Multiple Sclerosis Society of Canada

Urinary Dysfunction and MS

A Guide for People with Multiple Sclerosis

Consumer Guide to Clinical Practice Guidelines
Urinary Dysfunction and MS
A Guide for People with Multiple Sclerosis
by Rosalind C. Kalb, PhD and Nancy J. Holland, RN, EdD, MSCN

Based on *Urinary Dysfunction and Multiple Sclerosis: A Clinical Practice Guideline for Professionals* developed by the Multiple Sclerosis Council for Clinical Practice Guidelines.

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COVER ARTWORK
Sylvia Jenneson
Sunrise, Oil on canvas

"Though I've lived with MS for twenty years I still find the time and energy to create."

Sylvia Jenneson is an artist from B.C. with multiple sclerosis. She has been drawing and painting for most of her life. She likes to paint the world as she sees it, sometimes from the perspective of realism, and sometimes allowing her imagination to lead the way.

www.jennesoncreatives.ca

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Drawings of the male and female urinary system are by iMageWorx. The drawings originally appeared in *Multiple Sclerosis: A Self-Care Guide to Wellness*, published in 1998 by Paralyzed Veterans of America, Inc. They are reproduced here with the kind permission of PVA, Inc.

If you need additional copies of this Guide, you can download it from **www.mssociety.ca**

The information in this Guide is not intended to substitute for professional medical care. Contact a physician or other appropriate health-care professional.

This Guide was originally prepared based on scientific and professional information known about urinary dysfunction and multiple sclerosis in 2000, and has been updated several times since then. It is recommended that you periodically review this Guide with health-care professionals from whom you regularly receive care.

Originally developed by the Multiple Sclerosis Council for Clinical Practice Guidelines.

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Introduction

Normal bladder function is important not only for a person's overall health, but also for feelings of comfort and self-esteem. Fortunately, advances in bladder management strategies are making it possible for people with MS to carry out their daily activities at home and at work with confidence – secure in the knowledge that they have their bladder function under control. These same advances have significantly decreased the incidence of bladder complications and the number of MS-related hospitalizations.

In order to achieve confidence and control, it is important to understand:

- How the normal bladder functions
- The changes that can occur in MS to interfere with normal bladder function
- The available treatments and management strategies to regain and/or maintain bladder comfort and control, and prevent unnecessary complications

This Guide is designed to help you be an informed partner in your MS care. Keep in mind, however, that no two people with MS are exactly alike, and that health-care providers may differ somewhat in their management of MS urinary symptoms.

Members of your health-care team can obtain a free copy of *Urinary Dysfunction and Multiple Sclerosis, the clinical practice guideline written for professionals,* by logging onto the website of the Paralyzed Veterans of America at www.pva.org. They may also be interested in the resource, *Talking With Your MS Patients about Difficult Subjects,* which includes a publication on elimination problems, available on the MS Society of Canada website at www.mssociety.ca.

Normal bladder function

This section explains how the urinary system works, and defines the technical terms in the rest of the text.

The purpose of the urinary system is to remove waste products from the blood and eliminate them from the body.

When the urinary system is functioning normally, the process of urination feels natural and controlled. Urine collects slowly in the bladder, causing it to expand. Once the bladder has accumulated 113 mls to 227 mls of urine, nerve endings in the bladder transmit signals to the spinal cord which, in turn, transmits signals to the brain that voiding needs to occur. The person experiences the need to urinate and makes a decision when and where to do so. As the person prepares to urinate, the brain relays a return signal to the spinal cord that triggers the voiding reflex. The voiding reflex causes two things to happen simultaneously:

1. The detrusor muscle contracts to expel the urine from the bladder.
2. The external sphincter relaxes and opens to allow the urine to pass freely into the urethra and out of the body.

