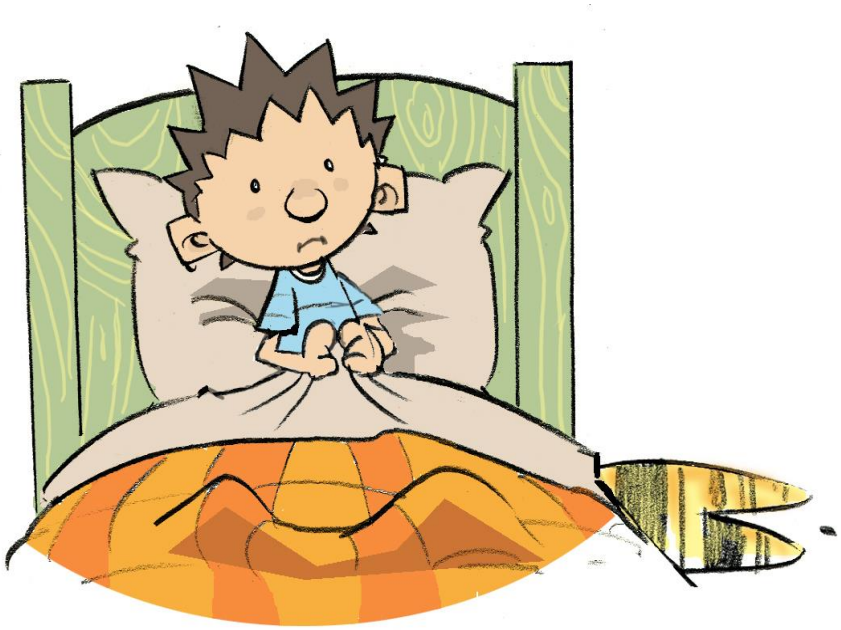
Bladder and Bowel UK
formerly PromoCon
part of Disabled Living

Enuresis

RCN School Nurses Conference
August 2017



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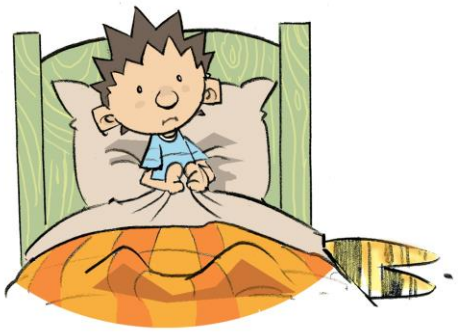
Definitions of enuresis

- Definitions vary
  - ICD 10 & DSM-V: incontinence – child age >5years, minimum once a month for at least 3 months
  - NICE: '...bedwetting...the symptom of involuntary wetting during sleep without any inherent suggestion of frequency of bedwetting or pathophysiology' (NICE 2010)
  - ICCS: 'Enuresis is both a symptom and a condition of intermittent incontinence that occurs during periods of sleep' (Austin et al 2014)

Most useful working definition?

Involuntary voiding of urine during sleep, with a severity of at least twice a week, in children over 5 years of age, when not caused by congenital or acquired defects of the central nervous system or by the direct physiological effect of substances such as a diuretic



(Butler et al 2005)

Definitions – types of enuresis

- Frequent enuresis: at least four times a week
- Monosymptomatic enuresis: bedwetting without other LUT symptoms
- Non-monosymptomatic enuresis: bedwetting with other LUT symptoms

(Austin et al 2014)

Definitions - more types of enuresis

- Primary enuresis : child has never been dry at night for 6 months or more
- Secondary enuresis: child has had period of being dry at night for more than 6 months -

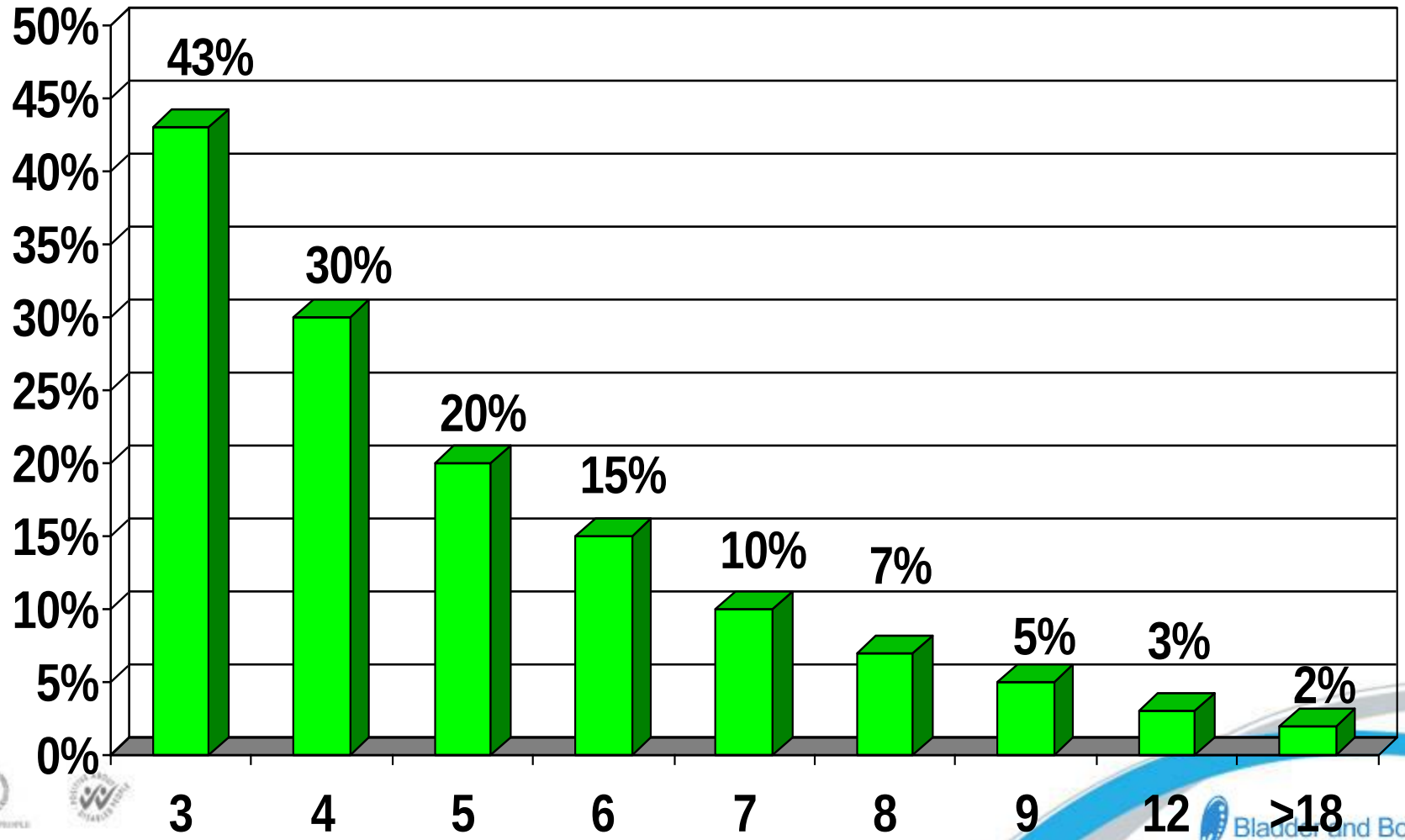
There are more likely to be behavioural co-morbidities that require investigation

