

**PROSTATE CANCER
(TRANSURETHRAL RESECTION
AND ENUCLEATION)
STRUCTURED REPORTING
PROTOCOL
(1st Edition 2018)**

Incorporating the:

International Collaboration on Cancer Reporting (ICCR)

Prostate Cancer - Transurethral Resection and Enucleation
Specimen Dataset

www.ICCR-Cancer.org

Core Document versions:

- ICCR dataset: Prostate Cancer - Transurethral Resection and Enucleation Specimen Dataset 1st edition
- AJCC Cancer Staging Manual 8th edition
- World Health Organization (WHO). Classification of tumours. Pathology and genetics of the urinary system and male genital organs. 4th edition.

ISBN: 978-1-76000-918-2
Publications number (SHPN): (CI) 180555

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First published: July 2018 1st Edition (Version 1.0)

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Scope

This protocol contains standards and guidelines for the structured reporting of transurethral resection and enucleation (suprapubic/simple/open prostatectomy) specimens of the prostate. The protocol applies to invasive carcinomas of the prostate gland. Rare urothelial carcinomas arising within the prostate are also included. There are separate protocols for core (needle) biopsies and radical prostatectomy specimens.

Structured reporting aims to improve the completeness and usability of pathology reports for clinicians, and improve decision support for cancer treatment. This protocol can be used to define and report the minimum data set but the structure is scalable and can equally accommodate a maximum data set or fully comprehensive report.

Abbreviations

AJCC	American Joint Committee on Cancer
CI	capsular incision
CG	Commentary for a guideline
CS	Commentary for a standard
FISH	Fluorescent in-situ hybridization
EPE	extraprostatic extension
ICCR	International Collaboration on Cancer Reporting
ISUP	International Society of Urological Pathology
LIS	laboratory information system
LVI	lymphovascular invasion
PBS	Pharmaceutical Benefits Scheme
PIN	prostatic intraepithelial neoplasia
PSA	prostate specific antigen
PSM	positive surgical margin
RCPA	Royal College of Pathologists of Australasia
SVI	seminal vesicle involvement
TNM	tumour-node-metastasis
TUR	transurethral resection
TURP	transurethral resection of prostate
UICC	International Union Against Cancer
WHO	World Health Organization

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.

Ancillary study	An ancillary study is any pathology investigation that may form part of a cancer pathology report but is not part of routine histological assessment.
Clinical information	Patient information required to inform pathological assessment, usually provided with the specimen request form, also referred to as "pre-test information".
Commentary	<p>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).</p> <p>Commentary is used to:</p> <ul style="list-style-type: none">• define the way an item should be reported, to foster reproducibility• explain why an item is included (e.g. how does the item assist with clinical management or prognosis of the specific cancer).• cite published evidence in support of the standard or guideline• state any exceptions to a standard or guideline. <p>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).</p>
General commentary	<p>General commentary is text that is not associated with a specific standard or guideline. It is used:</p> <ul style="list-style-type: none">• to provide a brief introduction to a chapter, if necessary• 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).

Guideline	<p>Guidelines are recommendations; they are not mandatory, as indicated by the use of the word 'should'. Guidelines cover items that are unanimously agreed should be included in the dataset but are not supported by NHMRC level III-2 evidence.¹ These elements may be clinically important and recommended as good practice but are not yet validated or regularly used in patient management.</p> <p>Guidelines include key information other than that which is essential for clinical management, staging or prognosis of the cancer such as macroscopic observations and interpretation, which are fundamental to the histological diagnosis and conclusion eg macroscopic tumour details, block identification key, may be included as either required or recommended elements by consensus of the expert committee. Such findings are essential from a clinical governance perspective, because they provide a clear, evidentiary decision-making trail.</p> <p>Guidelines are not used for research items.</p> <p>In this document, guidelines are prefixed with 'G' and numbered consecutively within each chapter (eg G1.10).</p>
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.
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.
Standard	<p>Standards are mandatory, as indicated by the use of the term 'must'. Standards are essential for the clinical management, staging or prognosis of the cancer. These elements will either have evidentiary support at Level III-2 or above (based on prognostic factors in the NHMRC levels of evidence¹ document). In rare circumstances, where level III-2 evidence is not available an element may be made a Standard where there is unanimous agreement in the expert committee. An appropriate staging system eg Pathological TNM staging would normally be included as a required element. 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.</p> <p>The summation of all standards represents the minimum dataset for the cancer.</p> <p>In this document, standards are prefixed with 'S' and numbered consecutively within each chapter (eg S1.02).</p>

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	<p>Synthesis is the process in which two or more pre-existing elements are combined, resulting in the formation of something new.</p> <p>The Oxford dictionary defines synthesis as “the combination of components or elements to form a connected whole”.</p> <p>In the context of structured pathology reporting, synthesis represents the integration and interpretation of information from two or more modalities to derive new information.</p>

Introduction

Prostate cancer

Prostate cancer is the most common non-cutaneous related cancer with 19,233 new cases reported in Australia and 3129 in New Zealand in 2013. It is also the third most common cause of cancer death, in both Australia and New Zealand in 2014.^{2,3} Both the number of new cases and the number of deaths from prostate cancer are increasing, partly driven by the ageing of the population.⁴ There is a wide variation in the biological behaviour of prostate cancer. Most tumours are relatively slow-growing; however, a significant minority have the propensity for aggressive behaviour, including metastasis, and such tumours can be fatal.⁵

Benefits of structured reporting

The pathology report lays the foundation for a patient's cancer journey and conveys information which:

- Provides the definitive diagnosis
- Includes critical information for Tumour-Node-Metastasis (TNM) staging
- Evaluates the adequacy of the surgical excision
- Provides morphological and biological prognostic markers which determine personalised cancer therapy

However, the rapid growth in ancillary testing such as immunohistochemistry, flow cytometry, cytogenetics, and molecular studies, have made the task of keeping abreast of advances on specific cancer investigations extremely difficult for pathologists. The use of structured reporting checklists by pathologists ensures that all key elements are included in the report specifically those which have clinical management, staging or prognostic implications. Consequently minimum or comprehensive datasets for the reporting of cancer have been developed^{6,7} around the world. Both the United Kingdom,⁸ and United States⁹ have produced standardised cancer reporting protocols or "datasets" for national use for many years.

