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The Royal College of Pathologists of Australasia ("College") has developed these protocols as an educational tool to assist pathologists in reporting of relevant information for specific cancers. While each protocol includes "standards" and "guidelines" which are indicators of 'minimum requirements' and 'recommendations', the protocols are a first edition and have not been through a full cycle of use, review and refinement. Therefore, in this edition, the inclusion of "standards" and "guidelines" in each document are provided as an indication of the opinion of the relevant expert authoring group, but should not be regarded as definitive or as widely accepted peer professional opinion. The use of these standards and guidelines is subject to the clinician's judgement in each individual case.

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Scope

This protocol contains standards and guidelines for the preparation of structured reports for local excisions of the colon and rectum. These include simple polypectomy, endoscopic mucosal resections, endoscopic submucosal resections, transanal submucosal excision for low rectal lesions, and transanal endoscopic microsurgery (TEMS) specimens for appropriate lesions in the mid and upper rectum. It is not intended to apply to tumours of the appendix, small bowel and anus. It does not cater for full resection specimens either as this is covered by a separate protocol.

Structured reporting aims to improve the completeness and usability of pathology reports for clinicians, and improve decision support for cancer treatment.

This document is based on information contained within multiple international publications and datasets and has been developed in consultation with local practising pathologists, oncologists, surgeons, radiologists and interested national bodies.
### Abbreviations

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>AJCC</td>
<td>American Joint Committee on Cancer</td>
</tr>
<tr>
<td>CRC</td>
<td>colorectal cancer</td>
</tr>
<tr>
<td>LIS</td>
<td>laboratory information system</td>
</tr>
<tr>
<td>MMRD</td>
<td>mismatch repair deficient</td>
</tr>
<tr>
<td>MSI</td>
<td>microsatellite instability</td>
</tr>
<tr>
<td>RCPA</td>
<td>Royal College of Pathologists of Australasia</td>
</tr>
<tr>
<td>HGD</td>
<td>high grade dysplasia</td>
</tr>
<tr>
<td>TNM</td>
<td>tumour-node-metastasis</td>
</tr>
<tr>
<td>WHO</td>
<td>World Health Organization</td>
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</tbody>
</table>
## Definitions

The table below provides definitions for general or technical terms used in this protocol. Readers should take particular note of the definitions for ‘standard’, ‘guideline’ and ‘commentary’, because these form the basis of the protocol.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ancillary study</td>
<td>An ancillary study is any pathology investigation that may form part of a cancer pathology report but is not part of routine histological assessment.</td>
</tr>
<tr>
<td>Clinical information</td>
<td>Patient information required to inform pathological assessment, usually provided with the specimen request form. Also referred to as ‘pretest information’.</td>
</tr>
<tr>
<td>Commentary</td>
<td>Commentary is text, diagrams or photographs that clarify the standards (see below) and guidelines (see below), provide examples and help with interpretation, where necessary (not every standard or guideline has commentary).</td>
</tr>
<tr>
<td></td>
<td>Commentary is used to:</td>
</tr>
<tr>
<td></td>
<td>• define the way an item should be reported, to foster reproducibility</td>
</tr>
<tr>
<td></td>
<td>• explain why an item is included (eg how does the item assist with clinical management or prognosis of the specific cancer).</td>
</tr>
<tr>
<td></td>
<td>• cite published evidence in support of the standard or guideline</td>
</tr>
<tr>
<td></td>
<td>• clearly state any exceptions to a standard or guideline.</td>
</tr>
<tr>
<td></td>
<td>In this document, commentary is prefixed with ‘CS’ (for commentary on a standard) or ‘CG’ (for commentary on a guideline), numbered to be consistent with the relevant standard or guideline, and with sequential alphabetic lettering within each set of commentaries (eg CS1.01a, CG2.05b).</td>
</tr>
<tr>
<td>General commentary</td>
<td>General commentary is text that is not associated with a specific standard or guideline. It is used:</td>
</tr>
<tr>
<td></td>
<td>• to provide a brief introduction to a chapter, if necessary</td>
</tr>
<tr>
<td></td>
<td>• for items that are not standards or guidelines but are included in the protocol as items of potential importance, for which there is currently insufficient evidence to recommend their inclusion. (Note: in future reviews of protocols, such items may be reclassified as either standards or guidelines, in line with diagnostic and prognostic advances, following evidentiary review).</td>
</tr>
</tbody>
</table>
Guideline

Guidelines are recommendations; they are not mandatory, as indicated by the use of the word ‘should’. Guidelines cover items that are not essential for clinical management, staging or prognosis of a cancer, but are recommended.

Guidelines include key observational and interpretative findings that are fundamental to the diagnosis and conclusion. Such findings are essential from a clinical governance perspective, because they provide a clear, evidentiary decision-making trail.

Guidelines are not used for research items.

In this document, guidelines are prefixed with ‘G’ and numbered consecutively within each chapter (eg G1.10).

Predictive factor

A predictive factor is a measurement that is associated with response or lack of response to a particular therapy.

Prognostic factor

A prognostic factor is a measurement that is associated with clinical outcome in the absence of therapy or with the application of a standard therapy. It can be thought of as a measure of the natural history of the disease.

Macroscopic findings

Measurements, or assessment of a biopsy specimen made by the unaided eye.

Microscopic findings

In this document, the term ‘microscopic findings’ refers to histomorphological assessment.

Standard

Standards are mandatory, as indicated by the use of the term ‘must’. Their use is reserved for core items essential for the clinical management, staging or prognosis of the cancer and key information (including observations and interpretation) which is fundamental to the diagnosis and conclusion. These elements must be recorded and at the discretion of the pathologist included in the pathology report according to the needs of the recipient of the report.

The summation of all standards represents the minimum dataset for the cancer.

In this document, standards are prefixed with ‘S’ and numbered consecutively within each chapter (eg S1.02).

Structured report

A report format which utilises standard headings, definitions and nomenclature with required information.

Synoptic report

A structured report in condensed form (as a synopsis or precis).
Synthesis is the process in which two or more pre-existing elements are combined, resulting in the formation of something new.

The Oxford dictionary defines synthesis as “the combination of components or elements to form a connected whole”.

In the context of structured pathology reporting, synthesis represents the integration and interpretation of information from two or more modalities to derive new information.
Introduction

Colorectal cancer

Colorectal cancer is currently one of the most common cancers diagnosed in Australia and has the second highest incidence of cancer-related deaths after lung cancer. Recent advances have been made in the biological understanding of this disease, which have resulted in new surgical, chemotherapeutic and radiotherapeutic strategies.

Colonoscopy is the first-line investigation for assessing the colon and rectum, and has a sensitivity of 95% for detection of colorectal cancer. Colonoscopy allows biopsy and histologic confirmation of the diagnosis of cancer as well as identification and immediate removal of synchronous polyps.

Adenomas are the precursors of most colorectal cancers, whereas about 15% of colorectal carcinomas develop through an alternative morphogenetic pathway from serrated polyps.

Benefits of structured reporting

Structured pathology reports with standardised definitions for each component have been shown to significantly improve the completeness and quality of data provided to clinicians, and have been recommended both in North America and the United Kingdom. Several studies have highlighted deficiencies in the content of colorectal cancer resection reports, including elements that are considered crucial for patient management. Many studies have shown that adherence to a checklist for colorectal cancer reporting significantly improves the rate of inclusion of these crucial features.

The College of American Pathologists and the Royal College of Pathologists (United Kingdom) have recently published useful protocols for the reporting of cancer. These have been widely used in recent years in Australia and New Zealand, usually in modified formats to suit local requirements and preferences. A protocol endorsed by the Royal College of Pathologists of Australasia and other local organisations involved in the management of colorectal cancer is therefore needed. The authors have not attempted to ‘re-invent the wheel’ but have borrowed freely from pre-existing publications. The intention is to provide pathologists with a minimum dataset and guidelines that are comprehensive, easy to use, and in keeping with local capacity and practice.

Design of this protocol

This protocol defines the relevant information to be assessed and recorded in a pathology report for local resections of the colon (simple polypectomy, endoscopic mucosal resections, endoscopic submucosal resections and transanal submucosal excision or low rectal lesions, and transanal endoscopic microsurgery (TEMS) specimens for appropriate lesions in the mid and upper rectum. Mandatory elements (standards) are differentiated from those that are not mandatory but are recommended (guidelines). Also, items suited to tick boxes are distinguished from more complex elements requiring free text or narrative. The structure provided by the following chapters, headings and subheadings describes the elements of information and their groupings, but does not
necessarily represent the format of either a pathology report (Chapter 7) or checklist (Chapter 6). These, and the structured pathology request form (Appendix 1), are templates representing information from this protocol, organised and formatted differently to suit their respectively different purposes.

It should be noted that if the resection specimen contains two or more primary carcinomas (as indicated by the term ‘synchronous carcinomas’ on the reporting checklist) then a separate reporting checklist must be completed for each primary carcinoma.

**Key documentation**

- “Clinical Practice Guidelines for Surveillance Colonoscopy – in adenoma follow-up; following curative resection of colorectal cancer; and for cancer surveillance in inflammatory bowel disease” developed by the Colonoscopy Surveillance Working Party, Cancer Council Australia\(^{10}\).
- Tumours of the colon and rectum. In: *Pathology and Genetics of Tumours of the Digestive System. World Health Organization Classification of Tumours, 2011*\(^{11}\)
- *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols*, Royal College of Pathologists of Australasia, 2009\(^{13}\)
- *Minimum Dataset for Colorectal Cancer*, Cancer Council of NSW, 2007\(^{15}\)

**Changes since last edition**

Not applicable.
Authority and development

This section provides details of the committee involved in developing this protocol and the process by which it was developed.

This document is based on Cancer Council Australia’s “Clinical Practice Guidelines for Surveillance Colonoscopy – in adenoma follow-up; following curative resection of colorectal cancer; and for cancer surveillance in inflammatory bowel disease” developed by the Colonoscopy Surveillance Working Party.

Protocol developers

This protocol was developed by an expert committee, with assistance from relevant stakeholders.

Expert committee

Dr Ian Brown, Pathologist (Chair and lead author), Pathologist
Conjoint Professor Stephen Ackland, Medical Oncologist
Prof Michael Bourke, Gastroenterologist
A/Prof Bastiaan deBoer, Pathologist
Associate Professor Robert Eckstein, Pathologist
Professor Nicholas Hawkins, Pathologist
Dr Andrew Hunter, Colorectal Surgeon
Dr Andrew Kneebone, Radiation Oncologist
Clinical Prof Priyanthi Kumarasinghe, Pathologist
A/Prof Andrew Ruszkiewicz, Pathologist
Dr Mee Ling Yeong, Pathologist

Acknowledgements

The Colorectal expert committee wish to thank all the pathologists and clinicians who contributed to the discussion around this document.

