BCCA

BINATIONAL COLORECTAL CANCER AUDIT

2020

Clinical Quality Report

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Example Hospital

Please email BCCA project manager with any queries relating to the data contained in this report. Note that whilst every effort is made to ensure data accuracy, the report is reliant on information provided to BCCA.

Confidential

21 July 2021

Binational Colorectal Cancer Audit

+61 3 98538013
bcca@cczanz.org

Binational Colorectal Cancer Audit (BCCA) is principally funded by:

The Colorectal Surgical Society of Australia and New Zealand (CSSANZ) is the professional body that represents Australian and New Zealand Colorectal Surgeons. CSSANZ members voluntarily fund the majority of costs associated with BCCA to advance the quality of colorectal cancer care in Australia and New Zealand.

Partners:

Monash University through both the Cancer Research Program and Clinical Outcomes data Reporting and Research Program provide database hosting and a secure research environment as well as Academic and Clinical Research guidance, Advocacy and Registry Science expertise. Monash is a leader in multiple Cancer Outcomes Registries and a critical partner in ongoing development of the BCCA.

Supporters:

Medtronic is a global leader in medical technology, services and solutions. Medtronic provides financial support to the BCCA through an annual medical grants program.

The Royal Australasian College of Surgeons (RACS) is an independent professional body committed to enabling surgeons to achieve and maintain the highest standards of surgical practice and patient care. RACS contributes annually to fund ongoing operation of the BCCA.

Epworth HealthCare is Victoria's largest not-for-profit private hospital group. Epworth HealthCare provided funding for BCCA data entry by supporting Clinical Colorectal Fellows and through additional Epworth Research Institute Grants.

Let's Beat Bowel Cancer is a not-for-profit initiative of Cabrini with a vision to significantly lower deaths related to bowel cancer through public awareness, research and medical advances. Let's Beat Bowel Cancer have collaborated with BCCA to aid database development through co-implementation of Patient Reported Outcome Measures (PROMs) software.

Aginic are an agile data analytics company engaged to develop the prototype Clinical Dashboards with BCCA in 2020. Aginic are currently hosting prototypes on behalf of BCCA for free.

Contents

1 Data analyses

Three year (2018 - 2020) data was used to generate funnel plots as this period would provide us with enough power and recency of information. Funnel plot is a visual representation of how individual units fare compared to their peers and the overall average; it also identifies those who are performing better or worse than the average. The funnel plot contours represent two standard deviations (95% control limits) and three standard deviations (99.8% control limits) from the mean, those above and below these lines are considered outliers, with a 5% and 0.2% chance of a false positive. In the preparation of funnel plots all units of less than 10 operations were grouped in a single group (patients in all, labelled 'lumped sites group'). Including this group, there were 101 units analysed. For the 101 units the median number of patients was 97, mean 137, with a range from 11 operations to a maximum of 602 operations.

Some of the funnel plots present unadjusted crude rate or mean while others (where noted) are risk-adjusted. Risk-adjustment considers differences in patient-level risk-factors; it enables adjustment for confounding variables which are beyond the control of the surgeon or healthcare system. The risk-adjustment models were revised in December 2018, which included both statistical and clinical considerations. The variables used in the risk adjustment model are noted under each graph. Clinical input identified the following risk factors: age, sex, ASA grade, urgency of surgery, cancer type and tumour stage. Statistical modelling including the likelihood ratio test was used to identify multivariate and independently significant risk factors. A separate category for missing data was created and included in the model. Due to potentital bias in interpretation, units with less than 20% of complete data on endpoint and risk factors were not included in the risk adjusted funnel plots.

For length of hospital stay (LOS), we excluded LOS <= 0 and > 30 days as these were deemed clinically unlikely and potential data entry errors. This resulted in 100% of all data submitted included in the analysis. This approach was also applied to the lymph node data, with the highest figure of 40 as cutoff as this represents 95% of all data submitted.

2 Annual participation (2018 - 2020)

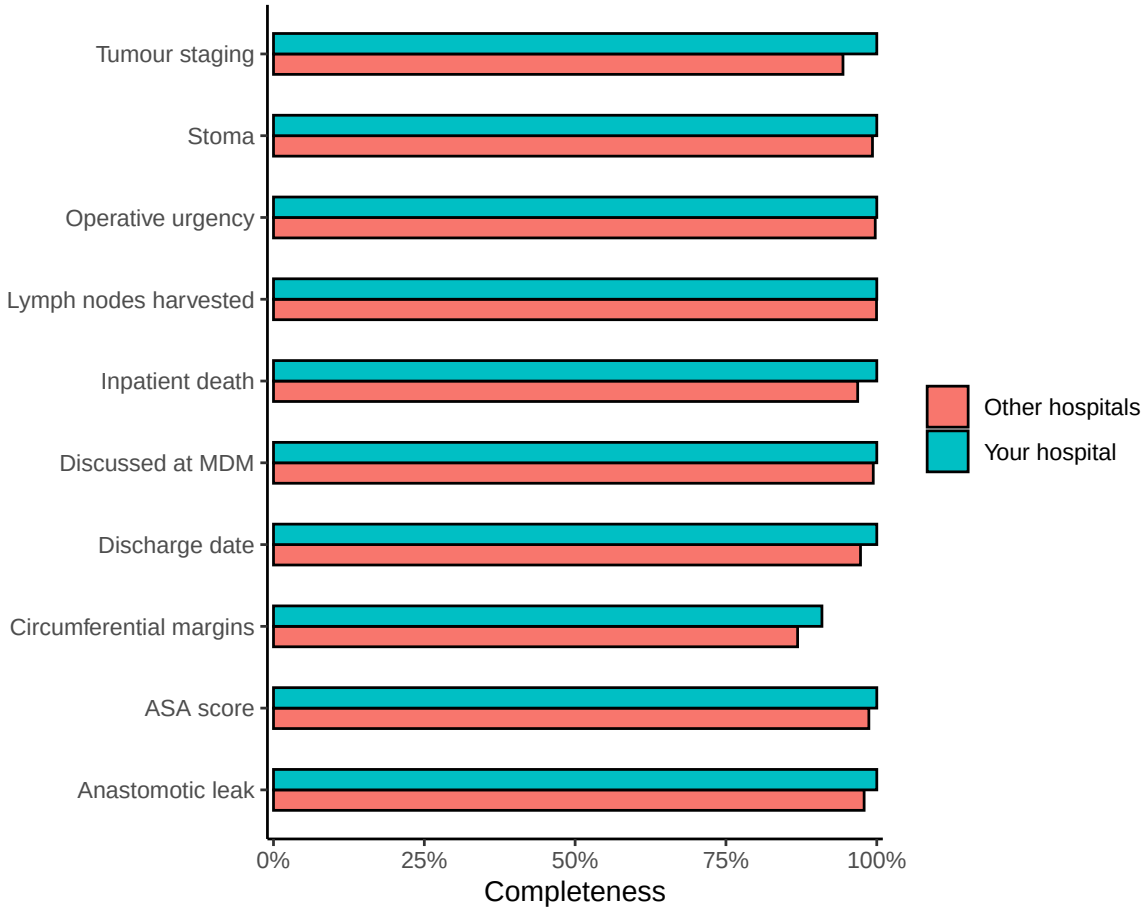
Table 1: *Number of episodes entered by your hospital per year*

