A re-audit of Prostate biopsies from January to December 2010 and 2013.

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Objectives

• To assess and compare our practices in reporting of prostate biopsies with those of Royal College of Pathologist’s guidelines for quality assurance purpose.
• To audit interobserver variability in reporting of Prostate biopsies.
Parameters

• Taken from RCPATH data sets (2009)
• Include:
  1. Clinical data
     - PSA levels
     - No. and site of biopsies
     - History of previous treatment
     - History of previous biopsies
  2. Macroscopic pathologic data
     - Number of cores or fragments
     - Length of cores
Parameters

• Microscopic Pathologic data
  a. Gleason sum score:
     If only one grade is present it is doubled
     If two grades are present then both will be included.
  b. Presence of tertiary grade
     If more than two grades are present, third is included in the sum score if it is of higher grade
  c. Number and percentage of cores positive per side
  d. Total percentage or greatest percentage.
Parameters

e. Perineural invasion
f. Vascular invasion
g. Involvement of adipose tissue (EPE)
h. If no cancer present any features that should lead to consideration of re-biopsy:
  -High grade PIN
  -Foci suspicious of but not diagnostic of adenocarcinoma.
Standards of reporting prostate biopsy

- RCPath datasets
- Evidence from literature

1. JCP 2006. Interobserver variability in Gleason Grading of Prostate cancer.
2. Hum Pathol. 2001 Jan;32(1):74-80. Interobserver reproducibility of 
Gleason grading of prostatic carcinoma: urologic pathologists. Allsbrook WC Jr, Mangold KA,
Materials and methods

• Histology reports and slides were reviewed by the lead pathologist for the year 2010 (Jan-Dec).

• Reaudit of histology reports performed for the year 2013 (Jan–Dec).
Results

- Total number of cases: 101 (2010), 397 (2013)

  Benign: 43 (42.57%), (2010) 158 (39%) (2013)

  Malignant: 54 (53.46%) (2010) 211 (53%) (2013)

  ASAP 04 (3.8%) (2010) 24 (6.04) (2013)
Results \(n=101\) (2010), \(397\) (2013)

- **Clinical data:**
  - **Number and site of bxs:** \(101, 397\) (100%)
  - **PSA:** \(101, 397\) (100%)
  - **History of previous treatment:** 0, 11 (2.77 %)
  - **History of previous biopsies:** 14 (13 %), 111 (27.95 %)
  - **Digital rectal examination (DRE):** (60%, 65%)

- **Macroscopy:**
  - **Number and length of cores:** \(101, 397\) (100%)
Results

• Microscopy:
  - Gleason sum score: 56, 211 (100%)
  - Tertiary pattern: 09 (16.07%), 40 (10.07%), 5%, 13%
  - No. of cores positive for tumour: 17 (30.35%), 394 (99.24%)
Results

• Total percentage of tumour - 56,211 (100%)
• Perineural invasion - 56, 211 (100%)
• Vascular invasion - Nil, Nil
• Extraprostatic extension (EPE) - 5 (8.9%), 7 (1.76%).
• Extraprostatic tissue (rectal mucosa) - 5 (8.9%), 98 (24.68%).
High grade PIN

• High grade PIN - 12 cases (8.75%), 35(8.81%).
  - 5,31 cases of HGPIN were associated with carcinoma.
  - 7,4 cases showed only HGPIN (6.9%, 1%).
Histology reviews

Year 2010 n-101
• Local MDT- 101
• Central MDT- 23
• Other centres- 2
• Audit review- 101

Year 2013 n-397
• Local MDT -211/397
• Central MDT- 64/397
• Audit review - reports only
Difference of opinion

<table>
<thead>
<tr>
<th>Variables</th>
<th>Local MDT (2/101)</th>
<th>Central MDT (4/23)</th>
<th>Audit review (4/101)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Concordance in Gleason grading</td>
<td>98.21 %</td>
<td>86.95 %</td>
<td>98.12 % ,</td>
</tr>
<tr>
<td>Gleason grade</td>
<td>1 (6-7)</td>
<td>3 (6-7)</td>
<td>2 (6-7)</td>
</tr>
<tr>
<td>ASAP</td>
<td>1 (False negative)</td>
<td>1 (False positive)</td>
<td>1 (False negative)</td>
</tr>
<tr>
<td>Cancer</td>
<td>0</td>
<td>0</td>
<td>0 *</td>
</tr>
</tbody>
</table>
### Histology review 2013, n-397

