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Standards and Datasets for Reporting Cancers

Dataset Adult Renal Parenchymal Cancer Histopathology Reports

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1 INTRODUCTION

Renal cancer is less common than bladder or prostate cancer but mortality rates are twice as high. Improvements in the management and treatment of these patients are required. Of about 6200 new presentations in the UK each year, 80% are managed by local multidisciplinary cancer teams. Pathologists within them have important roles in providing prognostic information for patients and identifying those who require central referral for adjuvant therapy or trial entry. Patients referred centrally for surgery, according to the NICE Guidance, Improving Outcomes in Urological Cancers (www.nice.org.uk), include those with tumours involving the vena cava or heart, limited metastatic disease which might be amenable to resection, bilateral disease, von Hippel-Lindau disease, hereditary papillary tumours or patients requiring dialysis. Patients with small tumours for whom nephron-sparing surgery may be possible may also be referred to the centre. Alternatives to surgery, such as radiofrequency ablation, may also be considered for patients with small tumours and patients who are not fit for anaesthesia.

The NICE Guidance further recommends that members of urological cancer teams should have specialised skills appropriate for their roles at each level of the service and that there should be a nominated lead pathologist for urological pathology. Within the network, referral pathways should be established for difficult cases. It is expected that pathologists reporting renal cancers participate in an external quality assurance scheme as recommended by the NICE Guidance.

These guidelines are not based on a full evidence review but reflect current best clinical practice, supported by large scale recent studies. They build on work done by the NCRI Renal Cancer Clinical Studies Prognostic Factors Subgroup.

Guidelines for the reporting of renal tumour specimens are required and should be adopted for the following reasons:

1. Algorithms or nomograms, which include multiple pathological features, have been developed to stratify patients according to risk and provide more accurate prognostic information than stage or grade alone.

2. There is an increasing trend to tailor follow-up regimens according to the level of risk of recurrence and progression, as defined by these algorithms, benefiting patients at low risk by reducing the frequency of imaging and therefore radiation exposure. Each cancer network should have agreed protocols for follow-up to ensure consistency of care. The specific algorithm used within these protocols should be highlighted to members of each multidisciplinary team.

3. These algorithms are used to identify patients at increased risk of developing metastatic disease and who may therefore benefit from adjuvant treatment in the context of clinical trials. Increased accrual of patients into trials is part of the national NHS strategy to improve outcomes in cancer. Identification of patients eligible for trial entry is an important component of the multidisciplinary team meeting, and part of the national cancer standards. Pathologists play a key role in this area.

4. Different subtypes of renal parenchymal tumours have become increasingly defined in recent years. They may be associated with different outcomes.

5. Adoption of a consistent approach to classification and risk assessment of renal tumours is essential for audit and epidemiological studies.

This document has been devised to include the data required for an assessment of a renal parenchymal tumour and is based on factors used in clinical management. It is recognised that some of these factors, such as the TNM staging system[1], were derived historically from consensus rather than an unbiased evidence base[2], but they subsequently have received a degree of external validation.

The following organisations have been consulted during the preparation of the dataset:

BAUS section of oncology, British Uro-oncology Group, NCRI Renal Clinical Studies Group

2 CLINICAL INFORMATION REQUIRED ON THE SPECIMEN REQUEST FORM

This includes any family history of renal cancer, whether the patient has clinically confined or metastatic disease, laterality of the specimen, operation type (partial or radical, open or laparoscopic) and the timing of any preoperative embolisation.

3 PREPARATION OF SPECIMEN BEFORE DISSECTION

The kidney is opened longitudinally to divide the kidney into broadly symmetrical anterior and posterior halves, but taking care not to cut through the hilum. Because of the presence of perinephric fat and the density of renal parenchyma, multiple additional sections to allow adequate fixation are useful. Dissection of fresh specimens is an option as renal parenchymal tumours are firm and relatively easy to handle.

