESBL-producing *Enterobacteriaceae*
- 2 Ceftazidim-resistant *P. aeruginosa*
- 10 Carbapenem-resistant non fermenter Gram-negative bacilli (*A. baumannii* and *P. aeruginosa*)
- MRSA, VRE : 0



# MDRO carriage prevalence

Digestive carriage of MDRO for all the hospitalized patients :

- $48/190 = 25,26\%$  ESBL-carriers
  - $8/190 = 4.2\%$  CPE-carriers
- High antibiotic selective pressure



# Identified targets to improve quality of antimicrobial prescribing

- No local guidelines
- No notes in medical records
- Excessive use of broad-spectrum antibiotics
- Insufficient microbiological documentation of infection



# Actions :

- Result interpretation reports sent to all participating wards (feedback)
- Team : a representative person from each ward, infectious disease specialists, microbiologists and pharmacists



# Actions:

- Develop local guidelines
  - Surgical prophylaxis
  - Common HAI (sepsis, pneumonia, UTI)
- Education and practice changes



# Conclusions

- Need to raise awareness and encourage development of local antibiotic prescribing guidelines
- Need for education and practice changes
- Need to reduce the selective pressure of broad-spectrum antibiotics to control the dissemination of MDROs in the country
- Repeated PPS : assess the effectiveness of actions



# Acknowledgments

- Laboratory of medical microbiology, vaccine and infectious diseases institute, university of Antwerp, Belgium
- All health workers who participated to the G-PPS
- Sponsor : BioMérieux, the sole sponsor of the G-PPS