Bladder problems

Fact Sheet

Multiple Sclerosis Trust

MS

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1. Introduction

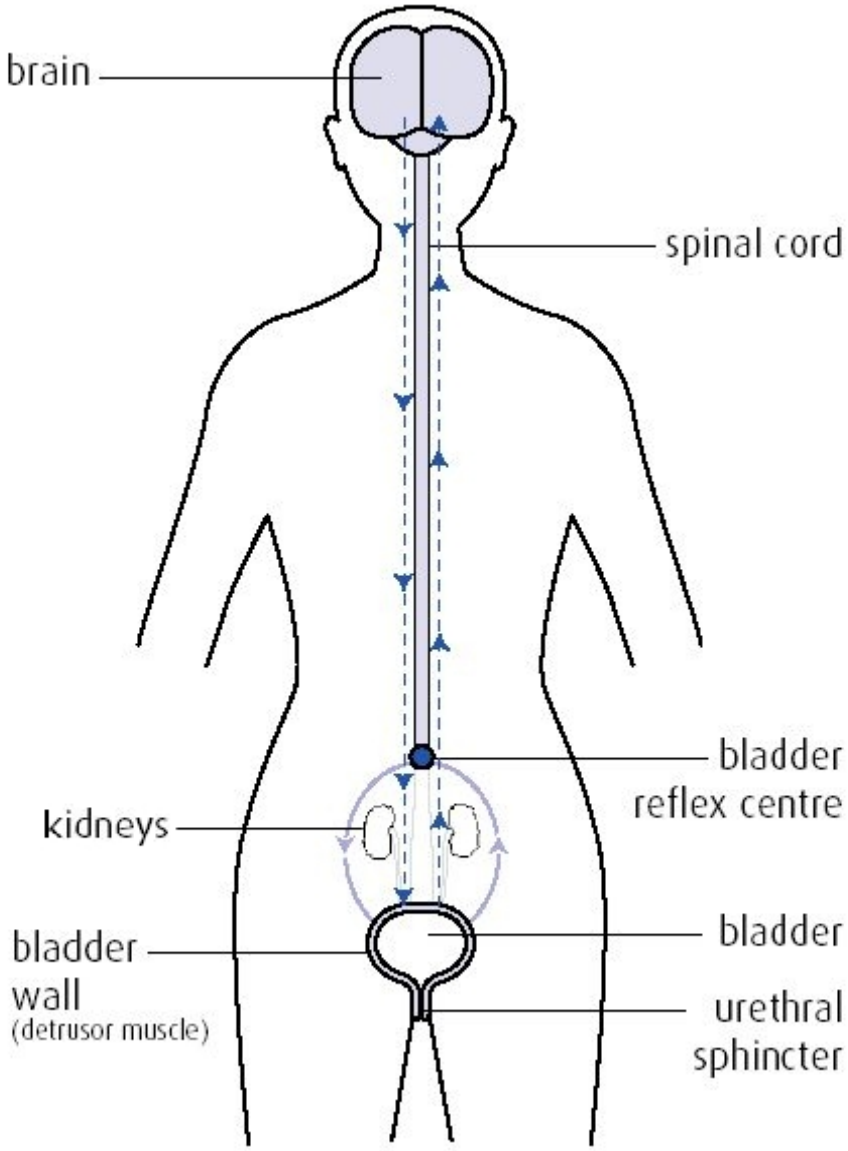
Bladder problems are among the most common symptoms reported by people with MS. Estimates of the number of people who experience these symptoms vary, but a level of about 75% is often quoted[1]. In a study of the impact of symptoms, 70% of respondents reported that bladder problems had a moderate to high adverse effect on their day-to-day quality of life[2].

There has been considerable research into bladder symptoms in MS and how they are best managed. Following a review of the available evidence, a UK consensus on the management of the bladder in multiple sclerosis was published in April 2009[2]. The consensus document provides health professionals with evidence-based recommendations on the management of

the bladder in MS; highlighting the treatments and strategies on which successful management of this symptom should be based.

This factsheet provides an overview of the main bladder problems encountered in MS and outlines the assessment procedures and management options recommended in the consensus document.

While a range of health professionals may be involved, your MS nurse, where available, will play a pivotal role in the assessment, diagnosis and treatment of bladder problems.