4 SPECIMEN HANDLING AND BLOCK SELECTION

A synoptic reporting proforma (appendix C) has been added as an *aide memoire* for the main features of these neoplasms. The proforma extracts the dataset currently used in diagnosis and staging. This would usually be supplemented by a more detailed written report. Aspects of best practice in handling renal tumour specimens have recently been reviewed.[3]

4.1 Gross examination

The specimen should be described as either a total or partial nephrectomy and laterality indicated. Whether the nephrectomy was performed using an open or laparoscopic approach may be important for audit purposes. Lymph nodes from an extended dissection, rarely performed by surgeons in the UK, are usually sent separately with the site identified. Thrombus from the inferior vena cava or beyond is also generally sent separately for pathological confirmation of the presence of tumour.

Careful macroscopic inspection of the nephrectomy specimen is important as much of the TNM classification system rests on observations at gross examination.

It is usual to weigh and measure the specimen although changes in weight and dimension may have more to do with the amount of perirenal fat than with the presence of a tumour. However, the perinephric fat should not be stripped as this hinders the interpretation of direct invasion. The specimen should be orientated by identifying the ureter, extending inferiorly from the renal sinus along the medial border. At the renal hilum, the renal vein is most anterior with the artery behind it and both normally lie anterior to the renal pelvis. The presence or absence of an adrenal in the suprarenal fat should be noted and whether or not it appears directly invaded by carcinoma (stage pT3a), as this is different from a blood-borne metastasis (classified as pM1 in the TNM system). If tumour appears to extend close to a surgical resection margin, the surface in question should be inked. The resection margin of partial nephrectomy specimens should be inked routinely.

The renal vein requires careful inspection to identify the potential presence of tumour. Irregularities of the inner aspect of the vein may represent invasion of the wall. The presence of lymph nodes near the hilum should also be noted. Complete sections through the kidney and laying out of individual slices should only be done after inspection of the hilum.

The location, including whether predominantly cortical or medullary, the appearance and the maximum dimension of the tumour should be recorded, as size is used both for the pT classification and in different algorithms. The presence of direct invasion into perinephric or renal sinus fat, the latter surrounding the collecting system where it emerges from the kidney, should be noted. The muscle containing tributaries (referred to as branches in the 2002 TNM publication[1]) of the renal vein are located in the sinus, and it is important to identify macroscopically any potential invasion of these vessels as this is classified as renal vein invasion. Involvement of Gerota's fascia (at the surgical

dissection plane for radical nephrectomy) or direct continuous spread into adjacent organs should also be recorded. Both these scenarios represent pT4 disease.

A photographic record of the specimen is useful.

4.2 Block selection

Blocks should be taken as individual structures are identified during the above examination. In summary, and in the order they are generally encountered, take sections of:

- all potential lymph nodes;
- the adrenal if present, demonstrating any areas of direct invasion;
- resection margins of the ureter and renal vein;
- potential areas of invasion into the main renal vein or its segmental tributaries as identified macroscopically;
- foci suspicious of invasion into the collecting system (calyces, renal pelvis);
- the interface between the tumour and the perinephric and renal sinus fat,;
- the interface between the tumour and adjacent renal parenchyma;
- areas where the cut surface of the tumour appears pale, as this may indicate sarcomatoid change;
- an area adjacent to and including some necrosis if present (see algorithms);
- areas where tumour is closest to a resection margin (partial nephrectomies in particular);
- any satellite lesions or other abnormalities;
- uninvolved kidney distant from the tumour.

