Introduction
Spinal cord injury (SCI) at any level almost always affects the level of control you have over your bladder. Loss of control over when and how you pass urine, is one of the major life-changing adjustments that needs to be made following SCI. During rehabilitation you will learn techniques tailored to your individual needs with regard to how to empty your bladder. These techniques take into account your level of functionality and dexterity.

The Urinary System
The urinary system is made up of the kidneys, 2 ureters, the bladder and urethra.

How does the bladder work?
The bladder is a muscular bag which stores urine until it is convenient to be emptied. When the bladder is full, nerves send a message via the spinal cord to the brain. When you decide to pass urine, the brain sends messages down the spinal cord to the muscles of the bladder wall to contract, and to the ring-like muscle called the sphincter, which acts as an outlet valve.

The sphincter opens and the bladder releases urine. Urine passes down the urethra via the penis or the vulva.

Urine is normally straw coloured. If you notice an unusual smell, change in colour or the presence of blood in the urine, you should seek medical advice. Certain foods and drugs can affect the colour and smell of urine.
How will my bladder work after my injury?
After your injury, your body’s normal system of bladder control no longer works, because messages no longer pass between the bladder muscles and the brain. If your injury is T12 or above, you usually have what is called a reflex (‘automatic’ or ‘spastic’ bladder). With an injury below the T12 level you will usually have an acontractile (or ‘flaccid’) bladder.

What is a reflex bladder (automatic/spastic bladder)?
If you have a reflex bladder, the nerve impulses (known as the reflex arc) between the bladder and spinal cord remain intact but messages no longer reach the brain. A reflex bladder allows automatic, involuntary control of the bladder so when the bladder fills above a certain level it contracts and urine flows out automatically. However, the reflex bladder may not empty completely due to the sphincter not relaxing fully. This can leave a pool of urine in the bladder which increases the risk of infection and back pressure on the kidneys.

What is a flaccid bladder (acontractile bladder)?
If you have a flaccid bladder, the reflex arc is damaged, this means the nerves between the bladder and the spinal cord have been damaged. Interruption of the impulses to the spinal cord results in the bladder not receiving the message to empty. The flaccid bladder has no muscle tone and therefore doesn’t contract automatically to allow emptying. It continues to fill and eventually small amounts of urine may leak out. The flaccid bladder needs emptying at regular intervals and this can be achieved by intermittent self-catheterisation.

What is a mixed bladder?
A mixture of reflex and flaccid bladder can result if you have an incomplete spinal cord injury. A sensation of the bladder being full may be present but still there is an inability to empty the bladder. It is important that you monitor this situation to prevent high levels of residual urine, as this adds to the risk of bladder infection and damage to the kidneys.

What is Bladder Management?
This is your personal programme, developed during rehabilitation, to allow you to gain as much control over your bladder as possible.

The main aims of bladder management are to:
- establish a safe method for emptying your bladder at intervals throughout the day, and importantly remaining dry
- establish a routine which will be long lasting and achieve the independence you need to carry out daily activities and enjoy a social life
- maintain a good body image
- reduce the risk of complications such as bladder and kidney infections and formation of bladder stones.

Correct bladder management is vital to your health and well-being. Urinary tract complications are still among the main causes of illness, re-admission to hospital and death in spinal cord injured people.

Spinal Injuries Association
www.spinal.org.uk

Factsheet – Bladder Management
How will I know which Bladder Management Methods are best for me?
During rehabilitation, you will be trained to empty your own bladder.

The method adopted will depend on:
- the level of your injury
- whether your bladder is reflex or flaccid
- whether you are male or female
- what is acceptable to you
- what is least likely to cause major complications, such as bladder stone formation, infection and Autonomic Dysreflexia (explained later).

The team of health professionals will explain to you the best method for you to adopt. Bladder management is not necessarily the same plan for life. Changes may have to be made depending on factors, such as a need for surgery, and your regime may not always be solely related to your level of injury.