Stakeholders

ACT Health
Anatomical Pathology Advisory Committee (APAC)
Australian Association of Pathology Practices Inc (AAPP)
Australian Cancer Network
Australian Commission on Safety and Quality in Health Care
Cancer Australia
Cancer Council ACT
Cancer Council NSW
Cancer Council Queensland
Cancer Council SA
Cancer Council Tasmania
Cancer Council Victoria
Cancer Council Western Australia
Cancer Institute NSW
Cancer Services Advisory Committee (CanSAC)
Cancer specific expert groups – engaged in the development of the protocols
Cancer Voices
Colorectal Cancer Research Consortium
Clinical Oncology Society of Australia (COSA)
Colorectal Surgical Society of Australia and New Zealand (CSSANZ)
Department of Health and Ageing
Grampians Integrated Cancer Services (GICS)
Health Informatics Society of Australia (HISA)
Independent Review Group of Pathologists
Medical Software Industry Association (MSIA)
National Breast and Ovarian Cancer Centre (NBOCC)
National Coalition of Public Pathology (NCOPP)
National E-Health Transition Authority (NEHTA)
National Pathology Accreditation Advisory Council (NPAAC)
National Round Table Working Party for Structured Pathology Reporting of Cancer.
New Zealand Guidelines Group (NZGG)
NSW Department of Health
NZ Ministry of Health
Peter MacCallum Cancer Institute
Queensland Cooperative Oncology Group (QCOG)
Representatives from laboratories specialising in anatomical pathology across Australia
Royal Australasian College of Physicians (RACP)
Southern Cancer Network, Christchurch, New Zealand
Southern Melbourne Integrated Cancer Service (SMICS)
Standards Australia
The Australasian Gastro-Intestinal Trials Group (AGITG)
The Medical Oncology Group of Australia
The Royal Australasian College of Surgeons (RACS)
The Royal Australian and New Zealand College of Radiologists (RANZCR)
The Royal Australian College of General Practitioners (RACGP)
The Royal College of Pathologists of Australasia (RCPA)
Victorian Cooperative Oncology Group (VCOG)
Western Australia Clinical Oncology Group (WACOG)

Secretariat
Meagan Judge, Royal College of Pathologists of Australasia

Development process

This protocol has been developed following the seven-step process set out in Guidelines for Authors of Structured Cancer Pathology Reporting Protocols.\(^{13}\)

Where no reference is provided, the authority is the consensus of the expert group.
1 Pre-analytical considerations

This chapter relates to information that should be recorded on receipt of the specimen in the laboratory.

The pathologist is reliant on the quality of information received from the clinicians or requestor. Some of this information may be received in generic pathology request forms, however, the additional information required by the pathologist specifically for the reporting of local resection of the colon is outlined in Appendix 1. Appendix 1 also includes a standardised request information sheet that may be useful in obtaining all relevant information from the requestor.

Surgical handling procedures affect the quality of the specimen and recommendations for appropriate surgical handling are included in Appendix 1.

S1.01 All demographic information provided on the request form and with the specimen must be recorded.

CS1.01a The Royal College of Pathologists of Australasia (RCPA) The Pathology Request-Test-Report Cycle — Guidelines for Requesters and Pathology Providers must be adhered to.14 This document specifies the minimum information to be provided by the requesting clinician for any pathology test.

CS1.01b The patient’s ethnicity must be recorded, if known. In particular whether the patient is of aboriginal or Torres Strait islander origin. This is in support of a government initiative to monitor the health of indigenous Australians particularly in relation to cancer.

CS1.01c The patient’s health identifiers may include the patient’s Medical Record Number as well as a national health number such as a patient’s Medicare number (Australia), Individual Healthcare Identifier (IHI) (Australia) or the National Healthcare Identifier (New Zealand).

S1.02 All clinical information as documented on the request form must be recorded verbatim.

CS1.02a The request information may be recorded as a single text (narrative) field or it may be recorded atomically.

S1.03 The pathology accession number of the specimen must be recorded.

G1.01 Any clinical information received in other communications from the requestor or other clinician should be recorded together with the source of that information.

S1.04 The total number of polyps submitted must be recorded if provided by the clinician.

CS1.04a The total number of polyps may be unreliable especially if there are large numbers of polyps submitted and/or numerous fragmented specimens, however an estimate of
the total number can be used as an indicator of polyposis syndrome.

G1.02 The number of polyps and site/sites of the polyps submitted in each specimen container should be recorded.

CG1.02a Ideally, when polyps are resected from different sites, they should be placed in separate, clearly labelled containers indicating number of polyps and resection site. If container contains piecemeal resected polyp, this should be clearly stated by the clinician.

CG1.02a To facilitate best practice, it is advantageous for the pathologist to have access to a comprehensive endoscopy report. This may be available online or alternately should accompany the pathology request form.
2 Specimen handling and macroscopic findings

This chapter relates to the procedures required after the information has been handed over from the requesting clinician and the specimen has been received in the laboratory.

Tissue banking

- Pathologists may be asked to provide tissue samples from fresh specimens for tissue banking or research purposes. The decision to provide tissue should only be made if the pathologist is sure that the diagnostic process will not be compromised. As a safeguard, research use of the tissue samples may be put on hold until the diagnostic process is complete.

Specimen handling – General guidelines

- The specimen must be handled in a systematic and thorough fashion to ensure completeness and accuracy of pathological data.
  - **Specimen reception:** Specimens for histological examination should be received in an adequate volume of formalin.
  - **Specimen inspection:** The specimen needs to be thoroughly examined for areas of possible invasive malignancy or attachment of muscularis propria. The latter should be communicated to the referring doctor.
  - All polyps should be totally embedded. Serial slicing of polyps ≥5 mm is recommended.
  - The presence or absence of a stalk should be noted and measured, and the specimen orientated and trimmed in such a way to best show the base, with application of ink to the base.

Specimen handling – TEMS and EMR/ESD specimens

- TEMS specimens are typically received in one piece pinned out on an appropriate medium and orientated. EMR/ESD specimens may be received in one piece but are more frequently received in multiple pieces.
  - EMR/ESD – Tissue pieces should be inspected for the presence of muscularis propria on the deep aspect. If confirmed histologically, this finding signifies the likelihood of local perforation and should be communicated to the referring clinician immediately.

  Larger tissue pieces should be serially sectioned and embedded in toto.
TEM – The pinned out specimen should be allowed to fix adequately. The deep and circumferential margins should be inked in such a way as to allow appropriate orientation of the histological sections. The tissue should be serially sectioned and fully embedded. Transverse sections with longitudinal sections to the margins at the long ends of resection are recommended (see Figure 1 below).

Figure 1: TEMS specimen indicated sectioning.

Macroscopic findings

S2.01 The number of specimens submitted must be recorded.

CS2.01a For each specimen the following information is required.

CS2.01b The term ‘polyp’ is used throughout this protocol as a generic designation for all lesions presenting as an elevated mucosal
abnormality. It is recognised that uncommon neoplastic lesions may be entirely flat or even depressed. Since this protocol is relevant to the designation and reporting of such lesions, the term ‘polyp’ is still used as a generalisation.

**S2.02** For each specimen submitted, record how it is labelled, the location from which it is taken and number of tissue fragments from that location.

CS2.02a Choose from one or more of the following locations and record the number of tissue fragments submitted:
- caecum
- ascending colon
- hepatic flexure
- transverse colon
- splenic flexure
- descending colon
- sigmoid colon
- rectosigmoid junction
- rectum
- distance from anal verge (in cm)
- No site provided

CS2.02b Particular factors apply to the polyps arising in the right colon versus the left colon, underlying the importance of site of polyp origin to subsequent colorectal carcinoma risk.

There is an increased risk for both metachronous adenomas with high grade dysplasia and colorectal cancer if multiple adenomas are found in the right colon at baseline colonoscopy.\textsuperscript{16-19} Increasing age is associated with an increase in the number of adenomas in the right colon.\textsuperscript{20} Other factors that may be responsible for the increased risk of metachronous lesions include the finding of sessile polyps (eg SSA/P), more anatomical ‘blind spots’ and more difficulty achieving adequate bowel preparation.

**S2.03** For specimens other than TEMS, record if polyps are received intact or fragmented.

CS2.03a Many large sessile polyps are removed by piecemeal endoscopic mucosal resection (EMR).\textsuperscript{21-22} This can make histological evaluation of the completeness of excision difficult or impossible.

**S2.04** For specimens other than TEMS, record the diameter of each intact polyp.

CG2.04a Adenomas are classified based on their diameter.\textsuperscript{10} Polyps $\geq$10 mm in diameter are advanced, Polyps $<10$ mm in diameter are non-advanced.
CG2.04b  The probability of developing future advanced adenomas or cancers increases with the size of adenoma found at index examination, and ranges, depending on the study, from 1.5-7.7% for adenomas less than 5mm, through 3-15.9% for adenomas of 5-20mm, to 7-19.3% for adenomas >20mm.\textsuperscript{16,23-28} Size is usually considered a more robust marker of risk than histological characteristics of advanced polyps such as higher grades of villosity or dysplasia, with which it is closely associated.\textsuperscript{17,23,29}

CG2.04c  Grossly, measurement of the size can be done from the formalin-fixed specimen, excluding the stalk, if present.

CS2.04d  Note that the macroscopic diameter may not correspond to the diameter seen at microscopy due to the finding at microscopy that the lesion represents only a proportion of the specimen, the remainder being a cuff of normal mucosa. The microscopic size is more reflective of lesional risk in this situation.

G2.01  When received in a fragmented fashion or where multiple tissue pieces are placed in a single specimen jar, the diameter of the largest fragment should be recorded.

CG2.01a  An aggregate measure of the total tissue submitted in 3 dimensions may be useful for the pathologist.

G2.02  A description of each polyp is recommended.

CG2.02a  The description may include:
- Colour
- Shape ie raised, flat, irregular surface
- Pedunculated, Sessile
  - If pedunculated, record the length of the stalk
- Contours - smooth/lobulated/villous
- Presence of muscularis propria. This should be communicated on discovery to the referring clinician as it may portend a surgical emergency (perforation)
- Other features such as ulceration

S2.05  For TEMS, the dimensions of the specimen must be recorded.

G2.03  For TEMS, a detailed description should be recorded.

CG2.03a  The description should include:
- Dimensions of the lesion
- Colour
- Surface contour eg villiform, nodular, granular
- Presence of ulceration

CG2.03b Ideally the specimen should be photographed.

S2.06 The nature and sites of all blocks must be recorded.
3 Microscopic findings

Microscopic findings relate to purely histological or morphological assessment. Information derived from more than one type of investigation (e.g., clinical, macroscopic and microscopic findings), are described in Chapter 5.

S3.01 The number and type of polyp must be recorded.

CS3.01a For each location from which specimens have been received and recorded in S2.02, record the type of polyp (refer to Appendix 5) and the number of polyps of that type.

CS3.01b If carcinoma, S3.05 – S3.11 must be recorded for EACH malignant polyp identified, and consider reporting G3.03-4.

S3.02 If present, the grade of dysplasia must be recorded.

CS3.02a This should be recorded as low or high grade which replaces previous terms such as mild moderate and severe. Most dysplastic lesions will have low grade dysplasia. Features of high grade dysplasia are listed in Appendix 5. High grade dysplasia is an indicator of an advanced polyp, and hence a shorter surveillance interval (Appendix 7). Dysplasia arising in a sessile serrated adenoma need not be graded as its presence alone is indicative of an advanced lesion necessitating a shorter screening interval.

Polypoid dysplastic lesions arising in a setting of inflammatory bowel disease should also be graded as low or high grade.

S3.03 The presence of a significant component of villous architecture must be recorded in conventional adenoma.

CS3.03a The 2010 World Health Organization (WHO) defines tubular adenomas as having <25% villous component, tubulovillous as 25-75% and villous as >75% villous component. Refer to Appendix 5 for additional information and definition of villous architecture.

CS3.03b The significance of villous architecture in other polyp types e.g., TSA or SSA/D is unknown. The presence of villous architecture in such lesions may be recorded, but is not a requisite to guide subsequent follow up.

G3.01 Evidence of polyposis syndrome should be recorded.

CG3.01a The pathologist should be cognisant of the presence of polyposis syndromes (refer to Appendix 6). These include:

- Familial Adenomatous Polyposis (FAP)
- Hyperplastic (serrated) polyposis syndrome
- MutYH polyposis
- Juvenile polyposis
• Peutz–Jeghers syndrome
• Cowden syndrome (PTEN hamartoma tumour syndrome)
• Hereditary mixed polyposis syndrome

CG3.01b For these syndromes the polyps suggestive of the syndrome can be and often are cumulative over time. The pathologist may need to review previous reports of specimens accessioned from the patient if available.

