Why collect pathology data?
Some data less equal than others?

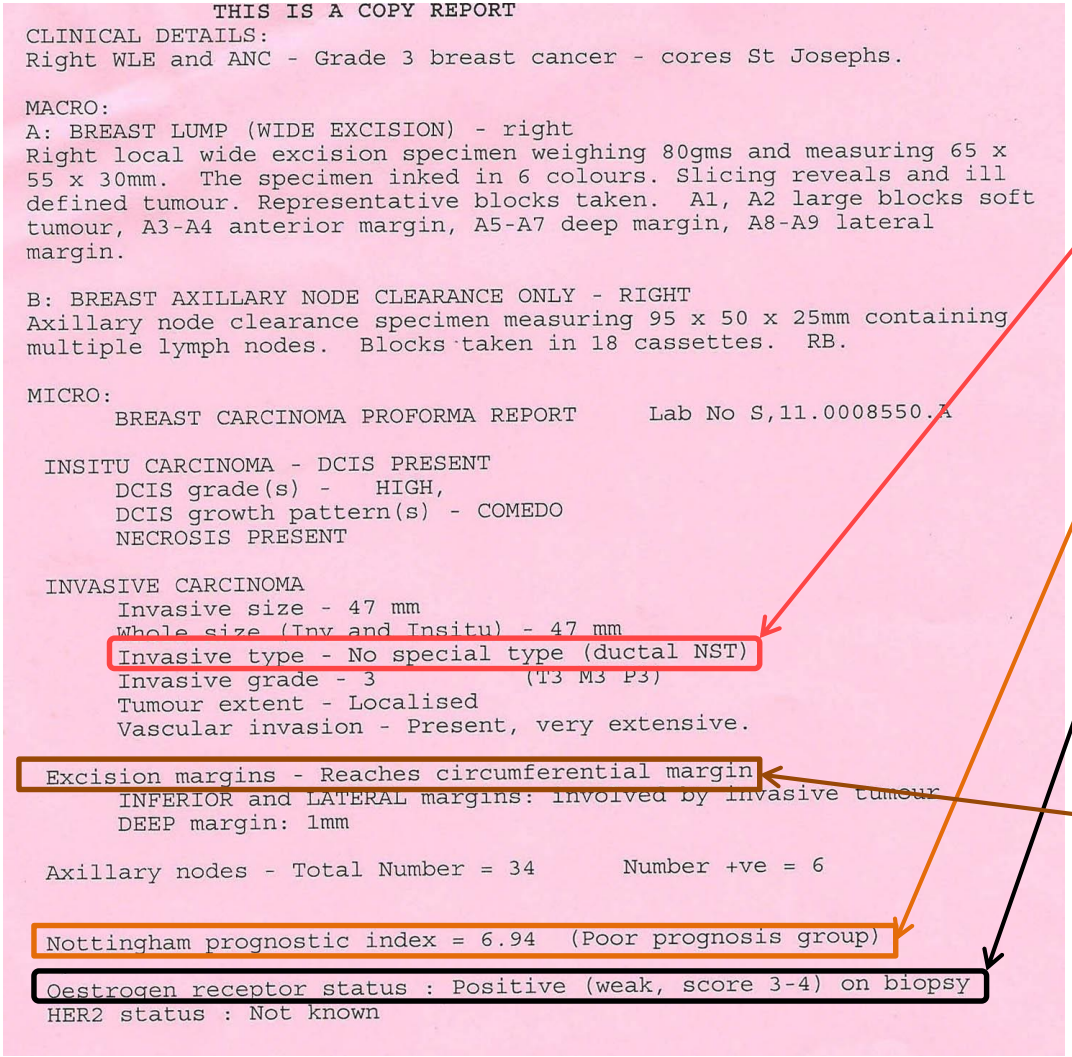
Murali Varma

Consultant Histopathologist

University Hospital of Wales

Cardiff

Pathology report:
Basis of all cancer management



THIS IS A COPY REPORT

CLINICAL DETAILS:
Right WLE and ANC - Grade 3 breast cancer - cores St Josephs.

MACRO:
A: BREAST LUMP (WIDE EXCISION) - right
Right local wide excision specimen weighing 80gms and measuring 65 x 55 x 30mm. The specimen inked in 6 colours. Slicing reveals and ill defined tumour. Representative blocks taken. A1, A2 large blocks soft tumour, A3-A4 anterior margin, A5-A7 deep margin, A8-A9 lateral margin.

B: BREAST AXILLARY NODE CLEARANCE ONLY - RIGHT
Axillary node clearance specimen measuring 95 x 50 x 25mm containing multiple lymph nodes. Blocks taken in 18 cassettes. RB.

MICRO:
BREAST CARCINOMA PROFORMA REPORT Lab No S,11.0008550.A

INSITU CARCINOMA - DCIS PRESENT
DCIS grade(s) - HIGH,
DCIS growth pattern(s) - COMEDO
NECROSIS PRESENT

INVASIVE CARCINOMA
Invasive size - 47 mm
Whole size (Inv and Insitu) - 47 mm
Invasive type - No special type (ductal NST)
Invasive grade - 3 (T3 M3 P3)
Tumour extent - Localised
Vascular invasion - Present, very extensive.

Excision margins - Reaches circumferential margin
INFERIOR and LATERAL margins: involved by invasive tumour
DEEP margin: 1mm

Axillary nodes - Total Number = 34 Number +ve = 6

Nottingham prognostic index = 6.94 (Poor prognosis group)

Oestrogen receptor status : Positive (weak, score 3-4) on biopsy
HER2 status : Not known

- **Diagnosis**
- **Prognosis**
- **Choice of Rx**
  - Prediction of response to therapy
- **Completeness of excision**

TESTING TIMES TO COME?

AN EVALUATION OF PATHOLOGY CAPACITY ACROSS THE UK

NOVEMBER 2016

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NEWS

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Health

NHS cancer testing service 'at breaking point'

23 November 2016 Health Share

theguardian website of the year

Wednesday 20 November 2002 [illegible]:19 GMT

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Pathology labs 'face cash and recruitment crisis'

BRITISH MEDICAL JOURNAL VOLUME 282 4 APRIL 1981

Freedom, fallibility, and the energy of motor vehicles
T J R Francis, MB

Black spots for road accidents
G M Hunter, MRCGP

Staffing crisis in pathology
J L Emery, FRCPATH, and M S Variend, MRCPATH; R P Lindley, BM

Medical education, manpower, and unemployment
H M Buckland, MB

Selling oneself short
R N Hedley, MRCGP

A critical review of pathology data collection

Prostate biopsy report

B) (Left lobe) 6 cores of prostate are seen of which 4 are infiltrated by acinar invasive prostate adenocarcinoma of Gleason patterns 3 and 4. Gleason sum 3 + 4 = 7. Gleason pattern 4 accounts for 25%. WHO Grade Group 2. Background multifocal PIN.

The dimension of the tumour and the volume of tumour (given as a %) in each core is as follows: 2mm (12%), 0.2mm (1%), 0.2mm (1%), 3mm (16%).

Pathology data: Issues

- **Why** do we collect data?
- **Who** do we collect data for?
- **What** data do we collect?
- **How** do we collect data?
- How do we **report** data?

Pathology data: Issues

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- **What** data do we collect?
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- How do we **report** data?
- Issues with cancer datasets

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- **Why** do we need to change?

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- **How** do we change?

Why do we collect data?

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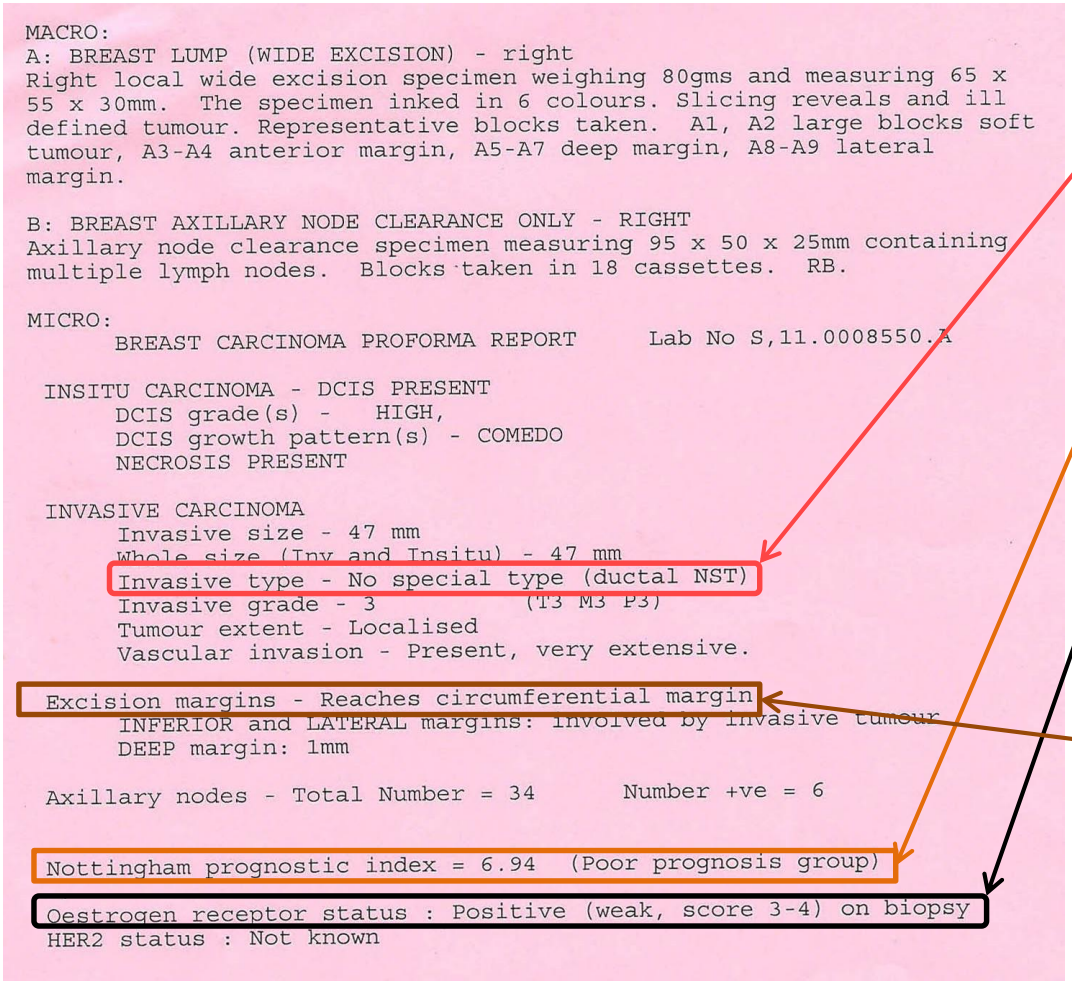
Basis of all cancer management



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Why do we collect data?

1. Patient management
2. **Clinical Trials entry/exclusion**

Why do we collect data?

1. Patient management
2. Clinical Trials entry/exclusion
3. **Epidemiology**
   - Cancer registration
   - Incidence and survival comparison
   - ……

Why do we collect data?

1. Patient management
2. Clinical Trials entry/exclusion
3. Epidemiology
4. **Current research**
5. **Potential future research**

Why do we collect data?

1. Patient management
2. Clinical Trials entry/exclusion
3. Epidemiology
4. Current research
5. Potential future research
6. **Audit of surgeons performance**
    - Number of lymph nodes

Why do we collect data?

1. Patient management
2. Clinical Trials entry/exclusion
3. Epidemiology
4. Current research
5. Potential future research
6. Audit of surgeons performance
7. **"Part of complete pathology report"**
   - Dimensions of fallopian tube/spermatic cord

Report data: for who?

Report data: for who?

- **Pathologists**
  - Macroscopic description
  - Block key
  - Microscopic description?

Report data: for who?

- Pathologists
- **Clinicians**
  - Diagnosis
  - Prognostic data
  - Predictive data

Report data: for who?

- Pathologists
- Clinicians
- **Epidemiologists**
- **Cancer registries**
- **MDT coordinators**

SNOMED codes

Report data: for who?

- Pathologists
- Clinicians
- Epidemiologists
- Cancer registries
- MDT coordinators

SNOMED codes

- **Researchers**
- **……**

Pathology data collection

- Different purposes
- For different users
- With very different requirements

Tumour grading

- Why do we grade tumours?

Why grade tumours?

- **Individual patient**
  - Prognosis
  - Management

Why grade tumours?