What are the Bladder Management Options?

If I have a reflex Bladder
If you have a reflex (spastic) bladder the method of choice is likely to be:
- intermittent self catheterisation (ISC)
- indwelling catheter
- tapping
- supra-pubic catheter
- for males, a condom with catheter draining into a urine bag.

If I have a flaccid Bladder
If you have a flaccid (acontractile) bladder the method of choice is likely to be intermittent self catheterisation.

Intermittent Self-Catheterisation
This is often the method of choice if you have a flaccid bladder and is commonly used by men and women with paraplegia. If you have a reflex bladder that has good capacity, you can use this method.

If you have sufficient hand control you can learn to self-catheterise, but you need to be sufficiently dexterous so as not to risk damaging the urethra. Importantly, you are less likely to get an infection if you change your own catheter than if someone else changes it for you.

Both men and women can usually catheterise while in bed, in a wheelchair or on the toilet.

The aims of intermittent self-catheterisation are:
- to empty your bladder completely at regular intervals
- to achieve continence without the need to wear an appliance.

Disadvantages:
- you need some privacy or access to a toilet
- privacy may be a problem when travelling or away from home.

Good technique and hygiene:
- important to avoid bladder infections

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• important to wash your hands and genital area thoroughly before passing the catheter.

How do I insert a catheter?

Wash your hands and your penis or labia thoroughly with soap and water, if you have no access to these, baby wipes will do, but should not be used too often as they may cause soreness.

Men insert gel into the urethra, you need to hold the penis up to straighten the urethra.

Women dip the tip of the catheter into a blob of gel placed on a clean surface (e.g. a paper towel).

Pass the catheter gently up into the bladder, pausing if resistance is felt. Once urine begins to flow apply gentle pressure to the lower abdomen with the flat or heel of your hand and continue until the urine flow stops. Gradually withdraw the catheter (1-2cm at a time), stop each time urine begins to flow out and wait until the flow stops before continuing to withdraw the catheter. Unless you are in the toilet, a plastic bag or small container is needed to collect the urine.
What catheters are available?

There are two types of catheters – plain and lubricated.

**Plain catheters** require a separate lubricant. A catheter can be reused for up to one week - it should be washed in soap and water, then rinsed and flicked dry. It should be stored in a container of Milton, and the solution changed daily. While you are away from home the catheter can be dried and stored in a clean plastic bag.

**Lubricated catheters** come either packaged in their own solution and ready for use, or need water (tap water is fine in the UK) added to the packaging to activate the lubricant (this takes 30 seconds). After use the catheter is then disposed of, i.e. single use only. Also available are complete sets of intermittent catheterisation equipment which contain the catheter, lubricant and a collecting bag. These are particularly useful where toilets are not available or suitable, at work, when abroad or during the night.

**Indwelling urethral catheters**
This method of emptying the bladder is normally used for short periods of time, for example, before and after surgery, when away from home if you know you cannot rely on access to toilets to self-catheterise.

The catheter is inserted through the urethra in the usual way, but kept permanently in place by a small balloon on the end inside the bladder. Once the catheter has been inserted, the balloon is inflated with sterile water, expanding to hold the catheter in place.

Long term use of indwelling urethral catheters can cause urethral dilatation, chronic bladder infection, penis splitting and bladder stones. Long term use of indwelling catheters is best avoided.

**Indwelling urethral catheters:**
- can be easily blocked by sediment and small calcium granules which gather around the balloon and grow to form stones
- require regular bladder washouts (care must be taken during this procedure)
- need to be changed regularly, every 4-6 weeks
- often need to be inserted by your PA or District Nurse
- require extra care to ensure good sterile technique
- require you to increase your daily intake of fluid to 3.5 litres (6 pints)
- create a high risk of infection, bacteria can enter through the permanent opening left by the indwelling catheter
• can sometimes be expelled by spasms, or because of a blockage or stone
• risk causing damage to the bladder neck and urethra if pulled out accidently – you can prevent this by tapping the catheter to your leg
• in women, can cause ‘leakage’ around the catheter during menstruation.