Urinary System Components

KIDNEYS - the organs that extract impurities and water from the blood to produce urine

URETERS - thin tubes that carry urine from the kidneys to the bladder

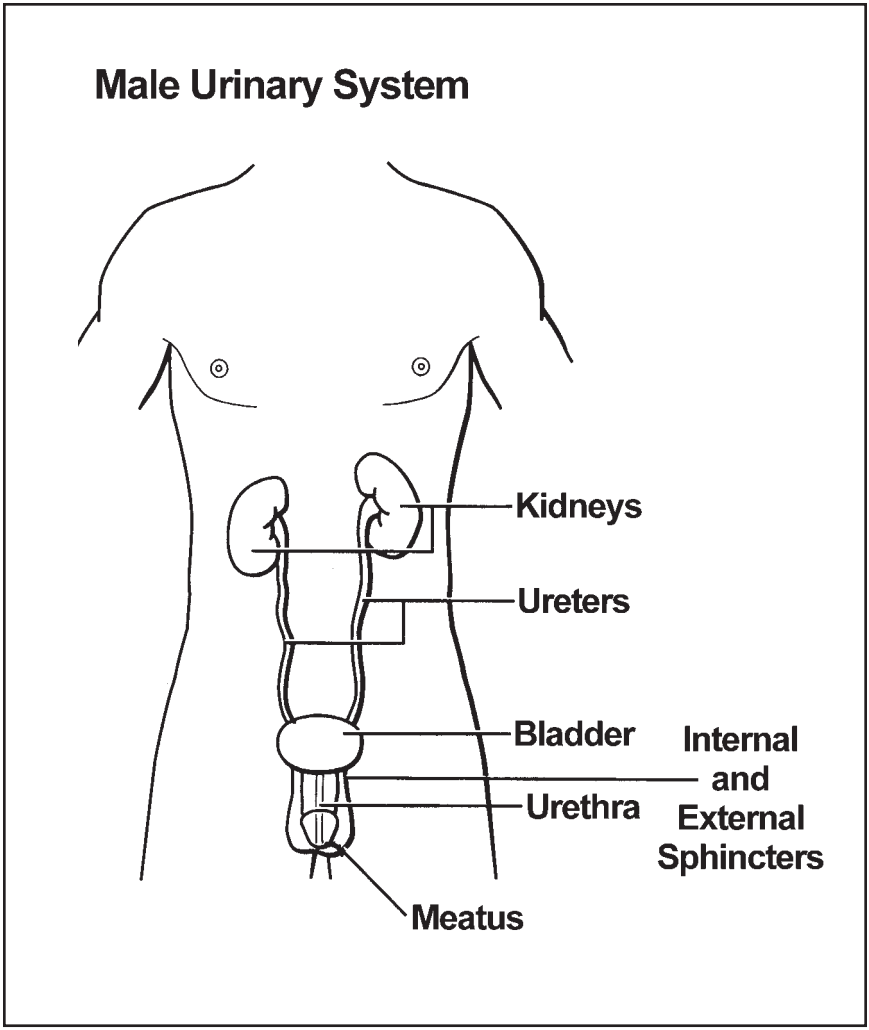
BLADDER - an elastic sac that stores the urine prior to voiding (urination)

DETRUSOR MUSCLE - the muscular portion of the bladder that contracts to expel urine from the bladder into the urethra and out of the body

EXTERNAL SPHINCTER - a circular band of muscle fibres, located just below the juncture between the bladder and the urethra, which remains closed between times of urination

URETHRA - the tube that carries the urine from the bladder, through the meatus, to the outside of the body

