

**RENAL PARENCHYMAL
MALIGNANCY (RENAL CELL
CARCINOMA)
STRUCTURED REPORTING
PROTOCOL
(1st EDITION 2011)**

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Scope

This protocol contains standards and guidelines for the preparation of structured reports for kidneys for renal parenchymal malignancy (renal cell carcinoma) in adults and children. However this protocol should not be used for other paediatric renal tumours.

If the tumour is multifocal due to intra-renal spread then a single form should be used. However if two or more synchronous malignancies are present (usually identified by the presence of differing morphologies) then a separate form should be used for each tumour.

Structured reporting aims to improve the completeness and usability of pathology reports for clinicians, and improve decision support for cancer treatment. The protocol provides the framework for the reporting of any renal parenchymal cancer, whether as a minimum data set or fully comprehensive report.

Abbreviations

AJCC	American Joint Committee on Cancer
PBS	Pharmaceutical Benefits Scheme
RCC	Renal cell carcinoma
RCPA	Royal College of Pathologists of Australasia
TNM	tumour-node-metastasis
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 not essential for clinical management, staging or prognosis of a cancer, but are recommended.</p> <p>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.</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 morphological assessment using a microscope or equivalent.
Predictive factor	A <i>predictive factor</i> is a measurement that is associated with response or lack of response to a particular therapy.
Prognostic factor	A <i>prognostic factor</i> 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'. Their use is reserved for core items essential for the clinical management, staging or prognosis of the cancer.</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	Synthesis is the process in which two or more pre-existing elements are combined, resulting in the formation of something new. 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

Renal Parenchymal Malignancy (Renal Cell Carcinoma)

Renal cell carcinoma was not described in antiquity, with the first confirmed case of RCC being reported in France in 1810.¹ The first classification of renal neoplasia was produced in 1824 and since then a variety of classifications have been proposed.² Despite these early attempts to classify RCC, it is only in the last two decades that there has been any real appreciation as to the wide variety of morphotypes of RCC that exist.

In the first edition of the WHO classification, published in 1981, epithelial malignancies of the renal parenchyma were classified as *Renal Cell Carcinoma* and *Other*.³ The publication of the Mainz Classification in 1986 and the work of the Heidelberg (1996) and Rochester (1997) Consensus Groups provided the basis for classifying RCC into a variety of sub-types, each with differing clinical, histological and genetic features.^{4,5} These conclusions were reinforced by the third WHO classification working group who met in 2002, with the final classification being released in 2004.⁶ In this classification ten distinctive sub-types of renal parenchymal neoplasia were recognized, with a further category – that of *Renal Cell Carcinoma – Unclassified* being reserved for those tumours whose features differ from those of the recognized in the 2004 classification. It is from the group of tumours classified as *Renal Cell Carcinoma – Unclassified* that several novel variants of renal epithelial malignancy have been identified and since the publication of the 2004 WHO Classification, a further six tumour sub-types have been recognized.⁷

The failure to appreciate from the outset that RCC is a group of tumours rather than a single tumour entity, has had a major impact upon outcome prediction for these forms of malignancy. In particular the failure to identify tumour sub-type in data sets has served to introduced an uncontrolled variable into statistical analyses and this has served to undermine the credibility of numerous prognostic studies.⁸

More recently major studies have validated the sub-classification of RCC on the basis of tumour-related outcome data.⁹⁻¹¹ These studies have also attempted to identify prognostic parameters for each sub-type of RCC and specifically, there has been considerable emphasis on the evaluation of the predictive importance of tumour stage and grade.¹² This is of particular importance as RCCs as a group have a considerable morbidity and mortality accounting for 2% of cancer deaths worldwide. In the United States the annual incidence of renal cell carcinoma has increased by 46.9% over the past 17 years rising from 27,200 cases in 1990 to 51,200 cases in 1997.^{13, 14} In Australia the age adjusted incidence of RCC is 3.00/100,000 while in New Zealand the incidence is 3.2/100,000.¹⁵

Importance of histopathological reporting

Information derived from the careful assessment and dissection of the gross specimen, the judicious selection of tissues for histological examination and the provision of a pathology report that contains information of both clinical and prognostic utility is central to contemporary medical practice.

The information contained within pathology reports on specimens removed for the management of RCC provide guidance for further treatment options and permit assessment of outcome.

It is recognized that some morphotypes of RCC have a less aggressive clinical course than others and as a consequence consideration may be given to undertaking further surgical interventions if a patient subsequently develops metastatic disease. Further, for those patients who have disease that is found to be incurable following surgery, a variety of chemotherapeutic options are available, and current protocols relate to specific tumour sub-types. For both of these scenarios it is clear that subsequent management is informed by the pathology report that details the morphology of the primary tumour.

It is well recognized that the most important single prognostic parameter for RCC is tumour stage. Information regarding the completeness of surgical excision and involvement of anatomic boundaries by tumour is essential for staging purposes. Evaluation of other features contained with a standard report for RCC, such as tumour grade, the presence of sarcomatoid or rhabdoid differentiation, and the presence and degree of tumour necrosis provide information that is essential for determining prognosis in individual cases.

Benefits of structured reporting

Structured pathology reports with standardised definitions for each component have been shown to significantly enhance the completeness and quality of data provided to clinicians, and have been recommended both in North America and the United Kingdom.¹⁶⁻¹⁹

The Association of Directors of Anatomic and Surgical Pathology and the College of American Pathologists published protocols for the reporting of RCC in 2009 and 2010 respectively.²⁰⁻²¹ In view of the increasing support for and interest in synoptic reporting it is clear that a protocol endorsed by the Royal College of Pathologists of Australasia and other Australasian organisations involved in the management of RCC is overdue. In this protocol we have not simply reworked the contents of previously published protocols but have attempted to incorporate recent developments relating to our understanding of the classification and behaviour of RCC. It is hoped that the finished product will provide clinicians with a data set that is appropriate to clinical management in the local setting.

Design of this protocol

This structured reporting protocol provides a complete framework for the assessment and documentation of all the pathological features of renal cell carcinoma.

Mandatory elements (standards) are differentiated from those that are not mandatory but are recommended (guidelines). Consistency and speed of reporting is improved by the use of discrete data elements recorded from the checklist. However, the pathologist is encouraged to include free text or narrative to document any other relevant issues, to give reasons for coming to a particular opinion and to explain any points of uncertainty.