Year	Number of episodes
2018	119
2019	95
2020	77

Note:
Only treatment episodes with performed surgery were included

3 Data completeness (2020)

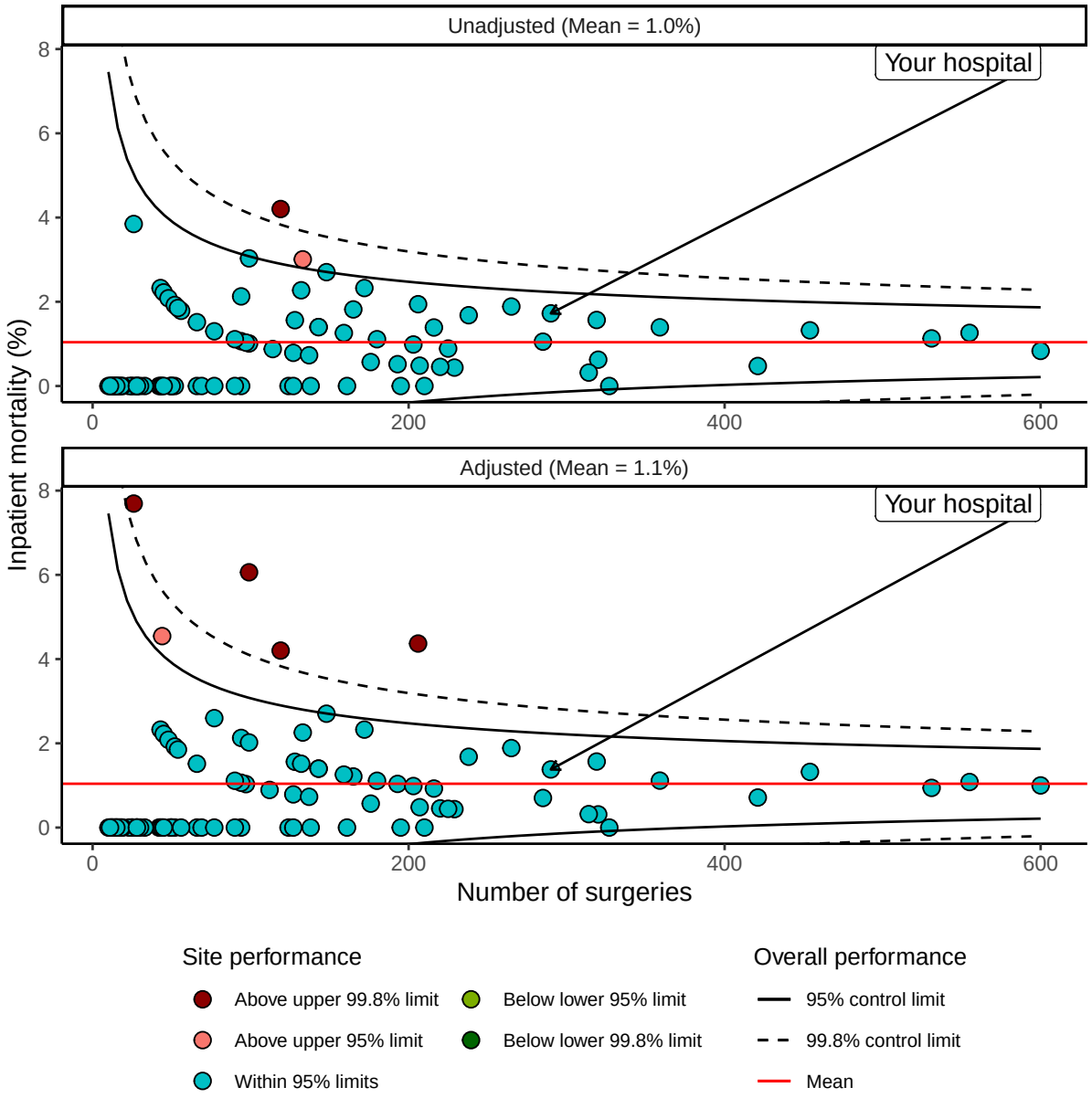
Figure 1: *Data completeness (2020)*



4 BCCA primary key performance indicators

4.1 Inpatient mortality

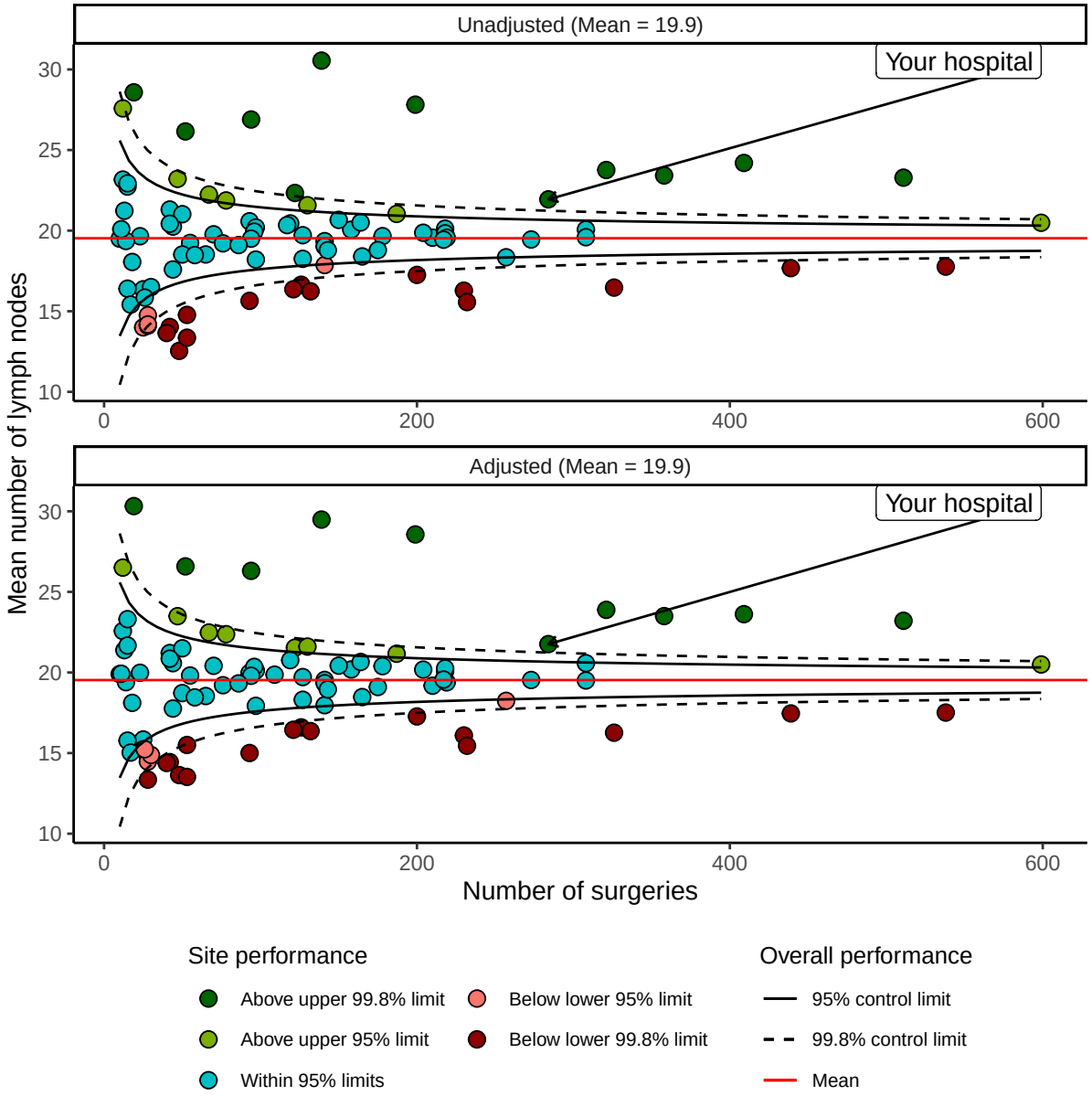