(Austin et al 2014)

Incidence

- Less than two nights a week:
  - 21% of 4.5 year olds
  - 8% of 9.5 year olds
- More than two nights a week:
  - 8% of 4.5 year olds
  - 1.5% 9.5 years (Butler & Heron 2008)

Incidence of Bedwetting



Incidence

- Bedwetting will spontaneously resolve in up to 16% of children each year
- Severe bedwetting (every night) – less likely to respond spontaneously (Yeung 2006)
- More boys than girls until teenage and then incidence similar
- By age 13 most are wetting 3 or more nights
- 0.5 – 5.8% adults persistent nocturnal enuresis

Risk factors

- Some children are more prone to bedwetting:
  - Family history (von Gontard et al 2011, Sarici et al 2015)
  - Age (Sarici et al 2015)
  - Male gender (Sarici et al 2015)
  - Constipation (Van de Walle et al 2012)
  - ADHD (Von Gontard & Equit 2015)
  - Emotional and conduct disorders (Von Gontard & Hollman 2004)
  - Speech and language problems (Ferrara et al 2014)

Children with ADHD and similar issues are more difficult to treat, show lower compliance and have less favourable treatment outcomes

These children & their families need more support

Treatment

- Papyrus scrolls – hare testicles and red wine
- Africa – tying a frog to the child's waist
- 1897 Holt's textbook of paediatrics: Circumcision, make urine sour, avoid tea and coffee, no beer. Do not punish the child, it does more harm
- 1980s: No differentiation between day and night wetting, myths, social stigma, psychological role – NO TREATMENT!

Why treat?

- Children recognise the problem (Butler & Heron 2008)
- Social impact (Butler et al 1990)
- Reduced self-esteem (Norfold & Wootton 2011)
- Psychological and emotional problems (Joinson et al 2016)
- Poor school performance (Sarici et al 2015)
- Financial cost (Fleming 2012)
- Negative impact on quality of life (Kilicoglu et al 2014)
- Link with sleep problems and psychological dysfunction (van Herzeele et al 2016)

When treat?

- If there is parental intolerance – immediately
- Impact and severity of symptoms
- Family situation
- When the child and family present
  - Presenting at a younger age
  - ? more children presenting in the winter months

(Kushnir et al 2013)

Impact of successful treatment

- Negative effects of enuresis are resolved on successful treatment

- Postponing treatment is inappropriate

NICE NE Guidelines (2010) Principles of care

- Inform children and young people with bedwetting and their parents or carers that it is not the child or young person's fault and that punitive measures should not be used in the management of bedwetting **(*KPI*)**