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 Protocols²²
- The Pathology Request-Test-Report Cycle — Guidelines for Requesters and Pathology Providers²³
- AJCC Cancer Staging Manual, 7th edition²⁴

Updates 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.

Protocol developers

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

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Stakeholders

ACT Health

Anatomical Pathology Advisory Committee (APAC)

Andrology Australia

Australian Association of Pathology Practices Inc (AAPP)
Australian Cancer Network
Australian Commission on Safety and Quality in Health Care
Cancer Australia
Cancer Control New Zealand
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 Society of New Zealand.
Cancer specific expert groups – engaged in the development of the protocols
Cancer Voices
Clinical Oncology Society of Australia (COSA)
Department of Health and Ageing
Faculty of Radiation Oncology Genito-Urinary Group (FROGG)
Grampians Integrated Cancer Services (GICS)
Health Informatics Society of Australia (HISA)
Medical Software Industry Association (MSIA)
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.
NSW Department of Health
Queensland Cooperative Oncology Group (QCOG)
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Royal Australasian College of Physicians (RACP)
Southern Cancer Network, Christchurch, New Zealand
Southern Melbourne Integrated Cancer Service (SMICS)
Standards Australia
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)

The Urological Society of Australia and New Zealand (USANZ)

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Development process

This protocol has been developed following the nine-step process set out in *Guidelines for Authors of Structured Cancer Pathology Reporting Protocols*²²

Where no reference is provided, the authority is the consensus of the expert group.

1 Clinical information and surgical handling

This chapter relates to information that should be collected before the pathology test, and procedures that are required before handover of specimens to the laboratory.

The standards and guidelines below specify the particular information and specimens required for renal cell carcinoma. Some of this information can be collected on generic pathology request forms; any additional information required specifically for the reporting of renal cell carcinoma may be recorded on a separate data sheet. Appendix 1 provides a standardised data sheet that may be useful in obtaining all relevant information.

S1.01 Adequate demographic and request information must be provided with the specimen by the requesting clinician.

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.²³ This document specifies the minimum information to be provided by the requesting clinician for any pathology test. Items relevant to cancer reporting protocols include:

- patient name
- date of birth
- sex
- identification and contact details of requesting doctor
- date of request
- Additional information specified in the RCPA *The Pathology Request-Test-Report Cycle — Guidelines for Requesters and Pathology Providers* such as the specimen type and clinical information relevant to the investigation is catered for in the following standards and guidelines.

CS1.01b The patient's ethnicity must be recorded, if known.

G1.01 The patient's health identifiers should be recorded where provided.

CG1.01a The patient's health identifiers may include the patient's Medical Record Number as well as a national health number such as a NHI or the Individual Healthcare Identifier (IHI).

S1.02 The pathology accession number of the specimen must be recorded.

S1.03 The principal clinician involved in the patient's care and responsible for investigating the patient must be identified.

- CS1.03a The requesting clinician (identified under S1.01) may be the doctor who performs the surgery or biopsy, and may not be the person with overall responsibility for investigating and managing the patient. Identification of the principal clinician is essential, to ensure that clinical information is communicated effectively.
- G1.02 Any relevant past medical history should be provided.
- G1.03 Any relevant predisposing factors, including genetic status where appropriate, should be provided.
- G1.04 If the patient has received any neo-adjuvant therapy this should be recorded.
- CG1.04a Previous radiation therapy or chemotherapy may impact on the morphology of the tumour and this must be taken into account by the reporting pathologist.
- G1.05 Any relevant family history should be provided.
- CG1.05a Familial syndromes that predispose individuals to renal neoplasia are well recognized and several of these are associated with specific sub-types of RCC.
- G1.06 Details of the extent of disease as determined from both clinical assessment and imaging studies should be provided.
- CG1.06a Relevant information as to the extent of disease obtained from examination of the patient and from imaging studies is necessary for the accurate staging of the tumour.
- G1.07 The details of any previous biopsy or surgical specimens removed from the patient should be provided.
- CG1.07a The details of any tissue removed from the patient will provide information as to the extent of the tumour. Diagnostic information regarding the nature of the tumour as determined by biopsy, may inform handling of the specimen, especially if genetic studies are being considered. Comparison of the finding from previous biopsies/surgical specimens may alert the pathologist to a second, possibly occult, malignancy.
- S1.04 The laterality of the lesion must be recorded.**
- CS1.04a Laterality information is needed for identification purposes.
- G1.08 The clinical diagnosis or differential diagnosis should be recorded.
- CG1.08a Providing the provisional clinical diagnosis or differential diagnosis improves clinicopathological correlation and improves diagnostic accuracy.
- S1.05 The nature of the operation must be recorded.**

- CS1.05a Whether the surgical procedure is a radical, total or partial nephrectomy must be stated as this will influence the assessment of surgical margins. Specifically in the case of partial nephrectomy specimens it is important that the intra-renal surgical margin be carefully evaluated so as to ensure that no residual tumour is present in the remaining kidney.
- CS1.05b If the kidney has been removed laparoscopically and/or the specimen has been morcellated this must be stated.²⁶
- G1.09 The operative findings should be recorded.
 - CG1.09a The operative findings may provide additional data that is necessary for accurate staging of the patient
- G1.10 The surgical intent should be stated.
 - CG1.10a The surgeon should provide an indication as to whether the intent of the operation is palliative or curative. This will inform the assessment of surgical excision margins.
- S1.06 If tissue has been removed from the specimen for research or other purposes, this must be stated and details as to nature of the tissue removed provided.**
 - CS1.06a Pathologic evaluation requires a detailed examination of the complete surgical specimen. If tissue has been removed prior to examination this could compromise diagnosis, staging and prognostic assessment.

Surgical handling

- G1.11 The specimen should be capable of orientation if the status of specific surgical margins is critical in determining the need for, or extent of, further surgery.
 - CG1.11a Where there are no anatomical landmarks, specimen orientation may be indicated with marking sutures or other techniques. If a specimen is oriented, the orientation should be indicated on the specimen request form (this may be facilitated by the use of a diagram).

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.

S2.01 All measurements are in SI units, unless explicitly stated.

G2.01 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 when the pathologist is sure that the diagnostic process including the measurement of maximum depth of invasion and other important parameters that influence patient prognosis and management will not be compromised. As a safeguard, research use of the specimen may be put on hold until the diagnostic process is complete so that the specimen can be retrieved.

