

Improving Colorectal Cancer Surgical Outcomes through Audit and Feedback: Results from the Emilia-Romagna ESCA program

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Objective

Colorectal cancer (CRC) is among the most common malignancies worldwide. Despite advances in surgical techniques, significant inter-institutional disparities in clinical outcomes persist. Audit and Feedback (A&F) is a recognised strategy to reduce variability and promote best practices. This study aimed to evaluate the impact of the Emilia-Romagna Surgical Colorectal Audit (ESCA), launched in 2019 as Italy's first multicenter A&F programme for CRC surgery.

Methods

This retrospective, multicenter, observational study included patients undergoing CRC surgery between 2019 and 2024 across seven surgical units in the Emilia-Romagna region. Over 170 perioperative variables were collected via structured forms. The evaluated outcomes, adjusted for case mix, included minimally invasive resection rate, length of stay, readmissions, and mortality at 30 days. Annual anonymised reports were distributed, allowing performance benchmarking across centres.

Results

A total of 3604 patients were enrolled, representing approximately 93% of the eligible cases. Among them, 80.9% were operated for colon cancer, and 48% were female (Fig. 1). Following ESCA implementation, the average length of stay decreased from 6.2 to 4.8 days (-7% ceteris paribus, i.e., adjusting for covariates), resulting in 1395 hospital days saved (Table 1). The use of minimally invasive surgery for rectal cancer increased by 6.5%, with variation ranging from -0.3 to +14.2% (Table 1). Focusing on the comparison of the last two years (Figs. 2 and 3), we observed an 18.8% reduction in readmissions (Fig.2). The overall 30-day mortality for the entire period was +1.4 (Table 1), but in the most recent year, 4.5 lives were saved compared to the estimated expected deaths based on the previous year's data (Fig. 3).