G3.02 The adequacy of resection of non-malignant polyp should be reported where the polyp is received intact and where the margin of resection is unequivocally seen.

CG3.02a This is typically only able to be done in a small percentage of specimens.

S3.04 The presence of other relevant coexistent pathological abnormalities in the bowel must be recorded.

CS3.04a The presence and type of chronic inflammatory bowel disease (Crohn’s disease, ulcerative colitis, primary sclerosing cholangitis (PSC) related colitis) and any other clinically relevant pathology is important information that needs to be recorded.

CS3.04b In both ulcerative colitis and Crohn’s disease, patients with more extensive disease and duration of disease >10 years are at increased risk of colorectal cancer.30-31 Ulcerative colitis patients with co-existing primary sclerosing cholangitis are especially at risk of developing colorectal neoplasia.32

The following text may be added to the report to allow clarification of colorectal carcinoma risk:

‘Dysplastic lesions arising in an area affected by inflammatory bowel disease are a heterogeneous group. Many are adenoma-like, and are not progressive. Conservative management may be warranted if the following conditions are met: Macroscopically adenoma-like in appearance; excised with clear margins; no flat dysplasia of surrounding mucosa and/or polyp stalk. If these criteria are not met, the lesion should be regarded as having a significant risk for associated or subsequent colorectal carcinoma.’

Malignant Polyps

S3.05 The specific tumour type must be recorded.

CS3.05a The description must be based on the WHO Histological Classification of Tumours of the Colon and Rectum (refer to Appendix 4).11

CS3.05b Virtually all colorectal cancers are adenocarcinomas. The term ‘Adenocarcinoma NOS’ on the reporting checklist is used to indicate conventional adenocarcinoma without any of the
special features of the tumour types listed below it.

**S3.06 The histological tumour grade (differentiation) must be recorded.**

**CS3.06a** Histological grading of invasive colorectal adenocarcinoma is based on a balance of the different levels of differentiation. The 2010 WHO classification\(^1\) provides the following classification scheme.

<table>
<thead>
<tr>
<th>Criterion</th>
<th>Differentiation grade</th>
<th>Numerical grade</th>
<th>Descriptive grade</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt;95% gland formation</td>
<td>Well</td>
<td>1</td>
<td>Low</td>
</tr>
<tr>
<td>50-95% gland formation</td>
<td>Moderate</td>
<td>2</td>
<td>Low</td>
</tr>
<tr>
<td>&gt;0-49% gland formation</td>
<td>Poor</td>
<td>3</td>
<td>High</td>
</tr>
<tr>
<td>No gland formation</td>
<td>Undifferentiated</td>
<td>4</td>
<td>High</td>
</tr>
</tbody>
</table>

Ideally pathologists should designate the differentiation of adenocarcinoma arising in a polyp by at least one of these descriptors.

**S3.07 The presence of any degree of poor differentiation/undifferentiated tumour must be recorded.**

**CS3.07a** Several studies have specifically examined the relevance of poor differentiation of any extent and have identified this as an adverse prognostic feature associated with an average approximate 20% risk of lymph node or systemic metastasis.

**CS3.07b** Poor differentiation is often seen at the advancing edge. It is identified to variable extent in 6-9% of malignant polyps. The following patterns are indicative of poor differentiation.

- <50% gland lumina
- Signet ring cells
- Small tumour nests with >5 cells (termed ‘focal dedifferentiation’)
- Tight cribriform arrangements characterised by small closely associated gland lumina and/or fused chain like arrangements. This pattern is often reminiscent of Gleason pattern 4 prostatic adenocarcinoma.
- Undifferentiated ‘sheet like’ carcinoma

Tumour budding (invasive groups of <5 cells) does not equate
with poor differentiation but appears to represent an independent adverse prognostic feature (see below).

Poor differentiation remains a subjective feature and hence has less interobserver agreement than other features listed below.

CS3.07c Mucinous adenocarcinoma is now graded on the basis of the differentiation of the component epithelial elements. In the past and in several previous studies, the presence of a mucinous component has been regarded as indicative of poor differentiation. Pending future studies, it is advisable to highlight the presence of a mucinous component in any malignant polyp.11

G3.03 The presence of any amount of tumour budding should be recorded.

CG3.03a Multiple studies have identified the presence of tumour budding as an adverse prognostic factor in pT1 adenocarcinoma including invasive adenocarcinoma in polypectomy specimens. While all studies agree that tumour budding is an infiltration of single cells or cell groups of ≤5 cells, to date a uniform definition of amount of tumour budding that is prognostically significant is lacking.33-38 The most widely quoted definition of prognostically significant ‘high grade’ budding comes from a paper by Ueno39 and defines ‘high-grade budding’ as >10 buds composed of fewer than 5 cells in a 25X_field (field area = 0.385mm²). Other definitions of prognostically significant tumour budding (based on resection specimens) are summarised in a review article by Mitrovic et al.40 Pending further evidence, it would seem unjustified to base further treatment decisions upon only the presence of tumour budding in a malignant polypectomy specimen.

CG3.03b It is good practice to quantify the number of foci in 1 HPF (field diameter xxmm²).

S3.08 Vessel invasion must be reported.

CS3.08a Lymphatic and venous invasion are regarded as adverse prognostic factors with risk for lymph metastasis of up to 35% in pooled analysis. Not all studies have identified a prognostic significance to vascular invasion, although wide variation (0-57%) in reported prevalence of vascular invasion may underlie this.

Use of special stains to detect lymphatic invasion (D2-40 immunohistochemistry) and venous invasion (orcein or other elastic tissue stain) may improve detection.

S3.09 The margin status must be recorded.

CS3.09a If uninvolved, the clearance must be recorded in mm. This should be from the free edge of resection.

CS3.09b What constitutes an involved (‘positive’) deep (basal) margin is not uniformly agreed. Most studies define it in one of the following ways: 1) the presence of cancer within the zone of
diathermy, 2) cancer within one high-power field of the zone of diathermy, or 3) cancer < 1mm from the actual edge of resection. Because of the lack of a uniform definition for positive deep margin status, pathologists should state the exact relationship to the margin. The presence of adenoma or adenocarcinoma in the lateral resection margin should also be reported as an indication for potential further treatment.³

It is generally agreed that margin clearance > 2mm is complete resection.

Multiple levels may be required to best assess the margin status in cases where clearance is <2mm.

Mucinous adenocarcinoma may present a situation where mucin pools are transected by the margin, however, no tumour cells are present at the margin. This situation is regarded as a positive margin.

CS3.09c Note that removal of large sessile polyps piecemeal by endoscopic mucosal resection (EMR) can make histological evaluation of excision margin difficult or impossible.¹⁰ A comment should still be made if tumour is seen at the diathermised edge of any tissue fragment.

G3.04 Where possible record whether the malignant polyp had a pedunculated or sessile morphology.

CG3.04a This may require correlation with the macroscopic and/or endoscopic appearance.

CG3.04b This may be difficult in poorly orientated or fragmented specimens.

CG3.04c In pooled analysis, sessile polyps containing malignancy are associated with an approximately 10 times increased mortality risk over pedunculated polyp with malignancy.¹¹ This appears to be largely related to the increased frequency of a positive polypectomy margin, although increased rate of vascular invasion and other factors may contribute. Because positive margin seems to be the most significant feature, further treatment is not usually warranted in a sessile polyp with malignancy where there is a clear resection margin at polypectomy and no other adverse factors.

S3.10 The depth of invasion must be reported.

CS3.10a As a minimum, it is recommended that pathologists record in all polyps the maximum depth of invasion (in mm) beneath the muscularis mucosae, or the maximum tumour thickness if the muscularis mucosae is destroyed by tumour. In piecemeal resections where no orientation is possible, the maximum dimension of invasive adenocarcinoma in any piece should be recorded. In pedunculated polyps the Haggitt level should also be recorded.
The level of submucosal invasion in both pedunculated and sessile polyps is important in predicting the outcome of a malignant polyp. A number of systems have been proposed.

**Haggitt levels:** This four level system was developed to assess depth of invasion in pedunculated polyps compared to sessile polyps. In both situations invasion into submucosa is level 4. Levels 1-3 represent varying degrees of invasion into the polyp stalk. All sessile malignant polyps will be level 4 by definition. Adverse behaviour is restricted to polyps with level 4 invasion.42 (Refer to figure CS3.10a)

**Kikuchi levels:** Are applicable to sessile or semi-sessile polyps and record the depth of invasion into submucosa (sm) in a 3 grade system.

- Sm1 – slight submucosal invasion (200-300µm(0.2 – 0.3mm))
- Sm2 – intermediate between sm1 and sm3
- Sm3 – invasion into deep aspect of submucosa

This system shows good correlation with lymph node metastatic risk (sm1 – ≤3%, sm2 – 8%, sm3 – 23%). The system has become simplified by many users into a division of the submucosa into thirds.

This system is difficult to apply in the following circumstances:43-44

1) polypectomy specimens because the muscularis propria is usually not included. ESD specimens may allow more use for this system.

2) where muscularis mucosae is completely destroyed by the invasive tumour front. This feature appears to be an independent poor risk factor.34

3) pedunculated polyps (Refer to figure CS3.10b)

**Direct measurement of depth of invasion beneath muscularis mucosae:** malignant polyps with only slight submucosal invasion to a depth of 0.2 – 0.3 mm are very unlikely to have metastatic lymph nodes. Those with a depth of >2mm have increased risk of nodal involvement.3

**S3.11 The width of invasive tumour should be recorded.**

**CS3.11a** Data from the Ueno paper33 supports width of invasive carcinoma as a prognostic factor. Invasive carcinoma <2mm in diameter was not associated with lymph node metastases while invasive carcinoma > 4mm is associated with a lymph node metastasis rate of approximately 20%.

**CS3.11b** It is recognised that in some situations it may be difficult or poorly reproducible to determine where high grade dysplasia
ends and invasive adenocarcinoma starts. This may significantly affect the accuracy of measurements of invasive carcinoma width and depth. Pathologists are encouraged to seek a consensus from colleagues. Failing this, the difficulty in providing an accurate measurement should be highlighted as a text comment in the report.

Figure CS3.10a Levels of invasion of colorectal adenomas.

A comment on the likelihood of residual disease post polypectomy may be included.

CG3.05a The pathologist can provide clinical guidance based on published studies and meta-analysis to the likelihood of residual disease post polypectomy. This can be considered as low risk or high risk. Appendix 8 provides a summary of useful prognostic data.
4 Ancillary studies findings

Ancillary studies are being increasingly used to aid diagnosis as prognostic biomarkers or to indicate the likelihood of patient response to specific biologic therapies.

G4.01 Immunohistochemistry for mismatch repair markers (MLH-1, MSH-2, MSH-6 and PMS-2) can help identify an adenoma as originating in Lynch syndrome.

CG4.01a Approximately 70% of adenomatous polyps in patients with Lynch syndrome demonstrate an absence of immunoreaction for one or four common mismatch repair markers.45 Adenomas in Lynch syndrome are often large, villous, right sided and demonstrate high grade dysplasia.46-47 Adenomas with these features are more likely to demonstrate an immunohistochemical abnormality. The incidental occurrence of sporadic adenomas in patients with Lynch syndrome probably accounts for the approximately 30% of adenomas that exhibit preservation of mismatch repair markers. Hence, the presence of MMR expression/staining does not exclude that a patient has Lynch Syndrome.

The original Bethesda criteria48 recommended investigation for Lynch syndrome in ‘Individuals with adenomas diagnosed at age less than 40’. Currently no universal testing guideline exists.

G4.02 Immunohistochemistry for mismatch repair markers (MLH-1, MSH-2, MSH-6 and PMS-2) may be performed on all invasive adenocarcinomas arising in a polyp. The rationale for considering this is outlined below.

