

# Keeping up with colonoscopy standards – a challenge for the non-colorectal general surgeon?

## Abstract

**Introduction:** The recent “Guidelines for the Implementation of a National Quality Assurance Programme in GI Endoscopy” published by the RCPI/RCSI in October 2010 stipulate the minimum standards expected in endoscopy practice. This study aims to compare advised standards to current practice in our institution compare any differences in performance amongst colorectal versus non-colorectal, general surgeons.

**Materials and methods:** Data of patients undergoing colonoscopy performed by surgeons (January 2010-December 2011) was attained from our prospectively maintained database.

**Results:** Of 806 colonoscopies, mean age was 60.1years. In the colorectal versus non-colorectal group, caecal intubation was 95.4% versus 75.1%( $p<0.001$ ) and polyp retrieval was 94.0% versus 87.3%( $p<0.001$ ) respectively.

**Conclusion:** This is the first study to highlight the discrepancy of standards between colorectal and non-colorectal surgeons for colonoscopy. Overall, current practice did not fully adhere to the minimum standards of the proposed guidelines. However, this was particularly evident in the non-colorectal group. Caecal intubation rates were greater than 95% in the colorectal group which was not the case for the non-colorectal group. This study suggests that colonoscopy should be done exclusively by colorectal surgeons along with medical gastroenterologists or perhaps focused training is required for the non-colorectal surgeon to help them adhere to proposed standards.

**Keywords:** colonoscopy, colorectal surgeon, general surgeon

Volume 1 Issue 1 - 2014

OS Al Hadeedi, PM Neary, GTO Donoghue,  
KS Cross, FC Cooke

Department of General Surgery, Waterford University Hospital,  
Ireland

**Correspondence:** PM Neary, Department of General Surgery,  
Waterford University Hospital, Dunmore Road, Waterford,  
Ireland, Tel 00353-51-848000, Fax 00353-51-848572,  
Email peterneary@hotmail.com

**Received:** September 14, 2014 | **Published:** October  
08, 2014

## Introduction

Colonoscopy is a commonly used and effective screening tool for colorectal cancer.<sup>1</sup> Both the sensitivity and specificity of colonoscopy for the detection of pathology are 95%.<sup>2</sup> However, there is widespread inter-operator variability in colonoscopy standards.<sup>3,4</sup> Recent multi-centre audits in the United Kingdom have demonstrated that standards currently fall short of best practice.<sup>5</sup> This variability in practice prompted the UK-based Joint Advisory Group on Endoscopy (JAG) to declare minimum standards in delivery of care.<sup>6</sup> Similarly, in October 2010, the conjoint board of the Royal College of Physicians and Surgeons in Ireland published the “Guidelines for the Implementation of a National Quality Assurance Programme in GI Endoscopy.”<sup>7</sup> These guidelines stipulate a minimum standard of best practice in endoscopy units. The criteria to be satisfied annually include caecal intubation rates greater than 95%, polyp detection rates greater than 10%, polyp retrieval rates greater than 90%, tattooing of all polyp sites, the use of appropriate, age-adjusted levels of sedation and analgesia, documentation of discomfort using the Gloucester pain score and documentation of quality of bowel preparation using Ottawa or Aronchick scores. Furthermore, the post-colonoscopy perforation rate should not exceed 0.1% and the post-polypectomy perforation and significant bleed (requiring transfusion) rate should not exceed 0.5% and 1%, respectively.

Interestingly, there are no guidelines stating who should be performing colonoscopies. General surgeons perform the majority of colonoscopies in our institution with subspecialty interests that include colorectal, vascular and urology. There has never been a

previous comparison of colonoscopy standards amongst colorectal and non-colorectal general surgeons. This study aims to analyze the performance of general surgeons performing colonoscopies in a regional hospital and compare these to recently published guidelines as well as compare the performances of surgeons based on their subspecialty area of interest.

## Materials and methods

We retrospectively examined the colonoscopy records of five general surgeons with differing subspecialty interests over a one-year period. We utilized a prospectively collected electronic database to retrieve endoscopy records of intended full colonoscopies performed between January 2010 and December 2010. These included colonoscopy records from one general/colorectal surgeon, three general/vascular surgeons and one general/urology surgeon. Sigmoidoscopy and proctoscopy records were excluded. Left-sided colonoscopies were excluded on an intention-to-treat basis. We documented the sub-specialty interest of the endoscopist, indication for colonoscopy, levels of sedation and analgesia used completion of colonoscopy and pathology detection with subsequent retrieval, as per the Guidelines of the Conjoint Board.<sup>7</sup> Polyp detection was defined as identification of a polyp, adenoma or carcinoma during the procedure. We also documented evidence of a per-rectal examination as per JAG guidelines. The data was statistically analyzed using Excel. Two-paired student t-test and Chi-Square tests were performed. Data were expressed as the mean±standard deviation. P-values less than or equal to 0.05 were considered significant.

