



# Evolution of antimicrobial consumption in a trauma intensive care unit using defined daily doses per 100 occupied bed days

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## Background and importance

**Microbial resistance** to antimicrobial treatment constitutes a **public health problem**, principally in hospital environment.

## Aim and Objectives

To evaluate the evolution of **antimicrobial consumption** in a **Trauma Intensive Care Unit (ICUt)**, using the defined daily doses per 100 occupied bed-days (**DDD/100 OBD**).

## Materials and Methods

**Retrospective** study conducted from January 2016 - December 2018.

**Inclusion criteria:** patients admitted at the ICUt during study period who received antimicrobial treatment.

**Variables:**

- Biodemographic and clinical data of patients
- DDD\*/100 OBD of each antimicrobial drug (\*DDD WHO's International Working Group for Drug Statistics Methodology of Norway)
- Annual DDD/100 OBD

## Results

	2016	2017	2018
Number of patients	397	380	429
Age (years) (mean ± standard deviation)	53,4 ± 19,9	55,0 ± 19,1	54,1 ± 19,4
Sex (% men)	67,5	66,6	69,9
Main diagnostic			
• Medical (%)	9,6	6,8	7,5
• Surgical (%)	18,9	16,1	18,4
• <b>Traumatic (%)</b>	<b>71,5</b>	<b>77,1</b>	<b>74,1</b>
APACHE (mean ± standard deviation)	16,3 ± 6,6	15,9 ± 6,3	15,0 ± 6,4
Mortality (%)	8,6	11,6	10,5

**Table 1.** Biodemographical and clinical data of patients.

- Important ↓ **DDD/100 OBD of piperacillin/tazobactam** (-45,46%), but ↑ DDD/100 OBD of amoxicillin/clavulanate (+17,42%).
- Stable use of cephalosporins, with a **minimum consumption of ceftolozane/tazobactam** (<1,5%).
- Stable consumption of carbapenems, being meropenem the most prescribed (>87%) and ↓ **use of imipenem/cilastatin** (-32,51%).
- ↓ **prescription of antifungals** (-49,02%), being always **fluconazol** the most used (>74%).

## Conclusions and Relevance

- ✓ ↓ extended-spectrum penicillins consumption could demonstrate **appropriateness of empirical therapy**.
- ✓ ↓ ceftolozane/tazobactam prescription demonstrates a **controlled prescription of restricted use cephalosporins**.
- ✓ Minimum imipenem/cilastatin use could be relation to its neurotoxic effects.
- ✓ Results indicate an **adequate use of antifungals**.

	DDD/100 OBD		
	2016	2017	2018
<b>Penicillins</b>	<b>60,00</b>	<b>54,77</b>	<b>60,42</b>
Amoxicillin and clavulanate	33,90	35,03	39,81
Piperacillin and tazobactam	12,39	8,37	6,76
<b>Cephalosporins</b>	<b>13,95</b>	<b>16,14</b>	<b>14,37</b>
Cefotaxime	5,82	3,78	5,11
Ceftazidime	4,34	7,60	4,17
Ceftriaxone	0,79	0,88	1,04
Ceftolozane and tazobactam	0,00	0,23	0,06
<b>Fluoroquinolones</b>	<b>3,70</b>	<b>9,42</b>	<b>7,07</b>
Ciprofloxacin	1,80	5,41	3,04
Levofloxacin	1,89	4,09	3,90
<b>Carbapenems</b>	<b>15,32</b>	<b>16,00</b>	<b>15,03</b>
Ertapenem	0,11	0,64	1,36
Meropenem	14,34	15,36	13,08
Imipenem and cilastatin	0,87	0,00	0,59
<b>Aminoglycosides</b>	<b>3,15</b>	<b>2,86</b>	<b>5,69</b>
Daptomycin	3,36	4,68	2,35
Linezolid	2,38	3,27	3,32
<b>Glycopeptides</b>	<b>4,11</b>	<b>3,05</b>	<b>3,85</b>
<b>Antifungals</b>	<b>7,34</b>	<b>3,69</b>	<b>3,74</b>
Fluconazol	6,48	2,76	3,35
<b>ANNUAL</b>	<b>131,12</b>	<b>137,62</b>	<b>133,09</b>

**Table 2.** DDD/100 OBD data.