

Inkontinens hos børn



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Prof., overlæge, Dr.med.

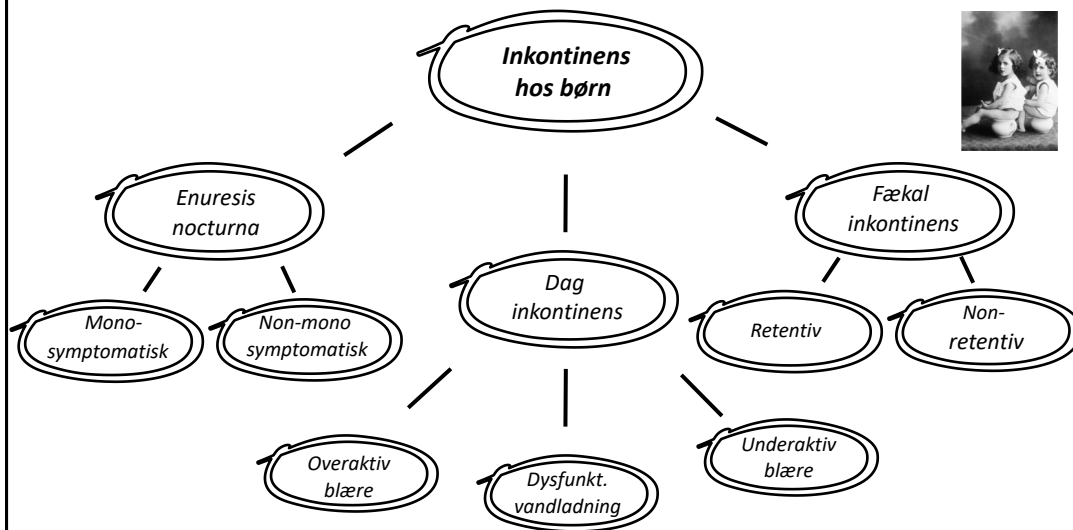
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Børn og Unge

Århus Universitetshospital



Inkontinens hos børn - typer



Prioritet ved inkontinens hos børn

1. Fækal inkontinens/UVI



2. Daginkontinens

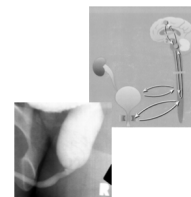
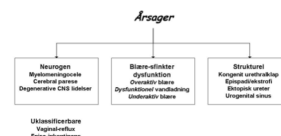


3. Enuresis nocturna

Inkontinens hos børn

Anamnese

- Definer typen af inkontinens
- Find associerede symptomer/riskikofaktorer
 - a. Rec. infektioner
 - b. Obstipation
 - c. Psykosocial/ADHD
- Få mistanke om neurogen/anatomisk årsag som behøver videre udredning



Inkontinens hos børn

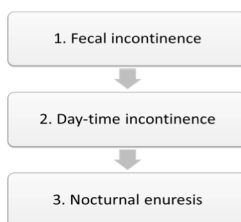


Objektiv us

- Undersøg ryggen
(udfyldning, assymetri, pigmentforandring
hårvækst)
- Undersøg genitalia externa
(anatomisk misdannelse, phimosis)
- Undersøg underekstremiteter
(symmetri, tonus, dybe reflekser,
anocutan refleks, gang)
- Undersøg for obstipation
(soiling, abdominal udfyldning, rektalekspl.)



Bladder and Bowel Dysfunction - effect of bowel regimen



Treating bowel symptoms resulted in:

Among 66 with daytime incontinence:

- 68% had > 50% reduction in daytime incontinence
- 27% became dry

Among 58 with enuresis:

- 9 (16%) > 50% reduction in wet nights

ACTA PEDIATRICA

REGULAR ARTICLE

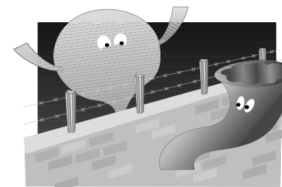
Bladder and bowel dysfunction and the resolution of urinary incontinence with successful management of bowel symptoms in children

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Keywords: Gastrointestinal dysfunction, urinary incontinence, combined bladder and bowel dysfunction, daytime, nocturnal enuresis
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ABSTRACT
Aim: To investigate the effect of treating defecation problems on urinary incontinence in children suffering from combined urinary bladder and bowel dysfunction (BBD).
Methods: We established a clinical database from medical records of all children referred to the urinary incontinence and gastroenterology outpatient clinics with BBD. The following variables were extracted: symptoms of constipation, fecal incontinence, urinary incontinence, age at onset of symptoms, treatment, including duration and response. All children went through the same treatment protocol. Fecal disorders were treated primarily and once resolved, the daytime incontinence was managed and followed by intensive toilet training.



Borch et al, Acta Paediatr. 2013 May;102(5):e215-20

Epidemiology constipation/FI

Constipation:

Background population: 0,3-29 %
Mean: 12 %

Fecal Incontinence (FI):

5-6 years: 2.2-4.1 %
11-12 years: 0.75-1.6 %

Boys/Girls: (6:1)
Retentive: 90 %
Non-retentive: 10 %

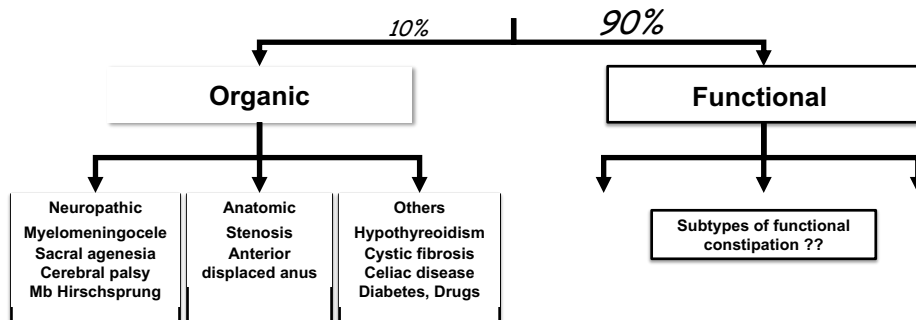
*Mugic, S, et al B.Prac. Research Clin. Gas., 2011
Van der Wal et al J Pediatr Gastroenterol Nutr, 2005*

Constipation and urinary symptoms

- More than 50% of children with LUTS evaluated at a tertiary referral center fulfilled Rome III criteria for functional defecation disorders.
- "We recommend thorough evaluation of bowel habits as an integral part of the initial assessment of a child who presents with voiding symptoms."