MEATUS - the external opening of the urethra in both women and men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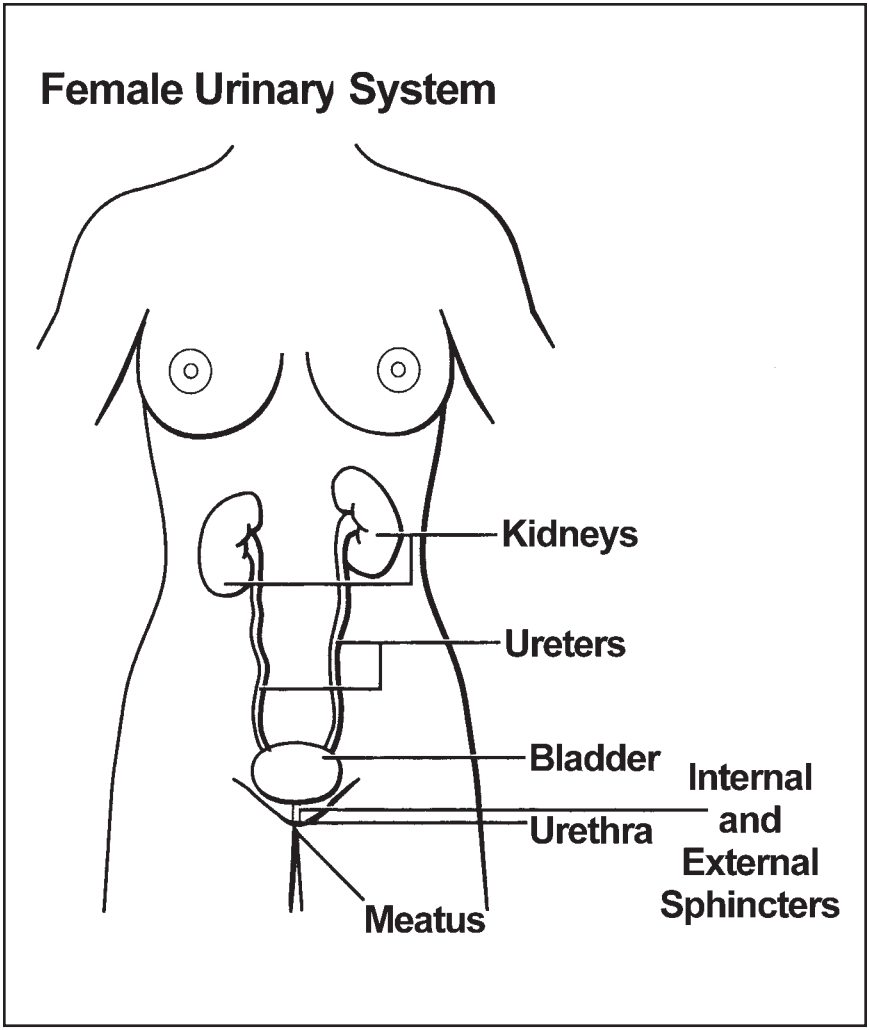
Female Urinary System
Kidneys
Ureters
Bladder
Urethra
Internal and External Sphincters
Meatus

Types of bladder dysfunction in MS

MS-related lesions (areas of inflammation, demyelination, scarring and/or neuronal damage) in the brain or spinal cord can disrupt this normal process by interfering with the transmission of signals between the brain and urinary system.

Three primary types of bladder dysfunction can result:

Storage dysfunction

Failure to store urine is caused, in part, by an overactive detrusor muscle that begins to contract as soon as a small amount of urine has collected in the bladder. These contractions repeatedly signal the need to void, even though the bladder has not reached normal capacity. Because of demyelination, the spinal cord is unable to forward the signals from the bladder all the way to the brain. Without the involvement of the brain, the process of urination becomes less controlled. The urge to urinate becomes a reflex response to the frequent, repeated spinal cord signals. This type of storage dysfunction can result in the following symptoms:

- **Urgency -** the inability to delay urination once the urge to void has been felt
- **Frequency -** the need to urinate in spite of having voided very recently
- **Nocturia -** the need to urinate during the night
- **Incontinence -** the inability to control the time and place of urination

Emptying dysfunction

Demyelination in the area of the spinal cord that signals the voiding reflex can also result in a failure to empty the bladder. Although the bladder fills with urine, the spinal cord is unable to send the appropriate message to the brain (to signal the need to void) or to the external sphincter (to signal the need to relax). In the absence of voluntary control, the bladder continues to fill and expand. The eventual result is an enlarged, flaccid (overly relaxed) bladder, accompanied by the following symptoms:

- **Urgency -** the inability to delay urination once the urge to void has been felt
- **Dribbling -** uncontrolled leakage of urine
- **Hesitancy -** delay in ability to initiate urination even though the need to void is felt
- **Incontinence -** the inability to control the time and place of urination

Combined dysfunction

Failure to store in combination with failure to empty (formally known as detrusor-external sphincter dyssynergia) results from a lack of coordination between muscle groups. Instead of working in coordination with one another (with the detrusor contracting to expel urine while the external sphincter relaxes to release it), the detrusor and external sphincter contract simultaneously, trapping the urine in the bladder. The resulting symptoms can include:

- **Urgency**
- **Hesitancy**
- **Dribbling**
- **Incontinence**

Urinary tract infection

In addition to these common types of bladder dysfunction, people with MS are at increased risk of urinary tract infections. Although anyone can develop an infection in the urinary tract, they are more common in people who are unable to fully empty their bladder. Urine that remains in the bladder over a prolonged period of time breeds excessive bacteria, eventually leading to infection. Storage of urine also allows mineral deposits to settle and form stones that promote infection and irritate bladder tissues. The symptoms of a urinary tract infection can include:

- **Urgency**
- **Frequency**

- **A burning sensation**
- **Abdominal and/or lower back pain**
- **Elevated body temperature**
- **Increased spasticity (a common symptom of MS caused by an abnormal increase in muscle tone that results in involuntary muscle stiffness and/or spasms)**
- **Dark-coloured, foul-smelling urine**

A person who has a urinary tract infection may also experience a pseudo-exacerbation. The infection and accompanying elevation in body temperature may cause other MS symptoms to flare temporarily, mimicking a true exacerbation, even though there is no underlying disease activity. Once the infection has been treated, these MS symptoms resolve and return to the person's pre-infection baseline. Thus health-care providers look for bladder symptoms or other evidence of infection when trying to determine if a person is having an exacerbation.

Diagnosis and treatment

As can be seen from these descriptions of MS-related bladder dysfunctions, some of the same symptoms can result from very different types of problems. In fact, it is never possible to know from symptoms alone exactly what type of bladder dysfunction a person is experiencing. Further testing is required to identify the problem – and determine the appropriate treatment. Clearly, it is very important to report any bladder changes to the physician or other health-care professional who manages your MS. (In some settings it is the physician who manages urinary symptoms; in others, a nurse, nurse-practitioner, or physician's assistant (PA) is the primary contact person. The term "provider" will be used for the remainder of the booklet.)

Your provider will do the necessary tests and recommend a treatment regimen that is designed to relieve the symptoms, prevent unnecessary complications, and allow you to be more comfortable and confident in your daily life.

There is no need to feel any embarrassment about discussing these problems with your provider. Most people with MS will experience urinary symptoms at one time or another. Prompt, open discussions with your provider are the fastest, safest, and most effective way to manage urinary dysfunction, prevent complications, and regain comfort and confidence. Your recommended strategy is to report any changes in urinary function – either positive or negative – at every visit to your provider.

Steps to diagnosis

Once you have described your symptoms to your provider, he or she is likely to take the following steps:

Screen

Screen for a urinary tract infection (UTI), since any or all of the symptoms listed above could be caused by a UTI and UTIs are common in MS. The methods used to screen for a UTI are:

- **Culture & Sensitivity (C&S) -** drops of urine, collected from a sterile urine sample, are placed in a culture medium in the laboratory to allow the bacteria to grow for 48 hours. The bacteria are identified and tested against several antibiotics to determine which would be the most effective. If a specific treatment is indicated, you will probably be given a 7 to 14 day course of medication.

If the symptoms subside, no further action will be taken.

- **Urinalysis -** a microscopic study of a sample of urine
- **Dipstick -** a quick and convenient test; the paper stick changes colour in response to various indicators of infection in a urine sample. The dipstick technique is slightly less reliable than microscopic urinalysis.

If positive

If the screening test is positive (i.e., detects evidence of infection), your provider will probably take the following steps:

- Prescribe an antibiotic to treat the infection. The type and duration of treatment will differ depending on your symptoms, history, and prior use of catheterization (intermittent or indwelling catheters- see pp. 21-24).

Regardless of the specific antibiotic that is prescribed for you, **it is essential to take the full amount prescribed even if your symptoms subside.** Stopping the medication prematurely is likely to result in a recurrence of the symptoms because the infection has not been fully treated.

- If the symptoms subside, no further action will be taken.
- If the symptoms persist, the provider will initiate tests to identify what type of ongoing bladder dysfunction might be causing the infection to persist (see **If negative** on p. 17).
- If the tests indicate that bladder function is normal, but the symptoms of UTI continue, your provider will refer you for further testing by a urologist – a physician who specializes in the study and treatment of the urinary system. The urologist will do further testing (described on pp. 25-26) to identify the source of the problem.

