



Voiding diary: a practice evaluation

W12A, 29 August 2011 14:00 - 15:30

Start	End	Topic	Speakers
14:00	14:10	introduction	<ul style="list-style-type: none">• Jean Jacques Wyndaele
14:10	14:30	Voiding diary as method to evaluate LUT function and LUT symptoms	<ul style="list-style-type: none">• Jean Jacques Wyndaele
14:30	14:40	Electronic or paper diary	<ul style="list-style-type: none">• Ingrid van Neyghen
14:40	15:00	voiding diary for elderly, children and neurologic patients	<ul style="list-style-type: none">• Tom David van Meel
15:00	15:30	evaluations of voiding diaries and determining the clinical value , pitfalls and limitations	All

Aims of course/workshop

A bladder diary is used to document the symptoms and signs of lower urinary tract function in daily life. This course will highlight the indication, practical application, clinical value and limitations of using a bladder diary in men, women, children, elderly, neurologic patients.

Educational Objectives

Making a proper diagnosis in cases of lower urinary tract problems and incontinence is a prerequisite to propose an optimal treatment.

The use of a voiding diary is of utmost importance as it gives objective and reliable information of the clinical signs and symptoms, grades them and puts patients complaints into proper perspective.

As diagnostic tool a bladder diary is valuable if filled in correctly and interpreted without making mistakes.

Participants will learn from this course how the optimal clinical use should be so that they can apply it or improve their actual use.

Voiding diary as method to evaluate LUT function and LUT symptoms

JJ Wyndaele



 Universiteit
Antwerpen

LUT symptoms

- **Filling/Voiding**
 - Frequency
 - Nocturia
 - Stream ↓
 - Start ↓
 - ...
- **Sensation**
 - Desire to void
 - Urgency
 - Pain
- **Incontinence**
- **Other**

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Diagnosis

- History
- Physical examination
- Urine analysis
- Imaging
- Endoscopy
- Functional tests: padtest, urodynamics,...

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Problems

The diagnostic accuracy is not bad but:

- The reporting of symptoms is sometimes difficult
- Additional tests can cause more confusion
- Tests have limitations: artificial, non functional, non physiological, done in an uncommon environment.
- They can give data not related to the symptoms

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Major problem

- Patient has symptoms **in daily life**
- Evaluation should therefore focus on gathering information on LUT function in daily life



Questionnaires

Voiding diary = Frequency/ Volume Chart

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Voiding diary (= frequency volume chart, voiding chart)

- Patient writes down what is experienced of LUT function during a certain period



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Voiding diary

Standardization is
lacking

What would you think is needed
on a bladder diary?

Voiding diary

**Only valuable if
completed
correctly**

Patient's compliance

- Information , clear instructions and encouragement important for all types of VD !!!!
- Adaptation to information needed and to patient's possibilities
- More complex VD for research

Good quality VD

- How many days
- Which parameters
- Interpretation
- Reliability

Voiding diary: how many days needed ?

- 24 hours – 14 days (Wyman et al 1988, Larson et al 1992, Rabin et al 1993, Abrams –Klevmark 1996, Burgio et al 1998, Groutz et al 2000, Teleman et al 2002, Ja Hyeon Ku et al 2004, Naoemova et al 2008, 2009, 2010)
- Long complex charts
 - yield more data
 - may lower patient's compliance

How many days

- 1 full day + night = good basic impression
- 3 full days + nights = consistency of events
- 7 days = research
- 14 days or more = training

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Number of days?

- Nocturia and incontinence most variable and are not present every day in all (Groutz et al., 2000; Wyman et al., 1988; Locher et al., 2001; Naoemova et al 2010).
- Low incidence = more days needed (Homma et al., 2002)
- Urine loss 2/ week = diary needed of 7 days to be reliable (Locher et al., 2001).

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Voiding diary

• 24 hour frequency?

- depends on
 - fluid ingested
 - change in insensate fluid loss (weather)
 - why did patient go void?

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Food and water

- Yogurt 125 ml = 100 ml
- Pudding 150 g = 100 ml
- 2 scoops ice cream = 70 ml
- Fruit 1 piece = 100 ml
- 1 grape fruit = 180 ml
- 250 gr grapes = 200 ml
- ¼ melon = 200 ml



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What do we want patients to report ? Older publications:

- n° voiding episodes
- n° incontinence episodes
- + voided volumes
- + drinks /food/activities

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Which data needed ?

Urodynamics Society 1997

- Time micturition
- Time and type incontinence
- Voided volumes

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**ELECTRONIC OR
PAPER DIARY**



VAN NEYGHEN INGRID
GLASGOW
29 AUGUST 2011



WHAT DO WE PREFER?