R Burgers et al J Urol, 189:5,1886–1891; 2013

Obstipation - årsager



Rome IV Criteria: Constipation

Rome IV criteria: two or more of the following criteria during a period of at least 4 weeks

- ≤ 3 bowel movements per week
- ≥ 1 episode of fecal incontinence per week
- Large fecal mass in the rectum (digital rectal examination or ultrasound)
- History of large diameter stools (difficult to flush)
- History of retentive behavior ("withholding")
- History of painful or hard bowel movements



Bristolscalaen for afføringstyper	
Type 1	Separate hårde klumper, der ligner nødder
Type 2	Pølseform, men med klumper
Type 3	Ligner en pølse, men med revner på ydersiden
Type 4	Ligner en pølse eller orm, smidig og blød
Type 5	Bløde klumper med skarpe kanter (let at få ud)
Type 6	Iturevne småstykker
Type 7	Vandig uden klumper. Kun væske

Hyames et al. Gastroenterol 2016

Functionel Fecal Incontinence



FNRFI (nonretentive fecal incontinence)

Must include all of the following in a child with a developmental age of at least 4 years:

Defecation in places inappropriate to the social context at least once per month.
No evidence of an inflammatory, anatomical, metabolic or neoplastic process
No evidence of fecal retention

FRFI (Retentive fecal incontinence)

Same but the child has constipation according to the Rome IV criteria

Hyames et al. Gastroenterol 2016

Evaluation of Constipation

Physical examination

Complete with special attention to:

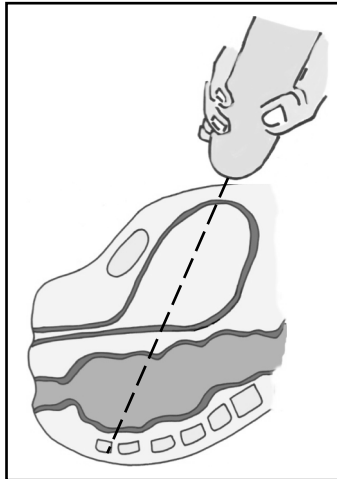
- ☐ Abdominal examination
- ☐ Anal inspection
- ☐ Rectal digital examination
- ☐ Neurological examination including perianal sensation testing
- ☐ Back and spine examination
 - Dimple
 - Tuft of hair

History + bowel diary

Physical examination



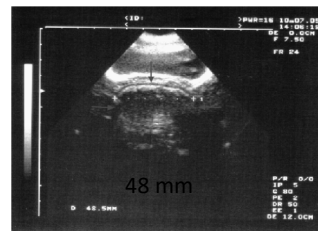
Evaluation of Constipation



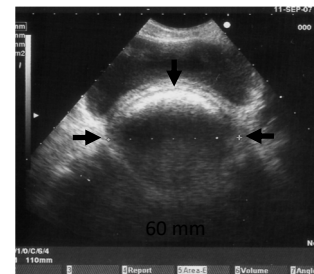
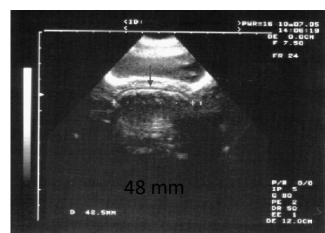
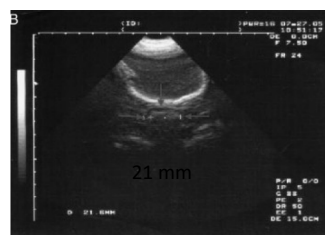
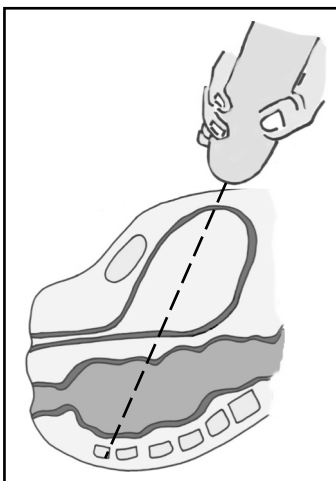
History + bowel diary

Physical examination

Ultrasound



Transabdominal ultralyd - måling af rektum diameter



Johnsson et al, J Urol. 2008;179(5):1997-2002

Evaluation of Constipation



Red Flags

Delayed meconium
Failure to thrive
Abdominal distension
Rectal bleeding
Displaced anus
Abnormal neurological examination

History + bowel diary

Physical examination

Ultrasound

Obstipation - behandling

4 elementer:

- Information
- Udtømning
- Vedligehold
- Opfølgning

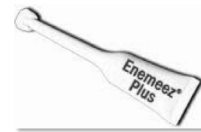


Disimpaction

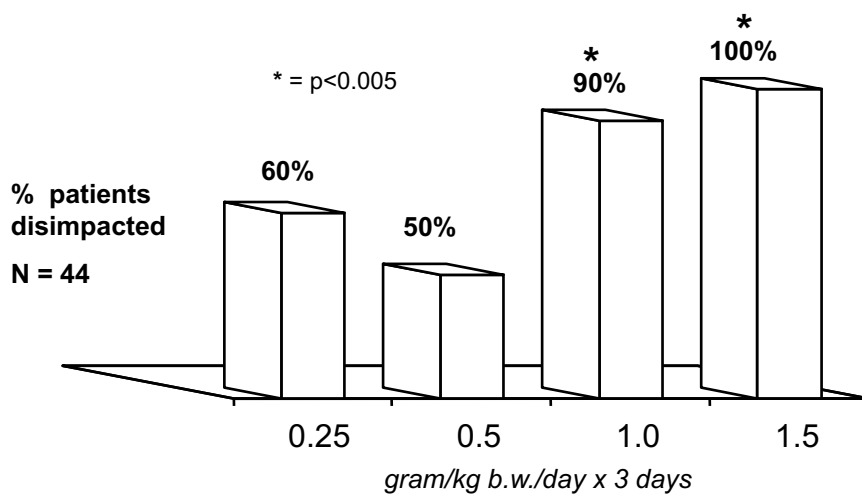
- ✓ PEG
- ✓ PEG +mini enemas
- ✓ enemas



- Education
- Disimpaction
- Maintenance
- Follow-up



Disimpaction - *Dose response of PEG 3350*



J Pediatr 2002

Vedligehold - toilettræning



- Education
- Disimpaction
- Maintenance
- Follow-up

- 2 to 3 times/day
- 5 - 10 minutes
- Learn to give it time
- Learn to push
- gastro - colic reflex
- Reward systems

Aim is to restore normal bowel habits by positive reinforcement

Vedligehold - laxatives



Osmotic and stimulant laxatives:

PEG is superior to lactulose for the outcomes of stool frequency per week, form of stool, relief of abdominal pain and the need for additional products.

- Education
- Disimpaction
- Maintenance
- Follow-up



Opfølgning

Adequate and prolonged treatment (6 months to years) with behavioral interventions and medication is required to regain normal bowel habits since this condition is not self-limiting.



- Education
- Disimpaction
- Maintenance
- Follow-up

Colon transit tid

Total colonic transit time



$$TT = \frac{24 \times n}{10}$$



Ved langsom transittid: mulig effekt af Resolor® behandling

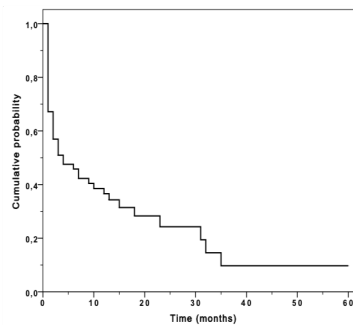
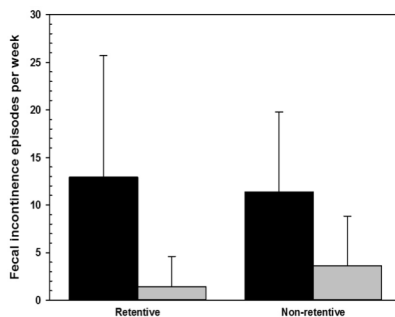
Bouchoucha et al. Dis Colon Rectum 1992

Transanal colonic irrigation

- *Effective in refractory patients*

- N = 72
- 25 (35%) girls
- Mean age 9.2 ± 2.2 years
- Avg FI: 13 episodes/week
- All children refractory to laxative treatment

- Cone system
- Irr vol: 20 ml/kg bw
- Irr frequency: 3/week
- Titrated according to effect



Siggaard et al 2015

Konklusioner - fækalinkontinens



- Stærk sammenhæng mellem obstipation/fækalinkontinens og vandladningsforstyrrelser.
- Hovedparten af børn med fækalinkontinens har obstipation.
- Nu evidens for effekt af timer og TENS behandling.
- Diagnosen obstipation bør stilles ud fra Rom IV kriterier og kan foretages ud fra anamnesen og en rektal-eksploration/UL.
- Behandlingsrefraktære patienter bør henvises.



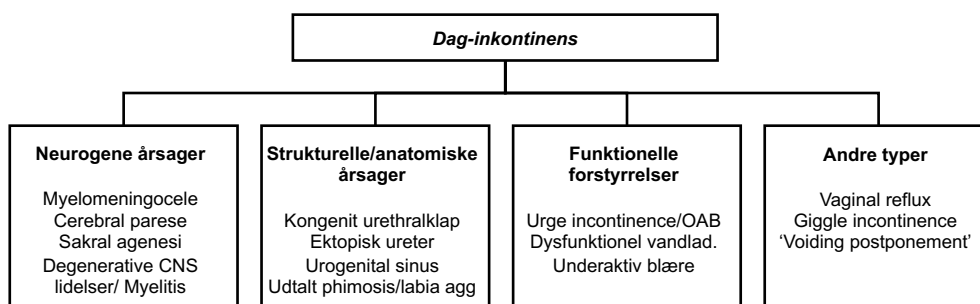
Urininkontinens hos børn

Terminologi

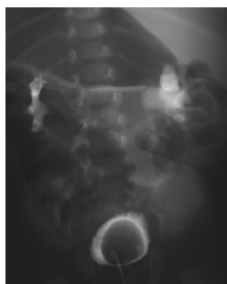
- Overaktiv blære (= urge symptomer)
- Hyppig vandladning (> 7 vandladninger per dag)
- Blærekapacitet = maximal vandladningsvolumen
(Forventet MVV = $30 \times \text{alder} + 30$ (ml))
- Natlig polyuri = Uvol på våde nætter
> 130 % af aldersforventet MVV



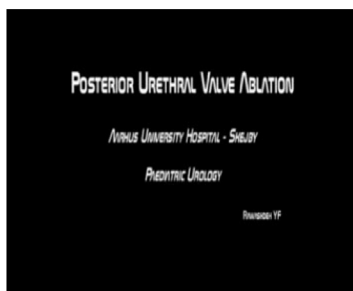
Dag-inkontinens hos børn



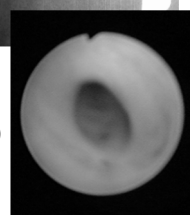
Inkontinens - strukturelle årsager



Ureterocele/
ektopisk ureter



Kongenit urethraklap



Inkontinens - neurogene årsager



Vandladnings-skema



Overaktiv blære (urge syndrom)