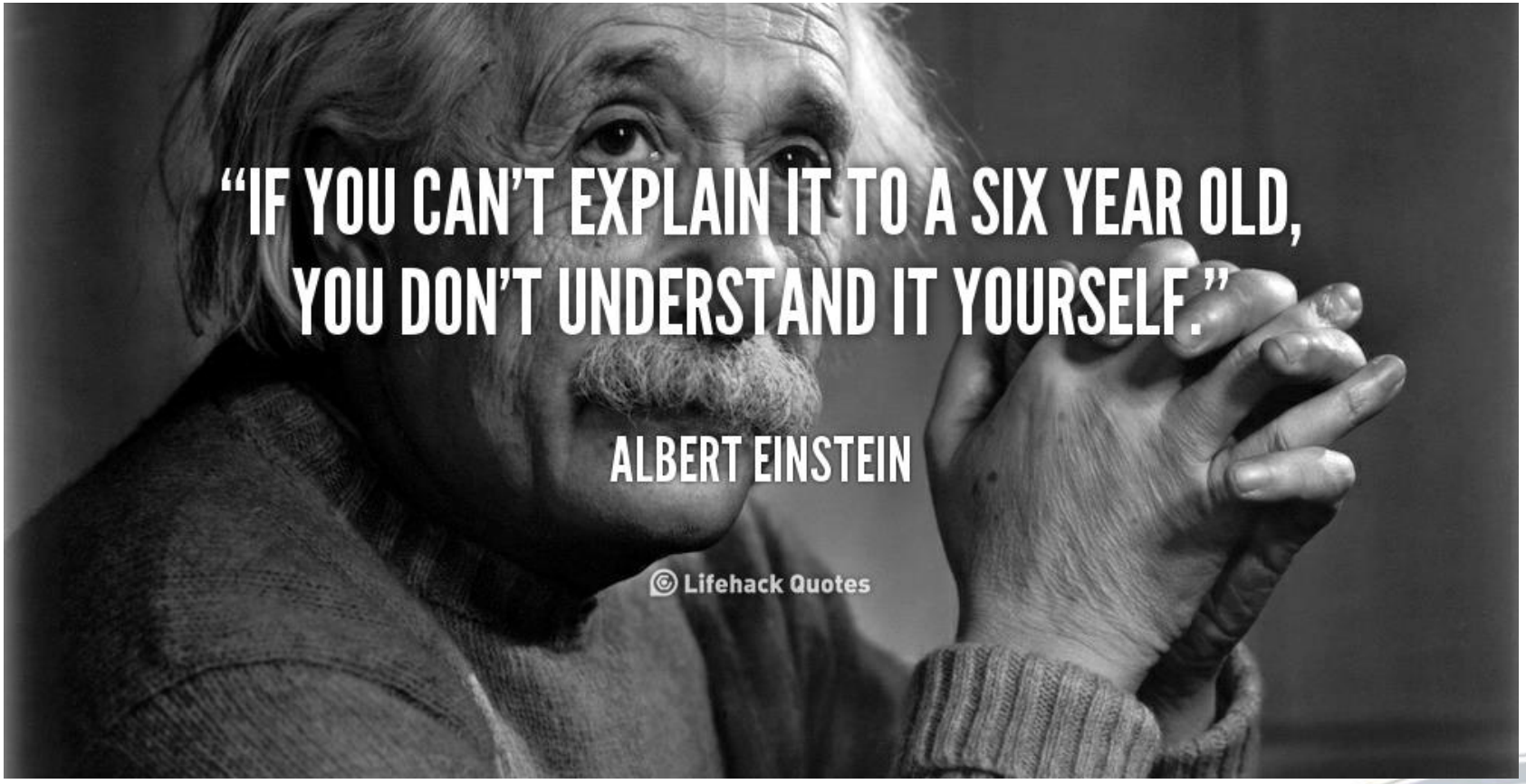
- Offer tailored support, assessment and treatment to all children and young people with bedwetting and their parents or carers **(*KPI*)**

- Do not exclude younger children (for example, those under 7 years) from the management of bedwetting on the basis of age alone **(*KPI*)**

NICE Bedwetting QS (2014)

- Statement 1. Children and young people who are bedwetting have a comprehensive initial assessment.
- Statement 2. Children and young people have an agreed review date if they, or their parents or carers, are given advice about changing their daily routine to help with bedwetting.
- Statement 3. Children and young people, and their parents or carers if appropriate, have a discussion about initial treatment if bedwetting has not improved after changing their daily routine.
- Statement 4. Children and young people who are bedwetting receive the treatment agreed in their initial treatment plan.
- Statement 5. Children and young people whose bedwetting has not responded to courses of initial treatments are referred for specialist review.

