Transformation of the South West Prostate Cancer Diagnostic Pathway

14th May 2018
Introduction

by Mr Jonathon Miller
Introduction

- National context
  - National Timed pathways
- Prostate Conundrum - & the PROMIS of Patient Benefit
Prostate and 62 days

- Prostate pathway – largest contributor to 62 day breaches
- Inter-trust referral guidance
  - 38 days to refer to Specialist MDT
  - 24 days for Specialist MDT to treat
- National timed pathway
- 28 Day Standard
21 Days to Specialist MDT
14 days where MRI may not be required or is contraindicated
Outcomes for today

- Opportunity to agree standards
- Acknowledge the gaps
- Commitment to address the gaps we can
- Describe the gaps we can’t to those that might
National context
by Mr Nick Burns-Cox
The conundrum and challenge

- Prostate pathway responsible for largest proportion of 62 day breach.
- Prostate cancer is a complex heterogeneous disease with multiple treatment choices and therefore patient choice and shared decision making is essential (requires time and resources)
- Full diagnostic information requires multiple steps and therefore multiple discussions
- MDT review required
- Centralisation (especially for RALP) requires inter provider referral and further complex MDT review
- New diagnostic techniques (PET, MPMRI) will improve quality but increase pressure on the pathway.
- Decreasing time line i.e. 28 day diagnosis and communication to patient.
Diagnostic accuracy of multi-parametric MRI and TRUS biopsy in prostate cancer (PROMIS): a paired validating confirmatory study

Lancet 2017; 389: B15–22
Published Online
January 19, 2017
http://dx.doi.org/10.1016/S0140-6736(16)32401-1
PROMIS

• To determine the accuracy of MPMRI in the diagnosis of clinically significant prostate cancer (CSPC).

• Any man with clinical suspicion of cap mainly PSA < 15 and volume < 100

• No previous biopsy

• Clinically significant disease defined as-
  Gleason score ≥4 + 3 or a maximum cancer core length 6 mm or longer
Results

- N = 740 complete data etc. on 576
- On TPM 70% cap
- On TPM 40% CSPC
## Accuracy of MPMRI

<table>
<thead>
<tr>
<th></th>
<th>TRUS and biopsy</th>
<th>MPMRI</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sensitivity</td>
<td>48</td>
<td>93</td>
</tr>
<tr>
<td>Specificity</td>
<td>96</td>
<td>41</td>
</tr>
<tr>
<td>PPV</td>
<td>90</td>
<td>51</td>
</tr>
<tr>
<td>NPV</td>
<td>74</td>
<td>90</td>
</tr>
</tbody>
</table>
Gains of the Proposed pathway using MPMRI as a triage test
MPMRI and then targeted Truss if positive

1) Reduced truss and biopsy by 27% (40,000 men)

2) 18% increase in the detection of CSPC

3) 5% Reduced diagnosis of clinically insignificant cancer

4) Better local staging of T3a/b etc. B

5) Better planning of surgery i.e. site of tumour (avoid positive margin) and safer nerve spare.

6) Better anatomical planning e.g. large median lobe etc.? Reduced complications
More evidence May 2018

MRI-Targeted or Standard Biopsy for Prostate-Cancer Diagnosis

• N=500 CSPC = GS 3+4=7 or greater
• RCT Multicentre
• Randomised to Standard 10-12 TRUS
• MPMRI and targeted of index lesion only.
Precision Results

- 28% no biopsy (PIRAD 1 and 2)
- CSPC 38% (MRI) vs 26% (p<0.005)
- Decrease in clinically insignificant
- 22% vs 9% (MRI) (p<0.001)
The National Message

- Prof Hashim Ahmed with MPMRI
- 25% triaged to no biopsy
- Diagnose 90% of CSPC
- Diagnose fewer Insignificant PC
National message

• ‘This is watershed moment for those of us involved in looking after men with suspected prostate cancer. I trust all of us will fully embrace the change’

• Prof Hashim Ahmed Imperial college.
Vanguards cutting edge Imperial, UCH

• One stop MRI diagnostics

• ‘Reduces a six week process to one week’

• Same day triage to follow up or biopsy

• Template targeted (under LA)
However..

- Can this be applied to the wider NHS?
- Concern that not reproducible
- Confidence of radiologist key
- ? Variations equipment, training, capacity etc.
- Any local data- YES
Multi-parametric MRI Targeted Prostate Biopsy versus Systematic Biopsy – Cause for Caution?

