

ANALYSIS OF THE *STANDARDISATION OF TERMINOLOGY OF LOWER URINARY TRACT DYSFUNCTION: REPORT FROM THE STANDARDISATION SUB-COMMITTEE OF THE INTERNATIONAL CONTINENCE SOCIETY*

Neurourol Urodynam 21: 167-78, 2002

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This analysis of the recent work by the Standardisation Sub-Committee is not as much a critique as it is a historical review, commentary and explanation of the recent revision of terminology which has not taken place to this extent since the First Report on the Standardisation of Terminology of Lower Urinary Tract Function was published in the British Journal of Urology¹ over a quarter century ago. Regardless of the motivation for change in this terminology in this latest document- change remains one thing that is inevitable. Incorporating these changes in terminology into daily practice and research may be difficult, but understanding how this terminology fits with some of the pre-existing committee reports has proved just as challenging. Many of the original qualifications of terminology in the First Report have been addressed over the last 27 years, but not in such a comprehensive fashion, with as many changes, as in the recent Abrams et al² report that is the subject of this review.

The original Standardisation Committee was composed of some of the greatest minds in dysfunction of the lower urinary tract function, and is probably only rivaled by the members of the current report. However, even the early reports from Standardisation Sub-Committees left some details unclear despite their comprehensive reviews and sometimes the definition of terms (i.e. - 'sensory urgency') was limited by the diagnostic technology available at the time (i.e. - absence of ambulatory urodynamics). The purpose of this review is to discuss the latest report and explain changes made to the basic terminology used to describe urinary tract function compared to earlier reports and to qualify areas where older terminology has not been reclassified and therefore continues to exist in its prior form whether intended by the Terminology Sub-Committee or not. It is the hope of the Education Committee of the ICS that this review will make the integration of this new terminology easier to understand for the practicing clinician.

The Sub-Committee qualifies the current work stating that its intent is to be compatible with the WHO ICIDH-2 of 2001 and the ICD 10 (International Classification of Diseases). It also reminds us to qualify all scientific presentations with the quote that "Methods, definitions and units conform to the standards recommended by the International Continence Society, except where specifically noted". It is observed that this is less commonly done now in the literature than in decades past and perhaps should be part of the review process for journals in the field as are many other standards.

The first new term introduced in the document is "***Lower Urinary Tract Symptoms***" and the acronym (***LUTS***). This term has been used with this abbreviation commonly in the urologic literature in the last decade and the definition is thoughtfully expanded to include not only the perceived "subjective indicator of a disease or change in a condition" by the patient, but also by the "carer or partner" "that may lead him/her to

seek help from health care professionals”. Symptoms are qualified as not to be used to make a definitive diagnosis.

Symptoms are distinguished from “*Signs*” which have been redefined as “observed by the physician including simple means, to verify symptoms and quantify them”. This clarified by the example originally used in 1976 with the sign of stress incontinence being the leakage of urine on coughing. They also state that “frequency-volume charts, pad tests and validated symptom and quality of life questionnaires” are signs. One would assume that even non-validated questionnaires would offer useful information or signs of the problem studied.

Another new addition to the terminology is the addition of “*Urodynamic Observations*” to the schema of symptoms, signs and conditions. A thoughtful addition, especially at a time where many clinicians do not perform physiological or urodynamic testing, these are defined as “observations made during urodynamic testing”. The authors qualify that urodynamic observations are different than “Conditions” and do not represent a definitive diagnosis, disease or condition (a change from the prior reports where the condition was defined by urodynamics). Clearly this is a change which represents the reality that urodynamics is testing which helps to explain symptoms but does not always define the underlying responsible condition.

Likewise, the definition of *Conditions* has been changed in a similar fashion to “defined by the presence of urodynamic observations associated with characteristic symptoms or signs and /or non-urodynamic evidence of relevant pathological processes”. This is different from the prior definition in that it deemphasizes the necessity of urodynamic testing and adds that other evidence or investigation may be useful in defining *Conditions*.

Lower Urinary Tract Symptoms (LUTS) are qualified as those reported by the individual or the caregiver and are substantially changed or redefined in this report. While the storage phase of bladder function has been defined previously defined as an urodynamic concept in the 1988 report of the Committee, *Storage symptoms* are defined as “experienced during the storage phase of the bladder, and include daytime frequency and nocturia”. It is unclear why 2 of these symptoms were included in the definition and not the other 2 *storage symptoms* of urgency and incontinence.

Increased daytime frequency is a new term to replace the “old” term frequency. It is defined as “the complaint by the patient who considers that he/she voids too often by day”. It is qualified that this is equivalent to the term “pollakisuria” used in many countries. One of the challenges to this term and to the use of nocturia is that they are patient complaints and we recognize that an individual may not have the perspective to realize what is the normal frequency of micturition during the day or the night unless they have had a recent change in these symptoms. Individuals tend to define normative experiences based on their own environments and if a woman has a sister and a mother who have urinated 16 times/ day for as long as she can recall and she voids this often she would not think to complain about *increased daytime frequency*. Certainly this can be later defined as a *sign* by the clinician, but shouldn’t this be qualified as a *symptom* by the professional collecting this history?