To remove an indwelling catheter: a syringe is inserted into the side entrance of the catheter and the balloon is deflated by allowing the sterile water to drain into the syringe. This should happen without the need to ‘pull back’ on the syringe.

However, if you have difficulty deflating the balloon, leave the syringe in place for about a minute before applying gentle suction. If this fails, seek help from a doctor or hospital. **Never apply force to, or cut any part of the catheter.**

**Suprapubic Catheter**

**What is a Suprapubic catheter?**
A supra-pubic catheter is an indwelling catheter which is inserted into the bladder, via a small surgical incision made in the abdomen below the belly button.

**Would a Suprapubic catheter be suitable for me?**
It is normally used by:

• newly injured people
• tetraplegic women
• people with flaccid bladders who do not have the manual dexterity to carry out intermittent self catheterisation.

The incision is not permanent and starts to close up within 24 hours if the catheter is permanently removed.

The catheter used is similar to that used for urethral use. The insertion of a suprapubic catheter may initially cause an increase in spasm. People with suprapubic catheters may experience oozing around the catheter site and this should be cleaned each day as part of your normal bathing routine. A dry gauze dressing may be applied each day.

The suprapubic catheter:
• should be changed every 4-6 weeks to prevent blockages
• should be taped to the lower abdomen and connected to a leg bag
• protects and frees the genital area for sexual function
• is easier to change than with a catheter passed through the urethra
• can be changed by you whilst sitting in a wheelchair
• carries less risk of tubing being sat on or kinked
• carries a similar risk of infection, blockage and stone formation as an indwelling urethral catheter

If the catheter becomes blocked, urine may drain via the urethra, and you may not realise you are sitting in wet clothing.

Bladder washouts will help to remove build up of deposits that ultimately may form bladder stones.
It is important to drink plenty to keep the urine as dilute as possible.

Sheaths and condoms
This form of bladder management may be used by men with reflex bladders. A urinary sheath or condom is applied to the penis and attached by a plastic tube to a collecting bag which is strapped to your leg or belly or can be hung beside your bed or wheelchair.

There are two main types. Each is available in different sizes of width and length to ensure the best fit. Also available are latex and non-latex hypoallergenic sheaths to reduce skin problems.

Urinary sheaths are purpose made. They have a tube outlet at the end, designed to resist twisting or tearing, and usually come with their own adhesive strip, or an adhesive coating on the inside of the sheath itself.

Contraceptive type unlubricated condoms, used together with an adapter or ‘stud’ which is placed inside the rolled-up condom. Scissors are used to make a hole through the condom where the stud projects and it is connected to a drainage tube. Special adhesive is brushed or sprayed onto the penis and the condom rolled down and pressed into place. The tubing is then connected to a collecting bag.

**Top Tip:** to avoid getting adhesive on your pubic hair and scrotum, fold a tissue in four, cut the corner and fit it over the penis to make an ‘apron’.

Fit a new sheath or condom daily, and try to give your penis a rest for 2 hours in every 24.

Inspect your penis carefully, and stop using a sheath/condom immediately if there are any signs of a rash, pressure or broken skin. If skin is particularly sore it may be necessary to have an indwelling urethral catheter for a short period to allow the skin to heal.

Some men might be suitable for the insertion of penile implants to allow a condom sheath to fit appropriately.

**(Top Tip:** some men use a strategically placed shaving mirror to help them apply the sheath)

Tapping
The reflex to empty the bladder can be triggered by tapping with the side of the hand at the base of the stomach, just above the pubic area. You may find it helpful to stroke the inside of the thighs or perineum (the area just in front of the anus). Tapping should be carried out every 3-4 hours, if this is the method of choice. Nowadays, tapping is not routinely recommended. It is felt to contribute to stress incontinence, reflux of urine to the kidneys, increased risk of bladder infections.

