

# Surveillance for dysplasia in patients with inflammatory bowel disease: an updated national survey of colonoscopic practice in New Zealand

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## ABSTRACT

**BACKGROUND:** Patients with inflammatory bowel disease (IBD) undergo surveillance for an increased risk of colorectal cancer. Advances in endoscopy have rendered most previously invisible dysplasia visible, leading to changes in guidelines around surveillance and management of dysplasia. This study aims to assess New Zealand endoscopists' (i) understanding of current guidelines, (ii) uptake of advanced techniques and (iii) management of dysplasia.

**METHODS:** A digital survey of New Zealand endoscopists was undertaken. Invitations were sent to members of New Zealand gastroenterology and surgical societies. Questions were asked regarding demographics, surveillance interval, risk stratification, endoscopic technique and dysplasia management.

**RESULTS:** Fifty of the 322 invitees completed the survey (15.5%). Over 80% used techniques meeting the guideline recommendations. The majority (77%) of endoscopists take random biopsies in addition to targeted. Endoscopically resectable polypoid low-grade dysplasia was typically managed with surveillance (93%) but this dropped to less than half for high-grade dysplasia and less than a third for non-polypoid high-grade dysplasia (inconsistent with guidelines).

**CONCLUSIONS:** Current New Zealand endoscopists' practice appears to be aligned with international guidelines in terms of screening interval, risk stratification and technique. However, New Zealand endoscopists are less likely to offer a patient surveillance for endoscopically resectable dysplasia.

There is an increasing rate of inflammatory bowel disease (IBD) in New Zealand.<sup>1</sup> Patients with IBD are known to have an increased risk of colorectal cancer.<sup>2</sup> This risk is greater with an increased duration, extent or severity of disease.<sup>2-4</sup> The New Zealand Guidelines Group has set out recommendations regarding the timing of screening and surveillance of patients with IBD.<sup>5</sup>

In 2004, a survey of New Zealand endoscopists suggested a relatively poor understanding of the guidelines of the time

and a degree of under-estimation of the risk associated with a finding of low-grade dysplasia.<sup>6</sup> Traditional endoscopic techniques available during this period were relatively insensitive for the macroscopic detection of dysplasia and hence relied heavily on extensive random biopsies.<sup>7</sup> Current advances in endoscopic technology and techniques (such as high definition (HD) and chromendoscopy) are significantly more sensitive and have rendered most dysplasia visible.<sup>8</sup> This has allowed more cases to be managed endoscopically, preserving native colon for longer.

With the Surveillance for Colorectal Endoscopic Neoplasia Detection and Management in Inflammatory Bowel Disease Patients: International Consensus Guidelines (SCENIC) published in 2015, there have been a number of changes made to the nomenclature and management approach. Specifically, there is an increased focus on surveillance as opposed to colectomy for endoscopically resectable lesions.<sup>9</sup> This study aimed to (i) assess the understanding of current IBD surveillance guidelines by New Zealand endoscopists; (ii) establish the prevalence of advanced techniques for dysplasia detection; and (iii) gauge the current attitudes of endoscopists to towards the endoscopic management of dysplasia in the context of IBD in New Zealand.

## Methods

A prospective survey of the current practice of New Zealand endoscopists was performed. Ethics approval was granted by the University of Otago Human Ethics Committee (reference code 19/029).

### Population

The target population included all endoscopists currently performing IBD surveillance endoscopy in New Zealand. There is no complete register for this so permission was sought to disseminate the survey through the New Zealand Society of Gastroenterology (NZSG), the New Zealand Association of General Surgeons (NZAGS) and the New Zealand branch of the Colorectal Society of Australia and New Zealand (CSSANZ NZ Inc).

Membership of NZSG is voluntary, the NZSG workforce survey published in 2018 estimated that there were 93 practising gastroenterologists in New Zealand. The membership of NZSG currently includes approximately 106 senior medical officers practising in New Zealand as gastroenterologists or physicians. Membership of NZAGS is similarly voluntary; it is estimated that there are 270 practising general surgeons in New Zealand, of which 195 are members of the NZAGS although the proportion of these performing endoscopy regularly is unknown. Membership of CSSANZ is voluntary among colorectal surgeons; 41 are members of the CSSANZ. Some surgeons are members of CSSANZ, NZAGS and NZSG,

participants were asked to complete the survey once only.