The use of cancer reporting checklists improves completeness and quality of cancer reporting and thereby ensures an improved outcome for cancer patients. This has long term cost implications for public health by ensuring the most effective and timely treatment based on accurate and complete information.

The use of a structured reporting format also facilitates easy extraction of the necessary information by secondary users of the information ie cancer registries.

Importance of histopathological reporting

Information from pathology reports on core biopsy and transurethral resection (TUR) specimens, particularly Gleason grade and pathological stage, has a key role in the rational planning of patient management and is a major component of the most common nomograms used to guide clinical decision making.¹⁰ Likewise, accurate data from the pathological examination of transurethral resection and enucleation specimens is essential in predicting the risk of cancer recurrence after prostatectomy and aids clinical decisions on surveillance, adjuvant therapy etc.^{11,12}

International Collaboration on Cancer Reporting

The International Collaboration on Cancer Reporting (ICCR), founded in 2011 by the Australasian (RCPA), US (CAP) and UK (RCPath) Colleges of Pathology and the Canadian Association of Pathology (CAP-ACP) in association with the Canadian Partnership Against Cancer (CPAC), was established to explore the possibilities of a collaborative approach to the development of common, internationally standardised and evidence-based cancer reporting protocols for surgical pathology specimens.

The ICCR, recognising that standardised cancer datasets have been shown to provide significant benefits for patients and efficiencies for organisations through the ease and completeness of data capture¹³⁻¹⁶ undertook to use the best international approaches and the knowledge and experience of expert pathologists, and produce cancer datasets which would ensure that cancer reports across the world will be of the same high quality – ensuring completeness, consistency, clarity, conciseness and above all, clinical utility.

Representatives from the four countries participating in the initial collaboration undertook a pilot project in 2011 to develop four cancer datasets - Lung, Melanoma, Prostate (Radical Prostatectomy), and Endometrium. Following on from the success of this pilot project, the ICCR was joined by the European Society of Pathology (ESP) in 2013 and in 2014 incorporated a not-for-profit organisation focussed on the development of internationally agreed evidence-based datasets developed by world leading experts. The ICCR Datasets are made freely available from its website www.ICCR-Cancer.org

Design of this protocol

This structured reporting protocol has been developed using the ICCR dataset on prostate cancer (transurethral resection and enucleation specimens) as the foundation.

This protocol includes all of the ICCR cancer dataset elements as well as additional information, elements and commentary as agreed by the RCPA expert committee. It provides a comprehensive framework for the assessment and documentation of pathological features of prostate cancer in transurethral resection and enucleation specimens.

ICCR dataset elements for prostate cancer in transurethral resection and enucleation specimens are included verbatim. ICCR Required elements are mandatory and therefore represented as standards in this document. ICCR Recommended elements, that is, those which are not mandatory but are recommended, may be included as guidelines or upgraded to a standard based on the consensus opinion of the local expert committee.

The ICCR elements are identified in each chapter with the ICCR logo placed before the Standard or Guideline number or bullet and the ICCR element description and commentary is boarded by a grey box as shown below:

 S3.01	The histological tumour type must be recorded.
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Additional commentary by the RCPA expert committee may be added to an ICCR element but is not included in the grey bordered area nor indicated with an ICCR logo eg

 G2.03	If present, the laterality of the lymph nodes submitted may be recorded as left, right or bilateral.
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CS2.03a If present, record site and number. All lymph node tissue should be submitted for histological examination.

Further information on the ICCR is available at www.iccr-cancer.org

Checklist

Consistency and speed of reporting is improved by the use of discrete data elements recorded from the checklist. Items suited to tick boxes are distinguished from more complex elements requiring free text or narrative. A structured or discrete approach to responses is favoured, however the pathologist is encouraged to include free text or narrative where necessary to document any other relevant issues, to give reasons for coming to a particular opinion and to explain any points of uncertainty.

Report format

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 that represent information from this protocol, organised and formatted differently to suit different purposes.

Key documentation

- *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols, Royal College of Pathologists of Australasia, 2009*¹⁷
- *World Health Organization (WHO). Classification of tumours. Pathology and genetics of the urinary system and male genital organs. Humphrey PA, Moch H, Reuter VE, Ulbright TM editors. 4th edition. Lyon, France: IARC Press;2016.*¹⁸
- *AJCC Cancer Staging Manual, 8th edition, American Joint Committee on Cancer, 2016*¹⁹

Changes since last edition

Not applicable.

Authority and development

This section provides information about the process undertaken to develop this protocol.

This 1st edition of the protocol is an amalgam of two separate processes:

1. This protocol is based on the ICCR dataset – prostate cancer transurethral resection and enucleation specimens 1st edition. All ICCR elements from this dataset, both required (mandatory) and recommended (optional), are included in this protocol, verbatim. (It should be noted that RCPA feedback from all Anatomical Pathology fellows and specifically the local expert committee was sought during the development process of the ICCR dataset.) Details of the ICCR development process and the international expert authoring committee responsible for the ICCR dataset are available on the ICCR website: iccr-cancer.org.
2. Additional elements, values and commentary have been included as deemed necessary by the local expert committee. In addition, the standard inclusions of RCPA protocols eg example reports, request information etc, have also been added.