If negative

If the screening test is negative, indicating that no infection is present, your provider will initiate testing to determine which type of bladder dysfunction is causing your symptoms. The most important question to be answered is whether you are retaining urine in your bladder after attempting to empty it completely. Urine left in the bladder **(post-void residual urine)** can cause any of the symptoms described above. **Post-void residual (PVR) testing** is usually done in one of two ways:

- **Diagnostic catheterization -** Immediately after you have voided, your provider will pass a thin, hollow tube, called a catheter, through the meatus into the urethra. This will drain the remaining urine out of the bladder so it can be measured. Although people dislike the idea of catheterization, most find it to be a quick and easy procedure that causes little discomfort.
- **Bladder ultrasound -** After you have urinated, the provider will apply a conductive jelly to your lower abdomen and slide a small instrument over the area to obtain an image that can be analyzed to measure residual urine.

With either method, a residual amount of less than 100ml is normal.

Treatment process

Treatment of storage dysfunction

If the PVR test determines that you are retaining less than 100ml of urine, your provider will likely conclude that your symptoms are caused by an overactive bladder detrusor muscle. He or she may recommend various behavioural interventions (**see Table 1**) or prescribe an anticholinergic medication to relax the detrusor muscle. These are:

- oxybutynin (Ditropan®, Ditropan XL®, or Oxytrol Transdermal Patch®)
- propantheline (Pro-Banthine)
- imipramine (Tofranil®)
- tolterodine (Detrol® and Detrol LA®)
- solifenacin succinate (Vesicare®)
- darefenasin (Enablex®)

While any of these can relieve urgency, frequency, nocturia, or incontinence, you may need to try more than one before finding the one that works best for you. The major side effects of these medications are dry mouth and constipation, which will, in turn, need to be managed. If the need to urinate frequently at night is not relieved by this type of medication, your provider may also prescribe desmopressin acetate (DDAVP®), a nasal spray that temporarily reduces the amount of urine produced by the kidneys and allows for a more restful sleep.

Table 1 - Behavioural Interventions in Treating Storage Dysfunction

Behaviour	Why it helps and tips
Drink approximately 8 glasses of fluid per day – especially water.	To flush wastes, bacteria, and mineral deposits from the urinary system. Establish regular "water-break" times.
Limit intake of fluids that contain caffeine or alcohol.	These substances act as bladder irritants and contribute to storage dysfunction.
Restrict fluid intake beginning approximately two hours before starting any activity where no bathroom will be available.	Do not, however, restrict fluid intake on a continuous basis, because that greatly increases the risk of infection by interfering with the normal flushing of the bladder and making the urine overly-concentrated.

Table 1 - Behavioural Interventions in Treating Storage Dysfunction

Behaviour	Why it helps and tips
Wear an absorbent pad for extra protection.	A variety of products are available for women and for men, all containing a powder that turns to gel when moistened. Some men may choose to use a condom catheter (also called a Texas catheter) some of the time. This external device consists of a condom-like sheath that fits over the penis and is connected to a drainage bag. The bag is strapped to the leg inside the trousers.

In the event that none of these measures is effective, your provider may prescribe an anticholinergic medication to force the bladder to retain urine. You would then be taught additional strategies for emptying your bladder (see page 21).

Treatment of emptying dysfunction

If the PVR determines that you are retaining more than 100ml of urine after voiding, your provider will probably recommend **intermittent self-catheterization (ISC)**. This relatively simple technique works quickly and effectively to eliminate residual urine.

Intermittent Self-Catheterization (ISC) Procedure

1. Wash hands thoroughly and urinate.
2. Wash around the urinary opening (meatus) with soap and water or a pre-packaged towelette.
3. Insert the catheter and allow urine to flow into the toilet.
4. Remove the catheter, wash it with soap and water and store in a plastic bag.

Depending on the symptoms you are experiencing, and the amount of residual urine, your provider will recommend that you catheterize one or more times per day. While many people are reluctant to begin this procedure, most quickly discover the comfort and security it provides. Women are usually less resistant than men because of their experience inserting tampons, but men generally have an easier time because of the greater accessibility of the urinary opening.

Table 2 - Dietary Changes in Treating Emptying Dysfunction

Diet	Why it helps and tips
Limit intake of citrus juices.	Surprisingly, citrus juices make urine more alkaline than acidic, which favors the growth of bacteria.
Take cranberry tablets or drink cranberry juice daily. Generally, tablets are better than juice because juice is sweetened to counter the sour taste, and it's wiser to avoid a daily dose of extra sugar or high-fructose corn syrup. It is also easier to take cranberry tablets than drink the large amount of cranberry juice required to acidify the urine.	Cranberry makes urine more acidic, which inhibits bacterial growth. It also contains compounds that prevent bacteria from sticking to cells that line the urinary tract and may even kill some bacteria directly. Cranberry is a helpful preventive measure but should never be used to self-treat an existing UTI.