Figure 2: *Inpatient mortality rate (2018 - 2020)*



Adjusted for ASA score, patient age at diagnosis, operative urgency, sex, and overall stage
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

4.2 Number of lymph nodes examined

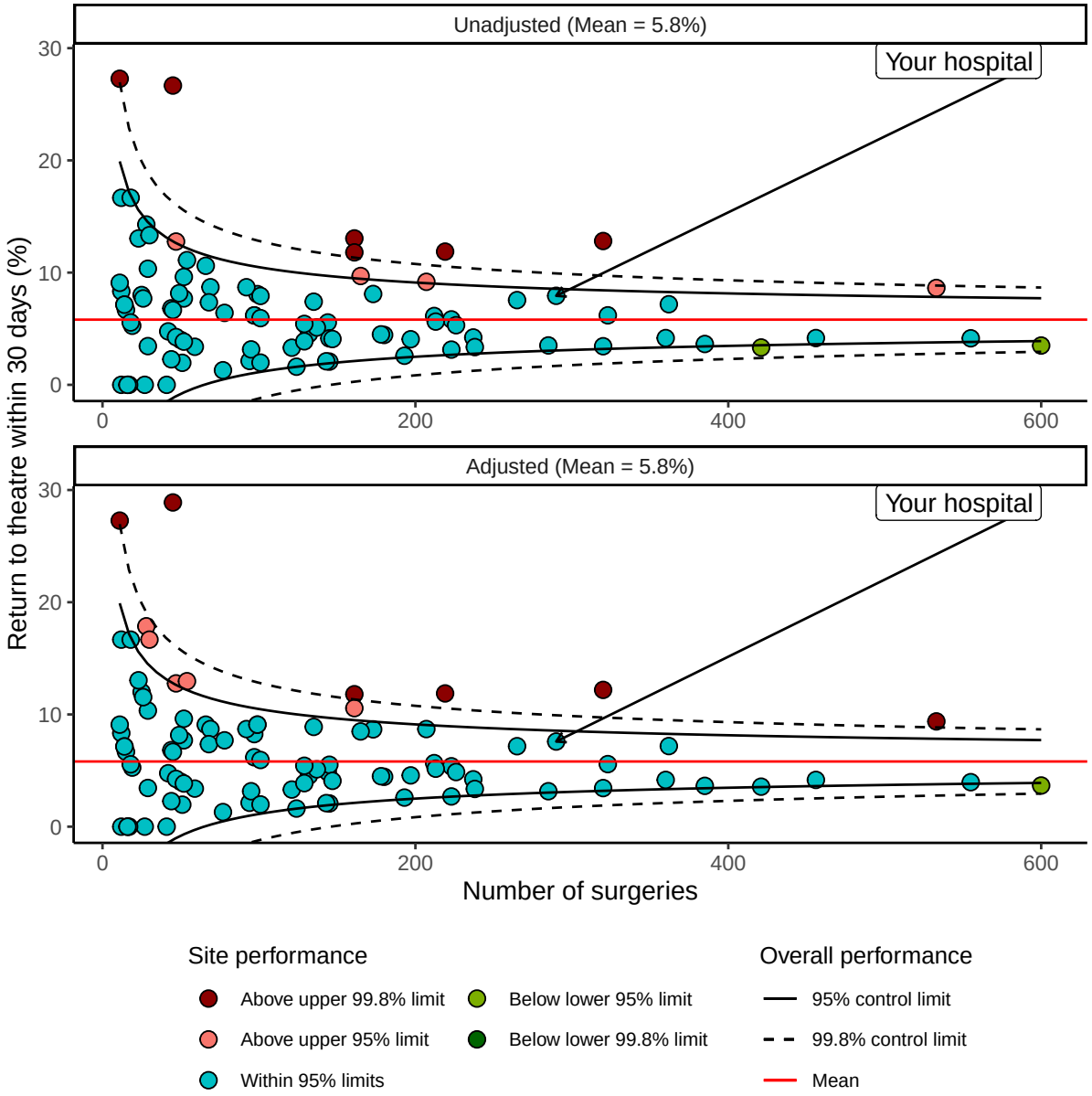
Figure 3: *Mean number of lymph nodes examined (2018 - 2020)*