Navn: Camilla						
CPR-nr. [redacted]						
Dato: 27-01						
Klokkeslet	Drukket i ml	Vandladning i ml	Lidt	Meget	Utæthed	
					Tissetrang	Aktivitet
9:00						
9:30		115		X		Stød op (børn af venteliste)
10:00	150					
11:15		115				
12:00	150					
12:15		105				
12:30		50				
12:45		90				
13:30	200					
13:45			X	X		Spillede bold
14:30		80				
17:30		30	X	X		Spillede bold
17:30	200					
18:30		70				
18:50		100				
19:00	150					
19:30		55				
19:45		80				
20:45		70				
22:00	200					
22:30		40				
22:30						i seng

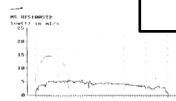
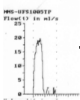
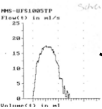
Underaktiv blære (Lazy bladder)

Navn: Casper						
CPR-nr. [redacted]						
Dato: 5/8-21						
Klokkeslet	Drukket i ml	Vandladning i ml	Lidt	Meget	Utæthed	
					Tissetrang	Aktivitet
8:00						
9:00	400	350	X			S tid op
12:00	400					
16:30		480				
21:00	400					
21:15		500				i seng
:						
:						
:						
:						
:						
:						

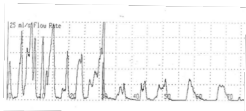
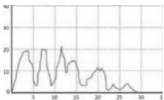
Uroflow + residualurin



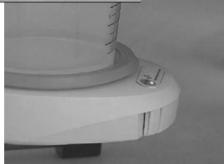
In total, 1742 uroflowmetries were performed on 691 patients (avg. 2.5 per patient).



Uroflowmetry	%
Normal	63.1
Tower-shaped	13.7
Staccato	14.0
Interrupted	8.3
Plateau	0.9
PVR > 20 ml	19.6



Urodynamisk US LUNA



Inkontinens – behandling



Dag-inkontinens hos børn



"Standard therapy"

- Forklaring og afmystificering
- Instruktioner om hvornår og hvordan (almene råd)
- Blære-rehabilitering
 - klokkesletsvandladning (evt. timer)
 - dobbelt voiding
- Behandling af obstipation og UVI



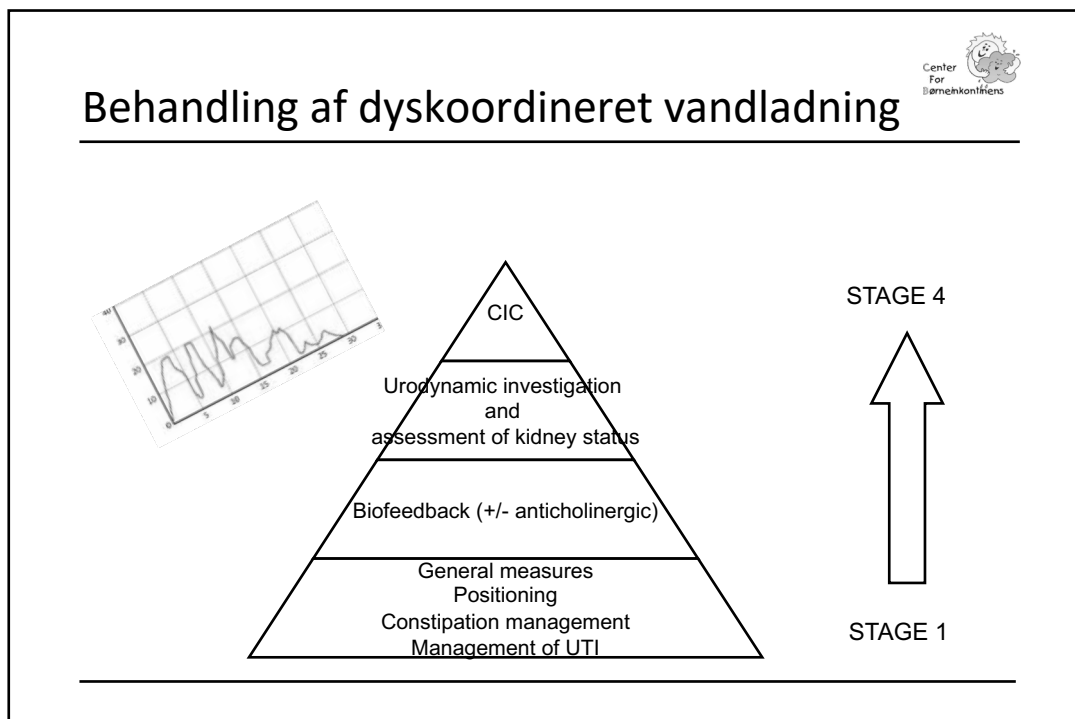
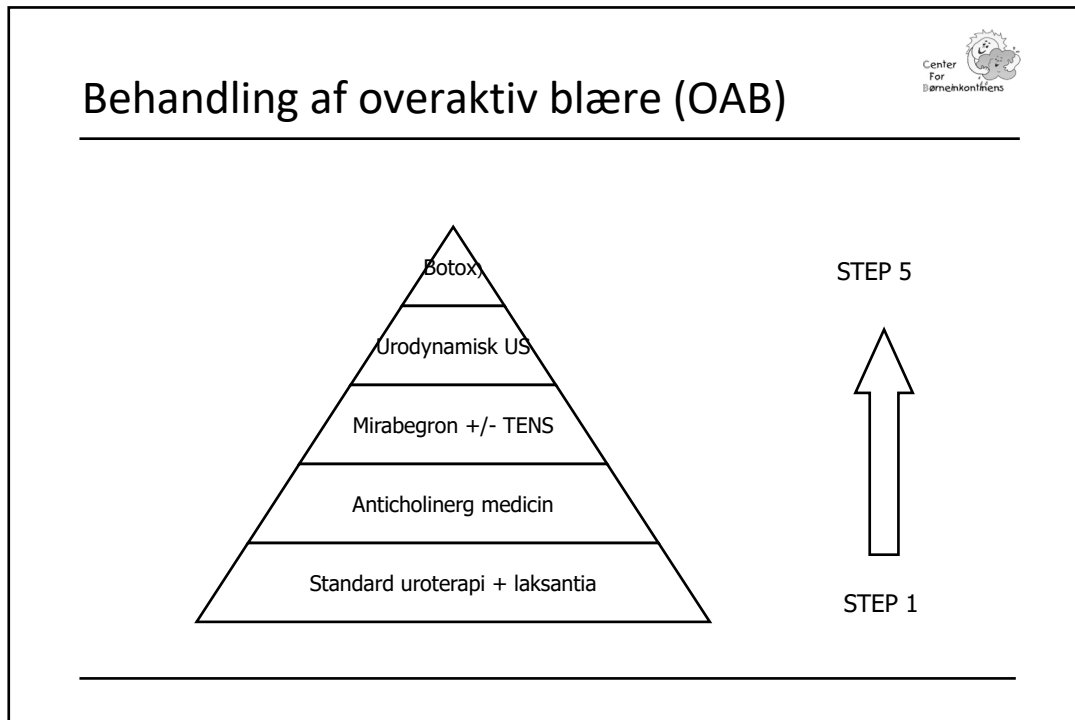
Timer behandling