A. Birring, A. McCormick, N. Burns-Cox. Musgrove Park Hospital, Taunton

Background

Prostate biopsy is evolving to pre-biopsy multi-parametric MRI (MP-MRI), followed by systematic biopsy (SB) with optional targeted biopsy (TB).

MP-MRI combined with TRUS-guided TB may increase detection rates of prostate cancer (PCa), especially clinically significant PCA (CSPCa).

However, few studies compare the detection rate of SB versus TB in the same cohort of men, as recommended by the Standards of Reporting for MRI-Targeted biopsy studies (START) consensus panel.

Objectives

In this study we compare the diagnostic yield of conventional TRUS-guided SB with MP-MRI TB in the same cohort of men.

Patients & Methods

33 patients had a pre-biopsy MP-MRI that identified a target lesion. Each patient then had a TRUS-guided SB and TB.

The cognitive fusion technique was used to perform the TB.

Results

Characteristics of patients

<table>
<thead>
<tr>
<th></th>
<th>Median</th>
<th>Range</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age (years)</td>
<td>68</td>
<td>52 - 79</td>
</tr>
<tr>
<td>PSA (ng/ml)</td>
<td>8</td>
<td>1 - 108</td>
</tr>
</tbody>
</table>

Cancer detection – overall

The positivity rate for any prostate cancer was 64% for SB and TB. Combining SB and TB increased the detection rate to 70% (p=0.79).

Detection of clinically significant cancer

The positivity rate for CSPCa was 55% (n=18) for SB biopsies and 42% (n=14) for TB (p=0.46). The combined rate was 61% (p=0.35).

Missed cases of clinically significant cancer

TB underdiagnosed 2 (6%) cases of CSPCa that were detected on TB. TB underdiagnosed 5 (15%) cases of CSPCa that were diagnosed to SB (p=0.43).

Conclusion

- Equal detection rates for PCa were achieved using SB and TB (64%).
- Unexpectedly, SB had a higher detection rate for CSPCa than TB (55% vs. 42%)
- TB was 9% more likely to miss a case of CSPCa compared with SB
- Combining TB with SB increases the detection rate for both PCa and CSPCa by 6%
- However, the differences in this study were not statistically significant and at present equivalence must be assumed
- The cognitive fusion technique used to perform TB is simple, does not require any additional equipment, and is easy to learn. However, further studies that compare SB and TB in the same cohort of men are needed before TB using this technique becomes standard practice.

Reference

Trus systematic and or targeted

- N = 33
- Detection all cancer = 70%
- 64% systematic and 64% targeted
- For clinically significant overall = 61%
- Systematic = 55% and targeted = 42%
Prostate MRI PI-RADS score
Correlation with Gleason score
Taunton & Somerset NHS Trust

C. A. Jones, ST2 Radiology Registrar
E. Lambert, ST5 Radiology Registrar
N. Burns-Cox, Consultant Urologist
J. Brown, Consultant Radiologist
P. Burn, Consultant Radiologist
- Retrospective May 2015 - February 2018
- PI-RADS then correlated with Gleason score
- 396 patients
- 2 definitions of “significant disease”
  - Gleason score ≥4+3
  - Gleason score ≥3+4

Muschgove Park Hospital, Taunton
PI-RADS 1/2
<table>
<thead>
<tr>
<th></th>
<th>&quot;Misses&quot;</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH</td>
<td>4 cases</td>
</tr>
<tr>
<td></td>
<td>PI-RADS 1/2</td>
</tr>
<tr>
<td>PROMIS</td>
<td>0 cases</td>
</tr>
</tbody>
</table>

"Significant Cancer" $\geq 4 + 3$
<table>
<thead>
<tr>
<th></th>
<th>&quot;Misses&quot;</th>
<th>NPV</th>
</tr>
</thead>
<tbody>
<tr>
<td>MPH</td>
<td>18 cases PI-RADS 1/2</td>
<td>85%</td>
</tr>
<tr>
<td>PROMIS</td>
<td>38 cases PI-RADS 1/2</td>
<td>76%</td>
</tr>
</tbody>
</table>

"Significant Cancer" ≥3+4
Project Aims

• To introduce Pre biopsy MPMRI into the prostate pathway in the South West Region.

• To achieve the timelines set out in the NHS England ‘Implementing a timed prostate cancer diagnostic pathway’

• For the pathway to be high quality

• To reduce variability (workforce, equipment, referral criteria, biopsy technique etc.)

