Hematuria accounts for a significant proportion of urology workload. Guidelines for investigation & management are unclear.

To evaluate the outcomes for visible hematuria (VH) versus non-visible hematuria (NVH) & update the guidelines. This is the largest study with the longest follow-up ever.

### Demographics for NVH & VH - different

<table>
<thead>
<tr>
<th>Demographics</th>
<th>NVH</th>
<th>VH</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of patients</td>
<td>974</td>
<td>1804</td>
</tr>
<tr>
<td>Age range (mean)</td>
<td>15 - 100 (59.2)</td>
<td>13 - 110 (63.3)</td>
</tr>
<tr>
<td>Male: Female</td>
<td>504 : 470</td>
<td>1363 : 441</td>
</tr>
<tr>
<td>Smokers (M: F) (%)</td>
<td>393 (231:162) (41.5)</td>
<td>748 (615:133) (41.5)</td>
</tr>
<tr>
<td>FU range years (mean)</td>
<td>8.0 - 18.5 (14.9)</td>
<td>8.5 - 18.5 (13.7)</td>
</tr>
</tbody>
</table>

### Results for NVH & VH - remarkably different

#### Outcomes for NVH & VH - remarkably different

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>NVH</th>
<th>VH</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pathology (%)</td>
<td>859 (88)</td>
<td>804 (44.56)</td>
</tr>
<tr>
<td>Benign Pathology (%)</td>
<td>68 (7)</td>
<td>605 (33.54)</td>
</tr>
<tr>
<td>Malignant Pathology (%)</td>
<td>47 (4.96)</td>
<td>395 (21.90)</td>
</tr>
<tr>
<td>Total</td>
<td>974</td>
<td>1804</td>
</tr>
</tbody>
</table>

#### NVH & VH < 40 outcomes - significantly different

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>NVH</th>
<th>VH</th>
</tr>
</thead>
<tbody>
<tr>
<td>No Pathology (%)</td>
<td>108 (98.2)</td>
<td>166 (87.4)</td>
</tr>
<tr>
<td>Benign Pathology (%)</td>
<td>2 (1.8)</td>
<td>17 (8.9)</td>
</tr>
<tr>
<td>Malignant Pathology (%)</td>
<td>0 (0)</td>
<td>7 (3.7)</td>
</tr>
<tr>
<td>Total</td>
<td>110</td>
<td>190</td>
</tr>
</tbody>
</table>

**Benign pathology:** calculi (renal/ureteric), cystitis / UTI, hydronephrosis (benign aetiology), renal cyst(s), urethral stricture/bladder neck stenosis, bladder stone.

**Malignant pathology:** bladder cancer, renal cancer, prostate cancer, metastatic disease.

### Incidence & Pathology - recurrent NVH

None of the re-investigated recurrent NVH was diagnosed with malignant pathology.

### Incidence & Pathology - recurrent VH

<table>
<thead>
<tr>
<th>Diagnosis</th>
<th>Number (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>UTI / stone disease</td>
<td>17 (26.56)</td>
</tr>
<tr>
<td>LUTS</td>
<td>8 (12.50)</td>
</tr>
<tr>
<td>Prostate cancer (+ high PSA)</td>
<td>4 (6.26)</td>
</tr>
<tr>
<td>Urological cancer</td>
<td>7 (10.93)</td>
</tr>
<tr>
<td>No pathology</td>
<td>28 (43.75)</td>
</tr>
<tr>
<td>Total</td>
<td>64</td>
</tr>
</tbody>
</table>

### Conclusions

- **NVH:** Incidence of malignancy is low (5%). The majority cleared by initial investigations remained asymptomatic. None developed a new malignancy.
- **VH:** Incidence of malignancy is high (22%). 50% of recurrence indicated pathology. Vigilance/repeat investigations are required.
- Age & type of hematuria should guide investigations.
- Guidelines need updating.

### References