<table>
<thead>
<tr>
<th>Variables</th>
<th>Local MDT (4/211)</th>
<th>Central MDT (13/64)</th>
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<tbody>
<tr>
<td>Gleason grading concordance</td>
<td>207 (98.10 %)</td>
<td>51 (78.12%),</td>
</tr>
<tr>
<td>Gleason grade Discordance</td>
<td>4, (1.89%) (1 grade upgraded)</td>
<td>10 (4.73%) (1 UG) (9 DG)</td>
</tr>
<tr>
<td>ASAP</td>
<td>0</td>
<td>2, (1-ASAP to Benign)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>(1-6 to ASAP).</td>
</tr>
<tr>
<td>Cancer</td>
<td>0</td>
<td>1- ASAP to ACA (6)</td>
</tr>
</tbody>
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Histology CMDT review 2013

• Total cases 64/396
• Agreement 51, Difference of opinion-13
• Difference of opinion in Gleason G - 10
• 9 cases-downgraded ,
  7 cases Gleason 7 to 6
  1 case 8-7
  1 case 9-8
• 1 case upgraded from 7-8.
# Histology review comparison

<table>
<thead>
<tr>
<th></th>
<th>UHNT</th>
<th>Standard</th>
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<tbody>
<tr>
<td>High grade PIN (%)</td>
<td>6.9, 1</td>
<td>9 US, 1.5-5 ERSPC (2010)</td>
</tr>
<tr>
<td>Gleason grading concordance (%)</td>
<td>86.95, 78.12</td>
<td>78 UK, 2006, &gt;70% Allsbrook WC, 2001</td>
</tr>
<tr>
<td>ASAP (%)</td>
<td>3.8, 6.04</td>
<td>3-5</td>
</tr>
<tr>
<td>False –ve cancer rate</td>
<td>0, 1 (0.25)</td>
<td>1.1</td>
</tr>
<tr>
<td>Core data items</td>
<td>6, 7</td>
<td>8</td>
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Summary

• Clinical data information was satisfactory except DRE. 7/8 items were reported in re audit.
• Macroscopic details were provided in all cases.
• All essential microscopic information was available in all cases including Gleason grade, tumour % and PNI. Information on number of cores involved by tumour was given in almost all cases in re-audit.
Summary

• This improvement in reporting patterns is partly attributed to Pathosys synoptic reporting system where parameters are recorded according to RCPath dataset.

• Inter observer variability is comparable to national and international figures.
1. False negative biopsies

False negative Prostate needle biopsies: Frequency, Histopathologic features and followup. Am J surj Path 2010

Screening Setting. 196 participants

In this study overall false negative rate was 2.4%, (1.1% for prostate cancer and 1.3% for ASAP.

In our second audit FN cancer rate was 0.25 %, ASAP <1%.
False negative biopsies

- Factors involved include
  - Low number of atypical glands (<10)
  - Lack of architectural distortion
  - Lack of recognition of prostate cancer variants.

Recommendation: Routine examination of at least 1 level of prostate biopsy sets at high magnification and awareness of prostate cancer variants.
2. Interobserver variability

- Variability in diagnostic opinion among Pathologists for single small atypical focus in prostate biopsies. (2010-AJSP)
- 5 experts and 7 ERSPC
- 20 biopsies
- 2 & 5 atypical glands (<1mm)
- Full agreement on 7/20 bxs. between experts.
- Experts and ERSPC rendered diagnosis from
Interobserver variability

benign to malignant on the same biopsy in 5 and 9 cases respectively.

- Poor agreement on foci of <6 glands.

- Pathologists are encouraged to take expert opinion for these lesions before a carcinoma diagnosis whereas clinicians consider to perform staging biopsies before engaging on deferred or definitive treatment.
3a,b,5,7
Second opinion significance

• Clinical and cost impact of second opinion Pathology review of prostate biopsy prior to Radical Prostatectomy. J I Epstein, 1996 AJSP.

• 535 cases reviewed referred for RP at JHUH diagnosed outside as adenocarcinoma.
  6(1.3%) reclassified as benign

Cost for review: $44,883-(535 cases)
Cost for RP surgery was $85,686-(6 cases)
Second opinion significance

- This cost saving did not include other costs resulting from lost wages, morbidity and potential litigation.
- Conclusion: Second opinion pathological evaluation of prostate biopsy before radical prostatectomy has a major impact on clinical treatment for a subset of patients and is cost effective.
Dr. Donald F Gleason
1920-2008
Acknowledgement

• All my department staff
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• Dr. Maria Ahmed
• Dr. Lubna Noor
Thank you