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Unacceptable variation in screening colonoscopy

Fixing it will require strategic investment in data collection and infrastructure

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Heisser and colleagues' (doi:10.1136/bmj.l6109) linked meta-analysis of colorectal cancer and adenoma prevalence in the years following a negative colonoscopy shows that while neoplasms (including adenomas) were observed in more than 20% of participants within five years, advanced neoplasms were rare even after 10 years (2.1% in men, 1.8% in women).¹ The authors concluded that a 10 year screening interval after negative colonoscopy, as currently recommended,² could be adequate.¹

In a second paper, Burr and colleagues (doi:10.1136/bmj.l6090) quantify rates of colorectal cancer up to three years after a negative colonoscopy in England.³ They report a decreasing incidence of post-colonoscopy cancers over the period of investigation (from 9.0% in 2005 to 6.5% in 2013), but highlight statistically significant variation between colonoscopy providers. Specifically, they find higher rates of post colonoscopy cancers following privately provided colonoscopy, after controlling for certain confounding factors (adjusted odds ratio 1.63 (95% confidence interval 1.39 to 1.91), $P<0.01$). Rates were also higher among women, older people (aged ≥ 80), and in people with inflammatory bowel disease and diverticular disease.³

Both studies used empirical analyses to assess outcomes following colonoscopy, identify substantial variations in expected outcomes, and explore potential sources of heterogeneity. Heisser and colleagues showed that the risk of advanced neoplasia after negative index colonoscopy is low.¹ Extending the testing interval or the use of non-invasive alternatives such as triage by immunochemical testing might be appropriate for many of these patients, because they are least likely to benefit from repeat colonoscopy based screening. Greater

clarity on differences in risk by sex would be helpful for people making screening decisions, and requires further exploration.

Burr and colleagues highlight concerning heterogeneity in the quality of colonoscopies, as evidenced by differences in the incidence of post-colonoscopy cancers among patients using private and NHS providers.³ This heterogeneity is likely to affect outcomes,⁴ and will be of concern to patients, clinicians, and providers. The inconsistencies seem linked to training and accreditation processes and are therefore amenable to improvement.

Getting a clear understanding of performance variation between providers is dependent on robust data on all potential explanatory factors. These authors note a limited ability to control for patient characteristics and potentially important features of the colonoscopy process.³ Ideally, future analyses would include more detailed characterisation of the study population and data on features such as whether participants had received previous sigmoidoscopy screening,⁵ the type and adequacy of bowel preparation,^{6,7} and the use of sedation.^{8,9} These factors are important in understanding any reported differences between groups.¹⁰ Moreover, the value of individualised risk assessment in informing screening decisions^{11,12} is increasingly clear, but requires much richer data on known risk factors such as lifestyles and genetic variation.

Consensus statements by the World Endoscopy Organisation consider post-colonoscopy colorectal cancer in detail.¹³ These cancers can be subcategorised as interval (detected before planned surveillance) or non-interval (detected at or after a planned surveillance, types A or B or where no surveillance was planned, type C). They can be further characterised according to whether the intended testing schedule was effectively implemented, how adenoma rates were measured,¹⁴ caecal intubation rates, patients' risk grouping, and the number of lesions at index colonoscopy. Controlling for all these factors would provide a much better understanding of the sources of variation in service quality, and give patients greater clarity and reassurance regarding their own clinical situation.

Navigating complexity

Understanding colonoscopy performance is necessarily complex because it involves the interaction of multiple factors. The performance of complex healthcare systems is best understood using multiple, reliable data sources.¹⁵ Both studies attempt to navigate this complexity, but greater clarity could naturally be achieved if richer data were available. Nevertheless, Burr and colleagues do report telling evidence on differences between public and private providers that indicate scope for improvement.

Both new analyses provide insight into colorectal cancer risk according to patient characteristics, indicating a potential for personalisation in the use of colonoscopy. Greater personalisation, however, requires fully informed consent for tailored services, including information on the performance of individual services. Public disclosure of performance data will be necessary.

These studies provide welcome appraisals of colonoscopy performance and both were dependent on good quality data infrastructure. The minimum dataset outlined in the World Endoscopy Organisation consensus statements¹³ would help support service improvements and ultimately lead to better patient outcomes. Both studies reinforce the need for strategic investment in appropriate data infrastructure, coupled with clear communication with all decision makers, including patients. UK wide initiatives such as the recently announced DATA-CAN (the Health Data Research Hub for Cancer) can help provide the data enabled framework to underpin the detailed intelligence required to inform improved service provision.¹⁶

Web extra Extra material supplied by authors

Web appendix: Visual summary

file: McFerran051119.vs

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<jrn>1 Heisser T, Peng L, Weigl K, Hoffmeister M, Brenner H. Outcomes at follow-up of negative colonoscopy in average risk population: systematic review and meta-analysis. *BMJ* 2019;367:l6109.</jrn>

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