Invasion into fat or into the large veins of the renal sinus is best demonstrated by close sectioning the kidney in the transverse (horizontal) or longitudinal (vertical) plane, the slices placed in sequence and the areas most suspicious for invasion selected. In the absence of macroscopic invasion into vessels, sections of the sinus fat and renal parenchyma adjacent to the tumour are useful for the identification of microvascular invasion. However, according to the rules of the TNM system[1], vascular invasion, when only identified microscopically, does not alter the pT classification of the tumour, even if it is seen in perinephric tissues. If invasion into the renal vein or its large tributaries is seen macroscopically, the pT category becomes 3b, hence the need for very careful inspection of the vein(s) and sampling of all suspicious areas for microscopic confirmation. It is usual to recommend one block per centimetre of tumour. However, the number of blocks depends on how uniform the tumour is in appearance and whether high risk factors are clearly identifiable. If, for instance, there is definite renal vein invasion, taking large numbers of blocks to identify additional foci of microvascular invasion is unlikely to be contributory.

If the tumour has an unusual cut surface, for instance suggestive of oncocytoma (tan colour with central stellate scar), consideration should be given to taking tissue for electron microscopy. This may also be done subsequently for the diagnosis of chromophobe carcinoma as the characteristic cytoplasmic vesicles do not survive processing. If the differential diagnosis is between collecting duct carcinoma and urothelial carcinoma, additional sections of the calyces and pelvis to identify a papillary or in situ urothelial component may help to reach a definitive diagnosis of urothelial carcinoma.

5 CORE DATA ITEMS

The TNM system is internationally accepted, although it must be acknowledged that it was historically based on expert consensus, and that a more rigorous method for continuous improvement has only recently been adopted.[2] Three large institutions have sought to improve the stratification of patients into different prognostic groups by adding different pathological factors (and clinical factors in some cases) to the TNM staging. Study endpoints include time to recurrence [4, 5], development of metastasis[6] and disease specific survival.[7, 8] Some of these studies do not differentiate between the subtypes of renal carcinomas[5, 8] and others are confined to the most common type of renal carcinoma, i.e. the conventional (clear cell) carcinoma.[4, 6, 7] Therefore all the systems have advantages and limitations, and

there has been no agreement as to which was preferable. The studies used to develop these algorithms or nomograms are institution- rather than population- based and therefore the precise estimates of the risk of recurrence or progression may not be directly transferable to the general population or other institutions. Nevertheless, these are large scale studies, all of which have been subjected to independent external validation.[4, 9-11] These prognostic tools appear to offer better information for decision- making and clinical management than the TNM system alone. We therefore recommend that the data items required for these algorithms are routinely recorded (see Appendix B) and further validated prospectively through audit of outcomes. The only relatively new items are histological tumour necrosis[6, 7, 12] and microvascular invasion.[4] Tumour necrosis is defined as coagulative necrosis and must be clearly distinguished from areas of hyalinization, haemorrhage or fibrosis, which are commonly observed. Caution should also be used when assessing tumour necrosis in cases of pre-operative embolization. This is performed usually shortly before surgery to reduce the risk of major haemorrhage during mobilisation of the kidney. It does not generally cause tumour infarction and its greatest effect is often observed in the non-tumorous kidney where acute tubular necrosis can be seen.

In terms of tumour subtypes, the Heidelberg/Rochester classification[13, 14] defines morphological entities based on different underlying genetic abnormalities and includes conventional (clear cell), papillary, chromophobe and collecting duct carcinomas, as well as benign entities such as oncocytoma. Sarcomatoid carcinomas are no longer a distinct entity, as any type of renal cancer can undergo sarcomatoid change. It is recognised that up to 5% of tumours may be unclassifiable; this includes sarcomatoid tumours if the original tumour type cannot be identified. The classification is robust and easy to apply and is highly recommended, as different subtypes of renal carcinoma may have different outcomes. The more recent World Health Organization Classification[15] contains an extended list of tumour types, including the subdivision of papillary renal carcinomas into types 1 and 2 and other recently described entities, the majority of which are rare. It is useful as a reference, particularly for unusual cases.

