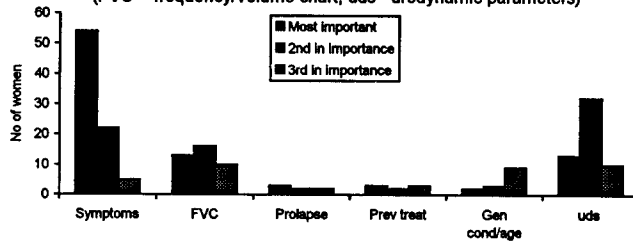


Figure 1 Diagnostic parameters and importance in reaching diagnosis  
(FVC = frequency/volume chart, uds= urodynamic parameters)



Some videourodynamic parameters were considered discriminant, despite the final overall inconclusive results. These were: detrusor pressure rise on filling and maximum bladder capacity (14); pressure/ flow study (9); first sensation to void, detrusor pressure at the stop test and trabeculation (5).

We also compared the women with stable and unstable bladders on ambulatory urodynamics. They significantly differed only for urge incontinence ( $p=0.04$ ), being more prevalent in the unstable women, and the voided volume before their laboratory urodynamic test ( $p 0.01$ ) being 393.3mls (SD 121.8) in the women with unstable bladder and 491.3 (SD 188.9) in case of stable bladder.

#### CONCLUSION

This study clearly shows that ambulatory urodynamics alters the management of women with urinary symptoms who have no laboratory urodynamic diagnosis. Up to 60% of women would have different and often inappropriate treatment if ambulatory urodynamics were not available. This is not surprising as there is a poor correlation between urinary symptoms and urodynamic diagnosis. In this study urinary symptoms were the most important factor in deciding treatment in the absence of ambulatory urodynamics. Change of management may not alter outcome. A prospective randomised trial is needed to confirm whether ambulatory urodynamics does alter outcome in symptomatic women who do not have a laboratory urodynamics diagnosis.

1. J Urol, 47: 1319-26, 1992.

## 8

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#### A MULTI-DISCIPLINARY THERAPEUTICAL APPROACH IN A "VOIDING SCHOOL". FOR THERAPY-RESISTANT DYSFUNCTIONAL VOIDING.

Because dysfunctional voiding is often therapy-resistant to traditional ambulatory treatment: (up to 30 % after > 1 y therapy), alternatives had to be found : J. Van Gool and al started in Utrecht with a "voiding" school: an intensive training by a "trainster" during a hospitalisation-period. We modified their therapy design to a real multi-disciplinary approach with combination of medical, psychological, physiotherapeutical (urogym of pelvicfloor) therapeutical tools, coordinated by a specialised nurse-department.

Aim of the study : 1)To demonstrate the effectiveness of a multi-disciplinary therapeutical approach and an intensive training program during a hospitalisation of 2 weeks. 2) To analyse factors that play a role in succes-rate of this therapy.

Study-group: Included : university hospital admitted children >7y, > 4/7 d wet, with proven dysfunctional voiding on cystomanometry and therapy-resistant to > 1y ambu-latory therapy. Excluded: mental retardation, psychiatric or neurological disorders.

Methods: All patients received a initially a standardised screening (anamnesis (micturation and psychological), clinical investigation, calendar, bladdervolume for age, uroflow, residu) that was suggesting a bladderdysfunction, that was subsequently proven on radiocystomanometry. Ambulatory treatment was tailored on the outdoorclinic, based on these findings: physiotherapy of the pelvic floor, training, drugs, alarm and/or psychology. In therapy-resistant patients, this was followed by an intensive training program in the "voiding school", during a hospitalisation period of 2 weeks (weekends not included), by a multidisciplinary team : paediatric nephrology, urology, psychology, physiotherapy and specialised nurses. These nurses did the coördination, follow up.The daily program consisted of daily monitoring- and motivation-sessions by the nurse, a voiding- and micturation-calendar during high fluid intake, 1 session of psychology, 2 sessions of pelvic floor-exercise (physiotherapy), biofeedback by uroflow and residu after miction by ultrasonography. Drugs were used only when indicated on cystomanometry. Alarmsystems were introduced, when appropriate both for daytime and night-time indications.The patients were always hospitalised together with 1 or 2 other children of the same sex, age, and voiding disorder. No invasive techniques were allowed during the training period. The hospitalisation was followed by ambulatory treatment and follow up by multidisciplinary

team for at least 12 m. continence was defined as < 1/7 day's wet overnight, and during the day.

