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Prostate Cancer Histopathology Reporting Guide Transurethral Resection and Enucleation

ICCR

Family/Last name | Date of birth DD – MM – YYYY

Given name(s)

Patient identifiers | Date of request DD – MM – YYYY | Accession/Laboratory number

Elements in **black text** are CORE. Elements in **grey text** are NON-CORE.

☐ indicates multi-select values ◯ indicates single select values

SCOPE OF THIS DATASET

CLINICAL INFORMATION (Note 1)

◯ Information not provided
◯ Information provided (select all that apply)

- ☐ Previous history of prostate cancer (including the Gleason score or WHO/ISUP Grade/Grade Group of previous specimens if known), *specify*
- ☐ Previous biopsy, *specify date and where performed*
- ☐ Previous therapy, *specify*
- ☐ Other clinical information, *specify*

PRE-PROCEDURE SERUM PSA (Note 2)

ng/mL

CLINICAL STAGE (Note 3)

OPERATIVE PROCEDURE (Note 4)

◯ Not specified
◯ Transurethral resection
◯ Enucleation (suprapubic/simple/open prostatectomy)
◯ Other, *specify*

SPECIMEN WEIGHT (Note 5)

g

◯ Cannot be assessed, *specify*

SPECIMEN DIMENSIONS (Note 6)

(Enucleation/suprapubic/open prostatectomy specimens only)

mm x mm x mm

BLOCK IDENTIFICATION KEY (Note 7)

(List overleaf or separately with an indication of the nature and origin of all tissue blocks)

HISTOLOGICAL TUMOUR TYPE (select all that apply) (Note 8)

☐ Adenocarcinoma (Acinar, usual type)
☐ Other, *specify*

HISTOLOGICAL TUMOUR GRADE (Note 9)

Gleason score

Primary pattern/grade
◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5

Highest remaining pattern/grade
◯ 1 ◯ 2 ◯ 3 ◯ 4 ◯ 5

◯ Indeterminate, *specify reason*

WHO/ISUP Grade (Grade Group)

◯ WHO/ISUP Grade (Grade Group) 1 (Gleason score ≤6)
◯ WHO/ISUP Grade (Grade Group) 2 (Gleason score 3+4=7)
◯ WHO/ISUP Grade (Grade Group) 3 (Gleason score 4+3=7)
◯ WHO/ISUP Grade (Grade Group) 4 (Gleason score 8)
◯ WHO/ISUP Grade (Grade Group) 5 (Gleason score 9-10)
◯ Indeterminate, *specify reason*

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HISTOLOGICAL TUMOUR GRADE (Note 9) **continued**

Percentage Gleason pattern 4
(Applicable for Gleason score 3+4=7 or WHO/ISUP Grade 2)

- ◯ 1-5%
- ◯ 6-10%
- ◯ 11-20%
- ◯ 21-30%
- ◯ 31-40%
- ◯ 41-50%

Percentage Gleason pattern 4
(Applicable for WHO/ISUP Grade ≥3)

_____ %

Percentage Gleason pattern 5
(Applicable for WHO/ISUP Grade ≥4)

_____ %

TUMOUR GROWTH PATTERNS (Note 10)

Intraductal carcinoma of the prostate (IDC-P) AND/OR Invasive cribriform carcinoma

- ◯ Indeterminate
- ◯ Not identified
- ◯ Present

If present, specify the tumour growth pattern (if apparent on H&E staining[a])

IDC-P

- ◯ Not identified
- ◯ Present
  - ◯ IDC-P incorporated into Gleason score
  - ◯ IDC-P not incorporated into Gleason score

Invasive cribriform carcinoma
(Applicable for Gleason score 7 or 8)

- ◯ Not identified
- ◯ Present

[a] *Use of immunohistochemistry is optional.*

PROSTATIC TISSUE INVOLVED BY TUMOUR (Note 11)

Prostatic tissue involved by tumour measured on the basis of area
(TURP or enucleation/suprapubic prostatectomy specimens)

- ◯ 1% - 5%
- ◯ 6% - 10%
- ◯ 11% - 20%
- ◯ 21% - 30%
- ◯ 31% - 40%
- ◯ 41% - 50%
- ◯ 51% - 60%
- ◯ 61% - 70%
- ◯ 71% - 80%
- ◯ 81% - 90%
- ◯ >90%