The most common grading system is that proposed by Fuhrman.[16] As one of the algorithms[6] used in clinical management has a modified system, correlations between the two, which can be easily drawn, are presented in table 1 for ease of reference. The prognostic value of nuclear grade has been demonstrated for conventional, papillary and chromophobe carcinomas[17-18] and was more important than histological subtype in one large series[18] but not in another.[17] The significance of nuclear grade does not appear to have been tested for collecting duct carcinomas but these rarer tumours are generally of high grade and associated with poor prognosis.

Most current trials and prognostic systems use the 2002 TNM edition[1] but the UCLA Integrated Staging System uses the 1997 edition.[19]

Summary of core data items

5.1 Clinical

- Laterality;
- Type of operation.

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5.2 Pathological

5.2.1 Macroscopic items

- Tumour size;
- Tumour location;
- Perinephric, renal sinus fat or direct adrenal invasion;
- Invasion into the renal vein or its segmental branches (more correctly referred to as tributaries);
- Invasion beyond Gerota fascia;
- Invasion of adjacent organs;
- Presence of adrenal metastasis (distinguished from direct spread).

5.2.2. Microscopic items

- Tumour subtype;
- Tumour grade;
- Primary tumour category (pT stage);
- Histological tumour necrosis;
- Microvascular invasion;
- Margin status;
- Regional nodal status (pN stage) including number involved relative to total number.

6 NON-CORE DATA ITEMS

- Invasion of the collecting system: this is rare and there are few reports on its importance but it appears to confer a worse prognosis particularly in lower stage disease.[20, 21]
- Characterisation of invasion into perinephric tissues (pT3a): perinephric or renal sinus invasion, defined as the presence of tumour cells in direct contact with the perinephric or renal sinus stroma or fat cells, may not be equivalent as renal sinus fat invasion appears to confer a worse prognosis.[22] One report has further suggested a worse outcome for patients with an infiltrative rather than a pushing margin.[23] Direct invasion into the ipsilateral adrenal, however, appears to confer the worst prognosis within the pT3a group, with outcomes equivalent to those for pT4 disease.[24, 25] These three types of invasion into perinephric tissues are distinguished in the proforma provided as an *aide memoire* as prospective data collection and audit would clarify their prognostic significance in routine practice.
- Distance to the intraparenchymal resection margin for partial nephrectomies: this may be recorded for audit purposes although the available evidence indicates that, providing a margin of normal renal parenchyma is present, its size does not influence recurrence rates.[26]
- Any significant pathology in the uninvolved kidney.

7 DIAGNOSTIC CODING

7.1 TNM classification (appendix A)

The 6th edition of TNM[1] is recommended. One of the differences from the 5th edition[19] is the subdivision of pT1 tumours using a cut-off point of 4 cm. This is relevant as it largely represents the cut-off point for nephron sparing surgery. The second modification affects the assessment of nodes and applies to all cancer sites. A tumour nodule in the connective tissue of the lymph drainage area is classified as a regional lymph node metastasis if the nodule has the form and smooth contour of a lymph node, even in the absence of histologically proven residual lymph node tissue. In the kidney, the lymphatic drainage follows the blood vessels to form large trunks within the renal sinus. These are joined by the capsular and perinephric lymphatics as they exit the hilum and the first lymph nodes to drain the kidney may therefore be found at the hilum, often associated with the renal vein.

The 6th edition explicitly states that invasion of perinephric tissues includes renal sinus (peripelvic) fat invasion (pT3a) and renal vein invasion includes invasion into its large muscle containing branches (pT3b). This is not a change from the 5th edition and therefore is not identified by a vertical bar in left column of the 2002 publication. It was a clarification of the UICC position (personal communication, LH Sobin) given possible differences in views about whether the sinus fat is around or within the kidney and what constitutes the renal vein(s). Only direct invasion of perinephric tissues, and not histological identification of invasion of vessels in this location, constitutes pT3a (personal communication, LH Sobin). Vascular invasion can be recorded using the TNM system by using the optional categories for lymphatic invasion (L1 if present) and vascular invasion (V1 if present microscopically). Vascular invasion only upstages a renal carcinoma (to pT3b not a) if it is identified macroscopically in either the main renal vein or its segmental (muscle containing) branches (more correctly termed tributaries).