- Købes via nettet/Leisner
- Op til 7 alarmer per dag
- Vælg mellem lyd og vibration
- Sættes til alarm hver 2-3. time
- Effektivt ned til 5 års alder
- Bedrer compliance til klokkeslets-vandladning
- Lav en aftale med barnet:
 - ✓ tag uret på
 - ✓ gå på toilet når det alarmerer



Timer watch assisted urotherapy in children. a randomized controlled trial. Hagstroem S, Rittig S, Djurhuus JC. J Urol. 2010 Oct;184(4):1482-8.





Konklusioner - Daginkontinens

- Ca. 55 % af alle patienter m. dag-inkontinens kan behandles effektivt non-farmakologisk.
 - Ca. 95 % af alle patienter m. dag-inkontinens kan behandles effektivt med blæretræning, timer, bio-feedback, og anticholinerg medicin (+ laxantia).
 - Nu evidens for effekt af timer og TENS behandling.
 - Meget lidt evidens for behandling af fnise-inkontinens.
 - Behandlingsrefraktære patienter bør undersøges for underliggende strukturel eller neurogen årsag.
-



Perception of Nocturnal Enuresis

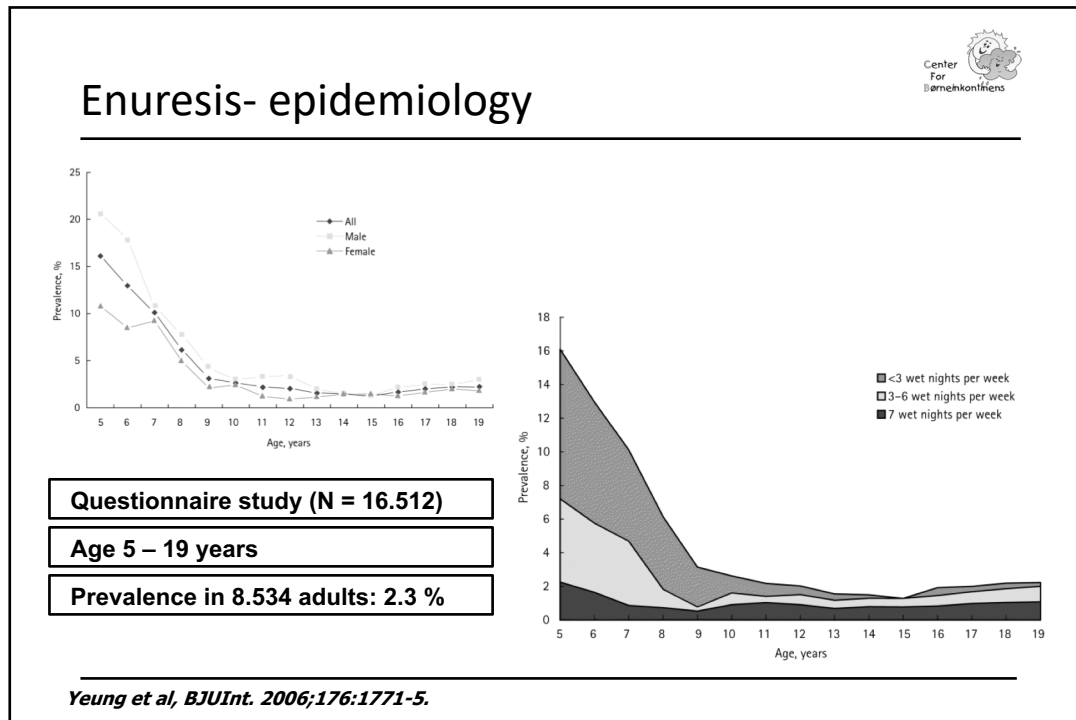
“..Therapy: Circumcision, treat meatus stenosis, make the urine sour, avoid coffee, tea and absolutely no beer.

Don't punish the child, it does more harm.

Adenoids ought to be removed.”