- **Individual patient**
  - Prognosis
  - Management
- **Groups of patients**
  - **Clinical trials**
    - Groups have to be comparable
  - **Survival analysis**
    - Surgeons, Areas (eg. England vs. Wales)

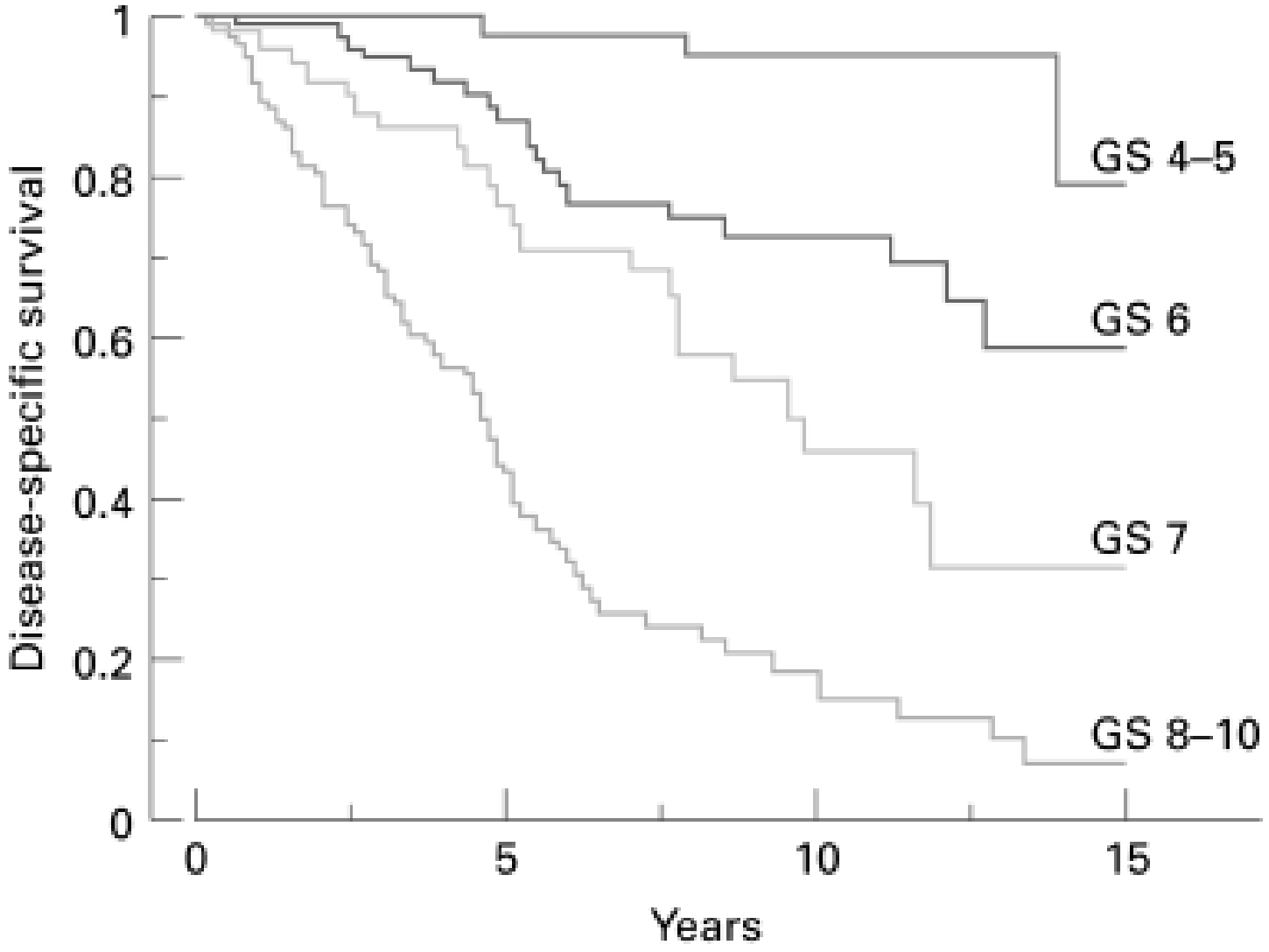
Grading tumours

- **Groups of patients**
  - All published studies based on group analysis

Prognostic value of the Gleason score in prostate cancer

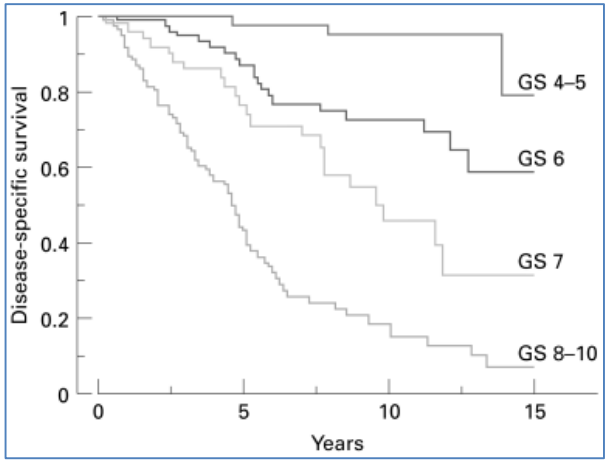
L. EGEVAD, T. GRANFORS*, L. KARLBERG*, A. BERGH† and P. STATTIN‡

BJU International (2002), 89, 538–542



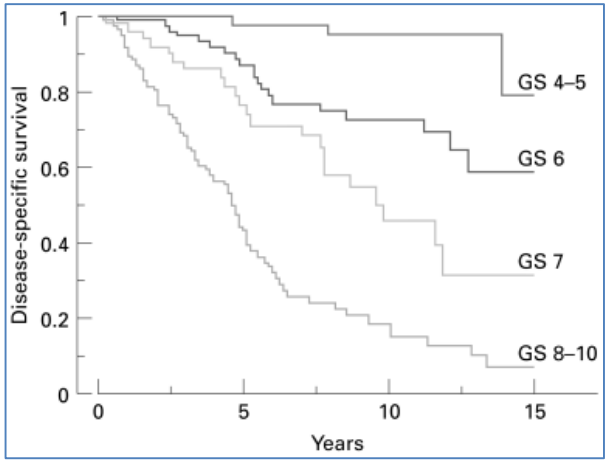
Grading tumours

- **Groups of patients**
  - Borderline grades cancel each other as randomly distributed across adjacent grades



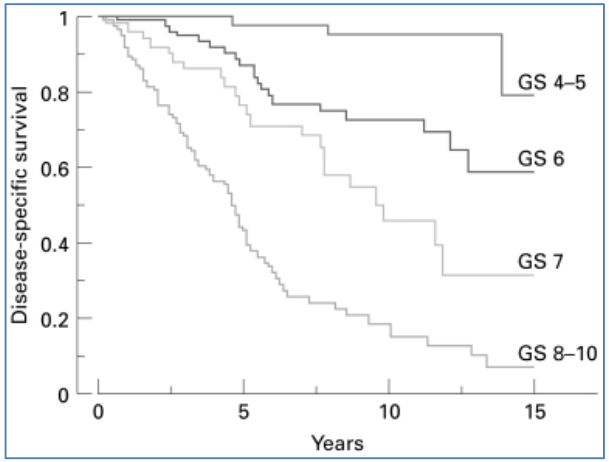
Grading tumours

- **Groups of patients**
  - Borderline grades cancel each other as randomly distributed across adjacent grades
  - Inter-observer reproducibility less important

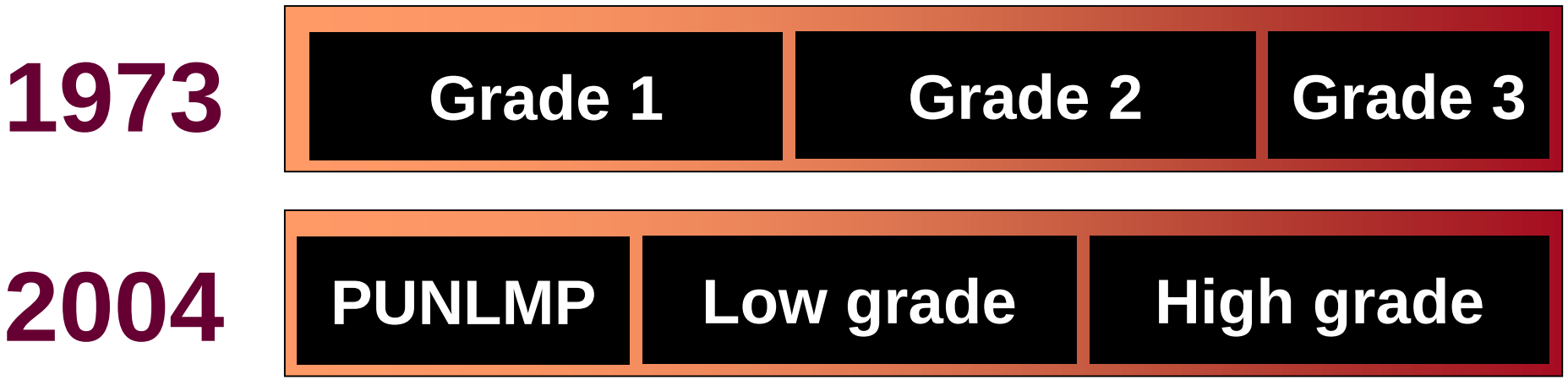


Grading tumours

- **Groups of patients**
  - Borderline grades cancel each other as randomly distributed across adjacent grades
  - Inter-observer reproducibility less important
  - Fewer tiers the better?
    - More cases in each group
    - Easier statistics



Grading bladder cancer



Grading tumours

- **Groups of patients**
  - Borderline grades cancel each other
  - Inter-observer reproducibility less important
  - Fewer tiers the better?
- **Individual patient**
  - Arbitrary lines in continuum

Gleason score 3 + 4 = 7

- Morphological continuum
- Clinical continuum

Medicine is not Mathematics!

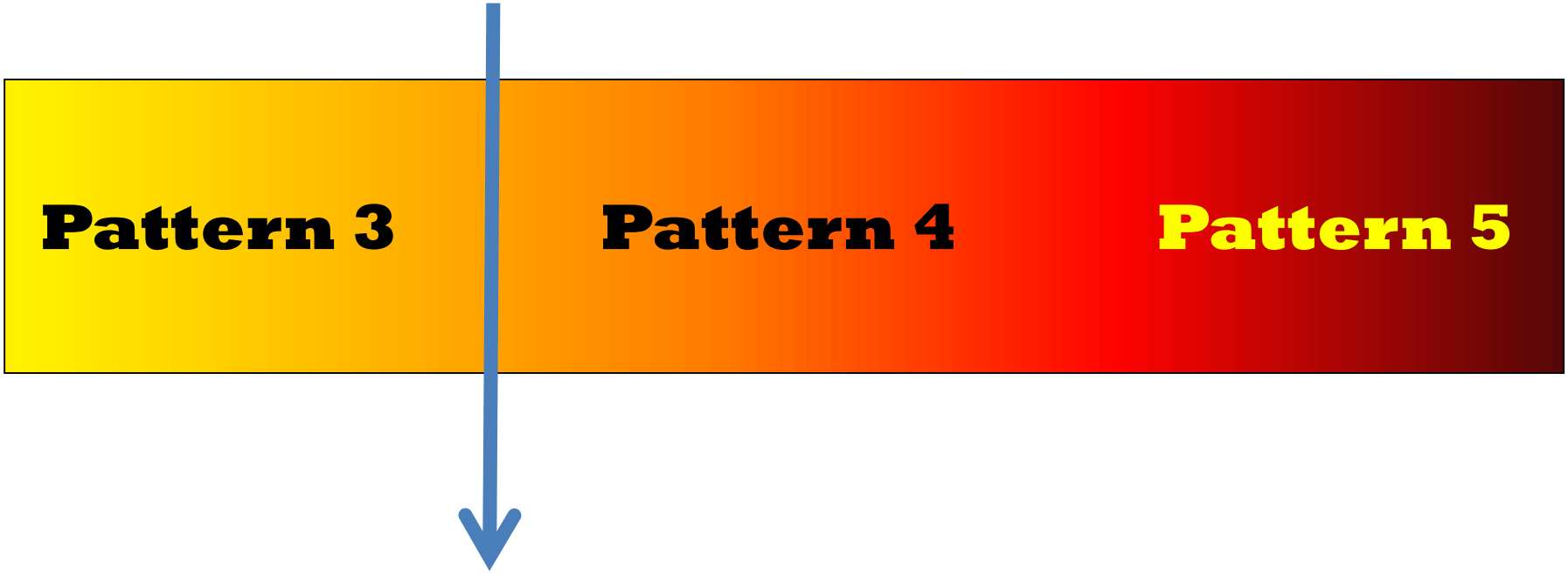
- **Gleason score 6:** AS
- **Gleason score 7:** Radical Rx

Medicine is not Mathematics!

- **Gleason score 6:** AS
- **Gleason score 7:** Radical Rx

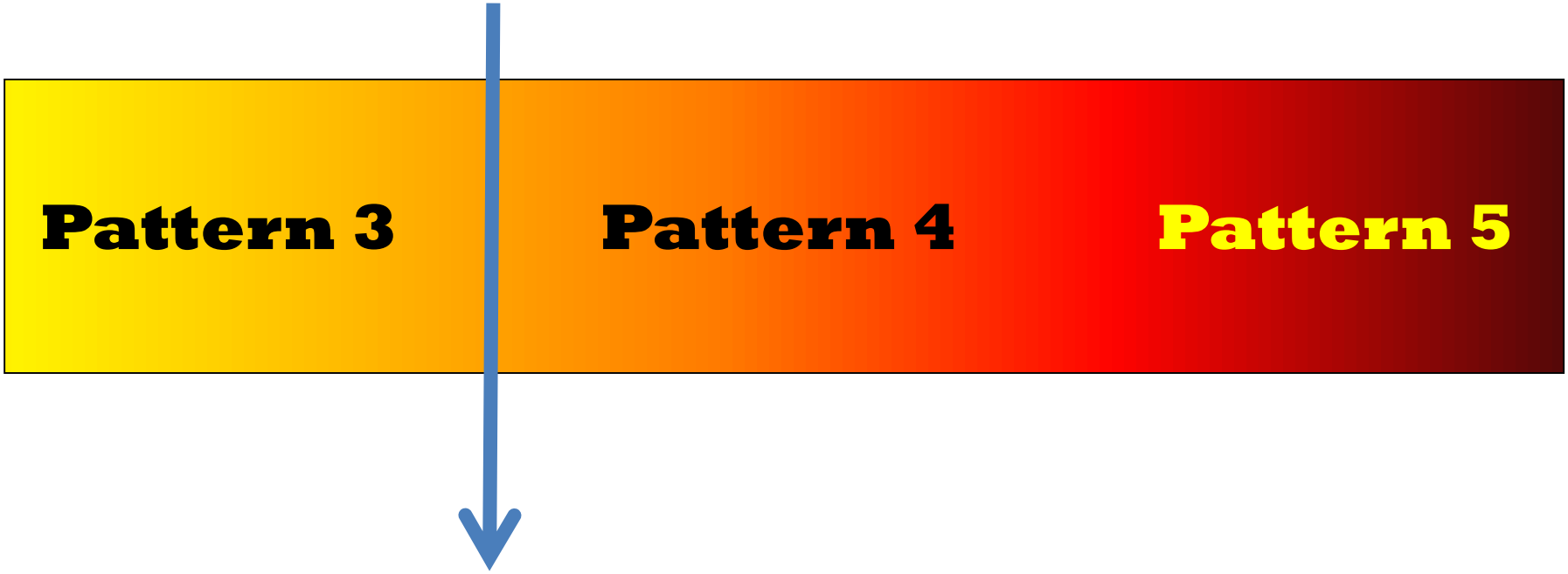
All Gleason 7 tumours are not the same

Gleason score 3 + 4 = 7



Gleason score 3 + 4 = 7

[May be suitable for surveillance]



