



I'm delighted to announce ERIC will be hosting the first conference to introduce both new NICE Guidelines. Our 2010 Conference, 'Leading the Way: Educating, Empowering and Improving Service Delivery', will take place on 1st December 2010 at the Botanical Gardens in Birmingham. Keynote speakers will include Dr Jonathan Evans, chair of the Nocturnal Enuresis NICE Guideline Development Group and Dr Jenny Gordon, chair of the Idiopathic Constipation in Children NICE Guideline Development Group. The NICE Guidelines are an important step for the childhood continence sector and the ERIC Conference aims to improve understanding, uptake and implementation of this guidance by health professionals across the UK. The day will

combine a selection of keynote speakers and afternoon seminars as well as providing networking opportunities with delegates and exhibitors from a variety of settings. For further information, please visit the professionals section on www.eric.org.uk or email Natasha - natasha@eric.org.uk

Following last year's success, in June we will be launching our 'Banish the Wee Horror' campaign. This time round, the message will focus on sleepovers. We know thousands of children and young people dread summer sleepovers and holidays because they wet the bed. The campaign aims to increase awareness of just how difficult sleepovers can be for those suffering with bedwetting and encourage families to contact ERIC for support, information and resources. Last summer, ERIC's 'Banish the Wee Horror'



campaign saw calls to our Helpline rise by a third, and visits to our website soared. This year, we want to reach even more families to help them enjoy sleepovers without the fear of the Wee Horror! ERIC is grateful to Ferring Pharmaceuticals for its sponsorship of this year's campaign.

For further information from ERIC: Tel: 0117 960 3060 Helpline: 0845 370 8008 E-mail: info@eric.org.uk Websites: www.eric.org.uk and www.trusteric.org

Paediatric continence calendar

Ferring support the following events:

Conference	Date	Venue
Royal College of Paediatrics and Child Health (www.rcph.ac.uk) Spring Meeting	20-22 April 2010	Warwick University
The British Association of Paediatric Urologists Annual meeting (www.bapu.org.uk)	16-17 September 2010	Cambridge
ERIC Conference - Leading the Way: Educating, Empowering and Improving Service Delivery (www.eric.org.uk)	1 December 2010	Botanical Gardens in Birmingham

News and resources

The North Thames Paediatric Continence Forum

written by Dr C Yemula, Consultant Community Paediatrician, Bedford

The North Thames Paediatric Continence Forum was founded in April 08 by a small group of paediatricians and nurses with a special interest in paediatric continence issues.

We have successfully organised a conference 'Promoting continence in children with complex needs' in London on 20 March 2009 and plan to organise regular study days/meetings to raise awareness as well as to improve the management of continence problems in children and young people.

The recently-published flip chart 'Enuresis in children and young people - A teaching aid for parents and carers' featured in the July 2009 issue of this newsletter was developed by Dr Yemula with a significant contribution from our members. It can be used by healthcare professionals while explaining various aspects of enuresis to parents and carers. The flip chart is now available as a free resource via Ferring representatives.

Please contact Dr Arora on email: Nirmal.Arora@bcf.nhs.uk for further information.

East Suffolk Enuresis Service (ESES) Study Day

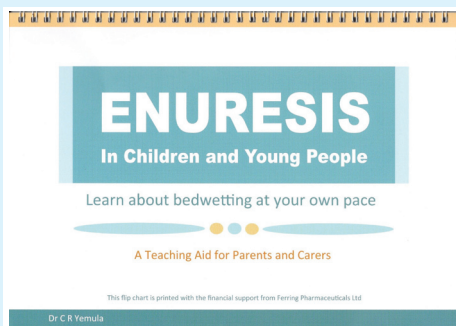
On 16 June 2009 the ESES team held a study day - Enuresis Update and Promoting Continence in Children and Young People - sponsored by Ferring. Discussions included: how to get

information to families of children over 5 with PNE; how to deliver a consistent service across Suffolk; toilet training initiation; improving interaction with children's centres and the new Continence Policy and Assessment form.

We are now pulling together the ideas from the delegates in order to improve the service we offer.



Kate Hendy, Cathy Fish, Judith Potter, Marie Clarkson, Caroline Nunn



Childhood Continence News and Views

Issue 5 MAY 2010

Our feature articles in this issue are written by Dr Philip Holland and Dr Fiona Cameron who explain the influence of bladder volume and of sleep deprivation on primary nocturnal enuresis (PNE). In addition we have feedback

from study days and conferences in the UK and a round-up of the proceedings at the international conference held in Istanbul from Dr Richard Butler.