Nocturia is newly defined as “the complaint that the individual has to wake at night one or more times to void”. This is wonderful to finally have a numeric definition despite the fact that we realize with aging the normative frequency of nocturnal

micturition may increase. We also recognize that “night” may actually be interpreted as whenever one regularly sleeps. This is subject of another excellent Sub-Committee report by van Kerrebroeck et al.³

The definition of *Urgency* has been changed to “the complaint of a sudden compelling desire to pass urine, which is difficult to defer”. The additional qualifications of “compelling” and “difficult to defer” enhances the definition which is always difficult to interpret from the patient’s history.

Urinary incontinence has been simplified and redefined as “the complaint of any involuntary leakage of urine”. The removal of the qualifier in the original definition of “a social and hygienic problem” was a problem. Who was going to define what was a “hygienic problem”? If the patient didn’t view leaking urine 165 times a day as a “social problem”- did she not have incontinence (or a problem with dementia)? We will all thank the Sub-Committee for this change for years to come.

The Sub-Committee felt that the original symptom/sign of “stress incontinence” was unsatisfactory because of its mental connotations and they renamed the symptom, *Stress Urinary Incontinence* and defined it as “the complaint of involuntary leakage on effort or exertion, or on sneezing or coughing”. This is still difficult for several reasons. The Sub-Committee felt that the term “stress” was problematic- yet it remains. Qualifying potential drivers of urinary leakage- effort, exertion, sneezing or coughing rather than just stating “anything that increases intraabdominal pressure” is problematic because it eliminates other causes of increased intraabdominal pressure like vomiting, and forces clinicians to try to understand whether position change or walking represent “effort or exertion”. And would a patient qualify sexual intercourse as an effort or exertion (hopefully not)? Yet, a substantial proportion of men and women with *stress urinary incontinence* will involuntarily lose urine during coitus.

The old term “urge incontinence” was changed to *Urge Urinary Incontinence* and defined as “the complaint of involuntary leakage (of urine) accompanied by or immediately preceded by urgency”. This definition is more precise than the First Report that said that “urge incontinence was involuntary loss of urine associated with a strong desire to void”. Prior division into the terms “motor urge incontinence” and “sensory urge incontinence” are rightfully absent in this report- because they required an understanding of the cystometric results prior to the use of the symptom which is inconsistent with the chronology of obtaining symptoms prior to performing urodynamic investigations.

Following the change in definition of stress urinary incontinence, *Mixed Urinary Incontinence* has been redefined as “the complaint of involuntary leakage (of urine) associated with urgency and also with exertion, effort, sneezing or coughing”. It is interesting to note that the first part of the definition matches that of the old definition of “urge incontinence” from the First Report and does not reflect the current changes for *urge urinary incontinence* introduced in this new report. The definition does reflect the changes introduced by this Sub-Committee for *stress urinary incontinence* and suffers from the same limitations listed above.

The Report defines *Enuresis* (as in the past) as “any involuntary loss of urine” and distinguishes that when it is during sleep it is qualified as *Nocturnal Enuresis* which is newly defined as “the complaint of loss of urine occurring during sleep”.

The new term *Continuous Urinary Incontinence* is introduced as “the complaint of continuous leakage (of urine)”.

Other Types of Urinary Incontinence is defined as “possibly situational, for example the report of incontinence during sexual intercourse or giggle incontinence”. Any “other category” is always difficult at best- but other undefined symptoms of incontinence do need to be defined. However, the absence of the prior described symptom of “Insensate Urine Loss” is notably absent and a fairly frequent symptom amongst incontinent people. Does its absence from the current report mean that it does not exist in current terminology any longer or that it was not redefined and exists as earlier reported?

Bladder Sensation by history is divided into 5 different categories in this report. Bladder sensation may be *Normal* “where the individual is aware of bladder filling and increasing sensation up to a strong desire to void”. It may be defined as *Increased* when “the patient feels an early and persistent desire to void” or *Reduced* when “the individual is aware of bladder filling but does not feel a definite desire to void”. *Bladder sensation* may also be *Absent* when “the individual reports no sensation of bladder filling or urge to void”. The sensation may also be described as *Non-Specific* when “the individual reports no specific bladder sensation, but may perceive bladder filling as abdominal fullness, vegetative symptoms or spasticity”.

