



A pragmatic guide to
asymptomatic bacteriuria
and **testing** for **urinary tract**
infections (UTIs) in people
aged **over 65 years**

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Asymptomatic bacteriuria and urinary tract infections (UTIs) frequently occur in people aged over 65 years. Bacteriuria in older people without urinary symptoms, i.e. asymptomatic bacteriuria, is generally harmless and does not need to be routinely treated. Diagnosing and managing UTIs is more difficult in older patients as long-term urinary conditions (e.g. incontinence) or genitourinary abnormalities (e.g. anterior vaginal prolapse) are more common. The patient's symptoms and signs are the strongest predictor of a UTI and clinical information should always be included on laboratory requests for urine culture as it will influence the interpretation of results and how the patient is subsequently managed. Guidance on the investigation of suspected UTIs varies depending on whether the patient is female, male or if they have a urinary catheter. Antibiotic treatment for uncomplicated UTIs can often be initiated empirically, but local susceptibility data is crucial to guide the choice of antibiotic.

Asymptomatic bacteriuria is not necessarily bad bacteria

It is a common misconception that urine from a healthy person is sterile. In reality bacteria from the gastrointestinal tract can readily enter the bladder via the urethra. Once in the bladder, bacteria are often eliminated by voiding or by the immune system. If this does not occur asymptomatic bacteriuria may result,¹ i.e. the presence of a significant growth of bacteria in the urine with no urinary symptoms. Alternatively, a symptomatic urinary tract infection (UTI) may result (see: "Why do some bacteria cause symptomatic infections?" over page). Bacteria may also gain access to the urinary tract via the circulatory system. This is, however, a relatively rare cause of bacteriuria.¹

In general the prevalence of asymptomatic bacteriuria increases in both older males and females, although it is more prevalent in females of all ages.² Approximately 20% of females and 5 – 10% of males aged over 80 years have asymptomatic bacteriuria,³ and the prevalence may be as high as 50% in older females in residential care facilities.⁴ Females are more susceptible to bacteriuria because of the reduced distance between the urethra and the anus and the reduced length of the urethra compared to males.

Asymptomatic bacteriuria is inevitable in all patients with long-term indwelling or supra-pubic catheters. Even when best-practice catheter insertion and care are followed, bacteriuria is reported to be acquired by catheterised patients at a rate of 2 – 7% per day,² and to occur in all catheterised patients within approximately four weeks.⁴

Asymptomatic bacteriuria in older patients does not need to be treated

It is rarely appropriate to treat asymptomatic bacteriuria in older patients with antibiotics. This is because asymptomatic bacteriuria is effectively harmless and needlessly treating patients with antibiotics exposes them to an increased risk of antibiotic-associated adverse effects, e.g. diarrhoea, nausea and potential allergic reaction. Inappropriate prescribing of antibiotics to treat older patients with asymptomatic bacteriuria also selects for bacteria that are antibiotic resistant. This increases the risk of a patient subsequently developing a symptomatic infection from a strain of bacteria that is resistant to treatment. In a residential care facility this can be particularly problematic as it increases the risk of an outbreak of antibiotic-resistant infections. Furthermore, in some people the normal microflora of the urinary tract is protective against the development of symptomatic UTIs.^{2,4} Therefore disrupting the natural growth of microorganisms in the urinary tract with unneeded antibiotics further increases a patient's risk of developing a symptomatic UTI in the future.⁴

Studies in many different groups of patients have consistently demonstrated that the treatment of asymptomatic bacteriuria with antibiotics is associated with increased adverse outcomes and is at best a needless waste of resources.⁵ This is even true in people who are immunosuppressed. In a study of 260 females with autoimmune rheumatic disease and a mean age of 52, the majority of whom were taking immunosuppressive medicines, the presence of asymptomatic bacteriuria was not associated with a significantly increased risk of developing UTIs over a one-year follow-up period.⁶

Do not request urine culture in older patients who are asymptomatic

Do not request urine culture in older patients who do not have symptoms of a urinary tract infection (UTI). Routine urine dipstick in older people solely for the purposes of detecting bacteriuria is unlikely to be helpful in patients without urinary symptoms and should also be avoided.

