RCPath Prostate Dataset
An Update

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The Royal College of Pathologists

Pathology: the science behind the cure

Standards and Datasets for Reporting Cancers

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

Draft 2015

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Produced by	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.
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 xxxxxx 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

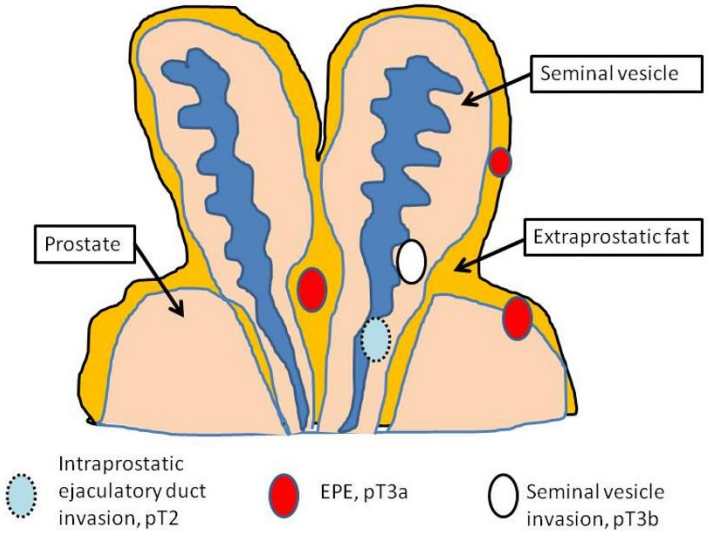

Figure 2: Definition of seminal vesicle invasion

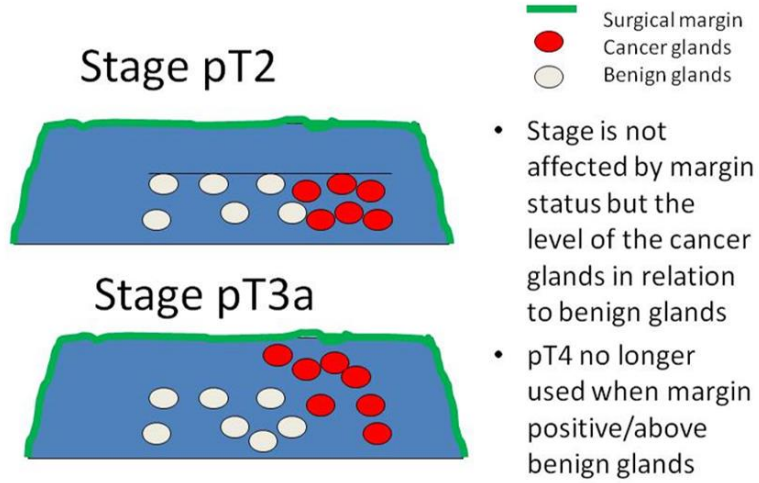

Figure 3: Definition of bladder neck invasion – the neoplastic glands have to be above the level of benign glands in the sections taken from the base of the radical prostatectomy to be staged as pT3a.