In Section 1.2, *Voiding Symptoms* are defined as those “experienced during the voiding phase”. *Slow Stream* is a new term defined as “the perception of reduced urine flow, usually compared to past performance or in comparison to others”. This would correspond to the urodynamic term of obstructive flow, but is a useful addition for the description of patients’ symptoms. This is differentiated from the new term *Intermittent Stream or Intermittency* which is “used when an individual describes urine flow, which stops and starts, on one or more occasions during micturition”. *Splitting or Spraying* of the urine stream may also be reported. *Hesitancy* is the new term “used to describe difficulty in initiating micturition resulting in a delay in the onset of voiding after the individual is ready to pass urine”. A new description of *Straining* to void is also introduced where “muscular effort is used to either initiate, maintain or improve the urinary stream. *Terminal Dribble* is a new term to use “when an individual describes a prolonged final part of micturition, when the flow has slowed to a trickle/dribble”. All of these new terms are descriptive, clear and should help the clinician record the history of a patient’s voiding function.

In Section 1.3 the new term, *Post Micturition Symptoms* are simply defined as those “experienced immediately after micturition”. The first of these is *Feeling of Incomplete Emptying* often described as “Post-Micturition Fullness” by clinicians in the past is now described as “a self-explanatory term for a feeling experienced by the individual after passing urine”. *Post Micturition Dribble* is also newly described as “the term used when an individual describes the involuntary loss of urine immediately after he or she has finished passing urine, usually after leaving the toilet in men, or after rising from the toilet in women”. Absent from this section is the description of post micturition pain, pressure or spasms that may be common in individuals with painful bladder syndromes like interstitial cystitis. Pain is described in Section 1.6 but not stated as first occurring after micturition. In this section one inconsistency of this report is recognized and that is the use of multiple terms (micturition, passing urine, and voiding) to describe

urine being expelled voluntarily from the bladder. As we are all asked to use proper terminology- the Sub-Committee should attempt to define one term (i.e. - micturition) and stick to it.

Section 1.4 defines *Symptoms Associated with Sexual Intercourse*. The Sub-Committee mentions dyspareunia, vaginal dryness and incontinence which may occur during or after intercourse. It is suggested that symptoms, like leakage be defined when they occur- during penetration, intercourse or at orgasm.

Section 1.5 discusses *Symptoms Associated with Pelvic Organ Prolapse* including “the feeling of a lump, low backache, heaviness, dragging sensation, or the need to digitally replace the prolapse in order to defecate or micturate”.

Section 1.6 discusses *Genital and Lower Urinary Tract Pain*. This section presents all new definitions. The pain should be described as whether “related to bladder filling or voiding, may be felt after micturition or be continuous”. The “pain should also be characterized by type, frequency, duration, precipitating and relieving factors and by location as defined below”. *Bladder Pain* is felt suprapubically or retropubically, usually increases with bladder filling, and may persist after voiding”. *Urethral Pain, Vulval Pain, Vaginal Pain* and *Perineal Pain* are all defined by their site. *Scrotal Pain* is qualified as “localized or not, for example to the testis, epididymis, cord structures or scrotal skin”. *Pelvic Pain* is also stated to be “less well defined than bladder, urethral or perineal pain and less clearly related to the micturition cycle or to bowel function and not localized to any single pelvic organ”. These descriptions are all clear and succinct and introduce the syndromes described in Section 1.7.

A whole new group of symptom complexes are added to the ICS terminology in Section 1.7 which is entitled *Genito-Urinary Pain Syndromes and Symptom Syndromes Suggestive of LUTD*. They note that these syndromes are constellations of at least 2 symptoms that are “functional abnormalities for which a precise cause has not been defined”. Several *Genito-Urinary Pain Syndromes* are described in Section 1.7.1. These syndromes are all very general and related to locus of pain. Clearly some disorders such as Interstitial Cystitis (which is not defined) may cross several of these loci- but the non-specific nature of their definitions may be a strength in that they are widely applicable. *Painful Bladder Syndrome* “is the complaint of suprapubic pain related to bladder filling, accompanied by other symptoms...in the absence proven urinary infection or other obvious pathology”. *Urethral Pain Syndrome* “is the occurrence of recurrent episodic urethral pain usually on voiding, with daytime frequency and nocturia, in the absence of proven urinary infection or other obvious pathology”. *Vulval Pain Syndrome* is defined as “persistent or recurrent episodic vulval pain, which is either related to the micturition cycle or associated with symptoms suggestive of urinary tract or sexual dysfunction. There is no proven infection or other obvious pathology”. Likewise, *Vaginal Pain Syndrome* is the occurrence of persistent or recurrent episodes of vaginal pain which is associated with symptoms suggestive of urinary tract or sexual dysfunction. There is no proven vaginal infection or other obvious pathology”. *Perineal Pain Syndrome* is defined in the exact same way except with the perineum as the site. For males there is the parallel syndrome of *Scrotal Pain Syndrome* which is described as “the occurrence of persistent or recurrent episodic scrotal pain which is associated with symptoms suggestive of urinary tract or sexual dysfunction. There is no proven epididymo-orchitis or other obvious pathology”. Lastly, *Pelvic Pain Syndrome* is “the

occurrence of persistent or recurrent episodic pelvic pain associated with symptoms suggestive of lower urinary tract, sexual, bowel or gynecological dysfunction. There is no proven infection or other obvious pathology”.

