RCPath Prostate Dataset
An Update

Jon Oxley (Lead)
Murali Varma
Dan Berney
### Standards and Datasets for Reporting Cancers

**Dataset for histopathology reports for prostatic carcinoma (3rd edition)**

**Draft 2015**

**Authors:** Dr. Jon Oxley (Lead author), North Bristol NHS Trust  
Dr. Murali Varma, Cardiff and Vale University Health Board  
Professor Dan Bomey, St Bartholomew's Hospital, Barts Health NHS Trust

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<tr>
<td>Document name</td>
<td>Dataset for prostatic carcinoma</td>
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<tr>
<td>Version number</td>
<td>8</td>
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<tr>
<td>Produced by</td>
<td>Each of the authors is a consultant histopathologist with a special interest in urological pathology and have published original and review papers related to urological pathology. JO is a member of the NICE prostate cancer guidance group as well as co-organiser of the Uropathology EQA Scheme. MV is a founder member of BAUP, and organises biannual uropathology courses on prostate and bladder pathology. DB is also a founder member and ex-chairman of BAUP as well as a co-author of the previous edition of this dataset. All the authors are involved in ICCR datasets.</td>
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| Date active            | |
| Date for full review   | |
| Comments               | This document will replace the 3rd edition of Dataset for histopathology reports for prostatic carcinoma.  
In accordance with the College’s pre-publications policy, this document will be on the College website for consultation from xx–xx xxxx 2015.  
Responses and authors’ comments will be available to view, following final publication of this dataset. |

Dr. Lorna Williamson  
Director of Publishing and Engagement
Prostate Dataset
Where are we now?

- Expert panel assesses evidence, decides recommendations, writes draft
- Draft sent to RCPath for comments (WGCS)
- Draft modified by expert panel
- Draft sent for consultation
- Comments reviewed
- Draft modified.
- Final version published
Prostate dataset 2015

Core data items

- What’s in?
- What’s out?
Prostate dataset 2015

Core data items

- What’s in?
- What’s out?
- Our approach to writing dataset
Our problems

- Imperfect evidence base
Prostate cancer evidence: Imperfect

- Sampling error of non-targeted biopsy
- Multifocality of prostate cancer
- Indolent nature of prostate cancer
  - Need for very long term follow-up
  - Most studies use pathology surrogates (grade, stage) or biochemical recurrence after radical as endpoints
Our problems
Rapidly changing landscape

**Techniques**

- Multiparametric MRI
- Template biopsies
- Targeted biopsies
Our problems
Rapidly changing landscape

- **Techniques**
  - Multiparametric MRI
  - Template biopsies
  - Targeted biopsies

- **Reporting**
  - ISUP Gleason grading consensus meeting 2014
  - ICCR 2016
  - WHO Blue Book 2016
Our problems

- Imperfect evidence base
- Rapidly changing landscape
- Dataset obsolete before published?
Our problems

- Imperfect evidence base
- Rapidly changing landscape
- Dataset obsolete before published?
  - Update overdue: 6 years since last version
  - ICCR and WHO 2016 discussions completed
Our approach

- Rules vs Guidance
  - Sought to provide practical guidance with diagrams where necessary
**Figure 2:** Definition of seminal vesicle invasion

**Figure 3:**
- Stage is not affected by margin status but the level of the cancer glands in relation to benign glands
- pT4 no longer used when margin positive/above benign glands

**Figure 4:** The location and whether intraprostatic or extraprostatic margin should be recorded.
Our approach

- Rules vs Guidance
- Biopsy pathology more important than radical pathology
Prostate needle biopsy prognostic data

Clinically critical

- Clinical and radiology unreliable
- Only selected cases undergo excision
- Most management decisions based on needle biopsy pathology data
  - Tumour extent
  - Tumour grade
  - Tumour stage
Prostatectomy prognostic data
Clinically less important

- Serum PSA excellent tool for monitoring for early recurrence post-radical
  - Identifies recurrence before clinical/radiology
  - Unlike colon/breast cancer: mets identified only when clinically/radiologically apparent
  - Less reliance on pathology to identify high-risk patients for adjuvant therapy
Our approach

- Rules vs Guidance
- Biopsy pathology more important than radical pathology
  - Resisted temptation to include data items such as Gleason score at margin
Our approach

- Rules vs Guidance
- Bx more important than radical
- Allow significant leeway (options) to reporting pathologist
- Keep core data items to minimum
Core data items

- “Supported by robust published evidence”
- “Required for cancer staging, optimal patient management and prognosis”
Core data items