Adjusted for overall stage, patient age at diagnosis, sex, operative urgency, and ASA score
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

4.3 Return to theatre

Figure 4: *Rate of return to theatre (2018 - 2020)*



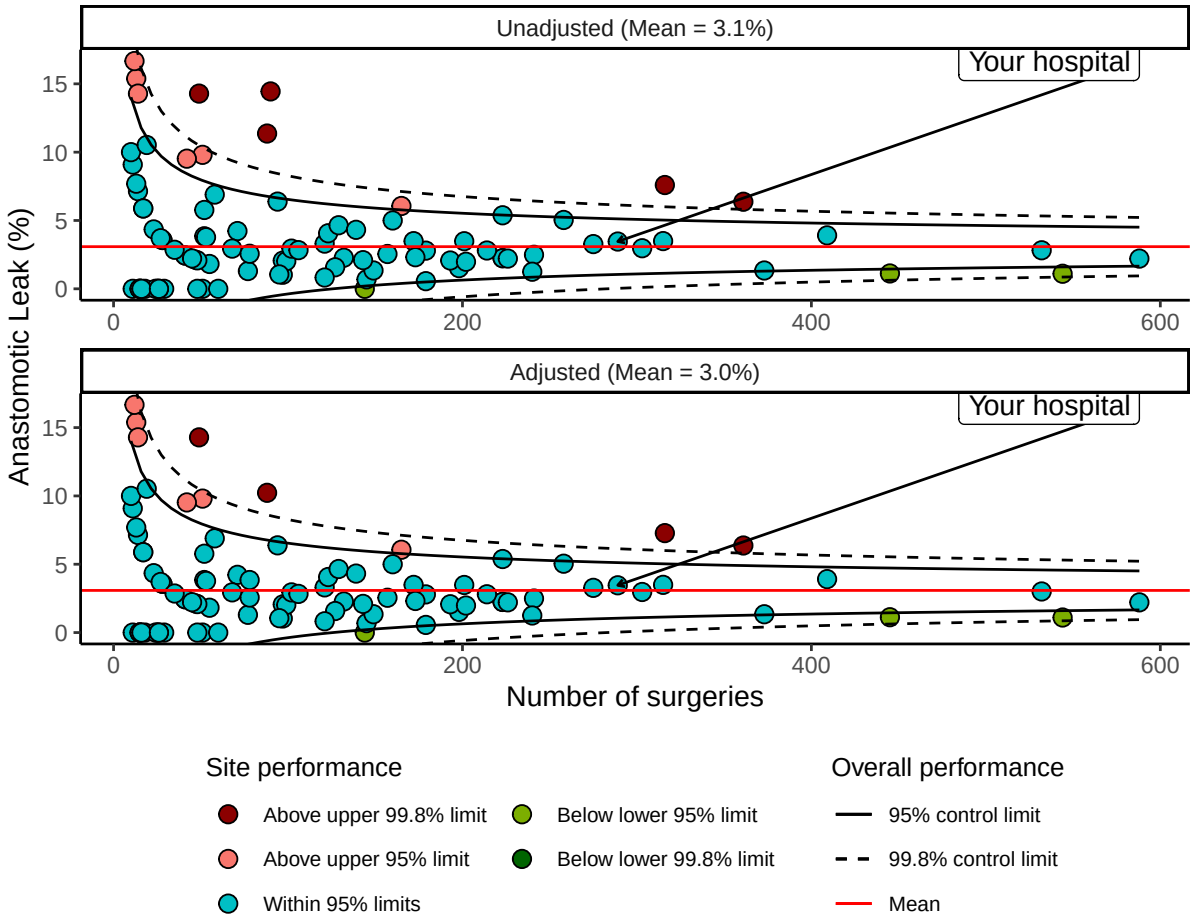
Adjusted for ASA score, cancer type, sex, patient age at diagnosis, and operative urgency
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

4.4 Anastomotic leak

Table 2: *Anastomotic leak rate*

Period	Cancer type	Other hospitals	Your hospital
2020	Colon	3% (70/2527)	4% (2/51)
	Rectal	5% (34/753)	17% (1/6)
2018 - 2020	Colon	3% (252/7996)	3% (6/184)
	Rectal	6% (125/2196)	9% (4/47)

Figure 5: *Rate of anastomotic leak (2018 - 2020)*



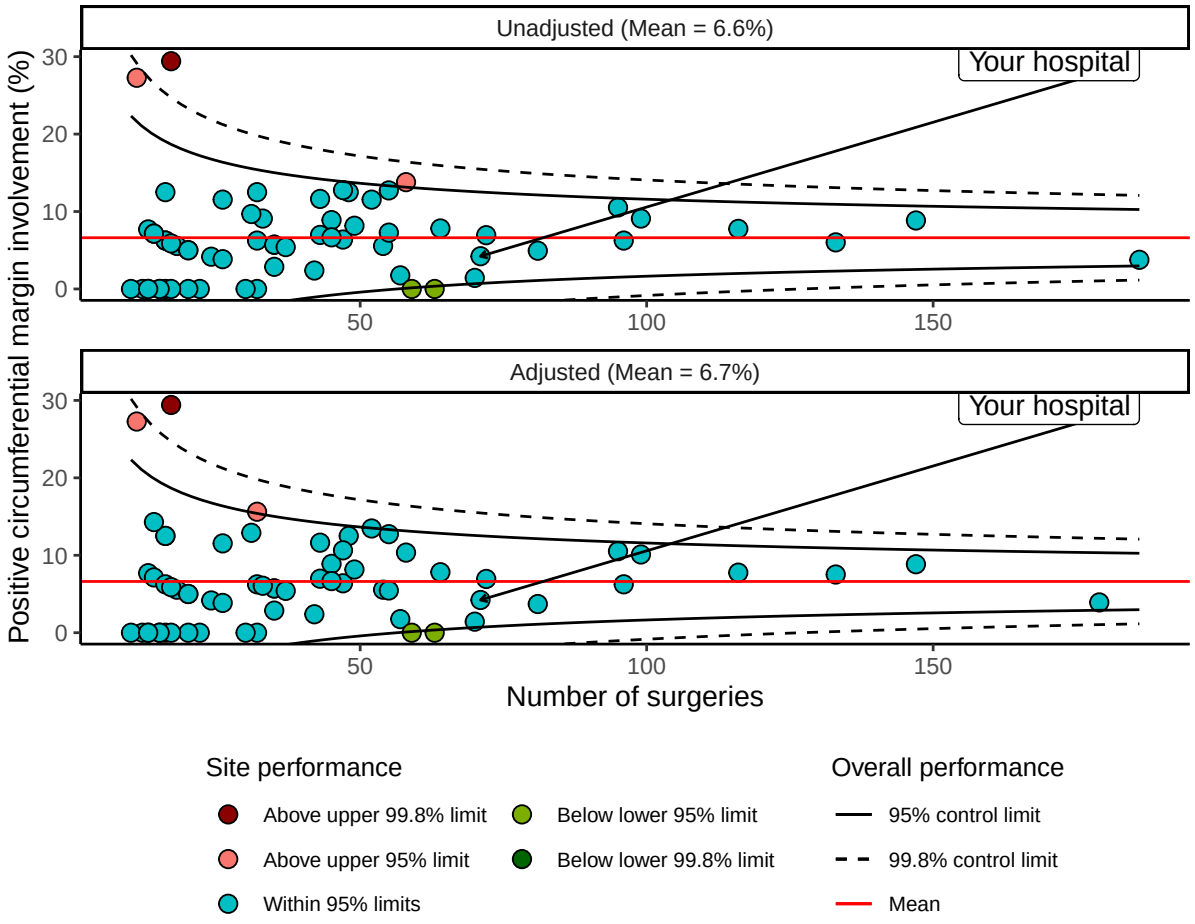
Adjusted for sex, and cancer type
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