Is testing for asymptomatic bacteriuria ever appropriate?

In theory a finding of asymptomatic bacteriuria in an older patient should be uncommon as laboratory testing for bacteriuria in patients without urinary symptoms is not recommended. One situation where it is appropriate that a urine sample be taken for culture is prior to procedures that involve entering the urinary tract and breaching the mucosa, e.g. endoscopic urological surgery.⁴ Testing for, and treatment of, bacteriuria prior to major joint surgery is often requested by clinicians in secondary care, although it is of uncertain benefit.⁷

N.B. In contrast to the situation in older patients, treatment of asymptomatic bacteriuria in pregnant women is recommended as it is associated with an increased risk of symptomatic UTI, including pyelonephritis.⁴

Investigating and managing cystitis in older people

In general UTIs in older patients are more difficult to diagnose and more difficult to manage than in younger populations. Most of the guidance on UTI investigation and management relates to younger female populations and in older populations a flexible approach is required that takes into account individual factors and patient circumstances. Older females experience cystitis, i.e. a lower UTI, more often than older males, although the difference in prevalence between females and males is less than in younger age groups.³

Diagnosing cystitis in older females and males

The classical symptoms and signs of cystitis are similar in older females and males, and include:²

- Dysuria
- Frequency
- Suprapubic tenderness
- Urgency
- Polyuria
- Haematuria

Why do some bacteria cause symptomatic infections?

It is thought that not all bacteria are capable of inducing symptomatic UTIs.⁴ Some strains of bacteria within a species are uniquely equipped with virulence factors, e.g. specialised pili (appendages resembling hair), and are more readily able to ascend from the faecal flora, introitus vaginae or periurethral area and into the bladder, and less frequently to the kidneys.⁴ The more the natural defences of the person are compromised, e.g. by obstruction or bladder catheterisation, the less virulent the bacteria needs to be to cause symptomatic infection.⁴ *E. coli* are reported to account for 80–90% of lower UTIs.⁸

A person's genetics, the presence of any underlying conditions, e.g. diabetes, and lifestyle factors influence the likelihood of them developing a UTI.¹



Table 1: Recommendations for urinary investigation in patients aged 65 years and over with symptoms and signs suggestive of urinary tract infection (UTI)

Patient catheterisation	Patient sex and presentation	Recommendation on urinary testing
Uncatheterised	Females with symptoms of uncomplicated cystitis, e.g. no recent history of UTIs and without co-morbidities	Urine dipstick and culture is not routinely required as a diagnosis can generally be made on symptoms and signs alone and empiric treatment with trimethoprim or nitrofurantoin given for three days.
	Females with symptoms of complicated cystitis, e.g. recurrent UTIs	Urine culture is recommended in all female patients with complicated cystitis. Further investigation of the urinary tract may be necessary to exclude anterior vaginal prolapse,* e.g. cystocele, and differential diagnoses such as atrophic vaginitis.
	Females and males with symptoms of pyelonephritis	Urine culture is recommended in all females and males with a suspected pyelonephritis. Empiric treatment can be initiated with co-trimoxazole for 10 days. Further investigations may be appropriate in some patients to exclude the possibility of an underlying obstructive cause.
	Males with symptoms of cystitis	Urine culture is recommended in all males with a suspected UTI and therefore dipstick testing is of limited benefit. However, a positive dipstick result for leukocyte esterase or nitrites can help “rule in” a UTI, but negative results should not be used to “rule out” a UTI. Empiric treatment can be initiated with either trimethoprim or nitrofurantoin for seven days.
Catheterised	Males or females	All patients with long-term catheters can be expected to have bacteriuria and pyuria, therefore urine dipstick testing for leukocyte esterase or nitrites is not helpful. Equally, the presence of bacteriuria on culture is unlikely to be useful diagnostically and urine culture is recommended only to confirm bacteriuria and guide antibiotic treatment.

