Carbapenemase resistance in European hospitals: Two consecutive point prevalence surveys of *Acinetobacter baumannii* and *Klebsiella pneumoniae*.

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I. Introduction

The REVERSE study (p**REV**ention and management tools for r**E**ducing antibiotic **R**esistance in high prevalence **SE**ttings) is a multi-center Horizon 2020-project. The aim is to evaluate the effectiveness of infection prevention control (IPC) and antibiotic stewardship (ABS) on reducing healthcare-associated infections due to multidrug-resistant microorganisms. This poster shows the prevalence of carbapenem resistant *Acinetobacter baumannii* (**CRAB**) and carbapenemase-producing *Klebsiella pneumoniae* (**KPC**) in four European countries (Greece, Italy, Romania and Spain), at baseline and after one year of IPC.

Figure 1: Geographic location of hospitals participating in the REVERSE study.

II. Methodology

This is a stepped wedge randomized controlled trial.

Twenty-four European hospitals participate in this study, located in Greece, Italy, Romania and Spain.

Point-prevalence surveys were carried out between February 2023 and December 2023 (baseline) and February 2024 and December 2024 (after one year of IPC).

In every hospital, 250 hospitalized adult patients were screened for carriage of CRAB and KPC, using perianal swabs.

All swabs were cultured on selective agar (ESBL/Brilliance CRE) in a centralized microbiology lab. Morphologically distinct colonies were identified using MALDI-TOF. *Klebsiella pneumoniae* was phenotypically tested for carbapenemase activity using the Carbapenem Inactivation Method (CIM).

Each hospital implemented 3 IPC measures over the course of one year.

III. Results

Table 1. Baseline characteristics

	Greece		Italy		Romania		Spain	
Year	2023	2024	2023	2024	2023	2024	2023	2024
Participating hospitals, *n*	6	6	6	6	6	6	6	6
Screened patients, *n*	1434	1435	1394	1315	1340	1308	1422	1441
Sex, female, *n (%)*	592 (41.3%)	580 (40.4%)	614 (44.1%)	560 (42.7%)	658 (49.1%)	608 (46.7%)	640 (45.0%)	636 (44.2%)
Age, *mean (SD)*	68.30 (16.52)	69.51 (15.47)	66.09 (16.92)	67.27 (16.17)	63.85 (15.12)	64.10 (22.27)	67.56 (16.45)	67.19 (16.71)
Length of stay ≥ 3 days, *n (%)*	996 (69.5%)	1026 (71.6%)	1055 (75.7%)	991 (75.6%)	913 (68.1%)	810 (62.6%)	1017 (71.5%)	1079 (75.1%)
Ward								
Haemato-oncology, *n (%)*	100 (7.0%)	132 (9.2%)	111 (8.0%)	128 (9.7%)	271 (20,2%)	254 (19.4%)	134 (9.4%)	205 (14.2%)
Intensive care unit, *n (%)*	120 (8.4%)	84 (5.9%)	132 (9.5%)	102 (7.8%)	142 (10.6%)	173 (13.2%)	203 (14.3%)	170 (11.8%)
Internal medicine, *n (%)*	817 (57.0%)	802 (55.9%)	812 (58.2%)	753 (57.3%)	528 (39.4%)	465 (35.6%)	731 (51.4%)	686 (47.6%)
Surgery, *n (%)*	396 (27.6%)	416 (29.0%)	339 (24.3%)	331 (25.2%)	398 (29.7%)	409 (31.3%)	354 (24.9%)	378 (26.2%)

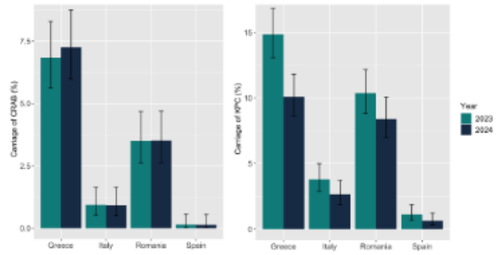

Figure 2: Prevalence of CRAB (left) and KPC (right) carriage in Greece, Italy, Romania and Spain at baseline (2023) and after one year of IPC (2024).

IV. Conclusion

At baseline, prevalence of KPC and CRAB carriage differed significantly between countries.

After one year of IPC, prevalence of KPC decreased in all participating countries, while the prevalence of CRAB remained roughly the same.

The decline in KPC prevalence was greatest in countries with the highest prevalence at baseline.

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REVERSE Consortium

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