Holt's textbook of Paediatrics, 1897





Center
For
Børnekontinens

Enuresis: Psychology – today

- NE → low self esteem
- Changes are secondary
- Successful treatment cause "normalization"
- Behavioural problems are important in secondary enuresis

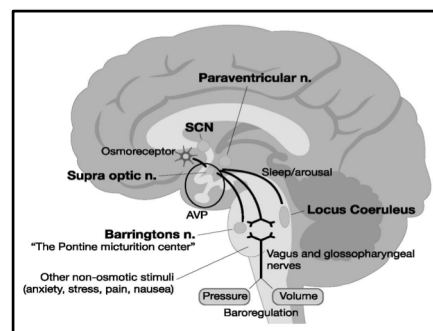
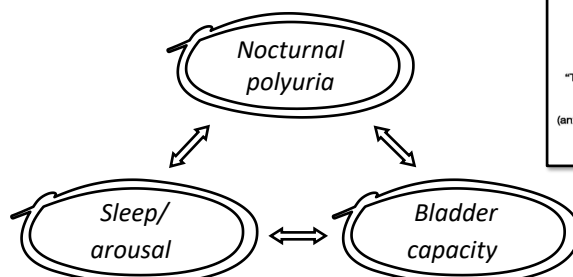
Enuresis patofysiologi

Enuresis nocturna skyldes et misforhold
mellem natlig urinvolumen og den
funktionelle blærekapacitet

+

Manglende evne til at vågne
når dette sker

Enuresis patofysiologi



Søvn – Enuresis

○ *Nørgaard et al, 1989:*

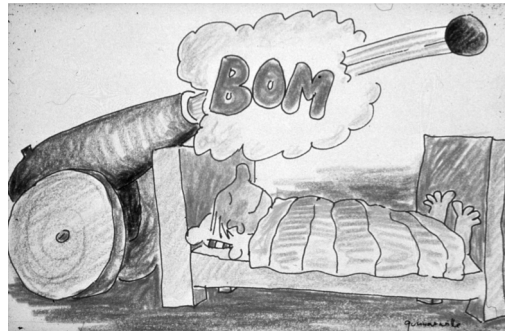
EEG pattern is normal

○ *Kirk et al, 1996:*

Normal children are also
unable to wake up when
the bladder is overfilled

○ *Hunsballe et al, 1998:*

No effect of dDAVP on
sleep pattern



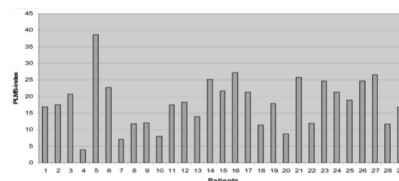
Søvn og PLMS

- Nye aspekter



Dhondt et al, J Urol, 2009:

Periodic Limb Movement during Sleep and
increased cortical arousal is common in
treatment resistant NE.



Dhondt et al, J Urol. 2009 Oct;182(4 Suppl):1961-5

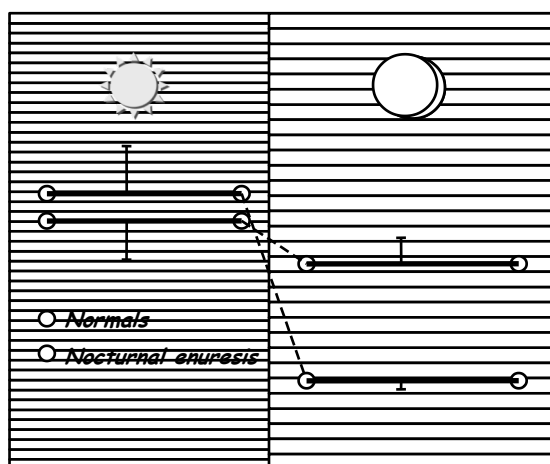


Herzeele et al, 2015:

PLMS is associated with reduced QoL
PLMS/Cortical arousal is associated with reduced daytime
neurocognitive performance
6 months desmopressin tx in pts with NP increases daytime
neurocognitive performance and reduces psychological problems

Enuresis may not be as benign as anticipated...

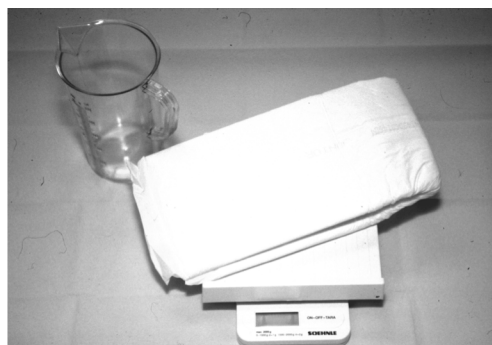
Natlig urinproduktion



Rittig et al: Am J Physiol, 1989

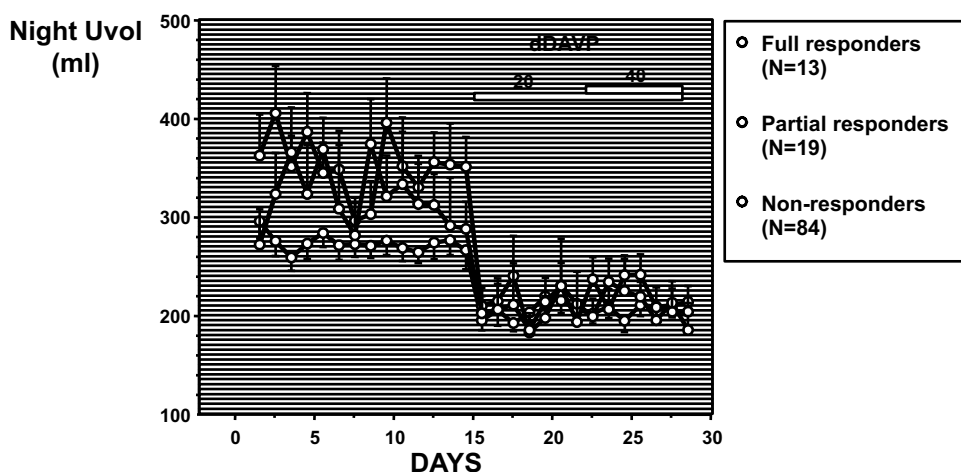
Hjemmemåling enuresis nocturna

- FV charts during 2 week-ends
- Diaper weights 2 weeks
- Night Uvol =
diff. diaper weight +
nocturia volume +
morning urine volume