2. How the healthy bladder works

The diagram on page 2 gives an outline of the relationship between the brain and bladder. As a means of excreting waste products from the body, the kidneys create urine which is stored in the bladder. The bladder is a muscle (the detrusor muscle) that can expand and contract. When it contracts urine is pushed out through a valve called the urethral sphincter.

When the urine levels reach a certain level, nerve endings in the bladder wall are stimulated to send a signal to the part of the spinal cord that controls the bladder emptying reflex. This area of the spinal cord then sends messages to the brain, making you aware of the need to empty your bladder. These messages can be controlled by the brain until there is an opportunity to empty the bladder. When a suitable occasion arises, the brain sends messages back to the spinal cord reflex centre and onto the bladder, telling the bladder to contract and the urethral sphincter muscle to relax, allowing urine to flow out through the urethra (voiding).

Although it varies from person to person, an adult will usually go to the toilet between six to eight times a day depending on the level of fluid intake. A healthy bladder has a capacity of between 300-500ml of fluid. It is rarely completely empty, with about 10% of capacity (called residual volume) left after a visit to the toilet[3]

Fluid is vital to ensure the kidneys and bladder work as well as possible. People with bladder problems often drink less in the hope that this will minimise their symptoms. However, reducing fluid intake causes a number of problems, including production of concentrated urine that creates a good environment for infection in the bladder. General advice is to drink around one to two litres, or six to eight glasses, of liquid per day[4].

3. Bladder problems in MS

Generally speaking, the bladder problems that are experienced by people with MS can be divided into two groups; those relating to the storage of urine and those relating to emptying of urine. Storage problems include symptoms such as urgency (the need to go to the toilet immediately) and frequency (often needing the toilet) during the day and night, and incontinence. Problems with emptying of the bladder include hesitancy (difficulty passing urine) and

retention (a feeling of incomplete bladder emptying). People can also experience a combination of these symptoms which are discussed in greater detail below.

a) Storage: bladder urgency and frequency

Bladder urgency can be defined as a desperate urge to go to the toilet with little or no warning. Frequency is defined as needing the toilet more than eight times a day. Urgency and frequency may be experienced separately or in combination. Either of these symptoms can be very disabling, as people may become unwilling to venture out of the house or to try new activities if they are unaware of the location of toilets. Frequency or urgency can also cause a need to urinate several times during the night, disturbing sleep. This is known as nocturia. Disturbed sleep can affect other symptoms, such as fatigue. Sometimes frequency and urgency can cause someone to lose control over their bladder completely - known as incontinence.

Urgency and frequency happen when messages are interrupted between the involuntary bladder emptying reflex signals in the spinal cord and the conscious control of the brain. This means that reflexes tell the bladder muscle to contract as soon as it starts filling. Frequent emptying of the bladder can also be due to infection or anxiety. Frequent emptying of the bladder will reduce its ability to store urine. Over time bladder capacity can fall which will mean that it will need emptying more frequently.

For some people with MS, the area of the spinal cord that controls the emptying reflex may become damaged. As there is no reflex to urinate, the person is unaware of the need to go to the toilet and the bladder becomes very full. As the bladder overfills, the wall stretches becoming thinner and less controllable. People with this problem may experience urgency and frequency, or dribble urine occasionally, or may experience urinary hesitancy (see section b).

b) Emptying: urinary hesitancy, urinary retention

MS can also cause difficulty in emptying the bladder. Typical experiences include a reduced flow rate or an interrupted stream of urine, often accompanied by a feeling of incomplete emptying of the bladder.

Frustratingly, in some people these symptoms may be combined with feelings

of urgency and frequency, which may lead to urine leaks in spite of earlier efforts to empty the bladder.

There are several potential causes of urinary hesitancy:

- The area of the spinal cord that controls the bladder emptying reflex becomes damaged. As there is no reflex to urinate, the bladder becomes very full but the person is unaware of how full it is and is not able to empty successfully. Urine leakage may occur.
- Messages from brain are confused, so that when the bladder muscle contracts to start emptying, the urethral sphincter, which allows urine out of the bladder, closes the outlet at the same time, effectively blocking or interrupting the bladder's attempts to empty. This lack of coordination between the different muscles is called dyssynergia.