The UCLA Integrated Staging System is based on the 5th edition[19], and this should be considered if this system is adopted for clinical management. However, the only real difference in this context is in the assessment of nodal status.

7.2 SNOMED coding

Right kidney – T71010
Left kidney – T72020
Conventional (clear cell) carcinoma – M83123
Papillary (chromophil) carcinoma – M80503
Chromophobe carcinoma – M82703
Collecting duct carcinoma – M85103

8 REPORTING OF SMALL BIOPSY SPECIMENS

Biopsies are not normally performed prior to nephrectomy as imaging is generally characteristic. When there is doubt about malignancy, such as in complex cystic lesions, sampling errors are such that biopsies may not be helpful in the distinction between benign and malignant lesions. However, biopsies may be useful to confirm an alternative diagnosis, especially where surgery can be avoided. Patients with transitional cell carcinoma require a more extended, or complete, ureterectomy. Patients with malignant lymphoma should be referred to the haematological multidisciplinary cancer team for confirmation of the diagnosis, lymphoma typing and subsequent management. The rare sarcomas should also be dealt with by the relevant multidisciplinary team. Finally, it is recommended that when a patient has not undergone nephrectomy, a biopsy should be performed to confirm the diagnosis prior to commencement of anti-cancer therapy.

Biopsy cores are generally small and it is often helpful to take only an initial shallow section for diagnosis to maximize the amount of tissue available for immunocytochemistry.

9 REPORTING OF FROZEN SECTIONS

Intraoperative examination of resection margins is performed in some institutions during partial nephrectomies. Available data suggest that this may not be necessary when partial nephrectomy is performed with attention to excising a perimeter of grossly normal-appearing parenchyma.[27, 28] If frozen sections are performed, the orientation of the initial and any subsequent wider excision should be clearly identified by the surgeons using sutures or ink when relevant.

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APPENDIX A TNM PATHOLOGICAL STAGING (6TH EDITION, UICC[1])

pT - Primary Tumour

pTx Primary tumour cannot be assessed.
pT0 No evidence of primary tumour.
pT1 Tumours 7 cm or less in greatest dimension, limited to the kidney.
- pT1a Tumour 4 cm or less.
- pT1b Tumour more than 4 cm but not more than 7 cm.

pT2 Tumour more than 7 cm at greatest dimension, limited to the kidney.
pT3 Tumour extends into major veins or directly invades adrenal gland or perinephric tissues but not beyond Gerota fascia.
- pT3a tumour directly invades adrenal gland or perinephric (including renal sinus) tissues but not beyond Gerota fascia.
- pT3b Tumour grossly extends into renal vein(s) or vena cava or its wall below the diaphragm.
- pT3c Tumour grossly extends into vena cava or its wall above the diaphragm.

pT4 Tumour directly invades beyond Gerota fascia.

In the case of multiple tumours, the tumour with the highest T category should be classified and the multiplicity or number of tumours should be indicated in parentheses, e.g. pT2 (m) or pT2 (5).

pN - Regional Lymph Nodes

pNx Regional lymph nodes cannot be assessed.
pN0 No regional lymph node metastasis.
pN1 Metastasis in a single regional lymph node.
pN2 Metastasis in more than one regional lymph node.

pM - Distant Metastasis

pMX Distant metastasis cannot be assessed.
pM0 No distant metastasis.
pM1 Distant metastasis.