## Results

A total of 806 colonoscopy records were analyzed. The mean age was 60.1 years. The male to female ratio was 1.8:1. The minimum number of colonoscopies performed by an endoscopist was 151. Indications for colonoscopy are outlined in Table 1. Certain indications for colonoscopy significantly differed in the patient cohort in the colorectal and non-colorectal group. A larger proportion of colonoscopies for cancer and polyp surveillance in the non-colorectal group are indicative of the large proportion of colorectal work performed by the general surgeons at this institution at that time.

A tabulated summary of the study endpoints is shown in Table 2 outlining institutional outcomes overall and comparing colorectal versus non-colorectal groups. Overall caecal intubation rates (80.4%) were lower than proposed minimum standards. Interestingly, the caecal intubation rate in the colorectal group was significantly higher

than the non-colorectal group (95.4% vs. 75.1%,  $p < 0.001$ ) and was compliant with recent standards published. Similarly, documentation of rectal examination and polyp retrieval were significantly better in the colorectal group. The only sedative used in our unit was midazolam. Midazolam dosages were above guidelines for both patients less than and greater than 70 years of age. However, the colorectal group still used significantly less dosages of midazolam than the non-colorectal group. The choice of opioid analgesia was surgeon-specific. The colorectal service exclusively used fentanyl whilst the other services exclusively used pethidine. The colorectal service administered analgesia in 160 (74.4%) cases. The non-colorectal services administered analgesia in 200 (33.8%) cases. Two patients (0.9%) in the colorectal group required reversal of sedation. Two patients (0.3%) in the non-colorectal group required reversal of sedation. A total of 32 (4.0%) new malignancies were identified in this sample of colonoscopies.

**Table 1** Summary of characteristics of all patients undergoing colonoscopy, indication for colonoscopy and comparison of colorectal versus non-colorectal groups. Significant inter-group differences were observed for some indications for colonoscopy (Two-paired student t-test, Chi-Square test)

	Institution n=806	Colorectal n=215	Non-Colorectal n=591	p-value
Mean Age in Years	60±14.7	59.8±16.3	60.1±14.0	0.809
Male Sex(%)	448(55.6%)	115(53.5%)	331(56.0%)	0.216
Indication(%)				
PR Bleed	163(20.2%)	50(23.3%)	113(19.1%)	0.252
Pain	125(15.5%)	29(13.5%)	96(16.2%)	0.029
Weight Loss	16(2.0%)	5(2.3%)	11(1.9%)	0.476
Anaemia	63(7.8%)	29(13.5%)	34(5.8%)	<0.001
Change in Bowel Habit	118(14.6%)	36(16.7%)	82(13.9%)	0.066
Polyp Surveillance	62(7.7%)	8(3.7%)	54(9.3%)	<0.001
Cancer Surveillance	87(10.8%)	17(7.9%)	70(11.8%)	<0.001
Ulcerative Colitis	12(1.5%)	1(0.5%)	11(1.8%)	<0.001
Family History	35(4.3%)	12(5.6%)	23(3.9%)	0.073
Miscellaneous	125(15.5%)	28(13.0%)	97(16.4%)	0.014

**Table 2** Summary of endpoints analysed for all patients undergoing colonoscopy, and comparison of colorectal versus non-colorectal groups and proposed guidelines. Significantly higher caecal intubation rates were achieved in the colorectal compared to non-colorectal group (Two-paired student t-test, Chi square test)

	Institution	Colorectal	Non-colorectal	Guidelines	p-value
Caecal Intubation(%)	80.4	95.4	75.1	95	<0.001
Documentation of Rectal Exam(%)**	30.9	76.7	14.7	100	<0.001
Mean Midazolam Dose<70yrs.(mg)	7.4±2.6	7.0±2.7	7.5±2.5	5.0	0.020
Mean Midazolam Dose≥70yrs.(mg)	6.0±2.4	5.2±2.0	6.2±2.4	2.5	0.002
Mean Analgesia<70 yrs.	Pethidine(mg) Non-Colorectal Only	0	16.4±22.7	N/A	N/A
	Fentanyl(mcg) Colorectal Only	52.0±40.44	0	N/A	N/A
Mean Analgesia≥70yrs.	Pethidine(mg) Non-Colorectal Only	0	11.6±19.9	N/A	N/A
	Fentanyl(mcg) Colorectal Only	35.7±33.2	0	N/A	N/A
Polyp Detection(%)	23.0	23.3	22.7	10	0.697
Polyp Retrieval(%)	89.2	94	87.3	90	0.001