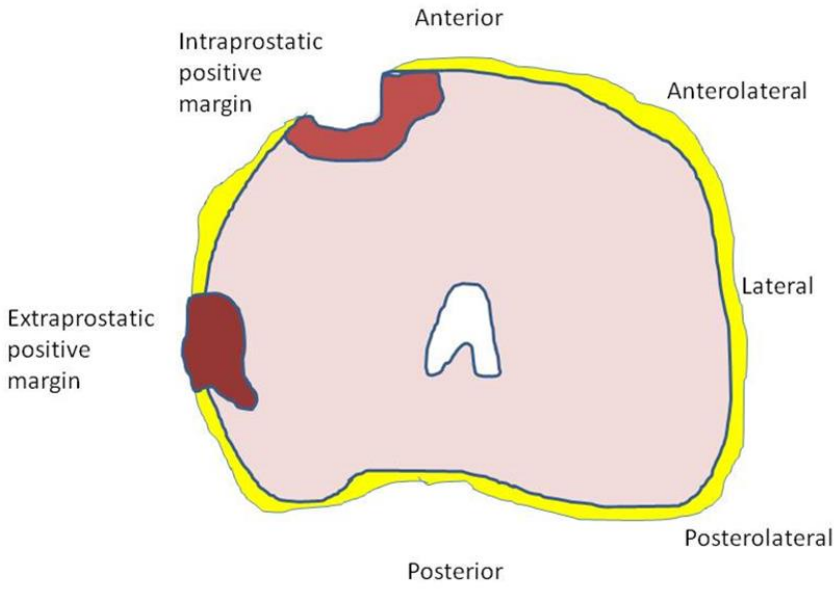

Figure 4: The location and whether intraprostatic or extraprostatic margin should be recorded.

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:

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- **CLINICAL**

  Added: serum PSA

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  (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

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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**