What other Specific Equipment is available?

Catheter valve
A catheter valve is a tap-like device. It fits into the end of your catheter – this may be a urethral or suprapubic catheter.
Do I need to use a catheter valve?
You may be advised to use a catheter valve. The valve may be switched on or off to drain urine from your bladder or to stop drainage. You can close the valve for 3–4 hours at a time to ensure that your bladder fills regularly and doesn’t get ‘lazy’. If the bladder is left empty all the time, this will probably reduce the amount of urine your bladder can hold. Some people use a spigot to stop urinary drainage.

**Urinals**
There are numerous different models, made of plastic or stainless steel. Some merely have a snap-on lid, but others have a no-spill adapter with a rubber sleeve to fit around the penis, and a non-return valve. Some are disposable. Contact your local Continence Advisor or Spinal Injury Centre for advice about the best one for you.

**Drainage bags**
Urine drainage bags are connected to a condom or catheter by plastic tubing. Different bags can be worn on the upper or lower leg, across the stomach, or hung beside a bed or wheelchair. They can be disposable or reusable. Leg bags, with capacities from 350 to 1,300ml can be attached by straps or a stocking-type sleeve. Overnight bags have larger capacities, up to two litres. These can be useful when on a long haul flight.

**Top tip:** Never lift a drainage bag above the level of the bladder, unless you are sure that your system has a well-functioning non-return valve!

**Top tip:** If you are susceptible to autonomic dysreflexia, care should be taken when using a catheter valve or spigot.

**What are the Common Problems / Complications I need to be aware of?**

**What is Autonomic Dysreflexia**
Autonomic Dysreflexia is the name given to a condition where there is a sudden and potentially lethal rise in blood pressure. It is your body’s way of responding to a problem. It is often triggered by acute pain or some other harmful stimulus within the body, such as an overfull bladder. It is unique to spinal cord injury and most
commonly affects spinal cord injured people with injuries at or above T6. This extreme rise in blood pressure (hypertension) can lead to some types of stroke (cerebral haemorrhage) and even death. It should always be treated as a medical emergency.

For further details see SIA fact sheet:


Fortunately, the signs of infection are usually fairly obvious:
- cloudy urine
- often dark coloured
- strong smelling*
- pink urine*
- a decrease in the amount of urine passed
- an increase in mucus produced.

*NB: eating asparagus can make the urine smelly! pink urine, eating beetroot can also produce beautiful pink urine.

Accompanying symptoms are:
- an increase in spasms
- pain in lower abdomen, if you have sensation
- high temperature
- headaches
- shivering and sweating
- uncontrollable shakes (rigors).

**Treatment of Urinary tract infection:**
- increase fluid intake to try to flush out the bacteria
- ensure your bladder is emptied frequently and completely
- try to keep your urine acid, (cranberry capsules and Vitamin C help).

If you are ill or signs of infection persist contact your GP. Urinary tract infection is defined as a positive urine culture indicating the growth of bacteria in the urine. There will also be flu-like symptoms, including feeling unwell and running a temperature etc.

Infection in the bladder can pass up to the kidneys and cause damage. Frequent infections can cause scarring of your bladder which may affect its ability to contract properly.
NB: On its own, a positive culture is meaningless, especially in the presence of a catheter. There should always be symptoms of infection in order to justify taking antibiotics.

Stones
Stones or calculi can develop in your kidneys and/or bladder. You are more prone to this after your injury because of your lower mobility, the loss of some calcium from the bones of your paralysed limbs (although this is usually limited to the months immediately after injury), and your less efficient bladder function. Smaller stones can be passed out through the bladder and urethra without being noticed.

Larger ones can create obstruction in the kidney, or obstruct an indwelling catheter, and make you more susceptible to urinary tract infections. The symptoms are similar to those of a urinary tract infection, with greater difficulty in passing urine and more likelihood of pink-tinged urine (with blood in it). You will need treatment in hospital. Nowadays stones can often be broken up by ultrasound (lithotripsy) without the need for an operation or be removed through an endoscope.