* Anterior vaginal prolapse may cause retention of small amounts of urine after voiding and increase the risk of a symptomatic UTI

The symptoms of UTIs may be difficult to differentiate from chronic genitourinary symptoms that are more common in older patients, including worsening urgency, incontinence, dysuria as well as non-specific symptoms such as anorexia, fatigue, malaise and weakness.⁹ Communication can also be an issue with older patients with dementia who may struggle to articulate their symptoms to health professionals.

The onset of symptoms can be helpful in differentiating symptomatic UTIs and long-term genitourinary problems, e.g. incontinence. New-onset dysuria in an older patient is the symptom with the strongest predictive value of UTI as it is not usually associated with urinary incontinence.⁹ New-onset urgency and new-onset frequency are also associated with symptomatic UTIs, but these symptoms may also occur with worsening urinary incontinence.⁹

Dysuria, fever and age over 60 years are reported to be the strongest predictors of UTI in older males. In a sample of over 600 males in general practice with a median age of 65 years the predictive value when dysuria, fever and age over 60 years were all present was 92%.¹⁰


UTIs in older patients are more likely to be complicated

A UTI is considered to be complicated if the patient has an abnormality of the genitourinary tract or an underlying condition that makes them less likely to respond to standard treatment or more likely to experience a severe outcome. Complicated UTIs are often recurrent, i.e. \geq three UTIs in 12 months,¹¹ because the underlying abnormality or condition predisposes the patient to repeat infection.¹² An older female patient with recurrent UTIs is likely to have a complicated UTI because genitourinary abnormalities which increase urinary retention are more common in older patients (see below). It is important that any underlying genitourinary condition that predisposes a patient to UTIs is managed appropriately. At least half of patients who present with a UTI due to an untreated genitourinary abnormality can be expected to experience a recurrent UTI within six weeks of completing a course of antibiotics.¹²

All UTIs in males are considered to be complicated because they are associated with structural abnormalities in the urinary tract, e.g. inflammation or obstruction due to benign prostatic enlargement, strictures, renal stones or malignancy.^{2,13}

Risk factors that increase the likelihood of a complicated UTI in older females include:^{4,12}

- Recurrent UTIs
- Previous genitourinary surgery
- Urinary incontinence
- Bladder diverticula
- Atrophic vaginitis due to oestrogen deficiency
- Anterior vaginal prolapse, e.g. cystocele
- Urinary catheterisation
- Uncontrolled diabetes
- Recent overseas travel (due to atypical bacteria)
- A general decline in health in a patient in residential care

 For further information on managing patients with suspected renal stones, see: "Managing patients with renal colic in primary care: know when to hold them", (BPJ 60, Apr 2014).

Complicated UTIs are caused by a more diverse array of bacteria

The majority of uncomplicated cystitis in older people is caused by *E. coli*, and while this is also the predominant organism in complicated cases, other species of bacteria may be involved, e.g. *Klebsiella pneumoniae*, *Citrobacter spp*, *Serratia spp*, *Enterobacter spp* or *Pseudomonas aeruginosa*.⁴ Multi-drug resistant organisms are more prevalent in patients with complicated UTIs because the patient is more likely to have been exposed to multiple courses of antibiotics to treat previous infections caused by an underlying genitourinary condition.⁴

Urine dipstick is not necessary for diagnosing UTIs

Urine dipstick is not required for the diagnosis of cystitis in females or males but it is helpful in some situations. Urine dipstick is of most use in "ruling out" a diagnosis of a lower UTI in an older patient with non-specific symptoms, such as confusion, in the absence of classical symptoms, e.g. dysuria.⁹

In a patient with symptoms of cystitis a urine dipstick positive for nitrites increases the likelihood that the patient has a UTI.¹ However, because only Enterobacteriaceae are able to metabolise nitrates to nitrites a negative urine dipstick does

not exclude the possibility of a UTI caused by another species of bacteria. The level of nitrites must reach a threshold for detection and therefore a patient with a UTI who is drinking lots of water and voiding frequently is more likely to test negative for nitrites on dipstick.¹ A systematic review of 16 studies including over 3 700 patients found that the presence of dysuria alone had a probability of 62% of predicting significant bacterial counts on urine culture; when this was combined with a positive result for nitrites this increased to 88%, and decreased to 47% when combined with a negative result for nitrites.¹⁴