G2.02 The nature of the specimen at the time of reception should be given.

CG2.02a Choose from fresh or fixed (identify fixative), intact or morcellated.

G2.03 Ideally the specimen should not be left to fix overnight, but should be dissected upon arrival in the laboratory.

CG2.03a Most radical nephrectomy specimens have a significant covering of fat. This usually acts as a barrier to penetration by fixatives into the renal tissue. It is also often easier to identify the renal artery and vein and the ureter in the unfixed state.

G2.04 Measure and weigh the specimen.

S2.02 Orient the specimen.

CS2.02a The surgeon should provide information to indicate as to whether the specimen is a right or left kidney.

CS2.02b The principal landmarks for orientation of a nephrectomy specimen are the ureter and the adrenal gland.

CS2.02c The ureter extends inferiorly from the renal sinus along the medial border of the specimen. It is possible to identify the laterality of the specimen from the position of the ureter as this lies posterior to the renal artery and vein.²⁷

CS2.02d The anterior surface of the kidney is usually smoother than the posterior surface and this should further assist in identifying the laterality of the specimen.

CS2.02e In addition to the descending path of the ureter, the position of the adrenal gland, when removed as part of the radical nephrectomy procedure, will provide absolute

confirmation as to the identification of the upper pole of the kidney.

- G2.05 The situation of the tumour should, where possible, be identified by palpation of the surface of the specimen before dissection of the perirenal fat of kidney is commenced.
- CG2.05a It is necessary to have an idea of the position of the tumour before commencing dissection as this will permit sectioning through its maximum dimension. The accurate determination of the maximum dimension of the tumour is required for the assignment of stage according to the UICC/AJCC TNM RCC staging classification.

The following guidelines G2.06-G2.27 describe one suggested cutup technique; other techniques may also be employed to achieve a similar result.

- G2.06 Do not attempt to ink the whole specimen, but ink those areas that are suspicious for tumour extending to the surgical excision margin.
- CG2.06a It is unnecessary to ink the whole specimen as in most cases tumour will be contained by the perirenal fat/Gerota's fascia. Excessive inking makes the specimen difficult to handle. It also has the potential to spread to non-surgical margins and will often obscure the hilar structures.
- G2.07 Carefully section through the perirenal fat down to the surface of the renal capsule and then continue this incision along the long axis of the kidney.
- CG2.07a This will usually clarify the position and extent of the tumour in relation to the surface of the kidney. If the tumour is situated close to the surface of the kidney, be careful not to cut into it.
- G2.08 Strip the fat off the surface of kidney around to the renal sinus.
- CG2.08a This should be done with care so as to leave the renal capsule intact.
- G2.09 If any tumour projects beyond the surface of the renal capsule carefully dissect around this.
- CG2.09a Any tumour beyond the surface of the renal capsule should be sampled for histological examination. It is important for tumour staging to detect any infiltration through the renal capsule by tumour.
- G2.10 As the blunt dissection extends towards the adrenal gland, identify the adrenal by palpation and record if there is any evidence of direct infiltration by tumour.
- CG2.10a Tumour involvement of the adrenal gland (either direct from the kidney or by metastatic spread) is associated with a poor prognosis and needs to be documented for staging

purposes.

- G2.11 Section through the adrenal gland at 3mm intervals.
- G2.12 Continue the blunt dissection of the perirenal fat to the area of the renal sinus.
- G2.13 Identify and measure the lengths of the renal vein, renal artery and ureter.
 - CG2.13a The renal vein has a thinner wall than the renal artery.
- G2.14 Take sections from the surgical margin of the renal vein and renal artery.
- G2.15 Open the renal vein and its tributary vessels and record if there is macroscopic evidence of tumour within the lumen.
 - CG2.15a The presence of tumour visible macroscopically is important staging information.
- G2.16 Sample any apparently abnormal areas within the lumen of the renal vein.
- G2.17 Open the renal artery and its branches.
- G2.18 Sample any apparently abnormal areas within the lumen of the renal artery.
- G2.19 Sample the cut margin of the ureter.
 - CG2.19a It is recognized that tumour may extend down the wall of the ureter and sections of the cut margin of the ureter are necessary to ensure complete surgical excision.
- G2.20 Completely remove the perirenal fat (excluding that overlying the tumour (G2.09)).
- G2.21 Carefully search the perirenal fat and renal sinus fat for lymph nodes. Any detected nodes should be sampled.
 - CG2.21a The presence of tumour within perirenal or hilar lymph nodes influences the stage of the tumour.²⁸ Despite this it is recognized that lymph nodes are rarely found at these sites.²⁹
- G2.22 The total dimensions of the kidney should be measured.
 - CG2.22a Measurements in three planes should be provided.
- G2.23 Strip the renal capsule off the kidney and record if there is any degree of adherence of the renal capsule to the visceral surface of the perirenal fat and any abnormalities on the cortical surface.
 - CG2.23a Begin this in an area of the kidney distant from the tumour and leave the capsule over the tumour intact.

- CG2.23b It is important to note if there is any degree of adherence of the renal capsule to the visceral surface of the perirenal fat as this is evidence of co-existing renal pathology.
- G2.24 Section the kidney into two (anterior and posterior) halves.
- CG2.24a Commence at lateral margin of the kidney and work towards the renal hilum.
- CG2.24b Try to undertake the bisecting of the kidney with a single swipe of the knife and avoid 'sawing' through the specimen.
- CG2.24c Continue the cut into the renal pelvis.
- CG2.24d Inspect the cut surface of the renal cortex and medulla for any abnormalities (especially small tumours).
- G2.25 If the longitudinal cut does not bisect the tumour along its long axis repeat the procedure with a second cut parallel to the first.
- G2.26 The position of the tumour in the kidney should be described (upper pole, mid zone or lower pole).
- CG2.26a The position of the tumour in relation to the boundaries of the kidney and the surgical resection margin for radical nephrectomy and partial nephrectomy specimens is important for staging purposes. The position of the tumour in relation to the renal cortex or medulla may also have diagnostic importance. This is especially important for small tumours where a site of origin within the medulla would support a diagnosis of collecting duct (duct of Bellini) renal cell carcinoma or medullary carcinoma.³²
- G2.27 Any separate tumours should be identified and described.
- CG2.27a Where there are multiple tumours, the following guidelines should be addressed and information should be recorded for each separate tumour as appropriate.
- S2.03 The total dimensions of the tumour(s) must be measured.**
- CS2.03a Measurements in three planes should be provided. The maximum dimensions of the tumour are required for staging purposes as these constitute the defining features of the pT1 and pT2 categories of the UICC TNM staging classification.³³ Further it has been shown that for clear cell renal cell carcinoma tumour size correlates with outcome as a continuous variable.³⁴
- G2.28 It is desirable that the distance between the tumour and the renal capsule be measured.
- G2.29 Sample the tumour where it lies closest to the renal capsule.
- G2.30 If the tumour appears to extend beyond the renal capsule the perirenal fat should still be intact in this area. Take a section that

includes as much of the adjacent fat as possible. If this is too thick divide the fat ensuring that the visceral and parietal surfaces are identifiable in the two sections.