4.5 Circumferential margins for rectal cancer

Table 3: *Positive circumferential margin rate*

Period	Margin involvement	Other hospitals	Your hospital
2020	Negative (>1mm)	94% (895/957)	100% (12/12)
	Positive (<=1mm)	6% (62/957)	0% (0/12)
2018 - 2020	Negative (>1mm)	93% (2662/2856)	96% (68/71)
	Positive (<=1mm)	7% (194/2856)	4% (3/71)

Figure 6: *Rate of rectal cancer patients with positive circumferential margin involvement (2018 - 2020)*

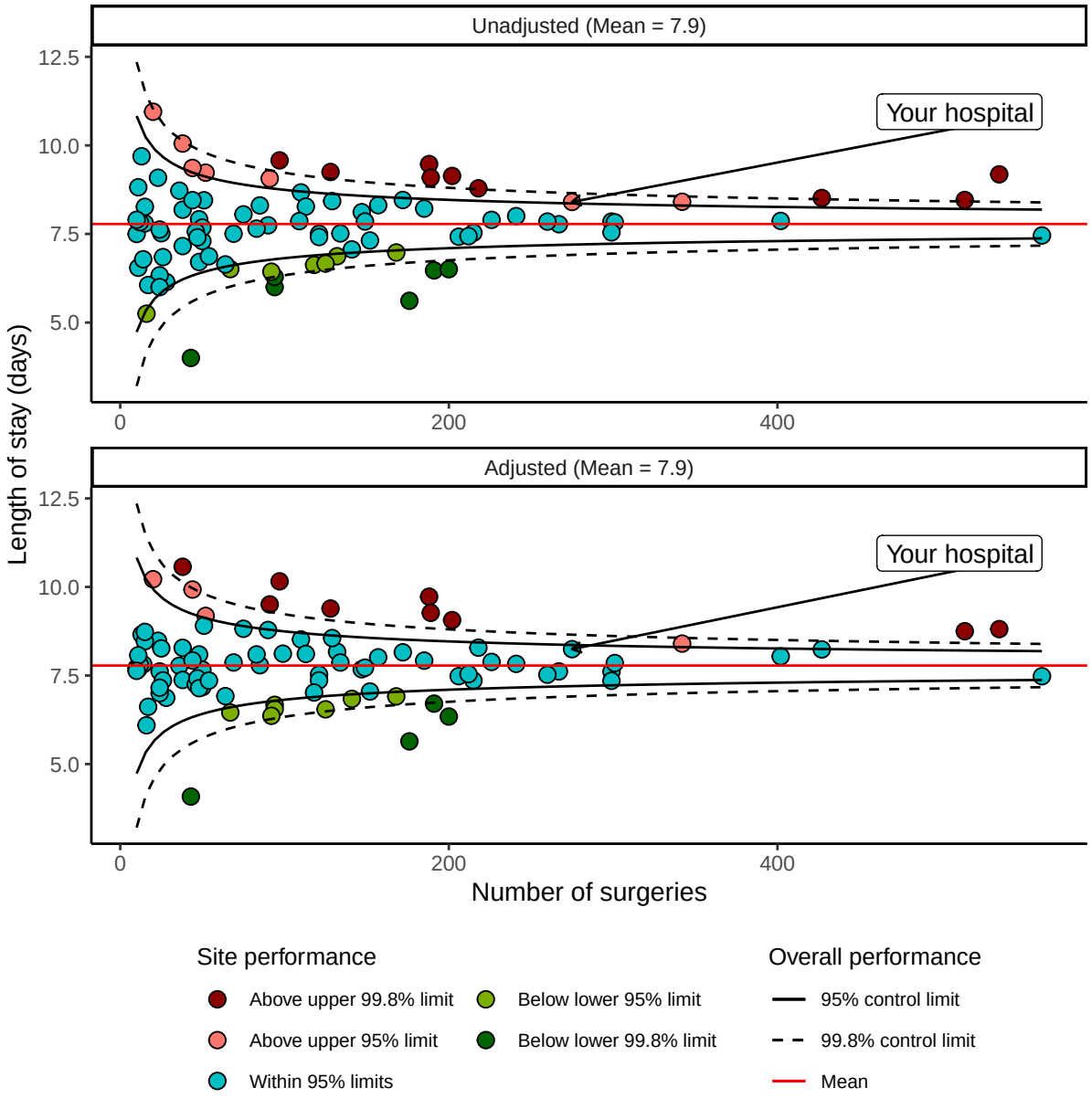


Adjusted for overall stage, and operative urgency
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

