It is common for people with dementia to get a urinary tract infection (UTI), particularly during the later stages of dementia. If a younger person has a UTI it will often get better by itself. However if an older or frail person has a UTI and it isn’t treated promptly it can be painful and cause serious complications. If there are any signs that a person with dementia has a UTI it is important for them to see a doctor straightaway.

It can be hard to know whether a person with dementia has a UTI, especially if they have difficulties communicating. The usual signs of infection are sometimes difficult to spot.

In some people a UTI can lead to a change in their mental state that is known as ‘delirium’ – this can cause them to become unusually confused, agitated or withdrawn. Delirium is a serious medical condition which can sometimes make dementia worse. A person with delirium should therefore always be given urgent medical attention.

This factsheet explains what a UTI is. It describes the different types of UTIs, including the symptoms and treatments. It also suggests ways to prevent UTIs.
Contents

- The urinary tract
- What is a UTI?
- UTIs and dementia
- What can cause a UTI?
  - Personal hygiene
  - Problems with passing urine
  - Sexual intercourse
  - Other health conditions
  - Hospital-acquired infections
- Getting a urine sample to test for a UTI
- Types of UTI and how they are treated
  - Lower UTIs
  - Upper UTIs
  - Catheter-related UTIs
  - Recurrent UTIs
- Delirium
- Tips to prevent UTIs
- Other useful organisations
Urinary tract infections (UTIs) and dementia

The urinary tract
Urinary tract infections (UTIs) and dementia

UTIs affect one or more of the different parts that make up a person's urinary tract. These are:

- two kidneys
- two ureters
- the bladder
- the urethra.

The kidneys make urine by filtering waste from the blood. The ureters are tubes from the kidneys that urine flows through to reach the bladder. The bladder does two things – it stores urine and it also releases urine so it can flow out of the body. The urethra is the tube from the bladder that urine flows through to leave the body. Women have a much shorter urethra than men.

**What is a UTI?**

If a person has a UTI it means they have an infection in their urinary tract. If their urethra is infected they may feel an uncomfortable burning sensation when they urinate.

A UTI is usually caused by bacteria getting into a person's urinary tract. Some bacteria are not harmful and do not cause any problems. However some types of bacteria can make a person's urinary tract irritated and sore. If a person starts to have symptoms such as discomfort, pain or a fever they should see a doctor. This is the type of infection that may need to be treated with antibiotics.

Our bodies make urine by filtering the waste from our blood through our kidneys. Most people don’t have many bacteria or other germs in their urine. The few bacteria that get into a healthy person’s urethra are usually flushed out when they urinate with a strong stream of urine. But for many older people this isn’t possible anymore (see ‘Problems with passing urine’ on page 7) and so bacteria stay in their urethra and multiply. This means that older people are much more likely to have bacteria in their urine (known as ‘bacteriuria’). Most people who live in a residential care home will have bacteria in their urine. However, if they don’t have any symptoms, they normally won’t need to be treated with antibiotics.
Antibiotics can often help to improve a person’s symptoms of a UTI. However treating a UTI is not always straightforward because antibiotics can sometimes make things worse. A doctor will therefore use their best judgement to choose the most appropriate treatment for each person who has a UTI.

For some people a UTI will sometimes get better by itself. However for other people, if the infection is not treated it can get worse. It could move further up their urinary tract to their bladder (known as ‘cystitis’). The infection could even reach their kidneys (known as ‘pyelonephritis’). Kidney infections are not common but they can lead to serious complications like kidney damage and blood poisoning.

**UTIs and dementia**

It is important to recognise and treat a UTI as quickly as possible. However it can be hard to know whether a person with dementia has a UTI. This is because the usual signs and symptoms of infection can be harder to spot. A person who has dementia may be less able to let someone know they are in pain or discomfort. Or those caring for them might think the person is going to the toilet more often because they have memory problems rather than because they have an infection. It helps if carers watch for any signs and symptoms of infection – for example if the person has bladder pain or changes how often they go to the toilet. If a person with dementia has any of these signs they should been seen by a doctor as soon as possible.

The first sign that a person with dementia has a UTI may be a sudden change in their mental state known as ‘delirium’. Delirium is a serious condition. It happens when a person’s brain is not able to function properly because of an underlying medical problem – such as an infection. If a person with dementia experiences delirium it can also sometimes make their dementia symptoms worse in the long term. See ‘Delirium’ on page 13 for more information.

If a person with dementia starts to become unusually confused, agitated or withdrawn and there seems to be no other explanation, it might be a sign that they have a UTI.
What can cause a UTI?

The main causes of UTIs are:

(a) harmful bacteria getting into a person’s urethra
(b) bacteria not being properly flushed out of a person’s urethra.