G2.31 Identify the area of the tumour that most closely approaches the renal sinus.

G2.32 Take sections of the tumour and adjacent renal sinus. This should be sampled extensively.

S2.04 Any infiltration of renal sinus or large vessels must be recorded.

CS2.04a The identification of tumour directly infiltrating the renal sinus or large vessels has prognostic significance and this information is required for staging purposes.³⁰⁻³¹

G2.33 Cut the tumour at right angles to the longitudinal cut through the kidney at 3mm intervals and select sections that show differing gross morphology for histological examination.

CG2.33a Examine the tumour kidney interface and take samples for histology.

G2.34 Cut the entire kidney at 5mm intervals at right angles to the sagittal bisecting cut. Take a least one section of the apparently normal kidney and note the site of origin.

CG2.34a Each slice should be carefully examined and any abnormal areas sampled for histology.

G2.35 The appearance of the cut surface of the tumour should be described.

CG2.35a Whether the tumour is solid or cystic should be recorded.

CG2.35b Macroscopic evidence of tumour necrosis should be given. The presence of necrosis within RCC has prognostic significance for clear cell renal cell carcinoma and chromophobe renal cell carcinoma but not for papillary renal cell carcinoma.³⁵

CG2.35c The colour of the tumour should be given. Variegated tumours with yellow areas are often rich in fat and this appearance is most frequently seen in a clear cell renal cell carcinoma. Chromophobe renal cell carcinomas and sarcomatoid carcinomas are often pale.⁶

CG2.35d The consistency of the tumour should be provided. Sarcomatoid carcinomas are often firm while papillary renal cell carcinomas usually have a friable consistency.³⁶

G2.36 Any abnormal features of the surface of the kidney should be listed.

G2.37 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.

CG2.37a 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.

CG2.37b 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.

3 Microscopic findings

Microscopic findings relates to purely histological (morphological) assessment. Information derived from multiple investigational modalities, or from two or more chapters, is described in Chapter 5.

S3.01 The tumour type must be recorded.

CS3.01a Many of the various sub-types of renal epithelial neoplasia exhibit differing clinical behaviour and prognosis.^{6,32,36-39} This has been confirmed in large single and multicentre studies for the main tumour sub-types. Several smaller series have also clearly demonstrated that many of the newly described entities of renal malignancy have a prognosis that differs from that of clear cell renal cell carcinoma.⁷ In addition to this protocols for the various types of adjuvant anti-angiogenic therapy relate to specific tumour sub-types.⁴⁰

Tumours should be identified from the following subtypes of renal epithelial malignancy:

- Clear cell renal cell carcinoma
- Multilocular cystic renal cell carcinoma
- Papillary renal cell carcinoma
 - Type 1
 - Type 2
- Clear cell tubulopapillary renal cell carcinoma
- Mucinous tubular and spindle cell carcinoma
- Chromophobe renal cell carcinoma
- Collecting Duct Carcinoma
- Renal medullary carcinoma
- Translocation (TFE-3 family) carcinoma
- Tubulocystic renal cell carcinoma
- Cystic renal disease/ chronic renal failure associated carcinoma
- Carcinoma associated with neuroblastoma
- Renal cell carcinoma – unclassified
- Other (specify)

S3.02 The tumour grade must be recorded. Tumour grade must be assigned preferably on the basis of degree of nucleolar prominence.

CS3.02a There is considerable debate as to the utility of grading renal cell carcinoma.¹² While the grading classification of Fuhrman, Lasky and Limas⁴¹ has widespread currency, there is little validating data even for clear cell renal cell carcinoma. While most pathologists report a Fuhrman

grade for these tumours it appears, at least, anecdotally that grading is not based upon the complete criteria defined in the Fuhrman paper.³⁶ It is clear that most pathologists assign grade according to nucleolar prominence using the Fuhrman criteria and calling this Fuhrman grade. In reality nucleolar grade is one of the three parameters that must be evaluated in assigning a Fuhrman grade however it is clear for some sub-types of renal cell carcinoma these parameters do not parallel each other and it is for this reason that nucleolar prominence alone is frequently used for grading purposes. The Association of Directors of Anatomical and Surgical Pathology endorse nucleolar grading.⁴² They also recommend that, in parallel, the granularity of the nuclear chromatin should be evaluated. While grading of papillary renal cell carcinoma using this methodology has validity,⁴³ it is recommended, at present, that chromophobe renal cell carcinoma not be graded, as neither Fuhrman nor nucleolar grading has prognostic significance.⁴⁴⁻⁴⁵

CS3.02b A recommended grading scheme is as follows:

NA	not applicable
Grade x	grade cannot be assessed
Grade 1	nucleoli inconspicuous at 400x magnification.
Grade 2	nucleoli visible at 400x magnification but not prominent at 100x magnification.
Grade 3	nucleoli prominent at 100x magnification
Grade 4	multinucleated tumour giant cells and/or markedly pleomorphic nuclei are present.

S3.03 Evidence of sarcomatoid differentiation must be recorded.

CS3.03a The report should indicate if sarcomatoid differentiation is present or absent.

CS3.03b The presence of sarcomatoid differentiation is seen in approximately 5% of renal cell carcinomas and is associated with a poor prognosis.^{46,47} Numerous studies have confirmed that sarcomatoid differentiation may occur within any of the main subtypes of renal cell carcinoma and represents high grade disease.⁴⁸ The five year survival for patients with sarcomatoid differentiation is of the order of 14 to 22%.⁴⁶⁻⁴⁹ The outcome associated with sarcomatoid differentiation is stage dependent.⁵⁰

CS3.03c An estimate as to the percentage of tumour that shows sarcomatoid differentiation could be provided.