### Survey

The survey consisted of five demographic questions to ensure the correct group was surveyed and ascertain the clinical settings of participants, followed by seven questions pertaining to the participants' clinical practice (see Appendix).

### Analysis

Statistics analyses were performed using SPSS version 25. Frequencies, percentages, medians and means were calculated where appropriate. For inferential statistics, chi-squares were performed comparing Speciality (three categories) by variable (two or more categories). In cases within which one of the variables had 0 cases in one of the specialties, Chi-square was artificially made possible by converting the 0s into 1s. Figures were made using Excel.

## Results

### Response rate and demographics

In total, 305 invitations to participate were sent to members of NZSG, NZAGS and CSSANZ (NZ). A total of 61 (20%) participants started the survey and 50 (16.3% of invitees) completed all of it.

Of the 61 that started the survey, 50 reported being involved in the care of UC patients. The demographics of the participants are represented in Table 1. The majority of respondents (30 of 56 who answered; 54%) do not participate in a regular IBD Multidisciplinary Team meeting. Forty-five percent confirmed a two pathologist review process for dysplasia in their institution (25 of 56), while 46% (16 of 56) didn't know and 9% reported that this was not the case.

**Table 1:** Demographic groups of respondents.

Demographic	Number (percentage) n=50
Colorectal surgeon	31 (62%)
Gastroenterologist	13 (26%)
General surgeon	11 (22%)
Other	1 (2%)

**Table 2:** General principles of timing and surveillance practice.

Question	Answer	n	%	Total
Time from diagnosis to first colonoscopy in UC <sup>1</sup> pancolitis	8 years	22	40	55
	10 years	21	38	
	5 years	8	14.5	
	15 years	2	3.6	
	Other	2	3.6	
Initial colonoscopy interval in pancolitis	Variable	28	51	55
	2 years	16	29	
	1 year	5	9	
	3 years	3	5.4	
	none	3	5.4	
Factors that would warrant increased surveillance	FH CRC <sup>2</sup>	44	80	55
	PSC <sup>3</sup>	43	78.2	
	Poor disease control	40	72.7	
	Prolonged duration of disease	37	67	
	Onset <15 age	18	32.7	
	Crohn's colitis	10	18	

<sup>1</sup>Ulcerative colitis; <sup>2</sup>family history colorectal cancer; <sup>3</sup>primary sclerosing cholangitis.

## Outcomes

### Initial surveillance and risk factors

The results of the questions pertaining to initial screening, surveillance interval and risk stratification are presented in Table 2. The majority of respondents answered in accordance with current guidelines that they would initiate surveillance within 8–10 years and employ variable surveillance intervals depending on risk stratification of the individual patient.

### Endoscopic technique and the use of random biopsies

Table 3 outlines the prevalence of technique and the use of random biopsies reported by the group. Gastroenterologists were more likely to use chromendoscopy than other groups, however they were still more likely to use HD, white light over all. Forty of the 52 respondents reported taking random biopsies (76.9%) and there was no significant difference between subspecialty in this regard.

### Management of dysplasia

The management of an endoscopically completely resected polypoid lesion with low-grade dysplasia (LGD) was predominantly in favour of surveillance (46 of 49; 93.9%), with three recommending colectomy. Polypoid high grade dysplasia (HGD) was managed slightly more commonly with colectomy (n=25 of 48; 52.1%), while colectomy was clearly more likely to be recommended for non-polypoid HGD (n=34 of 49; 69.4%), with no significant difference by subspecialty. When random biopsies identified HGD the majority (n=27/49; 55%) would recommend colectomy, while 12 (24.5%) would repeat an HD colonoscopy with chromendoscopy, nine (18.4%) would refer to an IBD specialist endoscopist and one (2.0%) would repeat SD, white light endoscopy (Table 4). Across these management decisions there was no significant difference between specialist groups.

**Table 3:** Technical aspects of colonoscopy.

Question	Variable	n	%	Total
Technique used	HD <sup>1</sup> WL <sup>2</sup>	27	52	52
	HD chromendoscopy	10	18	
	SD <sup>3</sup> WL	7	13.5	
	SD chromendoscopy	4	7.7	
	Narrow band	2	3.6	
	Other	2	3.6	
Random biopsies taken?	Yes	40	76.9	52
	<b>Mean number of sites</b> 8.08; SD <sup>4</sup> 3.44			
	<b>Mean number of biopsies/site</b> 3.38; SD 1.25			
	No	12	23.1	

<sup>1</sup>High definition; <sup>2</sup>white light; <sup>3</sup>standard definition; <sup>4</sup>standard deviation.