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Acknowledgements

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

Stakeholders

ACT Health

ACT Cancer Registry

Australian Cancer Network

Australian Commission on Safety and Quality in Health Care

Australian Digital Health Agency

Australian Institute of Health and Welfare

Cancer Australia

Cancer Council ACT

Cancer Council Queensland

Cancer Council Victoria

Cancer Council Western Australia

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Health Informatics Society of Australia (HISA)

Independent Review Group of Pathologists

Medical Software Industry Association (MSIA)

National Pathology Accreditation Advisory Council (NPAAC)

New Zealand Cancer Registry

Northern Territory Cancer Registry

Pathology Australia

Public Pathology Australia

Queensland Cooperative Oncology Group (QCOG)

RCPA Anatomical Pathology Advisory Committee (APAC)

Representatives from laboratories specialising in anatomical pathology across Australia

Royal Australasian College of Physicians (RACP)

South Australia Cancer Registry

Standards Australia

Tasmanian Cancer Registry

The Australian and New Zealand Urogenital and Prostate Cancer Trials Group (ANZUP)

The Medical Oncology Group of Australia

The Prostate Cancer Foundation of Australia (PCFA)

The Prostate Cancer Foundation of New Zealand (PCFNZ)
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)
The Urological Society Of Australia And New Zealand (USANZ)
Western Australia Clinical Oncology Group (WACOG)

Development process

This protocol has been developed following the ten-step process set out in *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols*.¹⁷

Where no reference is provided, the authority is the consensus of the local expert group for local inclusions and the ICCR Dataset Authoring Committee for ICCR components denoted with the ICCR logo.

1 Pre-analytical

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 prostate cancer, transurethral resection and enucleation specimens, 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.²⁰ This document specifies the minimum information to be provided by the requesting clinician for any pathology test.

CS1.01b Whether or not the patient identifies as Aboriginal and/ or Torres Strait Islander. 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 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 in a structured format.

CS1.02b The copy doctors requested on the request form must be recorded.

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

S1.04 The principal clinician involved in the patient's care and responsible for investigating the patient must be recorded.

CS1.04a The principal clinician should provide key information regarding the clinical presentation of the patient. Follow up may be required with the principle clinician for a number of reasons:

- The clinical assessment and staging may be incomplete at the time of biopsy.
- The pathology request is often authored by the clinician performing the surgical excision/biopsy rather than the clinician who is investigating and managing the patient.
- The identity of this clinician is often not indicated on the pathology request form

In practice therefore, it is important in such cases that the reporting pathologist should be able to communicate with the managing clinician for clarification.

CS1.04b The Australian Healthcare identifiers i.e. Healthcare Provider Identifier - Individual (HPI-I) and Healthcare Provider Identifier - Organisation (HPI-O) should be included, where possible, to identify the principal clinician involved in the patient's care.

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.

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

- Detailed fixation and specimen handling instructions are available from the RCPA online Cut-up Manual:
www.rcpa.edu.au/Library/Practising-Pathology/Macroscopic-Cut-Up
- **The specimen must be handled in a systematic and thorough fashion to ensure completeness and accuracy of pathological data.**

Macroscopic findings

S2.01 The labelling of the specimen(s) must be clearly recorded.

 S2.02	The weight of the specimen must be recorded.	
	CS2.02a	The specimen weight is the best estimate of the amount of tissue resected and received by the pathology laboratory for examination and current histological sampling guidelines are based on this parameter. ²¹ The specimen may be weighed in either the operating theatre or in the pathology laboratory.
 G2.01	Specimen dimensions of enucleation/suprapubic/open prostatectomy specimens should be recorded in three dimensions (in millimetres).	
	CG2.01a	Information regarding the size of the specimen received is generally regarded as either a recommended or required item in ICCR datasets, since it documents the tissue actually received by the pathology laboratory and upon which the diagnostic and prognostic information is based. Enucleation (suprapubic/simple/open prostatectomy

		specimens) are often received in pieces and only the largest piece or pieces need to be measured.
 S2.03	A block identification key listing the nature and origin of all tissue blocks must be recorded.	
	CS2.03a	Information regarding the nature of the surgical procedure undertaken is generally regarded as a recommended item in ICCR datasets since it facilitates internal and external case review. Recording the origin/designation of tissue blocks facilitates retrieval of blocks, for example for further immunohistochemical or molecular analysis, research studies or clinical trials.

G2.02 A descriptive or narrative field should be provided to record any macroscopic information that is not recorded in the above standards and guidelines, and that would normally form part of the macroscopic description.

CG2.02a The traditional macroscopic narrative recorded at the time of specimen dissection is often reported separately from the cancer dataset. Although this remains an option, it is recommended that macroscopic information be recorded within the overall structure of this protocol.

CG2.02b Much of the information recorded in a traditional macroscopic narrative is covered in the standards and guidelines above and in many cases, no further description is required.

CG2.02c A traditional macroscopic description may be required when the Laboratory Information System (LIS) does not allow a structured approach.

CG2.02d Where the LIS offers an electronic interface for structured data entry the need for narrative can be significantly reduced to describe only information not otherwise captured.

3 Microscopic findings

This section relates to purely histological or morphological assessment. Information derived from multiple investigational modalities, or from two or more chapters, is described in Chapter 5.

 S3.01	The histological tumour type must be recorded.	
	CS3.01a	Choose from the following values: <ul style="list-style-type: none"> • Adenocarcinoma (Acinar) • Other (specify) Refer to Appendix 4.
	CS3.01b	<p>The vast majority (>95%) of prostate cancers are acinar adenocarcinomas.²² Other types of carcinoma are rarer but must be recorded if present, since some variants, such as ductal adenocarcinoma, small cell carcinoma, sarcomatoid carcinoma and urothelial-type adenocarcinoma, have a significantly poorer prognosis.²²⁻²⁸ The tumour type should be assigned in line with the 2016 World Health Organisation (WHO) classification and mixtures of different types should be indicated.²² Subtypes of prostate carcinoma are often identified in combination with acinar type and in such cases the tumour type should be classified according to the subtype.</p> <p>Urothelial carcinomas arising in the bladder or urethra are dealt with in separate datasets; however, those rare urothelial carcinomas arising within the prostate are included in this dataset.</p>
 S3.02	The Histological grade must be recorded^{18,29,30} using the <ol style="list-style-type: none"> a. Gleason grading system (ISUP 2014) b. The International Society of Urological Pathology (ISUP) Grade (also known as Grade Group) (See Tables 1 and 2)	
	CS3.02a	Prostate cancer in transurethral resection specimens is graded according to similar principles to those applied to needle core biopsies since, like needle biopsies, transurethral resection of the prostate (TURP) does not sample the entire tumour. Since transurethral resection of the prostate mainly samples the transition zone, cancers arising in this part of the prostate are over-