Hjemmemåling enuresis nocturna



Rittig et al: Scand J Urol Nephrol, 1998



Hjemmemåling enuresis nocturna

Tolkning af hjemmemåling

Alder	Normal blærekapacitet	Nedsat blærekapacitet	Natlig Polyuri
5	180 ml	< 117 ml	> 234 ml
6	210 ml	< 136 ml	> 273 ml
7	240 ml	< 156 ml	> 312 ml
8	270 ml	< 175 ml	> 351 ml
9	300 ml	< 195 ml	> 390 ml
10	330 ml	< 214 ml	> 429 ml

1. Blærekapacitet MVV

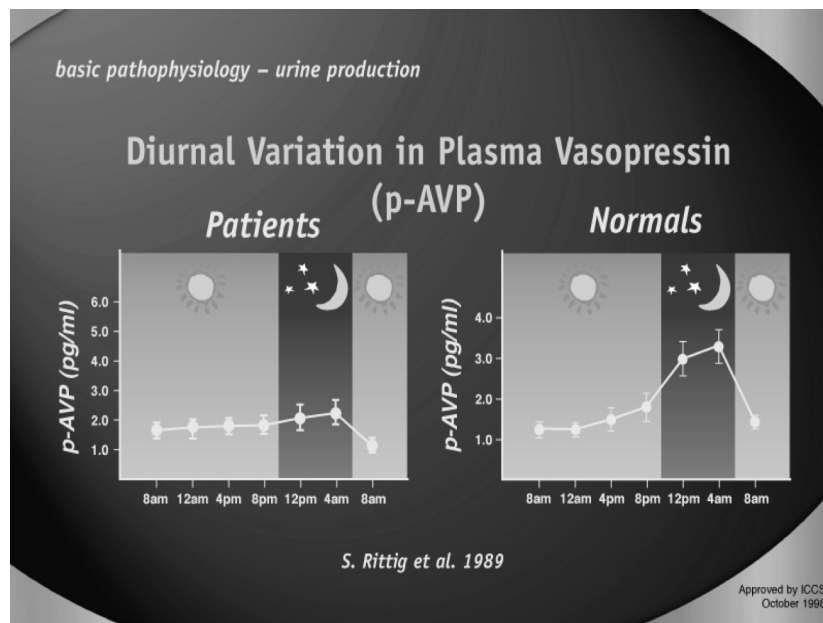
(Største vandladningsvolumen på skemaet)

- Normalværdi: $\text{alder} \times 30 + 30\text{ml}$
- Nedsat MVV: < 65% af normalværdi

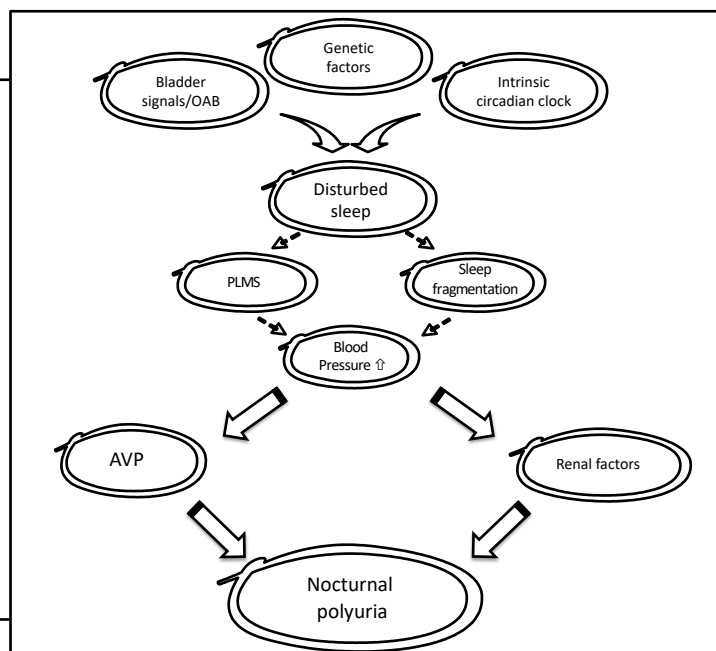
2. Natlig urinproduktion

Ved høj natlig urinproduktion (Natlig Polyuri) overskrider urinproduktionen blærekapaciteten med >30%. Udregnes kun på våde nætter

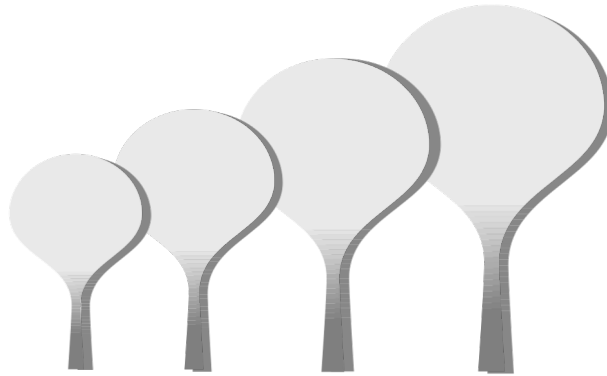
Udarbejdet i samarbejde med
Center for Børneinkontinens, Skejby Sygehus, 8200 Århus N



Polyuri mekanismer



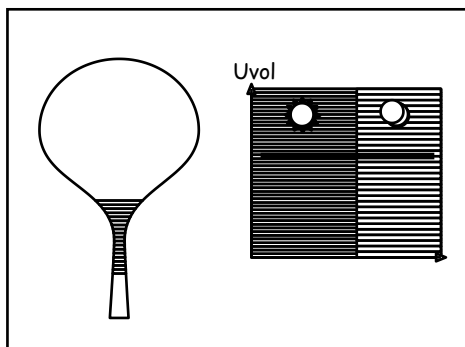
Blærekapacitet Enuresis Nocturna



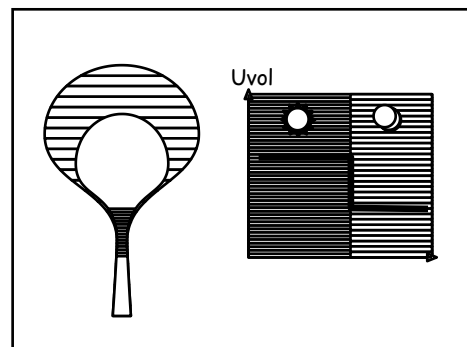
$$MVV = \text{alder (år)} \times 30 + 30 \text{ (ml)}$$

