UTI accounts for 1-3% of GP appointments. Even for simple infections rates of recurrence are high. 20-30% of patients fail initial antibiotic treatment and up to 70% experience another UTI within a year. Up to 1.6 million women aged 18+ in Britain suffer from chronic lower urinary tract symptoms (LUTS) but NICE guidance does not exist for chronic UTI and there is no quality standard for recurrent UTI. A significant number of men and children also suffer.

Negative dipstick tests and MSUs and the failure of short courses of antibiotics are for many persistent UTI sufferers the first step to a diagnosis of interstitial cystitis, painful bladder syndrome, urethral syndrome or overactive bladder. But numerous studies have shown dipsticks and MSUs to be unreliable. Burgeoning evidence suggests chronic LUTS are caused by untreated bacterial infections – not inflammation.

Effective early intervention is key to preventing chronic UTI.

If your patient is suffering from persistent or recurrent infections

- Believe your patient and treat according to symptoms, not just their test results
- Prescribe longer courses of antibiotics. Short courses are only effective for simple, uncomplicated UTI and repeated ineffective courses can promote microbial resistance
- Ensure antibiotics are taken promptly and encourage your patient to return immediately if their symptoms persist
- Do not discount low CFU counts. In the presence of significant symptoms the concept of a threshold below which infection is discounted does not make sense

NICE GUIDANCE WRONGLY PRIORITISES TEST RESULTS OVER SYMPTOMS
The Scottish Intercollegiate Guidelines Network from which NICE advice is sourced states “the diagnosis of UTI is primarily based on symptoms and signs. Tests that suggest or prove the presence of bacteria or white cells in the urine...rarely have important implications for diagnosis.” NICE omits this warning.

DIAGNOSTIC TESTS ARE INACCURATE
Compared with enhanced testing, standard urine culture missed 67% of uropathogens overall and 50% in participants with severe urinary symptoms. Dipstick tests were just 56% sensitive to leukocyte esterase and 10% sensitive to nitrites in a study of patients with chronic LUTS without dysuria. Urine culture missed 20% of infections in a 2017 GP-led study which concluded: “The woman that is visiting you with typical urinary complaints has an infection. There is nothing more to explore.”

KASS: NO LONGER THE GOLD STANDARD
The Kass Criteria was never validated for UTI. It originates from 60-year-old research on a small study of pregnant women with acute pyelonephritis. The threshold for infection (≥10^5 CFUs/mL of a known uropathogen) is disputed and 10^2 is stated in US and European guidelines. Kass himself warns sufferers typically over-hydrate, diluting their urine.
In requiring strong growth of a single uropathogen, Kass assumes “healthy” urine is sterile. RNA sequencing and quantitative PCR testing has disproved this.20, 2122 Standard cultures are highly sensitive to E. coli but detect as little as 12% of other clinically significant species.23

IC, PBS, US, OAB...A DIAGNOSIS THAT IS FAILING CHRONIC UTI SUFFERERS
There is no widely accepted cause, cure or care pathway for these conditions.24 Surgical interventions are painful, invasive and carry an inherent risk.25 A 2016 analysis of 36 RCTs evaluating 1,822 participants found that bladder instillations are no better than placebo.26 Patients are offered CBT, painkillers, anti-depressants and advised to learn to live with it.27 Evidence suggests that many cases of these so-called syndromes are untreated chronic bacterial infections.

A DISEASE MODEL FOR CHRONIC UTI
It is now known that uropathogens form biofilms – microbial communities protected by an extra-cellular matrix – and undergo morphological changes increasing resistance to both the immune response and to antibiotics.28, 29

Uropathogens in chronic or recurrent UTI colonise the urothelium, creating bacterial reservoirs which reinfect the urine when urothelial cells are shed days, weeks or months later. The colonised urothelium is weakened by the inflammatory process, leading to an increased rate of apoptosis. Prolonged inflammation of the mucosa also leads to remodelling, causing increased susceptibility to recurrent UTI.30, 31

Sub-lethal levels of ciprofloxacin promoted urothelial colonization and biofilm formation in murine studies,32 and other research found it caused genetic changes conferring multi-drug resistance.33

FURTHER INFORMATION
This document and further information, including links to research is available at cutic.co.uk.

An international research effort is improving understanding and treatment of chronic UTI. The Hultgren Laboratory at Washington University School of Medicine in the US and the British UCL Biofilm Centre are two such centres.

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5. Kupelian et al. Discrediting Microscopic Pyuria and Leucocyte Esterase as Diagnostic Surrogates for Infection in Patients with Lower Urinary Tract Symptoms: Results from a clinical and laboratory evaluation. BJU International 2013
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33. Kohanski ibid