OR

Prostatic tissue involved by tumour measured on the basis of number of chips
(TURP specimens only)

- ◯ 1% - 5%
- ◯ 6% - 10%
- ◯ 11% - 20%
- ◯ 21% - 30%
- ◯ 31% - 40%
- ◯ 41% - 50%
- ◯ 51% - 60%
- ◯ 61% - 70%
- ◯ 71% - 80%
- ◯ 81% - 90%
- ◯ >90%

EXTRAPROSTATIC EXTENSION (Note 12)

- ◯ Not identified
- ◯ Present

SEMINAL VESICLE INVASION (Note 13)

- ◯ Not identified
- ◯ Present

LYMPHOVASCULAR INVASION (Note 14)

- ◯ Not identified
- ◯ Present

PERINEURAL INVASION (Note 15)

- ◯ Not identified
- ◯ Present

COEXISTENT PATHOLOGY (Note 16)

- ◯ None identified
- ◯ Present, *specify*

Definitions

CORE elements

CORE elements are those which are essential for the clinical management, staging or prognosis of the cancer. These elements will either have evidentiary support at Level III-2 or above (based on prognostic factors in the National Health and Medical Research Council (NHMRC) levels of evidence[1]). In rare circumstances, where level III-2 evidence is not available an element may be made a core element where there is unanimous agreement by the Dataset Authoring Committee (DAC). An appropriate staging system e.g., Pathological TNM staging would normally be included as a CORE element.

Non-morphological testing e.g., molecular or immunohistochemical testing is a growing feature of cancer reporting. However, in many parts of the world this type of testing is limited by the available resources. In order to encourage the global adoption of ancillary tests for patient benefit, International Collaboration on Cancer Reporting (ICCR) includes the most relevant ancillary testing in ICCR Datasets as CORE elements, especially when they are necessary for the diagnosis. Where the technical capability does not yet exist, laboratories may consider temporarily using these data elements as NON-CORE items.

The summation of all CORE elements is considered to be the minimum reporting standard for a specific cancer.

NON-CORE elements

NON-CORE elements are those which are unanimously agreed should be included in the dataset but are not supported by level III-2 evidence. These elements may be clinically important and recommended as good practice but are not yet validated or regularly used in patient management.

Key information other than that which is essential for clinical management, staging or prognosis of the cancer such as macroscopic observations and interpretation, which are fundamental to the histological diagnosis and conclusion e.g., macroscopic tumour details, may be included as either CORE or NON-CORE elements by consensus of the DAC.

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Scope

The dataset has been developed for the examination of transurethral resection or enucleation (suprapubic/ simple/open prostatectomy or laser enucleation) specimens of the prostate. The dataset applies to invasive carcinomas of the prostate gland. Urothelial carcinomas arising in the bladder or urethra are dealt with in separate datasets.[2,3] Rare urothelial carcinomas arising within the prostate are included in a separate ICCR dataset.[3]

The second edition of this dataset includes changes to align the dataset with the World Health Organization (WHO) Classification of Tumours, Urinary and Male Genital Tumours, 5th edition, 2022.[4] The ICCR dataset includes 5th edition Corrigenda, November 2022.[5]

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Note 1 – Clinical information (Core and Non-core)

It is the responsibility of the clinician requesting the pathological examination of a specimen to provide information that will have an impact on the diagnostic process or affect its interpretation. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen. Information about prior biopsies or treatment aids interpretation of the microscopic findings and accurate pathological diagnosis.

In patients with known prostate cancer, uncommonly undergoing transurethral resection of the prostate (TURP) or enucleation procedure, the Gleason grade and score in any previously submitted specimen should be provided by the clinician as this may allow assessment of any progression of the tumour.