Explanations

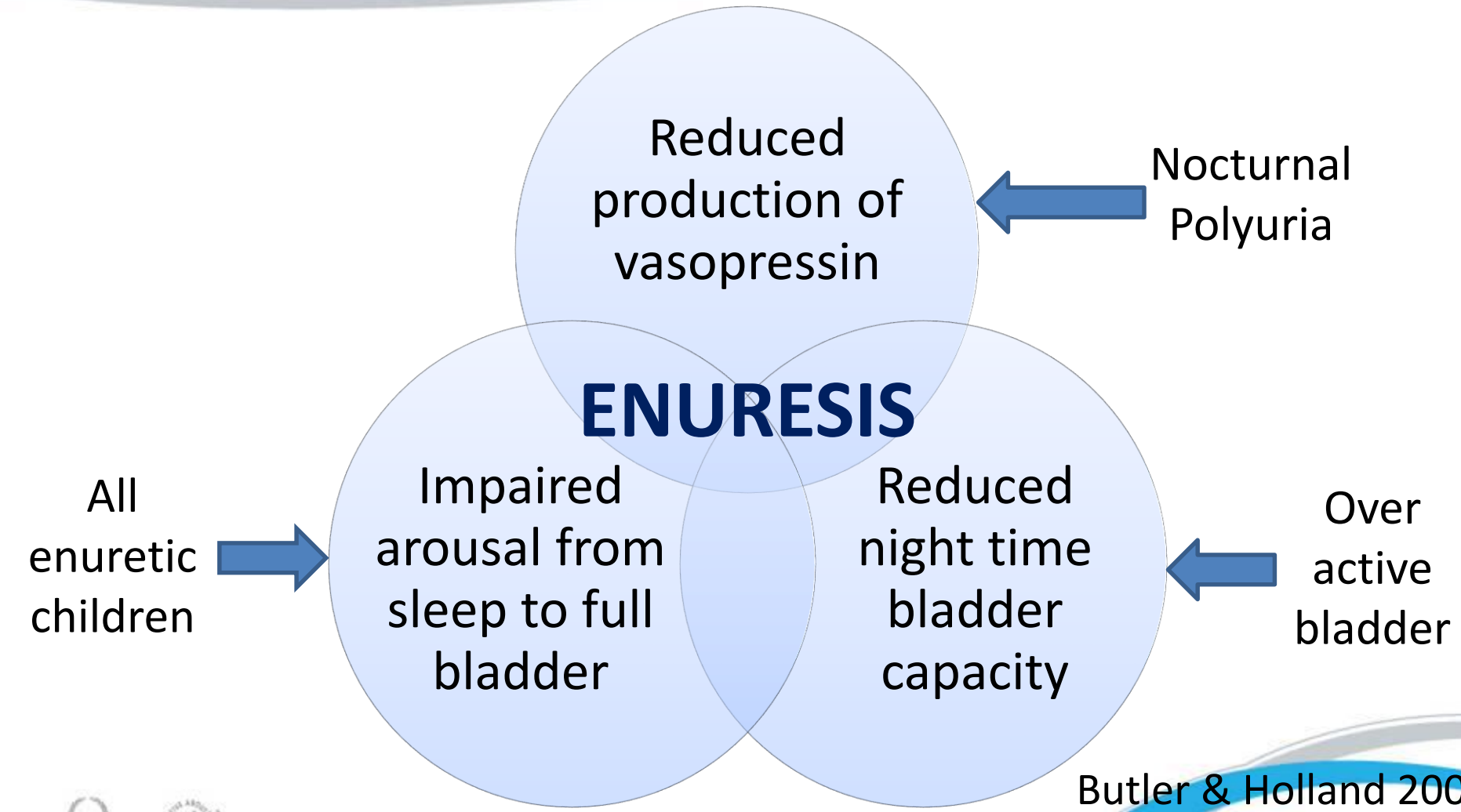


Three systems approach

- Systematic approach to understanding causes
- Model for providing explanations to families
- A means to facilitate assessment
- Aids appropriate treatment selection and compliance
- Emphasizes wetting outside the child's control

(Butler & Holland 2000)

Three systems model



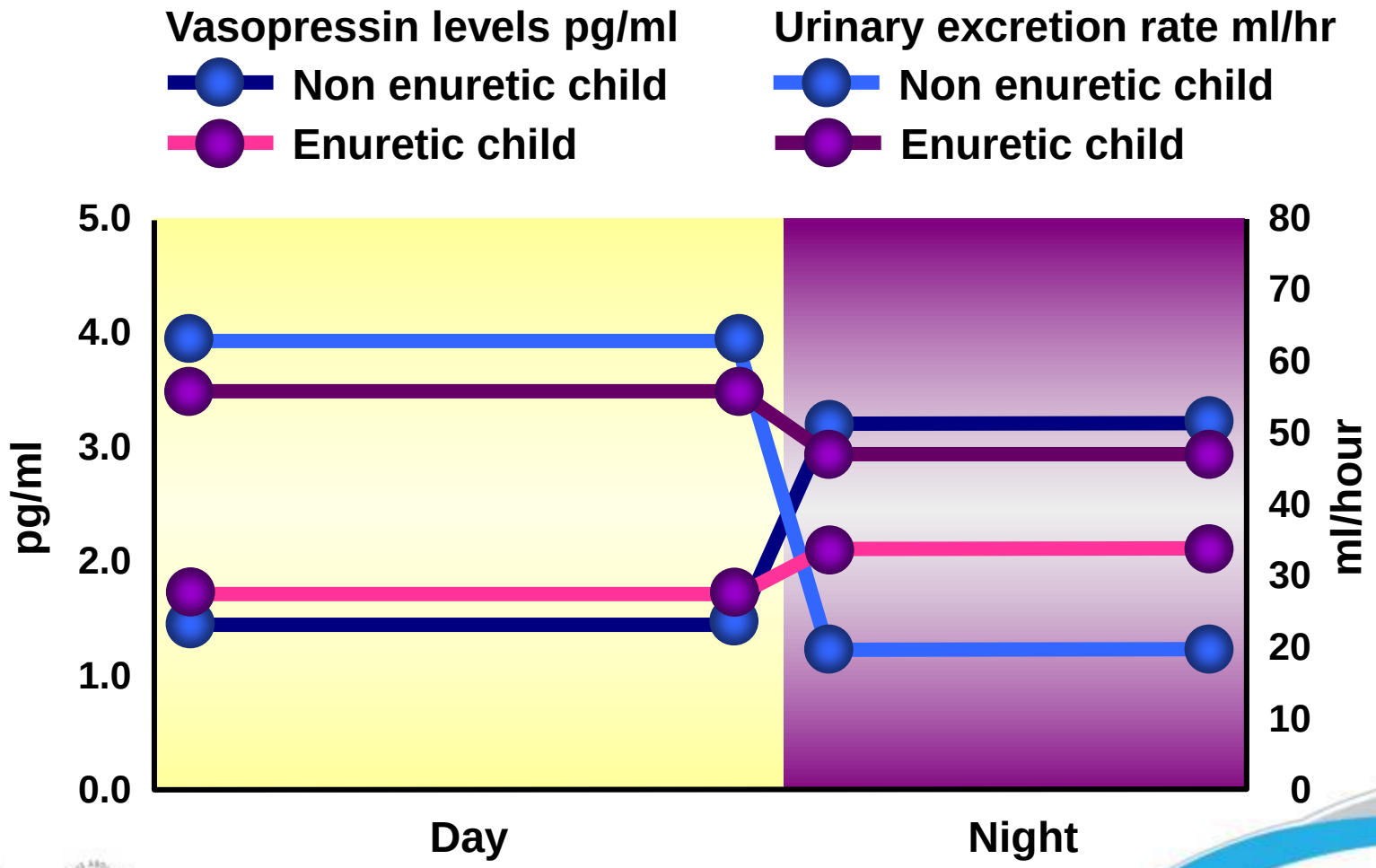
Butler & Holland 2000

Nocturnal polyuria

- Diuresis exceeding 130% of EBC may be due to disturbance of nocturnal secretion of vasopressin
- Nightly variation in nocturnal diuresis
- Urine output on dry nights lower than on wet

