Individualized Audit and Feedback Improves Colonoscopy Quality Indicators

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Introduction

- In the US, colorectal cancer (CRC) ranks second to lung cancer as a cause of cancer mortality. Colonoscopy is the only form of colon cancer screening that allows early detection and prevention of colon cancer. Colonoscopy is very dependent on the skill and competence of the colonoscopist. Adenoma detection rate (ADR) and colonoscopy withdrawal time (CWT) are important quality indicators of colonoscopy.

- Here, we aimed to determine if CWT influenced ADR, polyp detection rates (PDR) or serrated adenoma detection rates (SADR). Secondarily, we assessed gender differences in the detection rates. Lastly, we evaluated the effect of audit and feedback on CWT and detection rates among colonoscopists.

Table I: Adenoma Detection

Predictors	Odds Ratios	95% CI	p-value
(Intercept)	0.12	(0.09, 0.16)	<0.001
Withdrawal Time (minutes)	1.24	(1.22, 1.27)	<0.001
Gender [female]	0.65	(0.57, 0.75)	<0.001

Adenoma detection was more likely to occur as withdrawal time increased. Adenoma detection was less likely to occur in female patients.

Table II: Polyp Detection

Predictors	Odds Ratios	95% CI	p-value
(Intercept)	0.1	(0.08, 0.14)	<0.001
Withdrawal Time (minutes)	1.36	(1.32, 1.39)	<0.001
Gender [female]	0.59	(0.51, 0.68)	<0.001

Polyp detection was more likely to occur as withdrawal time (min) increased. Polyp detection was less likely to occur in female patients.

Table III: Serrated Adenoma Detection

Predictors	Odds Ratios	95% CI	p-value
(Intercept)	0.02	(0.02, 0.03)	<0.001
Withdrawal Time (minutes)	1.11	(1.09, 1.13)	<0.001
Gender [female]	1.07	(0.82, 1.39)	0.624

Serrated adenoma detection was more likely to occur as withdrawal time (min) increased. Gender was not a significant predictor of serrated adenoma detection.

Methods

- A retrospective analysis of screening Colonoscopies performed between 03/2019 and 03/2020 at Sanford Medical Center in Fargo, ND was carried out. Data on sex, CWT, ADR, PDR and SADR was obtained. Additionally, an interventional quasi-experimental study was conducted. Starting from 1/1/2020, ADR was announced for every GI provider at monthly GI meetings. The surgical group was used as a control group as the feedback and disclosure system was not implemented for this group.

Results

- Of 4,213 patients, 267 did not have any CWT documented and were excluded in the analysis. Three logistic regression models were used for ADR, PDR and SADR using independent predictor variables CWT and female gender. Increased ADR, PDR and SADR were significantly more likely to occur as CWT increased with odds ratio (OR) of 1.24 (1.22,1.27), 1.36 (1.32,1.39) and 1.11 (1.09,1.13) respectively. ADR and PDR were significantly less likely to occur in female patients with OR of 0.65 (0.57, 0.75) and 0.59 (0.51,0.68) respectively but not SADR (Table I-III).

- Among GI providers, audit and feedback resulted in a significant mean increase of CWT in minutes from 11.02±5.52 to 12.05±6.29 (p<.001). ADR increased from 43% to 50.4% (p<.002) and PDR increased from 56.9% to 65.7% (p<.001) while SADR increased from 6.1% to 7.0% but not significantly (p=0.43) (Table IV).

- Surgeons who did not receive the feedback and audit did not have any significant changes in CWT, ADR and PDR but had a significant decrease in SADR from 9.0% to 4.7% (p=.02) (Table IV).

Conclusion

- Our results support extensive evidence that increasing CWT improves ADR, PDR and SADR and that female gender is associated with decreased ADR. Audit and feedback improves CWT, ADR and PDR that can potentially help reduce risk in CRC development.

Table IV: ADR, PDR and SADR for the GI group

Outcome	Level	<= Dec 2019 (n = 2498)	>= Jan 2020 (n = 554)	p-value
Withdrawal Time in minutes (mean (SD))		11.02 (5.52)	12.05 (6.29)	0.0005
Adenoma detected (%)	Yes	1073 (43.0)	279 (50.4)	0.0018
	No	1425 (57.0)	275 (49.6)	
Polyp detected (%)	Yes	1421 (56.9)	364 (65.7)	0.0001
	No	1077 (43.1)	190 (34.3)	
Serrated Adenoma detected (%)	Yes	137 (6.1)	39 (7.0)	0.4336
	No	2116 (93.9)	515 (93.0)	

TableV: ADR, PDR and SADR for the surgical group

Outcome	Level	<= Dec 2019 (n = 882)	>= Jan 2020 (n = 279)	p-value
Withdrawal Time in minutes (mean (SD))		11.37 (4.36)	11.37 (5.59)	0.9992
Adenoma detected (%)	Yes	467 (52.9)	136 (48.7)	0.2426
	No	415 (47.1)	143 (51.3)	
Polyp detected (%)	Yes	591 (67.0)	177 (63.4)	0.2770
	No	291 (33.0)	102 (36.6)	
Serrated Adenoma detected (%)	Yes	79 (9.0)	13 (4.7)	0.0216
	No	803 (91.0)	266 (95.3)	

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