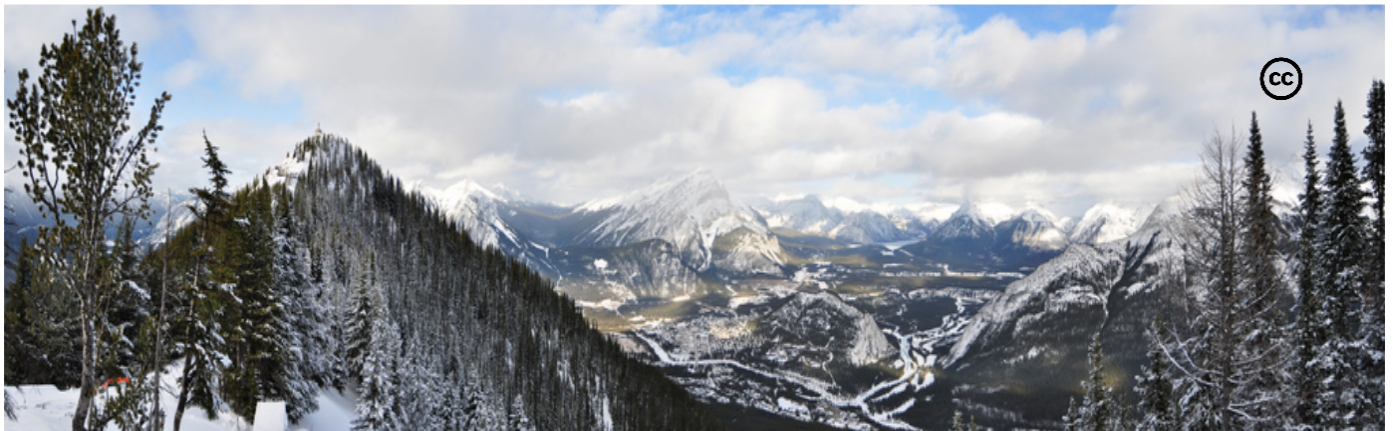# Alberta North Zone Endoscopy Quality Study Community Comparison Report Card

July 2020

Master

July 1, 2020

Dear Alberta North Zone Endoscopist,

Thank you for participating in the Alberta North Zone Endoscopy Quality Study, funded by the North Zone Quality Assurance team and facilitated by the emprss[TM] team. Emprss's main objective is to provide a means for health care practitioners to collect and receive reporting on their quality metrics related to procedural medicine.

The results enclosed should be self-explanatory, but definitions of outcomes and calculations are provided where necessary. Benchmarks were derived from existing literature and when benchmark targets differed between guidelines, the most commonly quoted or most stringent target was used. For example, for the quality of bowel preparations, American Society of Gastrointestinal Endoscopy recommends that inadequate bowel preparations should occur in ≤15% of procedures[1], while the National Health Services Bowel Cancer Screening Program[2] and others[3] recommend ≤10%. Therefore in the study, ≤10% benchmark target was used.

For ease of reflection, we have provided a summary page, which directly compares your results to standard benchmarks, and also provide a comparison of your results separated by year.

We acknowledge that some records are incomplete due to staffing shortages or local wifi issues. For this reason, please review the flow diagram (Figure 1), which outlines the number of procedures that are used for your report card.

We have added a summary of your FIT positive cases and at we also report on the number of missing or potentially inaccurate results. Throughout the report card, for specific variables that have missing data, we add a statement: "this variable is based on X entries out of Y records."

We would like to sincerely thank all the participating endoscopists and their teams for their participation in the Alberta North Zone Endoscopy Quality Study. We wish to especially thank Dr. Dereck Mok, co-principle investigator for his leadership role in the study and Dr. Mark Forder (North Zone Quality Lead) for his efforts in supporting and securing funding for this work. The study was supported by a grant from the Alberta Health Services Quality Innovation fund and indirectly supported by Alberta Rural Physician Action Plan.

We encourage feedback or ideas for future use of our data collection tool. If you have any questions pertaining to this data or your report, please contact:

Mike Kolber
Co-Principle Investigator

Dereck Mok
Co-Principle Investigator
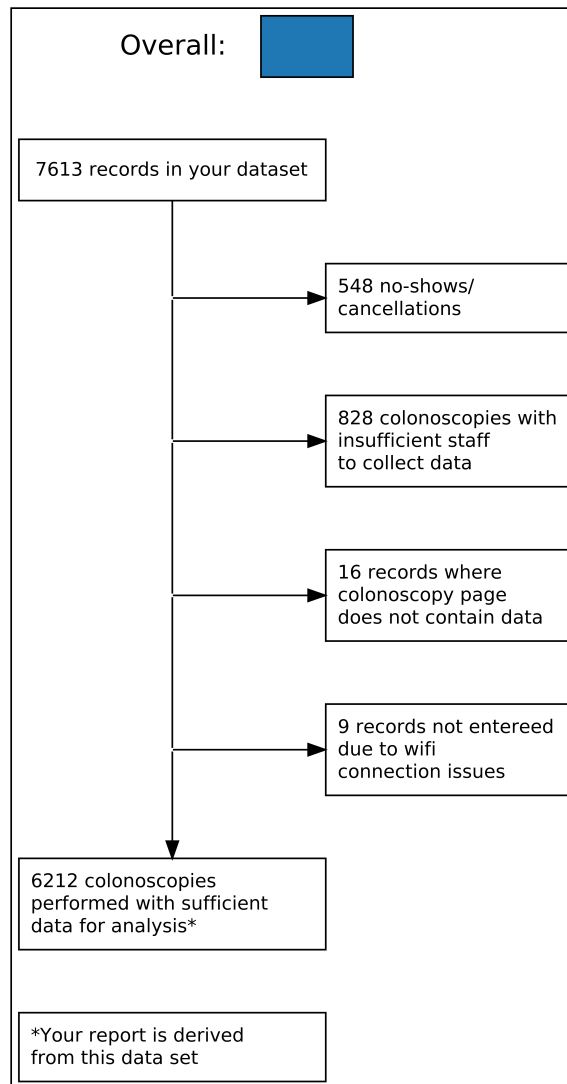

Nicole Olivier
Research Coordinator

Summary of Results
(based on 6212 colonoscopies)

	Benchmark Target	Overall North Zone Results	Benchmark Obtained
Cecal Intubation Rate	Cecal intubation rate >= 90%	96.73% 95% CI: (96.3%, 97.2%)	✔
Bowel Preps	Inadequate preparation < 10%	4.64%	✔
Patient Comfort	Moderate or Significant Discomfort < 10%	5.75%	✔
Sedation – Level of Consciousness	Responds when Stimulated or Unresponsive < 33%	54.87%	✘
Polyp Detection Rate 1st time colon, males over 50	Polyps detected > 45%	66.07% 95% CI: (62.8%, 69.0%)	✔
Polyp Detection Rate 1st time colon, females over 50	Polyps detected > 35%	49.79% 95% CI: (46.1%, 53.5%)	✔
Polyps per 100 colonoscopies	No standard benchmark	121.4/100	

Your Start Date: 2018-06-04
Study End Date: 2020-03-25

Figure 1: Record Flow for Analysis

Overall:

7613 records in your dataset

548 no-shows/
cancellations

828 colonoscopies with
insufficient staff
to collect data

16 records where
colonoscopy page
does not contain data

9 records not entereed
due to wifi
connection issues

6212 colonoscopies
performed with sufficient
data for analysis*

*Your report is derived
from this data set

No-Shows and Cancellations:
NZ Cohort
Overall: 7.2% (95% CI: 6.6%, 7.8%),

Patient Demographics and Indications:

Demographic	Overall
Number of completed colonoscopies	6212.0
Mean patient age (years)	56.9
Female (%)	49.4
First-time colon (%)	41.3
Screening (%)	28.3
Symptoms (%)	37.8
Follow Up (%)	26.3

