

# Economic impact of clinical pharmacist's interventions on antimicrobial therapy in critically ill patients



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**Objective:** To analyse the economic impact of clinical pharmacist's interventions (CPI) as part of the healthcare team regarding antimicrobial therapy in the Intensive Care Unit (ICU).

**Methods:** Retrospective analysis of CPI regarding antimicrobials in the ICU in 5 months of 2015



ICU



## Clinical pharmacist (CP)

5 hours/day, 5 days/week

- Participates in daily rounds
- Monitors pharmacotherapy
- Does treatment recommendations
- 33% of CPI are anti-infective related

## CP registers daily CPI in the information system:

- Drug
- Type of intervention
- Acceptance by physicians
- Estimated cost impact: changes in drugs, time and products for preparation and administration, and CP time.

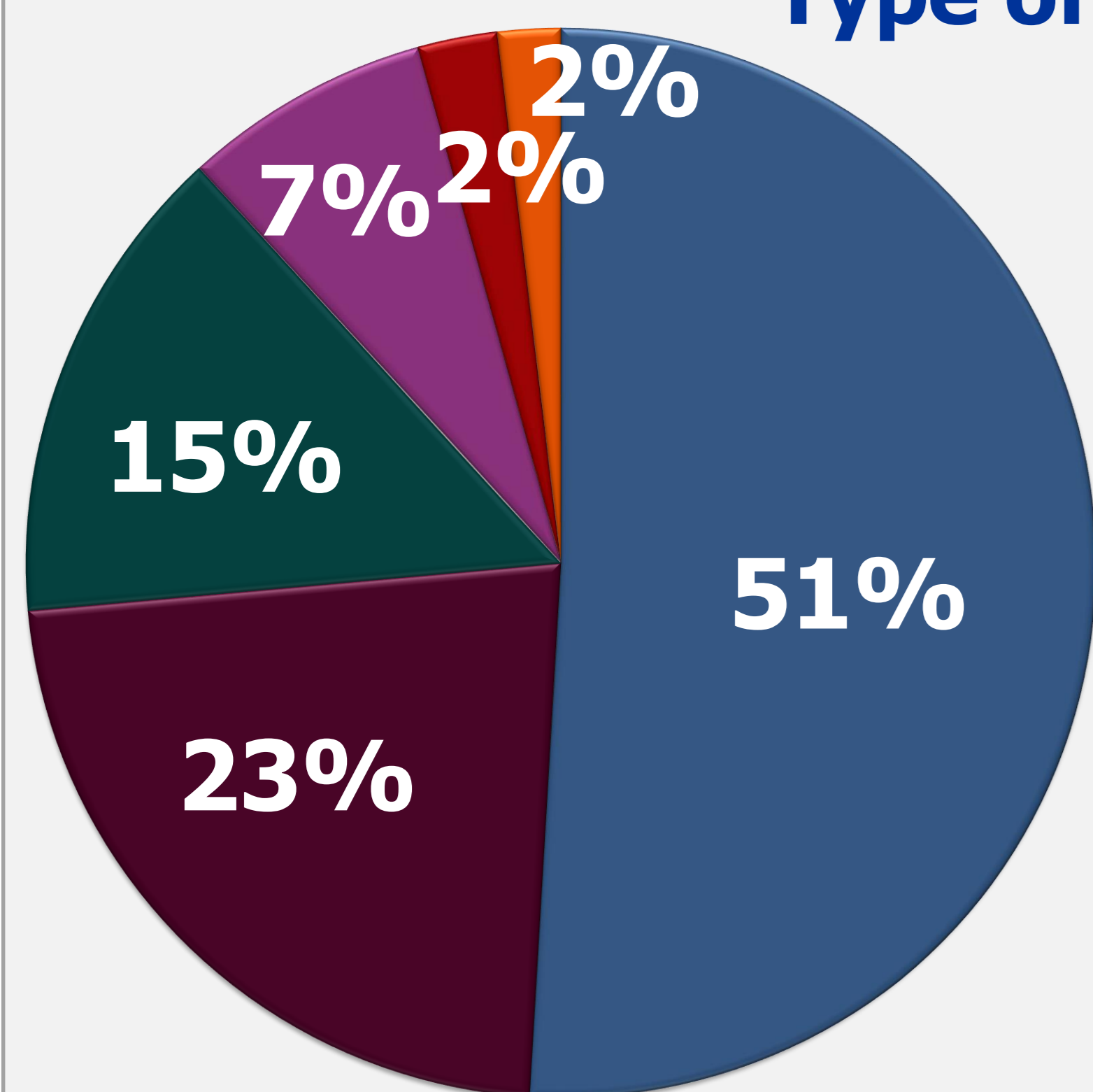
## Economic impact of CPI=

Cost with CPI – Cost without CPI

- Assumption: change to recommended therapy would have happened 2 days later without CPI.
- Cost with CPI= Cost from CPI to 2 days later with the recommended treatment
- Cost without CPI= Estimated cost during 2 days if change would not have happened
- Sensitivity analysis: change would have happened in 1 to 4 days.
- Ratio Avoided cost: Invested money.

**Results:** A total of 212 interventions were recorded, corresponding to 114 patients (61% surgical patients, 68% males, median of age 69.5 years (range: 19-95)).