In Section 1.7.2 new *Symptom Syndromes Suggestive of Lower Urinary Tract Dysfunction* are discussed. The *Overactive Bladder Syndrome* is equated with the *Urge Syndrome* and the *Urgency-Frequency Syndrome* and defined differently than before as “urgency, with or without urge incontinence, usually with frequency and nocturia”. This is obviously in the absence of infection or other proven etiology”. This new definition stresses urgency which is the most difficult component of the syndrome to define and quantify. It is unusual that the Sub-Committee has left us with all three terms instead of one. This may reflect the industry introduction of the term “Overactive Bladder”.

Clearly this is an important and common syndrome that usually does have a defined etiology after urodynamic and/or endoscopic evaluation is conducted. Lower Urinary Tract Symptoms Suggestive of Bladder Outlet Obstruction is defined for males as the “term used when a man complains predominately of voiding symptoms in the absence of infection or obvious pathology other than possible causes of outlet obstruction”.

In Section 2 *Signs Suggestive of Lower Urinary Tract Dysfunction (LUTD)* are discussed. Section 2.1 describes the tools available to measure the frequency, severity, and impact of LUTS. The *Micturition Time Chart* records only the times of micturition for at least 24 hours; whereas the Frequency Volume Chart also records volumes voided. Only the *Bladder Diary* records the times of micturitions, the volume voided, incontinence episodes, pad usage, fluid intake, the degree of urgency and incontinence. While many centers use these tools, it is helpful to have standard definitions- so investigators can define the tool they used in a consistent and universal fashion.

The measures obtained from these charts are also defined in this section. *Daytime Frequency* “is the number voids recorded during waking hours and includes the last void before sleep and the first void after waking”. *Nocturia* “is the number of voids recorded during a night’s sleep; each preceded and followed by sleep”. The *24-Hour Frequency* is the sum of both the preceding and the *24-Hour Production* (of urine) “is measured by collecting all urine for 24 hours”. *Polyuria* “is defined as the measured production of more than 2.8 liters of urine in 24 hours in adults”. *Nocturnal Urine Volume* “is defined as 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. It excludes the last void before sleep but includes the first void of the morning”. *Nocturnal Polyuria* is defined as “increased proportion of the 24-hour output occurs at night normally during the 8 hours the patient is in bed”. *Maximum Voided Volume* “is the largest volume of urine voided during a single micturition and is determined either from a *frequency volume chart* or a *bladder diary*”. These definitions again help clarify the terms and consistent use by members will help clear confusion about the exact definition of these terms.

Section 2.2 describes the keys to Physical examination and is self evident and clear. The sign of Urinary *Incontinence* is defined as “urine leakage seen during examination; this may be urethral or extraurethral”. The sign of *Stress Urinary Incontinence* has been changed in parallel to the symptom and is defined as “the observation of involuntary leakage from the urethra, synchronous with exertion/effort, or sneezing or coughing”. They qualify this saying that “Stress Leakage is presumed to be

due to raised abdominal pressure”. Again the obvious question is, why not just define it this way as “involuntary leakage of urine observed coincident with raised abdominal pressure”? This would be more succinct and clearer. **Extra-Urethral Incontinence** is unchanged and defined as “the observation of urine leakage through channels other than the urethra”. The new category of **Uncategorised Incontinence** is “the observation of involuntary leakage that cannot be classified into one of the above categories on the basis of signs and symptoms. This new sign parallels the symptom change an “Other” category and has the same advantage of being inclusive but is also limited by its lack of definition or helpful example to illustrate when this term would be used.

Section 2.2.3 discusses findings during a pelvic examination and represents a simplified version of the definitions in the prior report by Bump et al. in 1996.⁴ **Pelvic Organ Prolapse** is defined as the “descent of one or more of: the apex of the vagina or cervix, anterior or posterior vaginal walls”. The definition of **Anterior Vaginal Wall Prolapse** has been changed to” descent of the anterior vagina so that a point 3 cm proximal to the external urinary meatus, or any anterior point proximal to this is less than 3 cm above the plane of the hymen”. Change to the term **Posterior Vaginal Wall Prolapse** is the mirror image of this and defined as” any descent of the posterior vaginal wall so that a midline point on the posterior vaginal wall 3cm above the level of the hymen or any posterior point proximal to this, is less than 3 cm from the hymen. While these two terms are simplified, they still are flawed as was the original description. The average female urethra is 4 cm in length, so a point that is 3 cm above the hymen on the anterior vaginal wall will help define posterior descent of the urethra and not the rest of the anterior vaginal wall. In many women, following vaginal birth, the distal anterior vaginal wall is redundant. For this reason we may see perfect support of anterior compartment structures (bladder & urethra) and yet record an anterior POP-Q score at point Aa of -1.0 cm. Likewise, on both the anterior and posterior vaginal walls, women may have high symptomatic support defects that are clinically significant and do not descend below a point 3 cm from the hymen. If the terminology is to be modified it should account for these faults, rather than just to simplify the language. As a research tool this is valuable, but it is not being used universally on a worldwide basis as originally intended. Perhaps a simpler system should be considered that is more user friendly and is more specific and sensitive to deal with the deficiencies noted above. The definition of **Prolapse of the Apical Segment of the Vagina** is also changed in this document. It is defined as”any descent of the vaginal cuff scar (after hysterectomy) or cervix, below a point which is 2 cm less than the total vaginal length above the plane of the hymen”. This definition is clear and succinct with a constant numeric definition.