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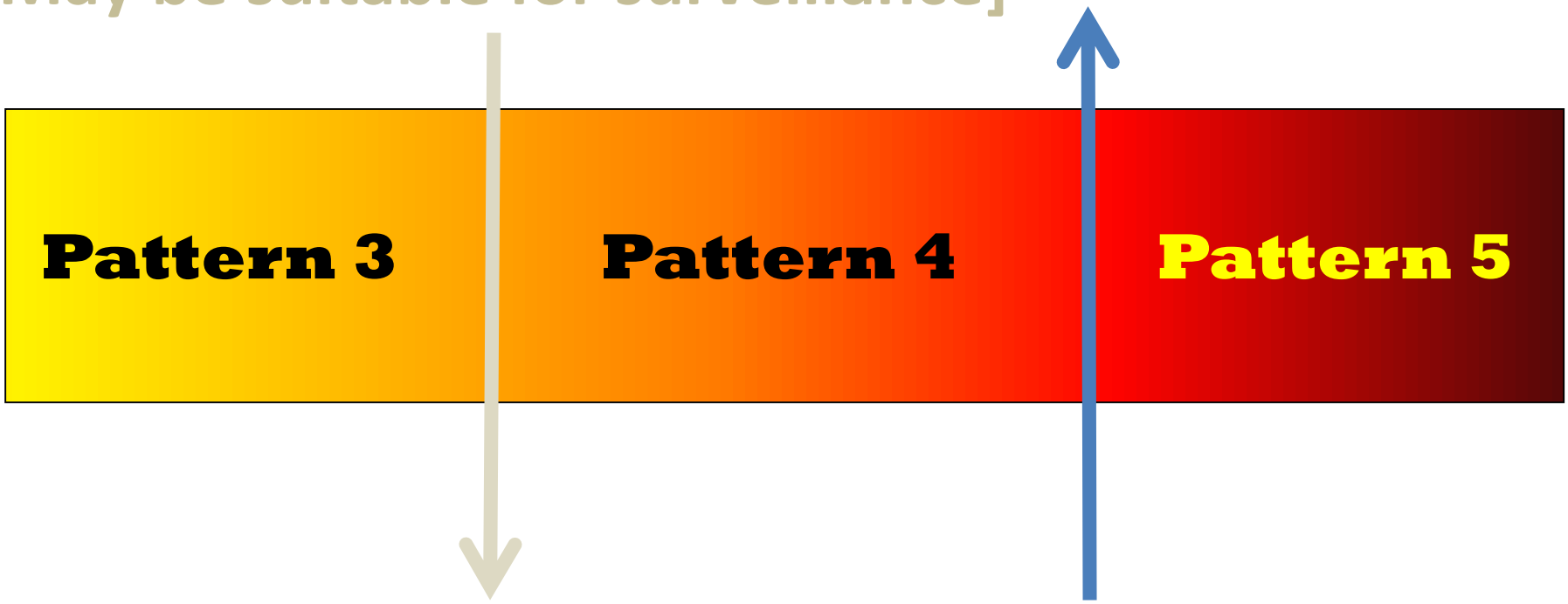


[NOT suitable for surveillance]

Gleason score 3 + 4 = 7

- Incomplete information
- Does not indicate where in the clinical spectrum

Gleason score 3 + 4 = 7

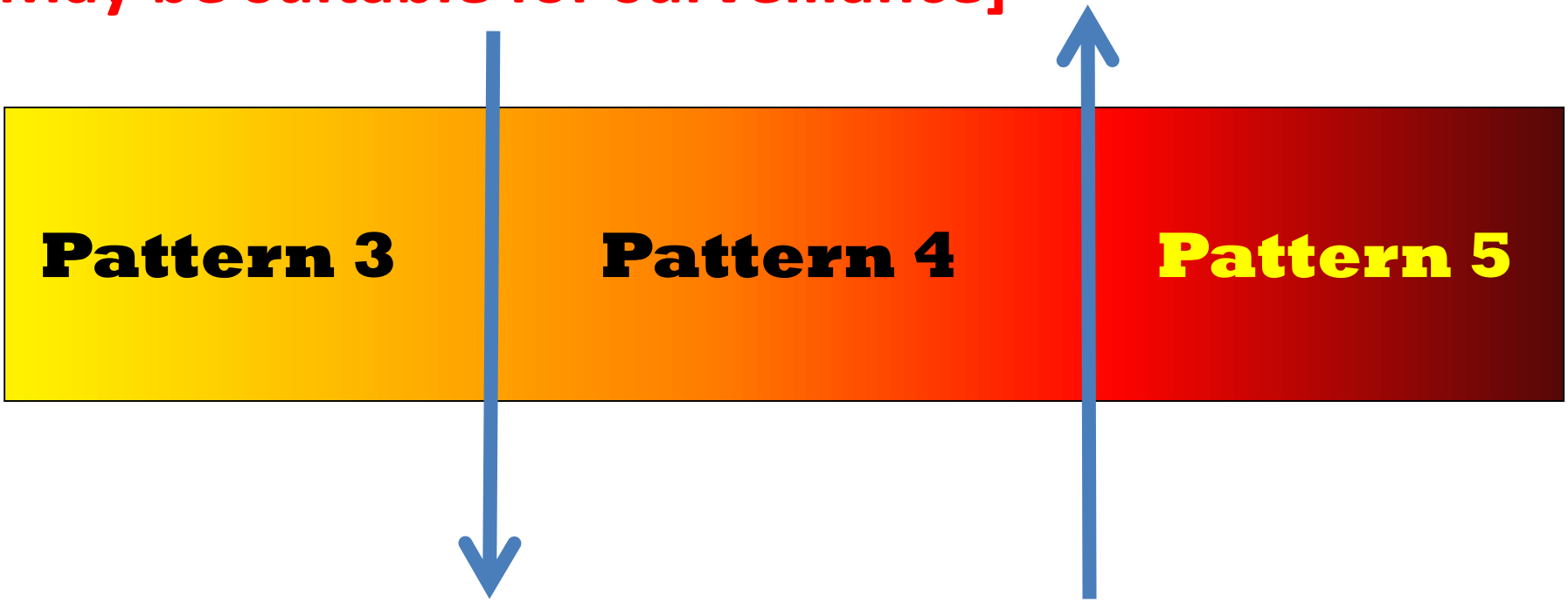
- Incomplete information
- Does not indicate where in the clinical spectrum

- Analogous to reporting RCC as pT2 without indicating tumour size
  - 71mm
  - 150mm?

Gleason score 3 + 4 = 7

3+4=7 (borderline pattern 4)

[May be suitable for surveillance]



[NOT suitable for surveillance]

3+4=7 (bordering on pattern 5)

Grading tumours

- Groups of patients
  - Borderline grades cancel each other
  - Inter-observer reproducibility less important
  - Fewer tiers the better?
- **Individual patient**
  - Arbitrary lines in continuum
  - Inter-observer reproducibility critical

Grading tumours

- Groups of patients
  - Borderline grades cancel each other
  - Inter-observer reproducibility less important
  - Fewer tiers the better?
- **Individual patient**
  - Arbitrary lines in continuum
  - Inter-observer reproducibility critical
  - More tiers the better?

Use both WHO 1973 and WHO 2004?

Using both 1973 and 2004 provides better stratification

Grading: one size fits all

- **Individual patient (Treating clinicians)**
  - Prognosis
  - Management
- **Groups of patients (Academics)**
  - Research/Clinical trials
  - Survival analysis

Cut-offs

- Most grading and staging cut-offs are arbitrary

Cut-offs

- **Most grading and staging cut-offs are arbitrary**
  - "Gleason 3+4 and 4+3 are different diseases"

Cut-offs

- **Most grading and staging cut-offs are arbitrary**
  - "Gleason 3+4 and 4+3 are different diseases"
    - Only at extremes
    - Tumours do not recognise 50% (Gleason) or 7cm (RCC)

Cut-offs

- Most grading and staging cut-offs are arbitrary
- **Cut-offs work best for groups not individuals**
  - Research, guidelines ……

Cut-offs

- Most grading and staging cut-offs are arbitrary
- Cut-offs work best for groups not individuals
- **Cannot replace clinical judgement**

Article first published online: 24 MAR 2016
DOI: 10.1111/bju.13458

BJUI
BJU International

Accuracy of prostate biopsies for predicting Gleason score in radical prostatectomy specimens: nationwide trends 2000–2012

Daniela Danneman*, Linda Drevin†, Brett Delahunt‡, Hemamali Samaratunga§¶, David Robinson**, Ola Bratt†††‡‡‡, Stacy Loeb§§, Pär Stattin¶¶*** and Lars Egevad*†††

Correlation of Gleason Grading of Biopsies and Radical Prostatectomy Specimens 2000-2012.
A Registry Study of 15 598 Men.

Lars Egevad, Daniela Danneman, Pär Stattin, Linda Drevin
Karolinska Institutet, Stockholm, Sweden; Uppsala University Hospital, Uppsala, Sweden; Memorial Sloan-Kettering Cancer Center, New York, NY

	ISUP grade, biopsy				
ISUP grade, RP	**2-6**	**3+4**	**4+3**	**4+4**	**9-10**
2-6	65	17	7	5	2
3+4	28	61	30	17	7
4+3	5	18	50	33	19
4+4	1	2	8	33	8
9-10	1	1	5	12	64
All	100	100	100	100	100

United States and Canadian Academy of Pathology annual meeting 2015

[819] Gleason Scores 3+5=8 and 5+3=8 at Biopsy Exhibit a Wide Spectrum of Gleason Scores at Prostatectomy

Alexander Baras, Jonathan I Epstein. Johns Hopkins, Baltimore, MD

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		3+3=6	3+4=7	4+3=7	3+5=8	5+3=8	4+4=8	GS 9,10	
Prostatectomy	3+3=6	72%	21%	9%	**4%**	**5%**	3%	1%	4609
	3+4=7	22%	56%	32%	**36%**	**30%**	11%	7%	2968
	4+3=7	4%	18%	40%	**36%**	**20%**	26%	10%	1246
	3+5=8	0%	1%	1%	**13%**	**10%**	1%	4%	86
	5+3=8	0%	0%	0%	**0%**	**15%**	0%	2%	18
	4+4=8	1%	1%	9%	**2%**	**0%**	38%	8%	364
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Radical: ≈50% overgraded **(≈20% primary pattern 3)**

Estimation of tumour grade within a morphological and clinical continuum

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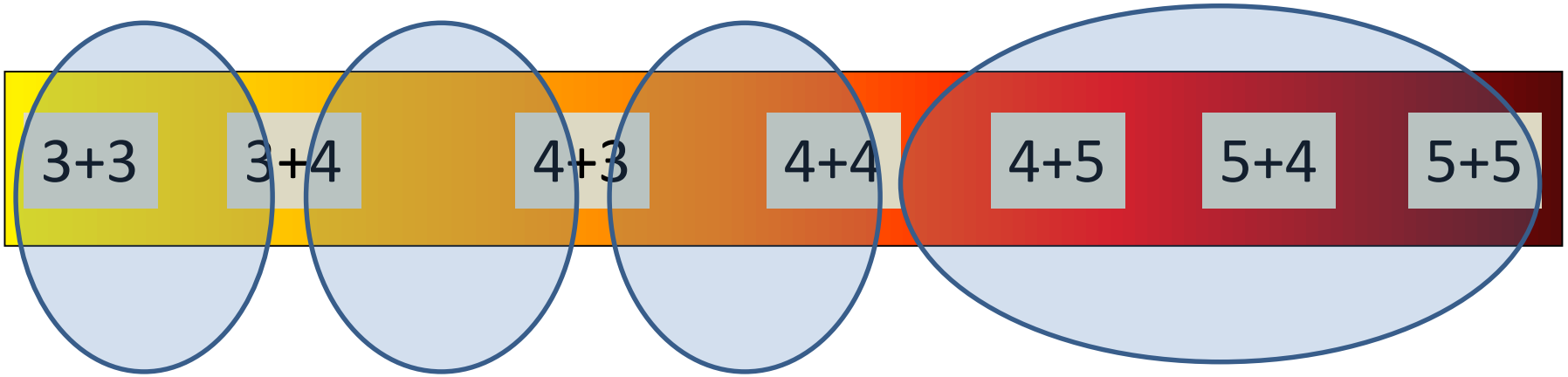

Perfect precision neither possible nor necessary

Pathology data

- **Why** do we collect data?
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- **What** data do we collect?
- **How** do we collect data?

Pathologists' psyche

- Obsessive Compulsive Disorder
- Paranoia

Pathology data collection

- **Record everything that *could* be useful**
- **Fear of missing data**
  - That could be retrospectively identified

Clinical data collection

- **Clinicians would not do complete neurological examination of every patient**
  - Would identify clinically significant disease
  - Not cost-effective: would increase consultation time and waiting lists

Data collection
Focussed approach

- Collect less data
- Collect this better

Evidence based medicine

- Needs evidence

Evidence based medicine

- ~~Needs evidence~~

Evidence based medicine

- ~~Needs evidence~~
- Needs **good quality** evidence
- Critically appraised

How do we collect data?

- Same data in all cases
  - One size fits all

RCPath
Data categorisation

- **Core (mandatory)**
  - "Required for cancer staging, optimal patient management and prognosis"
  - "Supported by robust published evidence"
- **Non-core (recommended)**

RCPath

Data categorisation: core/non-core

- A data item is either core or non-core in all specimens and in any clinical scenario

RCPath

Data categorisation: core/non-core

- A data item is either core or non-core in all specimens and in any clinical scenario
- However a core data item may be critical, important or irrelevant depending on clinical scenario

Diagnosis of prostate cancer in needle biopsy

- Critical?