A urine dipstick test positive for leukocyte esterase is reported to have 75 – 96% sensitivity for pyuria and 94 – 98% specificity.¹⁵ However, pyuria itself is not specific for UTIs and pyuria without bacteriuria may occur in patients with urinary catheters, renal stones or inflammatory conditions of the genitourinary tract, e.g. bladder pain syndrome (also known as interstitial cystitis).^{4,15}

Haematuria on dipstick in a symptomatic patient who also has pyuria and nitrites may also be consistent with a UTI, but the possibility of malignancy should always be considered when interpreting a finding of haematuria.¹

Request urine culture to confirm bacteriuria and establish susceptibility

Urine culture is not primarily a tool for the diagnosis of UTIs, as this is largely done on the basis of the patient's symptoms and signs.²

The main value of urine culture is to inform management of patients with UTIs by confirming the presence of significant bacteriuria and reporting on bacterial susceptibility to antibiotics.² Urine culture is not necessary in older female patients with classical symptoms of uncomplicated cystitis, who can be treated empirically. **Urine culture should be requested for older female patients with:** recurrent cystitis, persistent urinary symptoms following empiric antibiotic treatment, or atypical symptoms to exclude the possibility of a UTI, e.g. nausea, vomiting, confusion or abdominal tenderness. **Urine culture should be requested for all males with suspected cystitis.**

Pyuria on microscopy can be expected to be found in virtually all older patients with cystitis.¹ Bacteriuria without pyuria is consistent with contamination or colonisation, while pyuria or haematuria without bacteriuria is suggestive of other

conditions, e.g. nongonococcal urethritis, urinary stones or malignancy in older males.

Urine samples should be stored at approximately 4°C until they are sent to the laboratory as bacteria will continue to multiply in samples stored at room temperature which will lead to inaccurate colony counts. In New Zealand, 100×10^6 colony forming units (CFUs) of bacteria per litre of voided urine is the cut-off distinguishing clinically significant bacteriuria from contamination; the presence of urinary symptoms then determines whether the diagnosis is asymptomatic bacteriuria or UTI.

N.B. When a urine sample is sent for culture the laboratory will first perform microscopy and then urine culture if the microscopy is suggestive of bacteriuria. Susceptibility testing is then performed on all urine samples that are cultured. General practitioners are also able to specify that urine culture be performed regardless of the results of urine microscopy. In this article the term "urine culture" refers to urine microscopy, culture and susceptibility testing.

General practitioners are encouraged to include clinical information on urine testing request forms, rather than, for example "?UTI". This includes the type of specimen that has been collected, e.g. MSU or catheter, and the presence of relevant symptoms and signs. This information will improve the laboratory's interpretation of the results and alter how the results are reported. For example, urine samples taken from catheterised patients (see: "Collecting urine for culture", over page) are less likely to be contaminated by periurethral flora and therefore lower colony counts may represent significant bacteriuria. Additionally, a low colony count may be significant in a MSU sample from an older female patient without a history of UTIs who is otherwise healthy but has symptoms of dysuria and frequency.

All older males with cystitis require further investigation

Lower urinary tract symptoms in older males may be caused by benign prostatic hyperplasia or related to previous procedures such as transurethral resection of the prostate.⁴ Chronic bacterial prostatitis is reported to be the most frequent cause of recurrent UTI in males.⁴ Symptoms of prostatitis include: dysuria, frequency and pain in the prostatic, pelvic or perianal area.¹ However, patients with chronic bacterial prostatitis may not appear to be unwell and on examination the prostate may feel normal, tender or boggy.¹³ A urinary tract ultrasound should also be considered and may form the basis of a discussion with, or referral to, an urologist.

Managing cystitis in older females and males

Managing older patients with UTIs often requires additional considerations, compared with younger patients, as they are more likely to have significant co-morbidities, e.g. long-term or less well-controlled diabetes, or be living in residential care where the prevalence of antibiotic resistant UTIs is higher (see: "Managing UTIs in older patients with diabetes", opposite, and "Managing UTIs in patients living in residential care", Page 22).