It has been suggested that the proportion of tumour showing sarcomatoid differentiation (expressed as a percentage) has prognostic significance. In particular,

significantly different survivals were demonstrated for tumours divided with a cutpoint of 50% sarcomatoid component.⁴⁹

S3.04 Evidence of rhabdoid differentiation must be recorded.

- CS3.04a The report should indicate if rhabdoid differentiation is present or absent.
- CS3.04b Similar to the sarcomatoid differentiation, rhabdoid differentiation is a feature of high grade disease.⁵¹ Tumours showing this phenotype resemble rhabdoid cells having bulky eosinophilic cytoplasm and an eccentric nucleus, often with a prominent nucleolus.⁵² Rhabdoid change is associated with a poor prognosis. It has been shown that 71% of patients with rhabdoid differentiation developed metastases with a mean follow-up of 4.5 months. Within 2 years it was also noted that 43% of patients in this series had died, with a mean survival interval of 8 months.⁵³ In approximately 25% of tumours with rhabdoid differentiation, there is co-existing sarcomatoid carcinoma.
- CS3.04c An estimate of the percentage of tumour that shows rhabdoid differentiation could be provided.

G3.01 Evidence of tumour necrosis should be recorded.

- CG3.01a The report should indicate if tumour necrosis is present or absent.
- CG3.01b The presence of tumour necrosis has been shown to be a prognostic indicator for clear cell renal cell carcinoma and chromophobe renal cell carcinoma independent of tumour stage.^{35,37,39} Papillary renal cell carcinoma typically contains foci of necrosis, however the prognostic significance of this is, at best debated. There is also some question as to whether or not the amount of necrosis within an individual tumour predicts outcome and a cutpoint of 20% of the area of the tumour showing necrosis has been suggested to have prognostic significance.⁵⁴

S3.05 The presence or absence of tumour spread beyond the kidney must be recorded.

- CS3.05a Extra-renal extension of tumour is a feature of pT3 and pT4 staging categories of the TNM staging classification.

S3.06 Whether or not the tumour extends beyond the Gerota's fascia must be recorded.

- CS3.06a Extension of tumour beyond Gerota's fascia is a feature of the pT4 staging category of the TNM staging system.

S3.07 The presence or absence of tumour within the renal sinus fat

must be recorded.

S3.08 The presence or absence of tumour within small intra-renal vessels (microvascular invasion) must be recorded.

CS3.08a Microvascular invasion has been shown to correlate with the development of metastases and with survival, independent of tumour size, primary tumour category, and Fuhrman grade.⁵⁷

S3.09 The presence or absence of tumour within renal sinus lymphatics must be recorded.

CS3.09a Involvement of the renal sinus by tumour is a feature of pT3a tumour staging category of the TNM classification. It is likely that renal sinus invasion is preceded by involvement of renal sinus veins. It has also been shown that involvement of lymphatics within the renal sinus is of prognostic significance.⁵⁵

S3.10 The presence or absence of tumour in the muscle containing vessels within the renal sinus (including renal sinus fat) and within the renal vein must be recorded.

CS3.10a Macroscopic infiltration rather than microscopic evidence of invasion of the renal vein is a feature of pT3a, however, it has recently been shown that microvascular invasion correlates with outcome independent of T category, grade and perirenal fat invasion.⁵⁶

G3.02 The presence or absence of tumour within the pelvi-calyceal system should be recorded.

S3.11 The presence or absence of tumour within the adrenal gland must be recorded. If there is intra-adrenal tumour, record whether this is the result of direct extension or metastatic spread.

CS3.11a It is now recognized that direct spread of tumour to the ipsilateral adrenal gland has an outcome similar to pT4 tumour.^{58,59} In earlier TNM classifications this was included in the pT3a category, however, in view of these recent findings this was included as a feature of the pT4 category. In contrast a discrete, separate nodule in the adrenal gland is considered M1 disease.

S3.12 Any resected regional lymph nodes must be examined and findings recorded.

CS3.12a If regional lymph nodes were identified the site of origin must be specified.

CS3.12b The number of lymph nodes sampled must be stated The number of lymph nodes containing metastatic tumour must be stated

CS3.12c The number of lymph nodes containing metastatic tumour must be stated.

In earlier editions of the UICC/AJCC of the TNM classification, the number of lymph nodes infiltrated by tumour was used to differentiate the different pN categories. This has now been simplified to now consist of presence or absence of lymph node involvement by tumour. It has, however been shown that that survival does decrease with an increase in the number of lymph nodes involved (>4).²⁸

S3.13 The presence or absence of tumour in other organs must be recorded. If tumour has spread to other organs, record whether this is the result of direct extension or metastatic spread.

CS3.13a If tumour has spread to other organs specify the organ(s) involved

CS3.13b The presence of metastatic disease is a feature of the pM1 staging category of the TNM staging classification.

S3.14 The report must indicate if tumour is present at any marked or clearly identified surgical margin and if so which margin.

G3.03 For partial nephrectomy specimens, measure the distance from the tumour to the surgical margin.

S3.15 The nature of any co-existing renal pathology must be detailed.

CS3.15a The presence of co-existing disease may have an impact upon renal function if the contralateral kidney is involved.^{60,61}

G3.04 Any additional relevant comments should be recorded.

4 Ancillary studies findings

Ancillary studies may be used to determine lineage, clonality or disease classification or subclassification; as prognostic biomarkers; or to indicate the likelihood of patient response to specific biologic therapies.

Some studies, such as Her-2 testing, are required under the Pharmaceutical Benefits Scheme, to enable certain specific therapies to be prescribed.