The regular practice of ISC acts like physical therapy for the bladder. Some people find that bladder function returns to normal or near normal after several weeks or months. They can discontinue ISC at that time. For others, the practice of ISC remains a regular part of everyday life, promoting effective bladder drainage and preventing complications.

If symptoms persist in spite of ISC, your provider will probably initiate treatment for Combined Dysfunction (See page 24).

For those who continue to retain too much urine in the bladder, the provider may also recommend a few dietary changes **(see Table 2)** to make the urine more acidic.

In the event that ISC is not sufficient to take care of the problem, or other symptoms interfere with self-catheterization, your provider may recommend the use of an indwelling (Foley) catheter. An indwelling catheter consists of a flexible rubber tube that remains in the bladder to allow urine to flow into an external drainage bag. A small balloon, which inflates after insertion, holds the catheter in place.

Treatment of combined dysfunction

For those who experience problems with both the emptying and storage, a combination of strategies is usually recommended that includes intermittent catheterization to remove the residual urine, and an anticholinergic or antimuscarinic medication to relax the bladder's detrusor muscle. Occasionally, other medications may also be prescribed, including:

1. **Antispasticity agents** to relax the sphincter muscle:
   - oxybutynin (Ditropan)
   - baclofen (Lioresal®)
   - tizanidine hydrochloride (Zanaflex®)
2. **Alpha-adrenergic blocking agents** to promote the flow of urine through the sphincter:
   - prazosin (Minipress®)
   - terazosin (Hytrin®)
   - tamsulosin (Flomax®)

On the very **rare** occasions when none of the medications or self-care strategies are sufficient to manage MS-related bladder symptoms, a surgical procedure called suprapubic cystostomy can be performed. A tube is inserted into the bladder through an opening in the lower abdomen, to allow the urine to drain into an external collection bag.

Treatment horizons

Some clinicians have added still other strategies to manage bladder dysfunction. They include injections of botulinum toxin (Botox®) into the external sphincter or detrusor, and electrical stimulation of the sacral nerve which requires a surgically implanted stimulator. While the data concerning these interventions are still quite limited, you may want to discuss them with your physician.

Additional diagnostic measures

Should your bladder problems persist despite standard medications and self-care techniques, you should be referred to a urologist (a physician who specializes in problems of the urinary tract) for further testing to rule out other problems. Possible tests include:

Urodynamic studies - This test, in which the bladder is filled with sterile fluid, measures the pressure within the bladder and assesses the function of the external sphincter. The person lies on an examining table and the physician or nurse inserts a small urinary catheter and a rectal probe for the duration of the procedure.

Cystoscopy - By passing a thin tube with a light and a magnifier through the urethra into the bladder, the doctor is able to examine the interior of the bladder for inflammation, polyps, and other abnormalities that might cause urinary symptoms.

Ultrasound - This test allows the kidneys and urinary bladder to be visualized in order to check for blockage or stones.

Radioisotope renal scan - This test assesses kidney function. A short-acting radioisotope, that allows the entire urinary system to be visualized, is injected into a vein and excreted by the kidneys. Residual urine is measured by noting the amount of radioisotope remaining in the bladder after urination.

Intravenous pyelogram (IVP) - This test is similar to the radioisotope study in that it requires an injection of special dye and provides a picture of the entire urinary system. It differs, however, in that it is an X-ray that requires an empty bowel in order for the urinary system to be visible. The IVP is therefore used less frequently because it requires the use of enemas and/or laxatives before the examination.

The impact of other factors on bladder function

Mobility problems

Safe and comfortable self-care activities require adequate mobility, which in turn depends upon: strength; balance; coordination; flexibility; absence of pain; adequate sensory input to feet, legs, arms, and hands; and an accessible environment.

In addition to diagnosing and treating the bladder dysfunction you may be experiencing, the provider will be assessing your ability to move easily and comfortably in an environment that is accessible and safe **(mobility assessment)**.