1mm Gleason 3 + 3 prostate cancer in a needle bx

1mm Gleason 3 + 3 prostate cancer in a needle bx

- **Man with raised PSA**
  - Critical

1mm Gleason 3 + 3 prostate cancer in a needle bx

- Man with raised PSA
  - Critical
- **Man on active surveillance**
  - **Irrelevant**

Prostatectomy prognostic data

- **Tumour grade**
- **Tumour volume**
- **Extraprostatic extension**
  - Extent of EPE
- **Lymphovascular invasion**
- **Margin status**
  - Extent of margin positivity
  - Grade at positive margin

Prostatectomy prognostic data
Clinically less important

- Serum PSA excellent tool for monitoring for early recurrence post-radical

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

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**

Prostatectomy prognostic data

- **Tumour grade**
- **Tumour volume**
- **Extraprostatic extension**
  - Extent of EPE
- **Lymphovascular invasion**
- **Margin status**
  - Extent of margin positivity
  - Grade at positive margin

Is all this really necessary?

Pathology data

All data are equal but some data are sometimes **less** equal

How do we report data?

- **Same data in all cases**
  - **One size fits all**
    - Vascular invasion in patients with distant mets!!

Proforma reporting
One size fits all (scenarios)

- Antithesis of personalised medicine?

How do we collect data?

- Same data in all cases
  - One size fits all
    - Vascular invasion in patients with distant mets!!
- **Precise data**
  - ***Lengths and percentages***

Pathology measurements: examples

- **Lengths**
  - Specimen size
  - Tumour size (Macro and Micro)
  - Distance to margins
- **Percentages**
  - % tumour in prostate biopsy, TURP or prostatectomy
  - % tumour components: bladder, testis …
  - % necrosis in RCC
  - % sarcomatoid change in RCC

Prostate biopsy report

B) (Left lobe) 6 cores of prostate are seen of which 4 are infiltrated by acinar invasive prostate adenocarcinoma of Gleason patterns 3 and 4. Gleason sum 3 + 4 = 7. Gleason pattern 4 accounts for 25%. WHO Grade Group 2. Background multifocal PIN.

The dimension of the tumour and the volume of tumour (given as a %) in each core is as follows: 2mm (12%), 0.2mm (1%), 0.2mm (1%), 3mm (16%).

Is percentage estimation logical?

- **% tumour in needle core/organ**
  - More benign tissue makes tumour better?
  - 6mm tumour in 10mm core not more aggressive than 4mm tumour in 5mm core

Is percentage estimation logical?

- % tumour in needle core/organ
  - More benign tissue makes tumour better?
  - 6mm tumour in 10mm core not more aggressive than 4mm tumour in 5mm core
- **% tumour components, necrosis, sarcomatoid change etc**
  - **Depends on sampling protocol**
    - % will depend on number of sections taken from areas of necrosis, fleshy white areas etc

How do we collect data?

- Same data in all cases
  - One size fits all
    - Vascular invasion in patients with distant mets!!
- **Precise data**
  - ***mm or %***
    - amount of tumour, tumour components etc

Prostate biopsy report

Tumour extent

B) (Left lobe) 6 cores of prostate are seen of which 4 are infiltrated by acinar invasive prostate adenocarcinoma of Gleason patterns 3 and 4. Gleason sum 3 + 4 = 7. Gleason pattern 4 accounts for 25%. WHO Grade Group 2. Background multifocal PIN.

The dimension of the tumour and the volume of tumour (given as a %) in each core is as follows: 2mm (12%), 0.2mm (1%), 0.2mm (1%), 3mm (16%).

How do we collect data?

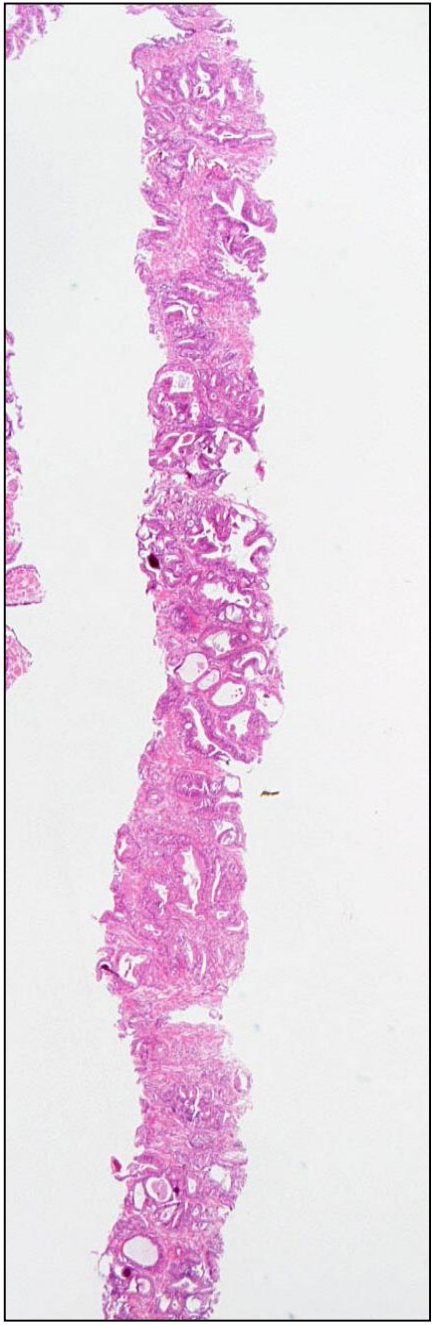
- Same data in all cases
  - One size fits all
    - Vascular invasion in patients with distant mets!!
- **Precise data**
  - ***mm or %***
    - amount of tumour, tumour components etc
  - ***Pseudo-precision?***

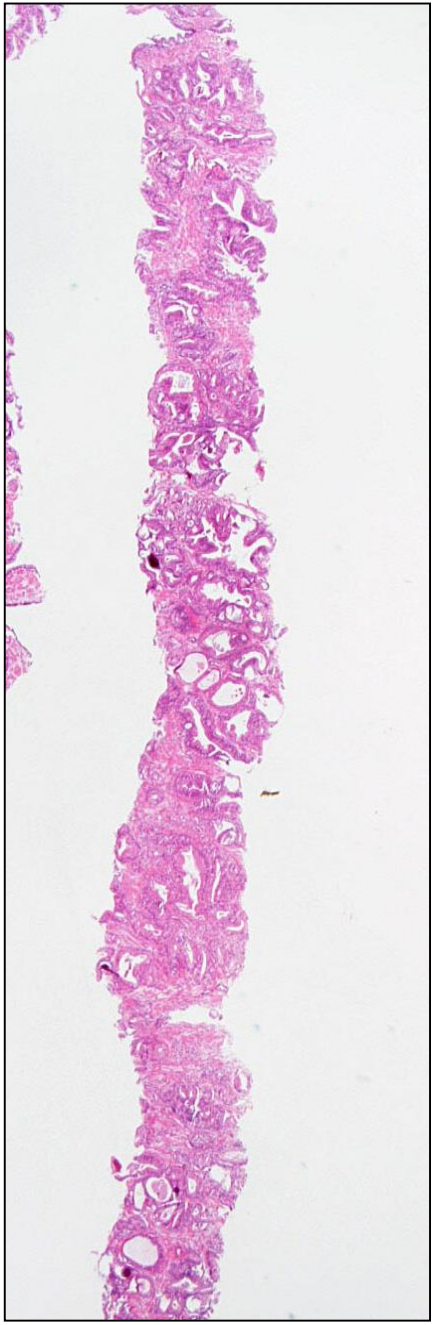
Tumour extent in biopsy

- **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 <10%)
  - Tumour length: to the nearest mm (or <1mm)

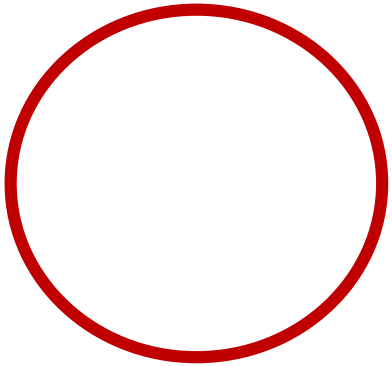
Measurements: *perfect precision not required*

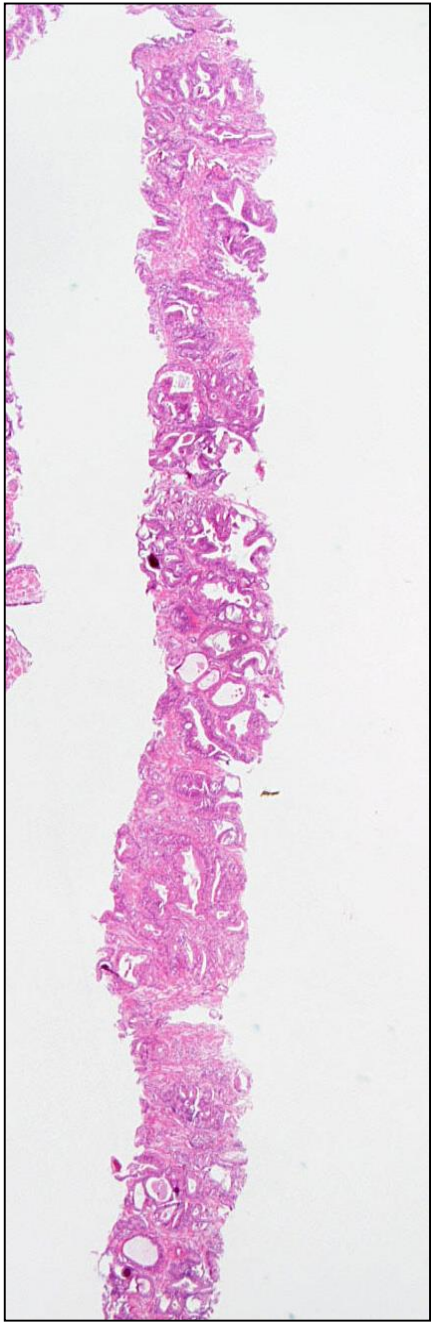
- **Size/distances (mm)**
  - **To nearest mm (or <1mm)**
    - "2.1mm" is meaningless
      - May be different in other levels or blocks
      - Cannot eyeball distinguish 2.1 for 2.3mm so would require measuring multiple levels/blocks!





x4





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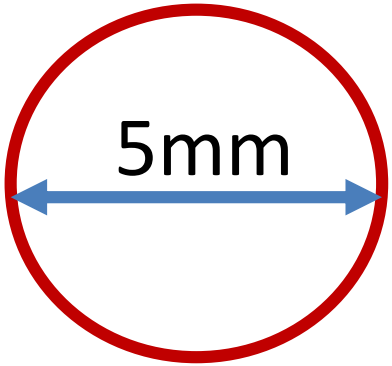

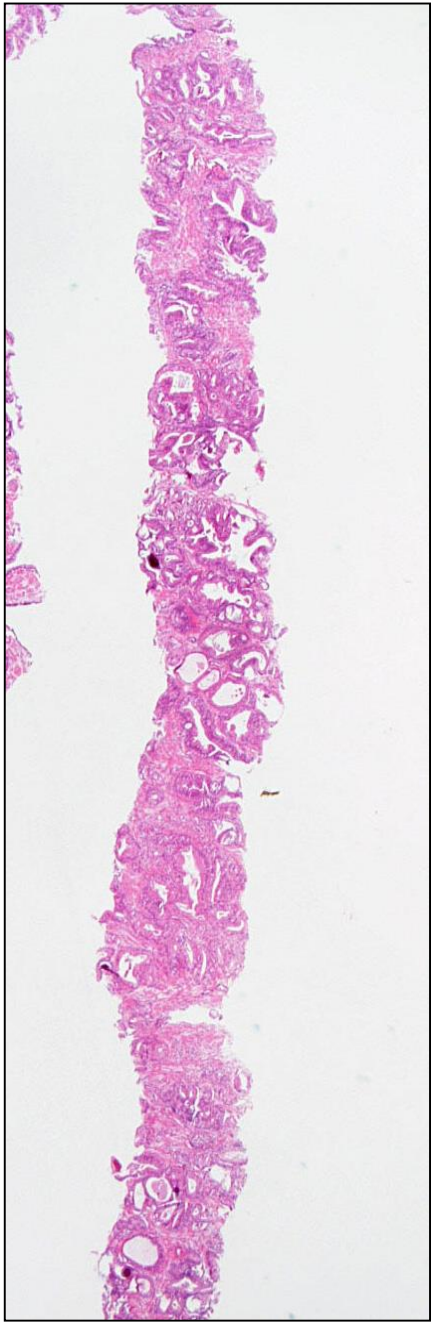

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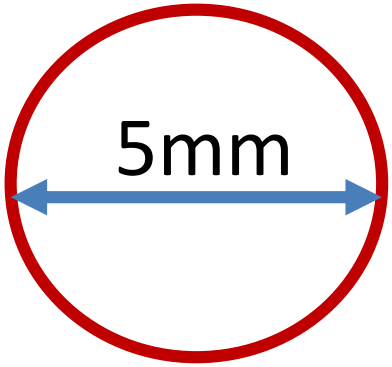

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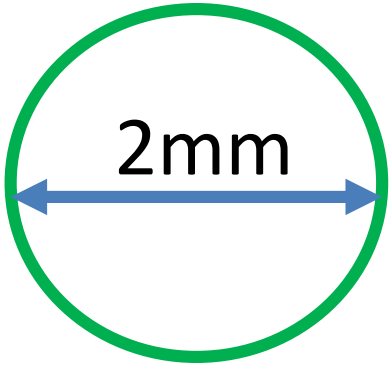