• To create collaborative working between providers to ensure equity for patients but also best use of skills and facilities
But also

- To identify patients in the Southwest who can safely be triaged by MPMRI to no non biopsy
Project structure

• **Questionnaire** for ‘basic data’

• **Visits** to discuss local issues, resources (workforce equipment), challenges, variability.

• To build networks and collaboration

• To identify key team members to lead locally

• To identify key areas for investment

• To identify innovative working and expertise that can be shared
Project structure cont…

• Creation of a supported South west database- quality assurance etc.

• Presentation of findings and Recommendations resource requirements to SSGs, Alliances, NHS England, commissioners etc. in September

• Implementation
Reflection on regional practice: Findings from Trust Visits

by Mr Nick Burns Cox & Prof Raj Persad
## Demand

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Trust Population</th>
<th>2ww referrals per 1000 patients</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>387,543</td>
<td>2.4</td>
</tr>
<tr>
<td>2</td>
<td>385,202</td>
<td>3.3</td>
</tr>
<tr>
<td>3</td>
<td>464,918</td>
<td>1.6</td>
</tr>
<tr>
<td>4</td>
<td>287,185</td>
<td>6.2</td>
</tr>
<tr>
<td>5</td>
<td>119,243</td>
<td>2.0</td>
</tr>
<tr>
<td>6</td>
<td>136,462</td>
<td>6.5</td>
</tr>
<tr>
<td>7</td>
<td>1,028,451</td>
<td>0.8</td>
</tr>
<tr>
<td>8</td>
<td>320,967</td>
<td>4.7</td>
</tr>
<tr>
<td>9</td>
<td>398,396</td>
<td>3.1</td>
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<tr>
<td>10</td>
<td>231,949</td>
<td>0.8</td>
</tr>
<tr>
<td>11</td>
<td>236,105</td>
<td>4.9</td>
</tr>
</tbody>
</table>

*Shaded: Trusts provided data for all Urology 2ww*

**Number of trusts whose pre-bx protocol routinely includes dynamic contrast?**

- Yes: 64%
- No: 36%
## Workforce

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Trust Population</th>
<th>No. of specialist Uro Pathologist per 1,000,000 population</th>
<th>Radiologists reporting prostate MRI per 100,000</th>
<th>Number or MRI radiologists per scan reported</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>387543</td>
<td>2.6</td>
<td>1.3</td>
<td>160</td>
</tr>
<tr>
<td>2</td>
<td>385202</td>
<td>2.6</td>
<td>0.8</td>
<td>185</td>
</tr>
<tr>
<td>3</td>
<td>464918</td>
<td>2.2</td>
<td>0.9</td>
<td>No answer</td>
</tr>
<tr>
<td>4</td>
<td>287185</td>
<td>3.5</td>
<td>0.7</td>
<td>No answer</td>
</tr>
<tr>
<td>5</td>
<td>119243</td>
<td>8.4</td>
<td>3.4</td>
<td>45</td>
</tr>
<tr>
<td>6</td>
<td>136462</td>
<td>0.0</td>
<td>0.7</td>
<td>318</td>
</tr>
<tr>
<td>7</td>
<td>1028451</td>
<td>2.9</td>
<td>0.4</td>
<td>338</td>
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<tr>
<td>8</td>
<td>320967</td>
<td>6.2</td>
<td>1.6</td>
<td>102</td>
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<tr>
<td>9</td>
<td>398396</td>
<td>7.5</td>
<td>1.3</td>
<td>200</td>
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<tr>
<td>10</td>
<td>231949</td>
<td>4.3</td>
<td>0.9</td>
<td>No answer</td>
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<tr>
<td>11</td>
<td>236105</td>
<td>4.2</td>
<td>0.8</td>
<td>252</td>
</tr>
</tbody>
</table>