Top 10 Indications (in descending order):[1]
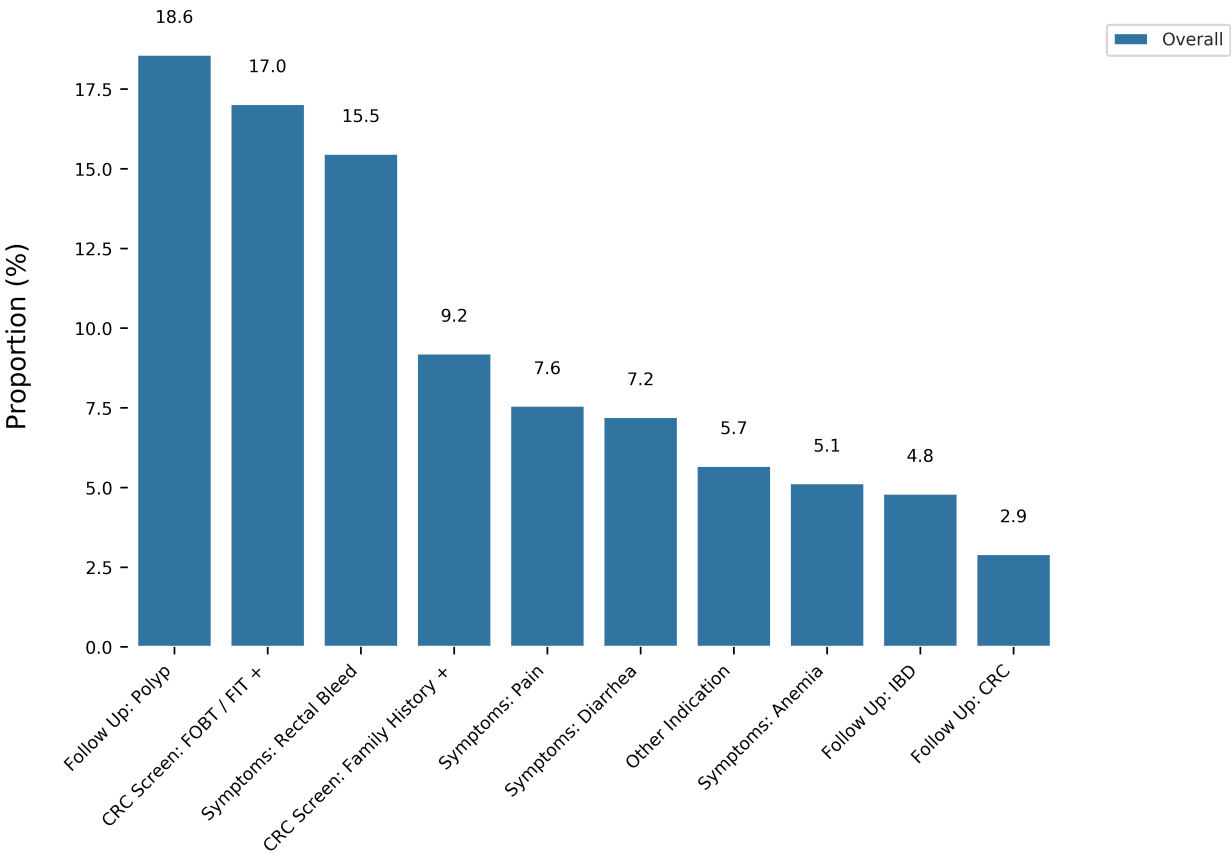
For this variable, your results are based on 6210 entries out of 6212 records
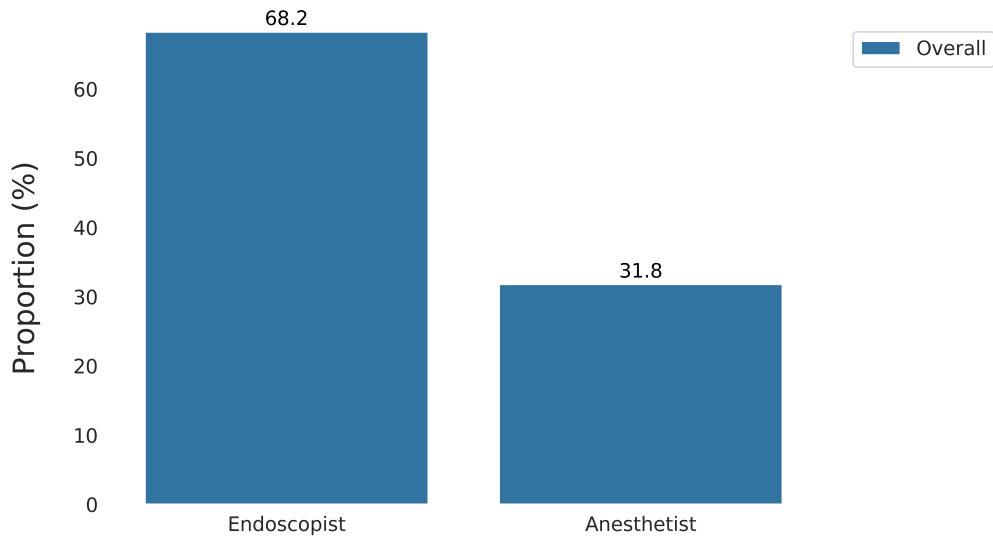
Bowel Preparation Results:[2]
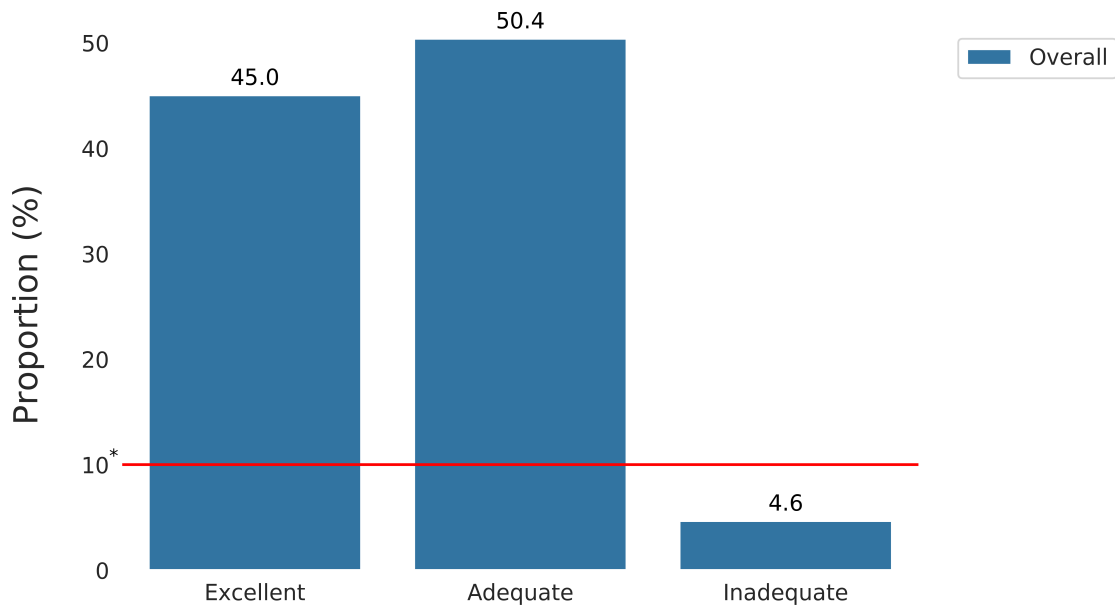
For this variable, your results are based on 6209 entries out of 6212 records