Other medical considerations

Occasionally, bladder problems in a person with MS may be related to other MS symptoms, to medications that the person is taking, or to diseases other than the MS. People may have difficulty with bladder management because of fatigue, constipation, cognitive problems, or other MS-related changes. These will need to be assessed and treated in order for bladder management to improve.

Bladder problems can also result from medical conditions unrelated to MS, such as pregnancy, diabetes, prolapsed bladder or uterus, enlarged prostate, arthritis, or the post-menopause period. Various medications, especially those for hypertension, can affect urinary function.

Strategies to improve mobility

1. Medical or surgical interventions to manage spasticity
2. Rehabilitation, including physical and occupational therapies, to provide:
   - Home exercise program to enhance flexibility, strength, endurance
   - Energy management strategies to conserve energy and minimize fatigue
   - Balance and mobility training to improve walking
   - Assistance with activities of daily living
   - Adaptive equipment to conserve energy, promote safety, and enhance mobility and productivity
   - Adaptive clothing for ease and convenience
   - Home/office modifications to improve bathroom access and safety

It is very important for your MS-care provider to know all the medications you are taking-prescription, non-prescription, and dietary supplements such as vitamins and herbs – regardless of the condition for which you are taking them (see Appendix 1).

Summary

In addition to being uncomfortable and embarrassing, the bladder symptoms of MS can have a significant impact a person's long-term health. The impact of these symptoms can be limited by reporting urinary symptoms promptly to your health-care provider. Based on the information you give, your provider can do the testing necessary to diagnose the underlying problem and recommend the appropriate medications and management strategies.

The treatment interventions described here are more effective the earlier they are implemented – before the problems have become severe. They can help you manage your symptoms, and prevent unnecessary, potentially dangerous complications, so you can pursue your daily activities with comfort and confidence.

Appendix 1 – My Medications List

Keep this list current, and bring it with you when you visit your regular doctor and see any new doctor.

Your name _____

Date _____

Prescription Drugs

Drug Name	How much?	How often?

Nonprescription Drugs

Drug Name	How much?	How often?

Herbal and Alternative Products, Vitamins, Dietary Supplements

Drug Name	How much?	How often?

Appendix 2 – Drug Information

Chemical Name: baclofen (**bak**-loe-fen)
Brand Name: Lioresal® (U.S. and Canada)
Generic Available: Yes (U.S. and Canada)

Description: Baclofen acts on the central nervous system to relieve spasms, cramping, and tightness of muscles caused by spasticity in multiple sclerosis. It is usually administered orally in pill form. An intrathecal delivery system is available for those individuals with significant spasticity who cannot tolerate a sufficiently high dose of the oral form of the medication. The intrathecal system delivers the medication via a surgically implanted pump directly into the fluid surrounding the spinal cord. It is important with this medication to introduce a small dose and build slowly to a therapeutic level. Building the dose up slowly will help to minimize side effects.

Chemical Name: ciprofloxacin (sip-roe-**FLOX**-a-sin)
Brand Name: Cipro® (U.S. and Canada)
Generic Available: Yes

Description: Ciprofloxacin is one of a group of antibiotics (fluoroquinolones) used to kill bacterial infections in many parts of the body. It is used in multiple sclerosis primarily to treat urinary tract infections. Cipro administered with tizanidine (used for spasticity) results in higher concentrations of tizanidine in the blood, which could lead to clinically significant adverse events such as increased sedation.

Chemical Name: darifenacin (dar-i-**fen**-a-sin)
Brand Name: Enablex® (U.S. and Canada)
Generic Available: No

Description: Darifenacin is an extended-release antispasmodic/ antimuscarinic medication that works by relaxing the bladder muscles to prevent urgent, frequent, or uncontrolled urination.

Chemical Name: desmopressin (des-moe-**press**-in) acetate
Brand Name: DDAVP Nasal Spray® (U.S. and Canada)
Generic Available: Yes

Description: Desmopressin acetate is a hormone used as a nasal spray. The hormone works on the kidneys to control frequent urination.

Chemical Name: imipramine (im-**ip**-ra-meen)
Brand Name: Tofranil® (U.S. and Canada)
Generic Available: Yes (U.S. and Canada)

Description: Imipramine is a tricyclic antidepressant used to treat mental depression. Its primary use in multiple sclerosis is to treat bladder symptoms, including urinary frequency and incontinence. Imipramine is also prescribed occasionally for the management of neurologic pain in MS.