ELECTRONIC OR PAPER DIARY?



**PAPER DIARY
STRENGTHS**

- Only way to access patients condition
- Allow tracking changes
- Accurate reflection of patients symptoms

Abrams et al. 1996



**PAPER DIARY
WEAKNESS**

- Validation of test instrument
- Logistic problems
- Quality of data
- No control of retrospective entry



**ELECTRONIC DIARY
STRENGTHS**

- All of the paper
- Greater subject compliance
- Possibility interim acces
- Dynamic display



**ELECTRONIC DIARY
WEAKNESS**

- Requires training
- Cost of devices
- Possible errors
- Data entry requires program planning





ARE THERE DIFFERENCES?

- Age related influence
 - No difference in easiness to use
 - Difference in the completeness of filling in of the records



ARE THERE DIFFERENCES?

- Reproducible measure/monitoring
 - Reported compliance with paper diaries was 90% (86-94%)
 - Actual compliance with an electronic diary system was 94% (92-96%)

Stone et al. 2002



CONCLUSIONS

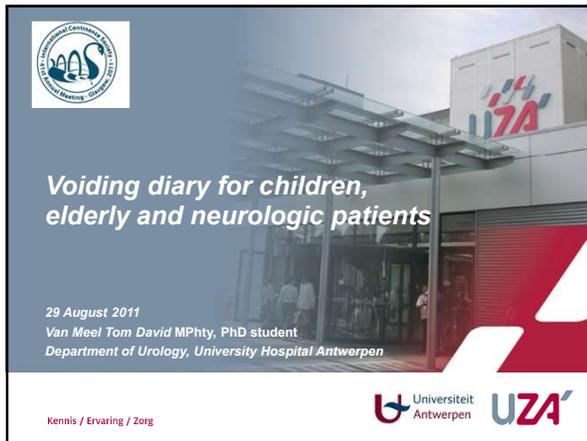
- Electronic diary can be a very specific tool for an evaluation of the bladder function
- Electronic diary is comparable with a paper diary
- Electronic diary has advantages in specific research with large sample sizes
- Paper diary remains useful in daily practice





Voiding diary for children, elderly and neurologic patients

29 August 2011
 Van Meel Tom David MPhy, PhD student
 Department of Urology, University Hospital Antwerpen



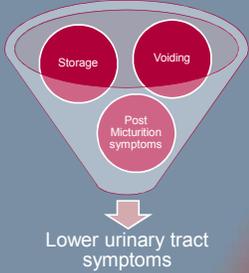
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Voiding Diary for children, elderly and neurologic patients

- Indications
- Terminology
- Practical Applications
- Clinical Value
- Limitations

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Indications



Lower urinary tract symptoms

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Terminology

- Increased daytime frequency: the complaint by the patient who considers that he/she voids too often by day
- Nocturia: the complaint that the individual has to wake at night one or more times to void
- Enuresis: means any involuntary loss of urine.
 If it is used to denote incontinence during sleep, it should always be qualified with the adjective "nocturnal"
- Nocturnal enuresis: the complaint of loss of urine occurring during sleep

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Practical Applications

- Micturition time chart: this records only the **times of micturitions**, day and night, for at least 24 h
- Frequency volume chart: this records the **volumes voided** as well as the **time of each micturition**, day and night, for at least 24 h
- Bladder diary: this records the **times of micturitions** and **voided volumes**, **incontinence episodes**, **pad usage** and other information such as **fluid intake**, the **degree of urgency** and the **degree of incontinence**

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What can we measure from bladder diaries?

- Daytime frequency: number of voids recorded during waking hours and includes the last void before sleep and the first void after waking and rising in the morning
- Nocturia: number of voids recorded during a night's sleep: each void is preceded and followed by sleep
- 24-hour frequency: the total number of daytimes voids and episodes of nocturia during a specified 24 h period
- 24- hour production: is measured by collecting all urine for 24 h

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What can we measure from bladder diaries?

- Polyuria:** the measured production of more than 2.8 litres of urine in 24h in adults
- Nocturnal urine volume:** the total volume of urine passed between the time the individual goes to bed with the intention of sleeping and the time of waking with the intention of rising
(excludes last void before going to bed, includes first void after rising in the morning)
- Nocturnal polyuria:** present when an increased proportion of the 24h output occurs at night
(excludes the last void before sleep, includes the first void of the morning)

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What can we measure from bladder diaries?