Urinary retention is a feeling of incomplete bladder emptying. While urine may be easy to pass and may flow normally, the bladder may feel as though it is never properly empty. Urinary retention shares the same cause as some types of urinary hesitancy. The area of the spinal cord which controls the emptying reflex becomes damaged meaning that bladder muscle stops contracting before the bladder is empty. The level of urine left in the bladder after going to the toilet is called the 'post void residual volume' (see following section on assessment).

4. Assessing and investigating bladder symptoms in MS

Expert guidance[2] on the management of the bladder in multiple sclerosis states that each person with MS who presents with bladder problems should be assessed by a suitably trained health professional with knowledge of MS and its affect on the bladder. The following approaches are recommended for investigating symptoms:

• ***Urine testing*** A 'dipstick test' can be used to test the urine and detect or exclude the existence of a urinary tract infection (UTI) (see section 8 for more about urinary tract infections).

• ***Check for efficient bladder emptying*** If there is no sign of a urinary tract infection, the amount of urine left after someone has been to the toilet (post void residual volume or post micturition volume) may be checked, usually with

an ultrasound bladder scan. If there is less than 100ml left after the bladder has been emptied, then the symptoms are more likely to be due to bladder overactivity (frequency, urgency, incontinence). If there is more than 100ml left after emptying, then the symptoms are likely to be due to problems with emptying (retention, hesitancy) (see section 6).
These investigations should be carried out as part of the initial assessment process and form the basis of any further investigations and treatment options.

5. Management and treatment options for urinary urgency and frequency

Expert guidance[2] on bladder management recommends the following treatment options for urinary urgency and frequency:

- ***Antimuscarinics***

  An MS nurse, GP, or continence advisor may prescribe drugs known as antimuscarinics to calm the bladder. Antimuscarinic drugs block the messages that start bladder contractions and so reduce how frequently someone needs to empty their bladder. Commonly prescribed antimuscarinic drugs include oxybutynin (Ditropan, Lyrinel XL) and tolterodine (Detrusitol, Detrusitol XL). Most antimuscarinic drugs are oral tablets, though some may be given either as a skin patch or via a catheter directly into the bladder. Antimuscarinics are recommended only after the post void residue has been checked to exclude problems relating to bladder emptying.

- ***Botulinum toxin***

  Botulinum toxin stops nerve conduction to muscles and can freeze muscles. Studies have indicated that injecting botulinum toxin into the bladder wall is effective in improving urinary continence in people with MS[5]. One study also indicated that botulinum toxin injections significantly reduced the incidence of urinary tract infections in people with MS related bladder symptoms[6]. The procedure usually involves around 40 injections into the bladder wall and can be carried out under local anaesthetic as an outpatient. The benefits appear to last between 6 and 12 months. The

treatment affects normal bladder emptying so people need to be prepared to carry out clean intermittent self-catheterisation (CISC).

It is recommended that botulinum toxin should be used in patients with MS displaying symptoms of bladder overactivity (frequency, urgency, incontinence) who have failed to respond positively to antimuscarinics and who are willing to perform clean intermittent self-catheterisaion (see section 6). However, this treatment is not yet licensed and is currently only available at a small number of specialist centres.

Experts agree that several other treatment options may be considered but no specific recommendations exist for the following[2]:

- ***Desmopressin***

  Desmopressin is a synthetic hormone that regulates the production of urine by the kidneys. There is evidence to suggest that desmopressin is effective in treating daytime frequency and nocturia in MS[7]. As suppressing the production of urine over the long-term can be dangerous, the drug needs to be prescribed with caution. Desmopressin is not licensed for people aged over 65.

- ***Cannabis-based medicine***

  Two small trials of cannabis-based medicine have shown some benefit for people with bladder problems. A small trial involving 15 people with complicated bladder problems and advanced MS showed that urinary urgency, the number of incontinence episodes and volume of urine lost, frequency of urination and nocturia all improved significantly following treatment. There were few side-effects, and the investigators suggested that these treatments are safe and effective for these sypmptoms in people with advanced MS[8]. Another trial in 630 people found that cannabis-based medicine had a significant effect on the number of incontinence episodes associated with urgency. Although it seems likely that cannabis-based medicine can be an effective treatment for bladder problems in some people, the drug remains unlicensed for this use in the UK[9].