## Discussion

Surveillance for neoplasia in IBD is a rapidly evolving field driven by advances in understanding and technology. This anonymised survey of New Zealand endoscopists (based on a similar questionnaire performed 15 years ago and recent international consensus guidelines) found a

reasonably high compliance with current surveillance guidelines (see Table 5 for a summary of recent guidelines). However, the management of dysplasia is less consistent with guidelines with a tendency to recommend colectomy more often than endoscopic approaches for endoscopically resectable lesions.

**Table 4:** Management of dysplasia.

Question	Variable	n	%	Total
Management of completely resected polypoid LGD <sup>1</sup>	Surveillance	46	93.9	49
	Colectomy	3	6.1	
Surveillance post-complete resection of polypoid LGD	1 year	20	43.5	46
	6 months	13	28.3	
	2 years	5	10.9	
	3 years	5	10.9	
	5 years	1	2.2	
	other	2	4.4	
Management of completely resected polypoid HGD <sup>2</sup>	Colectomy	25	52.1	48
	Surveillance	23	47.9	
Management of endoscopically resected non-polypoid HGD	Colectomy	34	69.4	49
	Surveillance	15	30.6	
Management of HGD confirmed on random biopsy	Colectomy	27	55.1	49
	Repeat HD <sup>3</sup> chromendoscopy	12	29.5	
	Refer IBD <sup>4</sup> specialist endoscopist	9	18.4	
	Repeat SD <sup>5</sup> WL <sup>6</sup> endoscopy	1	2	

<sup>1</sup>Low-grade dysplasia; <sup>2</sup>high-grade dysplasia; <sup>3</sup>high definition; <sup>4</sup>inflammatory bowel disease; <sup>5</sup>standard definition; <sup>6</sup>white light.

Seventy-eight percent of respondents would commence screening colonoscopy within 8–10 years of diagnosis. The majority of guidelines recommend initial colonoscopy within eight years, however there is discrepancy between guidelines as to whether this is from the “onset of symptoms” (European Crohn’s and Colitis Organisation (ECCO)<sup>10</sup> and National Institute for Health Care Excellence (NICE)<sup>11</sup>) or “diagnosis” (American College of Gastroenterology (ACG)<sup>12</sup>). There is reasonable concordance in terms of surveillance interval depending on risk stratification and the individual high-risk factors for this (specifically pancreatic disease, the presence of PSC, disease severity and duration).

There is some debate over the best technique for surveillance with most guidelines recommending HD white light over SD white light and advising the use of chromendoscopy if SD is used.<sup>9,12</sup> Chromendoscopy is recommended by all guidelines, although the recommendation is less strong if HD white light is used.<sup>9–12</sup> The European guideline allows for variation in local expertise and suggests either “chromendoscopy with targeted biopsy” or “random biopsies every 10cm with additional targeted biopsy for visible abnormality”.<sup>10</sup> NBI is not recommended by the SCENIC<sup>9</sup> guideline although it is supported by the ACG guideline.<sup>12</sup> By this standard 85% of respondents’ answers were supported by acceptable guidelines (72% either HD white light or HD plus chromendoscopy; 8% SD with chromendoscopy and 5% with NBI).

Interestingly, despite the utilisation of advanced techniques by over 80% of respondents, 77% still routinely take random biopsies in addition to targeted biopsies. There is considerable debate regarding the value of additional random biopsies. Random biopsies have significantly lower yield than targeted biopsies and add considerably to the procedure length and histologic processing time.<sup>13</sup> However, in a prospective series of 100 chromendoscopy colonoscopies performed with targeted and random biopsies 12 of 94 patients (10.6%) with dysplasia were detected by random biopsy alone, particularly associated with personal history of colorectal cancer and PSC. The

authors suggested random biopsies should be performed in anyone with a personal history of neoplasia, PSC or a “tubular appearing colon” at endoscopy.<sup>14</sup>