		<p>represented in TURP specimens. However, peripheral zone tissue is sometimes also resected and large peripheral zone cancers may involve the transition zone. Thus, TURP specimens include the same spectrum of cancers as needle biopsies, albeit with a different distribution. For example, small low-grade transition zone cancers are more often detected by TURP than by needle biopsies.</p> <p>It has been demonstrated that the Gleason score of cancer detected at TURP predicts cancer-specific survival^{31,32} and local progression.³³ Grading of cancer in TURP specimens was not specifically addressed in the International Society of Urological Pathology (ISUP) 2005 or 2014 revisions. In one study however, conventional Gleason score was compared to ISUP modified Gleason score including the highest Gleason grade regardless of amount.³¹ Both were independent predictors of cancer-specific survival in multivariate analysis but conventional Gleason score showed slightly stronger correlation with outcome. No studies have been done on the validity of the ISUP 2014 grading system on TURP detected cancer but there is no reason to assume that this grading system would not be valid when applied on TURP specimens.</p> <p>However, the issue of how to deal with tertiary patterns (minor high-grade patterns) in TURP specimens is unresolved as there is insufficient evidence at present to establish its validity. Hence, when a tertiary (minor high-grade) pattern is present, the methodology used in assigning the Gleason score and ISUP Grade (Grade Group) must be specified. In addition, the percentage of Gleason patterns 4 and 5 has been reported to predict cancer-specific survival independently of Gleason score.³¹</p> <p>TURP is sometimes done for palliative reasons in patients with locally advanced prostate cancer. These cancers have usually been treated with androgen deprivation and a common reason for the TURP is that the tumour has become hormone refractory. It is important that information about the hormonal treatment is given on the request form. Prostate cancer showing morphological signs of hormonal treatment should not be graded as the treatment effect can mimic a higher grade. However, these tumours are almost invariably high-grade cancers.</p> <p>The grade groups and associated definitions are outlined in Table 1.</p> <p>Both the Gleason score and the ISUP grade (Grade group) should always be reported for the sake of</p>
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		clarity.
 G3.01	The percentage of Gleason pattern 4/5, where the Gleason scores ≥ 7 , should be recorded.	

Table 1: ISUP grading system, core/needle biopsies and TURP specimens

ISUP grade (Grade group)	Gleason score	Definition
Grade 1	2-6	Only individual discrete well-formed glands
Grade 2	3+4=7	Predominantly well-formed glands with lesser component (*) of poorly- formed/fused/cribriform glands
Grade 3	4+3=7	Predominantly poorly-formed/fused/cribriform glands with lesser component (**) of well-formed glands
Grade 4	4+4=8	Only poorly-formed/fused/cribriform glands
	3+5=8	Predominantly well-formed glands and lesser component (*) lacking glands (or with necrosis)
	5+3=8	Predominantly lacking glands and lesser component (**) of well-formed glands (or with necrosis)
Grade 5	9-10	Lack gland formation (or with necrosis) with or without poorly formed/fused/cribriform glands

* Any component of the high-grade pattern (i.e. even if less than 5%) is included in the grade.

** The low-grade pattern is included in the grade only if it is at least 5%.

Table 2: Gleason scoring of unusual patterns

Pattern	Morphology	Comment
Vacuoles	Cytoplasmic change seen in all grades	Grade as if vacuoles were absent, on the underlying architecture
Mucin extravasation		Grade based on glandular architecture
Mucinous fibroplasia	Collagenous micronodules	Grade based on glandular architecture
Glomeruloid structures		Grade as 4
Foamy gland change		Grade based on glandular architecture
Small cell neuroendocrine		Do not assign a grade

 S3.03	The percentage of prostatic tissue involved by tumour must be recorded.	
	CS3.03a	<p>In the TNM classification, incidentally detected cancer is substaged into cT1a ($\leq 5\%$ cancer) and cT1b ($> 5\%$ cancer) based on the involvement of resected tissue. This substaging predicts cancer progression³⁴ and disease-specific survival.^{35,36} The TNM classification does not specify how tumour extent should be measured, but the reported percentage of extent is commonly assumed to be calculated as the fraction of total tissue area in the sections.</p> <p>It has recently been proposed that the percentage of number of chips positive for cancer over total number of chips be reported. With this method 10% involvement was a more useful cut-off for prediction of outcome than 5%.³⁶ This is expected as the percentage gets higher when a chip is considered positive regardless of the extent of cancer involvement. The advantage of this method is that it is simpler than estimating percentage of tissue area, but there is also a risk of overestimation when only a minute focus of cancer is present in several chips. Either of these measures can be used but the report should specify what method was used. Percentage of positive chips can obviously not be used for open prostatectomy specimens and percent cancer of the total surface area in the sections should then be reported.</p> <p>Whichever of these methods is used, for practical purposes it is only necessary to estimate the extent of tumour involvement to the nearest 10%, or for small tumours to state if the tumour comprises $< 5\%$ of the specimen.</p>
 G3.02	The presence or absence of perineural invasion should be recorded.	
	CG3.02a	<p>The significance of perineural invasion in prostate TURP or enucleation specimens is uncertain and there is little published literature specific to these particular specimen types. In needle core biopsy a systematic review of the literature concluded that the weight of evidence suggested that in clinically localised disease perineural invasion was a significant prognostic factor for extraprostatic extension (EPE) and subsequent local recurrence.³⁷ Hence, it may be significant and perineural invasion should be recorded when present in TURP and enucleation specimens.</p>
 G3.03	The presence or absence of seminal vesicle involvement should be recorded.	