There is a growing number of patients with low to intermediate risk prostate cancers on active surveillance (AS).[6-9] These patients usually undergo yearly follow-up biopsies, but these patients may uncommonly undergo TURP or enucleation procedure for benign prostatic hyperplasia (BPH) or lower urinary tract obstruction.[10,11]

Prostate cancer can also be managed by non- or minimally invasive therapies, such as radiation, hormonal or ablative therapies.[8,12-15] Radiation therapy for prostate cancer has a profound effect on the morphology of both cancer and benign prostatic tissue. Likewise, neoadjuvant androgen deprivation therapy (ADT) may induce morphological changes in both prostate cancer and benign tissue.[13-16] Hence, in TURP or enucleation specimens undertaken following either radiotherapy or ADT, tumours that show significant treatment effects should not be graded.

There is an increasing use of ablative therapies especially for intermediate risk prostate cancers as an alternative for surgery.[8,13,14,17] Examples of these minimally invasive therapies are high intensity focus ultrasound (HIFU), cryotherapy, interstitial laser ablation, and photodynamic therapy. This treated cancer is rarely encountered in TURP or enucleation specimens. Unlike in radiotherapy or ADT, most residual cancer after ablative therapies can be graded.

Uncommonly, patients with high risk or advanced prostate cancers may undergo tumour debulking by TURP to relieve urinary obstruction. These cancers may have been treated with chemotherapy and immunotherapy.[18,19]

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Note 2 – Pre-procedure serum PSA (Non-core)

The clinician requesting the pathological examination should provide information on the pre-transurethral resection/enucleation serum prostate-specific antigen (PSA) level, if measured. The use of a standard pathology requisition/request form including a checklist of important clinical information is strongly encouraged to help ensure that relevant clinical data is provided by the clinicians with the specimen and its use.

If the patient is on 5-alpha-reductase inhibitor medications, such as finasteride or dutasteride, this should be recorded as it may lower serum PSA levels and affect interpretation of serum PSA values for detecting prostate cancer.[20,21]

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Note 3 – Clinical stage (Non-core)

In the large majority of cases these procedures are performed for the relief of BPH when it is not anticipated that there will be a cancer present and clinical stage is not applicable; if cancer is found on microscopic examination in this situation it will be assigned to category T1.[22-24] In the small number of cases in which it is known that there is prostate cancer present, a TURP or enucleation procedure may be done to relieve an obstruction where a patient is not amenable to other procedures. These may either be patients with low risk prostate cancer on active surveillance being treated for non-tumoral obstruction (e.g., BPH), or patients with high risk or advanced prostate cancer undergoing debulking to relieve obstruction by the tumour. In these cases, the clinical stage may be more relevant.[10,11]

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Note 4 – Operative procedure (Core)

Information regarding the nature of the surgical procedure undertaken is generally regarded as a core element in ICCR datasets since it allows the morphological findings to be placed in context.

Surgical therapies for BPH, such as TURP or enucleation, take prostate tissues mainly from the transition zone.[25,26] Enucleation can also be performed using laser, such as by holmium laser enucleation of the prostate (HoLEP) or thalium laser enucleation of the prostate (ThuLEP). Choice of surgical procedure can be influenced by the size of the prostate. Simple prostatectomy can be done on large prostates while TURP is done on average or smaller size prostates. HoLEP can be performed regardless of prostate size and removes more tissue fragments. Most incidental prostate cancers encountered in these settings are of lower risk categories. Incidental prostate cancer has been reported in 5%-14% of TURP and 5.6%-23.3% of HoLEP.[27]

Transurethral resection of the prostate (TURP) or enucleation performed for tumour debulking or to relieve tumour obstruction yields higher risks prostate cancers.

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Note 5 – Specimen weight (Core)

The specimen weight is the best estimate of the amount of tissue resected and received by the pathology laboratory for examination and current histological sampling guidelines are based on this parameter.[28,29] The specimen may be weighed in either the operating theatre or in the pathology laboratory.

Specimen submission for histological examination is influenced by the weight of the specimen. Traditionally, submitting 12 grams of prostate tissue plus 1 cassette per additional 5 gram has been followed.[30]

Later studies that consider proper resource utilisation recommend a more conservative sampling of the prostate specimens. One study on TURP suggested that if minimal cancer is found on the first 6 cassettes (equivalent to about 10-12 grams of tissue), it is unlikely that there will be change in the grade and volume of the tumour with the additional sections.[28] A later study on TURP and HoLEP, suggested a minimum of 10 cassettes as a reasonable threshold.[31] However, additional studies are needed to standardise the submission of prostate specimens with incidental cancer.