The next section of the Sub-Committee report defines assessment of **Pelvic Floor Muscle Function** and suggests that it may be “qualitatively defined by the tone at rest and the strength of a voluntary or reflex contraction as strong, weak or absent or by a validated grading system. A pelvic muscle contraction may be assessed by visual inspection, by palpation, electromyography or perineometry. Factors to be assessed include strength, duration, displacement and repeatability”. Rectal examination is described in this section and it is discussed how **Pelvic Floor Muscle Function** can be assessed on rectal exam as was qualified for any examination previously in this section.

Section 2.3 briefly comments on the performance of pad testing which does not endorse the previously described ICS Pad Test but notes that methods range from a “short

provocative test to a 24-hour pad test. Why no one pad test is endorsed is curious but realistic. Investigators should define the methods they used in enough detail to make it clear the methods used.

Section 3 describes *Urodynamic Observations and Conditions*. New terminology is used to distinguish *Conventional Urodynamic Studies* “which normally take place in the urodynamics lab and usually involve artificial filling” from *Ambulatory Urodynamic Studies* which use natural filling (with production of urine) and attempt to reproduce the subject’s everyday activities. This is certainly a helpful distinction to keep up with current practice patterns.

In the next section measurements used for filling cystometry and pressure flow studies are described. *Intravesical Pressure, Abdominal Pressure* and *Detrusor Pressure* remain unchanged.

In Section 3.2 *Filling Cystometry* is described and filling methods newly defined. *Filling Cystometry* is still defined as “the method by which the pressure/volume relationship of the bladder is measured during bladder filling”. Filling rates are described as a *Physiological Filling Rate* if the “filling rate is less than the predicted maximum-predicted maximum body weight in kg divided by 4, expressed as ml/min”. It is a *Non-Physiological Filling Rate* if the “filling rate is greater than the predicted maximum filling rate” (as defined above). These definitions are changed and far more exact than the prior slow-fill, medium-fill and rapid-fill classifications. However the terminology is a little difficult to understand. What is predicted maximum body weight? This needs to be clarified.

In Section 3.2.1 bladder sensation during filling is qualified and some new definitions and terms are added. *Normal Bladder Sensation* is “judged by three defined points noted during filling cystometry and evaluated in relationship to the bladder volume at that moment”. *First Sensation of Bladder Filling* is newly defined as “the feeling, during filling cystometry, when he/she first becomes aware of the bladder filling”. The *First Desire to Void* has been modified in its definition to “the feeling, during filling cystometry, that would lead the patient to pass urine at the next convenient moment, but voiding can be delayed if necessary”. *Strong Desire to Void* is unchanged and represents “a persistent desire to void without the fear of leakage”. These points are then used to define bladder sensation during filling as increased, reduced and absent bladder sensation. *Increased Bladder Sensation* is a new term defined during filling cystometry as “an early desire to void and/or an early strong desire to void, which occurs at low bladder volume and persists”. This is a great definition but it lacks clarity because no normative volumes are offered. What is a low volume for these sensations? In the next report, clarification of these volumes based on the literature on cystometry in controls would be helpful. *Reduced Bladder Sensation* is defined, during filling cystometry, as “diminished bladder sensation throughout bladder filling”. Does this mean that *First Desire* and *Strong Desire to Void* occur at larger volumes than two standard deviations from the mean? Again the term is difficult to use unless it is quantitatively defined. *Absent Bladder Sensation* is defined, during filling cystometry, as an “individual (which) has no bladder sensation”. This is clear. A difficult term, but important to recognize, when analyzing bladder sensation is the new term, *Non-Specific Bladder Sensations*. This refers to the “sensations, during filling cystometry, that may make the individual aware that the bladder is filling, for example, abdominal fullness or vegetative

symptoms”. Clarification of this difficult term by examples greatly enhances the definition. **Bladder Pain** may be noted during cystometry. **Urgency** “during filling cystometry, is a sudden compelling desire to void”. The definition of the **Vesical/Urethral Sensory Threshold** is unchanged and defined as “the least current which consistently produces a sensation perceived by the subject during stimulation at the site under investigation”.