The choice of empiric antibiotic for the treatment of cystitis in females and males is the same, except that males require a longer, seven day, regimen compared to three days in females. New Zealand-based and international guidelines recommend that all non-pregnant females and males with acute cystitis be treated with a course of trimethoprim or nitrofurantoin.^{2, 18, 19, 20}

- Trimethoprim, 300 mg, once daily at night (for three days for females and seven days for males) **or**
- Nitrofurantoin, 50 mg, four times daily* (for five days for females and seven days for males); avoid in patients with creatinine clearance < 60 mL/min

* Four times daily dosing of nitrofurantoin 50 mg is required to achieve optimal therapeutic concentrations over a 24 hour period. Nitrofurantoin is available in a 100 mg sustained-release formulation overseas which is taken twice-daily, but the nitrofurantoin 100 mg formulation available

in New Zealand is not sustained-release and should not be taken twice daily by patients with UTIs.

Norfloxacin, 400 mg, twice daily (for three days for females and seven days for males), is an alternative treatment for UTIs but is reserved only for patients with isolates that are resistant to trimethoprim or nitrofurantoin.²⁰

Females with complicated cystitis require longer treatment regimens than females with uncomplicated cystitis and this may range from 7 – 21 days depending on the clinical situation, including whether an underlying genitourinary condition is being treated concurrently.⁴

Ciprofloxacin, 500 mg, twice daily, for 28 days is indicated for the treatment of acute or chronic prostatitis as this class of medicine has excellent penetration into the prostate.^{4, 9} Ciprofloxacin is not recommended for treating males or females with uncomplicated cystitis.

Investigating and managing pyelonephritis in older people

Male and female patients with symptoms of pyelonephritis, i.e. an upper UTI, are generally diagnosed and managed in the same way.

Collecting urine for culture in symptomatic patients

Midstream urine collection is recommended when sampling urine for dipstick or laboratory analysis.⁴ Cleansing of the external genitalia is not necessary when collecting urine as there is no evidence that this reduces contamination.¹⁶

When taking a urine sample from a catheterised patient, if it is a short-term catheter, e.g. has been in place for less than a week, then the urine sample can be taken through the catheter port using aseptic technique.¹⁷ If the patient has a long-term indwelling urinary catheter then ideally it is recommended that a urine sample be taken immediately after a fresh catheter is inserted into the patient.¹⁷



Symptoms of pyelonephritis

Symptoms and signs consistent with pyelonephritis include:⁴

- Flank pain
- Nausea and vomiting
- Fever > 38°C, sometimes with rigors
- Tenderness over the renal area

Pyelonephritis can occur with or without symptoms of cystitis.⁴

Investigating pyelonephritis in older females and males

Urine culture is recommended in all patients with suspected pyelonephritis (Table 1, Page 17).⁴ An ultrasound of the renal tract may be considered to exclude the possibility of an obstruction and if a renal stone is suspected then a CT urogram should be requested.^{4, 20} It is important to exclude the possibility of an obstruction early in a patient who is systemically unwell as urinary blockage can quickly lead to urosepsis.⁴ Prostatitis should be considered in all older males with symptoms of pyelonephritis.⁴

Depending on the patient's age and renal function, urgent FBC, CRP, electrolytes and creatinine should also be considered.

Antibiotic treatment of pyelonephritis in older females and males

The recommended empiric oral antibiotic treatment for males or females with suspected pyelonephritis is:²⁰

- Co-trimoxazole 160+800 mg (two tablets), twice daily, for ten days

Amoxicillin clavulanate is a second-line option (500+125 mg, three times daily, for ten days). Ciprofloxacin (500 mg, twice daily, for seven days) is a third-line option, but only for isolates resistant to initial empiric choices.²⁰