5 BCCA secondary key performance indicators

5.1 Length of stay

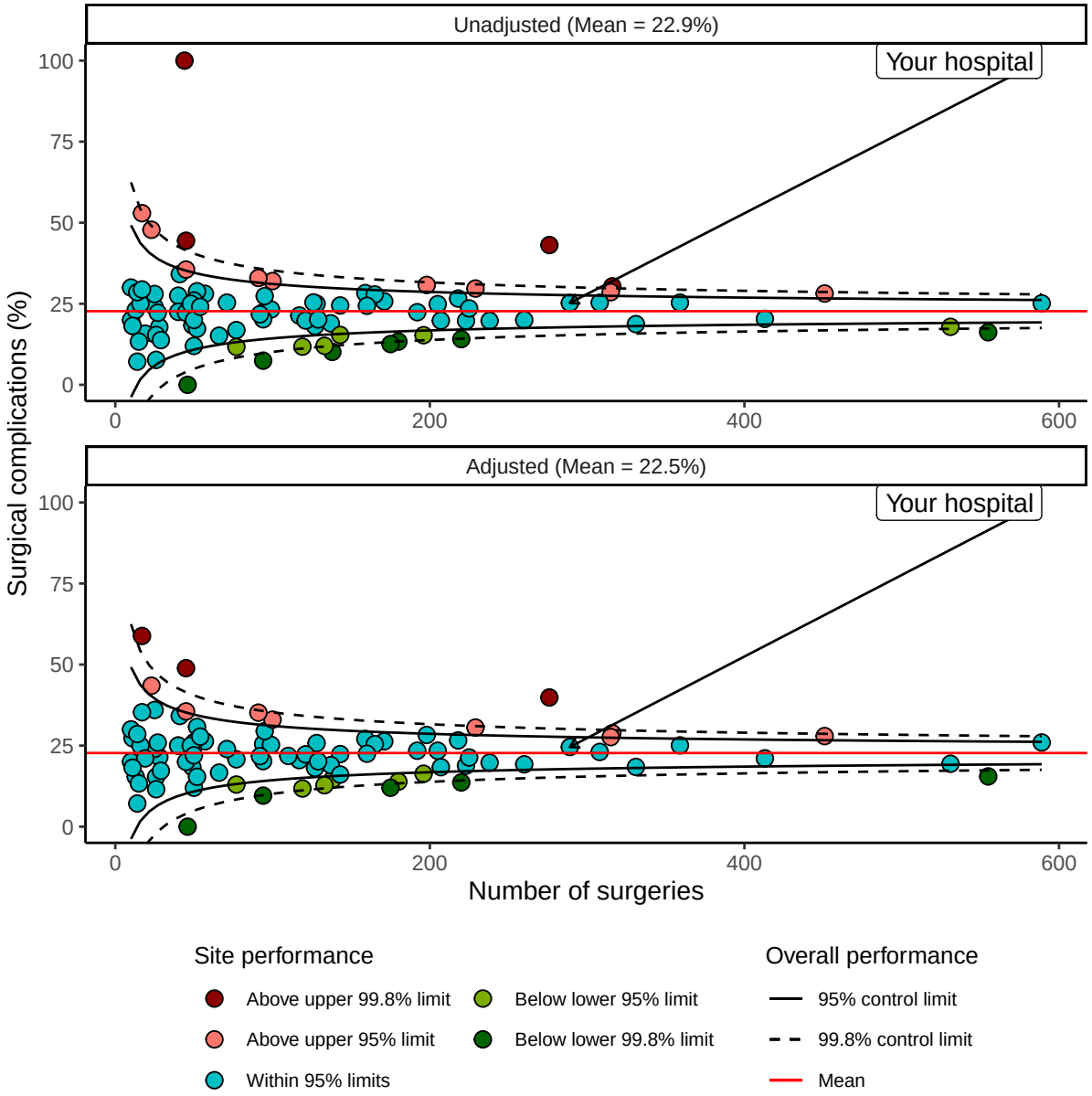
Figure 7: *Mean length of stay (2018 - 2020)*



Adjusted for ASA score, cancer type, operative urgency, overall stage, patient age at diagnosis, and sex
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

5.2 Surgical complications

Figure 8: *Rate of surgical complications in colorectal cancer patients (2018 - 2020)*



Adjusted for cancer type, ASA score, sex, operative urgency, patient age at diagnosis, and overall stage
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

Figure 9: *Rate of surgical complications in colon cancer patients (2018 - 2020)*

