



What's the clinical evidence for urodynamics in day-time LUTS

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EAU Guidelines on functional day-time LUT conditions

| Summary of evidence | | | | |
|---|--------------|--|---|--|
| The term 'bladder bowel dysfunction' should be used rather than 'dysfunctional elimination syndrome and voiding dysfunction'. | | | | |
| Day-time LUTS has a high prevalence | (1% to 20%). | | 2 | |

| Recommendations | | Strength rating |
|--|---|-----------------|
| Use two day voiding diaries and/or structured questionnaires for objective evaluation of symptoms, voiding drinking habits and response to treatment. | | Strong |
| Use a stepwise approach, starting with the least invasive treatment in managing day- time lower urinary tract dysfunction in children. | | Weak |
| Initially offer urotherapy involving bladder rehabilitation and bowel management. | | Weak |
| If bladder bowel dysfunction is present, treat bowel dysfunction first, before treating the lower urinary tract condition. | | Weak |
| Use pharmacotherapy (mainly antispasmodics and anticholinergics) as second line therapy in overactive bladder. | | Strong |
| Use antibiotic prophylaxis if there are recurrent infections. | 2 | Weak |
| Re-evaluate in case of treatment failure; this may consist of (video) urodynamics MRI of lumbosacral spine and other diagnostic modalities, guiding to off-label treatment which should only be offered in highly experienced centres. | | Weak |





uroflowmetry





Urodynamic tools

uroflowmetry







Subtypes of incontinence

Daytime urinary incontinence in children and adolescents

Anka J Nieuwhof-Leppink, Rogier P J Schroeder, Elise M van de Putte, Tom P V M de Jong, Renske Schappin

| Symptoms | | Signs | | |
|--|--|--|--|--|
| Overactive bladder | (Cystometric) detrusor overactivity, frequency, voiding urgency, incontinence, constipation, enuresis | Holding maneuvers, normal flow pattern, thick bladder wall, low-volume voids | | |
| Dysfunctional voiding | Failure to relax the sphincter during voiding, normal micturition frequency, incontinence, constipation, urinary tract infections, enuresis | Post-void residue, staccato or interrupted flow pattern, normal frequency of voids | | |
| Underactive bladder | (Cystometric) weak detrusor contractions, low micturition frequency, incontinence, constipation, urinary tract infections | Post void residue, staccato or interrupted flow pattern, frequent large-volume voids | | |
| Voiding postponement | Low micturition frequency, incontinence | Normal flow pattern | | |
| Classification of daytime lower urinary tract dysfunction, assessment and documentation should be based on following parameters; incontinence (presence or absence, and symptom frequency), voiding frequency, voiding urgency, voided volumes, and fluid intake. ³ | | | | |
| Table: Symptoms and signs of four main subtypes of lower urinary tract dysfunction | | | | |

Uroflowmetry provides

- Flow pattern
- Volume



Uroflowmetry curves





Uroflowmetry in Healthy Children





But in 20-30%





Bower et al 2004 Bartkowski et al 2004 Nijman 1995

Value of Uroflowmetry in subtype diagnosis

In Netherland, typically uroflowmetry without use of EMG

Analysis of uroflows in 118 children with LUTS (staccato, interrupted or mixed flow) with use of EMG



- 59% of staccato/interrupted or mixed flow had quiet EMG \rightarrow <u>No DV</u>
- Of those, 47% prolonged EMG lag time suggesting PBND



Only 41% active EMG

Prolonged EMG lag time, suggesting PBND



Diagnosis based on uroflowmetry alone can be misleading!





Wenske et al 2012

Uroflowmetry curve in DV

Uroflow in 121 patients with documented DV (EMG+)



- 58% staccato
- 19 % interrupted

EMG usefull in uroflowmetry to rule out or diagnose DV



- IU % mixed
- 14% bell-shaped



Uroflowmetry for diagnosing subtype









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- Volume



Value of uroflowmetry; bladder capacity



- Preferably 2 day voiding diary AND repeat uroflowmetry, but...
- Good agreement in bladder capacity between voiding diary and uroflowmetry in functional day time LUTS



Invasive (video)-urodynamics





International Children's Continence Society Standardization Report on Urodynamic Studies of the Lower Urinary Tract in Children

Stuart B. Bauer,¹ Rien J.M. Nijman,² Beth A. Drzewiecki,^{3*} Ulla Sillen,⁴ and Piet Hoebeke⁵

Invasive UDS

In children UDS should be performed if the outcome is likely to affect treatment or when treatment does not lead to its intended outcome.^{24,25} Testing is considered when surgical interventions are planned. Invasive UDS provides information



Indications for (V)UDS



• Normal findings in 6-44%

Hoebeke et al (n=1000) non-neuro LUTS and strict indications for VUDS:

- 58% dysfunctional voiding
- 32% overactivity
- 4% underactive
- 6% normal (usually in rUTI)

Using strict indications pathological findings are common

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Impact of UDS on Treatment plan?

60 patients referred for LUTS





Schewe 2011

Impact of UDS on Treatment plan?

60 patients referred for LUTSUDS showed Pathology: 62%

UDS confirmed Diagnosis: 66%

UDS shows discrepancy: 33% (mainly clinical OAB)

UDS guided therapy: only 7%



Schewe 2011

Correlation of UDS with outcome

 N=97 treated for clinical urge (frequency, urgency, holding manouvres, daytime wetting)



Only 33% had actual overactivity during filling!



Correlation of UDS with outcome





Bael et al 2008

Conclusions

Uroflowmetry is obviously usefull in diagnostic process BUT can be misleading without EMG

Uroflowmetry and voiding diary are both usefull tools to assess bladder capacity

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(V)UDS probably offers little treatment guidance in functional LUTS, also no correlation with outcome

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(V)UDS should be offered in select cases, or when treatment refractory