Arguably the most significant change in the guidelines has to do with the approach to management of dysplasia, once identified. At the time of the previously undertaken survey, a significant proportion of cases of dysplasia were considered ‘invisible’ and hence the capacity to safely assess and survey this group was limited. The previous survey suggested that the perception of risk from dysplasia was underestimated and that more people should be considered for colectomy.<sup>6</sup> Since this period, most dysplasia has been rendered ‘visible’ through the development of more reliable technology and techniques and the pendulum has swung towards surveillance over colectomy for endoscopically resectable dysplasia.<sup>9,10,12</sup> The ACG guidelines even allow for segmental or subtotal colectomies in selected cases.<sup>12</sup> In this survey, over 90% of respondents espouse surveillance for endoscopically resectable polypoid LGD, however this decreases to less than half for polypoid HGD and less than a third in non-polypoid HGD. Where random biopsies demonstrate HGD, most guidelines recommend referral to a specialist endoscopist, however in our sample only 45% would either repeat the colonoscopy or refer to a specialist, while 55% would recommend colectomy. This probably represents an over treatment in our current practice and further education is warranted to bring our practice in line with current guidelines.

This study is limited by a low response rate, particularly among gastroenterologists, although it is hard to truly estimate the national denominator. While the answers do seem to reflect current New Zealand guidelines and do not vary significantly by subspecialty, it is possible this has introduced a non-response bias and does not represent the actual current practice. Response rates to online surveys of medical specialists are currently notoriously low due to lack of time and the excess of surveys. Some groups suggest optimising response rates by offering incentives, however this was not considered appropriate in this setting.<sup>15</sup>

**Table 5:** Comparison of major recent guidelines.

Guideline	Year	Schedule	Technique	Dysplasia management
American College of Gastroenterology <sup>12</sup>	2019	<ul style="list-style-type: none"> <li>Initial screening colonoscopy for patients with disease extending proximal to the rectum from eight years after diagnosis</li> <li>Surveillance performed at 1–3 years depending on risk stratification</li> <li>PSC mandates yearly surveillance</li> </ul>	<ul style="list-style-type: none"> <li>High definition white light suggest chromendoscopy or narrow band imaging</li> <li>Standard definition white light strongly recommend chromendoscopy or narrow band imaging</li> </ul>	<ul style="list-style-type: none"> <li>Endoscopically completely resectable lesions may be followed up with surveillance</li> <li>Consider surgical resection if multiple pseudopolyps make endoscopic management impractical</li> <li>Selective recommendation for segmental or subtotal resections in appropriate candidates</li> </ul>
ECCO <sup>10</sup>	2017	<ul style="list-style-type: none"> <li>Initial colonoscopy at eight years from onset of symptoms</li> <li>If disease extends beyond rectum ongoing surveillance</li> <li>Follow-up: Low risk five years Intermediate risk 2–3 years High risk (or PSC) one year</li> </ul>	Depending on local expertise: <ul style="list-style-type: none"> <li>Chromendoscopy with targeted biopsies</li> </ul> Or <ul style="list-style-type: none"> <li>Random biopsies (quadrantic every 10cm) in addition to biopsies of visible lesions</li> </ul> High definition white light should be used if available	<ul style="list-style-type: none"> <li>Endoscopically visible: Endoscopic management sufficient for excisable polypoid dysplasia in the absence of non-polypoid or invisible dysplasia</li> <li>Selective endoscopic management of non-polypoid dysplasia (complete resection, no invisible dysplasia or other non-polypoid dysplasia)</li> <li>‘Endoscopically invisible’: Refer to IBD specialist endoscopist</li> <li>If confirmed to be endoscopically undetectable with histologically HGD then consider colectomy</li> </ul>
SCENIC <sup>9</sup>	2015	N/A	<ul style="list-style-type: none"> <li>High definition white light recommended over standard definition</li> <li>Chromendoscopy recommended over standard definition or high definition white light</li> <li>Narrow band imaging not recommended over other modalities</li> </ul>	<ul style="list-style-type: none"> <li>Surveillance endoscopy recommended over colectomy for endoscopically completely resected polypoid and non-polypoid lesions</li> <li>Referral to specialist endoscopist for assessment/N/Amanagement of ‘invisible dysplasia’ prior to consideration of surgery</li> </ul>
NZGG <sup>5</sup>	2011	<ul style="list-style-type: none"> <li>Initial colonoscopy 8–10 years following diagnosis</li> <li>Follow-up: Low risk five years Intermediate risk three years High risk one year</li> </ul>	‘Chromendoscopy not available in New Zealand at time of guideline so not included’	N/A
NICE <sup>11</sup>	2011	<ul style="list-style-type: none"> <li>Initial colonoscopy at 10 years from symptoms onset to establish risk</li> <li>Follow-up: Low risk five years Intermediate risk three years High risk one year</li> </ul>	Colonoscopy with chromendoscopy and targeted biopsy (for initial and follow-up)	N/A