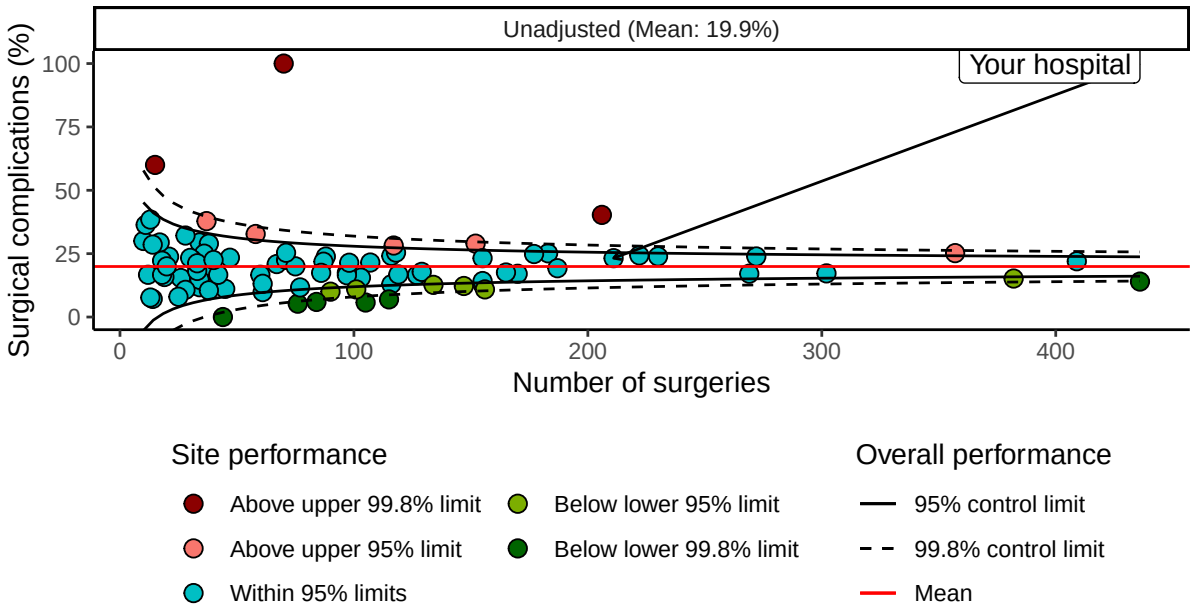
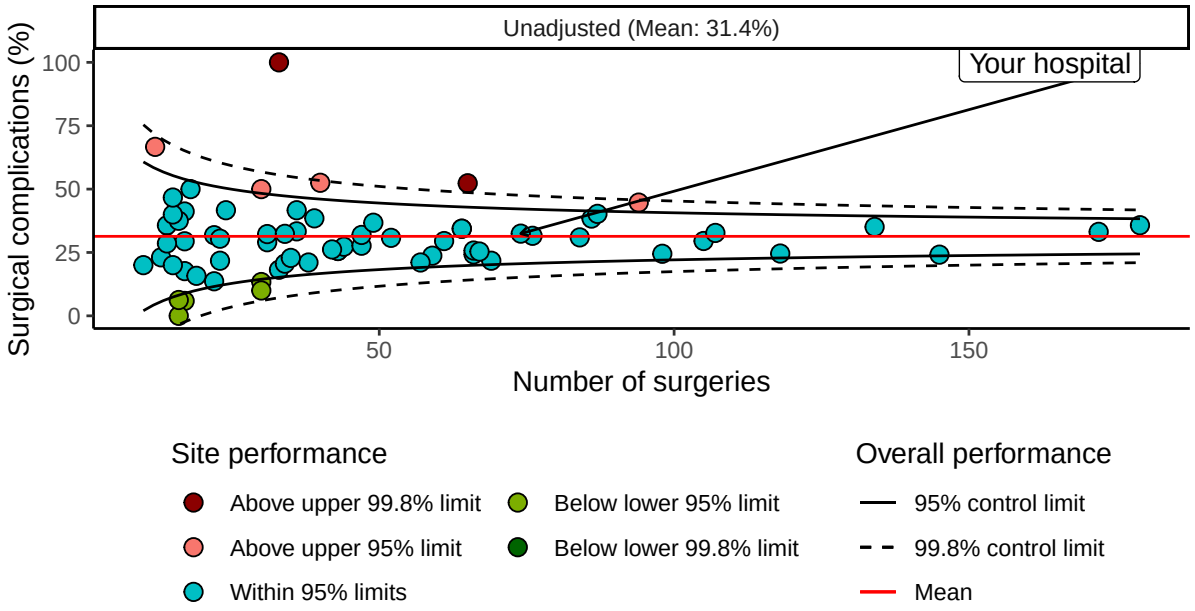
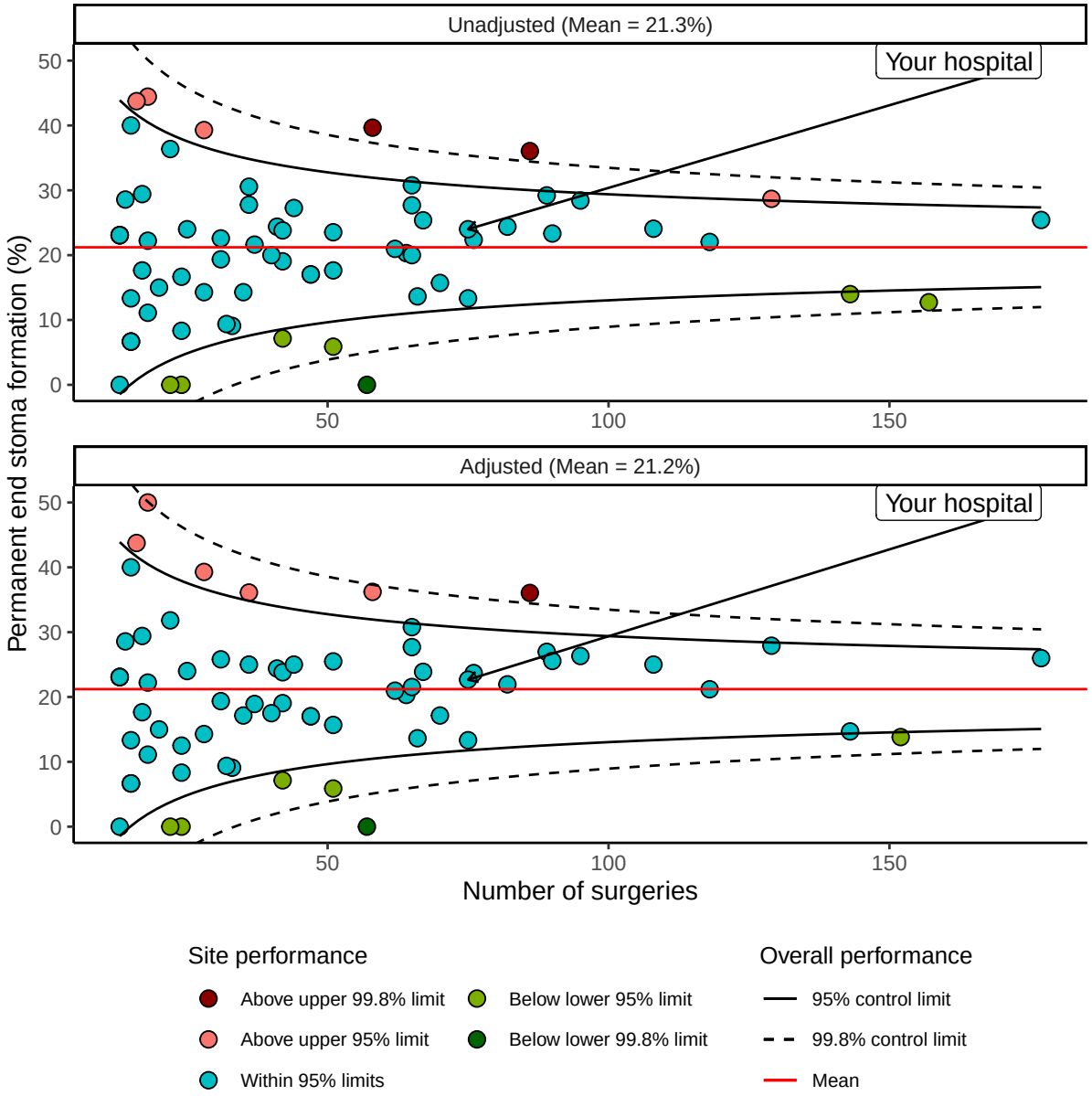


Figure 10: *Rate of surgical complications in rectal cancer patients (2018 - 2020)*