### Trusts experiencing problems with reporting backlogs during holiday periods?

- No: 27%
- Yes: 73%

### Cancer Nurse Specialist (CNS) in clinic?

- Yes: 27%
- Mostly: 64%
- Not regularly: 9%
Biopsy

<table>
<thead>
<tr>
<th>Hospital</th>
<th>Trust Population</th>
<th>No. of Trus and biopsy under LA performed in the year for all indications per 100,000</th>
<th>No. of Template prostate biopsies under GA for all indications per 100,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>387,543</td>
<td>114.1</td>
<td>27.6</td>
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<tr>
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<td>385,202</td>
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<td>0.0</td>
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<td>464,918</td>
<td>90.1</td>
<td>9.7</td>
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<td>287,185</td>
<td>116.3</td>
<td>6.3</td>
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<td>119,243</td>
<td>135.9</td>
<td>0.0</td>
</tr>
<tr>
<td>6</td>
<td>136,462</td>
<td>412.6</td>
<td>0.0</td>
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<td>7</td>
<td>1,028,451</td>
<td>46.9</td>
<td>19.2</td>
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<tr>
<td>8</td>
<td>320,967</td>
<td>No answer</td>
<td>No answer</td>
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<td>9</td>
<td>398,396</td>
<td>53.2</td>
<td>103.4</td>
</tr>
<tr>
<td>10</td>
<td>231,949</td>
<td>97.0</td>
<td>32.8</td>
</tr>
<tr>
<td>11</td>
<td>236,105</td>
<td>No answer</td>
<td>No answer</td>
</tr>
</tbody>
</table>

Do PIRADS 3 patients routinely get biopsy?

- Yes: 70%
- No: 20%
- Clinical decision: 10%
<table>
<thead>
<tr>
<th>Hospital</th>
<th>Trust Population</th>
<th>Type of scanners used for prostate MRI</th>
<th>Age of scanners</th>
<th>Plans to renew scanners</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>387,543</td>
<td>2 x Philips 1.5T</td>
<td>1 year and 14 years (for non MP)</td>
<td>None</td>
</tr>
<tr>
<td>2</td>
<td>385,202</td>
<td>2</td>
<td>4 and 10 (upgraded)</td>
<td>None</td>
</tr>
<tr>
<td>3</td>
<td>464,918</td>
<td>Philips 1.5T Achieva dStream plus mobile</td>
<td>Installed 2003, rebuild March 2014</td>
<td>Plans approved for new 3T magnet(s)</td>
</tr>
<tr>
<td>4</td>
<td>287,185</td>
<td>Siemens Aera 1.5 T</td>
<td>6 years</td>
<td>Third scanner (Aera)</td>
</tr>
<tr>
<td>5</td>
<td>119,243</td>
<td>1.5 Tesla Siemens Magnatom</td>
<td>14 years with TIM upgrade in 2014</td>
<td>MES to upgrade MRI and buy 2nd scanner</td>
</tr>
<tr>
<td>6</td>
<td>136,462</td>
<td>Siemens Avanto 1.5T</td>
<td>13 years</td>
<td>None at present.</td>
</tr>
<tr>
<td>7</td>
<td>1,028,451</td>
<td>Philips and GE, 1.5 and 3T</td>
<td>About 6 years old</td>
<td>Yes – new scanner being installed this year</td>
</tr>
<tr>
<td>8</td>
<td>320,967</td>
<td>2 Siemens Avanto 1.5 T MRI scanners</td>
<td>2006 and 2008</td>
<td>New scanner May 2018 – Siemens Skyra 3 T</td>
</tr>
<tr>
<td>9</td>
<td>398,396</td>
<td>2 x siemens avant o FIT 1.5 T</td>
<td>Both less than a year</td>
<td>Planning to install a siemens 3T at end of 2018</td>
</tr>
<tr>
<td>10</td>
<td>231,949</td>
<td>1.5 T machine</td>
<td>Don’t know</td>
<td>2nd MRI awaiting funding</td>
</tr>
<tr>
<td>11</td>
<td>236,105</td>
<td>2 scanners 1.5 siemans</td>
<td>No answer</td>
<td>No answer</td>
</tr>
</tbody>
</table>
Radiology

- PSA density is routinely calculated and included in radiology report?
- Prostate volume is routinely included in the radiology report?

- PIRADS score is routinely given?
- Likert score is routinely given?
Timed Pathways: Variation across the South West and ‘pinch points’

Average Trus Pathway Variation: 13-139

Average Template Pathway Variation: 33-189
Summary of variation in practice

• Telephone triage and straight to test; 2 out of 14 centres

• Rapid access clinics or general clinics

• Size of Urology Unit – efficient but annual leave problems

• Selection criteria
  Age adjusted PSA (upper limit 15, 20, 25? Upper limit of Age?)
  Suitability criteria, No pre-biopsy MRI for palpable disease?