Section 3.2.2 describes detrusor function during filling cystometry. It states that any detrusor contraction prior to permission to void is abnormal. **Normal Detrusor Function** remains unchanged and is defined as “allowing bladder filling with little or no change in pressure. No involuntary phasic contractions occur despite provocation”. **Detrusor Overactivity** is now defined as “a urodynamic observation characterized by involuntary detrusor contractions during the filling phase which may be spontaneous or provoked. This new definition eliminates the confusing phrase “which the patient cannot completely suppress” and does not set a minimum pressure for these contractions- but notes that it is difficult to accurately record contractions <5 cm H₂O. Three new terms are used to qualify types of detrusor overactivity. **Phasic Detrusor Overactivity** is “defined by a characteristic wave form, and may or may not lead to incontinence”. **Terminal Detrusor Overactivity** is “defined as a single involuntary detrusor contraction occurring at cystometric capacity, which cannot be suppressed, and results in incontinence usually resulting in bladder emptying”. **Detrusor Overactivity Incontinence** is a new term to describe “incontinence due to detrusor overactivity”. It is noted that when normal sensation is present the patient will also experience urgency. These are all good descriptive terms, but it is clear that there may be overlap –even in the same patient whom might have phasic contractions early in cystometry and then has a terminal detrusor contraction with a large amount of urinary incontinence that might be labeled detrusor overactivity incontinence. **Detrusor overactivity** with or without incontinence might have been simpler. The condition may also be sub-classified based on its etiology. Replacing detrusor hyperreflexia is the new term **Neurogenic Detrusor Overactivity** which is “when there is a relevant neurological condition (that causes the detrusor overactivity)”. **Idiopathic Detrusor Overactivity** is the new term used to replace detrusor instability and is used when involuntary detrusor contractions occur “when there is no defined cause”. While these are both great terms, the original Committee changed the term to Detrusor Hyperreflexia because of the confusion amongst clinicians who called everything neurogenic. Hopefully this change back will not lead to the same confusion. **Provocative Manoeuvres** are a new addition to the terminology of cystometry and are defined as “techniques used during urodynamics in an effort to provoke detrusor overactivity, for example, rapid filling, use of cooled or acid medium, postural changes and handwashing”. It is again quite helpful that examples are given. The spelling of the term manoeuvres is sure to trip up North Americans and short out their spelling check software programs.

Bladder Compliance is defined in Section 3.2.3 as the “relationship between change in bladder volume and change in detrusor pressure”. It is “calculated by dividing the volume change by the pressure change during that change in bladder volume”. The ICS recommends that two standard points be used for compliance calculations: the detrusor pressure at the start of filling (bladder volume=0) and the detrusor pressure and corresponding bladder volume at cystometric capacity or immediately before the start of

any detrusor contractions that cause significant leakage”. This change and thorough description is very clear and a dramatic improvement to the multiple methodologies utilized in the past.

Section 3.2.4 describes bladder capacities during filling cystometry. **Cystometric Capacity** has a new definition as “the bladder volume at the end of the filling cystometrogram, when “permission to void” is usually given. The cystometric capacity is the volume voided together with any residual urine”. **Maximum Cystometric Capacity**, in patients with normal sensation, is” the volume at which the patient feels he/she can no longer delay micturition and has a **strong desire to void**”. The one practical limitation of **maximum cystometric capacity** ending when the patient feels he/she can no longer delay micturition is the lack of sensitivity of this test in detecting **detrusor overactivity** if we stop the test before the patient leaks urine. The urodynamicist must take the patient with urge urinary incontinence to the point where he/she would leak urine and not stop when they are anxious that this could occur- otherwise we would rarely detect **detrusor overactivity**. **Maximum Anesthetic Bladder Capacity** has also been redefined as “the volume to which the bladder can be filled under deep general or spinal anaesthetic and should be qualified according to type of anaesthesia used, the speed of filling, the length of time of filling, and the pressure at which the bladder is filled”.

Section 3.2.5 describes urethral function during filling cystometry. The **Normal Urethral Closure Mechanism** “maintains a positive urethral closure pressure during bladder filling even in the presence of increased abdominal pressure, although it may be overcome by detrusor overactivity”. This acknowledgement of the effect of detrusor overactivity on the normal urethral sphincteric mechanism is important in this definition. **Incompetent Urethral Closure Mechanism** is “defined as one which allows leakage of urine in the absence of a detrusor contraction”. As a clarification of the prior confusing term “unstable urethra” the new term **Urethral Relaxation Incontinence** is “defined as leakage due to urethral relaxation in the absence of raised abdominal pressure or detrusor overactivity”. The prior term was rarely used and this is clearer and should be easier to use. The term urethral instability to describe fluctuations in urethral pressure was considered a confusing term of uncertain significance and is omitted from the current terminology. **Urodynamic Stress Incontinence** is “defined as the involuntary leakage of urine during increased abdominal pressure, in the absence of a detrusor contraction. This is the replacement term for “genuine stress incontinence” which will be missed only for the egotistical semantics of the term which implied that only people who could perform urodynamics were qualified to make the “genuine” diagnosis. Whoops, the new term still implies that.