Patients with severe pyelonephritis may not be able to take oral medicines due to nausea or vomiting and referral to hospital may be appropriate to initiate intravenous treatment, particularly in dehydrated patients with reduced renal function.⁴ Patients treated in a hospital setting, might be given oral trimethoprim after IV antibiotic treatment, if the isolate is susceptible. Nitrofurantoin is not recommended for the treatment of pyelonephritis as it fails to achieve effective tissue penetration.²

Managing UTIs in older patients with diabetes

People with diabetes are more at risk of developing cystitis and pyelonephritis.⁴ In an otherwise healthy older female patient with well-controlled diabetes an isolated diagnosis of cystitis may be considered uncomplicated.⁴ However, patients with long-term or poorly-controlled diabetes are more likely to develop a neuropathic bladder with voiding abnormalities which may complicate the clinical picture.⁴ Urine culture is recommended in all older patients with poorly-controlled diabetes and symptoms of a UTI and additional investigations, e.g. a urinary tract ultrasound, may be appropriate to assess the patient's residual urinary volume.

Patients with diabetes and pyelonephritis are at an increased risk of developing metabolic complications, e.g. hypo- or hyperglycaemia, hyperosmolar dehydration and ketoacidosis.⁴ Some patients with diabetes and pyelonephritis require close observation and blood glucose monitoring depending on the severity of their condition. Referral to hospital may be appropriate to initiate intravenous treatment, particularly in dehydrated patients with diabetes and reduced renal function.



Managing UTIs in patients living in residential care

Residential care facilities can be reservoirs of multi-drug resistant organisms and inappropriate treatment of asymptomatic bacteriuria contributes to this problem.²¹ Bacteria causing UTIs may display increased resistance to nitrofurantoin, ciprofloxacin and cephalosporins.²¹ In a study of 76 older patients in South Canterbury with a urine sample positive for multi-drug resistant *E. coli*, the factors which conferred the greatest risk of developing a multi-drug resistant UTI were living in a residential care facility and previous antibiotic treatment while in hospital, for any reason.²¹ A general deterioration in health and functional status is a further risk factor for the development of complicated UTIs in patients in residential care facilities.⁴ Urine culture is recommended in all patients living in residential care facilities who are suspected of having a UTI to improve antibiotic selection and reduce the spread of multi-drug resistant organisms. If susceptibility testing indicates resistance to commonly available antibiotics, or the patient is intolerant to antibiotics that are available, discussion with a clinical microbiologist is recommended. Alternative, unapproved, antimicrobial medicines, e.g. pivmecillinam hydrochloride or fosfomycin, are now being used in some DHBs for the treatment of cystitis.

Investigating and managing catheter-associated UTIs in older people

One of the most important risk factors for developing a catheter-associated UTI is the length of time that the patient has been catheterised. Therefore minimising the length of time that a patient has a urinary catheter in place reduces their risk of developing a UTI.

The diagnosis and management of catheter-associated UTIs is generally the same in females and males. The virtually constant presence of bacteriuria and pyuria in catheterised patients can make the diagnosis of a UTI difficult. Urine culture is therefore unlikely to be able to exclude a UTI and is more useful in determining antimicrobial susceptibility to guide antibiotic treatment.

Symptoms and signs of catheter-associated UTIs in females and males

There is no specific constellation of symptoms or clinical signs that characterise UTIs in catheterised patients.² The symptoms of UTI in catheterised patients may also be general and not localised to the urinary tract, including:²

- New or worsening fever
- Rigors
- Altered mental status
- Malaise or lethargy with no identified cause
- Flank pain
- Acute haematuria
- Pelvic discomfort

Investigating and treating UTIs in catheterised patients

Patients with long-term urinary catheters are more likely to present with polymicrobial UTIs,¹⁷ therefore urine culture is essential in all long-term and recently catheterised patients with a suspected UTI to guide antibiotic treatment (Table 1, Page 17). If a patient develops a UTI within 48 hours of urinary catheter removal then urine culture should also be requested.¹⁷

If a catheterised patient is febrile, blood cultures are recommended to assess for systemic involvement before beginning antibiotic treatment.⁴ However, the decision to treat a UTI in a catheterised patient should not be made on the presence of fever alone; only approximately one-third of cases of fever in catheterised patients are caused by UTIs and



other possible causes should be ruled-out before antibiotics are prescribed for the treatment of UTI.^{2,4}

