### Children’s services

#### Bladder and voiding problems in children

**Introduction**

Bladder and voiding (wee’ing) problems are common in children. The term ‘voiding dysfunction’ is a broad term which describes any voiding pattern that is not normal for the child’s age. This leaflet includes information on:

- How the bladder works
- What causes bladder and voiding problems in children?
- What are the problems that children can have?
- Tests that your child may need
- What you can do to help your child
- Medication and surgery

At the end of this leaflet you will find contact numbers for use if you have further questions or queries.

**What is the bladder and how does it work?**

The bladder, along with the kidneys, ureters and urethra, is a part of the body’s urinary system. Each part of the urinary system has an important job to do:

- The kidneys filter blood to remove waste products and make urine.
- Urine flows from the kidneys to the bladder via the ureters.
- Valves between the ureters and the bladder prevent urine from flowing back up to the kidneys.
- The bladder stores urine and its muscles work to empty the urine out.
- The urethra is the tube through which the urine leaves the bladder and exits the body.

The important muscles that relate to the bladder are; firstly the ‘detrusor muscles’ in the bladder wall and secondly the ‘sphincter’ which is a ring of muscle at the junction of the bladder and urethra which stops urine leaking out between voids (wee’s).

The bladder is like a balloon inside your body that fills up with, and stores, urine. The bladder should stretch easily as it fills with urine and should not contract or get increased pressure inside as it fills.
The bladder increases in size as your child grows and so, gets an increased capacity and therefore, older children can hold more urine and void less regularly than young children who, because their bladders can hold less, need to void more frequently.

To help understand how the bladder works, imagine you are holding a balloon filled with water; your fingers on one hand hold the neck of the balloon shut and so are acting like the sphincter muscle. Your other hand rests on and around the balloon just like the detrusor muscle. The best way to empty the balloon of water is to relax your fingers holding the neck of the balloon and at the same time, squeeze down with the hand around the balloon itself. Relaxing one hand whilst squeezing with the other takes coordination and this is what the sphincter and detrusor muscles should do when you urinate (‘wee’); the sphincter relaxes at the same time that the detrusor bladder muscle contracts.

What is considered normal with regards to bladder control?
What is considered normal depends on your child’s age. When we are babies our bladders fill and empty without our control as a reflex when the bladder is full. As we get older we start to learn to block this reflex; our brains learn that we can control when the bladder contracts and also stop it from contracting and so we become ‘potty trained’. The age at which children gain brain control over their bladders varies and so children differ greatly in how long it takes them to become fully toilet trained. Whilst most children will be dry in the day by the age of 5 years, 1 in 75 children older than five will have some degree of day time wetting.

For all children, night time bladder control takes longer to develop than day time control but again, the age at which children gain night time dryness also varies greatly. In the UK approximately half a million children aged between 5 and 16 wet the bed but the percentage of children decreases with age. For example, it is reported that eight percent of four and a half year olds wet the bed whilst one and a half percent of nine and a half year olds wet the bed and only one percent at adulthood.

What causes bladder and voiding problems in children?
There are many causes of bladder and voiding problems in children. Although parents often worry that their child’s problem will be due to an abnormality in the urinary or neurological systems (called ‘organics causes’), less than one percent of daytime wetting is due to an organic cause. For most children the cause of their problem is ‘functional’ rather than organic, that is, there is no underlying anatomical or neurological problem.

The more common causes include:

- Infections that affect the urinary tract (such as urinary tract infections or urethritis).
- Irritants to the urinary tract.
- Behavioural problems or poor habits (for example infrequent use of the toilet due to the child having too much fun or being too busy to go to the bathroom, poor toileting habits, holding on by squatting or crossing of the legs or holding one’s genitalia, psychological or emotional stress such as change of school).
- Stress incontinence; this means wetting during activities such as coughing.
- Giggle incontinence; this is the emptying of the bladder during laughing.
- Delayed night time bladder control (called ‘nocturnal enuresis’).
Less common causes include:

- Some children are born with problems in the anatomy of their renal tract; these are called ‘congenital’ problems.
- Some children acquire problems in the anatomy of their urinary tract due to trauma or having a tumour.
- Some children have problems of the brain or spinal cord (such as cerebral palsy and spina bifida) that affects the nerves that control bladder function.
- Occasionally genetic diseases can affect the urinary tract.

What are the common bladder and voiding problems that children experience?

