Editorial

The proof is in the pudding: improving adenoma detection rates reduces interval colon cancer development

Sarah B. Umar, Francisco C. Ramirez

Division of Gastroenterology and Hepatology, Mayo Clinic, Arizona, USA

Correspondence to: Francisco C. Ramirez, MD. Division of Gastroenterology and Hepatology, Mayo Clinic, Arizona, USA.
Email: ramirez.francisco@mayo.edu.

Provenance: This is a Guest Editorial commissioned by Editor-in-Chief Jia-Fu Ji, MD, FACS (Department of Gastrointestinal Surgery, Peking University School of Oncology & Beijing Cancer Hospital, Beijing, China).

Comment on: Kaminski MF, Wieszczy P, Rupinski M, *et al.* Increased Rate of Adenoma Detection Associates With Reduced Risk of Colorectal Cancer and Death. Gastroenterology 2017;153:98-105.

Received: 30 October 2017; Accepted: 15 November 2017; Published: 01 December 2017.
doi: 10.21037/tgh.2017.11.10
View this article at: http://dx.doi.org/10.21037/tgh.2017.11.10

Screening colonoscopies save lives. A bold statement, certainly, but one borne out of extensive research and well-established data and one that we gastroenterologists believe is the main reason why we do colonoscopies each day. Studies demonstrate a significant decrease in the risk of developing as well as dying from colorectal cancer (CRC) in average-risk patients who undergo screening colonoscopy (1,2). The benefit of colonoscopy on CRC development and mortality comes from the ability to remove adenomatous polyps and, hence has arisen the importance of and focus on adenoma detection. Adenoma detection rate (ADR) is currently a quality measure for colonoscopy due its demonstrated inverse association with the development of CRC and mortality (3-6). Corley *et al.* demonstrated that each 1% increase in ADR is associated with a 3% decrease in the risk for CRC (7). This direct correlation has prompted study into how to improve an endoscopist's ADR and what characteristics are associated with an endoscopists' ADR. Feedback provided to endoscopists as well as periodic monitoring have resulted in improved ADR, especially in those endoscopists who, at baseline, were considered 'low detectors' (ADR <25%) (8-12).

Despite the observed benefit in ADR after various quality interventions, there has been little to demonstrate that the outcome of these interventions has had a measurable, longterm benefit in terms of reducing risk for interval colon cancer and mortality. Kaminski *et al.* (13) needs again to be congratulated by their effort to point out once again that the quality indicator of ADR is a moving target aimed at improving the outcomes of our patients. They performed a prospective cohort study evaluating approximately 1 million person-years of follow-up in Poland between 2004–2008. A component of Poland's National Colorectal Cancer Screening Program includes feedback with benchmarking as part of a commitment to quality assurance. The initiation of these quality controls has resulted in an improvement of 1.5% annually in the overall ADR (14). The objective of Kaminski's current study was to assess whether these improvements correlated with a decrease in incidence of interval CRC and mortality from CRC (13). Two hundred and ninety-four endoscopists were divided into 5 quintiles based on their ADR and each endoscopist had an annual ADR calculated which either improved or declined from or maintained their baseline ADR. Endoscopists in the lowest quintile had an ADR of ≤11.2% whereas endoscopists in the highest quintile had an ADR >24.5%. Improvement was measured by comparing their current ADR to their baseline ADR and improvement was defined as an increase by at least one ADR category or maintenance of position in the highest category whereas no improvement was defined as a decrease in ADR category or maintenance of their category (apart from the highest category). Over the study period nearly 75% of endoscopists increased their annual ADR and, most impressively, the proportion of endoscopists occupying the lowest quintile decreased from 31% to 10% over the duration of the study.

For patients undergoing colonoscopy by an endoscopist whose ADR improved from lower quintiles to the highest

quintile (ADR >24.5%), the adjusted hazard ratio for interval CRC was 0.27 (95% CI, 0.12–0.63 P=0.003) which translates into a reduction in the rate of interval cancer from 25.3 cases per 100,000 patient-years to 7.1 cases per 100,000 patient-years (13). Interestingly, and notably, the risk for interval CRC appears to be most improved when endoscopists' ADR rose to the highest quintile whereas there is only a negligible effect when ADR improved to/maintained within the third quintile (ADR 15.1–19.2%).