CG4.02a The identification of Lynch syndrome may affect subsequent treatment decisions.

CG4.02b The finding of MMRD and/or MSI is important in colorectal cancer for the following reasons:

- MMRD has been shown to be a favourable prognostic factor in colorectal cancer, in terms of both recurrence-free survival and overall survival.49-51

- There is increasing evidence to support the observations that MMRD tumours are less responsive to 5FU-based adjuvant chemotherapy52-54 although this has not been shown conclusively in all studies.55-57 In ~20% of cases with MMRD, this abnormality will be associated with underlying Lynch syndrome, which raises cancer issues for all family members.

G4.03 Special stains may aid detection of lymphatic and venous invasion in malignant polyps

- Lymphatic invasion – use of the lymphatic endothelium marker
D2-40 can highlight that a space containing tumour is lined by lymphatic endothelium

- Venous invasion – the use of elastic stains such as VVG and Orcein can aid identification of veins containing tumour. A Desmin immunohistochemical stain may highlight smooth muscle in the wall of a compressed vein.
5 Synthesis and overview

Information that is synthesized from multiple modalities and therefore cannot reside solely in any one of the preceding chapters is described here. For example, tumour stage is synthesized from multiple classes of information – clinical, macroscopic and microscopic. Overarching case comment is synthesis in narrative form. Although it may not necessarily be required in any given report, the provision of the facility for overarching commentary in a cancer report is essential.

By definition, synthetic elements are inferential rather than observational, often representing high-level information that is likely to form part of the ‘Diagnostic summary’ section in the final formatted report (see G5.01).

G5.01 The ‘Diagnostic summary’ section of the final formatted report should include:

For carcinoma:
- tumour site(s) (S2.02)
- tumour type (S3.05)
- degree of differentiation (S3.07)
- depth of invasion (S3.10)
- vessel invasion (S3.08)
- margin status (S3.09)

For conventional adenoma*:
- Type of adenoma (S3.01)
- Number and location (S3.01)
- Diameter (S2.04)
- Evidence of polyposis syndrome (G3.01)
- Presence or absence of High Grade Dysplasia (S3.02)
- Adequacy of excision (G3.02)
- Villous component (S3.03)

For sessile serrated adenoma
- Number and location (S3.01)
- Diameter (S2.04)
- Evidence of polyposis syndrome (G3.01)
- Presence or absence of Dysplasia (S3.02)
- Adequacy of excision (G3.02)

For hyperplastic polyps:
- Number and location (S3.01)
*A table may be advantageous to report on large numbers of polyps.

**S5.01** A field for free text or narrative in which the reporting pathologist can give overarching case comment must be provided.

**CS5.01a** This field may be used, for example, to:

- list any relevant ancillary tests
- document any noteworthy adverse gross and/or histological features
- express any diagnostic subtlety or nuance that is beyond synoptic capture
- document further consultation or results still pending.

**CS5.01b** Use of this field is at the discretion of the reporting pathologist.
6 Structured checklist

The following checklist includes the standards and guidelines for this protocol which must be considered when reporting, in the simplest possible form. The summation of all ‘standards’ is equivalent to the ‘minimum dataset’ for colorectal cancer. For emphasis, standards (mandatory elements) are formatted in bold font.

S6.01 The structured checklist provided may be modified as required but with the following restrictions:

a. All standards and their respective naming conventions, definitions and value lists must be adhered to.

b. Guidelines are not mandatory but are recommendations and where used, must follow the naming conventions, definitions and value lists given in the protocol.

G6.01 The order of information and design of the checklist may be varied according to the laboratory information system (LIS) capabilities and as described in Functional Requirements for Structured Pathology Reporting of Cancer Protocols.[Royal College of Pathologists of Australasia, 2011 #790]

CG6.01a Where the LIS allows dissociation between data entry and report format, the structured checklist is usually best formatted to follow pathologist workflow. In this situation, the elements of synthesis or conclusions are necessarily at the end. The report format is then optimised independently by the LIS.

CG6.01b Where the LIS does not allow dissociation between data entry and report format, (for example where only a single text field is provided for the report), pathologists may elect to create a checklist in the format of the final report. In this situation, communication with the clinician takes precedence and the checklist design is according to principles given in Chapter 7.

G6.02 Where the checklist is used as a report template (see G6.01), the principles in Chapter 7 and Appendix 2 apply.

CG6.02a All extraneous information, tick boxes and unused values should be deleted.

G6.03 Additional comment may be added to an individual response where necessary to describe any uncertainty or nuance in the selection of a prescribed response in the checklist. Additional comment is not required where the prescribed response is adequate.
Values in italics are conditional on previous responses.

Values in all caps are headings with sub values.

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<tr>
<th>S/G</th>
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<th>Response type</th>
<th>Conditional</th>
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<td><strong>Clinical information provided on request form</strong></td>
<td>Text OR</td>
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<td>Proceduralist’s name and contact details</td>
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<td></td>
<td></td>
<td>• 0-Ip (protruded, pedunculated)</td>
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<td></td>
<td></td>
<td>• 0-Is (protruded, sessile; &gt;2.5mm above baseline)</td>
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<td></td>
<td>• Non-Polypoid</td>
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<td>• 0-IIa (superficial, elevated; &lt; 2.5mm</td>
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<td>above baseline)</td>
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<td>o 0-IIb (flat)</td>
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<td>o 0-IIc (superficial shallow, depressed)</td>
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<td>o 0-III (excavated/ulcerated)</td>
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<td>• ascending colon</td>
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<td>• hepatic flexure</td>
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<td>• transverse colon</td>
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<td>• splenic flexure</td>
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<td>• descending colon</td>
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<td>• sigmoid colon</td>
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<td>• rectosigmoid junction</td>
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<td>• rectum</td>
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<td></td>
<td></td>
<td>• distance to anal verge (....cm)</td>
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<td>• other</td>
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**Note:**
Record the location for each specimen submitted.

<p>| Other location | Text |</p>
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<th>Item description</th>
<th>Response type</th>
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<td>Diameter of resected polyp(s)</td>
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<td>Reason for procedure</td>
<td><strong>Multi select value list(select all that apply):</strong>&lt;br&gt;• Initial screening colonoscopy (baseline or index procedure)&lt;br&gt;• Surveillance – no previous history of adenoma or malignancy&lt;br&gt;• Surveillance – high risk eg FAP, other polyposis syndromes, Lynch syndrome&lt;br&gt;• Surveillance – previous adenoma/HGD/malignant polyps&lt;br&gt;• Positive faecal occult blood test (FOBT)&lt;br&gt;• Other (specify)&lt;br&gt;<strong>If other, records the other reason.</strong>&lt;br&gt;<strong>If the reason for the procedure is surveillance following previous findings of adenoma or malignancy, record the date and results of that previous episode.</strong></td>
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<td></td>
<td>Other reason</td>
<td><strong>Text</strong></td>
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<tr>
<td></td>
<td>Date and results of previous episode</td>
<td><strong>Text</strong></td>
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### Macropscopic findings

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<td>3. Record the number of polyps/tissue pieces from that location:</td>
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<td>• Ascending colon</td>
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<td>• Hepatic flexure</td>
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<td>Rectosigmoid junction</td>
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<td>Rectum</td>
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<td>Distance from anal verge .... cm</td>
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**Note:** this will be repeated for each specimen noted in S2.01
For large numbers of polyps a table may assist to present this in a clearer format.

**Other site**

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**Note:** this will be repeated for each polyp noted in S2.02

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<tr>
<td></td>
<td></td>
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<td>G2.02</td>
<td>Description of polyp (eg colour, shape, contour, ulceration etc)</td>
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<td>Colour</td>
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<tr>
<td></td>
<td></td>
<td>• Absent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present</td>
<td></td>
</tr>
<tr>
<td>S2.06</td>
<td>Nature and site of blocks</td>
<td>Text</td>
<td></td>
</tr>
</tbody>
</table>

**Microscopic findings**

<p>| S3.01 | Polyp type and number                         | Note: For each location from which specimens have been received and recorded in S2.02, record the type of polyp from the list below and the number of polyps/tissue pieces of that type. | If carcinoma, S3.05 – S3.11 must be recorded, and consider recording G3.03-4. |
|       |                                               | Single select value list if intact polyps received. Multi select where a location has |             |</p>
<table>
<thead>
<tr>
<th>S/G</th>
<th>Item description</th>
<th>Response type</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td><strong>polyp fragments:</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hyperplastic polyp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Conventional adenoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o tubular</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o tubulovillous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o villous</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Serrated adenomas</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o traditional serrated adenoma (TSA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o sessile serrated adenoma (SSA)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>o sessile serrated adenoma with dysplasia (SSAD)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mixed polyp (specify components)</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Carcinoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Neuroendocrine tumour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Hamartoma</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Inflammatory polyp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Juvenile type polyp</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mesenchymal polyp – fibroblastic polyp (perineurioma), Schwann cell hamartoma, schwannoma, neurofibroma, ganglioneuroma, leiomyoma, lipoma, granular cell tumour, inflammatory fibroid polyp, gastrointestinal stromal tumour</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Mucosal prolapse syndrome</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>• Other (specify)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>S/G</td>
<td>Item description</td>
<td>Response type</td>
<td>Conditional</td>
</tr>
<tr>
<td>-----</td>
<td>--------------------------------------</td>
<td>----------------------------------------</td>
<td>-----------------------------------------------------------------------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absent</td>
<td>If present, record the grade of dysplasia. Note: If sessile serrated adenoma</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present</td>
<td>(SSAD) selected in S3.01, S3.02 is not required.</td>
</tr>
<tr>
<td>S3.02</td>
<td>Dysplasia</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Low grade</td>
<td>Conditional on the presence of dysplasia</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• High grade</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Grade of dysplasia</strong></td>
<td><strong>Single selection value list:</strong></td>
<td>Conditional on conventional adenoma being selected in S3.01</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Significant villous architecture</strong></td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present</td>
<td></td>
</tr>
<tr>
<td></td>
<td><strong>Evidence of polyposis syndrome</strong></td>
<td><strong>Single selection value list:</strong></td>
<td>If present provide details</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Absent</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Present</td>
<td></td>
</tr>
<tr>
<td>G3.02</td>
<td>Polyp resection (non-malignant)</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Adequate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inadequate</td>
<td></td>
</tr>
<tr>
<td>S/G</td>
<td>Item description</td>
<td>Response type</td>
<td>Conditional</td>
</tr>
<tr>
<td>-----</td>
<td>------------------------------------------------------</td>
<td>-------------------------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>S3.04</td>
<td>Coexistent pathological abnormalities</td>
<td>Multi select value list (select all that apply):</td>
<td>If other is selected, provide details. If Ulcerative colitis, Crohn’s disease, Primary sclerosing cholangitis (PSC) or Inflammatory bowel disease, not otherwise specified is selected the following text may be added to allow clarification of colorectal carcinoma risk. ‘Dysplastic lesions arising in an area affected by inflammatory bowel disease are a heterogeneous group. Many are adenoma-like, and are not progressive. Conservative management may be warranted if the following conditions are met: macroscopically adenoma-like in appearance; excised with clear margins; no flat dysplasia of surrounding mucosa and/or polyp stalk. If these criteria are not met, the lesion should be regarded as having a significant risk for associated or subsequent colorectal carcinoma.’</td>
</tr>
<tr>
<td></td>
<td></td>
<td>• None noted</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Ulcerative colitis</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Crohn’s disease</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Primary sclerosing cholangitis (PSC)</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Inflammatory bowel disease, not otherwise specified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Other</td>
<td></td>
</tr>
</tbody>
</table>

