

FINANCIAL IMPACT OF THIRD-GENERATION CEPHALOSPORINES RESISTANCE IN HOSPITAL SETTINGS – AN EXAMPLE WITH CEFTRIAXONE

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I. Objectives

- ✓ To estimate the **financial impact** of cephalosporin resistance in patients with lower respiratory tract infections (LRTI);
- ✓ To calculate **the savings** in case of regular application of antibiograms from the hospital perspective.

II. Materials and methods

- ✓ A **cost-benefit analysis** - to evaluate the benefits from the introduction of compulsory antibiograms in hospitals in case of LRTI;
- ✓ Information about the **antibiotic resistance** (AR) towards ceftriaxone was gathered from the National Reference Microbiology Center;
- ✓ **Cost of ceftriaxone and antibiotics** commonly applied as alternatives (linezolid, vancomycin, teicoplanin) in the case of AR was calculated based on hospital prices;
- ✓ **Cost per bed day and length of stay** in hospitals were taken from the National Center of Public Health and Analyses;
- ✓ **Cost of antibiogram** - from National Health Insurance Fund;
- ✓ **Savings** from the avoided hospital stay, cost of therapy and antibiogram for a hypothetical cohort of 200 patients with LRTI were calculated.

III. Results

Input data	Unit(s)
price per DDD of ceftriaxone	1.93 euro
price per DDD of alternatives	22.54 euro
Hospital days for LTRI treatment	9.94 days
Level of ceftriaxone resistance (Pseudomonas aeruginosa)	8%
Level of ceftriaxone resistance (Klebsiella pneumonia)	14%
extension of hospital stays due to AR	5 days
One hospital bed per day	64.83 euro
Antibiogram test (AB test)	2.25 euro

Table 1 Input data

- ✓ Performing of AB test provides savings of 2 631.49 euro for one treatment course for 200 patients (figure 1 and table 2);
- ✓ The availability of resistant isolates is associated with generating of additional costs 3698.39 euro.

IV. Discussion and conclusions

- ✓ Application of efficient national antibiotic **policy**, use of **defensins** and regular provision of **antibiogram tests** in hospitals could decrease the costs for LRTI treatment.
- ✓ Further studies revealing the economic consequences of the use of defensins as a special class of antimicrobial peptides should be performed.

	alternative treatment costs in case of early detected resistance to ceftriaxone	ceftriaxone treatment costs	hospital stay costs	AB test costs	additional treatment costs due to resistance	total costs
with AB test	3561,84	2492,13	92797,66	404,94	0	99256,57
without AB test	0	2760,51	97335,89	0	1791,67	101888,10

Table 2 Costs and benefits for both alternatives

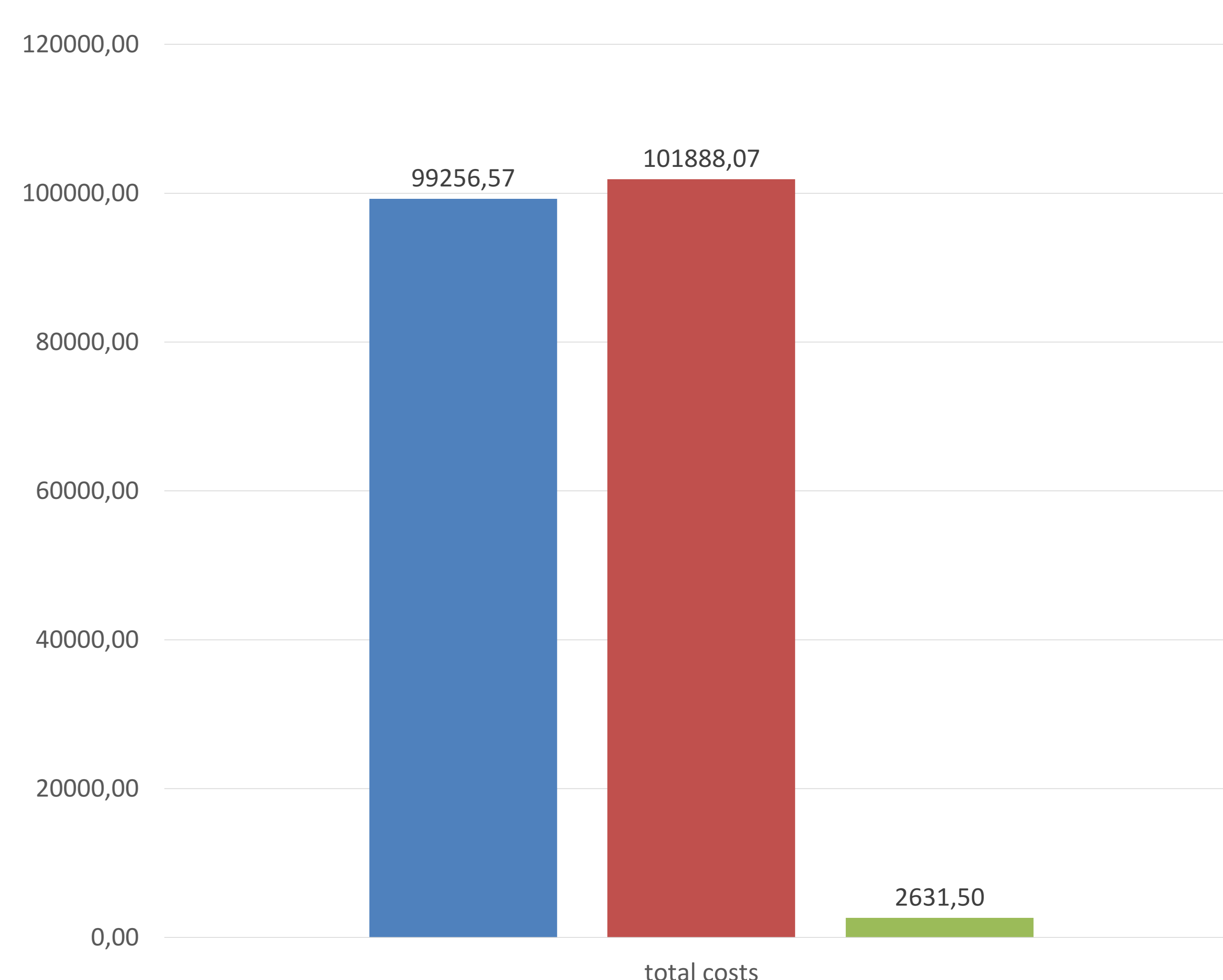


Figure 1 Savings in case of application of AB test

VI. References and Acknowledgements

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