Once antibiotic treatment for a UTI is started in a patient with a urinary catheter the catheter should be changed as bacteria adhering to it will not be eliminated by the antibiotic. Referral to hospital should be considered for patients with a UTI who are living in the community and are unable to tolerate oral medicines due to nausea or vomiting, particularly if they develop signs of systemic involvement, such as fever, rigors or confusion.²

Follow-up of older people treated for symptomatic UTIs

If the patient's symptoms resolve then it can generally be assumed that the UTI has resolved.⁹ In patients whose urinary symptoms have resolved a "test for cure" is not recommended as the presence of asymptomatic bacteriuria that has either persisted or developed recently may be misinterpreted.⁹ In other words, the patient may have been "cured" but a finding of asymptomatic bacteriuria might lead a clinician to believe that treatment had not been successful.

If a patient's symptoms have not resolved by the time they have completed an empiric antibiotic regimen or their symptoms return shortly after finishing treatment, e.g. within two weeks, then urine culture and susceptibility testing is recommended to select an antibiotic with more appropriate coverage; the laboratory should be informed as to what antibiotic the patient had been previously prescribed.⁴ If haematuria persists following resolution of a UTI then further investigation or referral to a urologist is appropriate.


Managing recurrent UTIs in older female patients

A history of recurrent UTIs in an older female suggests an underlying cause that has not been identified or effectively managed. In older female patients consider if urinary incontinence or urine retention may be a predisposing factor for recurrent UTIs. Intermittent catheterisation is a potential treatment for incomplete voiding.

Reconsider if the diagnosis is correct

There are a number of other conditions that are more prevalent in older females that can cause vulvovaginal symptoms similar to UTIs. A specific description of the patient's symptoms along with an examination of the vulvovaginal area will usually help to exclude the possibility of these conditions.

Atrophic vaginitis can cause vaginal discomfort and urinary incontinence in older females.²² Vaginitis due to vaginal atrophy following a reduction in ovarian oestrogen secretion also increases the likelihood of an older female developing cystitis. Oestrogen cream stimulates lactobacillus in the vaginal epithelium and reduces the pH of the microenvironment thereby reducing the likelihood of vaginal colonisation by Enterobacteriaceae.²² Ovestin cream (0.1%) is indicated for menopausal atrophy of the lower urogenital tract.¹⁹ In older females with recurrent UTIs periurethral application of ovestin cream, with or without intravaginal application depending on the severity of any atrophic vaginitis, can be considered.

 For further information on other potential differential diagnoses, see: "Vulvovaginal health in post-menopausal women", BPJ 63 (Sep, 2014).

Non-pharmacological interventions for the prevention of recurrent UTIs

Studies have failed to demonstrate a reduction in UTI risk through behavioural interventions such as increasing fluid consumption, wiping from front to back following defaecation and avoiding occlusive underwear.⁴ However, discussing these factors with the patient may be useful in emphasising the importance of good hygiene practices in general.

Cranberry products, e.g. juice or concentrated capsules, are often recommended to reduce the incidence of recurrent UTIs.⁴ However, a 2012 Cochrane review found that cranberry juice was less effective than had been previously thought and that it could not be recommended for the prevention of UTIs.²³ This review also highlighted the difficulty of knowing if there was a sufficient quantity of "active" ingredient in concentrated preparations of cranberry extract.²³ International guidelines do not make recommendations for or against the consumption of cranberry products for the prevention of recurrent UTIs.⁴ A pragmatic approach would be to suggest that the patient trials the daily use of cranberry capsules but to monitor the frequency of urinary symptoms and to cease the supplement if the frequency of UTIs does not decrease.

There is some weak evidence that ascorbic acid (vitamin C) supplementation, 100 mg daily, may reduce the risk of recurrent UTIs in younger females.²⁴ However, there is no evidence that this is effective in older females. Bicarbonate + citric acid + tartaric acid powder (Ural) is indicated and subsidised for the relief of discomfort in patients with UTIs, but there is no evidence that this reduces the prevalence of UTIs.

