

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

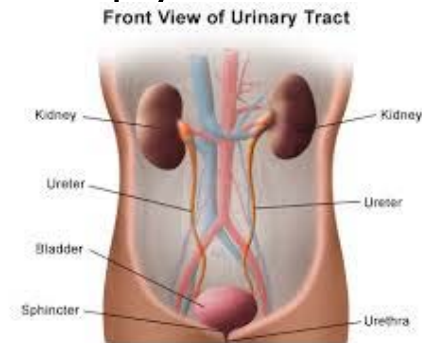
Chris Butler  
Professor of Primary Care

NIHR Oxford DEC/Leeds/KTN  
Antimicrobial Resistance Workshop  
25 January 2017  
St Hugh's College Oxford

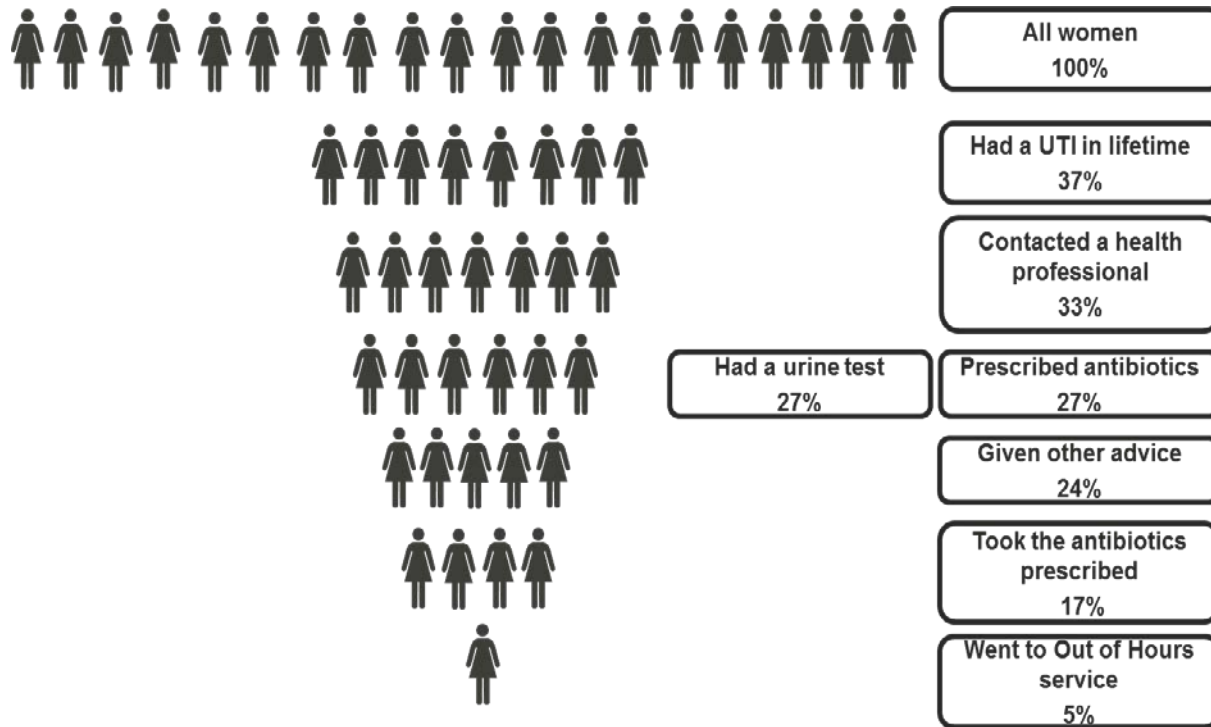


# Classification of UTI

- **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:**  $\geq 2$  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 )**



# 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
- Dipstick: not sufficiently trustworthy
- Clinical precision rules: sketchy



