

Post Colonoscopy Colorectal Cancer Rates in NHS Scotland 2012-18: Results of a National Quantitative Registry Linkage Analysis

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Introduction: Post colonoscopy colorectal cancer (PCCRC) rate is arguably the most important measure of colonoscopy service quality. We aimed to ascertain PCCRC-3 year rates in NHS Scotland between 2012 and 2018 and compare incidence between different health boards and between the Scottish Bowel Screening Programme (SBoSP) and symptomatic services.

Method: All cases of colorectal cancer between 1/1/2012 and 31/12/2021 were identified from the Scottish Cancer Registry. All colonoscopies between 1/1/2012 and 31/12/2018 were identified from local health board endoscopy reporting systems and linkage analysis performed using a modified version of the World Endoscopy Association criteria to account for the definition of Date of Incidence of cancer in Scotland at the time. Rates were reported by health board and referral pathway. Statistical significance was analysed using CHI squared test.

Results: From a population of 5.36 million, we identified 487,096 colonoscopies and 16230 cases of bowel cancer in patients who had undergone colonoscopy. We calculated an overall PCCRC-3 rate of 7.9% (CI 7.4-8.3%). Negative predictive value of colonoscopy of 99.73%, meaning 1/370 colonoscopies was a false negative. There was no improvement in annual rate over the time period studied. There was considerable variation in rates between health boards, from a rate of 5% (CI 3.2-7.8%) for the best performing mainland board to 11.1% (CI 9.8-12.7%) for the poorest. PCCRC-3 rate for the SBoSP was 6.7% (6.0-7.5%), lower than 8.3% (7.8-8.8%) in non-screening colonoscopy (p = 0.001). Similar to reports in other health care settings, rates were higher in females, with increasing age, and in patients with history of bowel disease (inflammatory bowel disease and diverticular disease)

Conclusions: PCCRC-3yr rate in Scotland is high at 7.9%, with considerable regional variation and no evidence of improvement over a 7 year time period up to 2018. PCCRC-3yr rate of 6.7% for the SBoSP was slightly lower than for non-screening colonoscopy, but considerably higher than the 3.6% reported for the NHS England BCSP during an earlier time frame, almost certainly reflecting the more rigorous selection and performance monitoring processes for screening colonoscopists in NHS England. These results reassure that NHS Scotland does not have a “two tier” colonoscopy service, but demonstrate considerable need for improvement. An upskilling of the entire national workforce is now underway, under the auspices of the Scottish National Endoscopy Training Programme.