**Details**

**Text**

**MALIGNANT POLYPS**

_This next section of microscopic reporting is conditional on the selection of a malignancy in S3.01. If there are multiple_
<table>
<thead>
<tr>
<th>S/G</th>
<th>Item description</th>
<th>Response type</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>malignant polyps a table may facilitate recording of information.</td>
</tr>
</tbody>
</table>
| S3.05 | Tumour type | *Single selection value list from WHO Classification of Tumours. Pathology and Genetics of Tumours of the Digestive System (2010).*  
*Note:* this should be recorded for each polyp classified as malignant in S3.01 |
| S3.06 | Histological tumour grade | *Single selection value list:*  
- Low grade - well and moderately differentiated  
- High grade – poorly and undifferentiated  
*Note:* this should be recorded for each polyp classified as malignant in S3.01 |
| S3.07 | Poor differentiation (undifferentiated) tumour | *Single selection value list:*  
- Absent  
- Present  
*Note:* this should be recorded for each polyp classified as malignant in S3.01 |
| G3.03 | Tumour budding | *Single selection value list:*  
- Absent  
- Present  
*Note:* this should be recorded for each polyp classified as malignant in S3.01  
*If present, consider recording the number of foci* |
<table>
<thead>
<tr>
<th>S/G</th>
<th>Item description</th>
<th>Response type</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>S3.08</td>
<td>Vessel invasion</td>
<td><em>Single selection value list:</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not identified</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Present</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Note:</em> this should be recorded for each polyp classified as malignant in S3.01</td>
<td></td>
</tr>
<tr>
<td>S3.09</td>
<td>Margin status</td>
<td><em>Single selection value list:</em></td>
<td><em>If involved, record the involved margin(s)</em></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Not involved</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Involved</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Note:</em> this should be recorded for each polyp classified as malignant in S3.01</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Involved margin(s)</td>
<td>Text</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clearance from deep margin</td>
<td>Numeric: ___mm</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Clearance from nearest peripheral margin</td>
<td>Numeric: ___mm</td>
<td></td>
</tr>
<tr>
<td>G3.04</td>
<td>Morphology</td>
<td><em>Single selection value list:</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Pedunculated</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Sessile</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>- Indeterminate</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Note:</em> this should be recorded for each polyp classified as malignant in S3.01</td>
<td></td>
</tr>
<tr>
<td>S3.10</td>
<td>Maximum depth of invasion</td>
<td>Numeric: ___ mm</td>
<td></td>
</tr>
<tr>
<td>S/G</td>
<td>Item description</td>
<td>Response type</td>
<td>Conditional</td>
</tr>
<tr>
<td>-----</td>
<td>------------------</td>
<td>---------------</td>
<td>-------------</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Notes:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>This should be recorded for each polyp classified as malignant in S3.01.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>Conversion: 1mm = 1000 µm</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><em>This should be recorded as the maximum depth of invasion beneath the muscularis mucosae or the maximum tumour thickness if the muscularis mucosae is destroyed by tumour. In piecemeal resections where no orientation is possible, the maximum dimension of invasive adenocarcinoma in any piece should be recorded.</em></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Haggitt level</strong></td>
<td><strong>Single selection value list:</strong></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Level 1</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Level 2</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Level 3</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>• Level 4</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Conditional on pedunculated being selected in G3.04</strong></td>
<td></td>
</tr>
<tr>
<td>S3.11</td>
<td><strong>Width of invasive tumour</strong></td>
<td><strong>Numeric:</strong> ____ mm</td>
<td></td>
</tr>
<tr>
<td>G3.05</td>
<td>Comment on risk for residual disease</td>
<td><strong>Text</strong></td>
<td></td>
</tr>
</tbody>
</table>

**Ancillary test findings**

<p>| G4.01 | MISMATCH REPAIR ENZYMES | <strong>Note:</strong> Mismatch repair enzyme immunohistochemistry results may be recorded for each malignant polyp recorded in S3.01. |             |</p>
<table>
<thead>
<tr>
<th>S/G</th>
<th>Item description</th>
<th>Response type</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>MLH1</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not tested</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Normal staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loss of staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td>PMS2</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not tested</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Normal staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loss of staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSH2</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not tested</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Normal staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loss of staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td>MSH6</td>
<td><strong>Single selection value list:</strong></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Not tested</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Normal staining</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>• Loss of staining</td>
<td></td>
</tr>
<tr>
<td>Comments</td>
<td>Text</td>
<td></td>
<td></td>
</tr>
<tr>
<td>G4.03</td>
<td>Special stains</td>
<td>Text</td>
<td></td>
</tr>
</tbody>
</table>

**Synthesis and overview**

<p>| G5.01 | Diagnostic summary | Text |</p>
<table>
<thead>
<tr>
<th>S/G</th>
<th>Item description</th>
<th>Response type</th>
<th>Conditional</th>
</tr>
</thead>
<tbody>
<tr>
<td>S5.01</td>
<td>Overarching comment</td>
<td>Text</td>
<td></td>
</tr>
</tbody>
</table>
7 Formatting of pathology reports

Good formatting of the pathology report is essential for optimising communication with the clinician, and will be an important contributor to the success of cancer reporting protocols. The report should be formatted to provide information clearly and unambiguously to the treating doctors, and should be organised with their use of the report in mind. In this sense, the report differs from the structured checklist, which is organised with the pathologists’ workflow as a priority.

Uniformity in the format as well as in the data items of cancer reports between laboratories makes it easier for treating doctors to understand the reports; it is therefore seen as an important element of the systematic reporting of cancer. For guidance on formatting pathology reports, please refer to Appendix 2.
Appendix 1  Pathology request information and surgical handling procedures

This appendix describes the information that should be collected before the pathology test. Some of this information can be provided on generic pathology request forms; any additional information required specifically for the reporting of local resections of the colon may be provided by the clinician on a separate request information sheet. An example request information sheet is included below. Elements which are in bold text are those which pathologists consider to be required information. Those in non-bold text are recommended.

Patient information

➢ **Adequate demographic and request information should be provided with the specimen.**

- Items relevant to cancer reporting protocols include:
  - patient name
  - date of birth
  - sex
  - identification and contact details of requesting doctor
  - date of request

- The patient’s ethnicity should be recorded, if known. In particular whether the patient is of aboriginal or Torres Strait islander origin. This is in support of a government initiative to monitor the health of indigenous Australians particularly in relation to cancer.

➢ The patient's health identifiers should be provided.

- The patient’s health identifiers may include the patient’s Medical Record Number as well as a national health number such as a patient’s Medicare number (Australia), Individual Healthcare Identifier (IHI) (Australia) or the National Healthcare Identifier (New Zealand).

Clinical Information

➢ The proceduralist’s identity and contact details should be recorded.

➢ The number of specimens submitted should be recorded.

➢ The endoscopic tumour morphology should be recorded in accordance with the Paris Classification of superficial neoplastic lesions. 

---

49
• This information is attained at time of colonoscopy by the requesting clinician.

• Select all that apply:
  
  • Polypoid
    
    o 0-Ip (protruded, pedunculated)
    
    o 0-Is (protruded, sessile; >2.5mm above baseline)
  
  • Non-Polypoid
    
    o 0-IIa (superficial, elevated; < 2.5mm above baseline)
    
    o 0-IIb (flat)
    
    o 0-IIc (superficial shallow, depressed)
    
    o 0-III (excavated/ulcerated)
  
  Refer to Figures A1(i) and (ii) below.

• The Paris classification provides a means of distinguishing sessile polypoid lesions (Type 0-Is, protruding above 2.5mm) from the non-polypoid ones (Type 0-IIa protruding below 2.5mm), the distinction being crucial given the highly significant differences in cancer rates between non-polypoid and sessile polypoid (adenomatous and serrated) lesions.³
Figure A1 (i) Neoplastic lesions with “superficial” morphology

Type 0

Polypoid
Non-Polypoid

Slightly Elevated
Flat
Slightly Depressed
Excavated (ulcer)

0-I (Ip, Is) 0-IIa 0-IIb 0-IIc 0-III
The major variants of type 0 neoplastic lesions of the digestive tract: polypoid (Ip and Is), non-polypoid (IIa, IIb and IIc), non-polypoid and excavated (III). Terminology as proposed in a consensus macroscopic description of superficial neoplastic lesions.\textsuperscript{58} Reproduced with permission.

- The location in the large bowel from which each specimen has been taken should be recorded.
  - Choose from one of the following:
    - caecum
    - ascending colon
    - hepatic flexure
    - transverse colon
    - splenic flexure
    - descending colon
    - sigmoid colon
    - rectosigmoid junction
    - rectum
    - distance to anal verge \ldots\text{cm}

- The diameter of each resected polyp should be recorded.
  - The diameter may be measured either \textit{in situ} or after retrieval.

- The presence of multiple unexcised polyps should be recorded.
  - In some cases polyps are too numerous to excise all lesions, and only a sample is taken. The presence of numerous polyps is
considered high risk for future high grade adenomas and may be indicative of Familial adenomatous polyposis (FAP).\textsuperscript{10}

- The reason for the procedure should be provided.
  - Options include:
    - Initial screening colonoscopy (baseline or index procedure)
    - Surveillance – no previous history of adenoma or malignancy
    - Surveillance – high risk eg FAP, other polyposis syndromes, Lynch syndrome
    - Surveillance – previous adenoma/HGD/malignant polyps
    - Positive faecal occult blood test (FOBT)
    - Other (specify)
  - If the reason for the procedure is surveillance following previous findings of adenoma or malignancy, the date and results of that previous encounter should be provided.

- Any relevant patient or family history should be provided.
  - Of particular relevance is a family history of colorectal cancer; FAP or other polyposis syndromes; Lynch syndrome, ulcerative colitis, inflammatory bowel disease or Crohn’s disease.

- Any previous colorectal surgery should be detailed.
  - Details regarding when the previous procedure has occurred and relevant results will be important.

- Any other relevant issues noted during the procedure.
  - Information such as the presence of inflammatory conditions; dysplasia etc is of importance to the pathologist.
# Example Request Information Sheet

**Polypectomy and Local Resections of the Colorectum Histopathology Request Information**

<table>
<thead>
<tr>
<th>Family name</th>
<th>Sex</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>☐ Male</td>
</tr>
<tr>
<td></td>
<td>☐ Female</td>
</tr>
<tr>
<td></td>
<td>☐ Intersex/Indeterminate</td>
</tr>
<tr>
<td></td>
<td>☐ Unknown</td>
</tr>
<tr>
<td></td>
<td>☐ Aboriginal/Torres Strait Islander</td>
</tr>
<tr>
<td></td>
<td>☐ Other ethnicity:</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Given name(s)</th>
<th>Date of birth</th>
<th>Date of request</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>DD - MM - YYYY</td>
<td>DD - MM - YYYY</td>
</tr>
</tbody>
</table>

**Patient identifiers**
- e.g. MRN, INI or NHI (please indicate which): [ ]

**Requesting doctor - name and contact details:**

**Copy to doctor name and contact details:**

**Proceduralists name & contact details:**

**Multiple unexcised polyps**
- Absent [ ]
- Present [ ]

**Reason for procedure**
- [ ] Initial screening colonoscopy (baseline or index procedure)
- [ ] Surveillance – no previous history of adenoma or malignancy
- [ ] Surveillance – high risk eg FAP, other polyposis syndromes, Lynch syndrome
- [ ] Surveillance – previous adenoma/HGD/ malignant polyps

**Date and results of previous episode:**

**Number of specimens submitted:**

For each specimen submitted use the table overleaf to record details.