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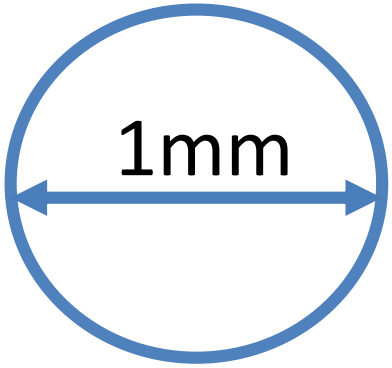

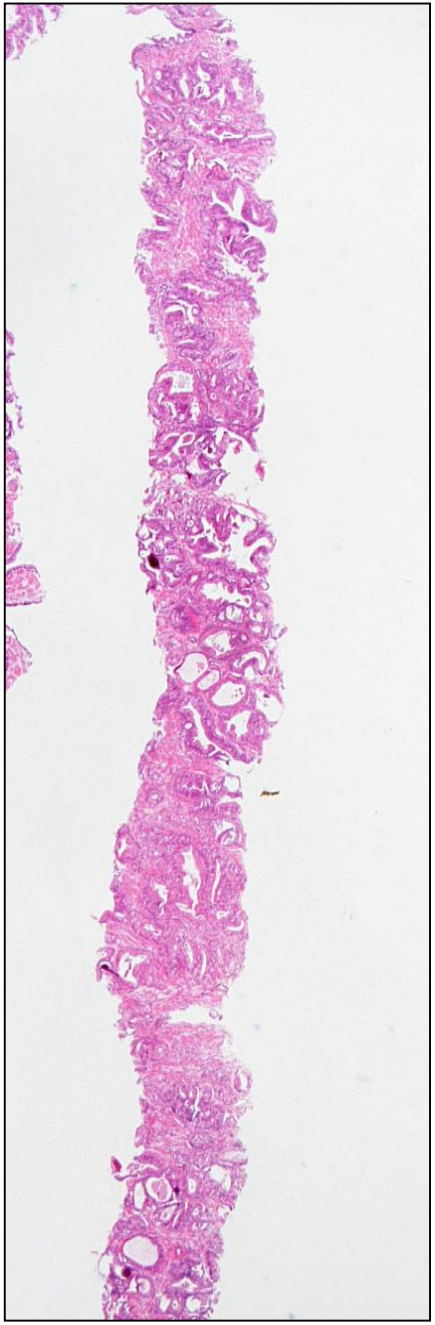

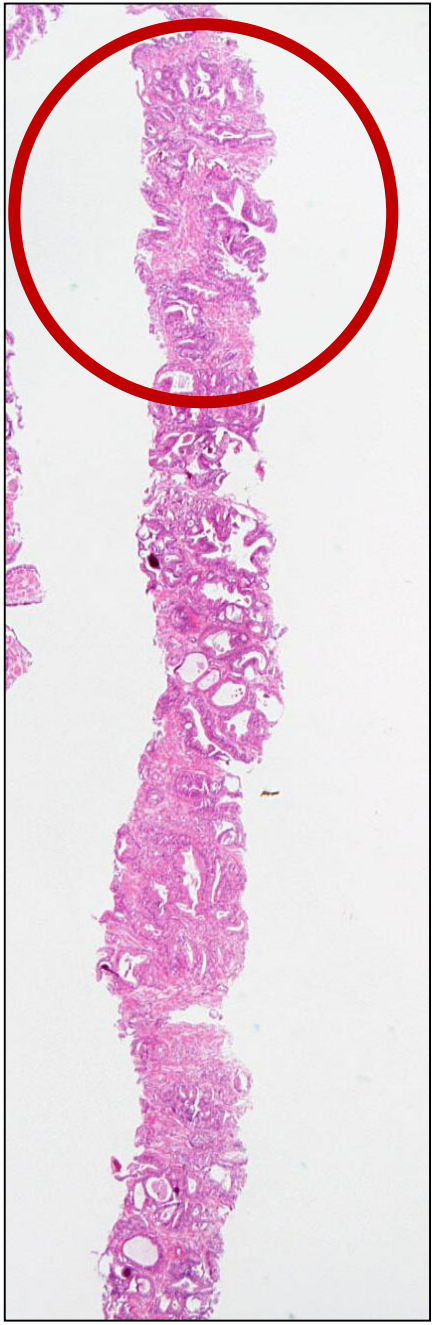

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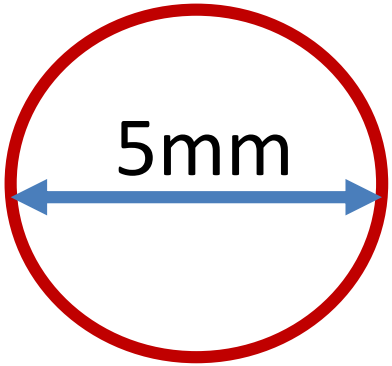

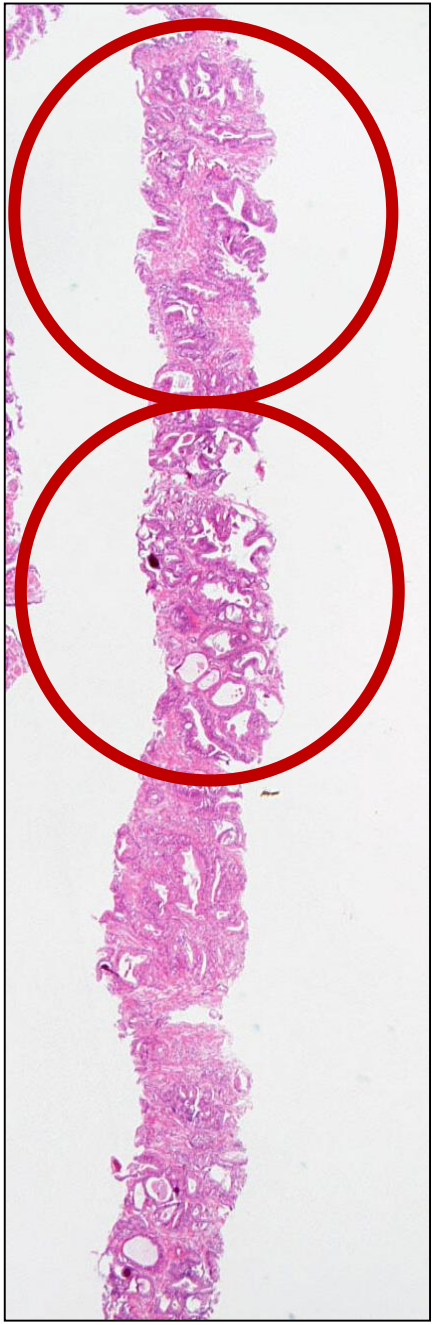

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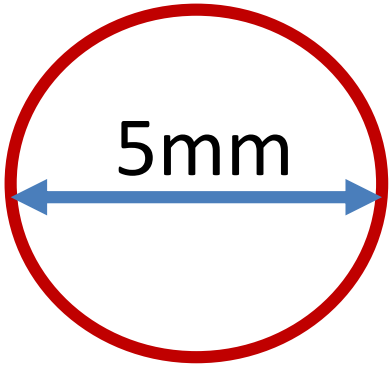
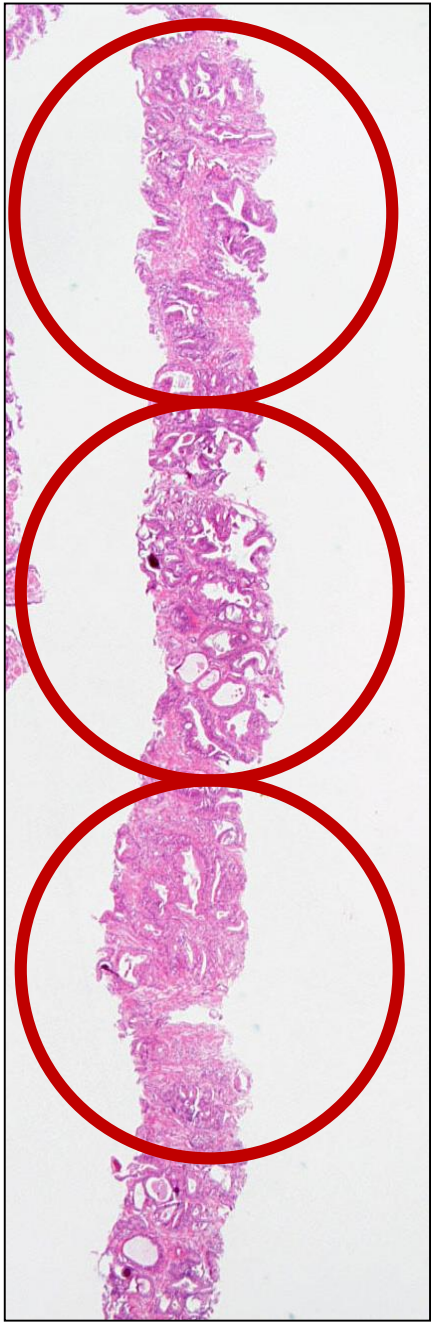
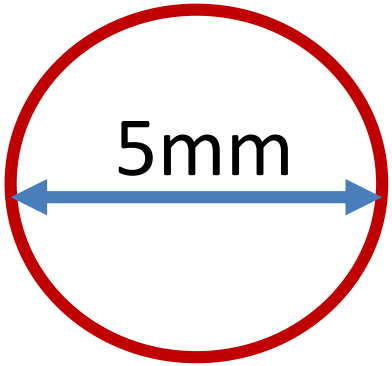
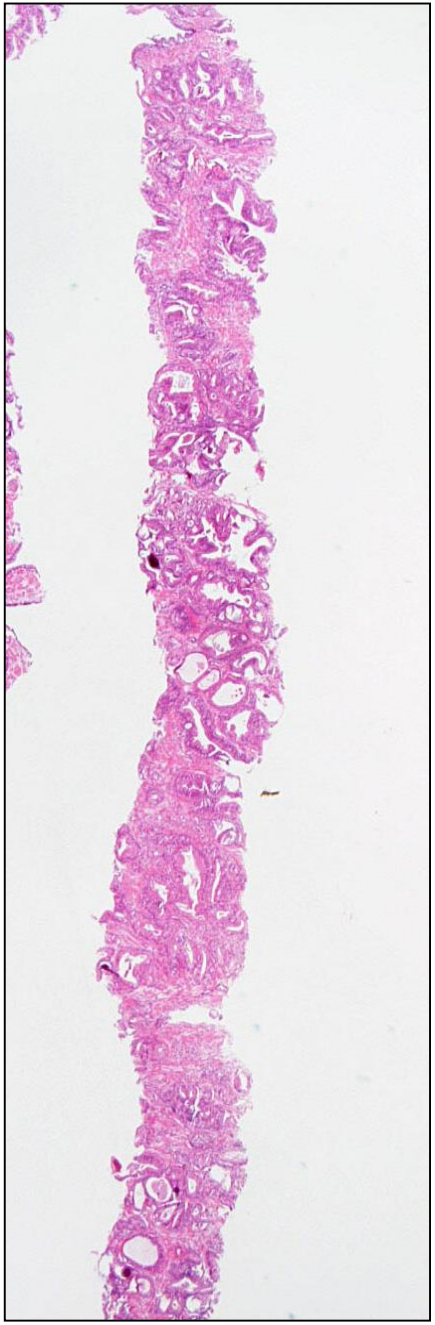