Personal hygiene

A type of bacteria that can cause an infection if it gets into a person’s urethra is the bacteria from food waste in the digestive system that is found in their stools (faeces or ‘poo’). This is why people are more likely to get a UTI if their bottom is not wiped or cleaned properly.

Women are much more likely to develop a UTI than men. This is mainly because women have a shorter urethra so bacteria have less far to travel to reach their bladder. It is also more likely for the opening of a woman’s urethra to be contaminated with bacteria than it is for men. This is why it’s important for a woman to wipe ‘front to back’ after going to the toilet.

If a person uses incontinence pads they should be changed frequently to reduce the risk of infection.

As their condition progresses a person with dementia may find it difficult to maintain good personal hygiene. They may not wash or change their clothes regularly. This can make them more likely to develop a UTI. Good personal hygiene can also be difficult if a person has diarrhoea or bowel incontinence.
Problems with passing urine

Older people are more likely to urinate with a weaker stream of urine. They may also not empty their bladder fully when they go to the toilet. This can mean that bacteria remain in their urinary tract.

Some people who have problems with passing urine use a catheter. This is a tube placed into their bladder to allow urine to flow into a bag. It can be very difficult to know if a person who uses a catheter has a UTI until they show changes in their behaviour. They won’t show some of the symptoms that are often easier to notice, such as going to the toilet more often or leaking urine. A person who uses a catheter will almost always have bacteria in their urine. This shouldn’t normally need to be treated unless they start to have symptoms of a UTI (also see ‘Hospital-acquired infections’ on page 8).

A person is also more likely to develop a UTI if they struggle to empty their bladder. This could happen if the structure of their urinary tract has abnormal changes – for example if a man has an enlarged prostate gland or a woman has a prolapse (where the uterus, bladder or bowel drops down from its normal position). People who have had a stroke or another neurological injury may also struggle to empty their bladder if signals from the brain don’t tell their bladder muscles to relax properly and release urine.

Having severe constipation can make it much more difficult for a person to urinate. If they have a very hard stool trapped in their rectum (back passage) it can put pressure on their bladder and block the urine from getting out. Constipation can also cause urine to flow back up a person’s urethra into their bladder. This speeds up the transfer of harmful bacteria.

Sexual intercourse

For some people, sexual intercourse (and sometimes other sexual activity) can lead to a UTI – particularly a bladder infection (known as ‘cystitis’). Again this risk is much higher for women.
Other health conditions
People who have a weakened immune system also have a higher risk of getting a UTI. This includes people who have diabetes or who are receiving chemotherapy. If a person has poorly-controlled diabetes it can cause their urine to contain sugar, which encourages bacteria to grow. Diabetes can also damage the nerves that control a person’s bladder. This makes it harder for them to empty their bladder properly.

Hospital-acquired infections
It is very common for a person with dementia to develop a UTI if they are in hospital. This is known as a ‘hospital-acquired UTI’. In most cases the infection is caused by bacteria in the person’s own body getting into their urinary tract.

Hospital-acquired UTIs are much more likely to happen when a person uses a urinary catheter for a long time – this is known as an ‘indwelling’ catheter. Bacteria can grow and spread along the catheter tube. Therefore indwelling catheters should only be used for incontinence when all other options have been tried. See ‘Catheter-related UTIs’ on page 12 for more information.

There is some evidence that older people in hospital who have delirium (particularly people with dementia) are sometimes wrongly treated for a UTI when the delirium has actually been caused by something else. See ‘Delirium’ on page 13 for more information.
Getting a urine sample to test for a UTI

A doctor will sometimes need a urine sample to test for a UTI. It is best to take the sample in the morning – the first time the person urinates in the day.

It can be hard to get a urine sample from a person with dementia. If the person has a close relative or carer, they will probably be the best person to help get the sample.

If the person with dementia wears incontinence pads, a ‘urine collection pack’ can be used to get a sample from a pad. These packs usually have two urine collection pads, a 5 mL syringe and a urine specimen container. A GP or local NHS continence service can give people advice about how to get a urine collection pack. Bladder and Bowel UK and the Bladder and Bowel Community can also help people find the nearest continence service (see ‘Other useful organisations’ on page 16).

Types of UTI and how they are treated

Lower UTIs

A person has a lower UTI when only their urethra and/or bladder is infected. When someone has a lower UTI they will have at least one of the following symptoms:

- pain or a burning sensation when they urinate – called ‘dysuria’
- the need to urinate immediately – called ‘urgency’
- the feeling that they can’t empty their bladder fully
- cloudy, bloody or unusually bad-smelling urine
- pain in their lower abdomen
- changes in urinary continence – such as urine leaking uncontrollably
- mild fever – a high temperature between 37–38°C or 98.6–101.0°F
- delirium/acute confusion that develops suddenly – over one or two days.
A doctor may recommend doing a ‘urine culture’ to get the most accurate diagnosis. This is where a urine sample is sent to a hospital laboratory to work out which bacteria are causing the infection. It will help the doctor prescribe antibiotics that are most likely to treat the infection. A doctor may recommend a urine culture if:

- the person has had two or more UTIs within the past three months
- there are signs that the person’s urinary tract has an abnormality – for example if they are incontinent or they can’t empty their bladder fully.