- ***Resiniferatoxin (intravesical vanilloids)***

  Resiniferatoxin is a chemical that, like botulinum toxin, halts nerve conduction to muscles. Resiniferatoxin was studied in a mixed group of 36

people with neurological conditions, including nine with MS. Incontinence episodes decreased by around 50% in most people, and bladder capacity improved by around 50% in most people. Resiniferatoxin is administered in a similar way to botulinum toxin and is only available in specialist centres[10].

- ***Hyperbaric oxygen therapy***

  Hyperbaric oxygen therapy involves breathing oxygen through a mask in a pressurised chamber, similar to a diving bell. Treatment usually consists of an initial course of around 20 sessions, each lasting an hour, spread over one month. Follow-up treatment is then needed at less frequent intervals. Although anecdotal evidence suggests that some people find it helpful, particularly for fatigue and bladder symptoms, research has failed to find scientific evidence that it is effective for MS[11]. In the UK, hyperbaric oxygen therapy is available through most MS Therapy Centres (see section 8).

- ***Diuretics***

  Diuretics, sometimes referred to as water pills, are drugs which draw excess fluid from the tissues of the body and convert it into urine. There is no specific evidence relating to the use of diuretics in people with MS, but these drugs have been shown to reduce night-time frequency if taken in the afternoon[12].

6. Management and treatment options for urinary hesitancy and retention

Before treating urinary hesitancy and urinary retention experts agree that post residual volume should be measured. A single measurement is not representative and a series of measurements should be made over the course of one or two weeks[2].

- ***Clean intermittent self-catheterisation (CISC)***

  Where an individual has a persistent post void residual volume in excess of 100ml expert guidance[2] recommends they should be offered the opportunity to learn clean intermittent self-catheterisation. This involves inserting a tube into the urethra in order to drain off urine. The procedure

should be taught by a urology specialist nurse or continence advisor, either in an outpatient setting or at home.

Experts agree that several other treatment options may be considered but no specific recommendations exist for the following[2]:

- ***Alpha blockers***

  A small study involving people with MS showed that alpha blocker medication reduced post void residual volume[13]. However, experience in clinical practice does not show a significant effect of this medication.

- ***Suprapubic vibration***

  There is some evidence to suggest that a vibration device or buzzer held against the skin above the bladder can help initiate contractions and improve emptying, but its effect is limited[14].

- ***Credé's manoeuvre***

  Credé's manoeuvre is the application of smooth, even, stroking pressure from the navel downwards to help bladder emptying. Not enough is known about the possible long-term risks of using this in people with MS.

- ***Long-term catheterisation***

  If people find clean intermittent self-catheterisation difficult to manage safely, an indwelling catheter may be recommended. Long-term indwelling catheters are only used after less invasive methods have been exhausted. Indwelling catheters are inserted via the urethra (urethral catheters) or through the abdominal wall (suprapubic catheter).

  Inserting a suprapubic catheter involves a minor operation to pass the catheter through the abdominal wall directly into the bladder. As a permanent solution, suprapubic catheters are preferred as they bypass the genital area and may be easier to manage. They are particularly suitable for people who want to participate in sexual activity. Suprapubic catheters do carry some risks, particularly with wound healing and infection at the insertion site, so it is important to discuss all the implications in advance with the relevant health professionals.

7. General measures

In addition to management and treatment options for bladder symptoms, health professionals may discuss some more general measures which may have a positive effect on symptoms. These include:

- ***Reviewing fluid intake***

  Reviewing the amount of liquid drunk in an average day can be done independently or with a health professional to determine whether the individual is consuming enough of the right kind of fluids[15]. A bladder diary kept over a week or so can be helpful.

  Some fluids, such as coffee, tea and caffeinated drinks and alcohol irritate the bladder and can make symptoms worse. Reducing the level of caffeine consumed to below 100mg per day has been shown to improve symptoms of urgency and frequency, although not specifically in people with MS[16].

- ***Bladder retraining***

  Bladder retraining usually consists of a series of pelvic floor exercises aimed at increasing control of the bladder and bladder capacity. Experts recommend that physical interventions such as pelvic floor exercises should be offered to people with mild disability from multiple sclerosis[2].