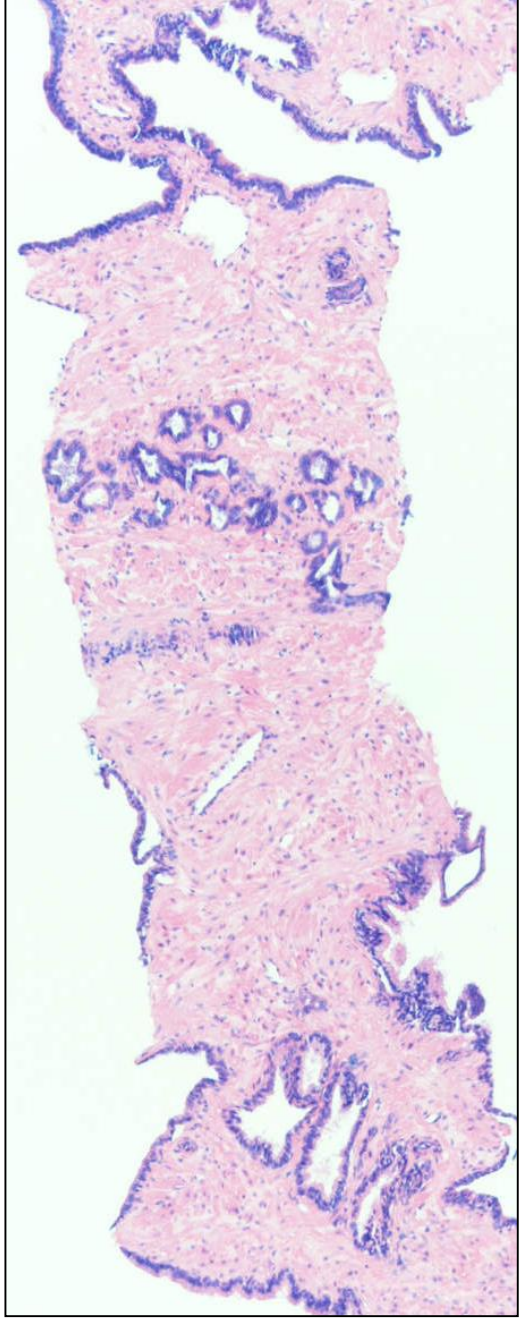


16mm

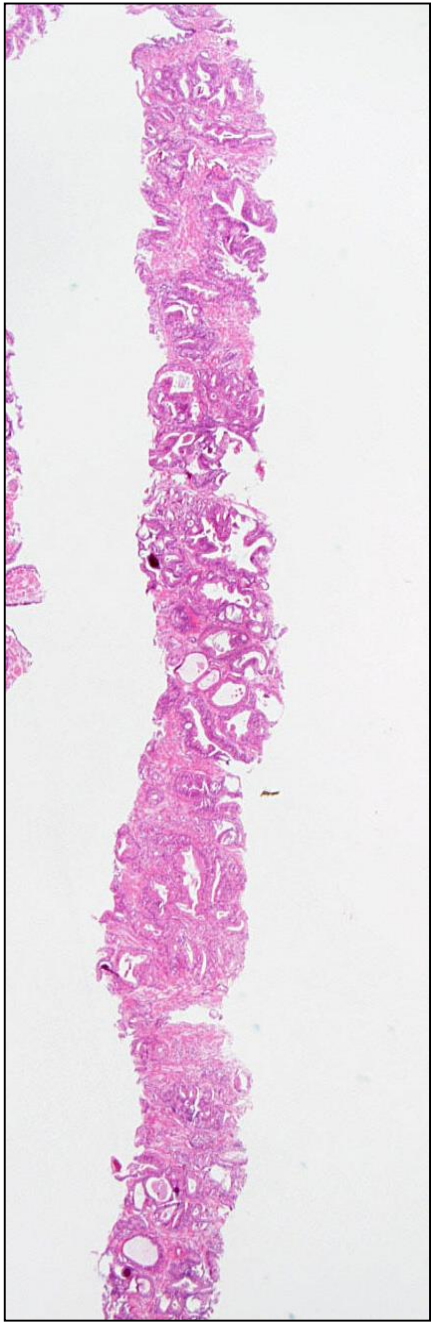
x4



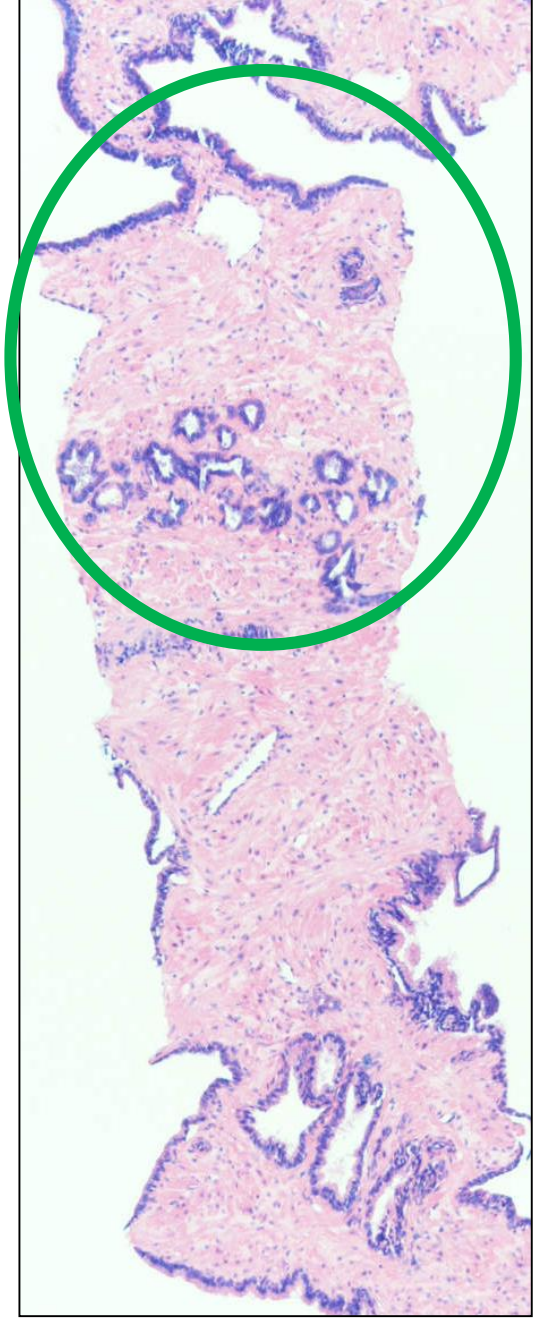




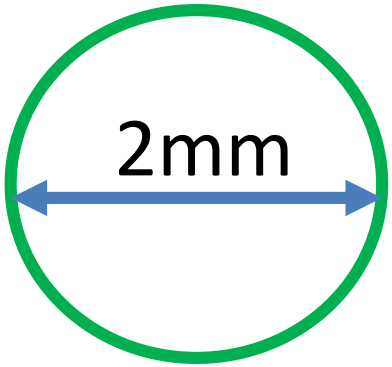
16mm

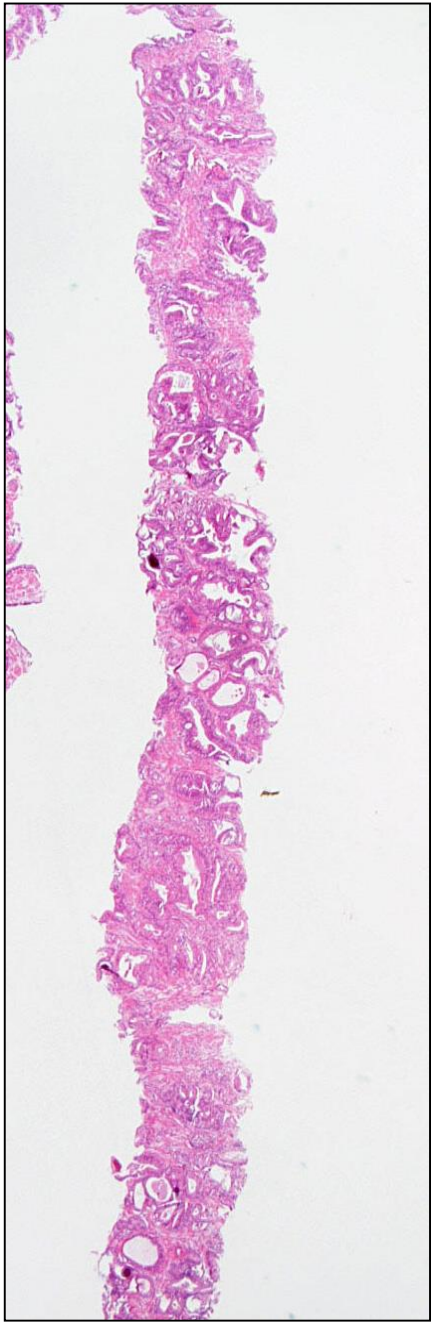


16mm

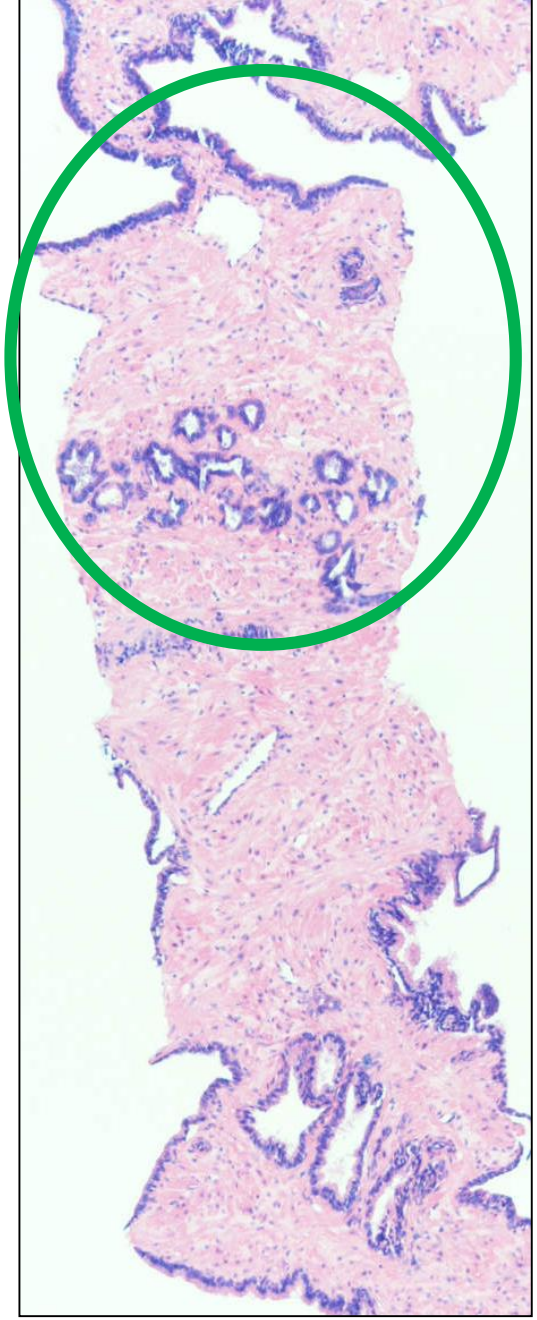


x10



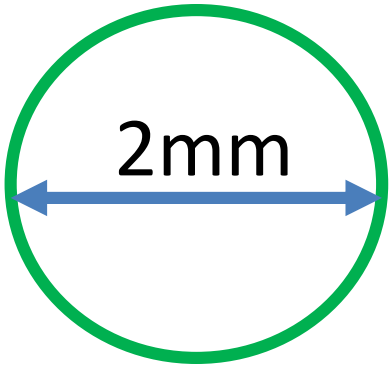


16mm



1mm

x10



Pseudo-precision

Diagnostic criteria

Diagnostic criteria for Intraductal cancer
Guo and Epstein 2006

- Solid intraductal proliferation
- Dense cribriform intraductal proliferation

OR

- **Loose cribriform / micropapillary** with
  - **Marked atypia (≥ 6x nuclear enlargement)**

or

  - Non-focal comedonecrosis

Guo and Epstein: “nuclear size ≥ 6x normal"

How does one define “nuclear *size*”?

Guo and Epstein: “nuclear size ≥ 6x normal"

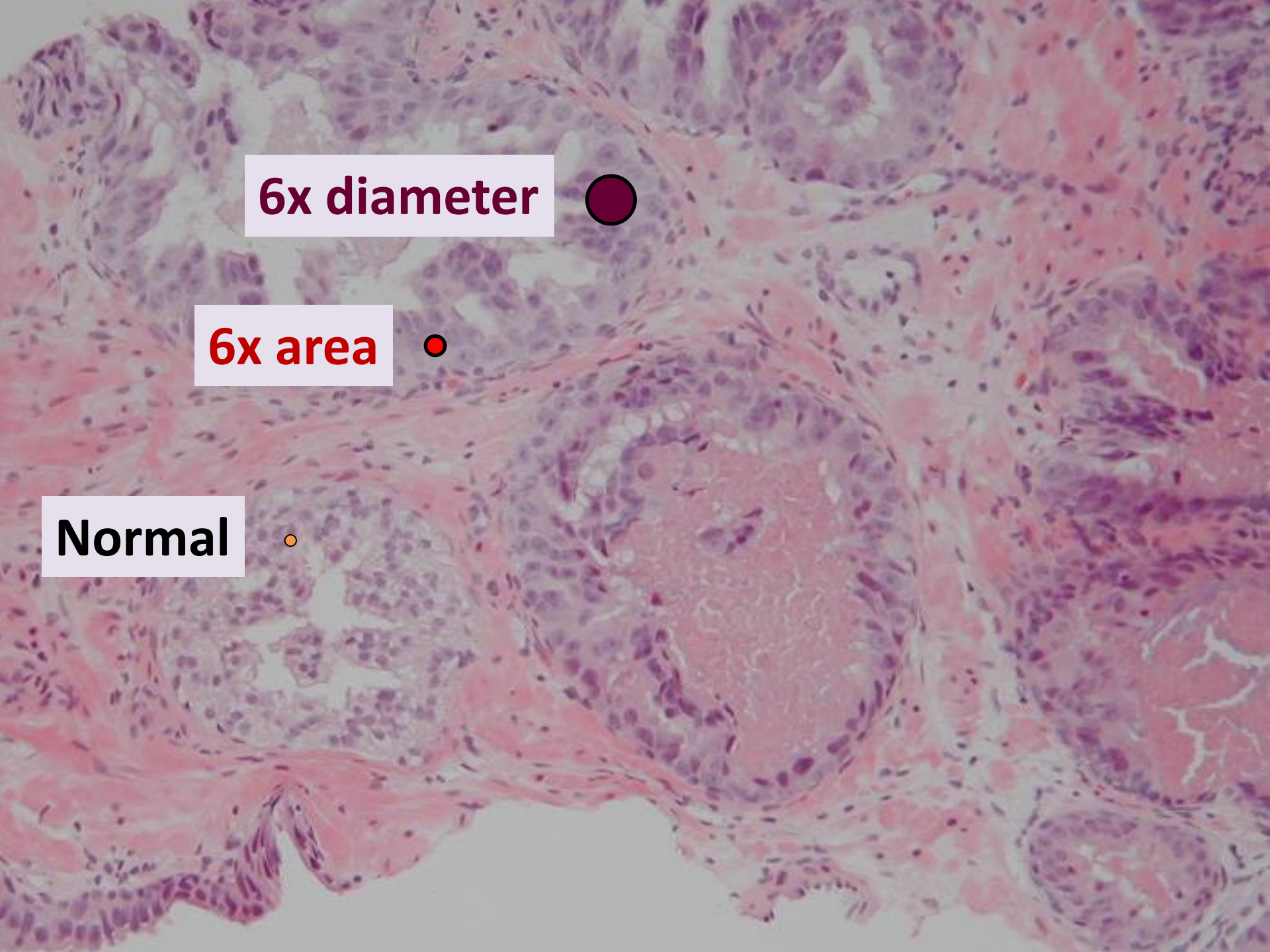
How does one define “nuclear *size*”?

- Nuclear ***area*** ≥ 6x normal?
- Nuclear ***diameter*** ≥ 6x normal?