Chemical Name: oxybutynin (ox-i-**byoo**-ti-nin)
Brand Name: Ditropan® (U.S. and Canada)
Generic Available: Yes (U.S.)

Description: Oxybutynin is an antispasmodic/anticholinergic that helps decrease muscle spasms of the bladder and the frequent urge to urinate caused by these spasms.

Chemical Name: oxybutynin (ox-i-**byoo**-ti-nin) chloride -extended release
Brand Name: Ditropan XL® (U.S. and Canada)/Uromax
Generic Available: No

Description: This form of oxybutynin is an extended-release antispasmodic/anticholinergic that is formulated to help decrease muscle spasms of the bladder and the frequent urge to urinate caused by these spasms.

Chemical Name: oxybutynin (ox-i-**byoo**-ti-nin)-transdermal
Brand Name: Oxytrol® (U.S. and Canada)
Generic Available: No

Description: This form of oxybutynin, which is delivered via a skin patch, is an antispasmodic/anticholinergic medication that helps decrease muscle spasms of the bladder and the frequent urge to urinate caused by these spasms.

Chemical Name: prazosin (**pra**-zoe-sin)
Brand Name: Brand name not available.
Generic Available: Yes (U.S. and Canada)

Description: Prazosin belongs to the general class of medicines called anti-hypertensives, which are used to treat high blood pressure. It is used in MS help promote the flow of urine through the sphincter.

Chemical Name: propantheline (pro-**pan**-the-leen) bromide
Brand Name: Pro-Banthine (U.S. only)
Generic Available: Yes (U.S. only)

Description: Propantheline is one of a group of antispasmodic/anticholinergic medications used to relieve cramps or spasms of the stomach, intestines, and bladder. Propantheline is used in the management of neurogenic bladder symptoms to control urination.

Chemical Name: solifenacin succinate
(sol-i-FEN-ah-sin SUC-sin-ate)
Brand Name: Vesicare® (U.S. and Canada)
Generic Available: No

Description: Solifenacin succinate is an antimuscarinic medication that is used to treat an overactive bladder causing symptoms of frequency, urgency, and/or urge incontinence. In MS, overactive bladder is seen in failure to store and combined failure to store/failure to empty types of dysfunction.

Chemical Name: tamsulosin (tam-**soo**-loh-sin)
Brand Name: Flomax® (U.S.)
Generic Available: Yes

Description: Tamsulosin is generally used to treat the signs and symptoms of benign enlargement of the prostate. It helps to relax the muscles in the prostate and bladder, and is used in MS to promote the flow of urine.

Chemical Name: terazosin (ter-**ay**-zoe-sin)
Brand Name: Hytrin® (U.S. and Canada)
Generic Available: Yes

Description: Terazosin belongs to the general class of medicines called anti-hypertensives, which are used to treat high blood pressure. It also helps relax the muscles of the prostate and the bladder. In MS, it is used to help promote the flow of urine through the sphincter.

Chemical Name: tizanidine (tye-**zan**-i-deen) hydrochloride
Brand Name: Zanaflex® (U.S. and Canada)
Generic Available: Yes

Description: Tizanidine is used in multiple sclerosis to treat the increased muscle tone associated with spasticity. While it does not provide a cure for the problems, it is designed to relieve the spasms, cramping, and tightness of muscles.

Chemical Name: tolterodine (tole-**tare**-oh-deen)
Brand Name: Detrol® (U.S. and Canada)
Generic Available: No

Description: Tolterodine is an antimuscarinic that is used to treat bladder spasms causing urinary frequency, urgency, or urge incontinence.

Chemical Name: tolterodine (tole-**tare**-oh-deen) tartrate
Brand Name: Detrol LA® (U.S. and Canada)
Generic Available: No

Description: Detrol LA (long acting) is an antimuscarinic agent used to treat overactive bladder with symptoms of urgency, frequency, and/or urge incontinence. This problem occurs in failure to store and combined failure to store/failure to empty types of dysfunction. It differs from Detrol in that Detrol LA can usually be taken as a single daily dose.

Credits

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Urinary Dysfunction Consumer Guide Development

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Our Mission

To be a leader in finding a cure for multiple sclerosis and enabling people affected by MS to enhance their quality of life.

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