The bladder as part of an integrated system aimed at achieving nocturnal continence

Dr Philip Holland, Consultant in Paediatrics, Leeds

The three systems model

As health care professionals at the forefront of managing children with continence problems you will know the importance of helping children from your very first meeting with them. This involves giving the child and parents a rational explanation of what is happening, as well as a constructive way forward to which they can themselves contribute. The three systems model was developed not only to help professionals approach continence problems in a rational way but also to help children and their parents. Alongside lack of vasopressin release during sleep, and an inability to rouse from sleep in response to bladder sensation, an integral part of the three systems model is the role of the bladder itself in achieving night time continence.

The importance of bladder volume

To be dry at night and to sleep through the night urine production over the period of sleep (often 12 hours in children) has to be less than bladder volume. The first studies described a natural circadian rhythm of vasopressin release which results in reduced urine production at night in those without enuresis compared with those with nocturnal enuresis. However work by Devitt showed that a circadian rhythm of vasopressin was lacking in only about one-third of children with severe enuresis. Others had high peaks of vasopressin during sleep, suggesting that a failure in the circadian rhythm of vasopressin is not the only cause of nocturnal enuresis.¹ Equally important is the volume of the bladder itself. A small overactive bladder will potentially result in nocturnal incontinence irrespective of the presence or absence of a circadian rhythm of vasopressin.

Vasopressin and urine production

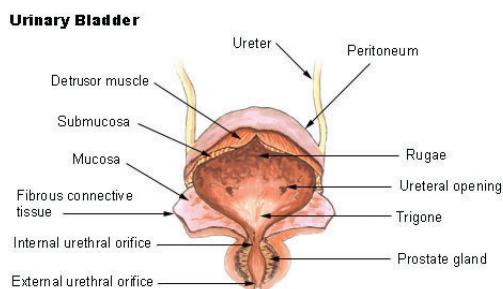
The bladder (Figure 1) is sometimes regarded simply as a balloon. In fact it is far more complex and sophisticated than that. The kidney filters the blood to produce urine 24 hours a day, seven days a week. The volume of urine reaching the bladder depends on the fine control of salt and water balance by the kidney, with vasopressin (through its V2 receptors in the renal tubule) influencing water reabsorption and thus the rate of urine production. The bladder therefore needs to store urine day and night and

must be able to expand appropriately during periods of increased urine production. Importantly this expansion must be smooth without inappropriate contractions. To have voluntary control over emptying, the bladder then needs to tell the brain when it is nearly full and, if you are asleep, to wake you up before emptying.

Other possible mechanisms

Theoretically, other potential mechanisms may help bladder control at night. There is some evidence that as the bladder fills it may stimulate vasopressin release and thus reduce urine flow under preset biological parameters. For this to be effective the bladder must be able to reach near maximum volume, so children who have small volume bladders may never be able to achieve this.

Figure 1



A second useful feature would be if the bladder was able to transfer water across the urothelium so that, once full, bladder volume could be reduced by transferring water out of the bladder. The human urothelium is said to be virtually impermeable to water, though hibernating mammals such as the black bear can recycle their bladder urine about 30 times over the period of hibernation (sleep could be argued to be a form of hibernation). Recent observations in children with nocturnal enuresis suggest that something like this might happen and subsequent work has confirmed the presence of aquaporins (water channel proteins) in the human urothelium, with their expression being affected by urine osmolality.^{2,3,4} Increasing bladder volume will

in this issue:

The bladder as part of an integrated system aimed at achieving nocturnal continence

Enuresis and sleep: Does your bladder keep you awake?

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Editorial advisory panel:

Dr Richard Butler, Consultant Clinical Psychologist, Baildon

Dr Fiona Cameron, Community Paediatrician, Motherwell

Dr Philip Holland, Consultant in Paediatrics, Leeds

Ms Jenny Perez, Director, ERIC

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Editorial liaison

We hope that you enjoy reading this issue of Childhood Continence News and Views. If you have any comments on this issue, or suggestions for topics that you would like to see covered in subsequent issues, please send them to: helen@helenlawn.co.uk This publication is sponsored by Ferring Pharmaceuticals

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The bladder as part of an integrated system aimed at achieving nocturnal continence - cont'd...

increase surface area significantly and theoretically allow water transfer to occur.