- Minimum requirement
- Mandatory
- Part of COSD (England)
Core data items

- Minimum requirement
- Mandatory
- Part of COSD (England)
- Other items may (should) be collected for research, audit or local MDT requirements
Prostate dataset 2015

Core data items

- What’s in?
- What’s out?
Prostate dataset 2015

Core data items

- Biopsy
- TURP
- Radical
Changes from previous:
Changes from previous: General
Changes from previous: General

- CLINICAL
  
  Added: serum PSA
Changes from previous: General

- CLINICAL

  Added: serum PSA

  (option: “not available”)
Changes from previous: General

- **CLINICAL**
  
  **Added:** serum PSA
  
  (option: “not available”)

- **MICRO**
  
  **Added:** Grade groups I-V
  
  - eg. $3 + 4 = 7$ (grade group II)
New grade groupings I- V

Advantages

- **Patients**
  - Gleason score 6 is in lowest group
- **Urologists**
  - 3+4 and 4+3 separated
- **Pathologists**
  - No extra work
  - No need to distinguish 4+5, 5+4, 5+5 (all V)
Needle: Clinical

- PSA (if available)
- Number of cores
- Site of cores
- Type of bx
  - Standard TRUS guided
  - Targeted TRUS guide
  - Digitally guided
  - Saturation
  - Template
Needle: Clinical

- PSA (if available)
- **Number of cores**
- Site of cores
- Type of bx
  - Standard TRUS guided
  - Targeted TRUS guide
  - Digitally guided
  - Saturation
  - Template
Number of cores taken

- Number positive should not be greater than number taken!
Number of cores taken

- Number positive should not be greater than number taken!
- Number of cores taken cannot be determined by macroscopy or microscopy
  - This information must be provided by operator
    - Number of cores taken from each side (at least)
Needle: Micro

- Type
- Grade
- Extent
- Perineural invasion
- EPE
Needle: Micro

- Type
- Grade
- Extent
- Perineural invasion
- EPE
Grade: Gleason score

- Global (composite)?
- Worst in core/specimen?
Gleason: Composite or Worst?

ICCR

- Worst – **mandatory**
- Global (composite) – **optional**
Gleason: Composite or Worst?

Problems

- Historical UK data: Composite score
- Contemporary data (ICCR): Worst score
Gleason: Composite or Worst?

Problems

- Historical UK data: Composite score
- Contemporary data (ICCR): Worst score
- Which is more accurate?
  - Some cases “worst”, in others “composite”
Scenario 1

Gleason score:

Composite: 3 + 4 = 7

Worst: 4 + 4 = 8
Radical:
2 tumours: 3+4 and 4+4

Worst score correct as prognosis will be of 4+4
Scenario 2

Gleason score:
Composite : 3 + 4 = 7
Worst: 4 + 4 = 8
Radical:

$$3 + 4 = 7$$

(Worst will over-grade in this scenario)
2 Different Scenarios, 1 Gleason Score

Worst Gleason score $4 + 4 = 8$

- Gleason pattern 3
- Gleason pattern 4
Gleason score: core data items

- Both composite (global) and worst
  - Score and grade group
Gleason score: core data items

- Both composite (global) and worst
- Record location of core with worst score
Report both composite and worst Problem

■ Which should be used?
  • Urologist/oncologist
  • Research
  • Cancer registries
Online survey of urologists/oncologists (n= 128)
Right apex: 3mm, 10%, Gleason score 4 + 4 = 8
Right base: 6mm, 80%, Gleason score 4 + 3 = 7
Left apex: 10mm, 60%, Gleason score 3 + 3 = 6
Overall (global) Gleason score 3 + 4 = 7

Worst: 76%
Global: 13%
Core with highest %: 11%
Composite or Worst?

My suggestion

- In most cases composite and worst is same
  - $3 + 3$
  - $3 + 4$
In most cases composite and worst is same

In few cases where different:

• Indicate which is more likely to be correct?
Tumour extent in biopsy

Core data items

- Number of cores positive from each side
Urologist/Oncologist survey

Tumour extent in bx

Number of positive cores: 94%
Number positive each side: 93%

(n=128)
Tumour extent in biopsy core data items

- Number of cores positive from each side

- Tumour extent in cores
  - % or length?
  - Overall, individual core or greatest?
<table>
<thead>
<tr>
<th>Description</th>
<th>Percentage</th>
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<tr>
<td>Number of positive cores</td>
<td>94%</td>
</tr>
<tr>
<td>Number positive each side</td>
<td>93%</td>
</tr>
<tr>
<td>% core involvement</td>
<td>84%</td>
</tr>
<tr>
<td>mm core involvement</td>
<td>60%</td>
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(n=128)
Tumour extent in biopsy core data items

- Number of cores positive from each side

- Tumour extent in cores
  - At least one of the following
    - Total %
    - Greatest % in core
    - Greatest length in core
Tumour extent in biopsy

- In view of the marked sampling error of needle biopsies, only a rough estimate of extent is required
Information overload?