	CG3.03a	<p>Seminal vesicle invasion (SVI) is rarely identified in TUR specimens, hence its absence does not need to be explicitly stated. However, if seminal vesicle/ejaculatory duct invasion is present it should be recorded and the following comments apply.</p> <p>SVI is defined as involvement of the muscular wall of the extraprostatic portion of the seminal vesicle.³⁸ If seminal vesicle tissue is present and involved by tumour, this should be reported since it indicates that the tumour may be pT3b in the American Joint Committee on Cancer (AJCC)/Union for International Cancer Control (UICC) Staging system.^{19,39} However, in TURP and enucleation specimens it is often difficult to distinguish between extraprostatic seminal vesicle and intraprostatic seminal vesicle or ejaculatory duct tissue, and it is important not to over interpret invasion of the latter two structures as SVI since their involvement by tumour does not constitute pT3b disease. If there is doubt as to whether the involved tissue represents the extraprostatic seminal vesicle or the intraprostatic seminal vesicle/ejaculatory duct, this should be stated in the report and SVI should not be definitively diagnosed.</p>
	G3.04	The presence or absence of lymphovascular invasion should be recorded.
	CG3.04a	<p>Lymphovascular invasion (LVI) is rarely identified in TUR specimens, hence its absence does not need to be explicitly stated. However, if LVI is present it should be recorded and the following comments apply.</p> <p>Invasion of lymphatic or blood vessels (i.e. thin-walled endothelial-lined spaces) is uncommonly identified in transurethral resection or enucleation specimens and there is little published data on the significance of LVI specifically relating to tissue obtained during these procedures. However, there is good evidence that LVI is a significant independent prognostic indicator of increased risk of recurrence post radical prostatectomy;⁴⁰⁻⁴³ therefore, if LVI is identified in a TUR/enucleation specimen it may well be significant and its presence should be recorded. The presence of LVI does not affect assignment of the AJCC/UICC T category.</p>
	G3.05	The presence or absence of extraprostatic extension (EPE) should be recorded.
	CG3.05a	Intraductal carcinoma of the prostate (IDC-P) is an uncommon finding in TUR specimens, hence its absence does not need to be explicitly stated. However, if IDC-P is present it should be recorded and the following comments apply.

		<p>Extraprostatic extension (EPE) became accepted terminology at a 1996 consensus conference, and replaces earlier ambiguous terms such as capsular penetration, perforation, or invasion.⁴⁴ In radical prostatectomy specimens EPE is an independent prognostic indicator of increased risk of recurrence post radical prostatectomy and is important in assignment of the AJCC/UICC T category.^{45,46} There is little data specifically on the significance of EPE in TURP or enucleation specimens given that it is rarely identified; however, it may occasionally be seen and should be reported when present since it indicates that the tumour is at least pT3a in the TNM system.¹⁹ In TURP specimens it is defined as tumour admixed with adipocytes.</p> <p>The presence of bladder neck smooth muscle involvement by carcinoma in a TURP specimen may indicate that the tumour is at least category pT3a. Typically it is a high grade cancer infiltrating among well-formed and thick smooth muscle bundles with absence of normal prostate glands or stroma. These bladder neck chips are often admixed with chips showing either cancer in the prostate or just normal prostate tissue.</p>
 G3.06		<p>The presence or absence of intraductal carcinoma of the prostate should be recorded.</p>
	CG3.06a	<p>Intraductal carcinoma of the prostate (IDC-P) is an uncommon finding in TUR specimens, hence its absence does not need to be explicitly stated. However, if IDC-P is present it should be recorded and the following comments apply.</p> <p>IDC-P is usually associated with invasive prostate cancer, however, occasionally isolated IDC-P is found without invasive carcinoma; this latter situation is rare and beyond the scope of this dataset.</p> <p>IDC-P has been well characterised at the histological and molecular levels over the past decade and its clinical significance is now also better understood.⁴⁷ The diagnosis of IDC-P is based on morphology and the key criteria include: 1) large calibre glands that are more than twice the diameter of normal non-neoplastic peripheral glands; 2) preserved (at least focally) basal cells identified on H&E staining or with basal cell markers, such as p63, keratin 34βE12 and keratin 5/6, however, the use of immunohistochemistry to identify basal cells is optional, rather than mandatory, for the diagnosis of IDC-P); 3) significant nuclear atypia including enlargement and anisonucleosis; and 4) comedonecrosis, which is often but not always present.^{48,49} It is important to distinguish IDC-P from high grade prostatic intraepithelial neoplasia (HGPIN):</p>

		<p>compared to IDC-P, HGPIN has less architectural and cytological atypia, and cribriform HGPIN is rare.</p> <p>IDC-P is strongly associated with high volume, high grade invasive prostate carcinoma and metastatic disease, hence the presence of IDC-P in a TURP specimen, even if invasive carcinoma cannot be identified, mandates either further investigation or definitive therapy (depending on the clinical situation).⁵⁰⁻⁵²</p> <p>There was a strong consensus (82%) at the ISUP consensus meeting (Chicago 2014) that IDC-P should not be assigned an ISUP or Gleason grade.⁵³</p>
 G3.07	<p>The presence or absence of co-existent pathology should be recorded.</p>	
	<p>CG3.07a</p>	<p>In some cases clinical management decisions may be aided by knowledge of coexisting pathology, such as high grade prostatic intraepithelial neoplasia (HGPIN), glandular atypia suspicious for malignancy (atypical small acinar proliferation), prostatic urethral lesions, granulomatous prostatitis etc.</p> <p>If there is carcinoma present, the presence of HGPIN is generally not significant, except perhaps occasionally in the situation where the carcinoma is of very limited extent. Low grade PIN should not be reported.</p> <p>Likewise, if there is carcinoma present in a specimen, the presence of glandular atypia suspicious for malignancy (atypical small acinar proliferation) is generally not significant, except perhaps occasionally in the situation where the carcinoma is of very limited extent. In TURP specimens where there is no cancer identified but atypical small acinar proliferation (ASAP) is present, the risk of carcinoma being present in subsequent specimens is not known, but in core biopsies is approximately 50%.⁵⁴⁻⁵⁷</p> <p>Lesions of the prostatic urethra, e.g. urothelial carcinoma in situ (CIS), urethral polyps, nephrogenic adenoma, villous adenoma etc, should also be recorded if present.</p> <p>Active prostatitis and granulomatous prostatitis may cause a rise in serum PSA, although inflammatory lesions may coexist with carcinoma and it is important not to assume that their presence always accounts for an unexplained increase in a patient's PSA.</p>