Electroencephalogram (EEG) and cystometry studies have shown up to 30–35% of children with nocturnal enuresis to have uninhibited bladder contractions while asleep, with smaller functional bladder capacities at the time of wetting than those who do not have an overactive bladder. Subsequently two groups were identified: those with normal daytime pattern of voiding and those with associated daytime overactivity.

Predictors of treatment success

Traditionally attempts to expand bladder volume have relied on 'stretching' the bladder by delaying voiding of urine. This does not work, however, and usually generates anxiety. Work carried out in Leeds (not published but presented at a previous ERIC meeting) has shown that there are two important predictors of success when treating children with nocturnal enuresis, both while on treatment and when weaning off treatment: a normal bladder volume and increased water intake during the day. It is likely that drinking more water increases bladder volume and anecdotally both Richard Butler and I have seen significant success with increased water drinking, once the child commits to it. Every attempt is made to encourage the child to drink water and minimise (or preferably stop) fizzy drinks, juices or squash (orange, blackcurrant etc).

Management strategies

How should all of this influence management in the clinic and what should children/teenagers be encouraged to do when they first come to clinic? Some ideas are listed in Table 1. Most children will work with you if they understand why you are asking them to do something.

Table 1

Give a clear explanation of how to be dry at night. Use the three systems approach if you find it helpful. (An accompanying leaflet may be useful.)

Explain how to measure bladder volume (give them their expected value) and suggest that volume should be measured around six times over the next few days. This may be repeated after a defined period of treatment but should not be done too frequently.

Discuss the role of water intake and encourage increasing water intake over the day – usually two glasses four times a day.

Explore the role of juices and squashes in bladder overactivity – often the child may observe this themselves.

If starting treatment, give an explanation of what you hope to happen and explain the likelihood of success.

Bladder volume in ml = age x 30 + 30. A 10-year-old will have an average bladder volume of 330 ml.

Aiming for a normal bladder volume is likely to be crucial for a number of reasons. It not only maximises capacity, but also increases surface area and may increase arousal and stimulate vasopressin release. To maximise the chances of success in helping the child/young person obtain nocturnal continence it is essential for them to understand the role of the bladder. Campaigns such as 'Water is Cool in School' and providing guidance on drinking is one easy way to start improving bladder volume and, one hopes, nocturnal continence.

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Enuresis and Sleep; Does your bladder keep you awake?

Dr Fiona Cameron, Community Paediatrician, Motherwell

"Sleep is the golden chain that ties health and our bodies together" (Thomas Decker, 1572–1632). As a community paediatrician Dr Fiona Cameron has a special interest in children with sleep problems. Here she discusses the links between sleep and health with particular reference to enuresis.

How do children with sleep problems present?

Our society seems to expect that having children will mean many sleepless nights. Perhaps as a result of this, many parents do not realise that they are bringing their child to see with me with a sleep problem. They are surprised that poor appetite, vomiting, poor attention, habitual drinking or challenging behaviour could be improved by working on sleep but are pleased when they do and can see for themselves the positive changes in their child.

Why is sleep important?

Sleep is an active process, and much more than the mere absence of consciousness. Although still largely undefined, there are a number of good quality studies that have established some of the functions and activities of sleep. Sleep has been shown to be intricately involved in the circadian rhythm of hormone release, with some essential hormones being primarily released at night. Established regular patterns of dreaming and non-dreaming sleep occur throughout the night and are critically involved in neurodevelopmental maturation, learning and the consolidation of memory.¹

What is it that governs how long we sleep?

Sleep and light are intimately related; melatonin, a pituitary hormone which is released in response to darkness, induces sleep and establishes our body's 24-hour circadian rhythm. In this country we sleep almost an hour less each night than we did 100 years ago. Many of us live a 24/7 life where light and television compete with sleep making it harder

for parents and children to establish good sleep patterns.

What are the long term effects of shortened or disrupted sleep?

Studies have enlightened us about the long-term health effects of shortened or disrupted sleep. Disrupted sleep has been linked to breast cancer,² dampened immune response and obesity (insulin resistance and leptin deficiency).³ Sleep deprivation in children has been associated with hyperactivity, poor attention and difficult behaviour.⁴

How is sleep affected by enuresis?