Children may experience only one problem or symptom but more commonly children experience more than one of the following:

**Urgency**

Children with urgency have to rush to the toilet as soon as they feel the need to wee and may wet themselves if they do not have access to a toilet immediately.

Children who hold on for a long time then wet while rushing to get to the toilet do not have urgency; they have simply waited too long before deciding to go to the toilet perhaps because they were busy playing and so didn’t listen to the signals telling them to use the toilet.

**Frequency**

Your child will be diagnosed with ‘frequency’ if they pass urine eight or more times every day but only pass small amounts of urine each time.

Children that pass urine eight or more times per day but pass good or large volumes are not diagnosed with frequency.

Frequency can be due to your child having a smaller than normal bladder for their age. As the bladder is smaller it will hold less urine and so feel full with even small amounts of urine. Frequency can also occur because the bladder has been irritated by concentrated urine or by blackcurrants, caffeine or carbonated drinks so it is important that such irritants are avoided.

**Incomplete bladder emptying**

Incomplete bladder emptying means that some urine is left behind in the bladder after having a wee. It is normal for babies to retain some urine in their bladder after they have had a wee. However, as children get older bladder contraction is coordinated with relaxation of the pelvic floor in order to achieve smooth and complete bladder emptying.

Some children use the toilet in a hurry and so don’t empty their bladder completely. Occasionally children are found to have a specific problem called ‘dysfunctional voiding’ in which they are unable to relax their sphincter muscle when trying to wee (imagine squeezing on the balloon whilst your fingers at the neck of the balloon continue to squeeze the neck of the balloon closed).

When bladder emptying is incomplete, the urine that has been left behind can leak out later. Old urine left in the bladder can also cause urine infections. It is important that
children take their time to wee and learn to relax. Children with incomplete bladder emptying should be encouraged to ‘double void’ (see below).

**Urinary tract infections**
Infection within the urinary tract can cause frequency, urgency and pain on voiding. Infection can be detected with a simple urine test. A specific leaflet on urinary tract infection in children (PIN0210) is available; please ask your child’s nurse or doctor if you would like one.

**Infrequent voiding (also called ‘the underactive’ or the ‘lazy bladder’)**
Children who void three or fewer times per day have infrequent voiding. Normally, as our bladder fills it sends signals to the brain so that we become aware that we need to use the toilet. Children can develop a habit of ‘holding on’ and ignore these signals. Because the child is not voiding frequently enough their bladder, over time, becomes stretched and so they develop a larger bladder than is normal for their age. Children with infrequent voiding often have incomplete bladder emptying, are more likely to have urinary tract infections and may experience wetting because the urine is overflowing from the bladder.

Children who have developed a habit of ‘holding on’ may not notice they need to go to the toilet so it is very important that these children void regularly (timed voiding every two to three hours) rather than waiting until the sensation to void is felt.

**Over active bladder**
Overactive bladder is a condition in which the large bladder muscle (the detrusor muscle) contracts involuntarily and so the child experiences frequency and urgency and leakage of urine that can range from a damp patch on underwear to complete emptying of all urine from the bladder. Children with an overactive bladder may have a smaller bladder than is normal for their age.

**Post void incontinence (vaginal voiding)**
When some girls void, a small amount of urine can backflow up into the vagina rather than pass straight into the toilet. When the child stands up the urine then trickles out of the vagina and onto the underwear or, sometimes the girls can feel the need to void again. Symptoms include dribbling of urine immediately after voiding, local irritation to the genitalia and an odour being noticed. (If your child leaks urine consistently rather than only just after a void then other causes of leakage will need to be investigated.) Vaginal voiding tends to occur in young girls whose labia (inner lips around the vagina) are still fused and in girls who do not spread their legs wide enough whilst sitting on the toilet.

To prevent vaginal voiding girls need to push their knickers right down to their ankles and then sit on the toilet with their legs wide apart. In girls where this does not resolve the problem completely, standing after voiding, turning around and sitting back down and wiping again usually solves the problem.

**Nocturnal enuresis**
Nocturnal enuresis is the medical name for bed wetting. It is not known why some children take longer than others to become dry at night but we believe that bed wetting is due to one of a combination of:
• Not waking to bladder signals
• Lack of a hormone called vasopressin which is responsible for making the kidneys produce less urine during sleep. Levels of vasopressin produced increases with age.
• Wetting problems in the day which also have an effect on night time wetting.
• Constipation
• Family traits; bedwetting can run in families
• Anxiety

Some children have never been reliably dry at night; this is called primary nocturnal enuresis. Other children start to wet the bed again after having been dry for at least six months; this is called secondary nocturnal enuresis. Primary and secondary enuresis are assessed and treated in the same way.