Benchmark Obtained! ✔

Benchmark Target: At least 90% bowel preparation should be described as excellent or adequate. [1-3] **Therefore inadequate bowel preparations benchmark ≤10%.**

Procedural Sedation:

For this variable, your results are based on 6208 entries out of 6212 records

Procedural Agents Used:

Agent	Overall
Versed (Midazolam)	6079 (97.9%)
Fentanyl	4855 (78.2%)
Propofol	1952 (31.4%)
Remifentanyl	589 (9.5%)
Buscopan	492 (7.9%)
Ketamine	122 (2.0%)
None used	54 (0.9%)
Diazemuls	27 (0.4%)
Demerol	21 (0.3%)
Other agent	16 (0.3%)

For this variable, your results are based on 6208 entries out of 6212 records
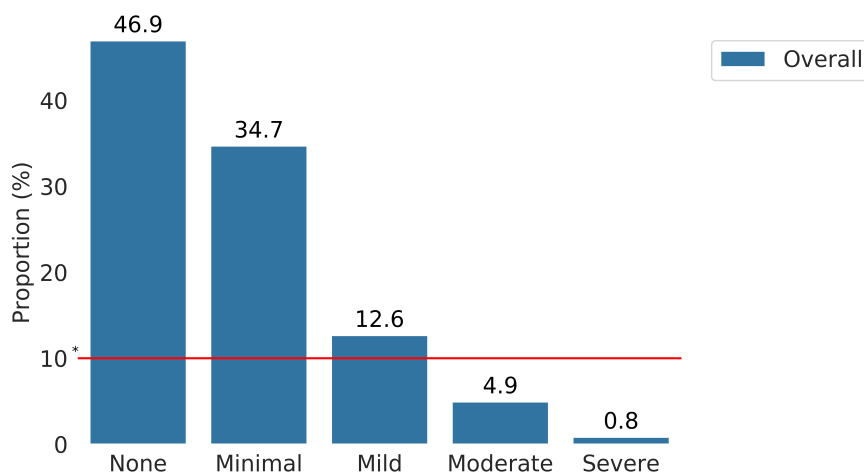
Sedation - Level of Consciousness[3]
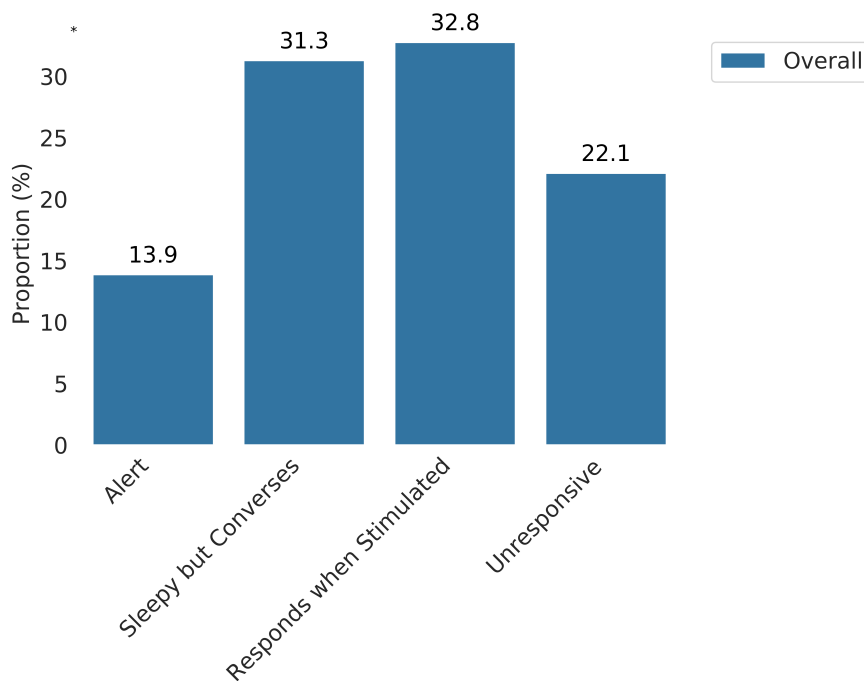
Benchmark Not Obtained. ✘

