UTIs in primary care: the next frontier in common infections research

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Classification of UTI

- **Acute cystitis**: infection of lower urinary tract (bladder); Can occur in conjunction with pyelonephritis (infection of the kidney)
- **Urethritis**: Inflammation of the urethra
- **Uncomplicated**: healthy non pregnant adult women
- **Complicated**: an underlying condition which increases risk of infection or failing therapy (obstruction, anatomic abnormality, multiply-resistant uropathogen). **Men, Child**
- **Recurrent UTI**: ≥2 infections in 6 m infections in a year
Percentage of women reporting a UTI in their lifetime, and information, advice and treatment sought with their most recent UTI (n=2,424)

- All women: 100%
- Had a UTI in lifetime: 37%
- Contacted a health professional: 33%
- Had a urine test: 27%
- Prescribed antibiotics: 27%
- Given other advice: 24%
- Took the antibiotics prescribed: 17%
- Went to Out of Hours service: 5%

Butler BJGP 2015
Diagnostics

• 6 million urine samples are cultured for infection each year from Primary Care in England and Wales.

• Up to 30% are contaminated by skin and vaginal flora: a mixed growth.
  • delay in diagnosis, increased use of inappropriate antibiotics and resources

• Dipsrick: not sufficiently trustworthy

• Clinical precision rules: sketchy
Resistance in Gram-Negative Organisms: Studying Intervention Strategies

R-GNOSIS WP2

POETIC

Observational study and RCT of clinical and cost effectiveness

Professor Chris Butler and team
Professor of Primary Care Medicine
Director of Institute of Primary Care and Public Health
Cardiff University
Appropriate antibiotic prescribing

Prescribed antibiotic at index consultation

Yes

Microbiologically confirmed UTI?*

Yes

Sample sensitive to prescribed antibiotic?

Yes 162/675 (24.0%)

No 28/675 (4.1%)

No

Microbiologically confirmed UTI?*

Yes 400/675 (59.3%)

No 22/675 (3.3%)

Inappropriate prescribing 450/675 (66.7%)

Appropriate prescribing 225/675 (33.3%)
Resistance in coliforms in the community in Wales 2005-2011

**Figure 16: All-Wales antimicrobial resistance rates for coliforms from community urine samples (2005 to 2011)**
E. Coli bacteremia by age group 2002-2011

![Graph showing E. Coli bacteremia by age group from 2002 to 2011.](image)

<table>
<thead>
<tr>
<th>Age Group</th>
<th>2002</th>
<th>2003</th>
<th>2004</th>
<th>2005</th>
<th>2006</th>
<th>2007</th>
<th>2008</th>
<th>2009</th>
<th>2010</th>
<th>2011</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 and under</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2 to 15</td>
<td>8</td>
<td>5</td>
<td>2</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
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<td>16 to 29</td>
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<td>11</td>
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<td>22</td>
<td>21</td>
<td>27</td>
<td>18</td>
<td>31</td>
<td>17</td>
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<td>30 to 49</td>
<td>25</td>
<td>26</td>
<td>34</td>
<td>36</td>
<td>46</td>
<td>41</td>
<td>45</td>
<td>44</td>
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<td>83</td>
</tr>
<tr>
<td>50 to 64</td>
<td>55</td>
<td>64</td>
<td>79</td>
<td>69</td>
<td>89</td>
<td>89</td>
<td>117</td>
<td>136</td>
<td>141</td>
<td>139</td>
</tr>
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<td>65 to 79</td>
<td>119</td>
<td>121</td>
<td>166</td>
<td>189</td>
<td>180</td>
<td>230</td>
<td>241</td>
<td>274</td>
<td>304</td>
<td>355</td>
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<td>80+</td>
<td>116</td>
<td>159</td>
<td>184</td>
<td>207</td>
<td>198</td>
<td>258</td>
<td>293</td>
<td>334</td>
<td>352</td>
<td>427</td>
</tr>
</tbody>
</table>