\*\*As per joint advisory group on endoscopy (JAG) guidelines

## Discussion

Our results highlight the discrepancy between current practice and proposed guidelines. Although pathology detection rates exceeded 10%, caecal intubation rates were less than 95% and sedation dosage exceeded recommendations, it is noteworthy that the colorectal service achieved a caecal intubation rate compliant with advised guidelines. Similarly, while the mean sedation doses were higher than proposed guidelines in both the colorectal and non-colorectal groups, the colorectal surgeon administered significantly less sedation to patients greater than 69 years of age. Documentation was significantly improved in the colorectal group as evidenced by improved documentation of per-rectal examinations performed. Interestingly, not all patients received analgesia. 74.4% versus 33.8% received analgesia in the colorectal versus non-colorectal group respectively. Hence, comparison of the colorectal group versus the non-colorectal group reveals that the colorectal service is closer to compliance with recommendations.

Recent meta-analyses of the outcomes of lower gastrointestinal colectomies have shown better results for patients treated in high-volume hospitals by high-volume, specialist surgeons.<sup>8</sup> A statistically significant reduction in the relative risk of primary (five-year survival and operative mortality) and secondary outcomes (five-year recurrence, anastomotic leak rate, permanent stoma formation, abdomino-perineal resection) was shown in specialist colorectal surgeons performing a high volume of colonic resections. The more focused training and cumulative experience of the specialist surgeon in this area is thought to relate to better outcomes. Our data shows a similar relationship where colorectal specialist general surgeons have better outcomes for colonoscopy compared to non-specialist general surgeons. This may similarly reflect more focused training and cumulative experience for colorectal surgeons in relation to colonoscopy. For similar reasons, medical gastroenterologists generally perform better for colonoscopy than surgeons.<sup>9</sup>

## Conclusion

In conclusion, this is the first study to highlight the discrepancy of standards between colorectal and non-colorectal surgeons for colonoscopy. Overall, current practice did not adhere to the minimum standards of the proposed guidelines. However, this was particularly evident in the non-colorectal group. Caecal intubation rates were greater than 95% in the colorectal group which was not the case

for the non-colorectal group. This study suggests that colonoscopy should be done exclusively by colorectal surgeons along with medical gastroenterologists or perhaps focused training is required for the non-colorectal surgeon to help them adhere to proposed standards.

## Acknowledgements

None.

## Conflict of interest

The author declares no conflict of interest.

## References

1. Read TE, Kodner IJ. Colorectal cancer: risk factors and recommendations for early detection. *Am Fam Physician*. 1999;59(11):3083–3092.
2. Winawer SJ. The multidisciplinary management of gastrointestinal cancer. Colorectal cancer screening. *Best Pract Res Clin Gastroenterol*. 2007;21(6):1031–1048.
3. Mehran A, Jaffe P, Efron J, et al. Colonoscopy: why are general surgeons being excluded? *Surgical Endoscopy and Other Interventional Techniques*. 2003;17(12):1971–1973.
4. Tran Cao HS, Cosman BC, Devaraj B, et al. Performance measures of surgeon-performed colonoscopy in a Veterans Affairs medical center. *Surg Endosc*. 2009;23(10):2364–2368.
5. Bowles CJ, Leicester R, Romaya C, et al. A prospective study of colonoscopy practice in the UK today: are we adequately prepared for national colorectal cancer screening tomorrow? *Gut*. 2004;53(2):277–283.
6. Mehta T, Dowler K, McKaig BC, et al. Development and roll out of the JETS e-portfolio: a web based electronic portfolio for endoscopists. *Frontline Gastroenterology*. 2011;2(1):35–42.
7. Patchett S. Guidelines for the implementation of a national quality assurance programme in GI endoscopy—version 1.0. Conjoint board of the RCP & SI October; 2010.
8. Archampong D, Borowski D, Wille-Jørgensen P, et al. Workload and surgeons' speciality for outcome after colorectal cancer surgery. *Cochrane Database Syst Rev*. 2012;10.1002/14651858.CD005391.
9. Leyden JE, Doherty GA, Hanley A, et al. Quality of colonoscopy performance among gastroenterology and surgical trainees: a need for common training standards for all trainees? *Endoscopy*. 2011;43(11):935–940.