**Results** : 108 patients ( 35M/F73, age 7-18 y, time from intake 12- 37 m), 29F with UTI, 9M had history of urethra valves. 1 F was lost for follow up immediately after the hospitalisation. The total intake of enuresis/incontinence patients during the study-period was  $\pm$  2000 patients (1992-1998). At 12 m follow up: there was a significant decrease in frequency of UTI, and disappearance of diurnal problems in 99/108 patients, of nocturnal continence in 92/108 for at least 3 month's. Relapses were frequent : 28/92 patients, but could be treated ambulatory. 2 patients needed a second training-period. Poor outcome rate correlated with initial bladdervolume (<100ml), age (<8y), diagnosis (urethral valves) and motivation of parents during follow up.

**Conclusion** : A voiding school with an intensive training is effective in dysfunctional voiders, resistant to conventional therapy. The high succes-rate, despite the poor prognosis of this patient-group seems to be related to the multidisciplinary approach, and an integrated use of multiple therapeutical tools.

## 9

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### BIOFEEDBACK METHODOLOGY: DOES IT MATTER HOW WE TEACH CHILDREN WITH VOIDING DYSFUNCTION TO RELAX?

#### Aims of Study

Biofeedback is a non-invasive treatment that has been documented to be helpful for children with daytime wetting and/or urinary tract infection (UTI) secondary to voiding dysfunction. A multidisciplinary voiding dysfunction center developed at our institution has utilized two different methods of biofeedback to manage this condition. Specifically we wish to:

1. Determine the effectiveness of biofeedback in a large population of children presenting with voiding dysfunction.
2. Evaluate differences between two different methods with regard to resolution of symptoms, improvement of objective measurements and patient satisfaction.

#### Methods

The charts of 102 consecutive patients treated with biofeedback were reviewed. Twenty-one patients were asked to void 4 to 8 times over the course of 6 hours seated in front of a uroflow device while receiving coaching by a designated staff member (Method A, median 1 session, range 1-2 sessions). Fifty-six patients were taught pelvic floor relaxation techniques in front of a computer monitor that displayed electromyogram readings for 45-90 minutes by the same or similar staff member (Method B, median 2 sessions, range 1-6 sessions). Both methods were used in 25 patients (A+B, median 3 sessions, range 2-10 sessions). Outcome variables were obtained through chart review telephone contact and included resolution of symptoms (success, improved, failed), elimination of UTI, character of voiding curve evaluated blindly (normal, abnormal), post-void residual as a % of voided volume (PVRVV), decrease in relaxation score (method B only) and parental satisfaction.

#### Results

Females comprised 79% of the population. The median age at first treatment was 7.7 years (range 4.3 to 15.4 years). Day wetting was seen in 84% and recurrent UTI in 66% of patients. Of those experiencing UTI, 54% had febrile infections and 71% had at least 2 UTI per year. Among children with daytime wetting, there was 100% success or improvement with Method A, 91% with Method B and 80% with A+B (p=NS). Among those with UTI, 2 (25%) subsequent UTI were seen with Method A, 6 (25%) with Method B and 5 (31%) with A+B (p=NS). Normalization of the flow curve was seen in 94% with Method A, 67% with Method B and 30% with A+B. Patients using A+B had a significantly greater median PVRVV compared to patients using method A (0 vs 33%, p=.003). Relaxation scores were found to decrease a median of 11.4% in patients using method B and A+B. After a mean follow-up of 1.4 years, 98% of parents expressed satisfaction with biofeedback with over 80% indicating a high degree of satisfaction. According to parents, biofeedback was felt to be helpful in 89% of patients. No differences were seen between groups.