• MRI Capacity/delays – contrast? restricting surveillance scans, staging scans,
  MRI – same day, same week?
  Reporting timelines (time to decision re biopsy)
Variation in practice (cont)

- Who acts on MRI – MDT/CNS/Urologist/Radiologist (variation in delays)
- Time from decision to biopsy to biopsy
- Delays to biopsy – Transperineal delay universally
- Delay from biopsy to reporting – most ready for mdt in just a few days but some units have to outsource their pathology
- Delay to MDT – time to treatment. Some patients seen in clinic before MDT.
- New rules 38 day breach rules for tertiary referrals
Description of the Proposed South West Prostate Cancer Diagnostic Pathway

Including Nationally Prescribed Timelines

by Prof Raj Persad
Primary Care Referral Criteria (tba through SSG’s):

1. Elevated age-adjusted PSA from two tests, no evidence of UTI
2. Clinically suspicious prostate (asymmetric, irregular, firm hard, nodular or craggy)
3. WHO performance status 0-2 unless otherwise appropriate
Radiology Pathway

By Dr Adrian Andreou, Consultant Radiologist
RUH Bath
Radiology Pathway

Request ➔ Vet ➔ Scan ➔ Report
Radiology Pathway

- Request
  - Appropriate Triage
  - Identify 2WW
  - Same day request
- Vet
- Scan
- Report
Radiology Pathway

Request
- Appropriate Triage
- Identify 2WW
- Same day request

Vet
- Electronic Vetting
- Book before Vet
- No Vet

Scan

Report
Radiology Pathway

Request
- Appropriate Triage
- Identify 2WW
- Same day request

Vet
- Electronic Vetting
- Book before Vet
- No Vet

Scan
- Capacity:
  - New scanner
  - Extended working days
  - Outsource to vans/ PP
  - Radiographers
- Same day MRI
- Pre set slots
- Scan time - no Gad?

Report
Radiology Pathway

Request
- Appropriate Triage
- Identify 2WW
- Same day request

Vet
- Electronic Vetting
- Book before Vet
- No Vet

Scan
- Capacity:
  - New scanner
  - Extended working days
  - Outsource to vans/ PP
  - ↑ Radiographers
- Same day MRI
- Pre set slots
- ↓ Scan time - no Gad?

Report
- Prioritize prostate reporting
- WLI
- Home reporting
- Regional insourcing
- ↑ Radiologists
Radiology Standards

Dr Adrian Andreou Consultant Radiologist RUH Bath
Radiology Standards

- Ensure good quality MpMRI

- Ensure standards met throughout South West
Poor Diagnostic Quality
Radiology Standards

1. Image Acquisition

2. Report

3. Radiologist
Radiology Standards

1. Image Acquisition
Radiology Standards

1. Image Acquisition

- Closed bore magnet
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age

- Minimum magnet strength 1.5 T
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T

- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T
- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)

- SFOV axial DWI sequences through the prostate. ≤4 mm slice thickness, no gap (ref to PI-RADS v2)
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T
- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)
- SFOV axial DWI sequences through the prostate. ≤4 mm slice thickness, no gap (ref to PI-RADS v2)

- Minimum 3 b values. Highest b value ≥1400
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T
- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)
- SFOV axial DWI sequences through the prostate. ≤4 mm slice thickness, no gap (ref to PI-RADS v2)
- Minimum 3 b values. Highest b value ≥1400

- Interpretable ADC map
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T
- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)
- SFOV axial DWI sequences through the prostate. ≤4 mm slice thickness, no gap (ref to PI-RADS v2)
- Minimum 3 b values. Highest b value ≥1400
- Interpretable ADC map

**Dynamic contrast enhanced sequences are optional**
Radiology Standards

1. Image Acquisition

- Closed bore magnet
- Recent generation scanner < 7 years age.
- Minimum magnet strength 1.5 T
- SFOV T2W sequences in at least 2 planes through the prostate. 3 mm slice thickness, no gap (ref to PI-RADS v2)
- SFOV axial DWI sequences through the prostate. ≤4 mm slice thickness, no gap (ref to PI-RADS v2)
- Minimum 3 b values. Highest b value ≥1400
- Interpretable ADC map
- Dynamic contrast enhanced sequences are optional

- Referral to scan time ≤ 7 days
Radiology Standards

2. Report
Radiology Standards

2. Report

- **Prostate volume** \((L \times H \times W \times \pi/6)\) or \((L \times H \times W \times 0.523)\)
Radiology Standards