(Dossche et al 2016)

Diurnal variation in plasma vasopressin and urine production



Rittig S et al. *1997*

Overactive bladder

- Detrusor overactivity
  - Frequent daytime voiding (> 7 times /day)
  - Urgency
  - With or without day time incontinence

(Austin et al 2015)

  - Unsuccessful holding manoeuvres
  - Low or variable voided volumes

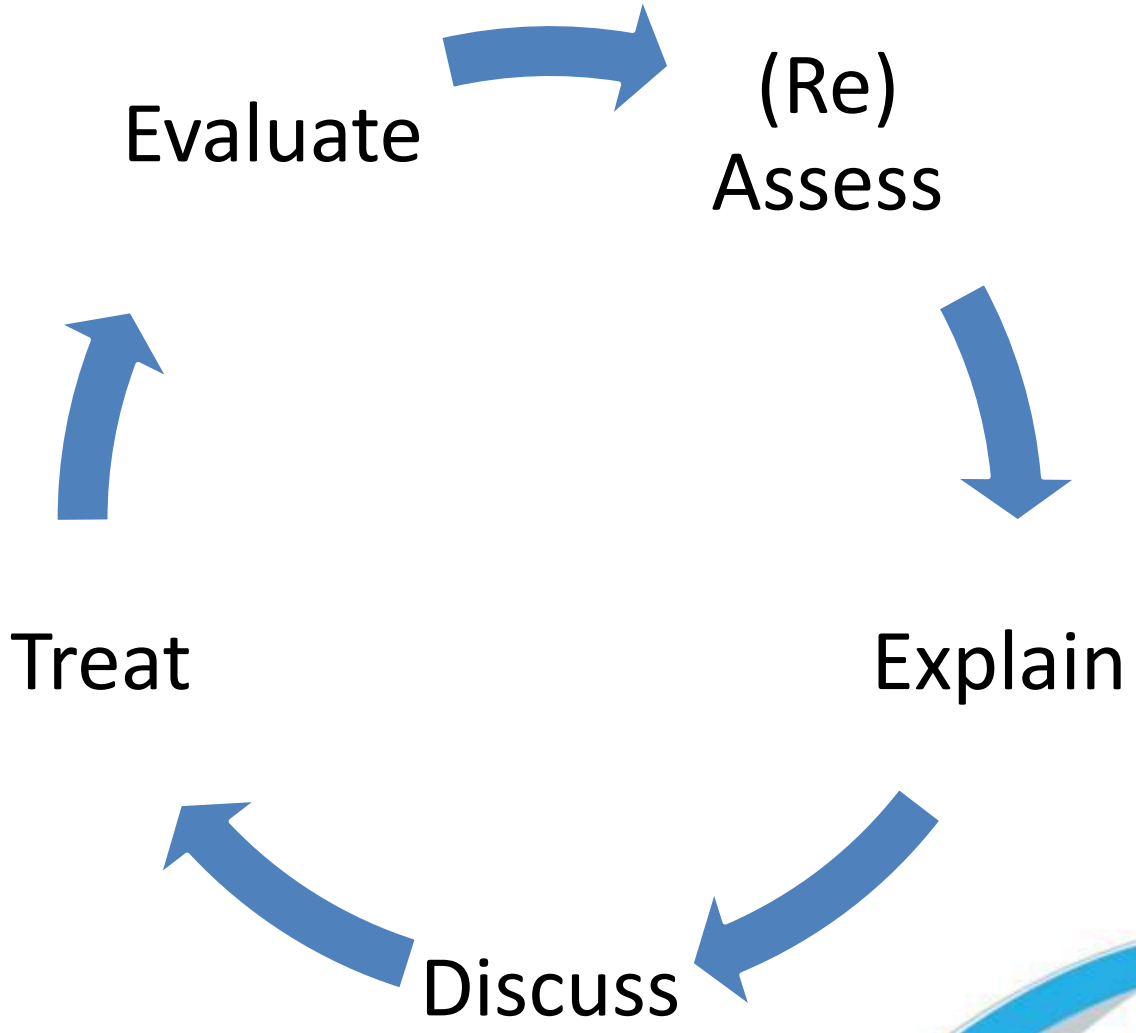
Overactive bladder

- There may be normal daytime bladder function and reduced night time bladder capacity (Yeung et al 2002)
- Some complete and some incomplete bladder emptying during enuretic episodes (Hagstroem et al 2004)
- The incidence of LUT dysfunction is higher than previously thought (Dossche et al 2016)

Lack of arousal from sleep

- There is increased cortical arousal and higher incidence of PLMS in enuretic children (Dhondt et al 2014)
- Coritical arousal – problem is not deep sleep
- Enuresis: shorter periods of continuous sleep
- Sleep deprivation – difficulty in arousing
- Role of the CNS not clear
- Treatment can improve sleep (Dossche et al 2016)

How to treat



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Assessing wellbeing - safeguarding

- Wetting may be caused or exacerbated by emotional problems
- Punitive reactions by parents may exacerbate the wetting and may be abusive
- Children may be more vulnerable to abuse due to wetting (Esezobor & Balogun 2016)
- **If concerned follow LSCB procedures, seek advice, treat or refer urgently**

Parental intolerance

- Must be assessed
- What is the cause of the wetting
  - Child lazy / not trying / defiant
- What is the effect of the wetting
  - Effect on the parent v effect on the child
- How do you cope with the wetting?
  - Punitive measures, humiliation, threats, abuse

(Butler 2006)