How to reduce the risk of stone formation:
- increase your fluid intake
- cut down on foods which are high in calcium (especially milk and cheese)
- keep urine acid.

Guide to General Care
Fluid intake
Considering the difficulties with continence, it may be tempting to drink less fluid. This is a mistake, especially if you use an indwelling catheter. You need a good fluid throughput to keep your kidneys clean and bladder washed out and functioning properly. If you are prone to urinary tract infections, increase your fluid intake (preferably to at least 3 litres or 5 pints per 24 hours), make sure your urine is slightly acid and if necessary take vitamin C (not the effervescent type). Some SCI people have found that cranberry juice in liquid or tablet form is useful.

Regular emptying
It is essential that your bladder is emptied regularly and as completely as possible (preferably every 3–4 hours during waking hours). An overfull bladder may cause urine to reflux or ‘back up’ into your kidneys and can cause infection and damage. An overfull bladder can cause autonomic dysreflexia.

Inadequate emptying of the bladder causes sediment and deposits to build up, increasing the likelihood of infection and bladder stones.

Bathrooms / Toilets
Make sure that your bathroom at home is well adapted for you:
- make sure it is easy to get in and out of
- have hand rails in the right place
- have a hand basin at a suitable height
- use a padded toilet seat (important to avoid pressure sores)
- include a low shelf or work surface
• the supplies you require are within easy reach.

If you are able to use one, a bidet can be very useful. Alternatively, there are special combined toilet/bidets, but take care the water is not too hot.

Who can help me when I need questions answered?
• Your spinal injuries unit is the first source of help and advice as they have a vast amount of experience

• Your GP – mainly by making referrals to appropriate specialists

• A Continence Advisor, employed by your GP Surgery or the Clinical Commissioning Group (formerly PCT) may see you at a clinic or visit you at home. He/she can usually tell you what equipment and supplies are available and where to get them

• The District Nurse may help with bladder and bowel care and arrange supplies for you initially

• Social Services, run disposal service for soiled materials

• The Bladder and Bowel Foundation (B&BF)
  Provides information and support for all types of bladder and bowel related problems, for patients, their families, carers and healthcare professionals.
  Nurse helpline: Tel: 0845 345 0165
  General enquiries: Tel: 01536 533255
  email: info@bladderandbowelfoundation.org
  Website: www.bladderandbowelfoundation.org

Radar Key
For gaining entry to accessible toilets at events and public places. You can obtain a radar key from:

Disability Rights UK
https://crm.disabilityrightsuk.org/007-key

Age UK
http://www.ageukincontinence.co.uk/incontinence-shop/toilet-aids/disabled-toilet-keys.html
To help you find out what's available, we’ve included a list of companies that are frequently used by SIA members for catheters and continence products.

SIA Healthcare
SIA Healthcare is SIA dedicated Home Delivery Service that will provide all of your urology and stoma appliances and prescription medication efficiently and discreetly to your door, at a time to suit you.