2. Report

- Prostate volume \((L \times H \times W \times \frac{\pi}{6})\) \((L \times H \times W \times 0.523)\)

- PIRADS V2 score
Radiology Standards

2. Report

- Prostate volume \((L \times H \times W \times \frac{\pi}{6})\) \((L \times H \times W \times 0.523)\)
- PIRADS V2 score

- **Confidence score**
PIRADS SCORE = 1-2

Confidence Score = Confident
PIRADS SCORE = 1-2

Confidence Score = Confident

Confidence Score = Not Confident
PIRADS SCORE = 4

Confidence Score = Confident
Radiology Standards

2. Report

- Prostate volume \((L \times H \times W \times \Pi/6)\) \((L \times H \times W \times 0.523)\)
- PIRADS V2 score
- Confidence score

- Maximum diameter of index lesion
Radiology Standards

2. Report

- Prostate volume \( (L \times H \times W \times \frac{\pi}{6}) \) \((L \times H \times W \times 0.523)\)
- PIRADS V2 score
- Confidence score
- Maximum diameter of index lesion
- **Identification of index lesion if multifocal disease**
Radiology Standards

2. Report

- Prostate volume \((L \times H \times W \times \Pi/6) \approx (L \times H \times W \times 0.523)\)
- PIRADS V2 score
- Confidence score
- Maximum diameter of index lesion
- Identification of index lesion if multifocal disease

- **Mapping of tumour** (either sectoral map or bookmark with tumour outlined/arrowed for biopsy targeting purposes)
Radiology Standards

2. Report

- Mapping of tumour
Radiology Standards

2. Report

• Prostate volume (L x H x W x \(\pi/6\)) (L x H x W x 0.523)
• PIRADS V2 score
• Confidence score
• Maximum diameter of index lesion
• Identification of index lesion if multifocal disease
• Mapping of tumour (either sectoral map or bookmark with tumour outlined/arrowed for biopsy targeting purposes)

• T N stage (if PIRADS \(\geq 4\))
Radiology Standards

2. Report

- Prostate volume \((L \times H \times W \times \frac{\pi}{6})\) \((L \times H \times W \times 0.523)\)
- PIRADS V2 score
- Confidence score
- Maximum diameter of index lesion
- Identification of index lesion if multifocal disease
- Mapping of tumour (either sectoral map or bookmark with tumour outlined/arrowed for biopsy targeting purposes)
- T N stage (if PIRADS \(\geq 4\))

- **Report turnaround time \(\leq 3\) working days**
Radiology Standards

3. Radiologist
Radiology Standards

3. Radiologist

- Each Trust should have a nominated uro-radiology lead
- Regular involvement with urology/prostate MDT (if available at local Trust)
- Minimum annual MpMRI prostate reports: ≥ 50 per annum (includes nhs/pp/outsourced)
- Previous attendance at a MpMRI prostate workshop
- Engagement with South West database and further on going audit
Radiology Standards

• Audit of image quality
Histopathology – Standards of reporting

Dr Jon Oxley
North Bristol NHS Trust
Standards and datasets for reporting cancers

Dataset for histopathology reports for prostatic carcinoma

June 2016

Authors: Dr Jon Oxley (lead author), North Bristol NHS Trust
Dr Murali Varma, Cardiff and Vale University Health Board
Professor Dan Berney, St Bartholomew’s Hospital, Barts Health NHS Trust

Core microscopic items

Histological tumour type†:
- Acinar adenocarcinoma □
- Prostatic ductal adenocarcinoma □
- Small cell neuroendocrine carcinoma □
- Other (specify) ........

Number of cores involved.
- Right ........ out of ........ Location(s): .................................................................
- Left: ........ out of ........ Location(s): .................................................................
- Other: ....... out of ........ Location (s): .................................................................

Total number of cores involved: ........ out of ........