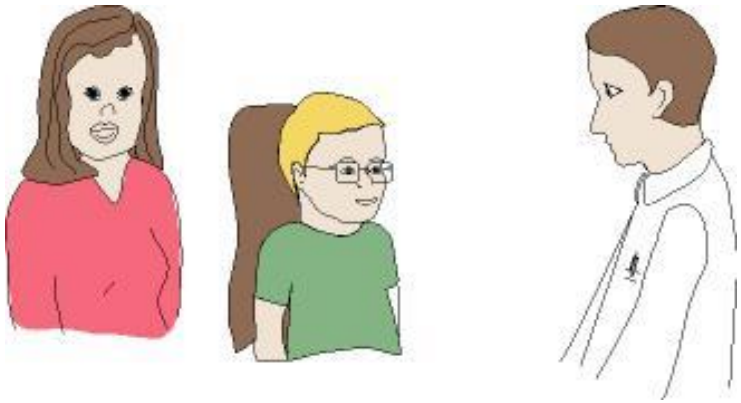
Addressing intolerance

- Maintain contact and provide:
  - Education and explanations
  - Empathy and support
- Need to foster understanding that the wetting:
  - is not in the child's control – it is not their fault
- Parents need help
  - Parents need to be helped to empathise with their child and to learn how to encourage their child with their efforts to remain dry (Butler & McKenna 2002)

Treatment principles

- Link treatment recommendations to assessment
- Tailor to individual needs and preferences
- Recognise expertise of child and family

Assessment



- History
- Frequency volume chart
- Assess for constipation
- Assess for parental intolerance
- Assess impact on child/family
- Exclude UTI if daytime symptoms

Frequency volume chart

- Gives detailed information about:
  - Drinks
  - Voids
  - Wetting incidents

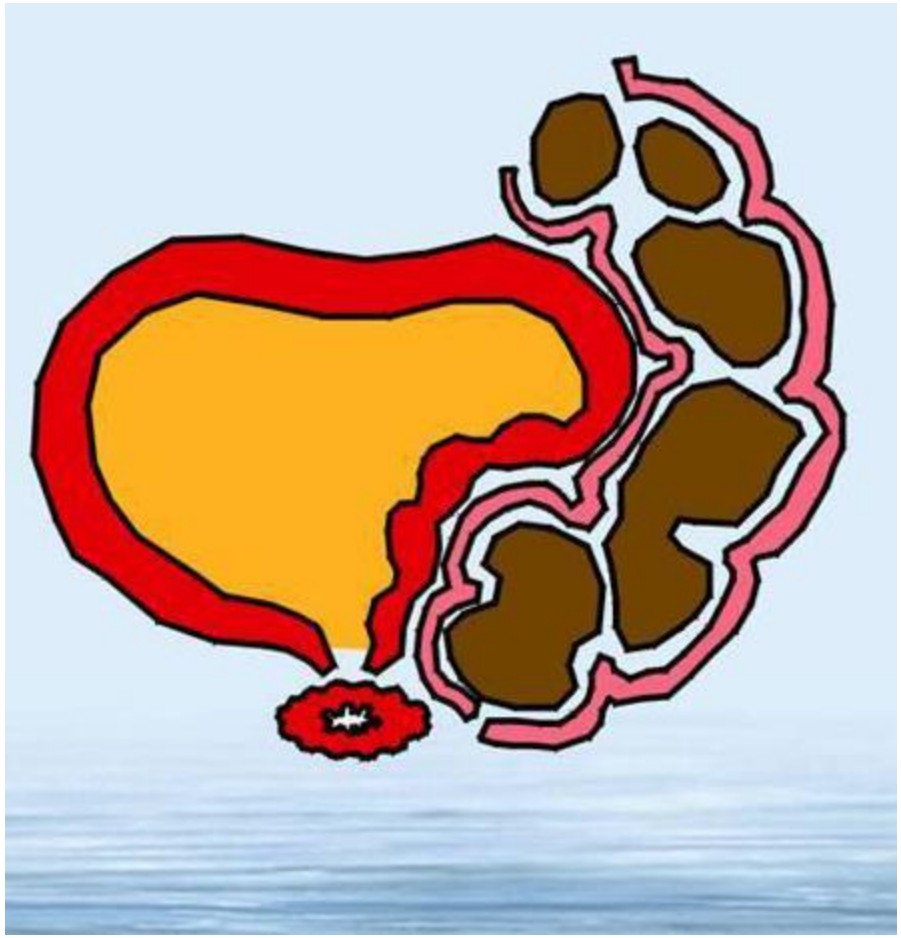
Name ..... Date .....

	Day 1			Day 2			Day 3		
	In	Out	Wet	In	Out	Wet	In	Out	Wet
7 am							150ml		
8 am	150ml	300ml		150ml	150ml			250ml	
9 am									
10 am					150ml				
11 am		150ml	X	200ml		X	200ml		
12 pm	200ml							100ml	X
1 pm					200ml		200ml		
2 pm	150ml	100ml							
3 pm		100ml	X	200ml				100ml	
4 pm	200ml				100ml		200ml	150ml	
5 pm									
6 pm	330ml	200ml	X		100ml	X			
7 pm				200ml			250ml	200ml	X
8 pm					100ml				
9 pm	200ml	200ml				X			
10 pm	100ml			200ml			330ml	100ml	
11 pm		200ml			200ml				
Midnight				100ml			100ml	150ml	X
1 am									
2 am									
3 am	150ml	200ml			150ml			100ml	
4 am									
5 am								100ml	X
6 am									