**Relevant patient or family history:**

**Previous colorectal surgery:**

**Issues noted during procedure:**

**Other relevant details:**

**Ver. 1.0 Request Information Polypectomy and Local Resections of the Colon & Rectum - Structured Reporting Protocol 1st Edition**
<table>
<thead>
<tr>
<th>Specimen Identifier/Tissue Fragment/polypl id.</th>
<th>Endoscopic tumour morphology</th>
<th>Specimen location (location from which taken)</th>
<th>Diameter of resected polypl(s)</th>
</tr>
</thead>
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<td><img src="table-url" alt="Table" /></td>
<td><img src="location-url" alt="Location" /></td>
<td><img src="diameter-url" alt="Diameter" /></td>
</tr>
</tbody>
</table>

The above Request Information Sheet is published to the RCPA website.
Appendix 2  Guidelines for formatting of a pathology report

Layout

Headings and spaces should be used to indicate subsections of the report, and heading hierarchies should be used where the LIS allows it. Heading hierarchies may be defined by a combination of case, font size, style and, if necessary, indentation.

Grouping like data elements under headings and using 'white space' assists in rapid transfer of information. Descriptive titles and headings should be consistent across the protocol, checklist and report.

When reporting on different tumour types, similar layout of headings and blocks of data should be used, and this layout should be maintained over time. Consistent positioning speeds data transfer and, over time, may reduce the need for field descriptions or headings, thus reducing unnecessary information or 'clutter'.

Within any given subsection, information density should be optimised to assist in data assimilation and recall. The following strategies should be used:

- Configure reports in such a way that data elements are 'chunked' into a single unit to help improve recall for the clinician.
- Reduce 'clutter' to a minimum. Thus, information that is not part of the protocol (eg billing information or SNOMED codes) should not appear on the reports or should be minimised.
- Reduce the use of formatting elements (eg bold, underlining or use of footnotes) because these increase clutter and may distract the reader from the key information.

Where a structured report checklist is used as a template for the actual report, any values provided in the checklist but not applying to the case in question must be deleted from the formatted report.

Reports should be formatted with an understanding of the potential for the information to 'mutate' or be degraded as the report is transferred from the LIS to other health information systems.

As a report is transferred between systems:

- text characteristics such as font type, size, bold, italics and colour are often lost
- tables are likely to be corrupted as vertical alignment of text is lost when fixed font widths of the LIS are rendered as proportional fonts on screen or in print
- spaces, tabs and blank lines may be stripped from the report, disrupting the formatting
- supplementary reports may merge into the initial report.
Appendix 3  Examples of a pathology report

Adenoma polyp – example report

POLYPECTOMY STRUCTURED REPORT

Diagnostic Summary

Ascending colon; 1 x sessile serrated adenoma (SSA); No evidence of dysplasia or malignancy.

Supporting Information

CLINICAL

Number of specimens submitted: 1
Endoscopic tumour morphology: Non-Polypoid, 0-Iib (flat).
Specimen location: Ascending colon. Close to the ileocaecal valve
Diameter of resected polyp(s): 1cm
Reason for procedure: Positive faecal occult blood test (FOBT)
Relevant patient or family history: Last colonoscopy 10 yrs ago clear.
Haemorrhoids present. No family hx.
Issues noted during procedure: None
Other relevant details: Scattered diverticula noted in sigmoid colon. Endoscopic report provided.

MACROSCOPIC

Number of specimens submitted: 1
Specimen location(s) and number of polyps: Specimen labelled ‘Ascending polyp’
Polyp conformation: 1 polyp from Ascending colon
Intact polyp diameter: Intact
Description of polyp: 10mm
Nature and site of all blocks:

MICROSCOPIC:

Polyp type and number: 1 x sessile serrated adenoma (SSA)
Dysplasia: Absent
Coexistent pathological abnormalities: None noted

ANCILLARY TESTS

Not performed

Reported by Dr Alex Sweeney  Authorised 4/4/2013
Diagnostic Summary

Sigmoid polyp

Adenocarcinoma; Low grade; Poor differentiation tumour - absent;
Depth of invasion: 4mm (4000µm); Vessel invasion: Not identified;
Involved deep and peripheral margins.

Comment: The adenocarcinoma arising in this polyp has multiple adverse histological features
(poor differentiation, size, vascular invasion and margin involvement) that place it
into a high risk group for residual disease (lymph node metastasis risk >20%).

Supporting Information

CLINICAL

Clinical information provided: Sigmoid polyp

MACROSCOPIC

Number of specimens submitted: 1 specimen labelled 'Sigmoid polyp'
1 x polyp from Sigmoid colon

Polyp conformation: Intact
22mm

Description of polyp: Sessile with surface ulceration

Nature and site of all blocks: Serially sectioned and blocked in toto (1A,8)

MICROSCOPIC:

Polyp type and number: 1 x carcinoma

Dysplasia: Present

Grade of dysplasia: High grade

Coexistent pathological abnormalities: Origin from adjacent tubular adenoma

Tumour type: Adenocarcinoma, NOS

Histological tumour grade: Low grade - moderately differentiated

Poor differentiation (undifferentiated) tumour: Absent

Tumour budding: Absent

Vessel invasion: Not identified. (Orcein stain performed)

Margin status: Involved

Involved margins: Deep margin

Peripheral margin, focal extension

Morphology: Sessile

Maximum depth of invasion: 4mm (4000µm)

Haggitt level: Level 4 (sessile configuration)

Width of invasive tumour: 6mm (6000µm)

ANCILLARY TESTS

Not performed

Reported by Dr Stewart Sweeney
Authorised 4/4/2013
Multiple polyp – example report

POLYPECTOMY STRUCTURED REPORT

Diagnostic Summary

Ascending colon: 1 x sessile serrated adenoma (SSA); No evidence of dysplasia or malignancy.
Hepatic flexure: sessile serrated adenoma (SSA) fragments and a tubular adenoma fragments with low grade dysplasia; No evidence of malignancy.
Descending colon: 1 x tubular adenoma; Low grade dysplasia; No evidence of malignancy
Rectum: 1 x Hyperplastic polyp; No evidence of dysplasia or malignancy.

Supporting Information

CLINICAL
Number of specimens submitted: 4
Reason for procedure: Positive faecal occult blood test (FOBT)

MACROSCOPIC

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<thead>
<tr>
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**ANCILLARY TESTS**

Not performed

*Reported by Dr Alex Sweeney  Authorised 4/4/2013*
Appendix 4  WHO Classification of tumours of the colon and rectum 4th edition.

**Epithelial tumors**

Premalignant lesions
- Adenoma, NOS 8140/0
- Tubular adenoma, NOS 8211/0
- Villous adenoma, NOS 8261/0
- Tubulovillous adenoma, NOS 8263/0
- Glandular intraepithelial neoplasia, low grade 8148/0
- Glandular intraepithelial neoplasia, high grade 8148/2

**Serrated lesions**
- Sessile serrated adenoma/polyp 8213/0
- Serrated polyposis 8213/0
- Traditional serrated adenoma 8213/0

**Carcinomas**
- Adenocarcinoma, NOS 8140/3
- Cribriform comedo-type adenocarcinoma 88201/3
- Medullary carcinoma, NOS 8510/3
- Micropapillary carcinoma 8265/3
- Colloid carcinoma 8480/3
- Serrated adenocarcinoma 8213/3
- Signet ring cell carcinoma 8490/3
- Adenosquamous carcinoma 8560/3
- Spindle cell carcinoma, NOS 8032/3
- Squamous cell carcinoma, NOS 8070/3
- Undifferentiated carcinoma 8020/3

**Neuroendocrine neoplasms**
- Neuroendocrine tumor G1 (NET G1) / Carcinoid 8240/3
- Neuroendocrine tumor G2 (NET G2) 8249/3
- Neuroendocrine carcinoma, NOS 8246/3
- Large cell neuroendocrine carcinoma 8013/3
- Small cell neuroendocrine carcinoma 8041/3
- Mixed adenoneuroendocrine carcinoma 8244/3
- Enterochromaffin cell (EC), serotonin-producing neuroendocrine tumour (NET) 8241/3
- L cell, Glucagon-like peptide-producing and PP/PYY-producing NETs 8152/1

**Mesenchymal tumors**
- Leiomyoma, NOS 8890/0
- Lipoma, NOS 8850/0
- Angiosarcoma 9120/3
- Gastrointestinal stromal tumor, malignant 8936/3
- Kaposi sarcoma 9140/3
- Leiomyosarcoma, NOS 8890/3
- Schwannoma, NOS 9560/0
- Perineurioma, NOS 9571/0
- Ganglioneuroma 9490/0
Granular cell tumor, NOS 9580/0

**Malignant lymphomas**
- Extranodal marginal zone lymphoma of mucosa-associated lymphoid tissue (MALT lymphoma) 9699/3
- Mantle cell lymphoma 9673/3
- Diffuse large B-cell lymphoma (DLBCL), NOS 9680/3
- Burkitt lymphoma, NOS 9687/3
- B-cell lymphoma, unclassifiable, with features intermediate between diffuse large B-cell lymphoma and Burkitt lymphoma 9680/3

Appendix 5  Polyp types

Polyps are classified as:

- Hyperplastic polyp
- Conventional adenoma
  - tubular
  - tubulovillous
  - villous
- Serrated adenoma
  - traditional serrated adenoma (TSA)
  - sessile serrated adenoma/polyp (SSA)
  - sessile serrated adenoma with dysplasia (SSAD)
- Mixed polyp (specify components)
- Carcinoma
- Neuroendocrine tumour
- Hamartoma
- Inflammatory polyp
- Juvenile type polyp
- Mesenchymal polyp – fibroblastic polyp (perineurioma), Schwann cell hamartoma, schwannoma, neurofibroma, ganglioneuroma, leiomyoma, lipoma, granular cell tumour, inflammatory fibroid polyp, gastrointestinal stromal tumour
- Mucosal prolapse syndrome
- Other (specify)

CONVENTIONAL ADENOMA

Conventional adenomas are neoplastic lesions characterised by the presence of dysplasia. Most are polypoid, but they may be flat or even depressed.

Dysplasia is evidenced by nuclear enlargement, hyperchromasia, stratification and loss of polarity. Increased mitotic activity and apoptosis are easily appreciated. All adenomas are regarded as having malignant potential. ‘Advanced adenoma’ is a term used for lesions at much higher risk for malignant progression. Advanced adenoma is characterised by one or more of the following: 1) size >10mm, 2) villous architecture and 3) high grade dysplasia. Increased number of adenomas is also associated with an increased risk for colorectal adenocarcinoma.

1) Number

The number of individual adenomas identified at the baseline colonoscopy correlates with an increased likelihood of finding an advanced adenoma at that time or in subsequent
colonoscopies. Analysis of pooled data from several prospective studies indicates that risk for metachronous advanced adenomas increased with the number of adenomas at baseline and was 8.6% (1 adenoma), 12.7% (2 adenomas), 15.2% (3 adenomas), 19.6% (4 adenomas) and 24.1% (5 adenomas). In another study the risk of developing colorectal cancer/advanced adenoma was double in patients with ≥3 adenomas (0.8-1.1%) than with ≤3 adenomas (0.5%) at baseline colonoscopy.

Current NHMRC guidelines (2011) recommend follow up colonoscopy 12 months after the identification of ≥5 adenomas and sooner in patients with ≥10 adenomas. If the number of polyps found at baseline colonoscopy is ≥10, then familial adenomatous polyposis (FAP) or MutYH associated polyposis may be the cause. Pathologists should highlight this in the report (See S3.03).

From the above it can be concluded that two objective criteria namely adenoma size and adenoma number, are strong predictive factors for a subsequent finding of advanced adenoma or colorectal carcinoma, and in multivariate analyses are typically more important than degree of villous architecture or dysplasia.

Adenoma size ≥20mm and/or ≥4 adenomas, identified at baseline colonoscopy, are associated with a 20% risk of finding either advanced adenoma or colorectal carcinoma on subsequent colonoscopy.

