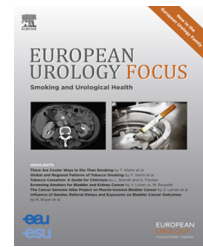


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Review – Voiding Dysfunction

## A Classification System for Urodynamic Evaluation of Lower Urinary Tract System Dysfunction

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### Abstract

**Context:** A classification system for lower urinary tract system (LUTS) dysfunction, based on urodynamics, could support the evaluation and management of this pathological condition.

**Objective:** A new alphanumerical classification system is proposed for staging neurogenic and non-neurogenic LUTS dysfunction, according to the urodynamic evaluation.  
**Evidence acquisition:** This is a proposal based on experience from everyday clinical practice and represents an opinion open to discussion.

**Evidence synthesis:** The purpose of this alphanumerical classification is the establishment of a simple, unified staging system describing all LUTS dysfunction situations, after a urodynamic evaluation, in a way that can help in diagnosis, treatment, health professionals' communication, education, and research.

**Conclusions:** This alphanumerical classification for LUTS dysfunction could become a unified standard and a prerequisite for ensuring the quality of care in all resource settings. Moreover, it would be useful for the future to include a classification as part of LUTS dysfunction registration.

**Patient summary:** A new alphanumerical classification system is presented. The purpose of this classification is the establishment of a simple, unified staging system describing entire lower urinary tract system dysfunction situations in a way that could help in diagnosis, treatment, health professionals' communication, education, and research.

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### 1. Introduction

Classification tends to describe the severity and extent of a person's medical dysfunction or disease. A classification system of lower urinary tract system (LUTS) dysfunction based upon the results of an urodynamic study is proposed in a simple and uniform way. The classification

staging system could become the common language in which urologists and other health professionals communicate on the LUTS severity and extent for individual patients as a basis for decision making on treatment management and individual prognosis, but can also be used to inform and evaluate treatment guidelines and research.

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## 2. Evidence acquisition

This is a proposal based on experience from everyday clinical practice and represents an opinion open to discussion.

## 3. Evidence synthesis

A classification system would cover many types of LUTS, non-neurogenic or neurogenic; for neurogenic LUTS where urodynamic evaluation is recommended, a staging system could be of major significance.

The proposed classification is a urodynamically based system that records the evaluation given according to the urodynamic study. This classification system uses four capital Latin letters, Arabic numbers, and small Latin letters as indicators.

The elements considered in this staging system are as follows: C for compliance, which is the most important element for the safety of the kidneys; O for overactivity; U for urethra; and V for voiding phase.

Staging could be important for several reasons, as it would help the doctor plan the appropriate treatment. It can provide an indication of prognosis, and moreover, assist in the evaluation of treatment results and facilitate the exchange of information about patients between treatment centers and researchers, giving them a common terminology for evaluating the results of clinical trials and comparing the results of different trials. Furthermore, it supports LUTS evaluation activities, including registries, and, most importantly, helps the educational process.

If this idea for such urodynamic classification for LUTS is well accepted, the next step could be its validation, potentially through the networks of appropriate societies. The main scope of this article is to make a proposal that can attract the attention needed to urodynamics, making it more familiar to an average urologist, and to systemize the urodynamic diagnosis in a uniform way. Moreover, if this classification system evolves, it could be connected to a symptom classification in order to provide physicians even with treatment options and have higher clinical usefulness.

Each individual aspect of COUV is termed as a category:

- 1 *Compliance* is represented by “C”; indicator number “1” reflects normal compliance, while “2” reflects low compliance. Moreover, indicator letter “a” presents a normal capacity, while “b” presents a decreased capacity.
- 2 *Detrusor overactivity* is represented by “O”, and indicator numbers 1, 2, 3, and 4 show the severity of overactivity [1]: “1” = high volume (>200 ml), non-urgency urinary incontinence (non-UUI); “2” = high volume (>200 ml), UUI; “3” = low volume (<200 ml), non-UUI; and “4” = low volume (<200 ml), UUI. The cutoff of 200 ml has been chosen, as this is thought to be the lowest average voided volume in a normal population [2,3]. This volume, approximately, in the case of the normal output of urine, gives acceptable intervals of time between micturitions. A cutoff value of detrusor pressures during overactivity seems not to be useful and realistic as

nowadays there is an argument on this [4–8]. Therefore, the level of pressures during overactivity is not included. This grading, of both urgency incontinence and volume of first overactive contraction, can be correlated with the influence on the quality of life of the symptoms associated with detrusor overactivity. Furthermore, indicator letter “a” reflects normal sensitivity, “b” increased sensitivity, and “c” decreased sensitivity.

These two letters (categories) actually covers all the important elements of bladder function during the filling phase of the urodynamic study.

- 3 *Urethral* function during filling is presented with letter “U,” and indicator number “1” reflects a competent urethra, while “2” reflects an incompetent urethra. The evaluation of urethra competence is based on International Continence Society (ICS) recommendations and appropriate tests [9].
- 4 *Detrusor* function during *voiding* and the entire voiding phase is presented with letter “V”; indicator number “1” shows normal detrusor contractility, “2” an underactive detrusor, and “3” a completely acontractile detrusor. Moreover, indicator letter “a” specifies (or designates) no existence of obstructions, “b” indicates the existence of an (undefined) obstruction that can be additionally categorized as “b(a)” if anatomical or “b(f)” if functional, “c” represents an equivocal obstruction, “d” indicates the existence of an obstruction because of dyssynergia, and “e” represents a situation of obstruction or even a situation that cannot be assessed. Obstruction, no obstruction, and equivocal obstruction are evaluated according to Bladder Outlet Obstruction Index for men [10] and Blaivas–Groutz nomogram for women [11]. The definition of detrusor underactivity is based on the descriptive and unique available, given by ICS [12]. The plus symbol (+) can be added to denote the existence of vesicoureteral reflux; on the contrary, the minus symbol (–) indicates that there is no vesicoureteral reflux. If none of these two symbols is used, it is implied that the evaluation of vesicoureteral reflux was not performed. Detailed information about a possible reflux is furthered in the scope of this classification, and a specific classification is also needed. The proposal for classification is obvious that it can be limited to current nomograms only; some of these nomograms could be considered inadequate and revised in the future. This classification can evolve in the future as new and more accurate nomograms will be applied. Furthermore, regarding the contractility and obstruction in neurogenic patients, despite the fact that no specific nomograms exist, the same methodology can be applied as used for non-neurogenic patients, since the principles of hydrodynamics are valid in both cases. It has to be noted that this classification looks toward systemizing the urodynamic diagnosis in a uniform way, based on current knowledge.

The proposed classification (Table 1) could potentially provide a comprehensive system for defining individual

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