“≥ 6x nuclear enlargement”

Area = πr^2

6x **area**	=	2.5x diameter
6x **diameter**	=	36x area


6x diameter
6x area
Normal

Intraductal Carcinoma of Prostate (IDCP) Reporting Practice:

A Survey of Expert European Uropathologists

Varma M, et al. J Clin Pathol 2016;0:1–6. doi:10.1136/jclinpath-2016-203658

23 **experts** from 11 countries

United Kingdom:	**5**
Germany:	**4**
France:	**3**
Portugal:	**2**
Austria:	**2**
Ireland:	**2**

- **Netherlands:** **1**
- **Spain:** **1**
- **Sweden:** **1**
- **Italy:** **1**
- **Switzerland:** **1**

Guo and Epstein: “nuclear size ≥ 6x normal"

How would you define “nuclear *size*”?

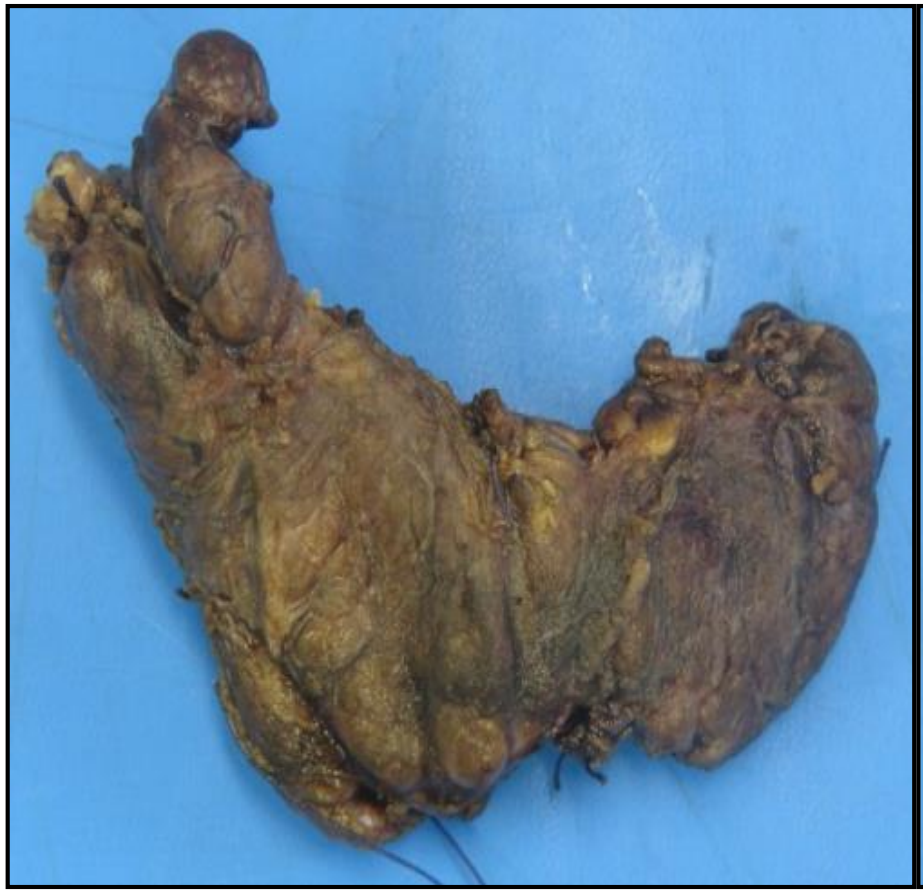
- Nuclear ***area*** ≥ 6x normal: **74%**
- Nuclear ***diameter*** ≥ 6x normal: **21%**
- Unsure: **5%**

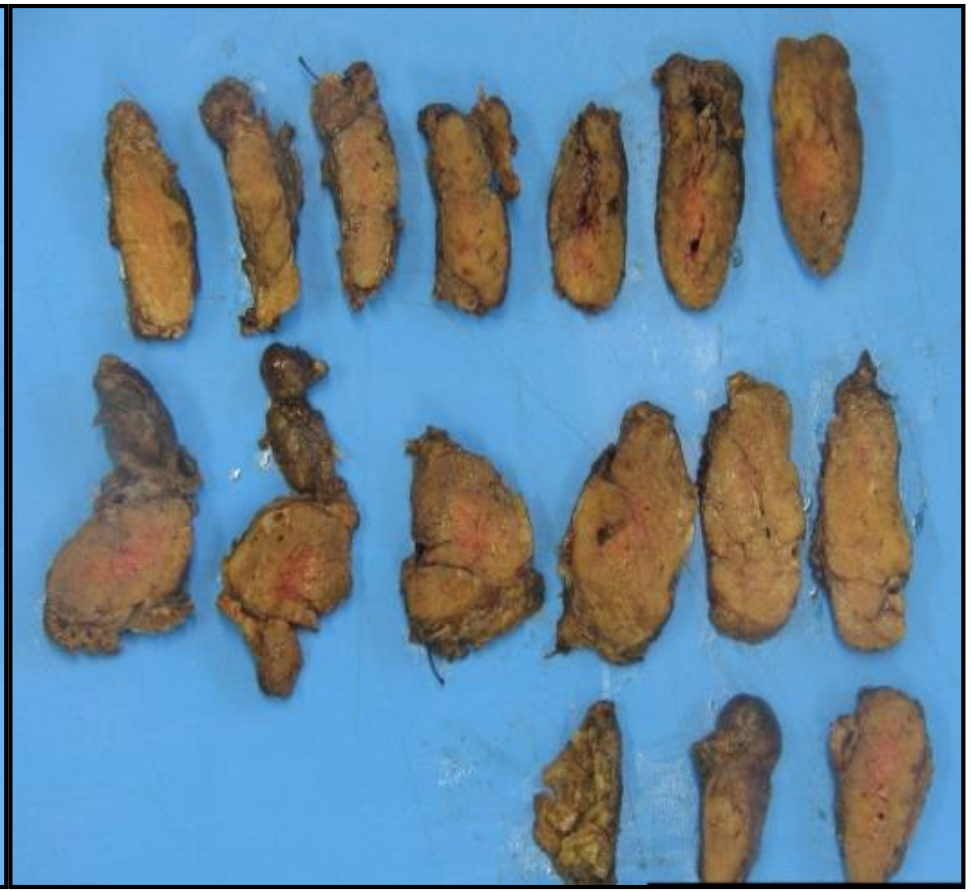
Varma M, et al. J Clin Pathol 2016;0:1–6. doi:10.1136/jclinpath-2016-203658

“x blocks per cm max diameter”

Total thyroidectomy for Graves

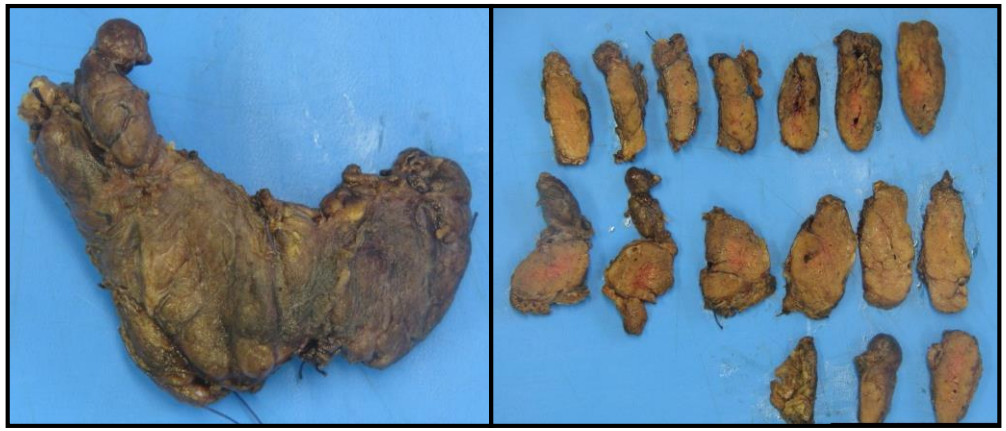
“2 blocks from each lobe”

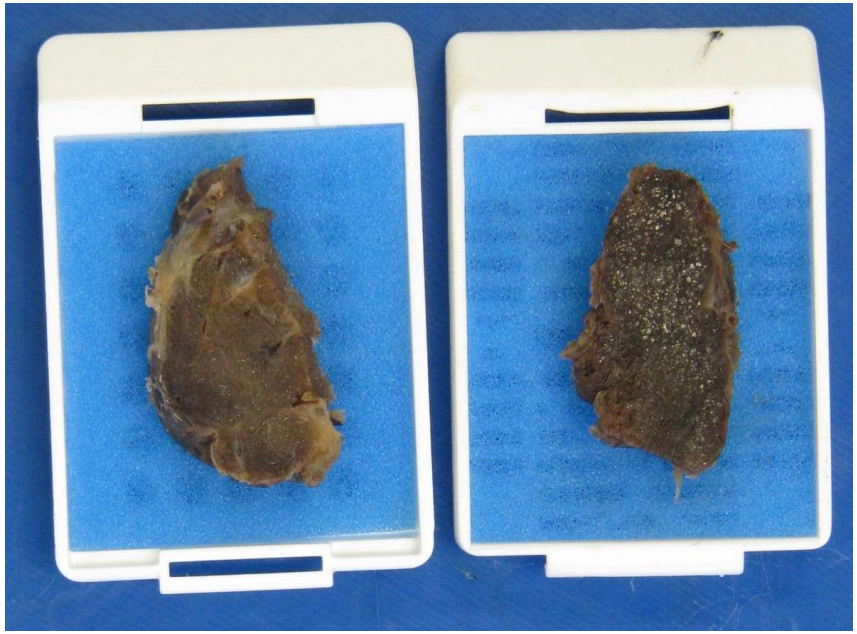


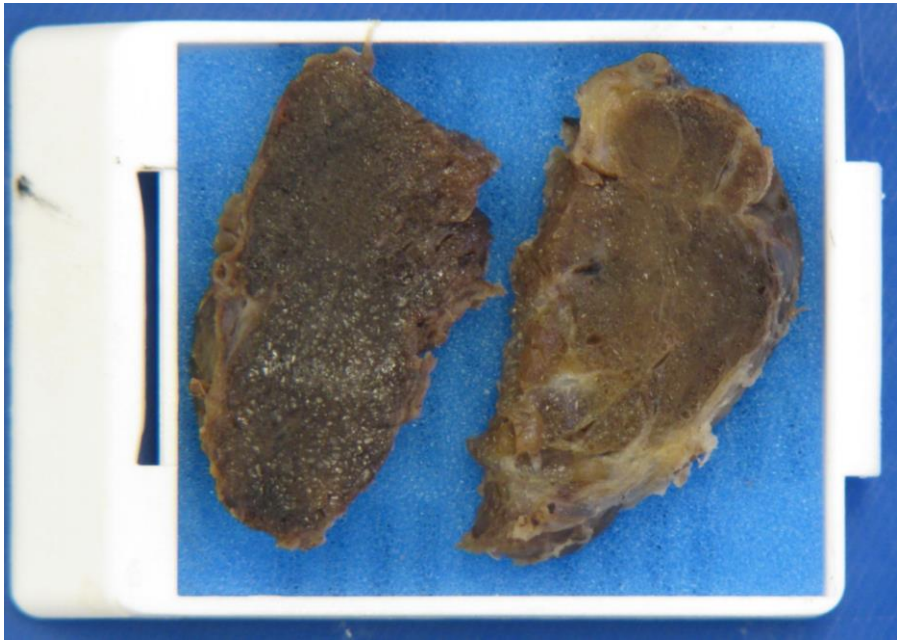


“2 blocks from each lobe”

What is a block?







“x blocks per cm max diameter”

- Re-define as “x cm^2 tissue per cm max diameter?

“x blocks per cm max diameter”

- Re-define as “x cm^2 tissue per cm max diameter**?**
- **Number of blocks too simplistic?**
  - Sampling macroscopically different areas more important than number of blocks
  - Need fewer blocks for grossly homogeneous tumours?

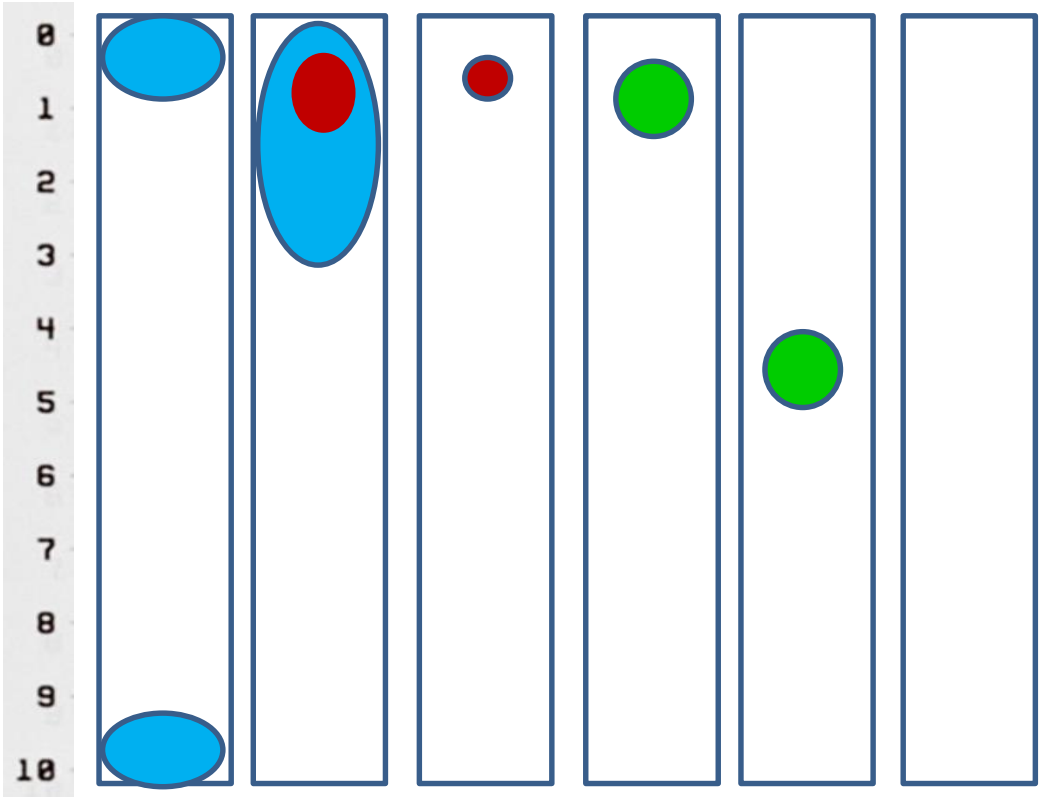
“x blocks per cm max diameter”