# R-GNOSIS

Resistance in Gram-Negative Organisms: Studying Intervention Strategies

## R-GNOSIS WP2



# POETIC

point of care testing for urinary tract  
infection in primary care

## Observational study and RCT of clinical and cost effectiveness

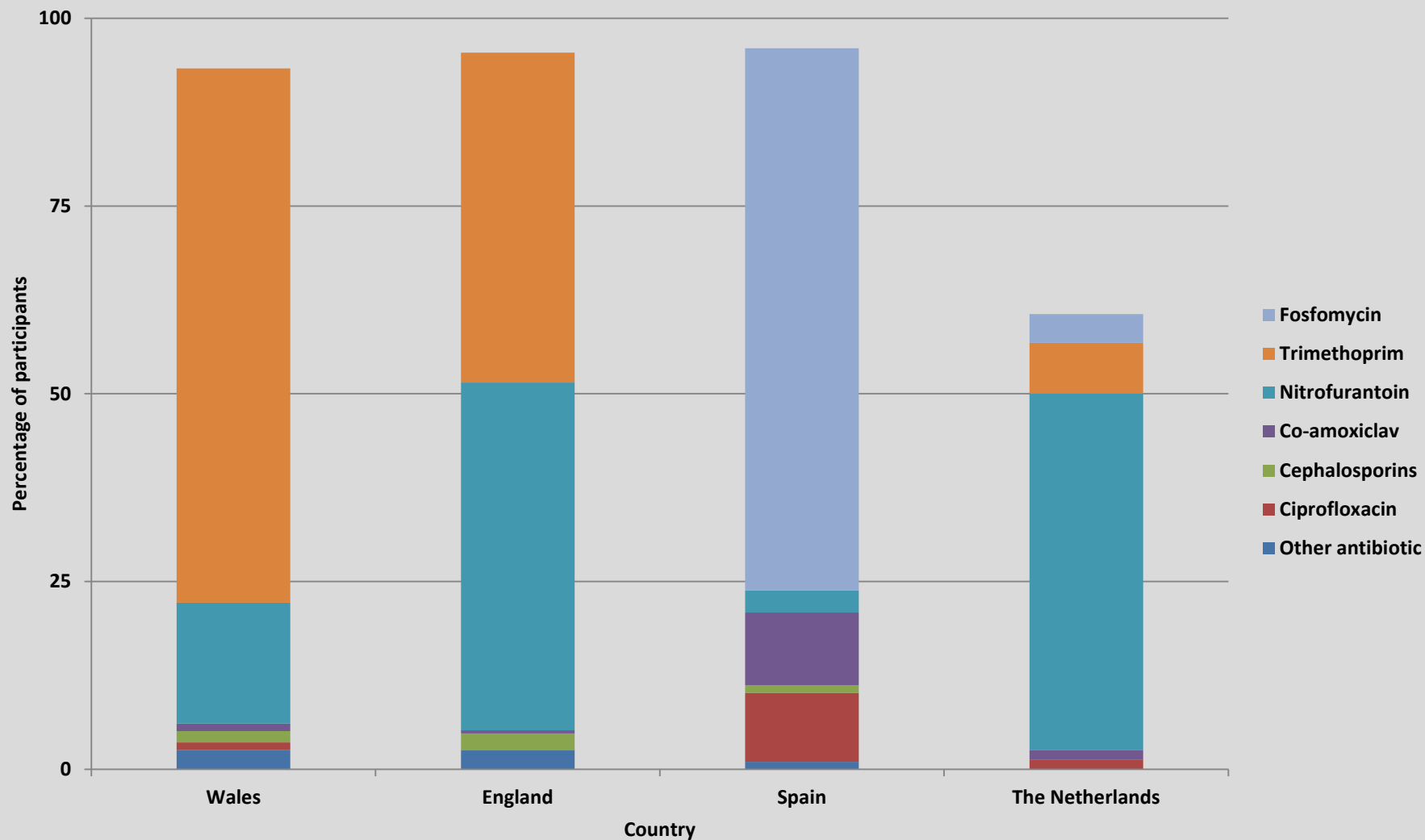
**Professor Chris Butler and team**

Professor of Primary Care Medicine

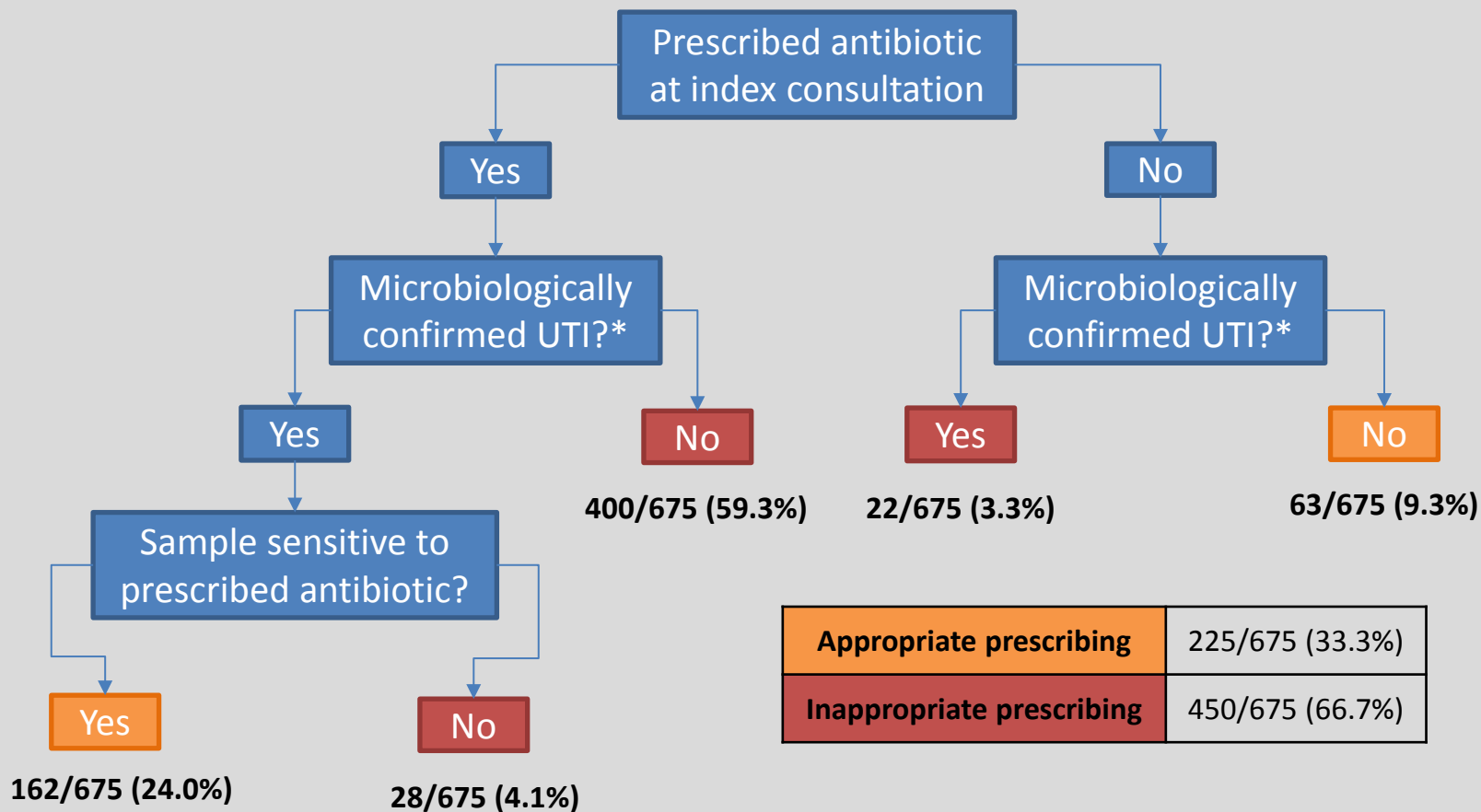
Director of Institute of Primary Care and Public Health