Benchmark Target: *No benchmark exists. We suggest that* ***<33% of patients only respond when stimulated, or are unresponsive during colonoscopy.***

For this variable, your results are based on 6206 entries out of 6212 records

Patient Discomfort during Colonoscopy[4]

Benchmark Obtained! ✔

Benchmark Target: *Alberta Colorectal Cancer Screening Program (ACRCSP) recommends <10% of patients have NAPCOMs score of ≥6[4]. Moderate or severe discomfort on Gloucester scale is equivalent to NAPCOMs score of 6 (see appendix).* ***Therefore study benchmark: <10% of patients experienced moderate or severe discomfort.***

For this variable, your results are based on 6208 entries out of 6212 records

Cecal Intubations:[5]

Proporton of Successful Cecal Intubations:

Overall: 6006 out of 6209* - 96.7% (95% CI: 96.3%, 97.2%)

*number of procedures to which cecal intubation was captured

<div style="background-color:#90EE90; text-align:center;">Benchmark Obtained! ✔</div>

> **Benchmark Target**: *Cecal intubation rates should be > 90% for all colonoscopies and >95% for colonoscopies performed for screening[1]. Given that colonoscopies in the study were performed for a variety of indications, **a cecal intubation rate ≥90% is the benchmark target.***

Reasons for Incomplete Colonoscopies:

Reason	Overall
Poor bowel prep	68.0 (33.5%)
Technically difficult	56.0 (27.6%)
Other reason	42.0 (20.7%)
Stricture	15.0 (7.4%)
Intent not to perform complete colonoscopy	12.0 (5.9%)
Severe colitis	9.0 (4.4%)
Equipment problem	1.0 (0.5%)

Polyp Detection:

Proportion of Patients with at Least One Polyp:[6]

MALES (>50 years, 1st time colonoscopy, any indication):

Overall: 898 males, 592 with ≥1 polyp (66.1%) (95% CI: 62.8%, 69.0%)

<div style="background-color:lightgreen">Benchmark Obtained! ✔</div>

FEMALES (>50 years, 1st time colonoscopy, any indication):

Overall: 699 females, 348 with ≥1 polyp (49.8%) (95% CI: 46.1%, 53.5%)

<div style="background-color:lightgreen">Benchmark Obtained! ✔</div>

For this variable, your results are based on 6202 entries out of 6212 records

> **Benchmark Target**: *Studies suggest that PDRs may be used to extrapolate to ADRs and suggest that to reach an adenoma detection benchmark of 25%, one should have a PDR of at least 40%[13]. As ADR benchmarks are 30% in males and 20% in females[1],* **PDR benchmarks could be 45% in males and 35% for females.**

Polyp Detection / 100 colonoscopies:[7]

Overall: 7542 polyps in 6212 colons: 121.4 polyps / 100 colons

> **Benchmark Target**: *none exists*

Procedure Times (In Minutes):

Total Procedure Time:[8]

Overall: Mean: 19.7 (SD: 11.0, range: 0-148)

For this variable, your results are based on 6205 entries out of 6212 records

Mean Withdrawal Times When no Lesions Detected:[9]

Overall: 7.3 (SD: 3.4, range: 0-67) - in 3095 procedures when no lesions detected

<div style="background-color:lightgreen; text-align:center">Benchmark Obtained! ✔</div>

For this variable, your results are based on 6209 entries out of 6212 records

> *Benchmark Target*: Withdrawal phase of colonoscopy in patients in whom no biopsies or polypectomies are performed, **should be (on average) ≥ 6 minutes[1].**
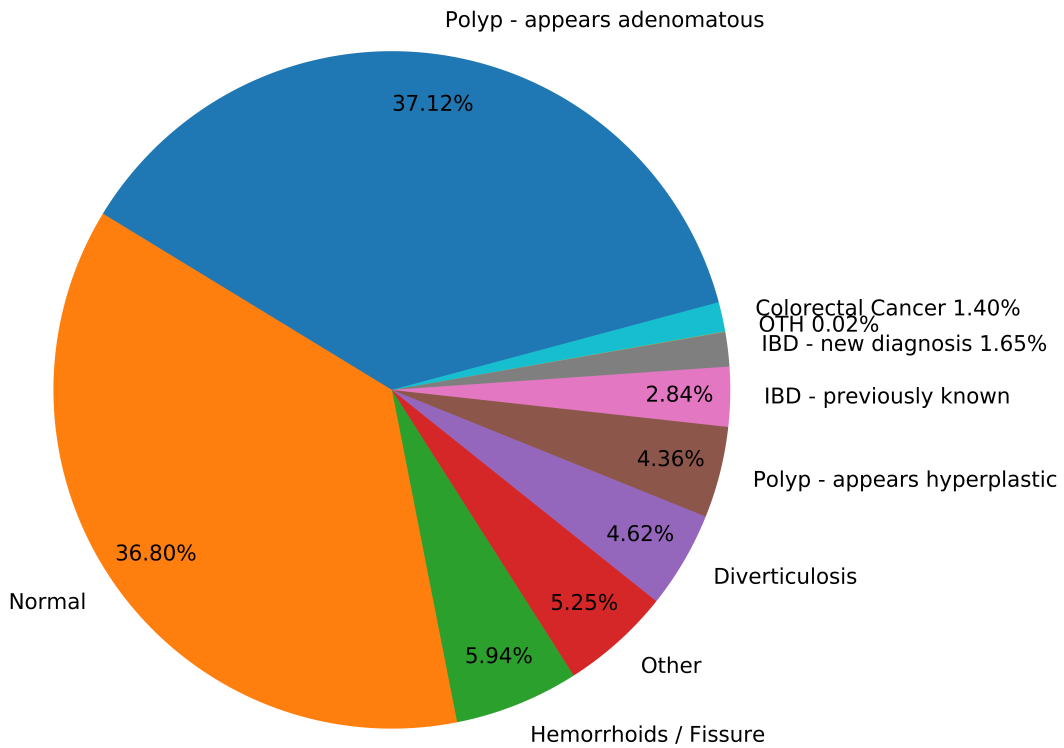
Cancer Incidence:[10]