A specific leaflet on nocturnal enuresis in children is available; please ask your child’s nurse or doctor if you would like one.

**How will my child be diagnosed?**
To find out the cause of your child’s problem your child will need to have some tests and you and your child will need to provide some detailed information to the nurses and doctors. A parent or carer can be present for all of the tests:

**Information needed**
The specialist nurses and doctors will ask you and your child lots of questions, including questions about your child’s voiding pattern, their bowel function (frequency of passing a stool or ‘poo’), whether there is any straining and what the stool looks like, how the problems affect your child, the presence of any other problems.

You are likely to be asked to fill in a ‘voiding diary’ which means you will need to write down when your child drinks, what they drink and how much as well as when they wee and how much. If you are asked to complete a voiding diary full, instructions on how to fill it in are also provided.

**Physical examination**
The specialist nurse or doctor will thoroughly examine the child’s back and genitalia and examine the lower limbs to assess for strength, sensation and reflexes.

**Urine tests**
Your child will be asked to provide a sample of urine that can be tested in the clinic (called ‘urinalysis’). If there are any abnormal findings on the clinic test, the urine will be sent to the laboratory for more detailed assessment (called microscopy and urine culture).

**Bladder scan**
A portable bladder scan can be undertaken in the clinic by one of the nurses or doctors; the scan is a type of ultrasound. Gel is placed on your child’s lower abdomen over the bladder and then a transducer (see picture below) is passed over the lower abdomen so any urine in the bladder can be seen. Your child may then be asked to pass urine and the scan repeated so we can assess if the bladder has emptied completely.
Uroflowmetry

Uroflowmetry (also called a ‘flow rate test’) involves passing urine into a machine which has the appearance of a portable toilet. The machine has a computer attached which measures how much urine your child passes and how quickly.

Blood tests

Sometimes blood tests are needed to assess how well the kidneys are working.

Other specialist tests

Depending on the findings of tests mentioned above, renal and bladder ultrasound may be arranged to assess for any obstructions in the urinary system, gain information on the bladder wall thickness and on how well the bladder empties. Ultrasound is not painful. Cold gel is placed onto a probe which is then passed over the child’s kidneys and bladder in the same way that a probe is passed over a pregnant mother’s abdomen.
Your child will then be asked to pass urine and then the bladder will be scanned again with the bladder empty.

Other specialist tests are usually only arranged if indicated by findings on ultrasound. They may be arranged to help get more information or confirm a diagnosis, for example:

**Non-invasive urodynamics** (also called ‘serial bladder scanning’) – a portable scan is taken after every void for an entire day to assess the bladder emptying.

**Magnetic resonance imaging (MRI)** – to identify any spinal cord abnormalities.

**Cystourethrogram** – a type of x-ray that looks for any backward flow of urine from the bladder, back up to the kidneys.

**Nuclear medicine scans (DMSA or MAG 3)** – to assess kidney function.

**Cystoscopy** – this means looking into the bladder with a tiny camera whilst your child is asleep under general anaesthetic.

If your child needs to have any of these specialist tests you will be given full information about what the test involves and we can provide specific information leaflets about the tests.

### What can my child do to help them improve and what can I do to help my child improve?

There are many things that you and your child can do to help improve their symptoms. First though, it is essential that your child is motivated; cooperation is essential. Secondly, your child has full support from you and other significant people in their lives (such as the school team). Thirdly, you and your child are patient; success will not come overnight but instead will take many months of hard work.

#### Sitting on the toilet correctly

Whilst many boys will prefer to pass urine whilst standing, some prefer to sit. It is important that boys have a wee in the position in which they are most comfortable.

For girls, it is important to sit on the toilet in a position which will encourage complete emptying of the bladder. Girls should sit on the toilet with their legs wide apart.

When sitting on the toilet it is very important that both feet are flat on the floor and if your child cannot reach the floor it is important that they use a footstool or step.

#### Regular ‘timed’ toileting

Timed toileting means going to the toilet regularly at set times (every two to three hours) rather than only going when the sensation to void is felt. For example:

- On waking
- Before leaving the house to go to school
- At morning break
- At Lunch break
- On finishing school
- Before the evening meal
- After the evening meal
- Before going to bed
Children are likely to need encouragement to undertake timed toileting because they are being asked to go to the toilet even though they may not feel they need to. You can encourage your child by initially rewarding them for going to sit on the toilet at the set times even if urine is not passed.

