

Impact of Intensified Prevention Measures On Rates of Hospital-Acquired Carbapenem-Resistant *Acinetobacter baumannii* In Endemic Setting

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Introduction

During the last decade, hospital-acquired carbapenem-resistant *Acinetobacter baumannii* (HA-CRAB) have become endemic in acute care facilities. Despite the increasing rates of CRAB carriage among hospitalized patients in endemic settings, the role of active surveillance cultures (ASC) is still debated

Objective

To evaluate the impact of different components of control measures conducted in an endemic acute care hospital

Methods

Hospital setting Wolfson Medical Center is a 670-bed, secondary-care teaching hospital in central Israel

Study design The study consisted of 4 phases:

Phase I (January 2019– June 2020)

Basic infection-control measures were implemented including contact precautions for CRAB carriers

Phase II (June 2020- December 2020)

All CRAB carries were cohorted in a single ward and managed by dedicated health care workers ; enhanced environmental cleaning was conducted by a dedicated team. Weekly florescent audits were conducted on the quality of environmental cleansing. Hospital-wide overt hand hygiene audits with immediate feedback were conducted by infection control preventionists. Screening cultures were obtained from close contacts of newly detected carries

Phase III (January 2021- 30 June 2021)

Implementation of admission and periodic ASC. Rectal, buccal and sputum cultures were obtained within 72 hours of admission from high-risk patients in the medical wards and weekly while the patient was in 6 step-down units and the general intensive care unit

Phase IV (July 2021–June 2022)

Follow-up period

Statistics Difference in clinical acquisitions rates between phases was tested with ANOVA and post hoc Tuckey's test for pairwise differences