Overall: 87.0/6193.0, colons (1.40%)

For this variable, your results are based on 6193 entries out of 6212 records

Predominant Findings - All Scopes:

Overall:

Polyp - appears adenomatous

37.12%

Colorectal Cancer 1.40%
OTH 0.02%
IBD - new diagnosis 1.65%

IBD - previously known

2.84%

Polyp - appears hyperplastic

4.36%

Diverticulosis

4.62%

Other

5.25%

Hemorrhoids / Fissure

5.94%

Normal

36.80%

For this variable, your results are based on 6193 entries out of 6212 records

FIT Report:

Demographics:

Demographic	Overall
Number of completed colonoscopies	1058.0
Mean patient age (years)	61.8
Female (%)	37.2
First-time colon (%)	66.4

MALES (with positive FIT):

Overall: 664 males, 498 with ≥1 polyp (75.1%) (95% CI: 71.7%, 78.3%)

FEMALES (with positive FIT):

Overall: 394 females, 232 with ≥1 polyp (58.9%) (95% CI: 54.0%, 63.7%)

Polyp Detection / 100 colonoscopies:[7]

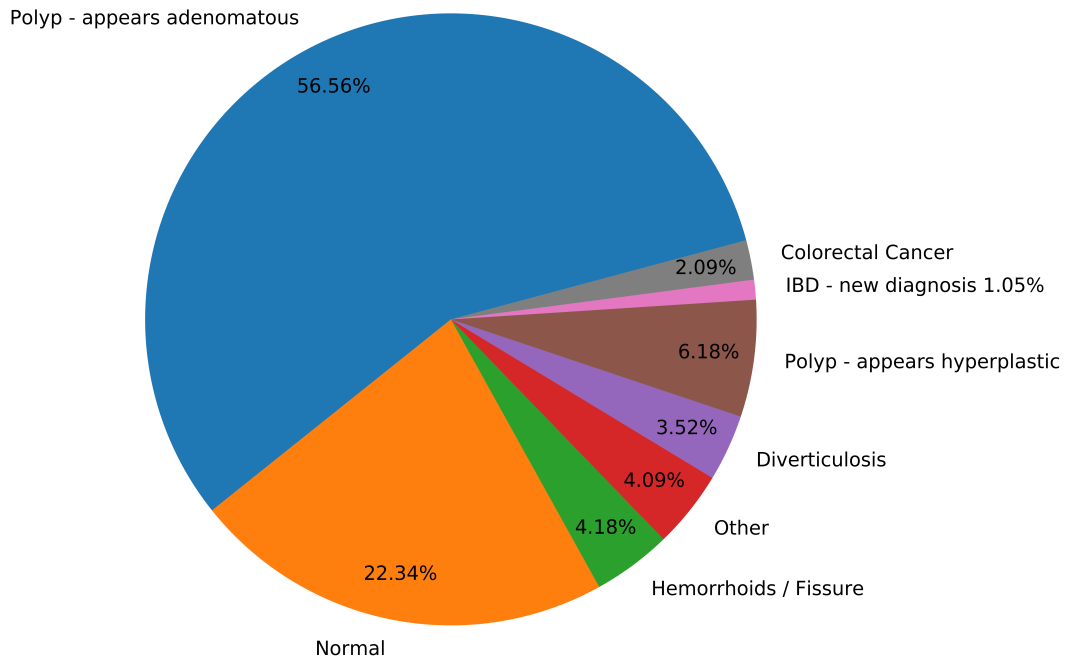**Overall:**   1998 polyps in 1058 colons: 188.8 polyps / 100 colons