Section 3.2.6 describes urethral function during filling cystometry. The original terms, **Urethral Pressure**, **Urethral Pressure Profile**, **Urethral Closure Pressure Profile**, **Maximum Urethral Pressure**, **Maximum Urethral Closure Pressure**, **Functional Profile Length** and **Pressure “Transmission” Ratio** all remain unchanged. The leak point pressures as assessments of urethral function are new additions to the terminology in this report. The **Abdominal Leak Point Pressure** is defined as “the intravesical pressure at which urine leakage occurs due to increased abdominal pressure in the absence of a detrusor contraction”. The footnote to the text qualifies that the site of pressure measurement (rectal, vaginal or intravesical) should be noted as well as the method by which the pressure is generated (cough or Valsalva). They also note that the

baseline pressure may be calculated in 3 different ways: from the true zero of intravesical pressure, bladder pressure measured at zero volume, or the bladder pressure right before cough or Valsalva usually performed at 200 or 300 ml. What a missed opportunity. All investigators agree on one thing about leak point pressure and that is that there is no standard. The Sub-Committee had a great opportunity to define this test by stating exactly how the pressure should be measured, at what volume, from what baseline and with what pressure generating modality. Despite the recognition of the test- the confusion about its performance will continue to persist. **Detrusor Leak Point Pressure** is also defined for the first time by the ICS as “the lowest detrusor pressure at which urine leakage occurs in the absence of either a detrusor contraction or increased abdominal pressure”. While this is confusing because the term was originally introduced to measure the pressure head generated during increases in detrusor pressure to predict the development of upper tract problems, the Sub-Committee acknowledges this in their footnote and state that while this is defined for assessing low bladder compliance- they recognize that many will measure DLPP during involuntary detrusor contractions. Why write this in the footnote. Why not define it as it was originally described and used or in the definition state that it is “the lowest detrusor pressure at which urine leakage occurs in the absence of increased abdominal pressure from either decreased bladder compliance or detrusor overactivity”.

Section 3.3 describes **Pressure Flow Studies** where “the relationship between pressure in the bladder and urine flow rate is measured during bladder emptying”.

Section 3.3.1 describes the terms used in the measurement of urine flow. Urine Flow is defined as either **Continuous** which is “without interruption” or as **Intermittent** where the “flow stops and starts during a single visit to the bathroom”. The continuous flow curve may be described as a **Smooth** arc shaped curve or **Fluctuating** when there are multiple peaks during a period of continuous voiding. The definitions for **Flow Rate**, **Voided Volume**, **Voiding Time**, **Flow Time** and **Time to Maximum Flow** all remain unchanged. The **Maximum Flow Rate** has been redefined as “the maximum measured value of the flow rate after correction for artifacts”. While seemingly simple- the reliance on electronic tracings and printouts makes this reminder in the changed definition, to remove artifact, important. The definition for Average Flow Rate has been changed to the “voided volume divided by the flow time. The average flow should be interpreted with caution if flow is interrupted or there is a terminal dribble”. This added statement to the definition is important, and would suggest that if such a situation exists, it should be noted.

Section 3.3.2 discusses pressure measurements during pressure flow studies. The definitions for **Premicturition Pressure**, **Opening Pressure**, **Opening Time**, **Maximum Pressure**, **Pressure at Maximum Flow**, and **Closing Pressure** are all unchanged from their original definitions. The **Minimum Voiding Pressure** is defined as “the minimum pressure during measurable flow. This is not necessarily equal to either the opening or closing pressures”. **Flow Delay** is defined as “the time delay between a change in bladder pressure and the corresponding change in measured flow rate”.

Section 3.3.3 discusses detrusor function during voiding. The definitions in this section of **Normal Detrusor Function**, **Detrusor Underactivity**, **Acontractile Detrusor** and **Post Void Residual** are all unchanged from the original definitions.