Cardiff University

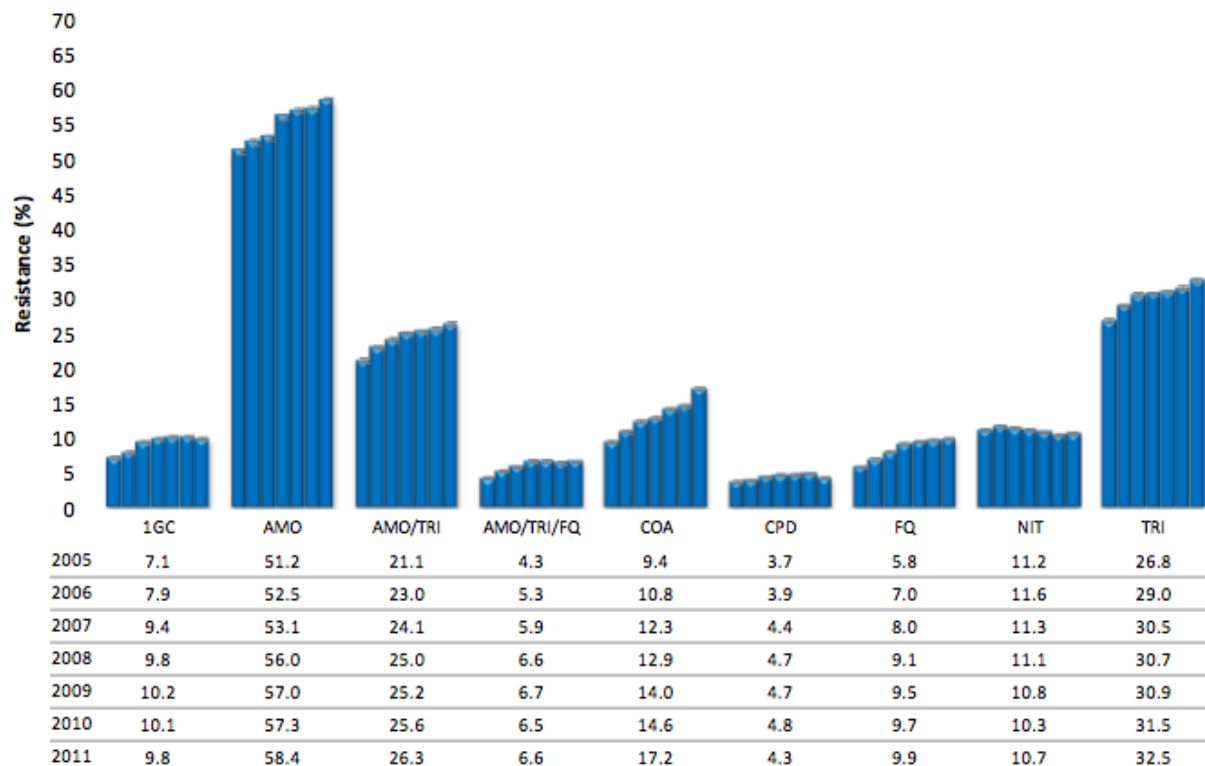
## Antibiotic choice by country



# Appropriate antibiotic prescribing



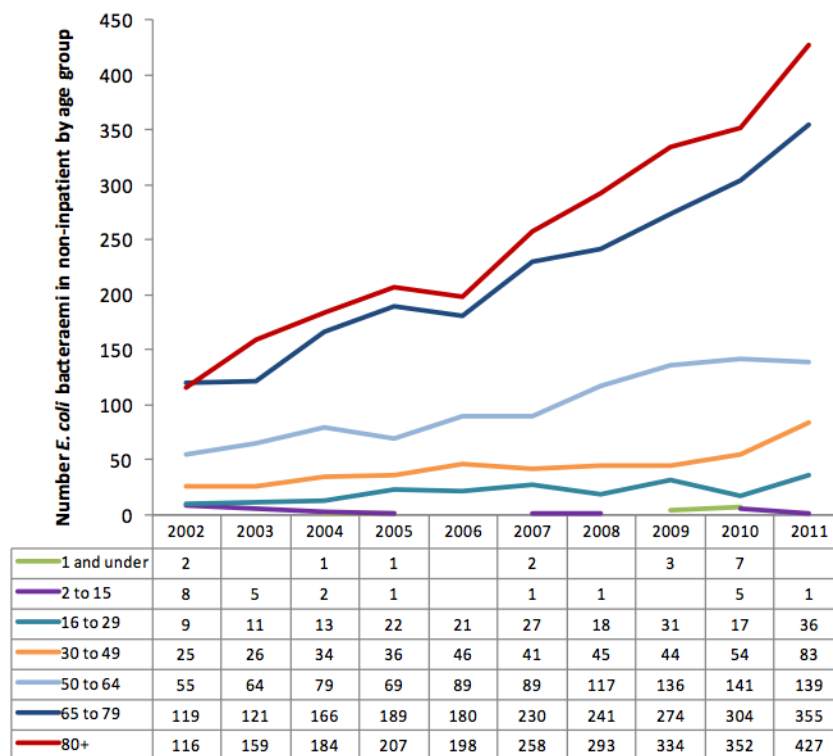
## Resistance in coliforms in the community in Wales 2005-2011