G3.08 Comments should be included, if appropriate.

CG3.08a Free text entry to allow any additional, unusual or unexpected findings to be reported.

4 Ancillary studies findings

No ancillary tests are currently used on a routine diagnostic basis for prostate cancer.

5 Synthesis and overview

Information that is synthesised from multiple modalities and therefore cannot reside solely in any one of the preceding chapters is described here.

For example, *tumour stage* is synthesised from multiple classes of information – clinical, macroscopic and microscopic.

By definition, synthetic elements are inferential rather than observational, often representing high-level information that is likely to form part of the 'Summary' or 'Diagnosis' section in the final formatted report.

Overarching case comment is synthesis in narrative format. 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.

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

- a. nature of specimen (S1.02)
- b. tumour type (S3.01)
- c. Gleason score and/or ISUP grade (S3.02)

S5.01 The reporting system must provide a field for free text or narrative in which the reporting pathologist can give overarching case comment if required.

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

- explain the decision-making pathway, or any elements of clinicopathological ambiguity, or factors affecting diagnostic certainty, thereby allowing communication of diagnostic subtlety or nuance that is beyond synoptic capture
- give recommendations for further action or investigation
- document further consultation or results still pending

CS5.01b Use of this field is at the discretion of the reporting pathologist.

G5.02 The edition/version number of the RCPA protocol on which the report is based should be included on the final report.

CS5.02a For example, the pathology report may include the following wording at the end of the report: "the data fields within this formatted report are aligned with the criteria as set out in the RCPA document "XXXXXXXXXX" XXXX Edition dated XXXXXXXX".

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 data set' for prostate 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*.⁵⁸

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.

Item descriptions in italics are conditional on previous responses.

Values in all caps are headings with sub values.

S/G	Item description	Response type	Conditional
Pre-analytical			
S1.01	Demographic information provided		
S1.02	Clinical information provided on request form	Not provided OR Text OR Structured entry as below:	
	CLINICAL INFORMATION		
	Previous history of prostate cancer (<i>including the Gleason grade and score of previous specimens if known</i>)	Text	
	Previous biopsy (<i>specify date and where performed</i>)	Text	
	Previous therapy	Text	
	Other	Text	
	Operative procedure	Single selection value list: <ul style="list-style-type: none"> • Transurethral resection 	

		<ul style="list-style-type: none"> • Enucleation (suprapubic/simple/open prostatectomy) 	
	Pre-procedure serum PSA	Numeric: ___ ng/mL	
	Clinical stage	Text	
S1.03	Pathology accession number	Alpha-numeric	
S1.04	Principal clinician	Text	
G1.01	Comments	Text	
Macroscopic findings			
S2.01	Specimen labelled as	Text	
	S2.02 Specimen weight	Numeric: ____g	
	G2.01 Specimen dimensions <i>(Enucleation/suprapubic/ open prostatectomy specimens only)</i>	Numeric: __x__x__mm	
	S2.03 Block identification key	Text	
G2.02	Additional macroscopic comments	Text	
Microscopic findings			
	S3.01 Histological tumour type	Multi selection value list (select all that apply): <ul style="list-style-type: none"> • Adenocarcinoma (Acinar) • Other (specify) 	

IC ₄ CR S3.02	HISTOLOGICAL GRADE		
IC ₄ CR	GLEASON SCORE	Indeterminate (specify reason) OR complete the following:	
IC ₄ CR	Primary pattern/grade	Numeric: ____ (1-5)	
IC ₄ CR	Secondary pattern/grade	Numeric: ____ (1-5)	
IC ₄ CR	INTERNATIONAL SOCIETY OF UROLOGICAL PATHOLOGY (ISUP) GRADE (GRADE GROUP)	Single selection value list: <ul style="list-style-type: none"> • ISUP Grade (Grade Group) 1 (Gleason score ≤6) • ISUP Grade (Grade Group) 2 (Gleason score 3+4=7) • ISUP Grade (Grade Group) 3 (Gleason score 4+3=7) • ISUP Grade (Grade Group) 4 (Gleason score 8) • ISUP Grade (Group Group) 5 (Gleason score 9-10) • Indeterminate (specify reason) 	
IC ₄ CR S3.03	PROSTATIC TISSUE INVOLVED BY TUMOUR	Notes: This should be an estimate <5% and then 10% increments Complete 1 or both of the following.	