Section 3.3.4 describes urethral function during voiding. The definition of **Normal Urethral Function** has been changed to “urethra that opens, and is continuously relaxed to allow the bladder to be emptied at a normal pressure”. **Abnormal Urethral Function** “may be due to either obstruction to the urethra or overactivity, or a urethra that cannot open due to anatomic abnormality, such as an enlarged prostate or urethral stricture”. **Bladder Outlet Obstruction** is “the generic term for obstruction during voiding and is characterized by increased detrusor pressure and reduced urine flow rate. It is usually diagnosed by studying the synchronous values of flowrate and detrusor pressure”. This definition is clear and succinct and even instructs how to test for the condition, but a quantitative criteria still is not offered- even in men where the footnote states the condition has been defined. The definition of Dysfunctional Voiding has also been changed to “an intermittent and/or fluctuating flow rate due to involuntary intermittent contraction of the peri-urethral striated muscle during voiding, in neurologically normal individuals”. This is a general term to describe what has been called “non-neurogenic neurogenic bladder or idiopathic detrusor sphincter dyssynergia” previously. This is a better term. The definition for **Detrusor Sphincter Dyssynergia** is unchanged from the original but qualified by a footnote which is valuable in clarifying the etiology of this condition. It states that “**Detrusor Sphincter Dyssynergia** typically occurs in patients with supra-sacral lesions...and is uncommon in lesions of the lower cord. Although the intraurethral and periurethral striated muscles are usually held responsible, the smooth muscle of the urethra and bladder neck may also be responsible”. The new finding of **Non-Relaxing Urethral Sphincter Obstruction** “occurs in individuals with a neurological lesion and is characterized by a non-relaxing, obstructing urethra resulting in reduced urine flow”. This condition is usually found in sacral and infra-sacral lesions such as with meningomyelocele or after radical pelvic surgery. This term replaces “isolated distal sphincter obstruction”. These additional new terms will make it easier to describe voiding dysfunction due to urethral dysfunction.

Section 4 describes 5 new conditions affecting voiding. **Acute Retention of Urine** is a new condition described as “a painful, palpable or percussable bladder, when the patient is unable to pass any urine”. **Chronic Retention of Urine** is defined as “a non-painful bladder, which remains palpable or percussable after the patient has passed urine. Such patients may be incontinent”. This condition supplants the poor past term of “overflow incontinence”. Typically the retention in these patients is >300ml. **Benign Prostatic Obstruction** is a form of bladder outlet obstruction; and may be diagnosed when the cause of outlet obstruction is known to be **benign prostatic enlargement**, due to histologic benign prostatic hyperplasia”. **Benign Prostatic Hyperplasia** “is a term used and reserved for the typical histopathological pattern which defines the disease”. **Benign Prostatic Enlargement** is defined as “prostatic enlargement due to histologic benign prostatic hyperplasia. The term ‘prostatic enlargement’ should be used in the absence of prostatic histology”.

Section 5 describes different treatments that are available for these conditions. They were published in the 7th ICS Report on Lower Urinary Tract Rehabilitation Techniques and remain unchanged.⁵ **Lower Urinary Tract Rehabilitation** is defined as “non-surgical, non-pharmacological treatments for lower urinary tract function and includes: **Pelvic Floor Training, Biofeedback, Behavioural Modification and Electrical Stimulation**. In Section 5.3.1 Intermittent Catheterisation is described as **Intermittent**

Self-Catheterisation performed by the patient, *Intermittent Catheterisation* performed by an attendant, *Clean Intermittent Catheterisation* using washed or disposable catheters, and *Aseptic Intermittent Catheterisation* using a sterile technique with sterile gloves and catheters. *Indwelling Catheterisation* is also described as “an indwelling catheter in the bladder, urinary reservoir, or conduit for a period longer than one emptying”. Sections 5.4 and 5.5 discuss techniques for bladder emptying, *Bladder Reflex Triggering* and *Bladder Expression*. *Bladder Reflex Triggering* “comprises various manoeuvres performed by the patient in order to elicit reflex detrusor contraction by exteroceptive stimuli”. *Bladder Expression* consists of “various manoeuvres aimed at increasing intravesical pressure in order to facilitate bladder emptying”. The most common of these are abdominal straining, Valsalva’s manoeuvre and Crede manoeuvre.

¹ Bates P, Bradley WE, Glen E, Melchior H, Rowan D, Sterling A, Hald T: First report on the standardization of terminology of lower urinary tract function, Br J Urol 1976; 48: 39-42.

² Abrams P, Cardozo L, Fall M, Griffiths D, Rosier P, Ulmsten U, van Kerrebroeck P, Victor A, Wein A: The standardization of terminology of lower urinary tract function: report from the standardisation sub-committee of the international continence society, Neurourol Urodynam 2002; 21: 167-78.

³ Van Kerrebroeck P, Abrams P, Chaikin D, Donovan J, Fonda D, Jackson S, Jennum P, Johnson T, Lose G, Mattiasson A, Robertson G, Weiss J: The standardisation of terminology in nocturia: report from the standardisation sub-committee of the international continence society, Neurourol Urodynam 2002; 21: 179-83.

⁴ Bump RC, Mattiasson A, Bo K, Brubaker LP, DeLancey JOL, Klarskov P, Shull BL, Smith ARB: The standardisation of terminology of female pelvic organ prolapse and pelvic floor dysfunction, Am J Obstet Gynecol 1996; 175: 10-11.

⁵ Andersen JT, Blaivas JG, Cardozo L, Thuroff J: Lower urinary tract rehabilitation techniques: seventh report on the standardisation of terminology of lower urinary tract function, Int Urogynecol J 1992; 3:75-80.