Results

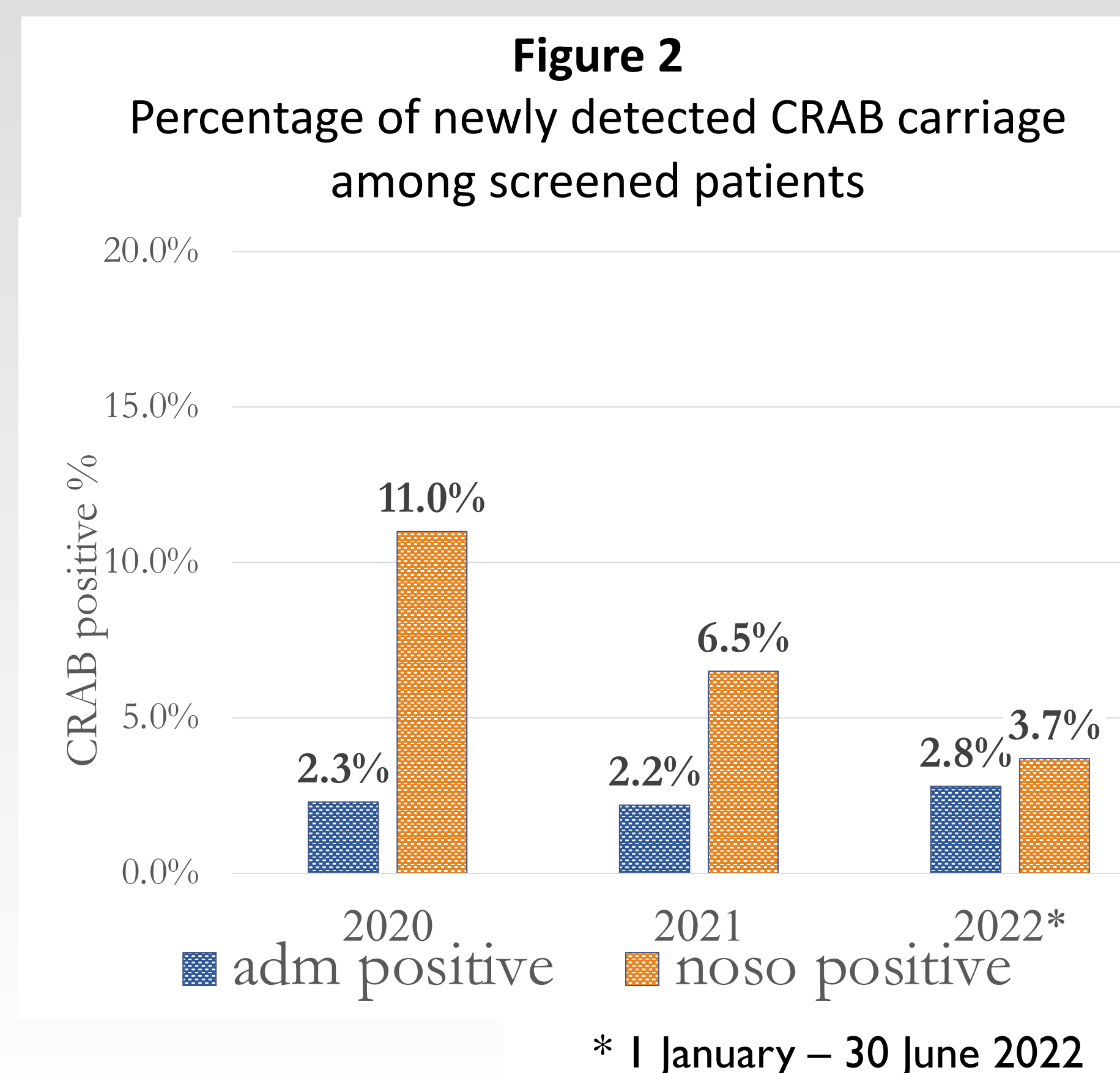
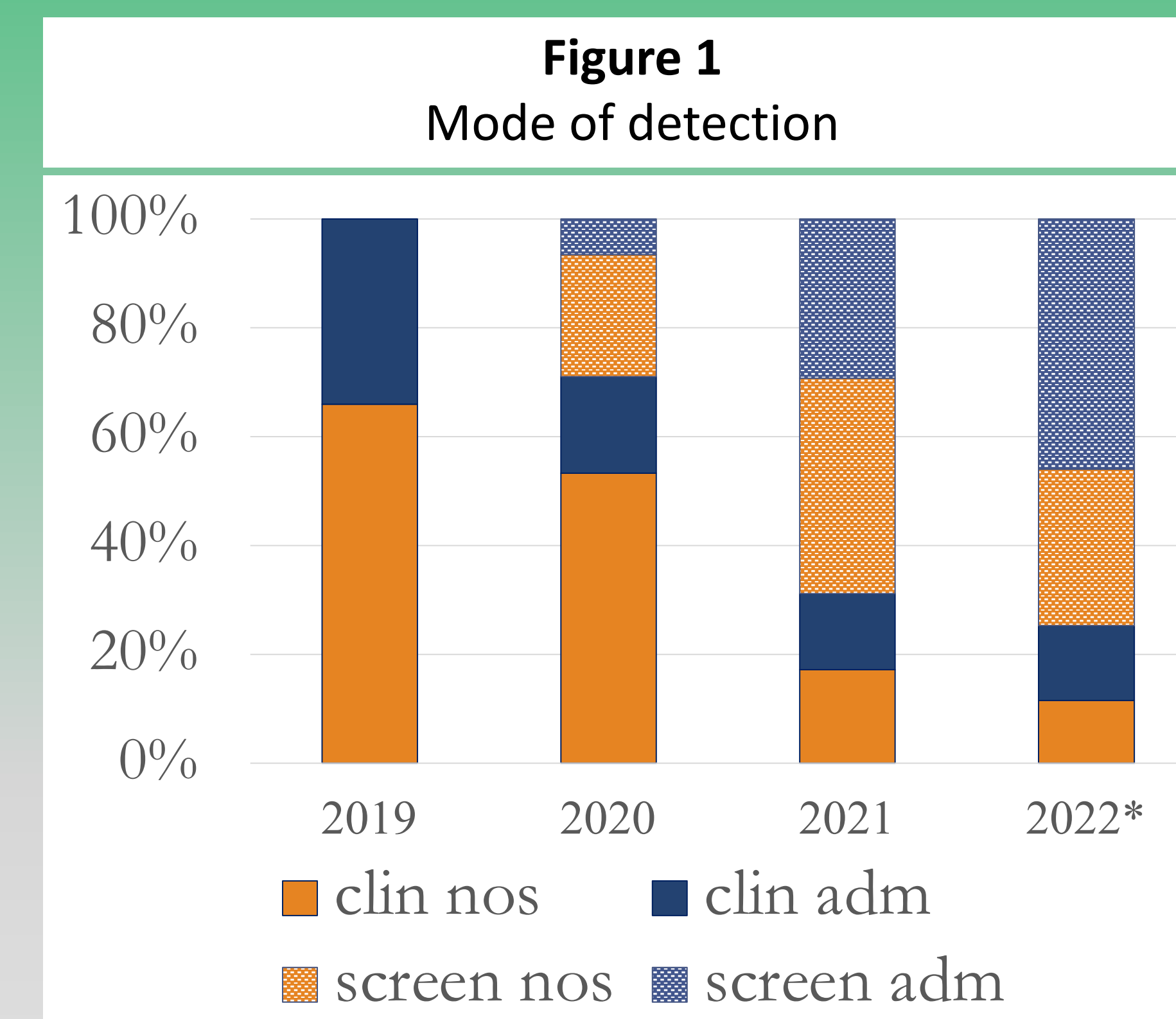
Prevention measures (Phase II-Phase IV)

Measures	% Compliance, monthly average (SD)
Cohorting in a dedicated ward	88.1% (13.3)
Hand hygiene compliance	76.3% (10.5)
Clean high-touch surfaces	88.7% (9.1)