**Figure 16: All-Wales antimicrobial resistance rates for coliforms from community urine samples (2005 to 2011)**



## E. Coli bacteremia by age group 2002-2011



**Figure 176: *E. coli* bacteraemias by age group for non-inpatients locations**

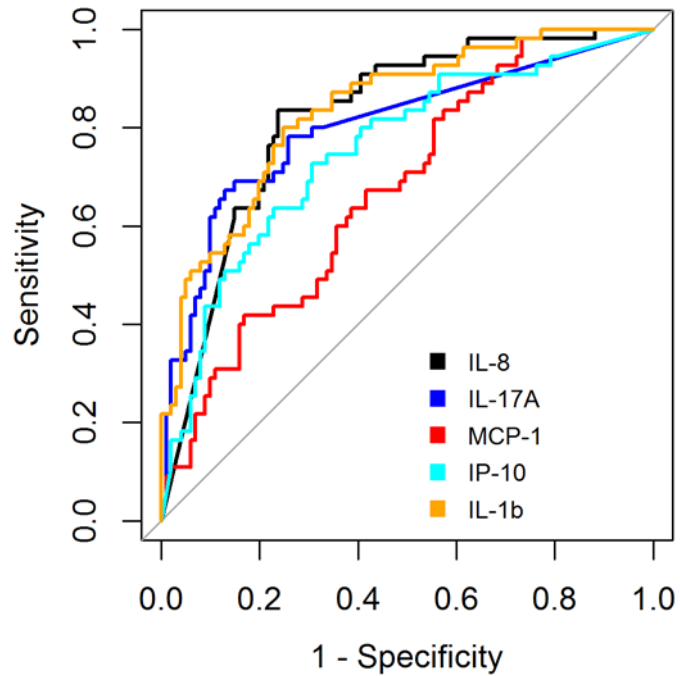
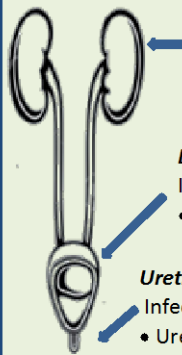


Table of growth of ruminococcus

Group	Number of samples with proportion of overall reads represented by Ruminococcus					Total number of samples
	0-1%	1-5%	5-10%	10-20%	>20%	
Controls	27 (47.4%)	6 (10.5%)	8 (14.0%)	6 (10.5%)	10 (17.5%)	57
Borderlines	8 (72.7%)	2 (18.2%)	1 (9.1%)	0	0	11
Negatives	44 (93.6%)	3 (6.4%)	0	0	0	47
Positives	28 (93.3%)	2 (6.7%)	0	0	0	30
Mixed	40 (97.6%)	1 (2.4%)	0	0	0	41