## Conclusion

In contrast to the previous survey in 2004, there appears to be a reasonable grasp of current guidelines and techniques in line with internationally accepted recommendations. The main area of lag appears to be

the persistent preference to manage endoscopically resectable lesions with colectomy rather than surveillance. Further education will be required to standardise care such that the appropriate patients are offered surveillance or surgery.

## Appendix

### Survey

#### Screening Colonoscopy in IBD (Crohn's and Ulcerative Colitis (UC)) Questionnaire

**Thank you for clicking on this survey. This should take eight minutes. We are asking all endoscopists in New Zealand about surveillance in IBD. We are asking you to answer based on YOUR own practice and opinions and not what you think other endoscopists are answering.**

**By consenting below, you consent to your anonymous answers being collated with the other responses to be analysed for future publications, including a Master's degree, conference proceedings, and a journal publication.**

#### CONSENT BOX

#### Demographics:

1. Do you look after patients with ulcerative colitis? Yes / No
2. Do you perform colonoscopy? Yes / No
3. To which of the following groups do you belong?
  - A. Gastroenterologist (hospital catchment <100,000 people)
  - B. Gastroenterologist (hospital catchment >100,000 people)
  - C. General surgeon (hospital catchment <100,000 people)
  - D. General surgeon (hospital catchment >100,000 people)
  - E. Colorectal surgeon
  - F. Colorectal trainee
  - G. Gastroenterology trainee
  - H. Other (please specify)
4. Do you participate in an IBD MDT?
5. Do two pathologists review all diagnoses of dysplasia at your institution? Y / N

#### Survey:

1. How long after diagnosis do you recommend surveillance colonoscopy be commenced for UC patients with pancolitis?
  - A. 5y
  - B. 8y
  - C. 10y
  - D. 15y
  - E. 20y
  - F. Not at all
  - G. Other (please specify)
2. How frequently do you recommend surveillance colonoscopy once started for pancolitis?
  - A. 6 monthly
  - B. Yearly
  - C. 2 yearly
  - D. 3 yearly
  - E. Once only
  - F. Not at all
  - G. Variably depending on activity/control of disease or previous dysplasia

3. In patients with disease extent less than pan-colitis, which of these would influence you to survey more frequently? (you may select more than one)
  - A. Prolonged duration of colitis
  - B. Presence of primary sclerosing cholangitis
  - C. Poor disease control
  - D. Family history of bowel cancer
  - E. Crohn's Colitis as opposed to UC
  - F. Onset of disease before age 15y
4. Regarding your approach to surveillance colonoscopy:  
What is your preference for surveillance endoscopy in IBD:
  - A. Standard definition, white light
  - B. High definition, white light
  - C. Standard definition, chromendoscopy
  - D. High definition, chromendoscopy
  - E. Narrow band imaging instead of white light
  - F. Other?
5. Do you routinely take random biopsies (as opposed to only if there is macroscopic abnormality?) Y / N  
If yes:
  - A. At how many different sites do you take biopsies?
  - B. How many biopsies do you take at each site?
6. In the context of a completely endoscopically resected polypoid lesion showing LGD:
  - A. Do you recommend i. colectomy or ii. surveillance?
  - B. If surveillance then when?
  - C. If the lesion shows HGD would you recommend i. colectomy or ii. surveillance?
  - D. If the lesion was non-polypoid would you recommend i. colectomy or ii. surveillance?
7. If random biopsies returned as HGD after standard definition, white light endoscopy, would you recommend
  - A. Further pathology review?
  - B. Colectomy?
  - C. Repeat standard definition, white light endoscopy?
  - D. Repeat high definition, chromendoscopy?
  - E. Referral to IBD specialist endoscopist?

**Competing interests:**

Nil.

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