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Note 6 – Specimen dimensions (Non-core)

Information regarding the size of the specimen received is generally regarded as either a core or non-core item in ICCR datasets, since it documents the tissue actually received by the pathology laboratory and upon which the diagnostic and prognostic information is based. Enucleation (simple prostatectomy or laser enucleation specimens) are often received in pieces and only the largest piece or pieces need to be measured.

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Note 7 – Block identification key (Non-core)

The origin/designation of all tissue blocks should be recorded. This information should ideally be documented in the final pathology report and is particularly important should the need for internal or external review arise. The reviewer needs to be clear about the origin of each block in order to provide an informed specialist opinion. If this information is not included in the final pathology report, it should be available on the laboratory computer system and relayed to the reviewing pathologist. It may be useful to have a digital image of the specimen and record of the origin of the tumour blocks in some cases.

Recording the origin/designation of tissue blocks also facilitates retrieval of blocks for further immunohistochemical or molecular analysis, research studies or clinical trials.

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Note 8 – Histological tumour type (Core)

The vast majority (>95%) of prostate cancers are acinar adenocarcinomas.[4,29] Other types and subtypes of carcinoma are rarer but must be recorded if present, since some, such as ductal adenocarcinoma, sarcomatoid carcinoma and pleomorphic giant cell carcinoma, have a significantly poorer prognosis. The tumour type should be assigned in line with the 2022 WHO classification and mixtures of different types should be indicated (Table 1).[32] Subtypes of prostate carcinoma (under acinar adenocarcinoma in Table 1) are often identified in combination with acinar type adenocarcinoma, and in such cases the tumour type should be classified according to the subtype(s) present.

Table 1: World Health Organization classification of tumours of the prostate.[32]

Descriptor	ICD-O codes[a]
Epithelial tumours of the prostate	
Glandular neoplasms of the prostate	
Cystadenoma	8440/0
Prostatic intraepithelial neoplasia, high grade	8148/2
Intraductal carcinoma	8500/2
Acinar adenocarcinoma	8140/3
Signet-ring cell-like acinar adenocarcinoma	8490/3
Pleomorphic giant cell acinar adenocarcinoma	8140/3
Sarcomatoid acinar adenocarcinoma	8572/3
Prostatic intraepithelial neoplasia-like carcinorna	8140/3
Ductal adenocarcinoma	8500/3
Adenocarcinoma with neuroendocrine differentiation	8574/3
Squamous neoplasms of the prostate	
Adenosquamous carcinoma	8560/3
Squamous cell carcinoma	8070/3
Adenoid cystic (basal cell) carcinoma†	8147/3
Mesenchymal tumours unique to the prostate	
Stromal tumours of the prostate	
Stromal tumour of uncertain malignant potential	8935/1
Stromal sarcoma	8935/3

[a] These morphology codes are from the International Classification of Diseases for Oncology, third edition, second revision (ICD-0-3.2).[33] Behaviour is coded /0 for benign tumours; /1 for unspecified, borderline, or uncertain behaviour: /2 for carcinoma in situ and grade Ill intraepithelial neoplasia; /3 for malignant tumours, primary site: and /6 for malignant tumours, metastatic site. Behaviour code /6 is not generally used by cancer registries. Subtype labels are indented. Incorporates all relevant changes from the 5th edition Corrigenda, November, 2022.[5]

† Labels marked with a dagger have undergone a change in terminology of a previous code.

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Note 9 – Histological tumour grade (Core and Non-core)

The Gleason grading system is the foundation of grading for prostatic adenocarcinoma.[34-37] Prostate cancer in TURP is graded according to similar principles as in needle core biopsies since, like needle biopsies, TURP does not sample the entire tumour. Since TURP mainly samples the transition zone, cancers arising in this part of the prostate are over-represented. However, peripheral zone tissue is sometimes also resected and large peripheral zone cancers may involve the transition zone. Thus, TURP specimens include the same spectrum of cancers as needle biopsies, albeit with a different distribution. For example, small low grade transition zone cancers are more often detected by Transurethral resection of the prostate (TURP) than by needle biopsies. In staging, presence of WHO/ISUP grade 2 or higher cancers in TURP upgrades the tumour

to stage II stressing the impact of grade in staging.[22,23] In terms of T category, derivation of T1a versus T1b is based on 5% cut-off that is not impacted by grade.