Figure 1: Describing the unadjusted case-mix

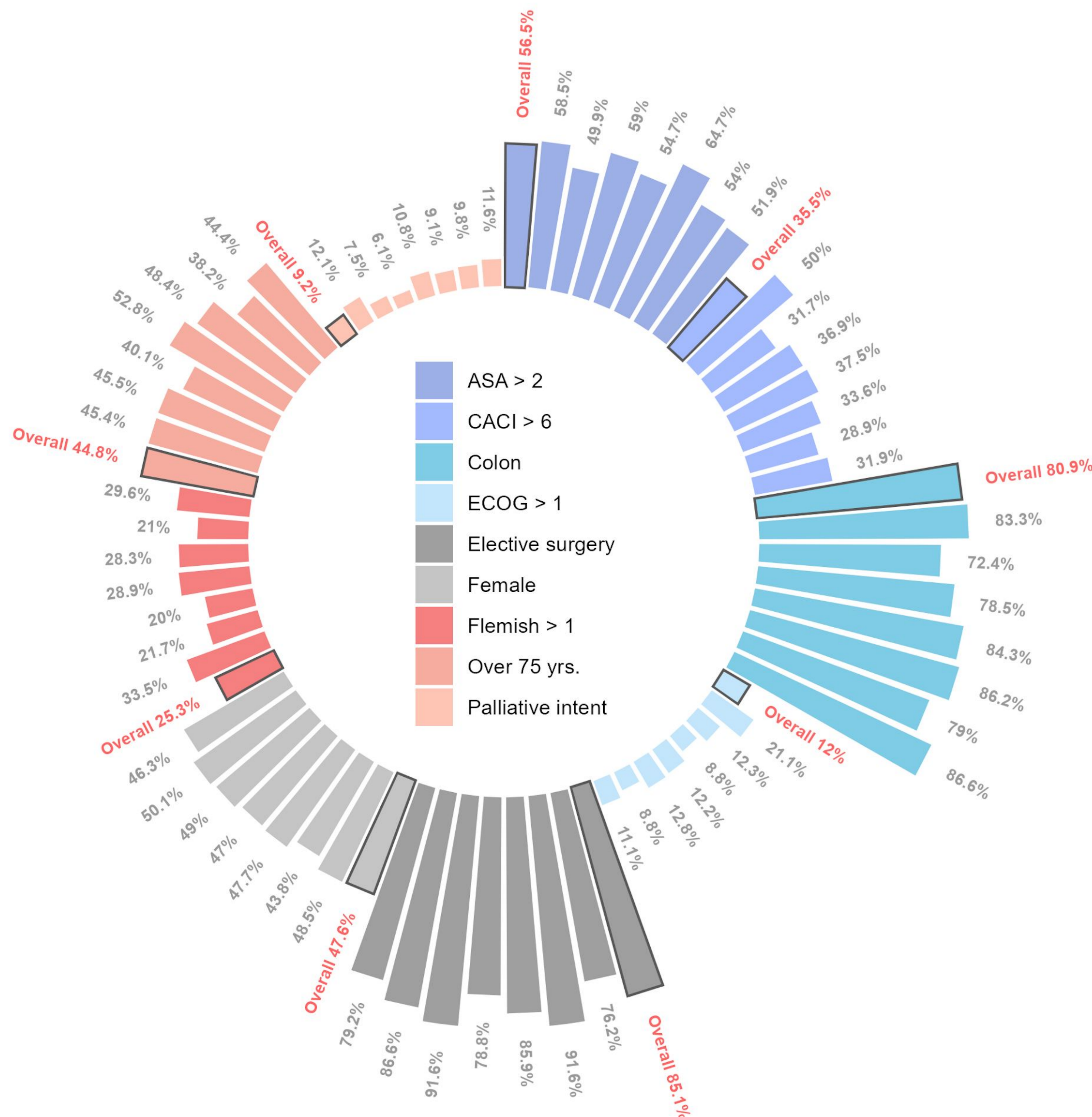


Table 1: Change in minimally invasive resection rate, LoS and 30-day mortality by site and overall observed from November 2020 to August 2024

(%)	Minimally invasive resection rate	Length of stay	30-day mortality rate
Site 1	+3.7	-0.1	-1.7
Site 2	-0.3	-2.0	-45.3
Site 3	+13.2	-2.6	-7.5
Site 4	+7.6	-6.2	+87.7
Site 5	+14.2	-33.7	-39.4
Site 6	+1.2	+9.2	-14.9
Site 7	+1.9	+18.3	+38.8
Overall	+6.5	-7	+1.4

