

# Impact of Infection Prevention and Stewardship Interventions in a Romanian University Hospital with high rates of carbapenem-resistant Gram Negatives

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## Introduction

Among multidrug-resistant microorganisms (MDRO) carbapenem-resistant *Enterobacteriales* (CRE), *Acinetobacter baumannii* (CRAB) and *Pseudomonas aeruginosa* (CRPA) represent the main resistance challenge in Romania that emerged because of excessive carbapenem prescribing and inconsistent hand hygiene (HH) practices.

This study assessed the impact of an intervention combining HH reinforcement and antibiotic stewardship (ABS) programme on antimicrobial use and on MDROs during nine months of implementation.

## Results

HH compliance increased steadily, from an average of 31% to 66%, with the most significant improvement in hematology department (over 90%).

Total carbapenem consumption decreased by 43% DDD/100 patient-days across the study period.

The use of carbapenem-alternative treatment decreased by:

- 37% for ceftriaxone (CRO),
- 49% for piperacillin-tazobactam (TZP),
- 14% for amikacin (AMK),
- 18% colistin.

But the use of salvage therapy for carbapenem-resistant Gram-negatives increased for:

- tigecycline (TGC) by 31%
- ceftazidime-avibactam (CZA) increased by 18%.

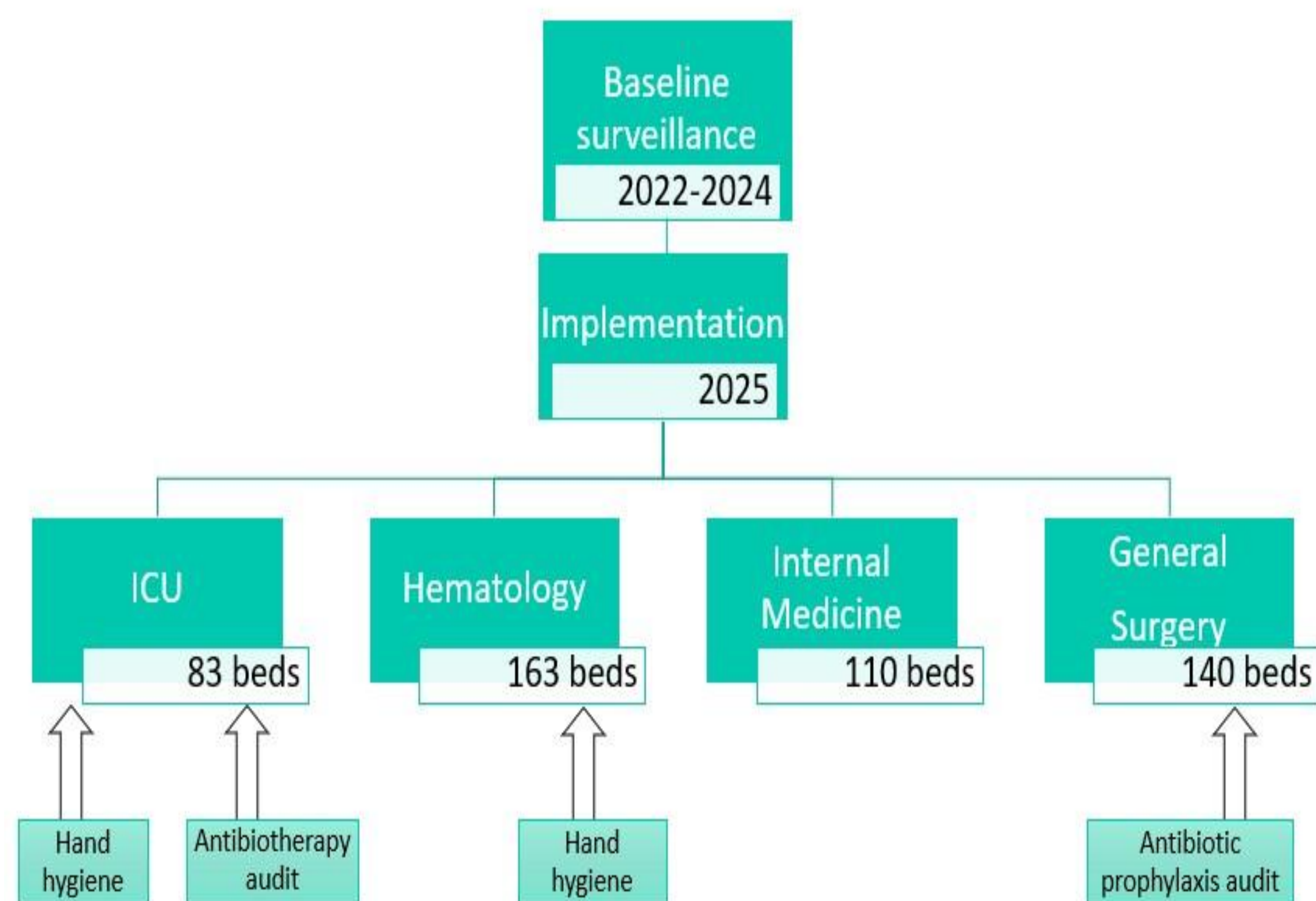
In the REVERSE wards, the rates of MDRO infections:

- CRE decreased from 54% to 45%,
- CRAB decreased from 20% to 9%,
- CRPA remained stable at 10%.

Despite the decreasing use of antibiotic, this did not harm patients (general mortality rate stable value of 1.5/1000).

## Methods

Prospective unicentre study, part of REVERSE Project. Interventions were both Restrictive and Persuasive and included: 1. structured HH training and weekly observation sessions (WHO 5 moments), 2. meropenem restriction, 3. antibiotic stewardship audits.



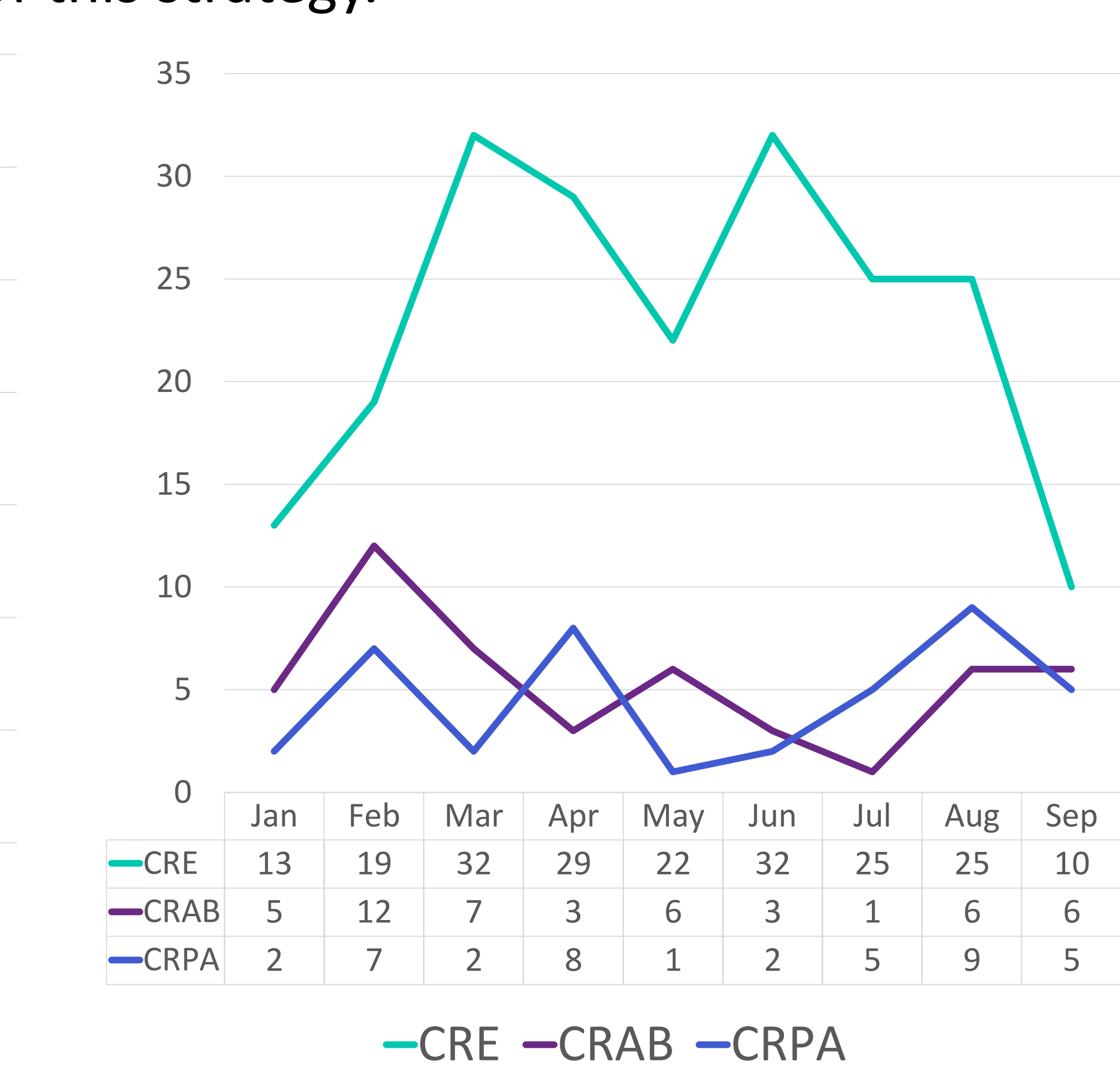
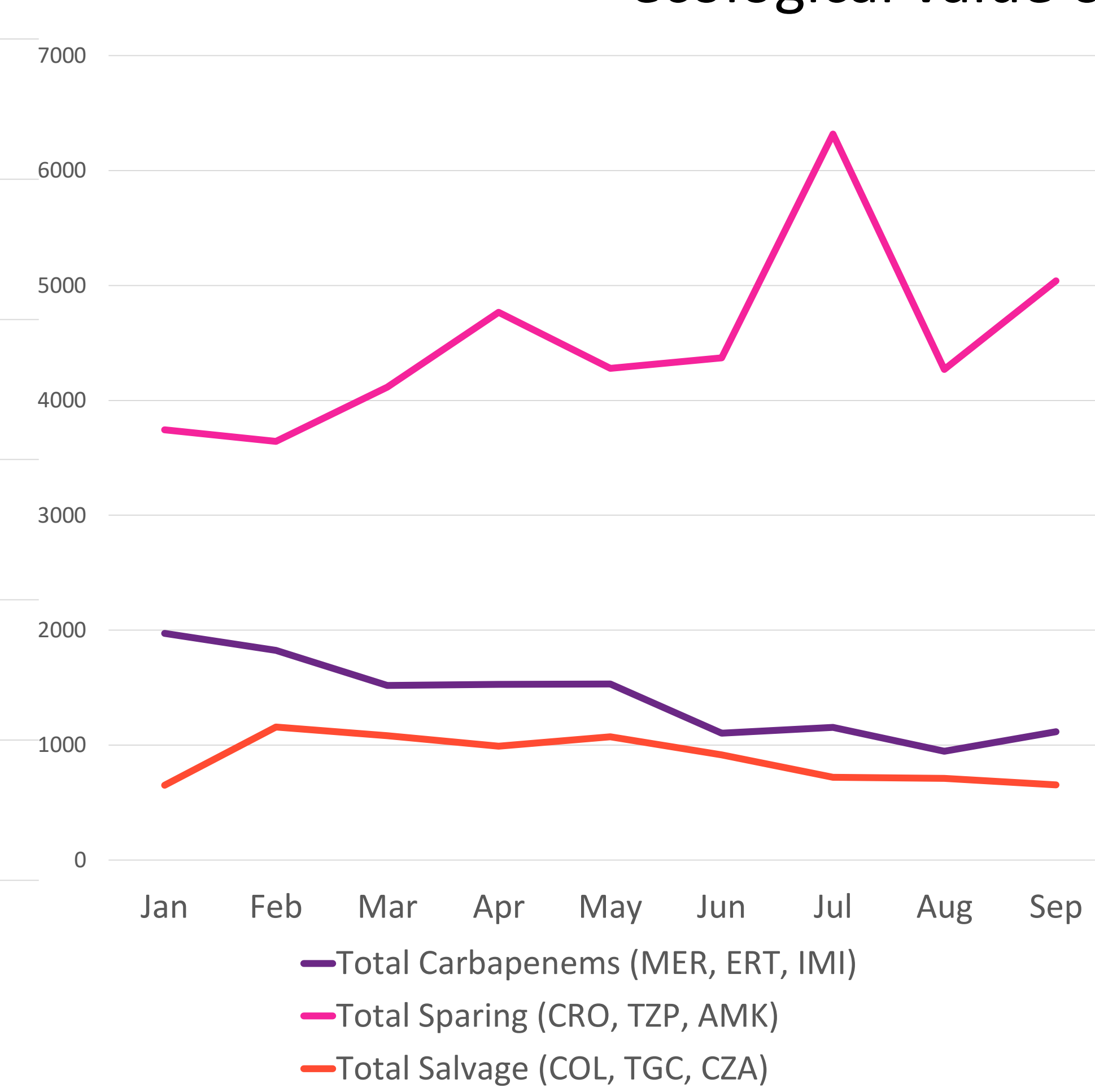
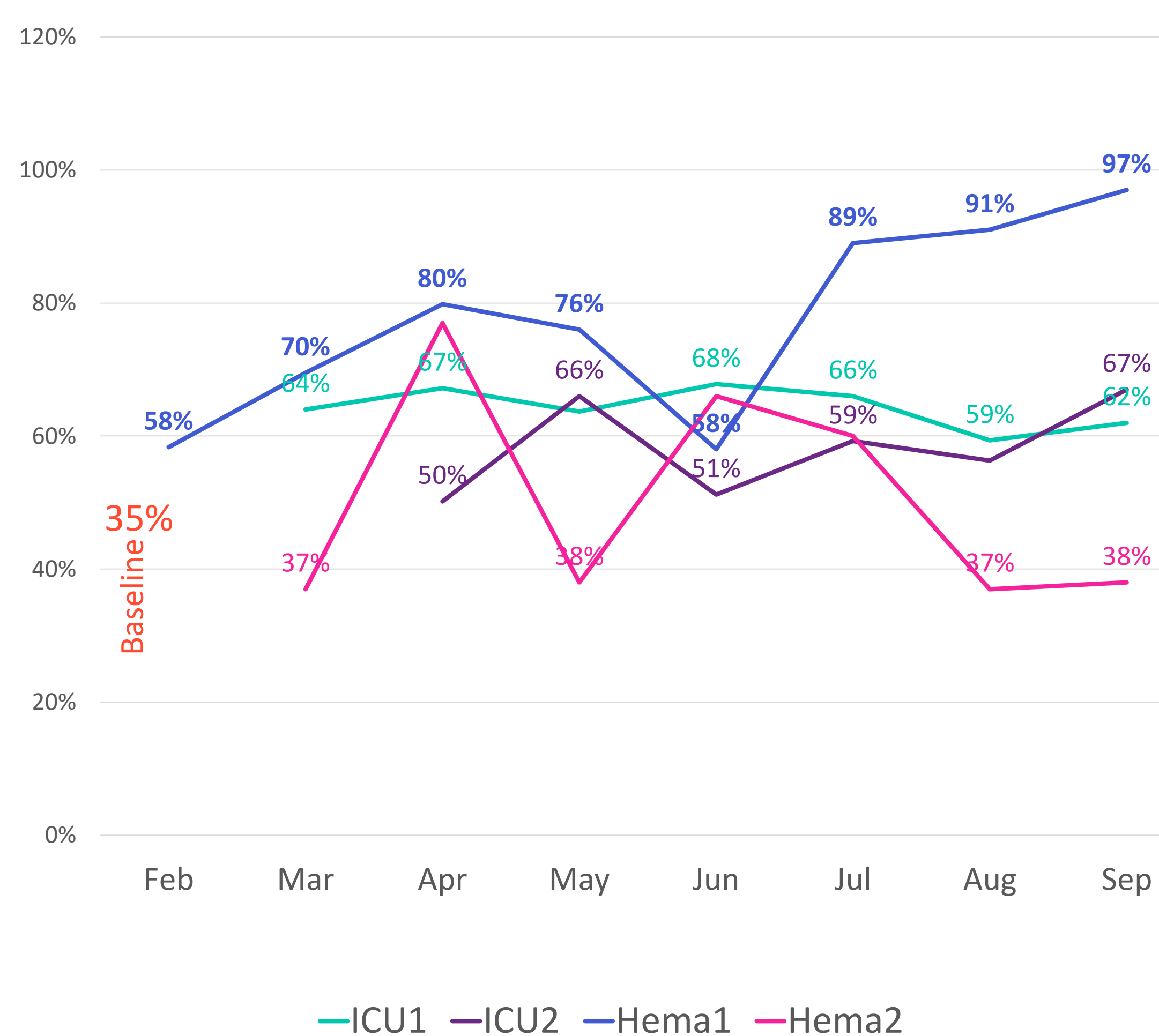
**Primary outcome:** total carbapenem consumption

**Secondary outcome:**

1. Consumption of alternative regimens,
2. Mortality and *Clostridioides difficile* infections
3. CRE, CRPA and CRAB prevalence

## Conclusions

ABS strategy significantly contributed to overall decrease of carbapenem use, without impacting the mortality and with a decrease in *C. difficile* cases. HH contributed to decreasing CRE and CRAB infection rates, showing the safety and ecological value of this strategy.



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