It has been demonstrated that the Gleason score of cancer detected at TURP predicts cancer-specific survival[38,39] and local progression.[39-41]

Grading of cancer in TURP specimens was not specifically addressed in the International Society of Urological Pathology (ISUP) 2005, 2014 and 2019 modifications and 2019 Genitourinary Pathology Society (GUPS) white paper.[42-45] Many of societies' recommendations were incorporated in the 4th and 5th editions of the WHO classifications.[4,46] In one study, however, conventional Gleason score was compared to modified Gleason score including the highest Gleason grade regardless of amount.[40] Both were independent predictors of cancer-specific survival in multivariate analysis but conventional Gleason score showed slightly stronger correlation with outcome.

No studies have been done on the validity of the WHO/ISUP grading system on TURP detected cancer but there is no reason to assume that this grading would not be valid when applied on TURP specimens. Moreover, the issue of how to deal with tertiary patterns is unresolved as there is not enough evidence at present to prove its validity. It is therefore required that the WHO/ISUP grade (Grade group) should be reported together with the Gleason score. Percent Gleason patterns 4 and 5 has been reported to predict cancer-specific survival independently of Gleason score in TURP.[40] The prognostic significance of increasing amount of Gleason pattern 4 has been shown in prostate biopsies and radical prostatectomy.[47-49] The 2019 ISUP consensus conference and GUPS white paper recommended that the percentage of Gleason pattern 4 be reported in cases with WHO/ISUP grades 2 or 3 in prostate biopsies, and such should also apply for TURP and enucleation specimens.[42,44] Since clinical use of this information in biopsy has been mainly for active surveillance, reporting of percentage Gleason pattern 4 is currently required only for Gleason score 3+4=7 tumours in prostate biopsy and TURP or enucleation specimens.

Transurethral resection of the prostate (TURP) is sometimes done for palliative reasons in patients with locally advanced prostate cancer. These cancers have usually been treated with ADT and a common reason for the TURP is that the tumour has become hormone refractory. It is important that information about the hormonal treatment is given on the request form. Prostate cancer showing morphological signs of hormonal treatment should not be graded as the treatment effect can mimic a higher grade. However, these tumours are almost invariably high grade cancers.

The grade groups and associated definitions are outlined in Table 2.

Both the Gleason score and the WHO/ISUP grade (Grade group) should always be reported for the sake of clarity.

Table 2: World Health Organization (WHO)/International Society of Urological Pathology (ISUP) grading system, core/needle biopsies and TURP specimens.

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

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

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

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Note 10 – Tumour growth patterns (Core and Non-core)

Several studies have shown the importance of invasive cribriform gland and intraductal carcinoma of prostate (IDC-P) as independent adverse prognosticators.[50-53] Both the 2019 ISUP consensus conference and 2019 GUPS white paper recommended reporting of these two elements in biopsies and radical prostatectomies with prostate cancer.[6,54] While the findings of the tumour growth patterns are uncommon in TURP or enucleation specimens, there presence should also be reported.

Invasive cribriform gland is one of the basic architectures for Gleason pattern 4. Presence of luminal necrosis upgrades the cribriform gland to Gleason pattern 5. Among the Gleason pattern 4 architectures, cribriform morphology has been shown to be associated with higher biochemical recurrence rate or poorer survival after radical prostatectomy or radiotherapy. Many of these findings were shown in Gleason score 7 prostate cancers.[55-59]

Both small and large cribriform glands are associated with poorer outcome, although the definition of small or large cribriform is still under debate.[60-62] To improve interobserver agreement, ISUP has proposed a definition for cribriform pattern as a confluent sheet of contiguous malignant epithelial cells with multiple glandular lumina that are easily visible at low power (objective magnification X10) and that there should be no intervening stroma or mucin separating individual or fused glandular structures.[63]

Intraductal carcinoma of prostate (IDC-P) is an uncommon finding in TURP and enucleation specimen and is usually associated with invasive prostate cancer. IDC-P is strongly associated with high volume, high grade invasive prostate carcinoma and metastatic disease.[54,55,64,65] Hence, the presence of IDC-P in TURP or enucleation specimens should be reported.