By frequently emptying the bladder, children reduce the chances of wetting and infections. Also, particularly in children with large bladders, they can start to recognise early signs from the bladder telling the brain that it is time to wee.

**Appropriate cleaning of the genitalia**

Our skin protects us by being a barrier against infection. Your child should wash around their genitals every day, avoid perfumed soaps and shower gels that can irritate the area and should use their own towel.

After using the toilet it is essential, especially in girls, that genitalia are wiped front to back to prevent transferring bacteria from the back passage (anus) to the urethra. Children often find balancing on the toilet and wiping in this way difficult so supervision may be needed and the use of a step for those unable to reach the floor with their feet will help.

**Drinking**

It is extremely important for children to have a good drink intake in order to maintain good health.

1) **Drinking enough**

How much a child needs to drink will depend on their age, whether they are male or female, the weather, what they have eaten and what physical activities they have been doing but every child should aim to have six to eight glasses per day.

As a guide:

<table>
<thead>
<tr>
<th>Age four to eight years</th>
<th>Boys and girls</th>
<th>1000 to 1400ml</th>
</tr>
</thead>
<tbody>
<tr>
<td>Age nine to 13 years</td>
<td>Girls</td>
<td>1200 to 2100ml</td>
</tr>
<tr>
<td></td>
<td>Boys</td>
<td>1400 to 2300ml</td>
</tr>
<tr>
<td>Age 14 to 18 years</td>
<td>Girls</td>
<td>1400 to 2500ml</td>
</tr>
<tr>
<td></td>
<td>Boys</td>
<td>2100 to 3200ml</td>
</tr>
</tbody>
</table>

2) **Drinking regularly**

It is better to drink smaller volumes of fluid regularly throughout the day than to have lots in one go. Children should aim to drink:

- On waking
- With breakfast
- Where permitted, during lessons
- Morning break at school
- With lunch
- On getting home from school
- Before the evening meal
- With evening meal
3) **Stopping drinks before bed**

   It is important that the majority of fluid is taken between waking and the child’s evening meal with only a small drink after dinner and no fluids one and a half to two hours before bed. This is especially important in children with bedwetting.

4) **Avoiding drinks that can irritate the bladder**

   Some drinks can irritate the bladder and so need to be avoided. For example, drinks containing caffeine, artificial sweeteners, carbonated drinks and drinks that contain blackcurrants. Water is the best to drink but fruit squashes (excluding blackcurrant) can be given as an alternative but need to be diluted well.

   Cranberry juice contains substances that reduce the risk of urinary tract infections so children should be encouraged to have one cranberry juice drink per day (about 250ml). Some children do not like the taste of cranberry juice and you can try giving your child cranberry extract in a tablet or capsule instead (available from health food shops).

**Prompts, encouragement and increasing motivation**

Changing behaviour and sustaining those changes takes hard work over a long period of time so it is essential that you and your child remain motivated and patient.

- Reward effort rather than outcome
- Use small steps to reward so that goals are achievable.
- Use charts and rewards to help motivate your child; rewards do not need to be expensive, for example, a sticker can be given each time a child has a drink and when a full row of stickers is achieved you could allow them to choose a film to watch with you at the weekend, or a game to play with you.
- Involving children can help motivate them; get your child involved in making their reward chart for example.
- Watches which can be set to alarm every two or three hours are available and can be worn by children to remind them to use the toilet.
- Make changes with your child; if you are aware that your own fluid intake isn’t enough, let your child see that you are also drinking more.

**Prevent and treat constipation**

Constipation can affect how your child voids and straining to pass stool (‘poo’) can weaken the muscles that support the bladder (the pelvic floor muscles). It is therefore essential that any constipation is treated, as resolving constipation often improves voiding.

- Drinking plenty helps to keep stools soft.
- Ensure your child eats a healthy diet with a wide range of fruit and vegetables.
- Some people find that introducing probiotic drinks or yoghurts help avoid constipation. There is some evidence that they can also change the bacteria in the stool and so may help to prevent urinary infections.
- Laxative medication can be given to children but, given only after talking with a nurse, doctor or pharmacist as children require doses to adults.
Treat urinary tract infections
If your child is diagnosed with a urinary tract infection (UTI) they will be given a course of antibiotics to treat it. It is very important that your child takes all medication as advised and completes the course of treatment.