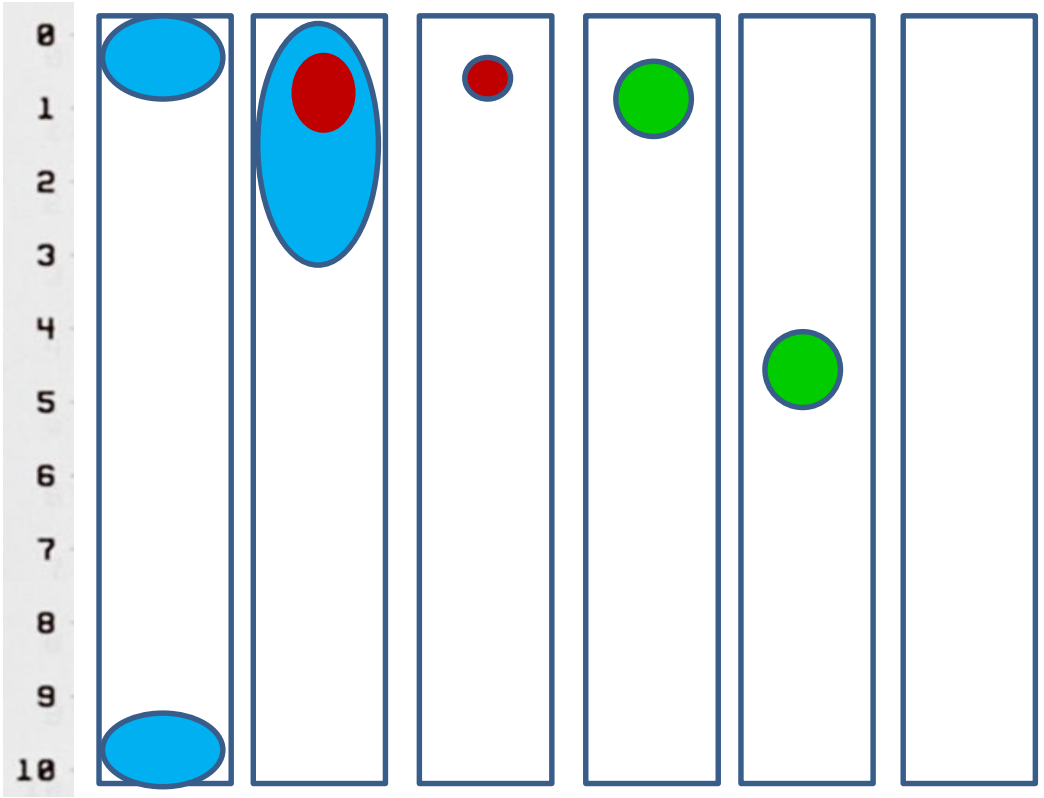
- Re-define as “x cm^2 tissue per cm max diameter?
- Number of blocks too simplistic?
- **Are such requirements pertinent for cystic lesions**
  - Size of cystic lesion depends on amount of fluid

Prostate bx reporting insanity?

Einstein's definition of insanity

Doing something very differently and expecting the *same* result!


0
1
2
3
4
5
6
7
8
9
10
Gleason pattern 3
Gleason pattern 4
Intraductal carcinoma
Benign



Gleason pattern 3

Gleason pattern 4

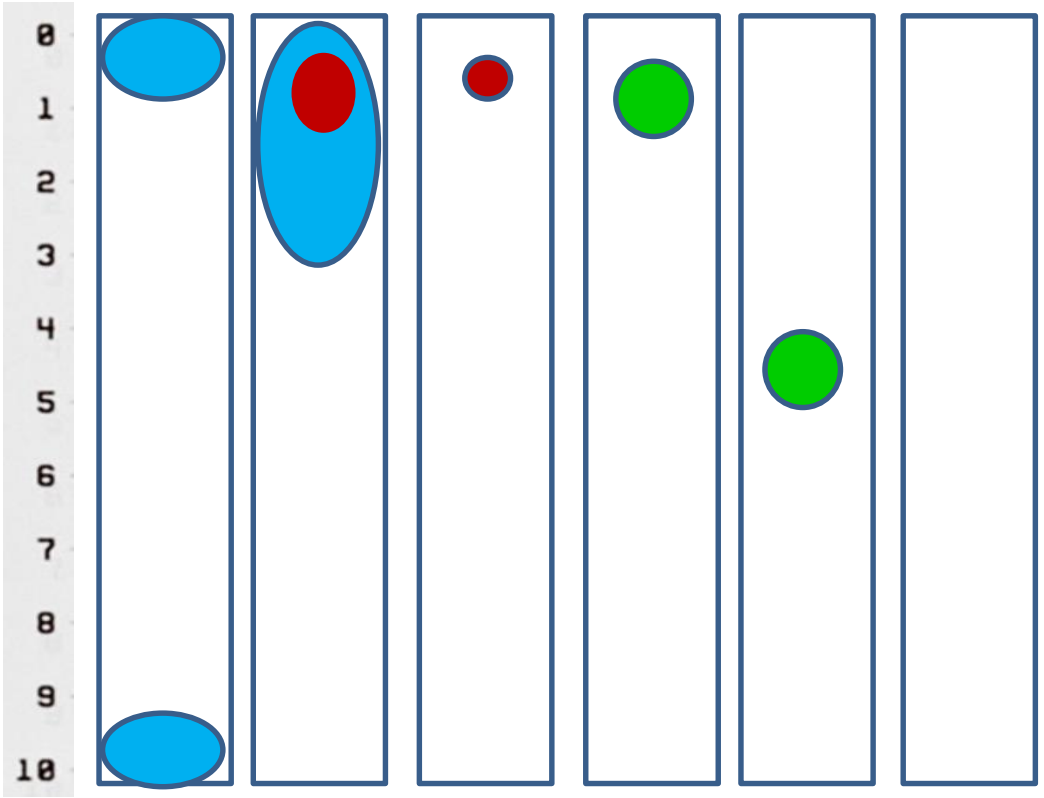
Intraductal carcinoma

Benign

3/6 cores, max 3mm/30%, Gleason 3+4=7 (ISUP Grade: 2)

IDC-P not included in tumour extent,

Intervening benign excluded, Global Gleason



Gleason pattern 3

Gleason pattern 4

Intraductal carcinoma

Benign

3/6 cores, max 3mm/30%, Gleason 3+4=7 (ISUP Grade: 2)

IDC-P not included in tumour extent,

Intervening benign excluded, Global Gleason

5/6 cores, max 10mm/100%, Gleason 4+4=8 (ISUP Grade: 4)

IDC-P included in tumour extent,

Intervening benign included, Worst Gleason,

Pathology data

- **Why** do we collect data?
- **Who** do we collect data for?
- **How** do we collect data?

- **Why** do we need to change?
- **How** do we change?

Drivers for change

- Ever increasing workload

Molecular testing strategies for Lynch syndrome in people with colorectal cancer

1 Recommendations

Next

1.1 Offer testing to all people with colorectal cancer, when first diagnosed, using immunohistochemistry for mismatch repair proteins or microsatellite instability testing to identify tumours with deficient DNA mismatch repair, and to guide further sequential testing for Lynch syndrome (see 1.2 and 1.3). Do not wait for the results before starting treatment.

Drivers for change

- Ever increasing workload
- **Ever lengthening cancer datasets**

Drivers for change

- Ever increasing workload
- Ever lengthening cancer datasets
- **Increasing other commitments**
  - Management, EQA, Appraisal, revalidation

    .....

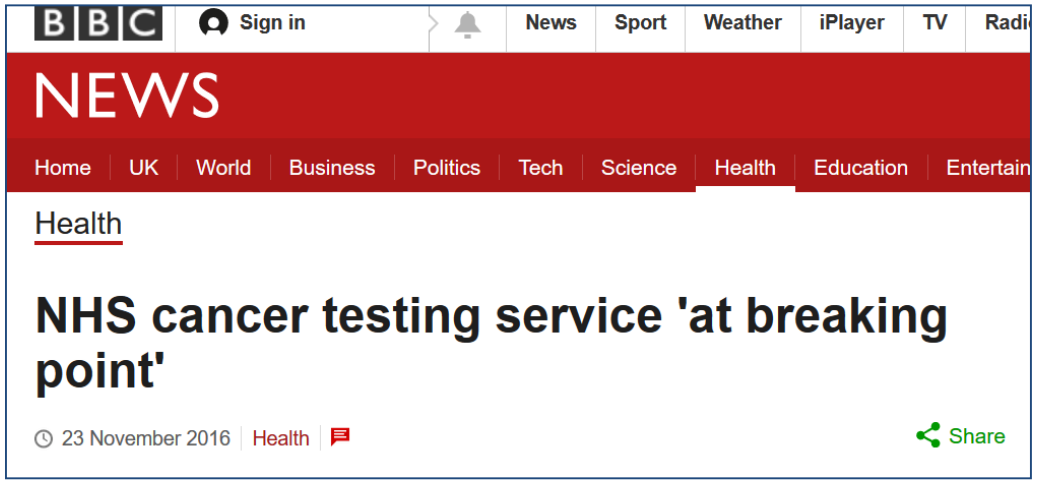
Drivers for change

- Ever increasing workload
- Ever lengthening cancer datasets
- Increasing other commitments
- **No increase in resources**
  - Manpower, finance ….

TESTING TIMES TO COME?
AN EVALUATION OF PATHOLOGY CAPACITY ACROSS THE UK

NOVEMBER 2016

CANCER RESEARCH UK



Risks of current practice

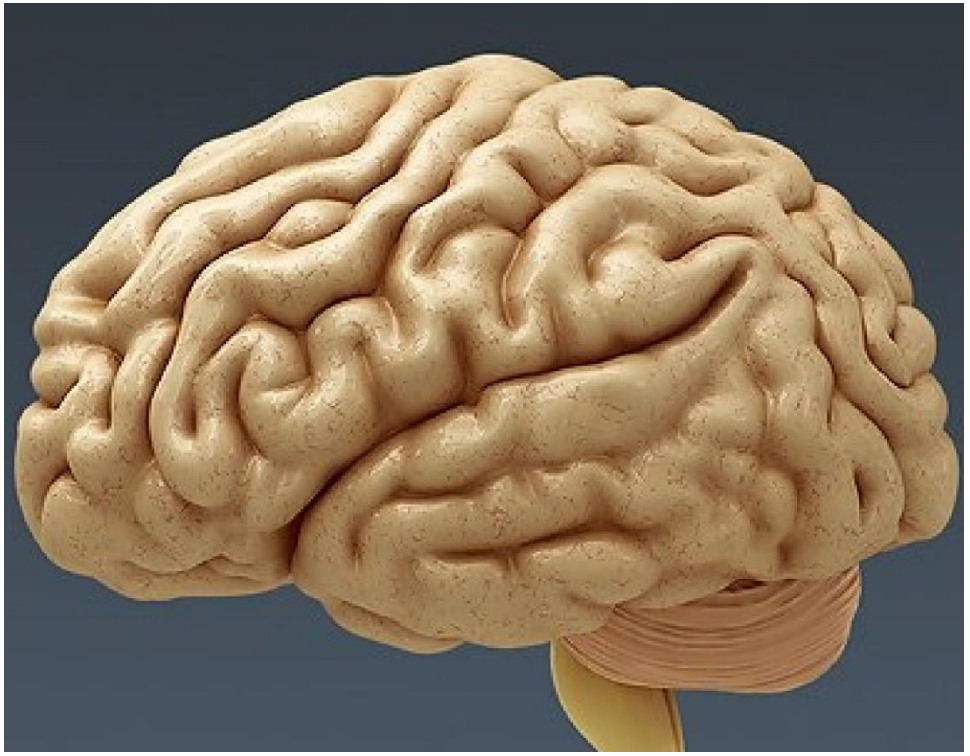
- **Waste of resources**
  - Time and money
- **Information overload**
  - Significant findings missed by clinicians
- **Stressed pathologist**
- **Risk of errors**
  - Missing data due to excess redundant data

Man vs Machine

Human constraints

Time

Concentration span



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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.

Total: 9 measurements in text + 2 in Conclusion

Risks of current practice

- **Waste of resources**
  - Time and money
- **Information overload**
  - Significant findings missed by clinicians
- **Stressed pathologist**
- **Risk of errors**
  - Missing data due to excess redundant data
  - Transcription error missed in unduly long report

Information overload?

Typo missed

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Pathology data

- **Why** do we collect data?
- **Who** do we collect data for?
- **How** do we collect data?

- **Why** do we need to change?
- **How** do we change?

How do we change?

- **Consider patient management**
  - All differentials are not equally important
  - All dataset items not equally important
- **More focussed approach**
  - Focus on clinically important data items
  - **While still meeting RCPath requirements**
    - RCPath requirements need to change?

RCPath datasets

Change?

RCPath datasets Change?

- **Provide more guidance**
  - Clinical utility of pathology data
  - What is important – when and why
  - How to collect data?
    - Degree of precision required

RCPath datasets Change?

- Provide more guidance
- **More scrutiny of recommended data items**
  - Especially non-core data items

RCPath datasets Change?

- Provide more guidance
- More scrutiny of recommended data items
- **Change the way we audit data?**
  - Focus on accuracy rather than completeness
  - Evalaute clinical significance of missing data
    - Vascular invasion missing in patients with known LN metastasis may be less important