Intraductal carcinoma of prostate (IDC-P) has been well characterised at the histological and molecular levels over the past decade and its clinical significance is now better understood.[66] In the 5th edition of the WHO Classification of Tumours the essential diagnostic criteria for IDC-P are: 1) expansile epithelial proliferation in the pre-existing duct-acinar system; 2) lumen spanning solid, cribriform and/or comedo patterns; 3) loose cribriform or micropapillary patterns with enlarged pleomorphic nuclei; and 4) residual basal cells.[32] Desirable diagnostic criteria include immunohistochemistry demonstrating at least partial basal cell retention.[67,68]

In terms of grading, it is recommended that pure IDC-P without invasive should not be graded. However, there is controversy in terms of grading IDC-P with invasive cancer.[69,70] ISUP recommended incorporating IDC-P into grade whereas GUPS recommended excluding IDC-P from grading of invasive cancer. The prostate TURP and enucleation dataset allows either manner of grading invasive cancer with IDC-P, however, the approach should be documented in the report.

Distinction between invasive cribriform gland and IDC-P should be made based on morphology. Use of immunohistochemistry for basal cell markers to distinguish these two growth patterns is not recommended.

It is important to distinguish IDC-P from atypical intraductal proliferation (AIP) and high grade prostatic intraepithelial neoplasia (HGPIN).[71] Compared to IDC-P, AIP and HGPIN have less architectural and cytological atypia.

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Note 11 – Prostatic tissue involved by tumour (Core)

In the TNM classification, incidentally detected cancer is substaged into cT1a (≤5% cancer) and cT1b (>5% cancer) based on the involvement of resected tissue.[22,23] This substaging predicts cancer progression and disease-specific survival.[22,23,72-75] The TNM classification does not specify how tumour extent should be measured, but the reported percentage of extent is commonly assumed to be calculated as the fraction of total tissue area in the sections.

It has been proposed that the percentage of number of chips positive for cancer over total number of chips be reported. With this method 10% involvement was a more useful cut-off for prediction of outcome than 5%.[75] This is expected as the percentage gets higher when a chip is considered positive regardless of the extent of cancer involvement. The advantage of this method is that it is simpler than estimating percentage of tissue area, but there is also a risk of overestimation when only a minute focus of cancer is present in several chips. Either of these measures can be used but the report should specify what method was used. Percentage of positive chips can obviously not be used for open prostatectomy specimens and percent cancer of the total surface area in the sections should then be reported.

Whichever of these methods is used, for practical purposes it is only necessary to estimate the extent of tumour involvement to the nearest 10%, or for small tumours to state if the tumour comprises <5% of the specimen.

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Note 12 – Extraprostatic extension (Non-core)

Extraprostatic extension (EPE) is now the accepted terminology and replaces earlier ambiguous terms, such capsular penetration, perforation, or invasion.[22,23,76] In radical prostatectomy specimens EPE is an independent prognostic indicator of increased risk of recurrence post radical prostatectomy and is important in assignment of the UICC/AJCC T category.[22,23,77,78] There is limited data specifically on the significance of EPE in TURP or enucleation specimens given that it is relatively uncommon. However, it may occasionally be seen and should be reported when present since it indicates that the tumour is at least T3a in the TNM system. In TURP specimens it is defined as tumour admixed with adipocytes.

The presence of bladder neck smooth muscle involvement by carcinoma in a TURP specimen may indicate that the tumour is at least category T3a. Typically it is a high grade cancer infiltrating among well-formed and thick smooth muscle bundles with absence of normal prostate glands or stroma. These bladder neck chips are often admixed with chips showing either cancer in the prostate or just normal prostate tissue. However, identification of bladder smooth muscles in TURP can be challenging and caution should be made in reporting their involvement. Reporting of this element is optional (non-core).