*Greatest length of cancer in one core: ........mm Location......... Not used* □
*Greatest percentage of cancer in one core: ........% Location......... Not used* □
*Percentage of cancer in all cores: ........% Not used* □

Perineural invasion†: Not identified □ Present □
Invasion into adipose tissue: Not identified □ Present □
Problems

- All parameters are variable dependent on factors unrelated to tumour burden
<table>
<thead>
<tr>
<th></th>
<th>TRUS Biopsy</th>
<th>TRUS Biopsy + Targeted</th>
<th>Transperineal template biopsy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total cores involved</td>
<td>2/10</td>
<td>4/12</td>
<td>2/20</td>
</tr>
<tr>
<td>Per side</td>
<td>2/5 + 0/5</td>
<td>4/7 + 0/5</td>
<td>2/10 + 0/10</td>
</tr>
<tr>
<td>% total cores involved</td>
<td>20%</td>
<td>33%</td>
<td>10%</td>
</tr>
<tr>
<td>% cores per side</td>
<td>40%/0%</td>
<td>57%/0%</td>
<td>20%/0%</td>
</tr>
<tr>
<td>% volume per side</td>
<td>10%/0%</td>
<td>15%/0%</td>
<td>2.5%/0%</td>
</tr>
<tr>
<td>Maximum length</td>
<td>8mm</td>
<td>9mm</td>
<td>8mm</td>
</tr>
<tr>
<td>Maximum percentage</td>
<td>40%</td>
<td>50%</td>
<td>40%</td>
</tr>
</tbody>
</table>
Tumour length in Cores

“I am none the wiser as to whether a small volume of tumour at either end of a core is 100% involvement or not.”
Percentage of tumour in core

- Core length is not standard
- Fragmentation

A, B

Both these cores have similar % of tumour but the length of tumour is greatly different. Core A tumour is likely to be a larger tumour than core B.
Table 1  Summary of responses from surgeons and oncologists

<table>
<thead>
<tr>
<th>Survey question</th>
<th>Surgeons</th>
<th>Oncologists</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Which tumour extent parameter do you use?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number (+) cores</td>
<td>77 (97)</td>
<td>20 (83)</td>
<td>97 (94)</td>
</tr>
<tr>
<td>Number (+) cores each side</td>
<td>35 (44)</td>
<td>8 (33)</td>
<td>43 (42)</td>
</tr>
<tr>
<td>% number of cores</td>
<td>73 (92)</td>
<td>24 (100)</td>
<td>97 (94)</td>
</tr>
<tr>
<td>mm linear extent</td>
<td>49 (62)</td>
<td>13 (54)</td>
<td>62 (60)</td>
</tr>
<tr>
<td>% linear extent</td>
<td>64 (81)</td>
<td>23 (96)</td>
<td>87 (84)</td>
</tr>
<tr>
<td>Which mm linear extent do you use?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t use</td>
<td>30 (38)</td>
<td>11 (46)</td>
<td>41 (40)</td>
</tr>
<tr>
<td>mm each core</td>
<td>21 (27)</td>
<td>2 (8)</td>
<td>23 (22)</td>
</tr>
<tr>
<td>Maximum mm in a core</td>
<td>37 (47)</td>
<td>11 (46)</td>
<td>48 (47)</td>
</tr>
<tr>
<td>Aggregate mm</td>
<td>12 (15)</td>
<td>3 (13)</td>
<td>15 (15)</td>
</tr>
<tr>
<td>Which % linear extent do you use?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Don’t use</td>
<td>24 (30)</td>
<td>3 (12)</td>
<td>27 (26)</td>
</tr>
<tr>
<td>% each core</td>
<td>20 (25)</td>
<td>7 (27)</td>
<td>27 (26)</td>
</tr>
<tr>
<td>Maximum % in a core</td>
<td>25 (32)</td>
<td>8 (31)</td>
<td>33 (31)</td>
</tr>
<tr>
<td>Aggregate %</td>
<td>33 (42)</td>
<td>10 (38)</td>
<td>43 (41)</td>
</tr>
<tr>
<td>Other</td>
<td>0 (0)</td>
<td>2 (8)</td>
<td>2 (2)</td>
</tr>
<tr>
<td>MRI/biopsy tumour extent disparity: which would you rely on?</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MRI</td>
<td>22 (29)</td>
<td>4 (17)</td>
<td>26 (26)</td>
</tr>
<tr>
<td>Pathology</td>
<td>40 (52)</td>
<td>11 (46)</td>
<td>51 (50)</td>
</tr>
<tr>
<td>Depends</td>
<td>2 (3)</td>
<td>3 (13)</td>
<td>5 (5)</td>
</tr>
<tr>
<td>Worst</td>
<td>2 (3)</td>
<td>3 (13)</td>
<td>5 (5)</td>
</tr>
<tr>
<td>Other</td>
<td>11 (14)</td>
<td>3 (13)</td>
<td>14 (14)</td>
</tr>
</tbody>
</table>

2/10 standard and 3/3 targeted cores positive: how do you interpret tumour extent?