### Type of CPI



- Modification of the dose/interval
- Discontinuing drug
- Changing to a more cost-effective route/method
- Initiating drug
- Changing to a more cost-effective drug
- Changing to a more effective drug

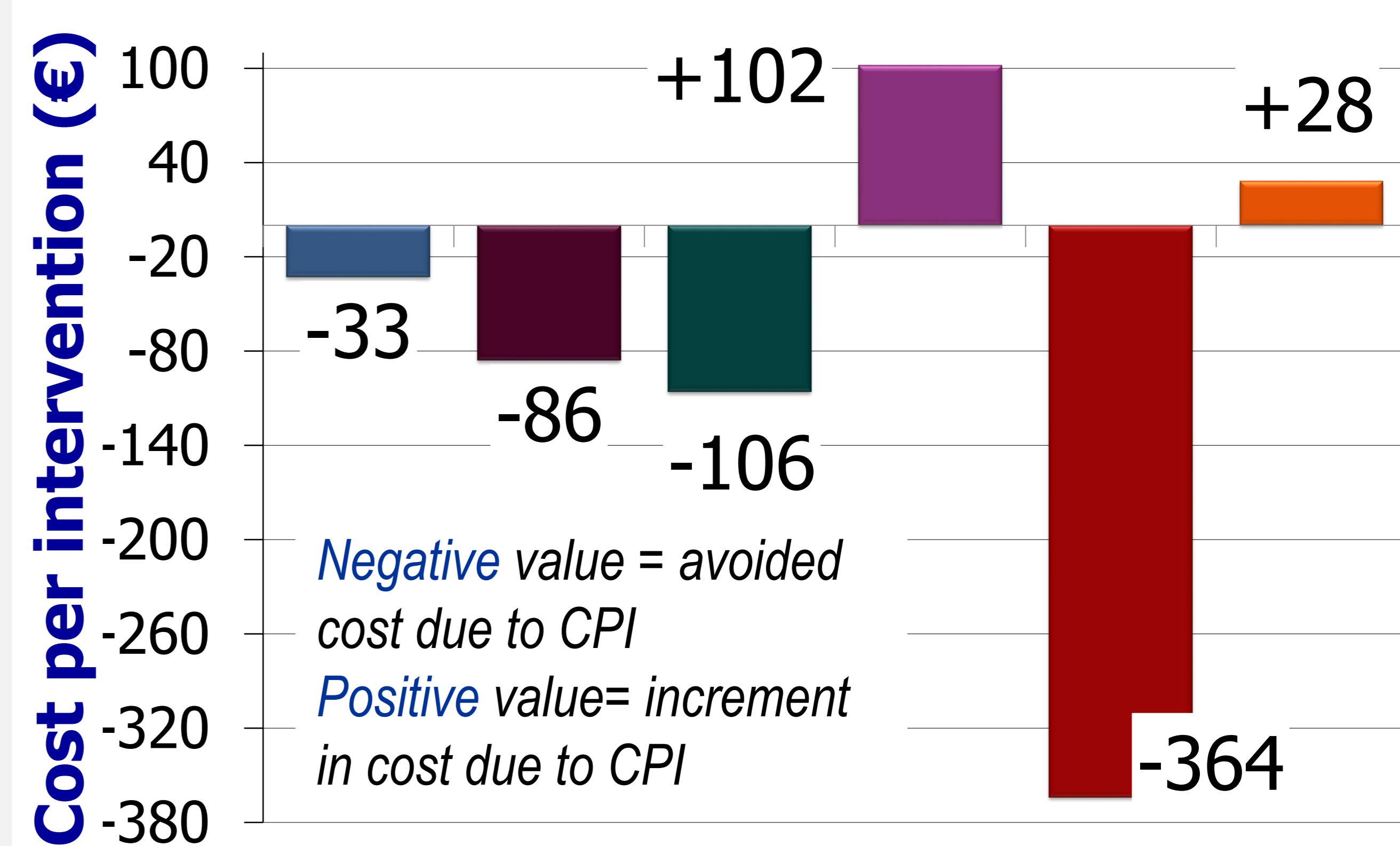


Figure 1. Percentage of each type of CPI and cost per intervention

Table 2. Economic analysis of CPI during the 5-month study period

Item	Cost with CP	Cost without CP	Difference in cost (cost with CP-cost without CP)	Sensitivity analysis
Cost of CP time	2,859 €	--	+2,859 €	--
Cost of drugs, preparation, administration	12,219 €	22,056 €	-9,837 €	--
Total cost (CP+drugs+preparation+ administration)	15,078 €	22,056 €	<b>-6,978 €</b> → <b>31.6% decrease in costs with CP</b> (32.9 €/intervention, 61.2 €/patient)	1 day: -2,820 € 4 days: -18,984€

**Ratio** avoided cost: invested money 3.4:1 → **3.4 € were avoided per 1 € invested in having a CP**

- ✓ 96% of the CPI were considered important with improvement of patients care.
- ✓ Physicians acceptance rate was 97.6%.

**Limitations:** costs not considered: length of stay, adverse drug events, mortality, readmissions

**Conclusions:** Having a Clinical Pharmacist as a member of the healthcare team in the ICU performing interventions related to antimicrobials is critical to improve care and decreases costs.