2) Villous architecture

While a strict universal definition of what defines a villous structure is lacking, most studies have identified villosity as a risk factor for metachronous advanced adenoma and colorectal carcinoma. Villous pattern has been defined as fronds covered by neoplastic cells. These may appear to be floating free on tangential section or to be connected to the main body of the polyp by a narrow stalk.

Some studies have identified villosity as an independent risk factor, while in other studies it correlates with adenoma size which is easier to measure, and less prone to inter-observer variation amongst pathologists.

Adenomas with a villous component have more malignant potential and are usually larger than the more common tubular adenomas. The 2010 World Health Organization (WHO) defines tubular adenomas as having <25% villous component, tubulovillous as 25-75% and villous as >75% villous component.

3) Degree of dysplasia

Dysplasia is an unequivocal neoplastic transformation in the epithelium. In conventional adenoma it is characterised by evidence of epithelial proliferation - multilayering, variable gland complexity and increased mitotic and apoptotic activity. Epithelial cells display nuclear hyperchromasia and nuclear enlargement.

Dysplasia is classified on the basis of its severity. A progression from low grade to high grade has been demonstrated in some (but not all cases) before malignancy develops.

At present, the degree of dysplasia is not reported for serrated pattern lesions as any degree of unequivocal cytological dysplasia is regarded as evidence of an advanced lesion.

Reparative changes in the superficial aspect of polyps due to trauma or erosion may mimic high grade dysplasia (HGD) and could be over interpreted as such. Pathologists should take this into account if there is evidence of erosion, torsion or other trauma in the adenoma.
Although not verified in all multivariate studies, HGD in adenomas at index colonoscopy increases the risk for advanced metachronous adenomas.\textsuperscript{17}

High grade dysplasia (HGD) is diagnosed when architectural and/or cytological abnormality is marked. Only one or two glands with HGD that are identifiable at low power examination are needed to classify an adenoma as high grade. Significant interobserver variability in the diagnosis of HGD has been reported.\textsuperscript{66} Gland architectural abnormality is more easily identified and has more importance to the diagnosis of HGD. The following are features diagnostic of HGD:

1. **Architecture**

Gland complexity typified by:

- Crowding and irregularity
- Prominent glandular budding
- Cribriform pattern with “back to back” glands
- Prominent intraluminal papillary tufting

2. **Cytology**

- Loss of cell polarity
- Nuclear stratification - at least 2–5 nuclear rows
- variable number of rows within individual glands
- The nuclei are haphazardly distributed within all three thirds of the height of the epithelium
- No maturation towards the luminal surface
- Abnormal goblet cell forms (retronuclear/dystrophic goblet cells)
- Nuclei - vesicular, enlarged, irregular thickened nuclear membranes, prominent nucleolus, loss of polarity, atypical mitotic figures
- Prominent apoptosis
- Focal cell debris and necrosis - ‘dirty necrosis pattern’

Usually more than one of the above features is present in an adenoma with HGD.

3. **Size**

The probability of developing future advanced adenomas or cancers increases with the size of adenoma found at index examination, and ranges, depending on the study, from 1.5-7.7\% for adenomas less than 5mm, 3-15.9\% for adenomas of 5-20mm and 7-19.3\% for adenomas >20mm.\textsuperscript{16-17,23-26,29} As an objective feature, size is a more robust marker of risk than histological characteristics (ie higher grades of villosity and dysplasia) which are subjective.\textsuperscript{17,23,29}

Neoplastic invasion into the submucosa through the muscularis mucosae into submucosa is diagnostic of invasive adenocarcinoma (pT1).\textsuperscript{3}

Rarely polyps are encountered that are completely excised and contain invasive adenocarcinoma in the lamina propria with or without extension into but not completely through the muscularis mucosae. Some pathologists may prefer the technically correct term ‘intramucosal carcinoma’ for this abnormality. This abnormality may be associated with submucosal invasion in deeper levels. If submucosal invasion is not identified then this lesion has negligible risk for metastatic spread (presumably, because of the absence of
communicating lymphatics in the colorectal lamina propria). The term ‘high grade dysplasia’ is therefore adequate and recommended. Caution may be warranted in the setting of intramucosal carcinoma with poor differentiation since metastatic spread has been reported. 

**HYPERPLASTIC POLYP**

Hyperplastic polyps (HP) account for 25-30% of resected polyps in most series and have an estimated prevalence of 10-20% in Western populations. These lesions frequently harbour BRAF or KRAS mutations, supporting a neoplastic nature.

Three HP subtypes are recognised 1) microvesicular hyperplastic polyp (MVHP); 2) goblet cell hyperplastic polyp (GCHP) and 3) mucin-poor hyperplastic polyp (MPHP). MVHPs and GCHPs are the most common. This subdivision remains only of theoretical interest at this time and its use in routine reporting is not required.

**Microvesicular hyperplastic polyps** are characterised by a serrated gland profile and an ordered ‘test-tube’ arrangement of the crypts which taper toward the muscularis mucosae. Microvesicular mucin droplets impart a faint basophilic quality to the cytoplasm. Superficial goblet cells are usually found. The subepithelial basement membrane and muscularis mucosae are thicker than in the adjacent normal mucosa.

**Goblet cell hyperplastic polyps** display crowded crypts containing an increased number of mature goblet cells. Serration is often minimal or limited to the upper third of the crypt, but tufting of the epithelial surface is frequent. Thickening of the basement membrane and muscularis mucosae is minimal.

**Mucin poor hyperplastic polyp** is poorly categorised potential sub-group.
Hyperplastic polyps of all types are currently regarded as innocuous lesions with no significant malignant potential and therefore no requirement for follow up.

**SERRATED ADENOMA/POLYP**

Classification schema for these polyps are still evolving and histological interpretation of these serrated polyp types differs between pathologists.\(^{28,87-88}\)

The 2010 WHO classification scheme divides this group into sessile serrated adenoma/polyp (SSA/P) and traditional serrated adenoma (TSA). SSA/P may harbour dysplasia and the term sessile serrated adenoma with dysplasia (SSAD) is preferred for this subgroup.

The majority of studies suggest that both TSA and SSA/P have significant malignant potential and are associated with subsequent development of metachronous neoplasia.\(^{73-76,87,89}\) There is variability and uncertainty as to the extent of the risk.\(^{90-93}\) It has been estimated that 1 in 25 SSA/P’s progress to malignancy,\(^{21}\) a rate approximately equivalent to that of a conventional adenoma.

A retrospective follow-up study of patients with SSAs found all but one patient had further polyps/tumours (including one CRC). This supports surveillance colonoscopies in patients with SSA/P.\(^{94}\)

**1) SSA/P**

The emergence of SSA/P as an entity distinct from HP is based on 1) epidemiologic evidence of CRC risk and 2) morphologic and 3) biological differences.\(^{95-96}\) When examined carefully, SSA/P has a prevalence of 9% of resected polyps. 75% occur on the right colon and polyp size is variable - 36% ≤5mm, 47% 6-10mm and 17% ≥11mm.

The lesions are sessile and often coated by thick mucus making them difficult to appreciate at colonoscopy.

At low power the typical features of SSA/P reflect asymmetric proliferation. Most characteristic are the dilated crypts as well as crypts with basal horizontal growth of crypts in L or inverted T shapes along the muscularis mucosae.\(^{86,97}\) The 2010 WHO recommends finding at least 3 such crypts before designation of a lesion as SSA/P, although recent consensus suggests as little as one such crypt may be adequate.\(^{98}\) Crypts are irregularly spaced and may display branching.\(^{84,86,99}\) Crypt serration extends into the crypt base. Increased intraluminal mucin is common and displaced crypts can be seen herniating into the submucosa.\(^{100}\) At higher power, disturbance to proliferation and maturation is evident,\(^{84,86}\) with asymmetric proliferative zones\(^{99}\) and maturation towards both the luminal and basal aspects of the crypts. This means that mature goblet cells extend toward both the luminal and basal aspects of the crypt.\(^{100}\) Dystrophic goblet cells may be prominent. A minor degree of nuclear atypia characterised by nuclear enlargement (with small nucleoli) is allowable, particularly in the crypt bases.\(^{84}\)
The natural history of SSAs without dysplasia is not well defined.\textsuperscript{101}

**Borderline lesions** - a subset with minimal changes occurs and the borderline between SSA and MVHP becomes blurred. At present there is no uniform approach to dealing with this issue.

SSA/P should be followed up as an advanced adenoma.

2) **Traditional serrated adenoma**

Named by Torlakovic et al in 2003\textsuperscript{84}, TSAs are the least frequent serrated polyp accounting for around 1\% of colorectal polyps (range 0.6-1.9\%).\textsuperscript{81,83,102} They can occur throughout the large bowel but have a predilection for the distal colon and rectum.

The histopathological features of TSAs are quite characteristic resulting in high diagnostic reproducibility.\textsuperscript{99} They typically display tubulovillous architecture, eosinophilic tall columnar epithelium with prominent serration and ectopic crypt foci (ECF). The epithelial cells are most characteristic with abundant pink cytoplasm and centrally located palisaded, pencillate nuclei with dispersed chromatin.\textsuperscript{99,102} This pattern is presumed to represent dysplasia but could be a senescent feature.
Filiform serrated adenoma\textsuperscript{103-104} reportedly accounts for 4\% of TSAs, occurs distally and is characterised by very long (filiform) villi and marked lamina propria oedema.

3) **Sessile serrated adenoma with dysplasia**

Dysplastic sessile serrated adenoma represents most of what in past was termed “mixed hyperplastic polyp/adenomatous polyps”. The development of dysplasia in SSA/P is believed to herald a more aggressive lesion with possible risk of rapid progression to CRC.

In a large population based study, 13.2\% of SSAs showed dysplasia, accounting for 0.17\% of all colorectal polyps.\textsuperscript{105}

Two types of dysplasia are described: \textsuperscript{106-107}

1) ‘conventional adenomatous dysplasia’ - similar to that of conventional adenomatous polyps with increased nuclear hyperchromasia, stratification and variable loss of polarity, increased mitoses and basophilic cytoplasm. The changes extend to the polyp surface; Caution is warranted in poorly oriented sections where there is risk of over-interpretation of the proliferative zone as dysplastic.

2) ‘serrated dysplasia’ in which the glands frequently retain serration, the cells have ample eosinophilic cytoplasm and the nuclei are vesicular and basally located.

![Figure A5-4 Sessile serrated adenoma with development of serrated pattern dysplasia.](image)

Grading the degree of dysplasia, either conventional or serrated type, is not currently recommended or appropriate.

**MALIGNANT POLYP (see appendix 8)**
EPITHELIAL MISPLACEMENT (PSEUDOINVASION)

Epithelial misplacement is seen in 2-10% of pedunculated polyps. There is predilection for the left colon (sigmoid), presumably due to increased intraluminal forces leading to polyp torsion. As dysplastic epithelium is displaced into the submucosa, the pattern may be misinterpreted as invasive carcinoma. It is important to be aware that invasive carcinoma may coexist with pseudoinvasion.

Distinction from invasive carcinoma relies on assessment of:

1. **Architecture**
   - Narrow gap in muscularis mucosae
   - Rounded appearance to focus
   - Rounded appearance of glands within focus

2. **Stromal change**
   - Lamina propria surrounds glands
   - Dense fibrosis (not desmoplasia)
   - Smooth muscle hypertrophy (and 'fibromuscular')
   - Haemosiderin
   - Chronic inflammation
   - Extravasated mucin
   - Either no epithelium or epithelium at periphery of the mucin. Epithelium floating within mucin pools is indicative of adenocarcinoma.