- Normal range of nocturnal urine production:**
 - Differs with age
 - Nocturnal polyuria = > 20% young adults
> 33% over 65 years
- Maximal voided volume:** largest volume of urine voided during a single micturition

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Voiding diary for children

TERMINOLOGY ICCS

FREQUENCY-VOLUME CHART:
Detailed diary recording fluid intake and urine output over several 24h periods *(JORGGAARD et al. 1998)*

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Voiding diary for children

FREQUENCY-VOLUME CHART

- Basic**
 - Number of voidings
 - Times of voiding
 - Voided volumes
- Additional**
 - Episodes of urgency
 - Episodes of leakage

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Voiding diary for children

Your Daily Bladder Diary
This diary will help you and your health-care team. Bladder diaries help show the causes of bladder control trouble. The "sample" line (below) will show you how to use the diary. Your name: _____ Date: _____

Time	Drinks What kind? How much?	Urine How much? How much?	Accidental leaks		Did you feel a strong urge to go?		What were you doing at the time? Swimming, exercising, playing, etc.
			How much?	How much?	Yes	No	
Sample	Coke 200 ml	100 ml	100 ml	100 ml	Yes	No	Running
6-7 a.m.					Yes	No	
7-8 a.m.					Yes	No	
8-9 a.m.					Yes	No	
9-10 a.m.					Yes	No	
10-11 a.m.					Yes	No	
11-12 noon					Yes	No	
12-1 p.m.					Yes	No	
1-2 p.m.					Yes	No	
2-3 p.m.					Yes	No	
3-4 p.m.					Yes	No	
4-5 p.m.					Yes	No	
5-6 p.m.					Yes	No	
6-7 p.m.					Yes	No	

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Why do we use it in children?

- Reproducible measure/monitoring of
 - Functional bladder behaviour *(Powell 1979 et al., Bower et al. 1997, Nijman 2004)*
 - Functional bladder storage in children *(Hjalmas et al. 1996, Berger et al. 1983, Koff et al. 1983)*
 - Paediatric bladder problems *(Doikno et al. 1987, Larsson et al. 1990, Mattson et al. 1994)*

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Effectiveness and reliability

- Motivation of the child ("Bladder detectives")
Bower et al. 2001
- Responsibility of the child, the parents should assist and support
Norgaard et al. 1998

1 glass	day miction	day accident	night accident	night miction	dry

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Effectiveness and reliability

- Exclusion of the first and last miction

First miction is in 72-75% the largest *Mattson 1994, Mattson et al. 1995*

Last miction is low, habit related or parent-prompted

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Limitations

- The importance of residual urine
- The influence of the moment:
Cooperation, errors, time of registration, "hidden" voids,...
- Normal fluid intake:
No increase, drinking pattern

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Voiding diary for elderly

BLADDER DIARY:

A tool for the registration of bladder habits within the "limits" of the patient

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Why do we use it in elderly?

- **Reproducible measure/monitoring of**
 - Functional bladder behaviour
Powell et al. 1979, Bower et al. 1997
 - Incontinence episodes
Fink et al. 1999, Groutz et al. 2000, Nygaard et al. 2000
 - "Elderly" bladder problems
Saito et al. 1993, Nielsen et al. 1994

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Limitations

- Lower cognitive level
- More ADL-limitations
- Fewer complaints of incontinence
- Impaired mobility
- Fewer chronic diseases
- More medication intake
- Registration by others

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Are there some changes of micturition events with ageing?

- **Volume/void** and **maximal voided volume** decreases significant with age in both sexes
(More prominently in men) Haarts et al. 2004
- Fluid intake decreased with age in both sexes
(Cardial problems, social isolation,...)

IN MEN

- Frequency increased with age (Development of prostatic enlargement)

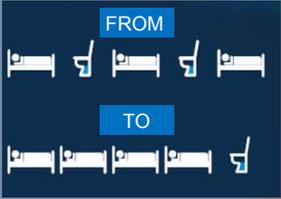
IN WOMEN

- Frequency increased initially and decreased in the elder

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Are there some changes of micturition events with ageing?

- The prevalence of nocturnal polyuria increased disproportionately with age
Swithinbank et al. 2003



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Take home messages

- Frequency-volume chart adapted to needs
(complexity of VD, number of different data)
- Patient's limitations influence the outcome
(reliability, completeness, interpretation)
- Registration by others if needed



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Voiding diary for neurogenic patients

BLADDER DIARY:

A tool for the registration of bladder habits within the "limits" of the patient

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Why do we use it in neurogenic patients?

- **Reproducible measure/monitoring of**
 - Functional bladder behaviour
 - Incontinence episodes

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Limitations

- More ADL-limitations
- Fewer complaints of incontinence
- Impaired mobility
- Fewer chronic diseases
- More medication intake
- Registration by others

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Take home messages

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