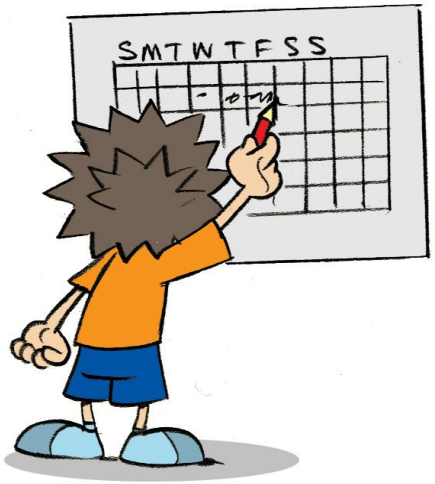
Constipation

- Rate of associated constipation is often underestimated in children with bladder problems such as nocturnal enuresis and daytime bladder problems
- Children and adolescents with LUTS symptoms have a higher rate of bowel disorders, including constipation and soiling, and vice versa (Halachmi & Farhat, 2008)
- Parents are often unaware (McGrath et al 2008)

Impact of constipation on the bladder



Treatment: Simple measures should always be introduced first



Initial advice

- Adequate daytime fluid intake
- Avoid caffeine, fizzy drinks
- Avoid excessive fluids in the evening
- Empty bladder before sleep
- Avoid high protein diet in the evening
- Avoid high salt diet in the evening
- No food or drink in hour before bed

(Van de Walle et al 2012)

Fluid intake

• 4-8 years		1000 – 1400mls
• 9-13 years	Female	1200 – 2100mls
	Male	1400 – 2300mls
• 14 – 18 years	Female	1400 – 2500mls
	Male	2100 – 3200mls

(NICE 2010)

- Drinks evenly spaced through the day
- Half of fluid intake during school day

Bedding protection

A word about nappies

- Can help in management
- Can be used by the child when awake
- Trial without for three or four nights

Bedtime routines

- Consistency
- Appropriate times
- Avoid light in the room
- Avoid computer games, electronic devices, TVs

If no or limited success

- What are the options?

Which one to use?

- Desmopressin:
  - Nocturnal polyuria
  - Parental intolerance
- Alarm
  - small mean voided volumes
  - Arousal problems
- Combination of both if polyuria and small voided volumes
- Many children will respond to either, some to neither

(Vande Walle et al 2017)

Desmopressin

- Desmopressin – synthetic analogue of arginine vasopressin – reduces diuresis
- 200mcg tabs or 120/240mcg melts
- Nasal spray not licensed for enuresis
- Overdose or fluid consumption prior to taking can cause hyponatremia
- Few side-effects (abdominal pain, nausea, headache, emotional disturbance)

Treatment - desmopressin

- Take up to one hour before last bedtime void
- No drinks for an hour before and 8 hours after
- No food for an hour before taking
- If incomplete/no response increase dose after one week
- Treat for 12 weeks and then withdraw for one week
- May have further 12 week episodes of treatment

Treatment - desmopressin

- Well tolerated and easy to take
- Quick results
- Ensure family understand instructions
- 60% success rate in MNE
- No response in 20 – 60% of children (Dossche et al 2016)
- Only 70% of children are treatment compliant (Van Herzeele et al 2009)

Tablet or melt?

- Melt is preferred formulation for children who:
  - Are under the age of 12 years (Lottmann et al 2009)
  - Have difficulties with tablets and require up to 200 mls of fluid to swallow (Vande Walle 2012)
  - Have shorter time interval between evening meal and bed time (De Bruyne et al 2014)
  - When tablet formulation has failed to give adequate response or not tolerated (Juul et al 2013)

Desmopressin withdrawal

- Take for 12 weeks then a week without
- If wet restart for further 12 weeks
- Monitor wet nights – try to find causes
- Use on nights more likely to be wet only
- Structured withdrawal
- Random withdrawal
- Dose reduction

Poor response to Desmopressin?

- Check bladder capacity
- Consider if polyuria due to osmotic diuresis - trial exclusion high salt/protein foods
- Consider if night time OAB

  - refer

Treatment - alarm

- Sensor detects wetting – alarm makes noise
- Bed mat or body worn alarms
- Child wakes, stops voiding, toilets
- Child has to learn to wake
- Should be worn every night (Van de Walle et al 2012)
- Continue until dry for 14 consecutive nights then overlearning until dry for further 14 nights (Brown et al 2010)

Treatment - alarm

- Works well where there are small bladder volumes
- Response rate is high if treatment continued
- Low relapse rates
- Poor compliance and high drop-out rates
- May exacerbate parental intolerance
- Not suitable for all children and families

(Van de Walle et al 2012)

KEY MESSAGE

Never use an alarm where there is parental intolerance or safeguarding concerns

Using the alarm

- Provide written and verbal instructions
- Establish routine
  - Set up and test alarm
  - Final toilet visit
- Child takes responsibility where possible
  - Turns off alarm and goes straight to the toilet
  - Help remake the bed
  - Complete progress chart

Using the alarm

- Parental support
  - Parents need to encourage and praise efforts
  - May need to assist with setting alarm, waking child, making bed, monitoring progress
- Signs of progress:
  - Child waking to alarm consistently
  - Smaller wet patches / larger voids in toilet
  - Later alarm triggering
  - Dry nights