Lactobacillus containing probiotics have not been widely studied in their effectiveness at preventing recurrent UTIs. Vaginal application of products containing *Lactobacillus crispatus* may reduce the rate of recurrent UTIs in younger females, but oral lactobacilli has not been demonstrated to do so.⁴ There is currently no evidence available suggesting that probiotics are effective at preventing UTIs in older people and guidelines recommend that they are not used for this purpose outside of clinical trials.⁴

Prophylactic antibiotics are a last-line treatment option

Prophylactic antibiotics should only be considered in primary care as a treatment of last resort for the prevention of recurrent UTIs in older people. If prophylactic treatment is initiated the choice of antibiotic should be based on the identification and susceptibility testing of the organism causing the UTIs along with any patient history of antibiotic intolerance or adverse drug reactions; discussion with a clinical microbiologist is likely to be helpful.⁴ Nitrofurantoin, 50 or 100 mg, once daily, continuously, is a possible regimen for older females with recurrent UTIs.⁴ Nitrofurantoin should be avoided in patients with an estimated glomerular filtration rate (eGFR) < 45 mL/min/1.73m² and its use is associated with the development of interstitial lung disease and pulmonary fibrosis,¹⁹ particularly in elderly people and with longer courses;² ask patients regularly about any respiratory symptoms, e.g. cough or shortness in breath, and advise them to report any new difficulties in breathing promptly. Prophylactic antibiotics should be stopped if there is no decrease in the rate of UTIs.

It is recommended that the use of prophylactic antibiotics in patients with urinary catheters generally be avoided.^{2,4} Prophylactic antibiotics do not appear to reduce the incidence of symptomatic UTIs in patients with short-term urinary catheters and there is a insufficient evidence available to recommend their use in patients with long-term catheters.⁴ Rarely, it may be appropriate to consider the use of prophylactic antibiotics in catheterised patients whose quality of life is reduced by either the frequency or severity of recurrent UTIs, or in patients with a history of UTIs following catheter change.²

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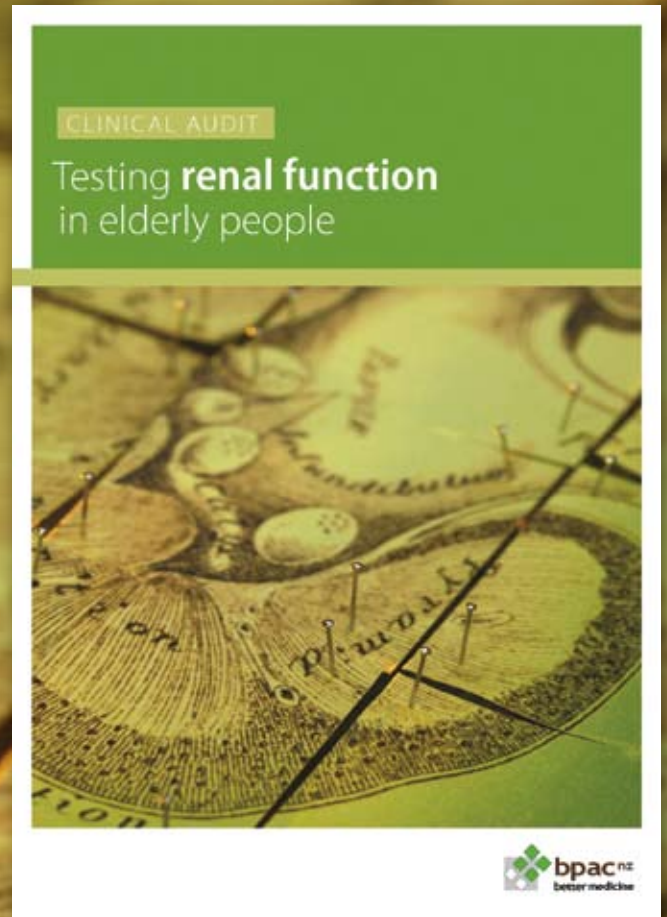
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