Stage Grouping

Stage I	T1	N0	M0
Stage II	T2	N0	M0
Stage III	T3	N0	M0
	T1, T2, T3	N1	M0
Stage IV	T4	N0, N1	M0
	Any T	N2	M0
	Any T	Any N	M1

APPENDIX B. CLINICAL MANAGEMENT ALGORITHMS AND NOMOGRAMS

Details of these are given for information, as clinical teams are increasingly introducing them into patient management to tailor the frequency and type of follow-up for individual patients. The performance of these algorithms in routine practice will require audit.

All renal cancer subtypes grouped

The main validated system is the UCLA Integrated Staging System (UISS). It uses stage (1997 TNM), Fuhrman's grade and the Eastern Cooperative Oncology Group (ECOG) performance status, as the latter is an independent prognostic factor[29]. Patients with clinically localised carcinoma or presenting with metastatic disease are stratified into groups at low, intermediate and high risk and the potential prognostic power of this system is illustrated by the differences in the estimates of the disease specific survival for each group (table 2), although collection of data for local validation is required. In the context of this system, the fact that it is based on the 1997 rather than the 2002 TNM impacts only on the assessment of nodal status, and will affect the small proportion of patients who are diagnosed as node positive even in the absence of identifiable nodal tissue according to the new rules.

Systems for conventional (clear cell) carcinomas only

Both the Memorial Sloan Kettering Cancer Centre (MSKCC) nomogram[4] and the Mayo Clinic algorithm[6] use the development of recurrence as the endpoint.

The MSKCC nomogram includes clinical presentation (incidental or symptomatic), because it has been shown to be of prognostic significance in cohort studies[30-32]. However, in a population based study[33], it was not an independent prognostic factor of survival suggesting that much of the apparent improvement in survival in cohort studies is due to lead time bias. Other factors in the nomogram are tumour size, stage (2002 TNM), Fuhrman grade, the presence of necrosis and/or vascular invasion. The nomogram of 5-year predicted probability of freedom from recurrence is available from nomograms@mskcc.org.

The Mayo Clinic algorithm is purely based on pathological factors (table 3). Although there was a potential selection bias towards good performance status, this is a large study (1671 patients) and discrimination between low, intermediate and high risk groups appears good (table 4) and it has been independently validated[9]. Further external validation will be provided in the context of the next trial to be offered to patients in the UK, the “SORCE” trial, a phase III randomised trial comparing sorafenib (an inhibitor of multiple tyrosine kinases) with placebo. It is likely that numerous UK institutions will take part in this large trial, which aims to recruit 1656 patients over a 5 year period (2006-2011). Pathologists will have a key role in identifying patients at high or intermediate risk of relapse for trial entry.

Table 1: Grading Systems

		Fuhrman[16]	Mayo Clinic[6]
Grade 1	Nuclear shape	Round, uniform	Small, round
	Nucleoli	None	Inconspicuous visible only at x 400
Grade 2	Nuclear shape	Slightly irregular	Round to slightly irregular
	Nucleoli	Visible at high-power x400 magnification	Mildly enlarged visible at x 200 magnification
Grade 3	Nuclear shape	Very irregular outlines	Round to irregular
	Nucleoli	Prominent visible at x 100 magnification	Prominent visible at x 100 magnification
Grade 4	Nuclear shape	Bizarre and multilobed spindle shaped cells	Enlarged pleomorphic or giant cells
	Nucleoli	Prominent	
Note about grade assignment		Worst grade regardless of extent	Highest grade occupying at least one high-power field (0.55mm at x400 magnification for the Olympus BX40 microscope)

Table 2: UCLA integrated staging system[8]

Patients with clinically localised disease (N0, M0)	T stage	Fuhrman's grade	ECOG status	5-year disease specific survival (standard error)
Low risk	1	1-2	0	91.1% (3.6)
Intermediate risk	1	1-2	1 or more	80.4% (4.0)
	1	3-4	Any	
	2	Any	Any	
	3	1	Any	
	3	2-4	0	
High-risk	3	2-4	1 or more	54.7% (5.4)
	4	Any	Any	
Patients with metastasis at presentation				
Low risk	N1M0	Any	Any	32.0% (8.7)
	N2M0/M1	1-2	0	
Intermediate risk	N2M0/M1	1-2	1 or more	19.5% (3.2)
		3	0, 1 or more	
		4	0	
High-risk	N2M0/M1	4	1 or more	0