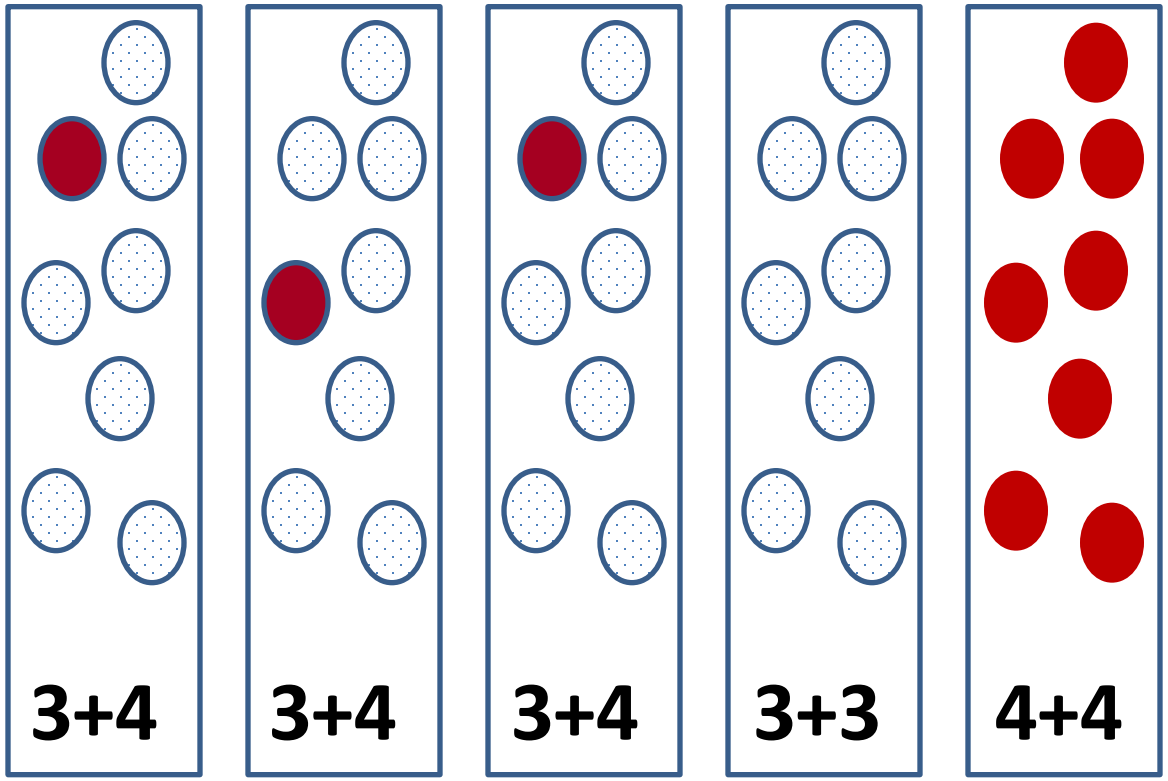
Gleason: Composite or Worst? Problems

- **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



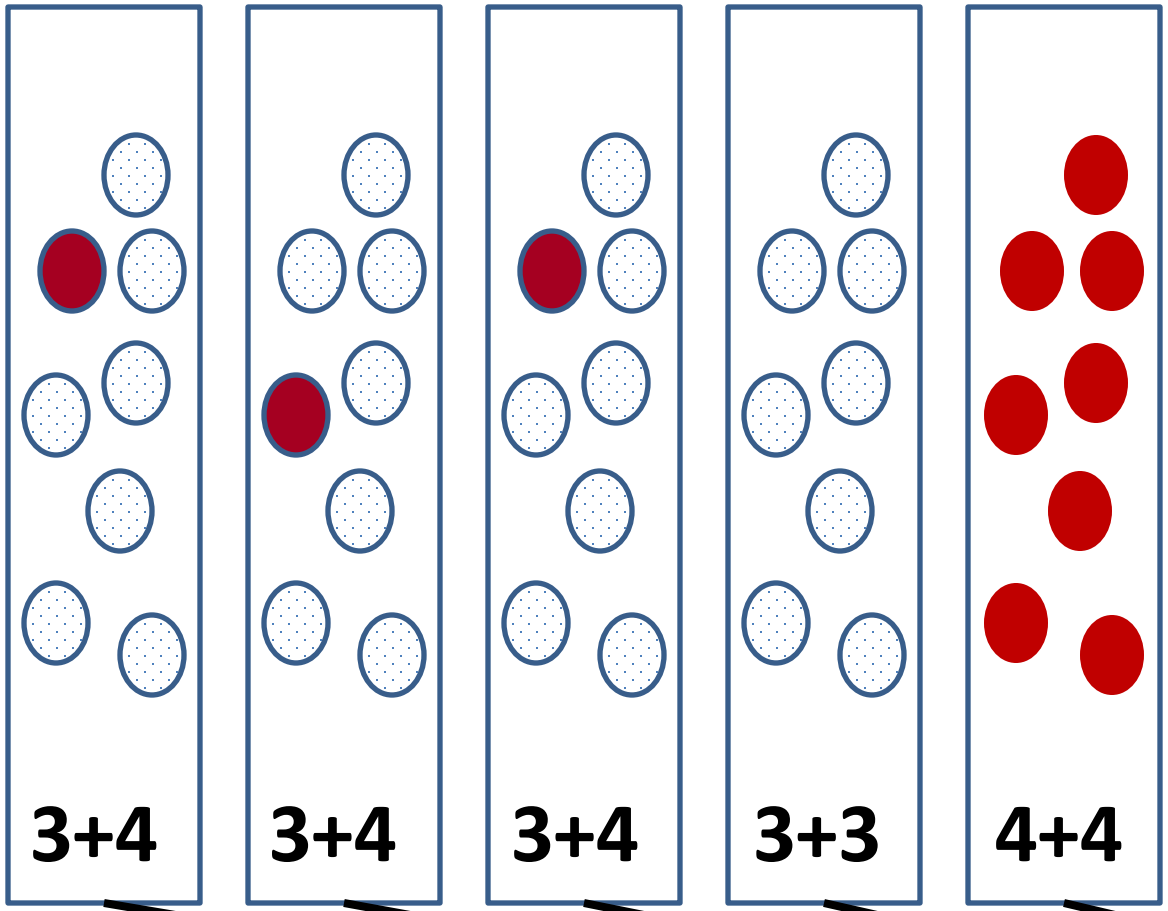
Gleason pattern 3

Gleason pattern 4

Gleason score:

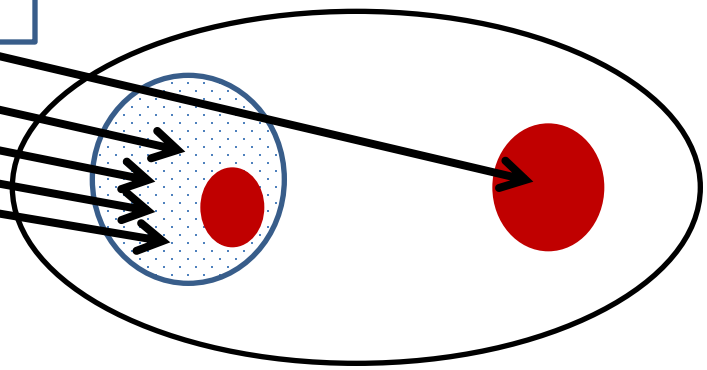
Composite: 3 + 4 = 7

Worst: 4 + 4 = 8



Gleason pattern 3

Gleason pattern 4

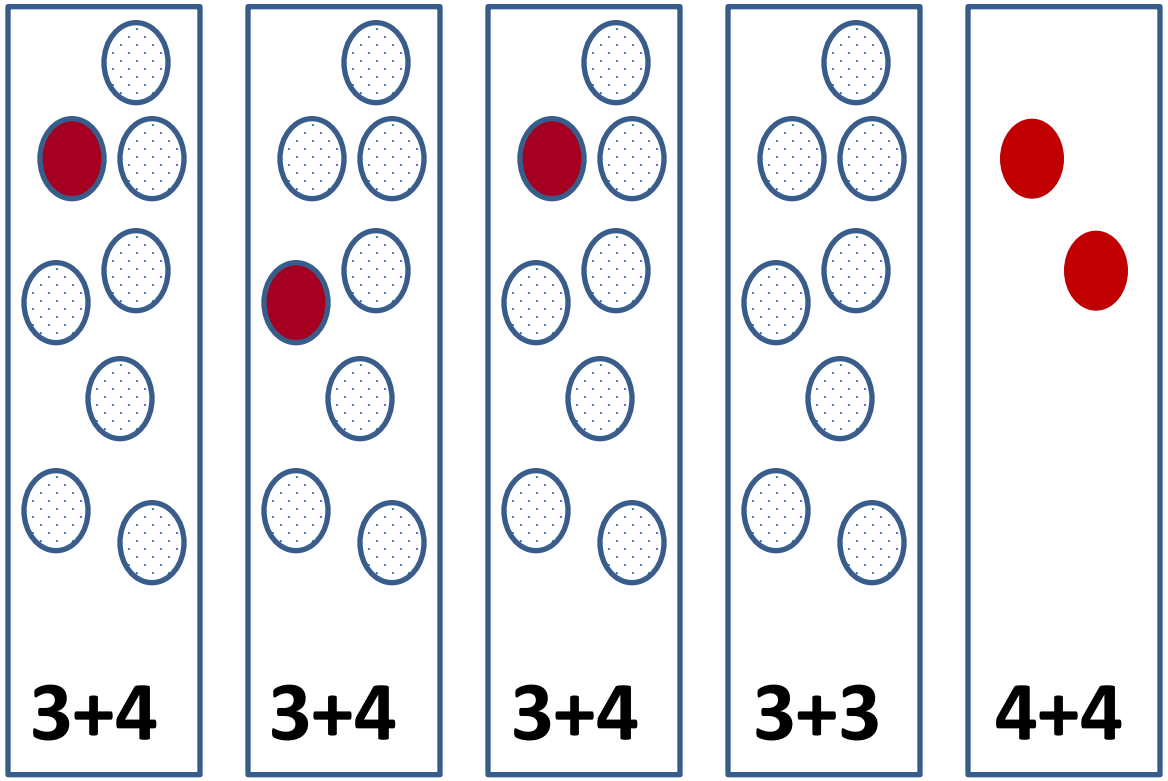


Radical:

2 tumours: 3+4 and 4+4

Worst score correct as prognosis will be of 4 + 4

Scenario 2



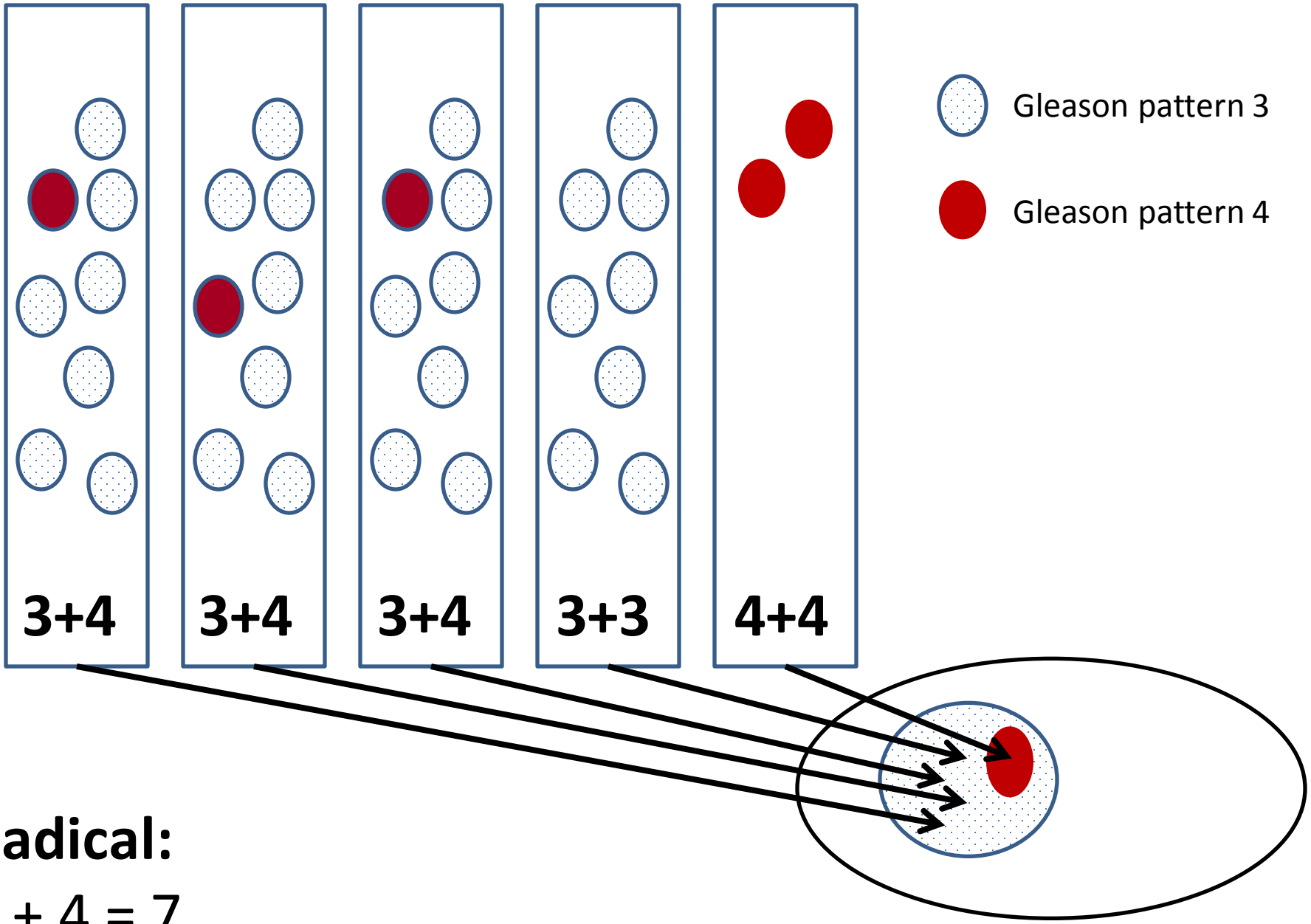
Gleason pattern 3

Gleason pattern 4

Gleason score:

Composite : 3 + 4 = 7

Worst: 4 + 4 = 8



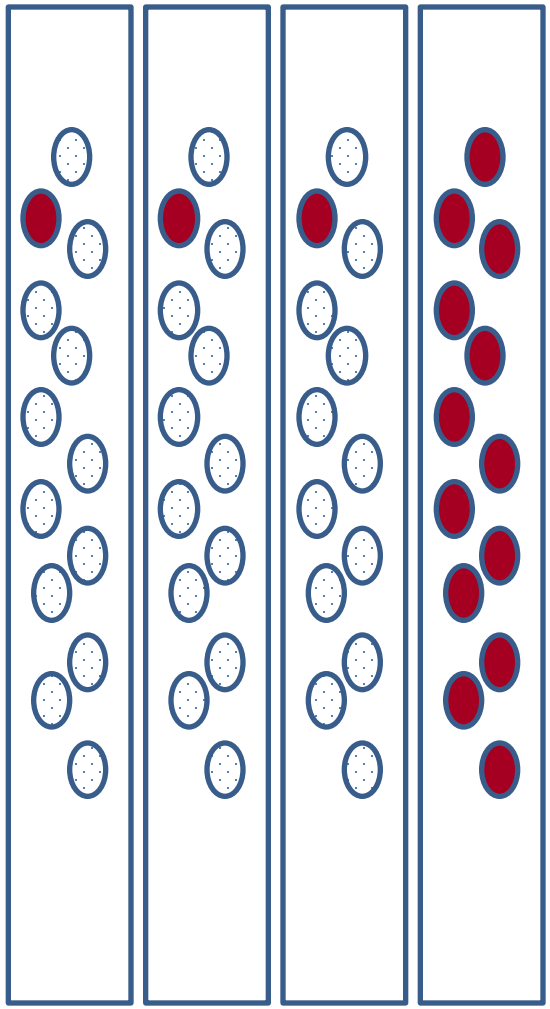
Radical:

3 + 4 = 7

(Worst will over-grade in this scenario)

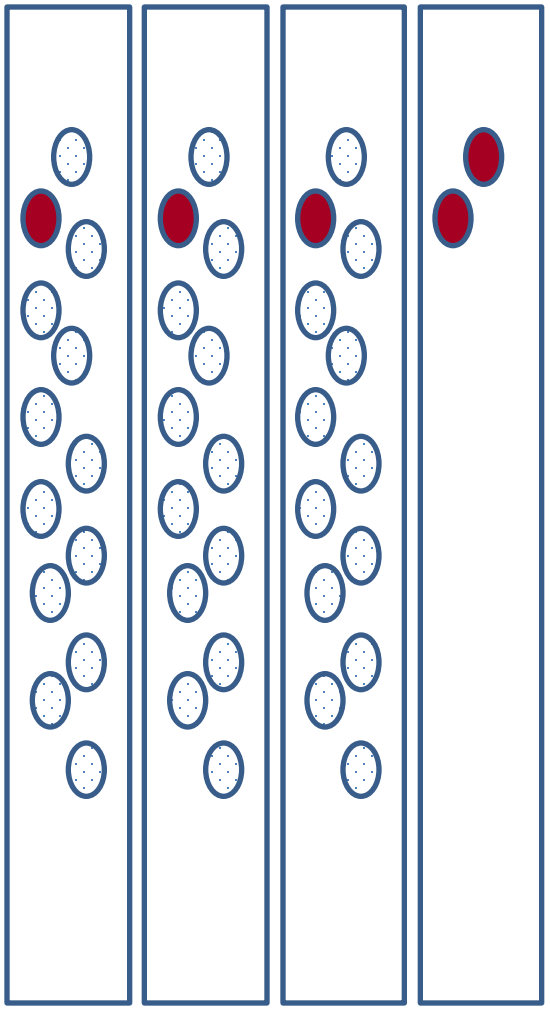
2 Different Scenarios, 1 Gleason Score

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

Composite or Worst?
My suggestion

- **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?

Urologist/oncologist survey

Tumour extent in bx

Number of positive cores:	94%
Number positive each side:	93%
% core involvement:	84%
mm core involvement:	60%

(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 % **or**
    - Greatest % in core **or**
    - 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.