It is noted that the ADR quintiles in Kaminski's study represent lower ADRs than the benchmark values currently accepted in the United States which are an overall ADR of 25% with an average for males of 30% and an average ADR for females of 20% (4). Given this discrepancy it is possible that a similar study reproduced in the United States would not produce quite as dramatic results, however, the data demonstrates quite clearly the benefit not only that higher endoscopist ADRs convey to decrease risk of interval CRC but also the effectiveness of regular feedback on ADR. Multiple studies have shown that it is possible to affect ADR by regular feedback and monitoring (9,11,15) and Kaminski's study takes this one, important, step further to show the clinically relevant benefit this feedback has on our patients by decreasing the risk of interval colon cancer and death (13). Still uncertain remains the question of the most effective method to improve ADR: is it written feedback, direct observation by 'high detectors' of their 'low detector' colleagues, innovative technologies to assist in ADR such as alternate-view scopes, supplemental colonoscope attachments, chromoendoscopy, computer aided programs? More research is needed to compare techniques and perhaps tailor the most appropriate intervention to the needs and learning style of the endoscopist.

This study should provide its readers with an optimistic view of the future of both colonoscopy as well as quality improvement. Quality improvement takes on many roles and occupies a significant amount of manpower and energy. Quality projects and initiatives can often become a source of frustration and anxiety for providers especially when they do not see a direct improvement in their practice, patient care or work environment as a result. Kaminski's study, however, has shown us that putting in the time and effort to provide feedback to endoscopists with the goal of improving their ADR has a direct and important benefit to our patients and is a most worthwhile exercise. It is absolutely possible to 'teach an old dog new tricks' and improve an endoscopist's ADR through regular monitoring and feedback. Endoscopists are not static 'low detectors' and this study demonstrates their remarkable ability to improve which, in turn, improves the care and health of our patients.

Acknowledgements

None.

Footnote

Conflicts of Interest: The authors have no conflicts of interest to declare.

References

1. Kahi CJ, Imperiale TF, Juliar BE, et al. Effect of screening colonoscopy on colorectal cancer incidence and mortality. Clin Gastroenterol Hepatol 2009;7:770-5; quiz 11.
2. Baxter NN, Goldwasser MA, Paszat LF, et al. Association of colonoscopy and death from colorectal cancer. Ann Intern Med 2009;150:1-8.
3. Winawer SJ, Zauber AG, Ho MN, et al. Prevention of colorectal cancer by colonoscopic polypectomy. The National Polyp Study Workgroup. N Engl J Med 1993;329:1977-81.
4. Rex DK, Schoenfeld PS, Cohen J, et al. Quality indicators for colonoscopy. Gastrointest Endosc 2015;81:31-53.
5. Kim TJ, Kim ER, Hong SN, et al. Adenoma detection rate influences the risk of metachronous advanced colorectal neoplasia in low-risk patients. Gastrointest Endosc 2017. [Epub ahead of print].
6. Wieszczy P, Regula J, Kaminski MF. Adenoma detection rate and risk of colorectal cancer. Best Pract Res Clin Gastroenterol 2017;31:441-6.
7. Corley DA, Jensen CD, Marks AR, et al. Adenoma detection rate and risk of colorectal cancer and death. N Engl J Med 2014;370:1298-306.
8. Sey MSL, Liu A, Asfaha S, et al. Performance report cards increase adenoma detection rate. Endosc Int Open 2017;5:E675-E82.
9. Gurudu SR, Boroff ES, Crowell MD, et al. Impact of feedback on adenoma detection rates: Outcomes of quality improvement program. J Gastroenterol Hepatol 2017. [Epub ahead of print].
10. Imperiali G, Minoli G, Meucci GM, et al. Effectiveness of a continuous quality improvement program on colonoscopy practice. Endoscopy 2007;39:314-8.
11. Lin OS, Kozarek RA, Arai A, et al. The effect of periodic monitoring and feedback on screening

colonoscopy withdrawal times, polyp detection rates, and patient satisfaction scores. Gastrointest Endosc 2010;71:1253-9.
12. Wallace MB, Crook JE, Thomas CS, et al. Effect of an endoscopic quality improvement program on adenoma detection rates: a multicenter cluster-randomized controlled trial in a clinical practice setting (EQUIP-3). Gastrointest Endosc 2017;85:538-45 e4.
13. Kaminski MF, Wieszczy P, Rupinski M, et al. Increased Rate of Adenoma Detection Associates With Reduced Risk of Colorectal Cancer and Death. Gastroenterology 2017;153:98-105.
14. Kaminski MF, Kraszewska E, Polkowski M, et al. Continous quality improvement of screening colonoscopy: data from a large colorectal cancer screening program. Gastrointest Endosc 2009;69:AB215.
15. Nielsen AB, Nielsen OH, Hendel J. Impact of feedback and monitoring on colonoscopy withdrawal times and polyp detection rates. BMJ Open Gastroenterol 2017;4:e000142.

doi: 10.21037/tgh.2017.11.10
Cite this article as: Umar SB, Ramirez FC. The proof is in the pudding: improving adenoma detection rates reduces interval colon cancer development. *Transl Gastroenterol Hepatol* 2017;2:99.