Table 3: Mayo Clinic Algorithm[6]

Pathological factor		Score
2002 TNM primary tumour category	pT1a	0
	pT1b	2
	pT2	3

	pT3a-pT4	4
Regional lymph nodes status	pNx or pN0	0
	pN1 or pN2	2
Tumour size (cm)	Less than 10 cm	0
	10 cm or more	1
Nuclear grade	1 or 2	0
	3 (corresponds to Fuhrman 3)	1
	4 (corresponds to Fuhrman 4)	3
Histological tumour necrosis	No	0
	Yes	1

Table 4: Mayo Clinic Algorithm[6] Estimated Metastasis Free Survival Rate

		Estimated metastasis free survival rate (standard error)	
	Scores	Year 5	Year 10
Low risk group	0-2	97.1% (0.7)	92.5% (1.3)
Intermediate risk group	3-5	73.8% (2.0)	64.3% (2.4)
High risk group	6 or more	31.2% (2.7)	23.6% (2.7)

APPENDIX C. REPORTING PROFORMA FOR ADULT RENAL CARCINOMAS

Surname…… Forenames……..… Date of birth…… Sex….

Hospital…….…… Hospital no…….…... NHS no……....
Date of receipt…….……. Date of reporting……..…..... Report no…….
Pathologist…….……... Surgeon…….……

Nature of specimen and core macroscopic items

Right kidney □ Left kidney □ Partial □ Radical □ Open □ Laparoscopic □

Adrenal present Yes □ No □ Adjacent organs present Yes □ No □
Nodal dissection Yes □ No □

Maximum tumour size ……(mm) Tumour location……..

Invasion into the renal vein(s) or vena cava below the diaphragm Yes □ No □ Cannot assess □
Invasion into the vena cava above the diaphragm Yes □ No □ Cannot assess □

Core microscopic items

Tumour subtype	Conventional (clear cell)	□	Differentiation	Grade 1	□
	Papillary (chromophil)	□		Grade 2	□
	Chromophobe	□		Grade 3	□
	Collecting duct	□		Grade 4	□ And sarcomatoid □
	Unclassified	□			
	Other:	□	Coagulative tumour necrosis	Yes □	No □
	Please specify……		Microvascular invasion	Yes □	No □

Tumour 4cm or less, limited to the kidney (pT1a)	□ No	□ Cannot assess (pTx)	□
Tumour 4.1 to 7cm, limited to the kidney (pT1b)	□ No	□ Cannot assess (pTx)	□
Tumour more than 7cm, limited to the kidney (pT2)	□ No	□ Cannot assess (pTx)	□
Direct invasion into perinephric fat (pT3a)	□ No	□ Cannot assess (pTx)	□
Direct invasion into renal sinus fat (pT3a)	□ No	□ Cannot assess (pTx)	□
Direct invasion into adrenal (pT3a)	□ No	□ Cannot assess (pTx)	□
Confirmation of gross invasion into the renal vein or its segmental tributaries or the vena cava below the diaphragm (pT3b)	□ No	□ Cannot assess (pTx)	□
Confirmation of gross invasion into the vena cava above the diaphragm (pT3c)	□ No	□ Cannot assess (pTx)	□
Direct invasion into Gerota's fascia (pT4)	□ No	□ Cannot assess (pTx)	□

Margins Negative □ Positive □
Distance to the nearest margin ……(mm) Site(s)……

Nodes Total Number positive N/A □

pTNM stage: pT …… pN…… pM…….

SNOMED codes

T…….. M……..
T…….. M……..

Signature of pathologist. ……. Date……..