**Figure 176: E. coli bacteremia by age group for non-inpatients locations**
### Table of growth of ruminococcus

<table>
<thead>
<tr>
<th>Group</th>
<th>Number of samples with proportion of overall reads represented by Ruminococcus</th>
<th>Total number of samples</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>0-1%</td>
<td>1-5%</td>
</tr>
<tr>
<td>Controls</td>
<td>27 (47.4%)</td>
<td>6 (10.5%)</td>
</tr>
<tr>
<td>Borderlines</td>
<td>8 (72.7%)</td>
<td>2 (18.2%)</td>
</tr>
<tr>
<td>Negatives</td>
<td>44 (93.6%)</td>
<td>3 (6.4%)</td>
</tr>
<tr>
<td>Positives</td>
<td>28 (93.3%)</td>
<td>2 (6.7%)</td>
</tr>
<tr>
<td>Mixed</td>
<td>40 (97.6%)</td>
<td>1 (2.4%)</td>
</tr>
</tbody>
</table>
## Urinary Tract Infection (UTI) Information Leaflet

For women outside care homes with suspected uncomplicated UTIs, or uncomplicated recurrent UTIs (not relapse).

### Possible urinary symptoms
- Frequency: Passing urine more often than normal
- Dysuria: Burning pain when passing urine
- Urgency: Feeling the need to pass urine immediately
- Haematuria: Blood in urine
- Nocturia: Needing to pass urine in the night
- Suprapubic pain: Lower tummy pain

**Other things to consider**
- Recent Sexual history
  - Some STIs can have symptoms similar to urinary symptoms.
  - Inflammation of the vagina due to change in sexual activity can feel similar to urinary symptoms.

### The outcome
- **Mild or 1-2 symptoms and/or vaginal discharge**
  - Less likely to be a UTI
  - Antibiotics less likely to help
  - Duration usually 5-7 days
  - **Recommended care**: Self-care. Symptoms are likely to get better on their own.

- **Severe or 3 or more symptoms and no vaginal discharge**
  - More likely to be a UTI
  - Antibiotics are likely to help
  - **Recommended care**: Antibiotic prescription.

### With antibiotics:
- Symptoms should start to improve within 48 hours
- Symptoms usually last 3 days

### Types of Urinary Tract Infection (UTI)

- **Kidneys (makes urine)**
  - Infection in the upper urinary tract.
  - Pyelonephritis (pie-lo-nef-right-is)

- **Bladder (stores urine)**
  - Infection in the lower urinary tract.
  - Cystitis (sis-tight-is)

- **Urethra (takes urine out of the body)**
  - Infection or inflammation in the urethra.
  - Urethritis (your-ith-right-is)

### Self-care to help yourself get better more quickly
- Drink enough fluids to stop you feeling thirsty (6-8 glasses including water, decaffeinated and sugar free drinks)
- Take regular ibuprofen (or other anti-inflammatories) for pain relief, if no previous side effects
- Take regular paracetamol to reduce fever or pain
- Cranberry capsules/Cystitis sachets: These are effective for some women. There is currently little evidence to support its use
- Consider reducing potential risk factors for future UTIs

### Options to help prevent a UTI

- **Stop the spread of bacteria from your gut into your bladder**: Wipe from front (vagina) to back (bottom) after using the toilet.
- **Avoid holding urine**: Pass urine as soon as needed.
- **Wee after having sex**: Flushes out an bacteria that may be near the opening to the urethra.
- **Wash external vagina area with water before and after sex**
- **Drink enough fluids (water, decaffeinated and sugar free drinks)** to ensure you pass urine regularly throughout the day, especially during hot weather.

### When might you have a kidney or blood infection and should contact your GP or nurse
- **If you have shivering, chills and muscle pain**
- **If you feel confused, or are very drowsy**
- **If you have not passed urine in a day**
- **If you are vomiting**
- **If you see blood in your urine**
- **If your temperature is above 38°C or less than 36°C**
- **If you have kidney pain in back area**
- **If your symptoms get worse**
- **If your symptoms are not starting to improve a little within 48 hours of antibiotics**

### Antibiotic Resistance

- Antibiotics may not always be needed, only take them after advice from a health professional. This way they are more likely to work if you have a UTI in the future.

- Antibiotics taken by mouth, for any reason, affect our gut bacteria, they become resistant to antibiotics we take.

- Antibiotic resistance means that the antibiotic cannot kill that bacteria.

- The gut bacteria that cause UTIs are twice as likely to be antibiotic resistant for at least 6 months after you have taken any antibiotic.

- Common side effects to taking antibiotics include: thrush, rashes, vomiting and diarrhoea.