	Prostatic tissue involved by tumour measured on the basis of area (<i>TURP or enucleation/suprapubic prostatectomy specimens</i>)	Numeric: ___%	
	Prostatic tissue involved by tumour measured on the basis of number of chips (<i>TURP specimens only</i>)	Numeric: ___%	
 G3.01	Percentage Gleason pattern 4/5 (applicable for Gleason scores ≥ 7)	Numeric: ___% OR Not identified	
 G3.02	Perineural invasion	Single selection value list: <ul style="list-style-type: none"> • Not identified • Present 	
 G3.03	Seminal vesicle invasion	Single selection value list: <ul style="list-style-type: none"> • Not identified • Present 	
 G3.04	Lymphovascular invasion	Single selection value list: <ul style="list-style-type: none"> • Not identified • Present 	
 G3.05	Extraprostatic extension	Single selection value list: <ul style="list-style-type: none"> • Not identified • Present 	

		<ul style="list-style-type: none"> Indeterminate 	
 G3.06	Intraductal carcinoma of prostate	Single selection value list: <ul style="list-style-type: none"> Not identified Present 	
 G3.07	Coexistent pathology	Single selection value list: <ul style="list-style-type: none"> None identified Present, (specify) 	
G3.08	Additional microscopic comment	Text	
Synthesis and overview			
G5.01	Diagnostic summary Include: <ol style="list-style-type: none"> specimen type tumour type Gleason score and/or ISUP grade 	Text	
S5.01	Overarching comment	Text	
G5.02	Edition/version number of the RCPA protocol on which the report is based	Text	

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. An example of a pathology report is shown in Appendix 3.

Appendix 1 Pathology request form for prostate cancer

This appendix describes the information that should be collected before the pathology test.

Clinical information relating to presenting symptoms and spread of disease — including pretreatment prostate specific antigen (PSA) — are necessary for staging of the tumour. Details of previous therapy are required because this often impacts upon the grading of the tumour and this needs to be taken into account by the examining pathologist. Similar information is required regardless of whether the specimen is a core biopsy, transurethral resection (TUR) or radical prostatectomy.

Some of this information can be provided on generic pathology request forms; any additional information required specifically for the reporting of Prostate cancer 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.

Also included in this appendix are the procedures that are recommended before handover of specimens to the laboratory.

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
 - Whether or not the patient identifies as Aboriginal and/ or Torres Strait Islander. 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 Individual Healthcare Identifier (IHI) (Australia) or the National Healthcare Identifier (New Zealand).

- The Australian Healthcare identifiers i.e. Healthcare Provider Identifier - Individual (HPI-I) and Healthcare Provider Identifier - Organisation (HPI-O) should be use, where possible, to identify the requesting doctor.

Clinical Information

	<p>Clinical information should be provided including the following.</p> <ul style="list-style-type: none"> • Previous history of prostate cancer (including the Gleason grade and score of previous specimens if known) • Previous biopsy (specify date and where performed) • Previous therapy should be described. • Other specify
	<ul style="list-style-type: none"> • It is the responsibility of the clinician requesting the pathological examination to provide information that will have an impact on the diagnostic process or affect its interpretation. The use of a standard pathology requisition/request form including a checklist of important clinical information is encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen. Generally, information about pathological findings in prior specimens or previous treatment aids interpretation of the microscopic findings and accurate pathological diagnosis. <p>Radiation and/or endocrine therapy for prostate cancer have a profound effect on the morphology of both cancer and benign prostatic tissue. Following irradiation, benign acinar epithelium shows nuclear enlargement and nucleolar prominence,⁵⁹ while basal cells may show cytological atypia, nuclear enlargement and nuclear smudging.⁶⁰ There may also be increased stromal fibrosis, which may resemble tumour-induced desmoplasia. These changes may persist for a considerable period, having been reported up to 72 months after treatment, and are more pronounced in patients who have undergone brachytherapy compared to those who have received external beam radiation therapy.^{60,61} It is important to document any previous radiotherapy to help the pathologist to interpret changes accurately. Radiation may be associated with apparent upgrading of prostate cancer in prostatectomy specimens.⁶²</p> <p>Likewise, neoadjuvant androgen deprivation therapy (ADT) may induce morphological changes in both prostate cancer and benign tissue. Androgen blockade induces basal cell hyperplasia and cytoplasmic vacuolation in benign prostatic tissue, although this is unlikely to be confused with malignancy.⁶³ More significantly from a diagnostic point of view, neoadjuvant ADT may increase the risk of overlooking</p>

		<p>acinar adenocarcinoma on low power microscopic examination due to collapse of glandular lumina, cytoplasmic pallor and shrinking of nuclei.⁶⁴⁻⁶⁶ The effect of androgen blockage on prostate cancer is variable and an apparent upgrading of the cancer has been reported in a number of studies.^{62,63} As for needle core biopsies, in transurethral resection or enucleation specimens taken following either radiotherapy or androgen deprivation therapy, tumours that show significant treatment effect should not be graded.⁶⁷</p> <p>The Gleason score of prostate cancer in any previously submitted specimen should also be provided by the clinician as this allows assessment of any progression of the tumour towards a higher grade/ more undifferentiated state, which itself may be of prognostic significance.</p>
 ➤	<p>The operative procedure should be recorded.</p>	
	<ul style="list-style-type: none"> • 	<p>Information regarding the nature of the surgical procedure undertaken is generally regarded as a required item in International Collaboration on Cancer Reporting (ICCR) datasets since it allows the morphological findings to be placed in context.</p>
 ➤	<p>Pre-procedure serum PSA value should be recorded.</p>	
	<ul style="list-style-type: none"> • 	<p>The clinician requesting the pathological examination should provide information on the pre-transurethral resection/enucleation serum prostate-specific antigen (PSA) level, if measured. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen and its use.</p> <p>If the patient is on 5-alpha-reductase inhibitor medications, such as finasteride or dutasteride, this should be recorded as it may lower serum PSA levels and affect interpretation of serum PSA values for detecting prostate cancer.⁶⁸⁻⁷¹</p>
 ➤	<p>The clinical stage should be recorded.</p>	
	<ul style="list-style-type: none"> • 	<p>In the large majority of cases these procedures are performed for the relief of benign prostatic hyperplasia when it is not anticipated that there will be a cancer present and clinical stage is not applicable; if cancer is found on microscopic examination in this situation it will be assigned to category T1. In the small number of cases in which it is known that there is cancer present, a transurethral resection of the prostate may be done to relieve an obstruction where a patient is not amenable to other procedures. In these cases, the clinical stage may be more relevant.</p>

-
- Comments should be included, if appropriate.
 - Space for free text should be included to encourage reporting of ambiguity, or for the addition of other comments.