If a man has a lower UTI he may need to see a urologist. This is a doctor who specialises in treating urinary conditions. The urologist will try to work out what is causing the infection. For example it could be caused by prostate problems. Or it could be caused by some other condition that is stopping the bladder from emptying fully – such as nerve damage, a bladder stone or a tumour. To rule these out the urologist may suggest the person has:

- a rectal examination – to assess their prostate gland
- blood tests
- an ultrasound scan of their kidneys and bladder
- a cystoscopy – to look inside their lower urinary tract with a camera.

**Treatment**

Treatment for lower UTIs mainly aims to relieve the symptoms and stop the infection becoming more serious. The infection can normally be cleared up with a three-day course of antibiotic drugs. These drugs sometimes cause unpleasant side effects, such as feeling sick (nausea) or diarrhoea. People can also take over-the-counter pain relief such as paracetamol or ibuprofen.
It is important to contact the person’s medical team if their symptoms don’t improve after two days. It’s also important to contact the team if the person starts to feel much worse or if they are having very bad side effects from the antibiotics. The doctor may be able to prescribe a different antibiotic that is more suitable or effective for a specific type of infection the person has. The doctor may also recommend a urine culture (if one hasn’t been done already).

It is common for women who have been treated with antibiotics to develop a yeast infection known as thrush. This condition causes the vagina to become itchy and sore – particularly when urinating. It may also cause a thick, white discharge. For most women, thrush can be easily treated with a tablet or cream bought from a high street pharmacy.

### Upper UTIs
A person has an upper UTI when their kidneys and ureters are infected (often as well as their urethra and/or bladder). An upper UTI is more serious than a lower UTI. It can lead to kidney damage if it is not treated promptly. A person who has an upper UTI may also have bacteria in their blood. This can be life-threatening.

When a person has an upper UTI they may have some of the symptoms of a lower UTI (listed on page 9) as well as:

- higher fever – a high temperature over 38°C or 101.0°F
- sickness – nausea or vomiting
- shaking or chills (known as rigors)
- pain down their lower back – sometimes only on one side
- pain on the side of the body between the ribs and hip (known as flank tenderness).
These symptoms can be much more difficult to spot when a person has dementia because they may not be able to understand or tell people they are in pain or discomfort. It is also common for an older or frail person to not have a fever when they get an infection because their immune system may not be strong enough. It can be easy to think a person’s mood, behaviour or urinary function has changed due to dementia rather than an infection. As a result the person may not be treated as promptly as they would if they didn’t have dementia.

**Treatment**

People who have an upper UTI are usually treated with a 7- or 14-day course of antibiotic drugs. If a person has a serious infection they will need to go to hospital for more tests. They may need to be given antibiotics intravenously (directly into a vein through a needle that is attached to a drip). If a man has symptoms of an upper UTI he will usually be referred to a urologist to make sure there is no underlying cause of the infection. See the information about seeing a urologist on page 10.

**Catheter-related UTIs**

A urinary catheter that stays in a person’s bladder rather than being removed is known as an ‘indwelling’ catheter. A person may need to have an indwelling catheter after they have surgery. However indwelling catheters are a major cause of UTIs. Even with very careful hygiene, people who use an indwelling catheter are very likely to develop bacteria in their urine at some point. The longer an indwelling catheter is in place, the higher the risk that the person will get an infection. Therefore indwelling catheters should be avoided where possible. Or the catheter should be removed as soon as to reduce the risk of infection.

If a person instead uses ‘intermittent catheterisation’ they will have a lower risk of getting an infection. This is where once or several times per day a catheter is inserted into their bladder to drain the urine and the catheter is then removed. However, a person with dementia may find intermittent catheterisation distressing if they don’t understand the procedure. If they find it distressing, intermittent catheterisation must be avoided where possible.
Diagnosis and treatment
If a person with a catheter has a fever, lower back pain, bladder (suprapubic) pain, or other symptoms of a UTI, their urine should be tested to work out which types of bacteria are causing the infection. If they have severe symptoms they may need to start taking antibiotics immediately.

Recurrent UTIs
If a person has ‘recurrent’ UTIs it means they have had more than two UTIs within three months.

Treatment
People who have recurrent UTIs are sometimes given long-term, low-dose antibiotics to help prevent future infections. However, there is not much evidence that this is very effective. If it is likely that the infection was caused by an indwelling urinary catheter, the catheter should be removed and the person should be given a short course of antibiotics. They should also be referred to a urologist for more investigations.