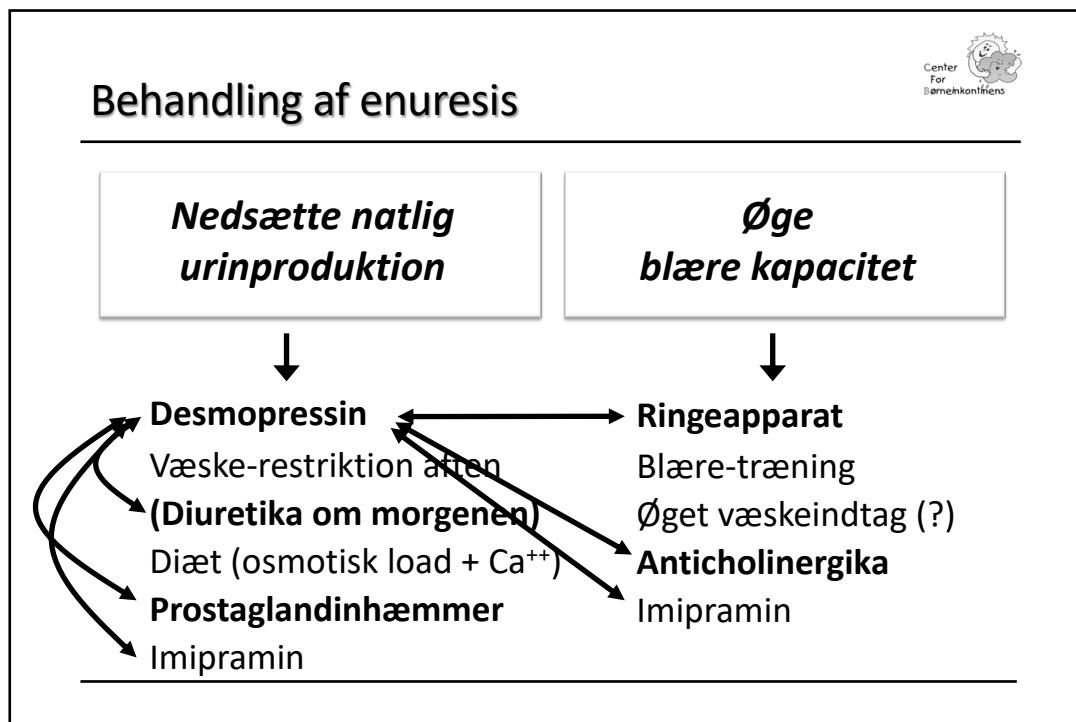
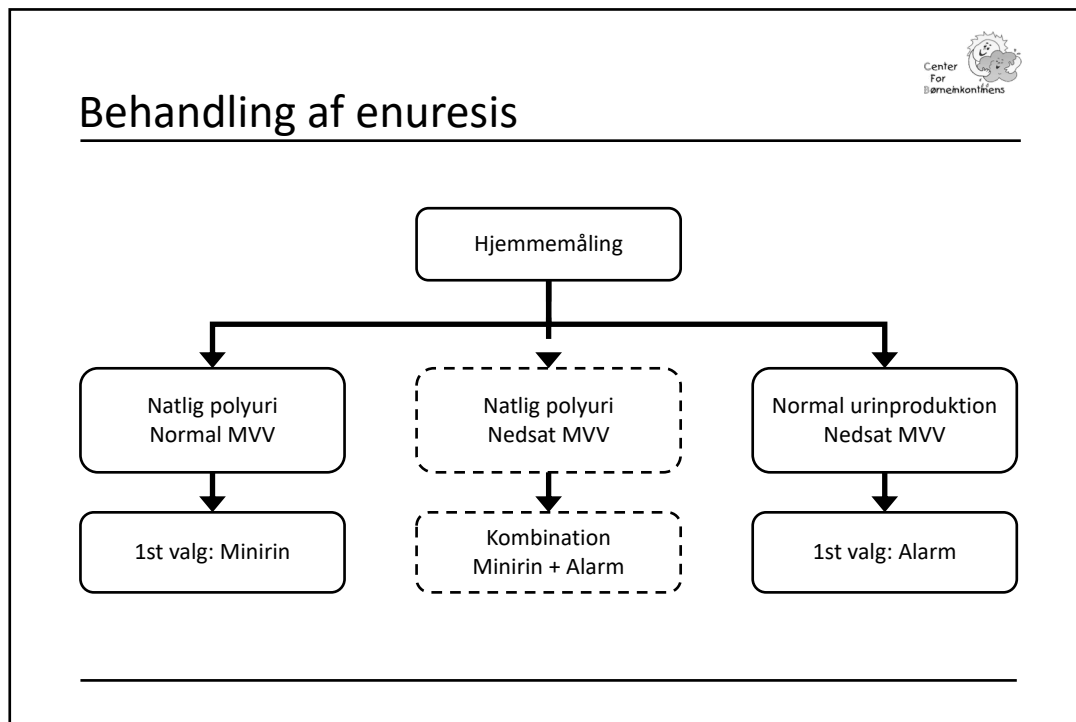
Enuresis prototyper

Natlig polyuri



Nedsat blærekapacitet







Konklusioner - enuresis

- Vigtigt at identificere dag-symptomer (non-MNE). Brug evt. enuresis management tool.
 - Vælg enten at prøve Minirin eller alarm eller lav hjemmemåling først og vælg behandlingen efterfølgende.
 - Henvis behandlingsrefraktære patienter (HSF).
 - Nogle patienter kræver flerstofs-terapi.
 - HUSK: World Bedwetting Day 29. Maj 2018.
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