3. **Cytology**

This is the same as the overlying epithelium and may incorporate some non dysplastic epithelium. High grade nuclear abnormality should raise concern that the abnormality may represent invasive adenocarcinoma.
NEUROENDOCRINE TUMOURS

Neuroendocrine tumours are occasionally removed as polypoid lesions. Most are low grade lesions (previously referred to as carcinoid tumour). There is an increasing recognition of tumours with mixed adenoma/neuroendocrine features.

WHO Classification:

- **Neuroendocrine tumours** (‘carcinoid tumours’)
  - EC cell ‘carcinoid’ tumours – right colon; like ileal tumours
  - L cell ‘carcinoid’ tumour – rectum
  - (Microcarcinoid in colorectal adenoma)

- **Mixed adenoneuroendocrine carcinoma (MANEC)**
  - Need 2 distinct recognisable malignant components (>30% glandular)\(^{112}\)
  - Seldom presents as a polyp amenable to local resection.

- **Neuroendocrine carcinoma (poorly differentiated)**
  - Seldom presents as a polyp amenable to local resection. May be small cell or large cell type.

*Note: These types of tumours are not covered by this protocol.*
Polyps arising in the setting of IBD may be inflammatory (‘inflammatory pseudopolyp’) or neoplastic in nature. The neoplastic lesions may be any from the list provided above.

There is a predilection for hyperplastic polyp like lesions to develop in the setting of longstanding IBD. The significance of this is unknown but is likely to be limited. Broad serrated lesions (with or without dysplasia) may also occur and have not been specifically studied but possibly portend a significant risk for CRC.

Sporadic adenomas may arise in patients with IBD either in areas never involved by disease or in the setting of active or quiescent disease.

Most attention has focused on polypoid dysplastic lesions in areas involved by colitis. For polyps harbouring dysplasia, knowledge of the endoscopic polyp appearance and most importantly, the adequacy of endoscopic resection is required. Biopsies from the mucosa surrounding the polyp and/or the polyp stalk must also be examined. These features are required to determine appropriate follow up as discussed below.

Polypoid lesions are of 2 types are endoscopically resectable (adenoma like lesion) and non-endoscopically resectable (non adenoma like lesion). The latter are usually non resectable because of a variable combination of large size, margin irregularity, sessile areas and ulceration. Endoscopically resectable polyps can be followed up as per sporadic adenoma (which most in fact are) as long as no dysplasia is found in the surrounding mucosa, elsewhere in the colon or in the polyp stalk (in the case of a pedunculated lesion).

Nonresectable polypoid dysplastic lesions are associated with high risk (>40%) of identifying invasive adenocarcinoma in a subsequent resection specimen and hence a colectomy is typically performed.

Because the reporting pathologist may not be made aware of the appearance and resection status of a dysplastic lesion in a setting of inflammatory bowel disease, the following comment should be applied to such lesions:

‘Dysplastic lesions arising in an area affected by inflammatory bowel disease are a heterogeneous group. Many are adenoma – like, and are not progressive. Conservative management may be warranted if the following conditions are met: Macroscopically adenoma – like in appearance; excised with clear margins; no flat dysplasia of surrounding mucosa and/or polyp stalk. If these criteria are not met, the lesion should be regarded as having a significant risk for associated or subsequent colorectal carcinoma.’
Appendix 6  Polyposis syndromes

A number of inherited genetic defects can give rise to syndromes characterised, *inter alia*, by the formation of multiple polyps within the large bowel. Increasingly, these syndromes are becoming defined by the inherited genetic defect, and there is often considerable overlap in phenotypic expression between syndromes, making morphological distinctions challenging. The notes below provide accepted phenotypic definitions, though these may change as the underlying genetics becomes better understood.

**In all polyposis syndromes, the polyp count is cumulative over time and the pathologist should also refer to previous patient specimens reported in their laboratory.**

**Hyperplastic (serrated) polyposis syndrome**

While it remains a poorly understood syndrome with no known biological basis, the WHO provided criteria for hyperplastic (serrated) polyposis syndrome in 2010 as follows:

1) At least five histologically confirmed hyperplastic (serrated) polyps proximal to the sigmoid colon, of which two are greater than 1 cm in diameter.
2) Any number of hyperplastic (serrated) polyps proximal to the sigmoid colon in a subject with a first-degree relative with hyperplastic polyposis.
3) More than 20 hyperplastic (serrated) polyps of any size distributed evenly throughout the colon.

**Familial adenomatous polyposis (FAP)**

Affected individuals usually develop hundreds to thousands of adenomatous polyps of the colon and rectum, a small proportion of which will progress to colorectal carcinoma if not surgically treated. Gardner syndrome is a variant of FAP in which desmoid tumors, osteomas, and other neoplasms occur together with multiple adenomas of the colon and rectum. See [http://omim.org/entry/175100](http://omim.org/entry/175100).

**Peutz Jegher syndrome (PJS)**

One of the following:

- Two or more PJS polyps of the small intestine.
- One hamartomatous polyp in a patient who has a Characteristic pigmentation of the mouth, lips, nose, eyes, genitalia, or fingers.
- One hamartomatous polyp in a patient who has a Family history of PJS

See [http://omim.org/entry/175200](http://omim.org/entry/175200)
**Juvenile polyposis syndrome**\(^\text{119}\)

One of the following:

- At least three–five juvenile polyps of the colon.
- Multiple juvenile polyps found throughout the GI tract.
- Any number of juvenile polyps in an individual with a family history of JPS.

See [http://omim.org/entry/174900](http://omim.org/entry/174900)

**Cowden syndrome (PTEN hamartoma tumour syndrome)**\(^\text{119}\) International consortium criteria have been established and a weighted heavily to the presence of the characteristic mucocutaneous lesions.

GIT manifestations occur in 60% of Cowden Syndrome patients and comprise the following lesions:

i. Hamartomatous polyps
   - <10-20mm
   - lamina propria fibrosis
   - gland/crypt elongation and dilatation
   - found throughout GIT
ii. Nodular lymphoid hyperplasia
iii. Adipose tissue in the lamina propria/true lipomas
iv. Ganglioneuromas (ganglioneuromatous hamartoma)
v. Glycogenic acanthosis in the oesophagus
vi. Probably colorectal carcinoma (not universally accepted)

See [http://omim.org/entry/601728](http://omim.org/entry/601728)

**MutYH -associated polyposis (MAP)**

A cumulative lifetime count of >15 adenomatous polyps (or 10 adenomatous polyps before age 50 years) has been suggested a threshold for genetic testing\(^\text{120}\). Serrated polyps may co-exist with adenomatous polyps in mutYH polyposis. Extra intestinal manifestations identical to those of familial adenomatous polyposis can occur.

See [http://omim.org/entry/608456](http://omim.org/entry/608456)

**Hereditary Mixed Polyposis syndrome (HMPS)**\(^\text{121-122}\)
An autosomal dominant condition characterised by presence of mixed hyperplastic-adenomatous polyps as well as conventional adenomatous polyps (up to 100) throughout the colon and rectum.

See http://omim.org/entry/601228
## Appendix 7 Colonoscopy surveillance guidelines

### Summary of NHMRC surveillance colonoscopy guidelines

<table>
<thead>
<tr>
<th>Finding</th>
<th>Follow up</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Low risk adenoma</strong></td>
<td>5 yearly</td>
</tr>
<tr>
<td>- &lt;3 adenomas</td>
<td></td>
</tr>
<tr>
<td>- &lt;10mm diameter</td>
<td></td>
</tr>
<tr>
<td>- Tubular adenoma</td>
<td></td>
</tr>
<tr>
<td>- Low grade dysplasia</td>
<td></td>
</tr>
<tr>
<td><strong>High risk 'advanced adenoma'</strong></td>
<td>3 yearly</td>
</tr>
<tr>
<td>- ≥3 adenomas</td>
<td></td>
</tr>
<tr>
<td>- ≥10mm</td>
<td></td>
</tr>
<tr>
<td>- Tubulovillous or villous</td>
<td></td>
</tr>
<tr>
<td>- High grade dysplasia</td>
<td></td>
</tr>
<tr>
<td><strong>Sessile serrated adenoma/polyp; traditional serrated adenoma</strong></td>
<td>As for adenomatous polyp – based on number, size and presence of dysplasia</td>
</tr>
</tbody>
</table>

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**Cancer Council Australia - Clinical Practice Guidelines for Surveillance Colonoscopy**

Appendix 8  Risk of residual disease following malignancy

Endoscopically removed malignant polyps may be of two types:

1) Invasive carcinoma arising from a pre-existing adenoma or
2) Polypoid carcinoma without a pre-existing adenoma evident.

Features determining risk for locally recurrent or metastatic disease are the same in both situations. These factors can be considered as either qualitative (poor differentiation, vascular invasion, tumour budding) or quantitative (Haggitt level, depth of invasion, width of invasive tumour). The number of qualitative prognostic factors present in a malignant polyp appears to be synergistic for the risk of adverse outcome. In the Ueno paper (ref 33) the risk for lymph node metastases was 0.7% if none were present, 20.7% if one adverse factor was present and 36.4% if ≥ 2 factors were present.

Several studies have identified the rectum (particularly the distal one third) as a site of increased adverse behaviour with increased lymph node metastatic rate (one third) and increased risk of recurrent or residual disease (5-28%). The reason for this increased adverse behaviour is unclear.

A more aggressive treatment approach has been advocated for a distal rectal site.

The following 2 tables have been developed as a result of meta-analysis of the published data and provide a useful clinical guidance that can be added as a comment to the histopathological report. The ultimate decision for further surgery is based on a weighted assessment of clinical and pathological aspects of the individual case.

Table 1: Scoring the risk of residual disease following resection of a malignant polyp.

<table>
<thead>
<tr>
<th>Criteria</th>
<th>Degree of Risk</th>
</tr>
</thead>
<tbody>
<tr>
<td>Resection margin &lt; 1mm</td>
<td>++++</td>
</tr>
<tr>
<td>Resection margin 1-2mm</td>
<td>+</td>
</tr>
<tr>
<td>Pedunculated Haggitt level 4</td>
<td>++++</td>
</tr>
<tr>
<td>Sessile: Kikuchi 2</td>
<td>++</td>
</tr>
<tr>
<td>Sessile: Kikuchi 3</td>
<td>++++</td>
</tr>
<tr>
<td>Poor differentiation</td>
<td>+++</td>
</tr>
<tr>
<td>Mucinous tumour</td>
<td>+</td>
</tr>
<tr>
<td>Tumour budding</td>
<td>+</td>
</tr>
<tr>
<td>Lymphovascular invasion</td>
<td>++</td>
</tr>
</tbody>
</table>
Table 2: Risk stratification based on sum of risk factors

<table>
<thead>
<tr>
<th>Total score</th>
<th>Grade of Risk</th>
<th>Current estimate of potential % risk of residual cancer</th>
<th>Recommended course of action to be discussed with patient</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Very low</td>
<td>&lt;3%</td>
<td>Routine follow up</td>
</tr>
<tr>
<td>+</td>
<td>Low</td>
<td>&lt;5%</td>
<td>Access other factors Careful follow up</td>
</tr>
<tr>
<td>++</td>
<td>Medium</td>
<td>5-10%</td>
<td>Discussion of risks/benefit of surgery or follow up with patient</td>
</tr>
<tr>
<td>+++</td>
<td>High</td>
<td>8-15%</td>
<td>Discuss risks with patient – err towards surgery</td>
</tr>
<tr>
<td>++++ (or more)</td>
<td>Very high</td>
<td>&gt;20%</td>
<td>Recommend surgery unless patient unfit</td>
</tr>
</tbody>
</table>

Criteria are based on histological description of endoscopically resected malignant polyp weighted for prognostic significance of each risk factor. Where more than one risk factor is present, the degree of risk is added together to give a total risk score.123
References


13 RCPA (Royal College of Pathologists of Australasia) (2009 ). *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols*. RCPA, Surry Hills NSW.