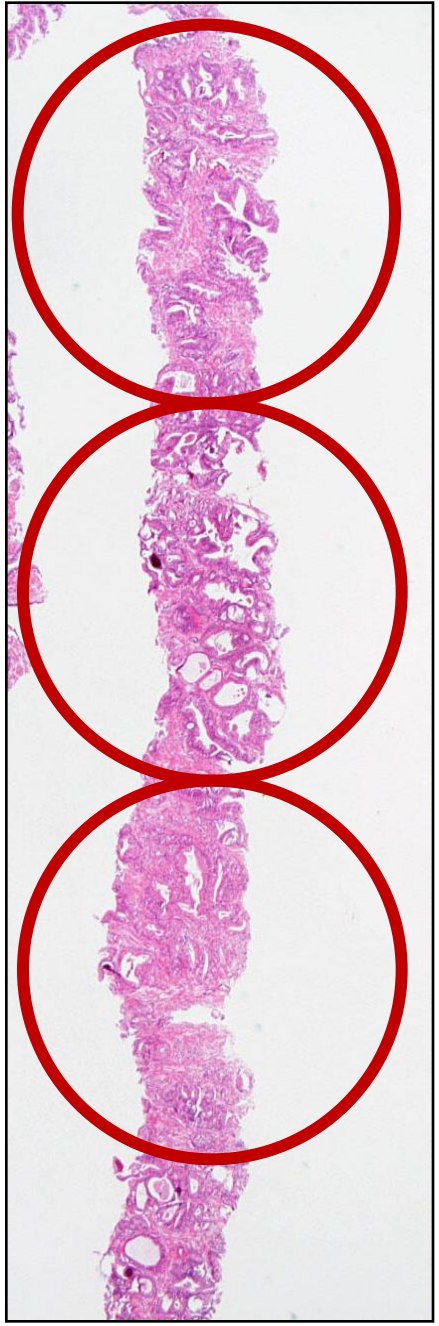
Tumour extent in biopsy

- **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)

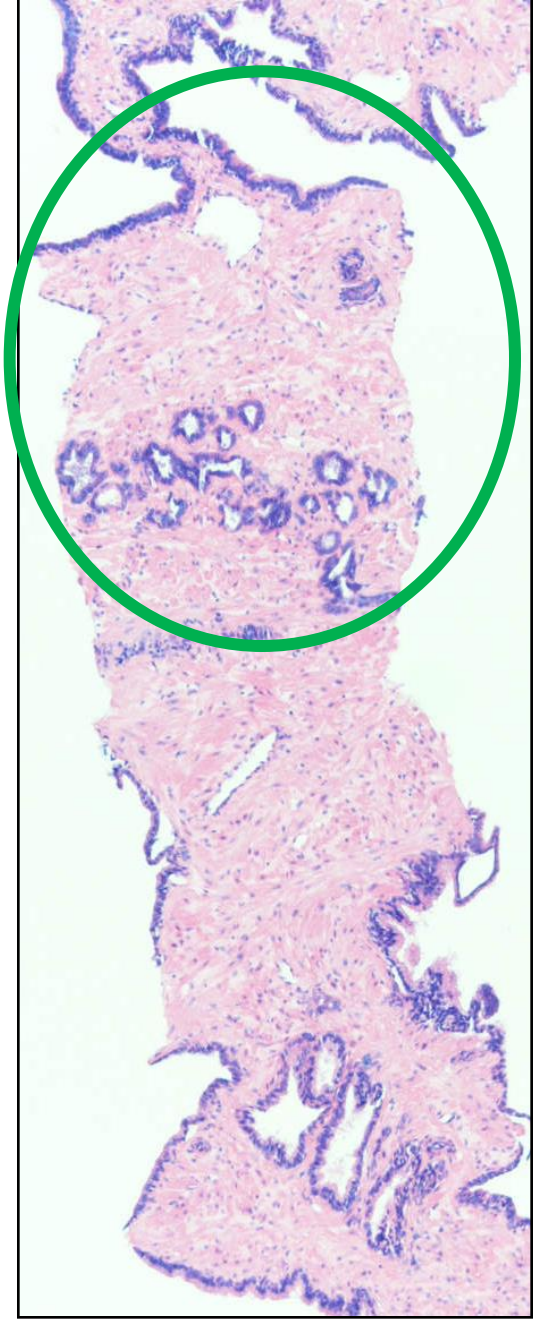
No need for calculator !!!!

A simple method for estimating tumour length

- By comparing tumour extent to field diameter



16mm



1mm

x4

5mm

x10

2mm

x20

1mm

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 <u>without SV</u>

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

  Deleted: macro description: fascia, incisions, tumour … (noncore)

Changes from previous: Radicals

- **MACRO**

  Weight <u>without SV</u>

  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**