Cancer Incidence:[10]

Overall: 22.0/1058.0, colons (2.08%)
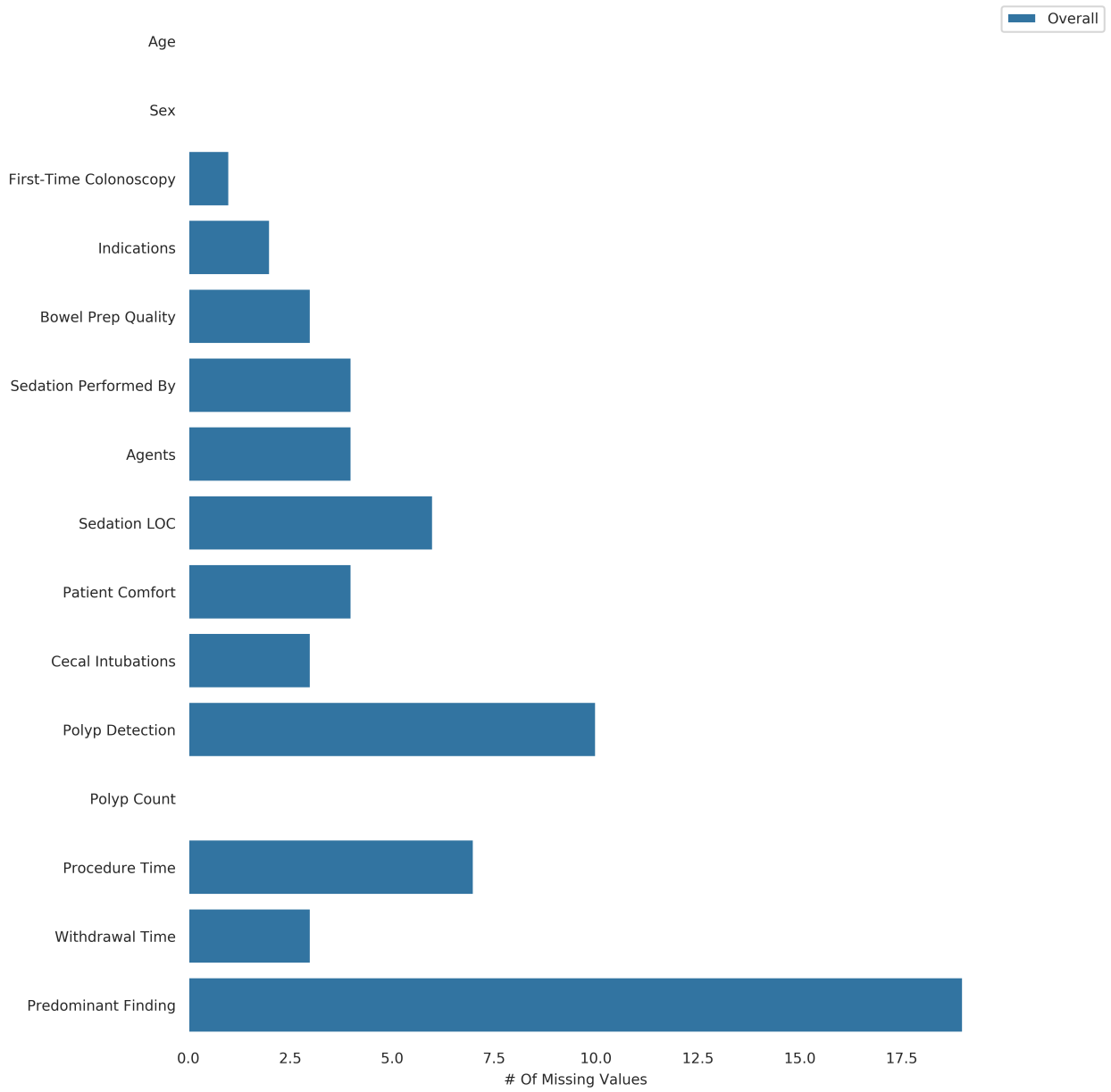
Predominant Findings - FIT + Scopes:

Overall:

Polyp - appears adenomatous

56.56%

Colorectal Cancer

IBD - new diagnosis 1.05%

2.09%

6.18%

Polyp - appears hyperplastic

3.52%

Diverticulosis

4.09%

Other

4.18%

Hemorrhoids / Fissure

22.34%

Normal

Missing Data Integrity:

References:

1. Rex D, Schoenfeld PS, Cohen J, Pike IM, Adler DG, et al for ASGE. Quality Indicators in Colonoscopy. *Gastrointestinal Endoscopy 2015*;81(1): 31-53.