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<tr>
<th>Company</th>
<th>Address</th>
<th>Phone</th>
<th>Website</th>
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<tr>
<td>Wellspect Healthcare</td>
<td>Park, Brunel Way, Stonehouse, Gloucester, GL10 3GB</td>
<td>0800 652 3350</td>
<td><a href="http://www.wellspect.co.uk/">http://www.wellspect.co.uk/</a></td>
</tr>
<tr>
<td>Bard Ltd</td>
<td>Forest House, Brighton Road, Crawley, West Sussex RH11 9BP</td>
<td>01293 527888</td>
<td><a href="http://www.crbard.com">www.crbard.com</a></td>
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<tr>
<td>CS Bullen Ltd</td>
<td>3-7 Moss Street, Liverpool L6 1EY</td>
<td>0151 207 6995</td>
<td></td>
</tr>
<tr>
<td>Coloplast Ltd</td>
<td>Peterborough Business Park, Peterborough PE2 6FX</td>
<td>01733 392000</td>
<td><a href="http://www.coloplast.co.uk">www.coloplast.co.uk</a></td>
</tr>
<tr>
<td>Hollister Ltd</td>
<td>Rectory Court, 42 Broad Street, Wokingham, Berkshire RG40 1AB</td>
<td>0118 989 5000</td>
<td><a href="http://www.hollister.com/">http://www.hollister.com/</a></td>
</tr>
<tr>
<td>Jade-Euro-Med Ltd</td>
<td>Unit 14, East Hanningfield Industrial Estate, Old Church Road East Henningfield, Chelmsford, Essex CM3 8BG</td>
<td>01245 400413</td>
<td><a href="http://www.jade-euro-med.co.uk">http://www.jade-euro-med.co.uk</a></td>
</tr>
<tr>
<td>Manfred Sauer UK</td>
<td>Unit 3 IO Centre, Lodgefarm Industrial Estate, Northampton, NN5 7UW</td>
<td>01604 595696</td>
<td><a href="http://www.manfred-sauer.co.uk">http://www.manfred-sauer.co.uk</a></td>
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JS
Revised December 2015
WHAT IS SIA?

SIA is the national charity for spinal cord injured people and their families. If you, a relative or friend is paraplegic or tetraplegic, or you are interested in our work, why not join us? Membership is free of charge and all new UK members will receive a year’s free subscription to SIA’s bi-monthly magazine *Forward*. An annual subscription to *Forward* is £20.00. We also circulate a monthly email newsletter, ‘eclips’ to all who subscribe while our popular interactive website offers a Message Board as well as hundreds of pages of useful information.

We produce a wide range of publications (available to purchase) dealing with all aspects of living with spinal cord injury including publications specifically for health care professionals and have an extensive series of free Factsheets on a wide range of topics. For those pursuing a compensation claim; we publish a Directory of Personal Injury Solicitors in book form and as a mobile app.

Our services begin when you are newly injured and will support you as you rebuild your life. Whether you’re being treated in a Spinal Cord Injuries Centre, general hospital or other non-specialist environment, we will be there for you. Our Peer Support Officers provide one-to-one support, practical help and advice, encouragement and a listening ear. They will also support your family members and friends. This support doesn’t stop once you are discharged. Our Peer Support Officers will make home visits to help ensure your transition from hospital to home is as smooth as possible, and will work with you to rebuild your life after your injury. When you are ready to consider the next step our Vocational Support service will also support you in looking at your future opportunities for those wishing to return to employment, retrain or take up volunteering

You can also contact our Freephone Advice Line by e-mail, text, post and phone for information on all aspects of spinal cord injury. Our Ageing project works to improve the quality of life for people ageing with a spinal cord injury and can be accessed via the Advice Line.

SIA also actively campaigns on vital issues affecting the everyday lives of disabled people, as set out in our campaigns manifesto. We are represented on major voluntary and statutory bodies and our own Governing Board is composed of spinal cord injured people. We have our own state-of-the-art premises, SIA House, which combines the twin principles of inclusive design and accessibility and from here we run the only specialist spinal cord injury Library in the country.

We are active on social media and also have a Message Board on our website providing an online community for spinal cord injured people, their family members and friends.

To find out more, or join us, please write to us at:

Spinal Injuries Association, SIA House, 2 Trueman Place, Oldbrook, Milton Keynes MK6 2HH or contact us on:

General Office: 01908 604191 (9am-5pm)
Freephone Advice Line: 0800 980 0501 (11am-1pm & 2pm–4.30pm)
Website: [www.spinal.co.uk](http://www.spinal.co.uk)
E-mail: sia@spinal.co.uk
Text: Text SIA and your enquiry to 81025 (messages will be charged at your standard network rate)

SIA Registered Charity Number: 1054097