Delirium
When a person has a UTI it can cause a significant and distressing change in their behaviour. This is often called an ‘acute confusional state’ or ‘delirium’. Delirium is a short-term change in someone’s mental state. It usually develops over one or two days.

There are different types of delirium. The symptoms can include:

- agitation or restlessness
- increased difficulty concentrating
- hallucinations or delusions
- becoming unusually sleepy or withdrawn.

If a person has delirium their symptoms may fluctuate (become more or less severe at different times).
Delirium is a short-term change in someone’s mental state. It usually develops over one or two days. There are different types of delirium. The symptoms can include agitation or restlessness, increased difficulty concentrating, hallucinations or delusions, or becoming unusually sleepy or withdrawn.

If a person with dementia has a sudden change in their behaviour those close to them should encourage and support them to get medical help. If the delirium has been caused by a UTI their symptoms of confusion may reduce as the infection is treated. However it is important not to just assume that the delirium is caused by a UTI. The person should have a full assessment to find all the potential causes of the delirium.

If delirium causes the person to have hallucinations or delusions they may become very distressed or agitated. They should be given lots of support and reassurance while medical staff try to find and treat the causes of the delirium. If this doesn’t work the doctor may sometimes suggest the person takes a short course of antipsychotic drugs at low doses. This should only happen if there is a serious risk that the person will harm themself or others – the doctor may use very low doses to help keep the person calm or sedated. For more information see factsheet 408, Drugs for behavioural and psychological symptoms in dementia.
Tips to prevent UTIs

A person with dementia may need help and support with the following ways of reducing the risk of UTIs. These include aspects of eating and drinking as well as personal care and hygiene.

Avoid becoming dehydrated – if a person is dehydrated they may have darker and more concentrated urine which can be painful when they urinate.

— People should drink 6–8 glasses of fluid per day and not drink too much alcohol. It can help to place a drink beside a person with dementia whenever they are eating. Making sure they can easily see and find their preferred drinks can encourage them to drink more. For example their drinks can be put in a brightly coloured or favourite glass or cup. The person can also be prompted to drink regularly.

— It is a good idea to offer a person different types of drink (both hot and cold) throughout the day. All fluids count – such as soup, water, fruit juice and tea.

— If a person is less able to get around and at risk of becoming dehydrated, those caring for them should monitor how much fluid they drink. If the person is not drinking enough or having difficulty with swallowing, a speech and language therapist may be able to help.

Do not hold urine in the bladder for too long.

— A person with dementia may need to be regularly prompted to use the toilet. The toilet should be easy to find. Putting a sign on the door with a picture of a toilet can help. As can changing the colour of the toilet seat – a plain coloured toilet seat with a white pan can be easier for a person with dementia to see and recognise.

Avoid becoming constipated because that can prevent the bladder from emptying properly. People can avoid constipation by eating foods that are high in fibre, drinking plenty of liquids and staying as physically active as possible.
Empty the bladder after sexual intercourse.
- Women should avoid using a diaphragm for contraception – they can prevent the bladder from being fully emptied.
- Men who use condoms should use one without a spermicidal lubricant.

Maintain good personal hygiene.
- Wash the genitals at least once a day using unperfumed soap. Do not use talcum powder.
- Women should wipe ‘front to back’ after using the toilet.
- Making wet wipes easily available in the bathroom can encourage good hygiene. Wet wipes should always be thrown in a bin and not flushed down the toilet.

If the person uses a urinary catheter, follow good processes to prevent infection – healthcare professionals can give people advice about this.

Other useful organisations

Bladder and Bowel Community
help@bladderandbowel.org
www.bladderandbowel.org

The Bladder and Bowel Community is a charity that gives help, information and support for all types of bladder and bowel-related problems.

Bladder and Bowel UK
0161 214 4591 (9am–4.30pm Monday–Friday)
bbuk@disabledliving.co.uk
www.bbuk.org.uk

Bladder and Bowel UK is a charity that provides practical advice and product information for people who have bladder and bowel problems.
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Our information is based on evidence and need, and is regularly updated using quality-controlled processes. It is reviewed by experts in health and social care and people affected by dementia.

Reviewed by: Dr Danielle Harari, Consultant Physician in Geriatric and Acute Medicine, Guy’s and St. Thomas’ NHS Foundation Trust and Professor Simon Conroy, Department of Health Sciences, University of Leicester

This factsheet has also been reviewed by people affected by dementia.

To give feedback on this factsheet, or for a list of sources, please contact publications@alzheimers.org.uk

People affected by dementia need our support more than ever. With your help we can continue to provide the vital services, information and advice they need.

To make a single or monthly donation, please call us on 0330 333 0804 or go to alzheimers.org.uk/donate