Example Request Information Sheet

Prostate Cancer - Transurethral Resection/Enucleation Histopathology Request Information	
<p>Family name</p> <input type="text"/>	<p>Indigenous Status</p> <p><input type="checkbox"/> Aboriginal but not Torres Strait Islander origin</p> <p><input type="checkbox"/> Torres Strait Islander but not Aboriginal origin</p> <p><input type="checkbox"/> Both Aboriginal and Torres Strait Islander origin</p> <p><input type="checkbox"/> Neither Aboriginal nor Torres Strait Islander origin</p> <p><input type="checkbox"/> Not stated/inadequately described</p>
<p>Given name(s)</p> <input type="text"/>	
<p>Date of birth</p> <input type="text" value="DD - MM - YYYY"/>	<p>Date of request</p> <input type="text" value="DD - MM - YYYY"/>
<p>Patient identifiers e.g. MRN, IHI or NHI (please indicate which)</p> <input type="text"/>	<p>Requesting doctor - name and contact details</p> <input type="text"/>
<p>Copy to doctor name and contact details</p> <input type="text"/>	
<p>CLINICAL INFORMATION</p> <p>Previous history of prostate cancer (including the Gleason grade and score of previous specimens if known)</p> <input type="text"/> <input type="text"/>	<p>PRE-PROCEDURE SERUM PSA</p> <input type="text" value="ng/mL"/>
<p>Previous biopsy (specify date and where performed)</p> <input type="text"/> <input type="text"/>	<p>CLINICAL STAGE</p> <input type="text"/> <input type="text"/> <input type="text"/>
<p>Previous therapy (specify)</p> <input type="text"/> <input type="text"/>	<p>PRINCIPAL CLINICIAN</p> <input type="text"/>
<p>Other (specify)</p> <input type="text"/> <input type="text"/>	<p>OTHER COMMENTS</p> <input type="text"/> <input type="text"/> <input type="text"/>
<p>OPERATIVE PROCEDURE</p> <p><input type="checkbox"/> Transurethral resection</p> <p><input type="checkbox"/> Enucleation(suprapubic/simple/open prostatectomy)</p>	

Version 1.0 Request Information from Prostate Cancer - Transurethral Resection and Enucleation Protocol 1st Edition

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.⁷²

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.⁷²

Reduce 'clutter' to a minimum.⁷² 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 Example of a pathology report

Page 1 of 1

Citizen, George W. C/O Paradise Close Sunset Bay Resort Nar Nar Goon East, Vic 3181 Male DOB 1/7/1951 MRN FMC1096785	Lab Ref: 18/P28460 Referred: 30/2/2018	Copy to: Dr G. Gleason Rainforest Cancer Centre, 46 Smith Road, Woop Woop, 3478	Referred by: Dr V. Smith Suite 3, AJC Medical Centre, Bunyip Crescent Nar Nar Goon West, 3182
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PROSTATE CANCER - TRANSURETHRAL RESECTION STRUCTURED REPORT

CLINICAL

Previous history of prostate cancer:	Nil
Previous biopsy:	Nil
Previous therapy:	Nil
Clinical history:	Retention
Operative procedure:	TUR
Pre-biopsy serum PSA:	3.8 ng/mL
Clinical stage:	N/A

MACROSCOPIC

Specimen labelled as:	Prostate chips
Specimen weight:	15g
Block identification key:	1A-H Prostate chips. All submitted

MICROSCOPIC

Histological tumour type:	Adenocarcinoma (Acinar)
Histological Grade Gleason score	
Primary pattern/grade:	3
Secondary pattern/grade:	3
ISUP Grade	ISUP Grade (Grade Group) 1 (Gleason score 3+3=6)
Prostatic tissue involved by tumour	
Measured on basis of no. of chips:	5%
Percentage Gleason pattern 4/5:	None identified
Perineural invasion:	Present focally
Lymphovascular invasion:	Not identified
Extraprostatic extension:	Not identified
Intraductal carcinoma of prostate:	Not identified
Coexistent pathology:	Present. Acute inflammation focally

Diagnostic Summary

Transurethral resection:

Adenocarcinoma (Acinar)
Gleason score (ISUP 2014) 3+3 = 6
ISUP Grade 1.

Reported by Dr Bernard Beckstein Authorised 4/3/2017

Appendix 4 WHO classification of tumours of the prostate^a

Descriptor	ICD-O codes
Epithelial tumours	
<i>Glandular neoplasms</i>	
Acinar adenocarcinoma	8140/3
Atrophic	
Pseudohyperplastic	
Microcystic	
Foamy gland	
Mucinous (colloid)	8480/3
Signet ring-like cell	8490/3
Pleomorphic giant cell	
Sarcomatoid	8572/3
Prostatic intraepithelial neoplasia, high-grade	8148/2
Intraductal carcinoma	8500/2
Ductal adenocarcinoma	8500/3
Cribiform	8201/3
Papillary	8260/3
Solid	8230/3
Urothelial carcinoma	8120/3
<i>Squamous neoplasms</i>	
Adenosquamous carcinoma	8560/3
Squamous cell carcinoma	8070/3
Basal cell carcinoma	8147/3
Neuroendocrine tumours	
Adenocarcinoma with neuroendocrine differentiation	8574/3
Well-differentiated neuroendocrine tumour	8240/3
Small cell neuroendocrine carcinoma	8041/3
Large cell neuroendocrine carcinoma	8013/3

^a The morphology codes are from the International Classification of Diseases for Oncology (ICD-O). Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour; /2 for carcinoma in situ and grade III intraepithelial neoplasia; and /3 for malignant tumours.

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- risk for disease recurrence for experimental adjuvant therapy following radical prostatectomy. *Urology* 45(5):831–838.
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