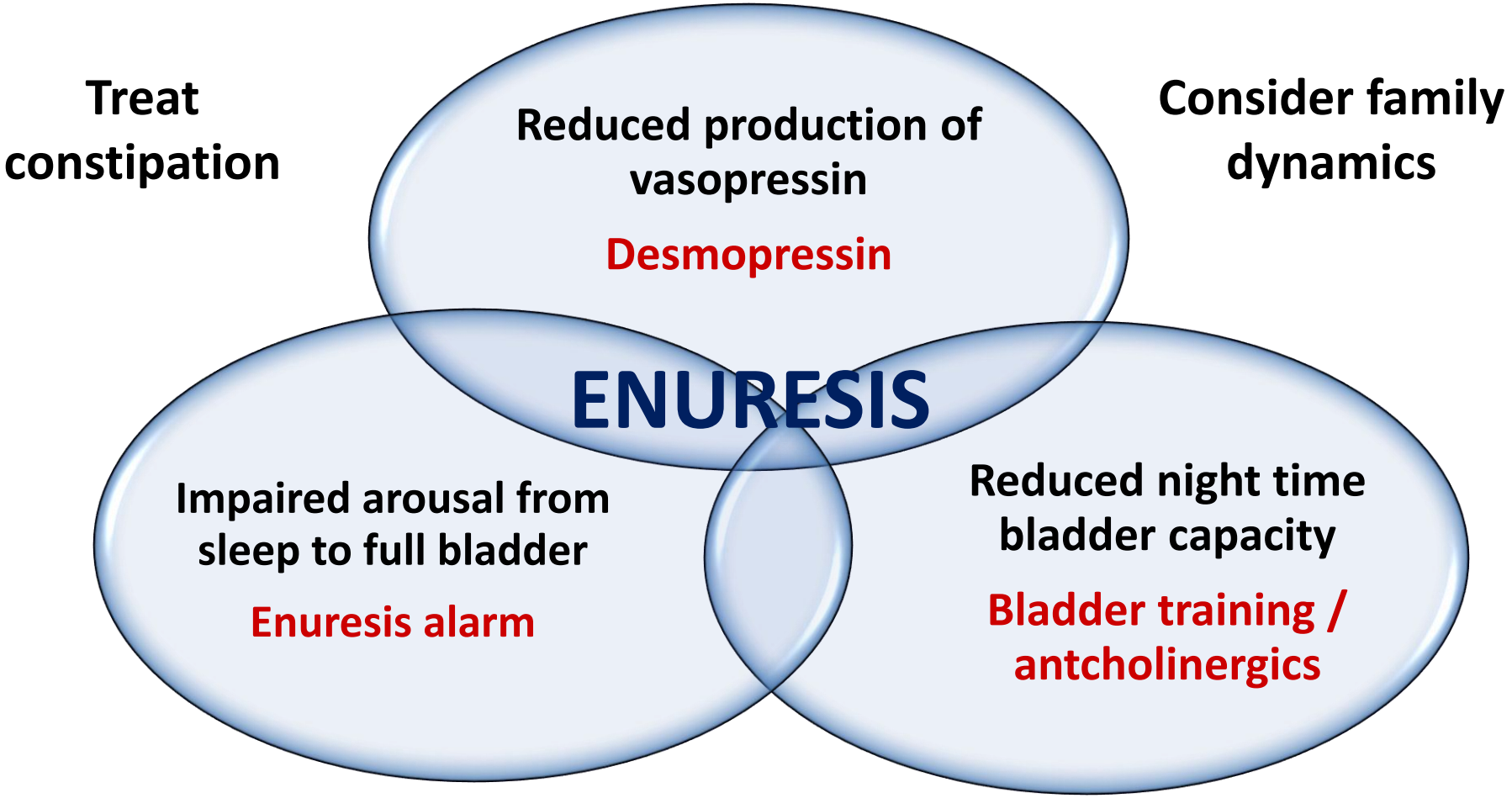
Improving response to alarm

- Try to ensure child and family are committed
- Consider using trial of alarm clock if unsure
- Consider postponing treatment to more suitable time e.g. School holidays
- Allow child/family choice of alarm
- Discuss with child/family why they do not think alarm working and consider options
- Do not reset after first wetting at least initially

When to refer on?

- Treatment resistance
- Daytime wetting
- Constipation that is not resolving
- Poor compliance
- Child may require anticholinergics
  - Treat overactivity by relaxing detrusor
  - Oxybutynin used most commonly

Three systems model - treatment



More than one problem will require combination treatment

Evaluation

- Non response: less than 50% reduction
- Partial response: 50 -89% reduction
- Response: greater than 89% reduction
- Full response: 100% or max 1 wet bed/month
- Relapse more than two wet in per two weeks
- Continued success: no relapse in 6 months with no treatment
- Complete success: no relapse in two years

KEY POINT

Clinically success is reached when the child and family are satisfied

Treatment success and cure are not always synonymous

Predictive factors for success

- Motivated child
- Tolerant parents
- Supportive families
- No comorbidities
- No daytime symptoms
- Not wet more than once a night

Predictive factors for drop out

- Parental intolerance

- Behaviour problems
- Poor self-esteem

Food for thought…

- Many children have some treatment resistance
- Specialist input required
- What about children with additional needs?
- When to refer on:
  - No or limited progress
  - Daytime wetting
  - Other concerns

KEY POINTS

- Enuresis is a symptom
- Enuresis is increasingly recognised as a heterogeneous condition
- Enuresis has a significant impact on the child and family
- Holistic assessment is essential
- Treatment takes time and perseverance and must be based on assessment

KEY POINTS

- Simple treatment methods should be tried first
- Frequent reassessment and adjustment of treatment may be required
- **Always find something positive to say to the child and family**
- **Do not use an alarm where there is intolerance and/or safeguarding concerns**

Resources

- NICE guidance CG111 (2010): https://www.nice.org.uk/guidance/cg111?unlid=7377427920162916134 2
- NICE quality standard QS70 (2014):
- https://www.nice.org.uk/guidance/qs70?unlid=8575342042016101971 0
- Bladder and Bowel UK publications on bedwetting: http://www.disabledliving.co.uk/Promocon/Publications/Children/Bladder

  Helpline: 0161 607 8219

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