5.3 End stoma

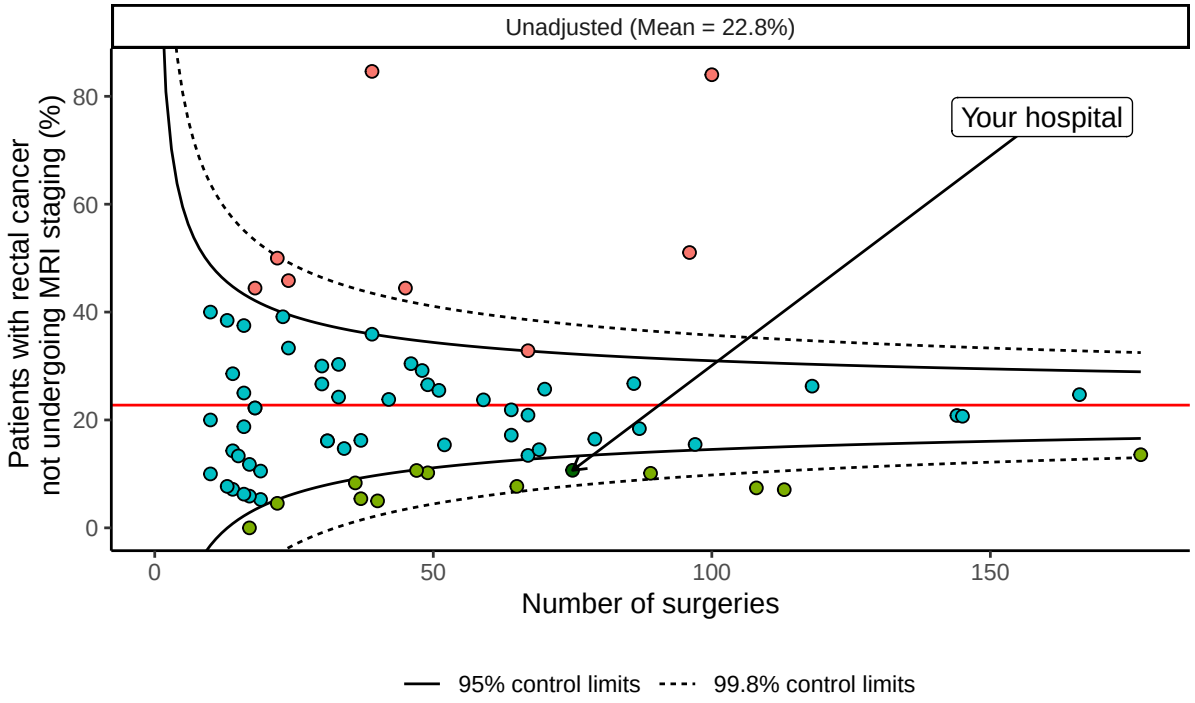
Figure 11: *End stoma rate (2018 - 2020)*



Adjusted for ASA score, overall stage, and patient age at diagnosis
8 sites were excluded due to low completeness of the adjusting covariates and/or outcome

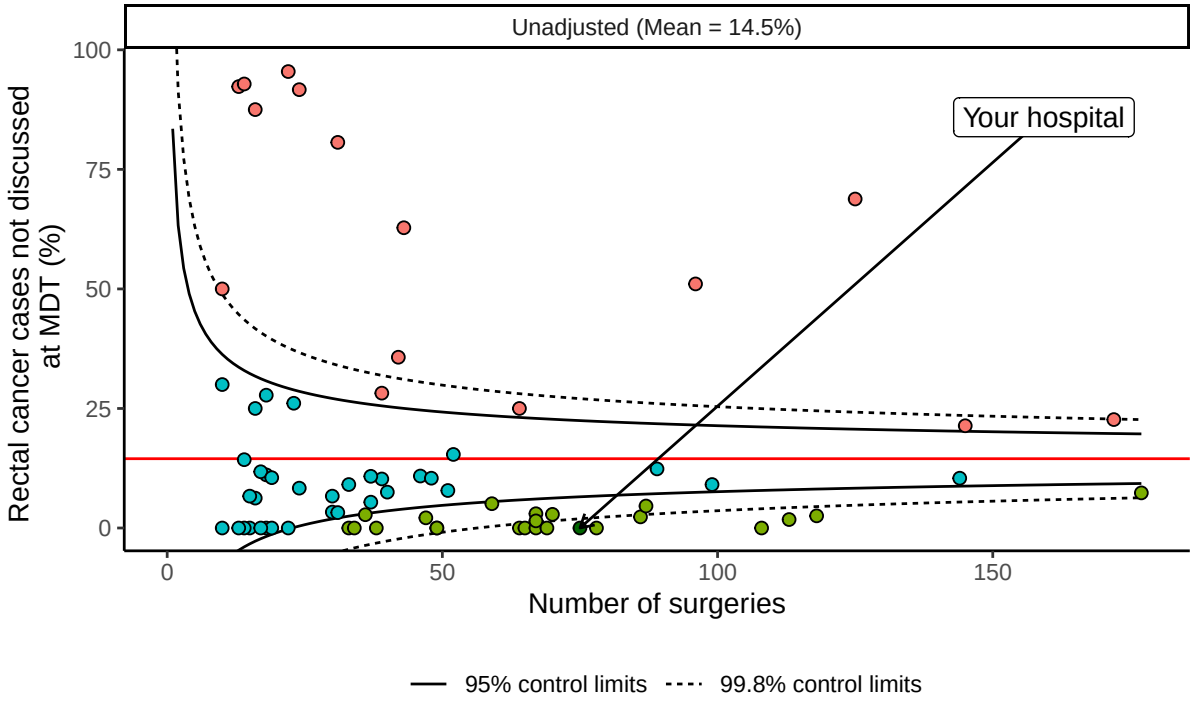
5.4 Rectal cancer: MRI

Figure 12: *Rate of rectal cancer patients who did not receive an MRI staging (2018 - 2020)*



5.5 Rectal cancer: Discussion at MDT

Figure 13: *Rate of rectal cancer patients who received surgical treatment not discussed at MDT (2018 - 2020)*



6 Disclaimer

BCCA dataset represents an estimated 29% of Australia and New Zealand colorectal cancer data entered by 412 clinicians from 150 hospitals participating in BCCA. Hence, the position of the unit identified in this report must be interpreted with this in mind and may be within the common bounds if all colorectal cancer surgeries in Australia and New Zealand were entered into BCCA.

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For more information:

Dr Hayat Dagher
BCCA Project Manager
79 Church Street
Hawthorn, VIC 3122

Phone: +61 3 9853 8013
Email: **bcca@cssanz.org**
Website: **bowelcanceraudit.com**