<table>
<thead>
<tr>
<th>Core Interpretation</th>
<th>Surgeons</th>
<th>Oncologists</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>5 cores positive</td>
<td>56 (72)</td>
<td>16 (67)</td>
<td>72 (71)</td>
</tr>
<tr>
<td>3 sites positive</td>
<td>11 (14)</td>
<td>3 (13)</td>
<td>14 (14)</td>
</tr>
<tr>
<td>2 standard and 3 targeted</td>
<td>8 (10)</td>
<td>2 (8)</td>
<td>10 (10)</td>
</tr>
<tr>
<td>Other</td>
<td>3 (4)</td>
<td>3 (13)</td>
<td>6 (6)</td>
</tr>
</tbody>
</table>

Multiple Gleason Scores (GS) in report: which score would you use?

<table>
<thead>
<tr>
<th>GS Type</th>
<th>Surgeons</th>
<th>Oncologists</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Highest GS</td>
<td>60 (79)</td>
<td>17 (74)</td>
<td>77 (78)</td>
</tr>
<tr>
<td>Global GS</td>
<td>9 (12)</td>
<td>3 (13)</td>
<td>12 (12)</td>
</tr>
<tr>
<td>GS in most involved core</td>
<td>7 (9)</td>
<td>3 (13)</td>
<td>10 (10)</td>
</tr>
</tbody>
</table>

How often do you use perineural invasion for patient management?

<table>
<thead>
<tr>
<th>Frequency</th>
<th>Surgeons</th>
<th>Oncologists</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Never</td>
<td>21 (28)</td>
<td>7 (28)</td>
<td>28 (28)</td>
</tr>
<tr>
<td>&lt;5% cases</td>
<td>23 (31)</td>
<td>4 (16)</td>
<td>27 (27)</td>
</tr>
<tr>
<td>5%–50% cases</td>
<td>15 (20)</td>
<td>9 (36)</td>
<td>24 (24)</td>
</tr>
<tr>
<td>&gt;50% cases</td>
<td>15 (20)</td>
<td>5 (20)</td>
<td>20 (20)</td>
</tr>
</tbody>
</table>

Contemporary prostate biopsy reporting: insights from a survey of clinicians’ use of pathology data

Murali Varma,1 Krishna Narahari,2 Malcolm Mason,3 Jon D Oxley,4 Daniel M Berney5

http://jcp.bmj.com/content/early/2018/05/02/jclinpath-2018-205093
The Future

• Tell us what you want
  – BUT do you know what that is???
Data Collection: Evidencing the case for change

Dr Adrian Andreou and Mr Gary Filer
Database

• Purpose: Not a research project
  Better understanding of quality of existing service
Database

- PROMIS
Database

• What does MpMRI mean for me?

[Map of the area]
Database

- Nominated data collector for each trust
- Support (Band 4 additional hours)
- Timeline: Implement mid June
- Review: First two quarters initially
Database

• Data - Governance
Database

- Fields:
  - Demography
  - MpMRI
  - Biopsy Technique
  - Histopathology

- Demonstration

Correct identification of study group!
Database Demonstration
Next Steps

by Prof Raj Persad
Next Steps

• Agree pathway modifications and standards with flexibility according to local practices

• Agree metrics to be derived from Database eg prospectively record no. of PIRADS 1-2 reported, no. of PIRADS 1-2 Not biopsied

• Gap analysis against agreed pathway (create plans on a page) and identify what can be done in house and what needs to be escalated.

• Sept– report back on initial data base findings

• Oct – Nov work with commissioners

• Clinical network development and communication with future challenges in mind
Metrics

- Pre-biopsy mpMRI
- Non-suspicious mpMRI
- Biopsies in non-suspicious mpMRI
- Low-risk cancers diagnosed
- Low-risk cancers treated (unnecessarily)
- Significant cancers diagnosed when mpMRI suspicious
- Rates of repeat biopsies and re-referrals
Purpose: To work in groups and consider how we might do things differently

In particular:

- Methods of clinical triage
- Opportunities to do reduce biopsy delays
- Regional wide approach to surveillance
- Prostate MRI without contrast?
- Radiology passports
- Referral criteria / gps
- Pathology and pathology passports

Each group will have a facilitator / scribe to help capture your conversations but there are also pens and paper provided.