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Note 13 – Seminal vesicle invasion (Non-core)

Seminal vesicle invasion (SVI) is rarely identified in TURP or enucleation specimens, hence its absence does not need to be explicitly stated. If seminal vesicle/ejaculatory duct invasion is present, it should be recorded.

Seminal vesicle invasion (SVI) is defined as involvement of the muscular wall of the extraprostatic portion of the seminal vesicle.[79] If seminal vesicle tissue is present and involved by tumour, this should be reported since it indicates that the tumour may be pT3b in the Union for International Cancer Control (UICC)/ American Joint Committee on Cancer (AJCC) Staging system.[22,23] However, in TURP and enucleation specimens it is often difficult to distinguish between extraprostatic seminal vesicle and intraprostatic seminal vesicle or ejaculatory duct tissue, and it is important not to over interpret invasion of the latter two structures as SVI since their involvement by tumour does not constitute pT3b disease. If there is doubt as to whether the involved tissue represents the extraprostatic seminal vesicle or the intraprostatic seminal vesicle/ejaculatory duct, this should be stated in the report and SVI should not be definitively diagnosed.

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Note 14 – Lymphovascular invasion (Non-core)

Lymphovascular invasion (LVI) is rarely identified in needle biopsies cores, hence its absence does not need to be explicitly stated. However, if LVI is present it should be recorded.

Since invasion of lymphatic or blood vessels (i.e., thin-walled endothelial-lined spaces) is uncommonly identified in TURP specimens and there is little published data on its significance specifically relating to TURP specimens. However, there is good evidence that LVI identified at radical prostatectomy is an independent prognosticator associated with adverse pathology, increased recurrence, metastasis and poorer outcome including those receiving radiotherapy.[80-84] Therefore, if LVI is identified in a TURP or enucleation specimens it may well be significant and its presence should be recorded. The presence of LVI does not affect assignment of the UICC/AJCC T category.

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Note 15 – Perineural invasion (Non-core)

The significance of perineural invasion in prostate TURP or enucleation specimens is uncertain and there is little published literature specific to these particular specimen types. In needle core biopsy a systematic review of the literature concluded that in clinically localised disease perineural invasion was a significant prognostic factor for extraprostatic extension (EPE) and subsequent local recurrence.[85] Hence, it may be significant and perineural invasion should be recorded when present in TURP and enucleation specimens.

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Note 16 – Coexistent pathology (Non-core)

In some cases clinical management decisions may be aided by knowledge of coexisting pathology, such as HGPIN, glandular atypia suspicious for malignancy (atypical small acinar proliferation or ASAP), AIP, granulomatous prostatitis etc.

If there is carcinoma present, the presence of HGPIN is generally not significant, except perhaps occasionally in the situation where the carcinoma is of very limited extent. Low grade prostatic intraepithelial neoplasia (PIN) should not be reported.

Likewise, if there is carcinoma present in a specimen, the presence of glandular atypia suspicious for malignancy (ASAP) is generally not significant, except perhaps in situation where the carcinoma is of very limited extent. In TURP specimens where there is no cancer identified but ASAP is present, the risk of carcinoma being present in subsequent specimens is not known, but in core biopsies is approximately 35%.[86-90]

Atypical intraductal proliferation (AIP) is the preferred term to describe intraductal neoplasm that has complexity or atypia greater than HGPIN but falls short for the diagnosis of IDC-P.[4,91-93] AIP is characterised by loose cribriform proliferation and/or nuclear atypia falling short for IDC-P and encompasses what was previously known as cribriform HGPIN. Because of the association of AIP with IDC-P, documenting their presence in biopsy is recommended especially in lower grade prostate cancers. Presence of AIP alone in biopsy specimens is uncommon and is managed with repeat follow-up biopsy.

Lesions of the prostatic urethra, e.g., urothelial carcinoma in situ (CIS), urethral polyps, nephrogenic adenoma, villous adenoma etc., should also be recorded if present.

Active prostatitis and granulomatous prostatitis may cause a rise in serum prostate-specific antigen (PSA), although inflammatory lesions may coexist with carcinoma and it is important not to assume that their presence always accounts for an unexplained or disproportional increase in a patient's PSA.[94-96]

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References

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