- G4.01 Cytogenetics could be performed and the results incorporated into the pathology report.
- CG4.01a Ancillary tests performed externally may contain information needed for compliance with NPAAC and RCPA requirements, but that are not relevant to cancer reporting protocols. The specific elements of an ancillary study report needed for cancer reporting include the following:
- laboratory performing the test
 - substrate (e.g. cytology smears, fluid in special media, paraffin block, fresh tissue, etc)
 - method (where relevant)
 - results
 - conclusion (usually a text field)
 - person responsible for reporting the ancillary test.
- CG4.01b Cytogenetic studies may assist in the diagnosis of difficult cases, however this is not usually undertaken for routine reporting of renal cell carcinoma.
- CG4.01c Documentation of all relevant ancillary study findings is essential for overarching commentary (see Synthesis and Overview, Chapter 5), in which the significance of each finding is interpreted in the overall context of the case.
- G4.02 Fluorescent *in-situ* hybridization (FISH) could be performed and the results incorporated into the pathology report.
- CG4.02a FISH studies have been shown to have value in differentiating between oncocytoma and chromophobe renal cell carcinoma.⁶²
- G4.03 Immunohistochemistry could be performed and the results incorporated into the pathology report.
- CG4.03a While most forms of renal parenchymal malignancy are readily identified on histological examination, some difficulties may be encountered in differentiating between some morphotypes. A variety of studies have investigated the utility of immunohistochemistry in distinguishing between tumour types with varying success. Despite this it is acknowledged that immunostaining may be helpful in some cases.⁶³
- G4.04 The results of any ultrastructural examination should be recorded and included in the pathology report.

CG4.04a While ultrastructural examination is usually unnecessary for the characterisation of renal cell carcinoma subtype, it may be useful in distinguishing chromophobe renal cell carcinoma from other tumour morphotypes. Chromophobe carcinomas typically contain membrane bound vesicles within the cytoplasm. These vesicles are disrupted by routine histological processing and are not visible in paraffin-embedded tissue re-processed for electron microscopy.

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 report '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.

S5.01 The tumour stage and stage grouping must be recorded according to the UICC/AJCC TNM Classification 2009 (Seventh Edition).

Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original source for this material is the AJCC Cancer Staging Manual, Seventh Edition (2010) published by Springer Science and Business Media LLC, www.springerlink.com.

CS5.01a TNM Descriptors

(required only if applicable) (select all that apply)

m (multiple primary tumours)
r (recurrent)
y (post treatment)

Primary tumour (pT)

pTX	Primary tumour cannot be assessed
pT0	No evidence of primary tumour
pT1	Tumour 7cm or less in greatest dimension, limited to the kidney
pT1a	Tumour 4cm or less in greatest dimension, limited to the kidney
pT1b	Tumour more than 4cm but no more than 7cm in greatest dimension, limited to the kidney
pT2	Tumour more than 7cm in greatest dimension, limited to the kidney
pT2a	Tumour more than 7cm but less than or equal to 10cm in greatest dimension, limited to kidney
pT2b	Tumour more than 10cm, limited to the kidney
pT3	Tumour extends into major veins or perinephric tissues but not into the ipsilateral adrenal gland and not beyond Gerota's fascia
pT3a	Tumour grossly extends into the renal vein or its segmental (muscle containing) branches, or tumour invades perirenal and/or renal sinus fat but not beyond Gerota fascia.

- pT3b Tumour grossly extends into the vena cava below the diaphragm.
- pT3c Tumour grossly extends into vena cava above diaphragm or invades the wall of the vena cava
- pT4 Tumour invades beyond Gerota's fascia (including contiguous extension into the ipsilateral adrenal gland)

(Refer to diagrams S5.01a and b below)

Regional lymph nodes (pN)

- pNX Regional lymph nodes cannot be assessed.
- pN0 No regional lymph node metastasis
- pN1 Metastasis in regional lymph node(s)

Distant metastasis (pM)

- pM0 No distant metastasis
- pM1 Distant metastasis

Figure S5.01a (i) T3a Invasion into perirenal and/or renal sinus fat but not beyond Gerota's fascia. Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original source for this material is the AJCC Cancer Staging Manual, Seventh Edition (2010) published by Springer Science and Business Media LLC, www.springerlink.com.

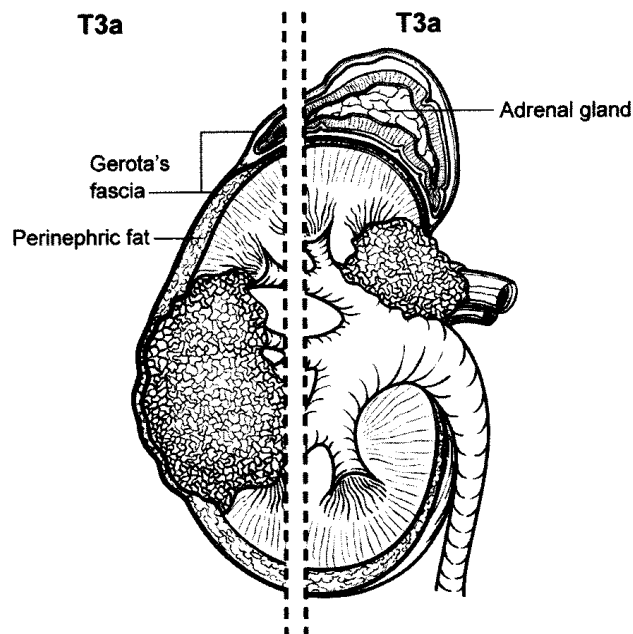
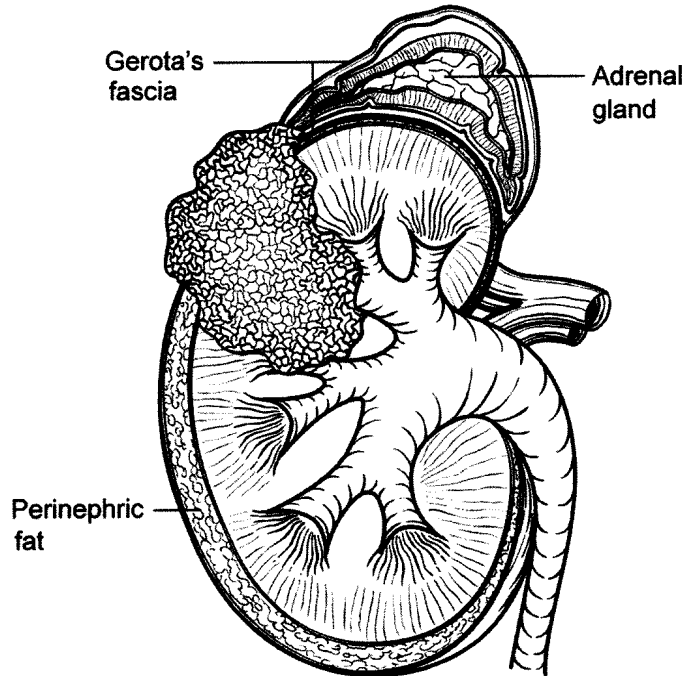


Figure S5.01a (ii) T4 Invasion beyond Gerota's fascia. Used with the permission of the American Joint Committee on Cancer (AJCC), Chicago, Illinois. The original source for this material is the AJCC Cancer Staging Manual, Seventh Edition (2010) published by Springer Science and Business Media LLC, www.springerlink.com.