2. Valori R, et al. for the BCSP Quality Assurance Endoscopy Group. *Quality Assurance Guidelines for Colonoscopy*. NHS BCSP Publication No 6 February 2011. ISBN 978-1-84463-077-6 https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/427591/nhsbcsp06.pdf

3. Rembacken B, Hassan C, Riemann JF, Chilton AC, Rutter M, et al. Quality in screening colonoscopy: position statement of the European Society of Gastrointestinal Endoscopy (ESGE). *Endoscopy 2012*;44:957-968.

4. Sadowski DC for Alberta Colorectal Cancer Screening Program. Quality Reporting of Colonoscopy Performance Standards for the Alberta Colorectal Cancer Screening Program 2013.

5. Study data were collected and managed using REDCap* electronic data capture tools hosted by the Women & Children's Health Research Institute. *Paul A. Harris, Robert Taylor, Robert Thielke, Jonathon Payne, Nathaniel Gonzalez, Jose G. Conde, Research electronic data capture (REDCap) - A metadata-driven methodology and workflow process for providing translational research informatics support, J Biomed Inform. 2009 Apr;42(2):377-81.

Appendix 1: Data Management

Data in the ABNZ Endoscopy Quality study was collected in real time (at the time of colonoscopy) using iPads[TM] or an existing computer within the site. Study data were collected and managed using REDCap[TM] electronic data capture tools hosted by the Women and Children's Health Research Institute at the University of Alberta.[5] Data entry was performed by both nurses and physicians, of which the proportions of reporting by each group varied by endoscopy units.

Typically, unit clerks or nurses would enter the patient information a few days prior to the endoscopy date. This would allow for sites to capture no show or cancellation rates. Then, details pertaining to patient demographics, indications, bowel preparations used and whether first time colonoscopy were entered prior to the procedure start. Procedural times, sedation agents and patient comfort, cecal landmarks (or reasons for incomplete colonoscopy) and information pertaining to polyps were typically entered in a collaborative fashion by the nursing team and endoscopist. The endoscopist would also render a 'most responsible diagnosis' at the end of the procedure.

Using the REDCap[TM] system allowed for individual colonoscopists to review their statistics in real time if so desired. Statistical analysis was performed with the help of the University of Alberta REDCap[TM] team, including Kyle Androschuk, study programmer. We employed one decimal rounding, so cumulative numbers may be slightly greater than anticipated.

Data continues to be anonymized by physician, with only the study team knowing the identity of participating physicians. Any publication pertaining to these or future results will continue to have anonymized participants.

Nicole Olivier, Research Coordinator, ABNZ Endoscopy Quality study

Mike Kolber, Co-Principal Investigator, ABNZ Endoscopy Quality study

Dereck Mok, Co-Principal Investigator, ABNZ Endoscopy Quality study

Appendix 2: Definitions

1. **Indications - General Groupings:**
   Screening: FIT+, FHx of CRC, average risk screen, Lynch/FAP
   Symptoms: pain, diarrhea, constipation, rectal bleeding or anemia
   Follow up: follow up colonoscopies for IBD, colorectal cancer or polyps.

2. **Bowel Preparation:**
   Excellent: No or minimal solid stool and only clear fluid requiring suction
   Adequate: Collections of semi-solid debris that are cleared with washing or suction
   Inadequate: Solid or semi-solid debris that cannot be cleared effectively

3. **Sedation Level Of Consciousness:**
   Alert: alert
   Sleepy: sleepy but initiates conversation
   Responsive: responds only when asked or stimulated.
   Unresponsive: Unresponsive or only responds with pronounced stimulation

4. **Patient Discomfort: (Modified Gloucster[2])**
   None: no discomfort - resting comfortably throughout procedure
   Minimal: one or two episodes of mild discomfort, well tolerated
   Mild: more than two episodes of discomfort, adequately tolerated
   Moderate: significant discomfort, experienced several times during procedure
   Severe: extreme discomfort, experienced frequently during the procedure

5. **Cecal Intubation:**
   Proportion of successful cecal intubations divided by number of colonoscopies attempted. Adjustment for incomplete colonoscopies was not made due to inadequate bowel preparation or intent was not to perform a complete colonoscopy.

6. **Proportion of Patients With At Least One Polyp:**
   Proportion of patients who had at least one polyp. Calculated for males or females ≥ 50 years having first time colonoscopy for any indication as denominator. Polyp detection does not require pathological verification.

7. **Polyp Detection per 100 Colonoscopies:**
   Any polyp removed from all colonoscopies, irrespective of indication, is counted to include the total number of polyps. The total number of polyps divided by the total number of colonoscopies gives the mean number of polyps per colonoscopy and multiplied by 100 gives the total number per 100 colonoscopies.

8. **Total Procudure Time:**
   Time from insertion of the colonoscope until it is removed from the anus.

9. **Withdrawal Time:**
   Withdrawal times (time from leaving the cecum until the colonoscope exits the anus) for completed colonoscopies (i.e. successful cecal intubation) when no polyps were detected.

10. **Cancer Incidence:**
    Cancers found at endoscopy (as per "predominant finding") divided by number of colonoscopies performed.