While we are sleeping, we are still aware, but that awareness is selective. This allows us to sleep soundly in a busy city, yet to wake easily when a baby stirs. Similarly, to be continent we need to be aware of our bladder and be responsive when it asks us to act to even if this is during the night. Children with enuresis do not respond and have often been reported by their parents to be generally difficult to wake.

A number of studies have been undertaken on sleep patterns in children with enuresis. These show normal patterns of dreaming sleep and non-dreaming sleep, yet there is increasing evidence that children with enuresis are actually harder to wake compared to those without enuresis.

CK Yeung, President of the International Children's Continence Society (ICCS), defines the ease of waking, or the transition from light sleep to complete awakening, as the 'awakening threshold' – the more elevated the threshold, the harder it is to wake. He has demonstrated that children with enuresis have elevated awakening thresholds. So why is the awakening threshold elevated in children with enuresis? The brain and bladder are in constant conversation whether we are awake or asleep and there is evidence that this bladder-brain dialogue starts at birth and continues throughout life. Bladder activity increases markedly prior to and during micturition. Some bladders therefore have periods of increased activity several times a night and this has been shown on electroencephalogram (EEG) to disrupt sleep.⁵

It is likely therefore that in some children the elevated awakening threshold is a result of long-term overstimulation by signals from the bladder. This view is supported by evidence that the elevated threshold returns to normal after successful treatment.⁵

Do we know the effects of disrupted sleep in children with enuresis?

Some studies in children with nocturnal enuresis have shown differences in terms of attention span, achievement and performance IQ compared to those without enuresis.^{6,7} Children with non-monosymptomatic enuresis are more likely to have behavioural issues and are also more likely to have active bladders overnight. Unpublished data has shown that when we treat the enuresis, cognitive performance and attention can return to normal.⁸

Can we establish better sleep patterns in children with enuresis?

I now routinely ask my patients and their parents about bedtime routines by establishing what they do before bed, what time they go to bed and what time they fall asleep. Children pass urine and take medications at bedtime, but this 'bedtime' may be a long time before they actually fall asleep. It is not unusual to find children watching television in bed for an hour or more. Television is stimulating and counteracts the darkness needed for effective melatonin release. It is possible that this may delay overnight vasopressin release. Children and even some resistant teenagers can have an increase in dry nights when good bedtime habits are established.

Treatments have been shown to improve the overnight quality of sleep. Some treatments such as alarms or timed waking will give short

term sleep disruption, whereas medications do not. Regardless of this, all successful treatments can be maintained long term and will ensure peaceful nights.

The next time you see a child with enuresis think about sleep. We can be confident that by treating the enuresis we may not just be ridding the child of an embarrassing problem but actually benefiting their general health and wellbeing.

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Primary nocturnal enuresis – the Turkish way

Dr Richard Butler, Consultant Clinical Psychologist, Basildon

This conference with the lofty title 'Nocturnal voiding dysfunctions: from bedwetting to nocturia', took place in October 2009 in the wonderful city of Istanbul. It was attended by over 200 medics from around Turkey, eager to gather the latest information on the subjects, and a small group from the UK, who tended to ask the tough yet apposite questions.

I'd been asked to kick the conference off by exploring the importance of treating nocturnal enuresis. The impact on both children and parents was discussed along with how we, as clinicians, might best support them. I also presented some results from the ALSPAC study suggesting we should aim to engage and treat children from 5 years, a theme to which the conference returned on a number of occasions.

Johan Vande Walle then outlined the causes of bedwetting – a lack of vasopressin, bladder over-activity and inability to arouse to bladder signals – which fitted neatly into the 'three systems approach'.

Jens Peter Norgaard then presented some powerful information on the bio-equivalence of DesmoMelt® compared to DesmoTabs® and some of the clinical differences of the former compared to the latter. In order to avoid relapse Daniela Marschall-Kehrel talked about some research which outlined the importance of

withdrawing desmopressin in a structured way rather than stopping the medication abruptly.

Throughout the two days there was useful time given over to discussing case studies. The timing of my flight back meant I missed the 'nocturia'

part of the conference but it interests me that something we regard as a solution for children who wet the bed (waking to void in the toilet), is seen as a problem in adults. I guess this reflects the many medical contradictions. We have much work still to do!