CS5.01b Stage Grouping

Stage	T	N	M
Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T1 or T2	N1	M0
	T3	N0 or N1	M0
Stage IV	T4	Any N	M0
	Any T	Any N	M1

S5.02 The year of publication and edition of the cancer staging system used in S5.01 must be included in the report.

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

- a. Specimen type (G2.02)

- b. Tumour position and laterality (G2.26 and S1.04)
- c. Tumour type (S3.01)
- d. Tumour grade (S3.02)
- e. Tumour stage (S5.01)
- f. Involvement of surgical margin (completeness of excision) (S3.15)

S5.03 The reporting system must provide a field for free text or narrative in which the reporting pathologist can give overarching case comment.

CS5.03a 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.

CS5.03b 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 Data Set" for renal parenchymal malignancy. For emphasis, standards (mandatory elements) are formatted in bold font.

S6.01 The structured checklist provided below 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.

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.

Clinical information and surgical handling

S1.01	Patient name	_____
	Date of birth	_____
	Sex	_____
	Identification and contact details of requesting doctor	_____
	Date of request	_____
	Ethnicity:	
	Aboriginal or Torres Strait Islander	_____
	Other ethnicity	_____
	Unknown	_____
G1.01	Patient identifiers (eg MRN, IHI, NHI)	_____ _____
S1.02	Pathology accession number	_____
S1.03	Principal clinician involved in the patient's care	_____
G1.02	Relevant past medical history	_____ _____ _____ _____
G1.03	Details of any predisposing factors (including genetic status)	_____ _____ _____

G1.04 Details of any neo-adjuvant therapy _____

G1.05 Details of any relevant family history _____

G1.06 Details regarding extent of disease _____

G1.07 Details of previous biopsy/surgical specimens _____

S1.04 Laterality

Left _____

Right _____

G1.08 Clinical or differential diagnosis _____

S1.05 Nature of operation:

Radical nephrectomy _____

Simple nephrectomy _____

Partial nephrectomy _____

Laparoscopic removal _____

Morcellated _____

G1.09 Operative findings _____

G1.10 Surgical intent
curative _____
palliative _____

S1.06 Tissue removed for research or other purposes
Not stated _____
No _____
Yes _____
If yes, specify details of tissue removed _____

Macroscopic findings

G2.02 Nature of specimen _____
fresh _____
fixed _____
If fixed, specify fixative _____
intact _____
morcellated _____

G2.04 Measurement and weight of specimen
Dimensions _____ x _____ x _____ mm
Weight _____ g

G2.10 Evidence of infiltration to adrenal gland
No _____
Yes _____

G2.13 Length of ureter _____ mm

Length of renal vein mm

Length of renal artery mm

G2.15 Evidence of tumour within lumen vein

No

Yes

G2.22 Dimensions of kidney X X mm

G2.23 Adherence of renal capsule to the visceral surface of perirenal fat

No

Yes

Abnormalities on cortical surface _____

G2.26 Position of tumour

Upper pole

Mid zone

Lower pole

G2.27 Multiple tumours?

No

Yes

If yes, indicate number and complete the following items for each tumour as appropriate

Tumour 1

Description _____

S2.03 Dimensions of tumour X X mm

G2.28 Distance between tumour and renal capsule mm

S2.04 Evidence of infiltration to:

Renal sinus No

Yes

Large vessels No

Yes

G2.35 Appearance of cut surface:

solid

cystic

other _____

Necrosis:

absent

present

Colour of tumour _____

Consistency:

firm

friable

other _____

Tumour 2

Description _____

S2.03 Dimensions of tumour X X mm

G2.28 Distance between tumour and renal capsule mm

S2.04 Evidence of infiltration to:

Renal sinus

Large vessels

G2.35 Appearance of cut surface:

solid

cystic

other _____

Necrosis:

absent

present

Colour of tumour _____

Consistency:

firm

friable

other _____

Tumour 3

Description _____

S2.03 Dimensions of tumour XX mm

G2.28 Distance between tumour and renal capsule mm

S2.04 Evidence of infiltration to:

Renal sinus

Large vessels

G2.35 Appearance of cut surface:

solid

cystic

other _____

Necrosis:

absent

present

Colour of tumour _____

Consistency:

firm _____

friable _____

other _____

G2.36 Abnormal features of the surface of the kidney _____

G2.37 Other macroscopic comment _____

Microscopic findings

S3.01 Tumour type:

Clear cell renal cell carcinoma _____

Multilocular cystic renal cell carcinoma _____

Papillary renal cell carcinoma

Type 1 _____

Type 2 _____

Clear cell tubulopapillary renal cell carcinoma _____

Mucinous tubular and spindle cell carcinoma _____

Chromophobe renal cell carcinoma _____

Collecting Duct Carcinoma _____

Renal medullary carcinoma _____

Translocation (TFE-3 family) carcinoma _____

Tubulocystic renal cell carcinoma _____

Cystic renal disease/ chronic renal failure associated carcinoma _____

Carcinoma associated with neuroblastoma _____

Renal cell carcinoma – unclassified _____

Other (specify) _____

S3.02 Tumour grade:

NA _____

Grade x _____

Grade 1 _____

Grade 2 _____

Grade 3 _____

Grade 4 _____

S3.03 Sarcomatoid differentiation

absent _____

present _____

If present, percentage of tumour showing sarcomatoid differentiation _____ % (estimated)

S3.04 Rhabdoid differentiation

absent _____

present _____

If present, percentage of tumour showing rhabdoid differentiation _____ % (estimated)

G3.01 Necrosis

absent _____

present _____

S3.05 Tumour spread beyond kidney

absent _____

present _____

- S3.06 Tumour extends beyond Gerota's fascia**
- no**
- yes**
- S3.07 Tumour in renal sinus fat**
- absent**
- present**
- S3.08 Tumour within small intra-renal vessels (microvascular invasion)**
- absent**
- present**
- S3.09 Tumour in renal sinus lymphatics**
- absent**
- present**
- S3.10 Tumour in muscle containing vessels within renal sinus**
- absent**
- present**
- Tumour in renal vein**
- absent**
- present**
- G3.02 Tumour in pelvi-calyceal system**
- absent**
- present**
- S3.11 Tumour in adrenal gland**
- absent**
- present**