## Urinary Tract Infection (UTI) Information Leaflet

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

Possible urinary symptoms	The outcome	Recommended care	Types of Urinary Tract Infection (UTI)
<ul style="list-style-type: none"> <li><b>Frequency:</b> Passing urine more often than normal</li> <li><b>Dysuria:</b> Burning pain when passing urine</li> <li><b>Urgency:</b> Feeling the need to pass urine immediately</li> <li><b>Haematuria:</b> Blood in urine</li> <li><b>Nocturia:</b> Needing to pass urine in the night</li> <li><b>Suprapubic pain:</b> Lower tummy pain</li> </ul> <p><u>Other things to consider</u></p> <p><b>Recent Sexual history</b></p> <ul style="list-style-type: none"> <li>Some STIs can have symptoms similar to urinary symptoms.</li> <li>Inflammation of the vagina due to change in sexual activity can feel similar to urinary symptoms.</li> </ul>	<div> <input type="checkbox"/> <b>Mild or 1 - 2 symptoms and/or vaginal discharge</b> <ul style="list-style-type: none"> <li>Less likely to be a UTI</li> <li>Antibiotics less likely to help</li> <li>Duration usually 5-7 days</li> </ul> </div> <div> <input type="checkbox"/> <b>Severe or 3 or more symptoms and no vaginal discharge</b> <ul style="list-style-type: none"> <li>More likely to be a UTI</li> <li>Antibiotics are likely to help</li> </ul> </div> <p><b>With antibiotics:</b></p> <ul style="list-style-type: none"> <li>Symptoms should start to improve within 48 hours</li> <li>Symptoms usually last 3 days</li> </ul>	<p><b>Self-care</b></p> <p>Symptoms are likely to get better on their own</p> <p><b>Antibiotic prescription</b></p> <div> <input type="checkbox"/> Immediate antibiotics with self-care         </div> <div> <input type="checkbox"/> Start backup/delayed antibiotics:         <ul style="list-style-type: none"> <li>If symptoms get worse</li> <li>do not get a little better with self-care after 24-48hrs</li> </ul> </div>	<p>UTIs are caused by bacteria getting into your urethra or bladder, usually from your gut and can occur in the different parts of the urinary tract:</p>  <p><b>Kidneys (makes urine)</b> Infection in the upper urinary tract • Pyelonephritis (<i>pie-lo-nef-right-is</i>)</p> <p><b>Bladder (stores urine)</b> Infection in the lower urinary tract. • Cystitis (<i>sis-tight-is</i>)</p> <p><b>Urethra (takes urine out of the body)</b> Infection or inflammation in the urethra • Urethritis- (<i>your-ith-right-is</i>)</p>

Self-care to help yourself get better more quickly	Options to help prevent a UTI	When might you have a kidney or blood infection and should contact your GP or nurse	Antibiotic Resistance
<p>Drink enough fluids to stop you feeling thirsty (<i>6-8 glasses including water, decaffeinated and sugar free drinks</i>)</p> <p>Take regular ibuprofen (or other anti-inflammatories) for pain relief, if no previous side effects</p> <p>Take regular paracetamol to reduce fever or pain</p> <p>Cranberry capsules/Cystitis sachets: <i>These are effective for some women. There is currently little evidence to support its use</i></p> <p>Consider reducing potential risk factors for future UTIs</p>	<p>It may help some women to consider these risk factors:</p> <ul style="list-style-type: none"> <li><b>Stop the spread of bacteria from your gut into your bladder:</b> Wipe from front (vagina) to back (bottom) after using the toilet</li> <li><b>Avoid holding urine:</b> Pass urine as soon as needed</li> <li><b>Wee after having sex:</b> flushes out an bacteria that may be near the opening to the urethra</li> <li><b>Wash</b> external vagina area with water before and after sex</li> <li><b>Drink enough fluids</b> (<i>water, decaffeinated and sugar free drinks</i>) to ensure you pass urine regularly throughout the day, especially during hot weather</li> </ul> <p><u>If recurrent UTI, also consider</u></p> <ul style="list-style-type: none"> <li><b>Cranberry products:</b> Effective for some women but there is currently little evidence to support this</li> <li><b>Post-menopause:</b> Menopausal women could consider topical hormonal therapy</li> <li><b>Methenamine:</b> may be useful; only take if advised by GP</li> </ul>	<ul style="list-style-type: none"> <li>If you have shivering, chills and muscle pain</li> <li>If you feel confused, or are very drowsy</li> <li>If you have not passed urine in a day</li> <li>If you are vomiting</li> <li>If you see blood in your urine</li> <li>If your temperature is above 38°C or less than 36°C</li> <li>If you have kidney pain in back area</li> <li>If your symptoms get worse</li> <li>If your symptoms are not starting to improve a little within 48 hours of antibiotics</li> </ul>	<p><b>Antibiotics may not always be needed</b>, 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.</p> <p>Antibiotics taken by mouth, for <b>any</b> reason, affect our gut bacteria, they become resistant to antibiotics we take.</p> <p>Antibiotic resistance means that the antibiotic <b>cannot kill that bacteria.</b></p> <p>The gut bacteria that cause UTIs are twice as likely to be antibiotic resistant for <b>at least 6 months after</b> you have taken any antibiotic.</p> <p>Common <b>side effects</b> to taking antibiotics include: <b>thrush, rashes, vomiting and diarrhoea.</b></p>