It is a good idea to make a record of when your child had a UTI, what the bacteria was that caused it, the name of the antibiotic that treated the infection and how well it worked, so that if your child gets other infections this information can be given to your child’s doctor or nurse.

An information leaflet specific to urinary tract infection in children (PIN0210) is available; if you would like a copy please ask your nurse or doctor.

Holding on exercises
If your child’s bladder only holds a small volume but empties well your nurse or doctor may advise ‘holding on exercises’. To start with your child may find this very difficult and only be able to hold on for a few seconds. Distracting your child may help them to be able to hold on and/or measuring their wee and then seeing if they can hold on and have a bigger wee next time can help them see their progress.

Double voiding
Double voiding means having a wee then, depending on the severity of the child’s symptoms, either counting to 20 then trying to wee again or, getting off the toilet and returning to try and wee again five minutes later.

Double voiding is particularly important in helping children who have ‘incomplete bladder emptying’ (see above).

Talk to the school
Check that your child’s school allows easy access to drinks and also to toilets; if needed your nurse or doctor can provide a letter to the school.

Can medicines be given to help?
In some cases medication may be suggested to help your child. However, in children with functional bladder and voiding problems, all medication is in addition to, not a replacement for, good bladder training. Medications are most effective when children are drinking enough, drinking regularly and using the toilet regularly as described in section headed “what can my child do to help them improve and what can I do to help my child improve”.

Antibiotics
Antibiotics are only used when your child’s bladder or voiding problems are due to infection.

Laxatives
Laxatives are medicines which treat constipation; some help to soften the stool, others stimulate the bowel movement and others do both.
Anticholinergic medications
These medications relax the detrusor muscle that surrounds the bladder. In children with a small capacity bladder an anticholinergic medication may increase the bladder capacity. The medication can also decrease bladder contractions so can be used to help children with urgency and frequency. The names of the two anticholinergic medicines commonly used for children are:
- Oxybutynin
- Tolterodine

Desmopressin
Desmopressin is an artificial form of the naturally occurring hormone called vasopressin and works in a similar way to concentrate urine produced at night. Desmopressin is available on prescription for children over the age of five years.

Will surgery be needed?
In most cases where the bladder problem is functional, surgery is not needed but occasionally an organic, anatomical, problem is found that is causing the bladder or voiding problem and for which an operation can be performed. If your child needs an operation this will be fully explained to you and specific leaflets are available about the different types of surgery.

Are there any products I can buy to prevent my child’s underwear from being wet?
Information on continence products can be found on:
- The Education and Resources for Improving Childhood Continence Website www.eric.org.uk
- www.drylikeme.com provides information on absorbent pads which are thin, individually wrapped and designed to be placed into normal pants/knickers of children who may have wetting issues.

Summary
- Bladder and voiding problems are common in childhood
- Most problems are the result of functional rather than organic causes
- Simple measures can greatly improve functional problems. For example:
  - Ensure your child drinks plenty of fluids
  - Avoid fizzy drinks, ones containing blackcurrant, caffeine or artificial sweeteners
  - Include cranberry juice in your child’s diet
  - Visit the toilet at set times throughout the day; about every 2 to 3 hours
  - Get in the right position to wee, take your time and relax
  - Always wipe from front to back
  - Try to void, count to 20 then void again
  - Avoid constipation
  - Use incentives with small steps to success
  - Reward effort rather than success
  - Keep trying
Who shall I contact if I have any queries, concerns or questions?

For further information/queries please contact:

Your nurse specialist (Mon to Fri 08:00 to 18:00hrs) 01223 586973

The ward/clinic you were on______________________________________________

References:

- The Education and Resources for Improving Childhood Continence Website
  www.eric.org.uk

- NICE (Oct 2010) Nocturnal Enuresis; The Management of bedwetting in Children
  and Young People (Guidance cg111).

We are now a smoke-free site: smoking will not be allowed anywhere on the
hospital site.

For advice and support in quitting, contact your GP or the free NHS stop smoking
helpline on 0800 169 0 169.

Other formats:

If you would like this information in another language, large
print or audio, please ask the department where you are
being treated, to contact the patient information team:
patient.information@addenbrookes.nhs.uk.

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translation requests are funded and agreed by the department who has authored the
leaflet.

Document history

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Contact number: 01223 586973
Publish/Review date: October 2015/October 2018
File name: Bladder_and VOIDING_problems_in_children.doc
Version number/Ref: 1/PIN3784