If present, is it
as a result of:

Direct extension _____

Metastatic spread _____

S3.12 Regional lymph node status

Site 1

Number of nodes involved by tumour _____

Total number of nodes resected _____

Site 2

Number of nodes involved by tumour _____

Total number of nodes resected _____

S3.13 Tumour in other organs received

absent _____

present _____

If present, specify organs _____

If present, is it
as a result of:

Direct extension _____

Metastatic spread _____

S3.14 Involvement of surgical margins

Tumour free _____

Involved _____

If involved, specify margin _____

G3.03 For partial nephrectomy specimens, distance of tumour from closest surgical margin _____ mm

S3.15 Co-existing renal pathology

G3.04 Other microscopic comment

Ancillary test findings

G4.01 Cytogenetics:

performing laboratory _____

substrate _____

method (where relevant) _____

result _____

conclusion _____

Person responsible for reporting _____

G4.02 FISH:

performing laboratory _____

result _____

conclusion _____

Person responsible for reporting _____

G4.03 Immunohistochemical stains:

Antibodies: _____

Positive antibodies _____

Negative antibodies _____

Equivocal
antibodies

Interpretation

Clinical
significance

G4.04 Ultrastructural examination:

performing laboratory

result

conclusion

Person responsible for
reporting

Synthesis and overview

S5.01 AJCC Tumour stage:

T _____

N _____

M _____

Stage Grouping _____

**S5.02 Year of publication and
edition of cancer staging
system**

G5.01 Diagnostic summary

**S5.03 Other relevant information
and comments**

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 form for renal parenchymal malignancy

S1.01 Patient name _____

Date of birth _____

Sex _____

Identification and contact details of requesting doctor _____

Date of request _____

Ethnicity:

Aboriginal or Torres Strait Islander _____

Other ethnicity _____

Unknown _____

G1.01 Patient identifiers (eg MRN, IHI, NHI) _____

S1.03 Principal clinician involved in the patient's care _____

G1.02 Relevant past medical history _____

G1.03 Details of any predisposing factors (including genetic status) _____

G1.04 Details of any neo-adjuvant therapy _____

G1.05 Details of any relevant family history _____

G1.06 Details regarding extent of disease _____

G1.07 Details of previous biopsy/surgical specimens _____

S1.04 Laterality
Left _____
Right _____

G1.08 Clinical or differential diagnosis _____

S1.05 Nature of operation:
Radical nephrectomy _____
Simple nephrectomy _____
Partial nephrectomy _____

Laparoscopic removal _____

Morcellated _____

G1.09 Operative findings

G1.10 Surgical intent

curative _____
palliative _____

**S1.06 Tissue removed for research
or other purposes**

No _____
Yes _____

If yes, specify details of
tissue removed _____

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.¹⁰

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.

- Configuring reports in such a way that they 'chunk' data elements into a single unit will help to improve recall for the clinician.¹⁰
- 'Clutter' should be reduced to a minimum.¹⁰ Thus, information that is not part of the protocol (e.g. billing information, Snomed codes, etc) should not appear on the reports or should be minimized.
- Injudicious use of formatting elements (e.g. too much bold, underlining or use of footnotes) constitutes 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

Citizen, Georgina W. C/O Paradise Close Wreck Bay Resort Nar Nar Goon East, 3181 Female DOB 1/7/1951 MRN FMC1096785	Lab Ref: 10/P28460 Referred: 30/8/2010	Copy to: Dr N.G.Chapman 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
--	--	--	---

RADICAL NEPHRECTOMY STRUCTURED REPORT

Page 1 of 2

Diagnostic Summary

Right radical nephrectomy:

Clear cell renal cell carcinoma, nucleolar grade 3, UICC Stage III (pT3a, N1, M0) (AJCC 7th edition, 2010)

- Comment:
1. Tumour infiltrates the renal sinus, but is not present within the renal vein or intra-renal vasculature.
 2. A single lymph node 0.9cm in diameter from the renal hilum contains a small focus of metastatic tumour.

Supporting Information

CLINICAL

Nature of operation:	Right radical nephrectomy
Medical History:	Haematuria and abdominal pain
Extent of disease:	No known metastases
Adjuvant therapy:	Nil
Tissue removed for research:	No

MACROSCOPIC

Weight of specimen:	756g
Dimensions of specimen:	170 x 120 x 80 mm
Weight of kidney:	312g
Dimensions of kidney:	125 x 98 x 62 mm
Renal vein length:	10mm
Renal artery length:	6mm
Ureter length:	5mm
Tumour:	
Dimensions:	60x40x42mm
Tumour location:	Lower pole
Gross infiltration perirenal fat:	No
Gross infiltration renal sinus:	No
Local resection margin	Clear
Appearance of cut surface:	Solid with focal cyst formation
Necrosis:	Absent
Colour of tumour:	Varigated yellow/gray with areas of recent haemorrhage

Consistency of tumour:	Firm
Abnormal features on surface of kidney:	Nil
Hilar lymph nodes:	2
Adrenal gland:	Present and Normal

MICROSCOPIC

Tumour

Tumour type:	Clear cell renal cell carcinoma
Tumour grade:	Grade 3
Sarcomatoid differentiation:	Absent
Rhabdoid differentiation:	Absent
Necrosis:	Absent

Extent

Tumour spread beyond kidney:	Absent
Tumour in renal sinus fat:	Present
Tumour in perinephric fat	Absent
Microvascular invasion:	Absent
Tumour beyond Gerota's fascia:	Absent
Tumour in renal sinus lymphatics:	Absent
Tumour in muscular vessels in renal sinus:	Absent
Tumour in renal vein:	Absent
Tumour in pelvi-calyceal system:	Absent
Tumour in adrenal gland:	Absent
Tumour in other organs:	Absent

Lymph nodes

Regional lymph node involvement:	Present
Site:	Renal hilum
No. of nodes present:	2
No. of involved nodes:	1

Margins

Involvement of surgical margins:	Absent
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Coexisting renal pathology None

ANCILLARY TESTS

None performed.

Reported by Dr Bernard Beckstein

Authorised 4/9/2010

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