Figure 2: Unplanned Readmission Rates 2022-23 Vs. 2023-24

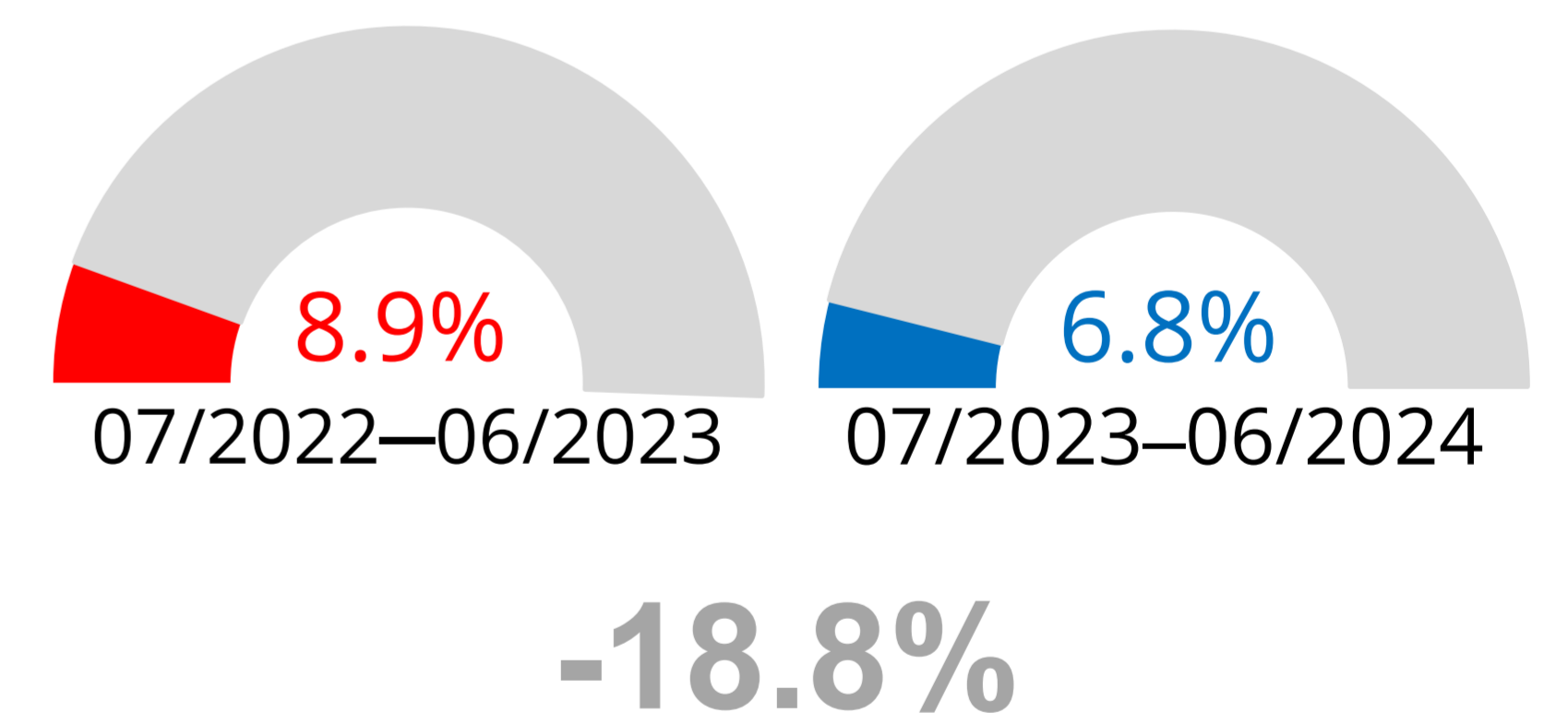
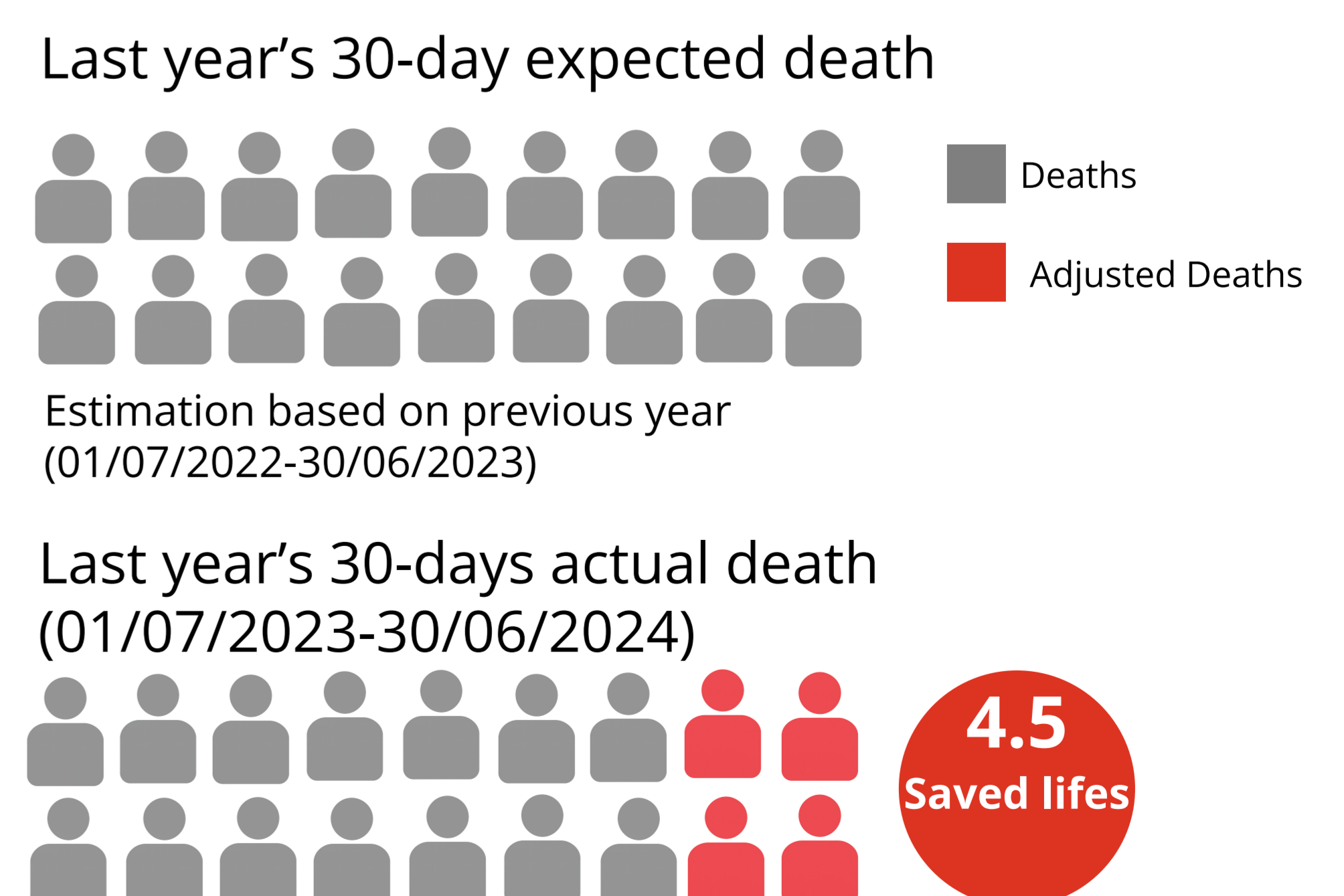


Figure 3: Last year's 30-day mortality



Conclusions

The ESCA A&F project shows promising indications of effectiveness in improving CRC surgical outcomes. Nonetheless, some heterogeneity among centers suggests differential responsiveness to A&F. The observation period encompasses the COVID-19 pandemic, which may have affected certain outcome indicators, including mortality. Further qualitative investigation into local audit dynamics and contextual determinants is warranted to optimize implementation and impact.