8. Urinary tract infections

MS is not always the cause of the bladder problems. There are a variety of possible other causes, but one common in the general population is a urinary tract infection (UTI) or cystitis. It is important that urinary tract infections are detected early and treated appropriately as they can often worsen other MS symptoms. People affected may experience some or all of the following symptoms, although it is possible to experience no symptoms at all:

- frequent urge to urinate;
- painful or burning sensation when urinating;
- generally tired or washed out most of the time;
- painful bladder or abdomen even when not urinating;
- passing a small amount of urine when urinating, even though there is an urge to pass more;
- milky or cloudy urine that smells unusual;

- high temperature.

Expert guidance[2] recommends urine testing as one of the investigative measures that should be taken when a person with MS first presents with bladder symptoms. After the initial assessment, urine should not be routinely tested unless the individual has symptoms suggestive of an infection.

The following recommendations are made regarding monitoring processes and treatment options:

- ***Cystoscopy and ultrasound***

  Where recurrent urinary tract infections are experienced, alternative underlying causes such as bladder stones, need to be excluded. A cystoscopy, whereby a doctor uses an instrument to look into the bladder, or ultrasound, may be used as part of this investigative process.

- ***Cranberry***

  Anecdotal evidence supports the use of cranberry juice as a means of guarding against urinary tract infections. Research has indicated that cranberry extract tablets reduce the likelihood of infections in people with bladder symptoms relating to neurological conditions though not specifically MS[17]. The UK guidelines recommend that cranberry preparations may reduce the likelihood of infections in people with MS[2].

- ***Antibiotics***

  In normal and uncomplicated circumstances, antibiotics should not be used to prevent the onset of infection in people with MS related bladder symptoms. However, where recurrent urinary tract infections are confirmed and alternative underlying causes excluded, it may be reasonable to start a course of low dose antibiotics to prevent the onset of further infections[2].

9. Complicated bladder problems

For people who experience a feeling of incomplete emptying combined with urgency and frequency, treatment is normally a combination of antimuscarinics and clean intermittent self-catherisation. Referral to a continence service may be necessary to ensure full assessment is obtained before treatment starts. An MS nurse or GP can make a referral.

10. Incontinence

Many people with MS experience continence difficulties, some of which can cause occasional incontinence. A few may experience what is known as reflex incontinence - a sudden complete emptying of the bladder without warning. This happens because messages from the bladder to the brain and vice versa are interrupted so that the bladder muscles that control its outlet, completely relax at the same time without warning.

Management options for this symptom include:

- ***Containment products***

  There are a number of products available that can help contain incontinence. These include continence pants and pads, which come in a variety of sizes and shapes, including washable and disposable pads.

- ***Appliances***

  There are also a number of appliances such as penile sheaths for men (also known as external catheters) that can help contain urinary leakage. More information about all of these products is available from local continence services, or from the Bladder and Bowel Foundation (see section 12).

Expert guidance[2] suggests that people should be assessed for their toileting needs and be given access to the appropriate toileting appliances, equipment and products.

11. Surgical treatments

In rare cases where bladder symptoms have not responded positively to less invasive treatment options, surgical approaches may be considered. Guidelines for the management of MS issued by NICE (the National Institute for Health and Clinical Excellence) state that where bladder surgery is offered, it ought to be carried out in centres which regularly undertake anaesthesia and surgery on MS patients[18].

Sacral nerve neuromodulation involves the implanting of a small device in the buttocks. This uses electrical impulses to stimulate the appropriate nerves to help restore coordination between the brain and the muscles of the pelvic floor or bladder[2].

Expert guidance[2] states that active treatment of bladder problems in all people with MS, regardless of the severity of their condition, should be undertaken by an appropriate specialist.

12. **Useful organisations**

The Bladder and Bowel Foundation is a charity providing information and support for all types of bladder and bowel related problems, for patients, their families, carers and healthcare professionals.
Website: www.bladderandbowelfoundation.org
email: info@bladderandbowelfoundation.org

MS Therapy Centres are a group of self-help therapy centres offering a wide range of drug-free symptom management therapies as well as advice and support for all those with the illness and their families. To find your nearest centre search the map on the MS Trust website at: www.mstrust.org.uk/map or telephone the MS Trust information team on 0800 032 38 38.

RADAR is a charity supporting people with disabilities. They run the National Key Scheme for access to disabled toilets.
Website: www.radar.org.uk
email: radar@radar.org.uk

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Acknowledgements

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