B. (Left lobe). Six cores and tissue fragments are seen of which three are infiltrated by invasive prostate adenocarcinoma of Gleason sum $3 + 4 = 7$. The vast majority is pattern 3 with a small amount of pattern 4. The dimension of the tumour and the volume of the tumour (given as a %) in each core is as follows: 8mm (47%), 8mm (67%), 3mm (19%). Focal perineural invasion is seen but no evidence of extraprostatic extension or lymphovascular invasion is present. The greatest percentage of cancer in any core is 67%. The greatest focus of cancer in any cores measures 8mm. The total percentage of cancer in the entire tissue of the left lobe is 24%. Associated high grade cribriform PIN is noted.

CONCLUSION:

A. PROSTATE, RIGHT LOBE - .FOCUS SUSPICIOUS OF HIGH GRADE PIN.
- NO EVIDENCE OF MALIGNANCY.

B. PROSTATE, LEFT LOBE - ADENOCARCINOMA, GLEASON 3 + 3.
- 3/6 CORES INVOLVED.
- GREATEST PERCENTAGE OF CANCER 67%.
- GREATEST FOCUS OF CANCER 8MM.
In view of the marked sampling error of needle biopsies, only a rough estimate of extent is required.

- % core involvement: “eyeball” estimate to nearest 10% (or <5%)
- Tumour length: to the nearest mm (or <1mm)

No need for calculator !!!!
A simple method for estimating tumour length

- By comparing tumour extent to field diameter
Changes from previous: Biopsy

- **MACRO**
  - **Added:** location of cores
  - **Deleted:** length of cores
Changes from previous: Biopsy

- **MACRO**
  - **Added:** location of cores
  - **Deleted:** length of cores

- **MICRO**
  - Extent: either length or % (prev %: total/greatest)
  - **Deleted:** presence of tertiary Gleason
  - **Deleted:** Vascular invasion (noncore)
  - **Deleted:** Presence of nonprostatic tissues
TURP: core data items

- **MACRO**
  - Weight (nearest gm)

- **MICRO**
  - Type
  - Grade
  - % involvement
    - % area *or* % number chips
      - Eyeball assessment
      - Nearest 10% (or <5%)
Changes from previous:
TURP/enucleations

- **MACRO**
  - **Deleted:** dimensions of enucleations
    - only weight for both

- **MICRO**
  - **Added:** % area involvement in TURP (option)
  - **Deleted:** vascular invasion (non-core)
  - “pT1” to “T1”
Radicals: core data items

- **MACRO**
  - Weight (without SV)

- **MICRO**
  - Type
  - Grade
  - Stage
  - Margins
  - Vascular invasion
Radicals: Stage

- **EPE**
  - Absent/Focal/Established

- **Bladder neck status:**
  - Uninvolved/involved

- **Seminal vesicle invasion:**
  - Present/absent
Margin status

- Negative
- Positive
  - <3mm or ≥3mm
  - Location(s)
Lymph nodes

- Total number on each side
- Number positive on each side
- Diameter of largest metastatic deposit
Changes from previous: Radicals

- MACRO

Weight **without SV**

Deleted: dimensions of gland, SV, lymph nodes (noncore)

Deleted: macro description: fascia, incisions, tumour ... (noncore)
Changes from previous: Radicals

- **MACRO**
  - Weight *without SV*
  - *Deleted*: dimensions of gland, SV, lymph nodes (noncore)
  - *Deleted*: macro description: fascia, incisions, tumour ... (noncore)

- **MICRO**
  - *Added*: extent of EPE: focal/established (noncore to core)
  - *Added*: extent of margin positivity: 3mm cut off
The Future: clinical

- Further advances in MRI
- More targeted biopsies
- Targeted biomarker/genetic testing
- Focal therapy???
The Future: pathology

- Fewer men have biopsies
  - No biopsy if MRI negative?
- Fewer cores per patient
  - Targeted biopsies
- Tumour extent (size) based on radiology rather than biopsy
- Prostate biopsy reporting more similar to breast bx reporting