Active surveillance

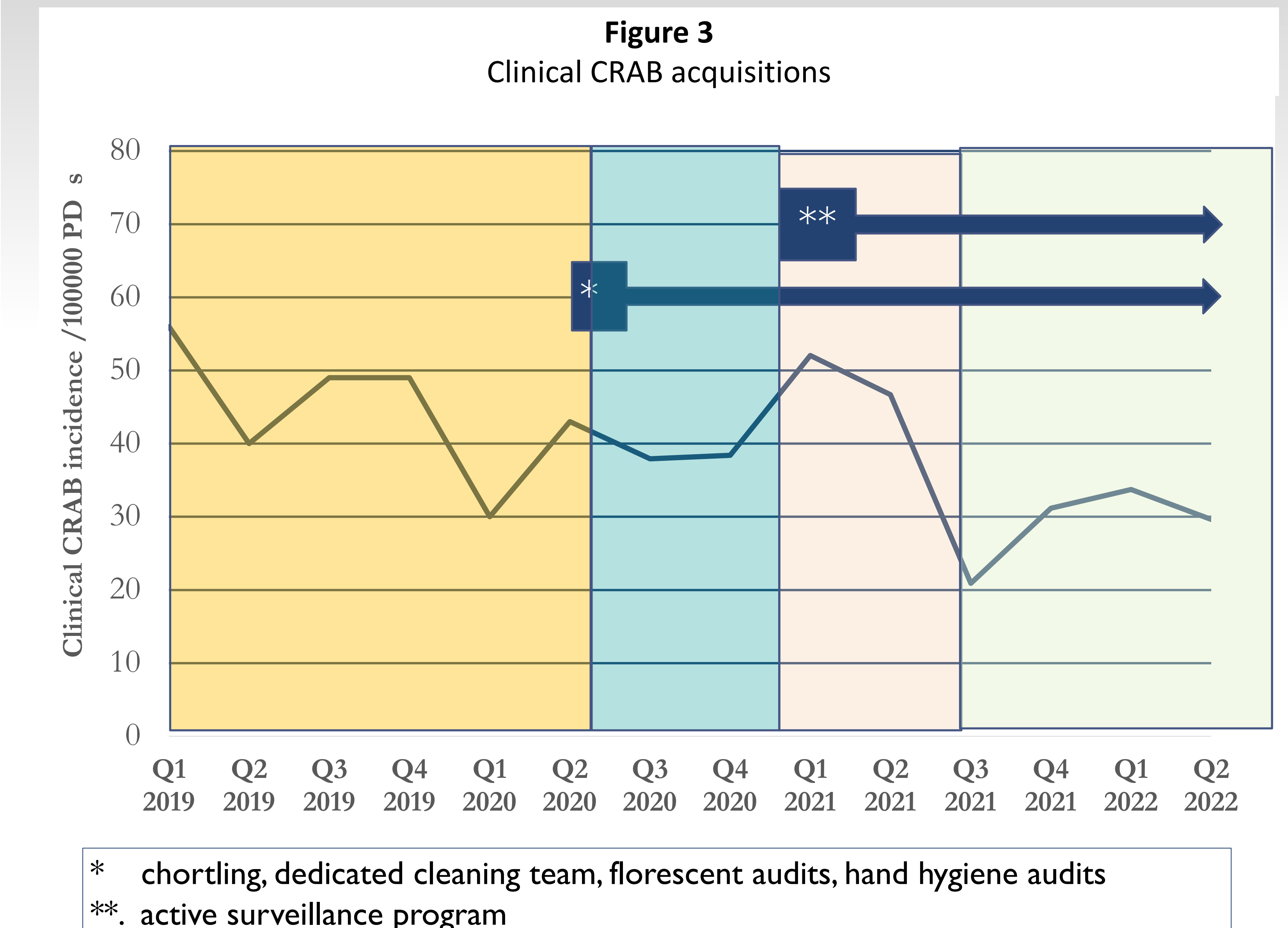
The number of screening cultures increased from an average of 88 per month during the third quarter 2020 (0.7 % of total admissions) to an average of 1100 per month (5.0% of total admissions) during phases III-IV. Between 01 July 2020-30 June 2022, 369 patients were identified as colonized or infected with CRAB; detection by surveillance cultures increased from 29.0% in 2020 to 74.7% in 2022; admission detections versus nosocomial acquisitions increased from 26.2% to 59.8% (figure 1)

Carriage rate among screened patients on admission was 2.4%. (110/4604) No significant change was observed in the prevalence of newly carriers on admission. The incidence of carriage among screened hospitalized patients > 3 days decreased from 11.0% in 2020 to 3.7% in 2022 (figure 2)



Clinical acquisitions

During the baseline period, Incidence density rate (IDR) of HA-CRAB was 4.9/10,000 patient days .(figure 3- yellow area) During phase II no significant decrease was observed (IDR 3.9/10,000 PD, IRR 0.7 95% CI 0.49-1.16, p=0.15) .In response to ongoing transmission in several wards, active surveillance was implemented during phase III. During phase IV IDR was 3.1/10,000 PD (IRR 0.60, 95% CI 0.40-0.88, p=0.007)



Conclusion

The comprehensive intervention that combined intensified control measures with ASC was effective in reducing the incidence of HA-CRAB in endemic settings
Following the implementation of an active surveillance program, more the 70% of the patients were detected by ASC