The Urge to Define Urgency: A Review of Three Approaches

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Current Urology Reports 2004, 5:413–415
Current Science Inc. ISSN 1527-2737
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Urgency, with or without urge incontinence and usually with frequency and nocturia, is defined as the overactive bladder (OAB) syndrome [1]. Urinary urgency has been proposed as the most clinically significant of the symptoms comprising the syndrome of OAB. The sensations of bladder filling are subjective. However, the adoption of common descriptors, clinical symptoms, urodynamic measures, and terminology suggested by international organizations to describe and objectify the “normal” sensations of bladder fullness and the desire to void versus the “abnormal” compelling discomfort of urinary urgency has dominated recent discussions of OAB terminology.

The International Continence Society (ICS) defines urgency as “the complaint of a sudden compelling desire to pass urine which is difficult to defer” (ICS-urge) and the National Institutes of Health as “the statement that the patient feels a strong need to pass urine for fear of leakage” [1,2]. Most importantly, ICS-urgency is defined as a symptom and should not be confused with the common English expression “urge to void.” Alternatively, the phrase “desire to void” has been suggested to describe the less compelling situations of “desire” versus “urge” to void to avoid confusion. This distinction is extremely relevant to the scales that will be presented later in this commentary and becomes critical during clinical studies when investigators are instructing patients on how to fill out voiding diaries based on the sensation experienced before voiding. A more literary description of urinary urgency was presented to describe the symptoms of the “desire to void” and the progression to ICS-urgency [3].

In a large, multicenter study evaluating 4 mg of tolterodine versus placebo in the treatment of OAB, perception of urgency was measured on a validated three-point urgency perception rating scale: Level 1, “I am usually not able to hold urine”; Level 2, “I am usually able to hold urine until I reach the toilet if I go immediately”; and Level 3, “I am usually able to finish what I am doing before going to the toilet.”

The investigators noted that urgency is the central problem in OAB, but stressed that it remains difficult to define or quantify. Urodynamics could not be used in this study because many of the patients did not experience detrusor contractions on testing, but experienced the sensation of urgency, which underlines the need to establish the mechanisms of urgency [4].

In a study evaluating the efficacy of 30 mg of darifenacin daily versus placebo, investigators used the concept of warning time to evaluate urgency. This study used volunteers at 4 times the normal dosage of darifenacin. Warning time was defined as time from the first sensation of urgency to voiding that was voluntary deferred as long as possible by the subjects. Participants recorded their sensations in an electronic diary and evaluated each event on a three-point scale of mild, moderate, or severe. This study is unique in that it was performed in a controlled laboratory situation as opposed to assignment as a secondary outcome measure in a 12-week, placebo-controlled clinical trial [5].

Another scale that has been used to measure urgency, the Indevus Urgency Severity Scale (Indevus Pharmaceuticals, Inc., Lexington, MA), is validated with psychometric methods. It was used in a phase-3 trial of trospium chloride versus placebo. The scale rated urgency on a four-point scale:

- 0: No urgency,
- 1: Awareness of urgency, but easily tolerated,
- 2: Enough urgency discomfort that it interferes with usual tasks,
- 3: Extreme urgency discomfort that abruptly stops all activity/tasks.

During the study, patients recorded each episode of urgency, toilet voids, and incontinence and indicated the degree of urgency with each episode along with voided volume. Most of the participants recorded a baseline urgency level between 1 and 2 (average of all voiding episodes). This scale has been psychometrically validated retrospectively during the approval studies for trospium chloride. Although it does not correlate with the ICS-urge definition, the Indevus Urgency Severity Scale provides intervals similar to the phase-1 to phase-4 scheme discussed in this review [6].
There are four points of sensation noted during cystometric filling: first sensation of filling, which is experienced during testing, but is not a normally described sensation; the first sensation of urge (desire to void); second sensation of urge (desire to void); and the urgent desire to void (ICS-urge). The interpretation of bladder storage sensations and the desire to objectify these sensations with a laboratory measurement (cystometry) of bladder volume and sensation is worthy of another review. However, these sensations have become associated with the presenting complaint of frequency (without a compelling need to void) and these earlier sensations have been considered to be as clinically important, if not more important, than the ability to defer a contraction during bladder filling.

In this author’s clinical experience, it seems that many patients who present with urinary frequency complain of a desire to void, rather than of true ICS-urgency and, in fact, may (or may not) void frequently to avoid the more compelling situation. If so, studies that are limited to the interval following ICS-urge may not capture the total picture of drug or clinically relevant effect.

A patient may void even before any sensation is experienced, which is known as a “void of convenience” (VOC). The patient always may have a sensation of incomplete emptying, pressure, or pain that would compress phases 1, 2, and 3 to occur within minutes of emptying. A neurogenic patient may experience an episode of incontinence without any sensation, desire, or ICS-urge to void. All of the phases of filling include the time, volume, and sensation.

Phase 1 is the sensation of the first desire to void, which typically can be ignored, or at such a time when voluntary void can be initiated (“I have to go, but I can make it easily past this rest stop and make it to the next exit”). As noted previously, variations of habit, symptom, or condition may affect record keeping at this point. At the end of phase 2, the second sensation of a desire to void may prompt the individual (“I am going to stop to avoid the need to worry”). Phase 3 encompasses the period up to the onset of urgency (“I will use this rest stop to avoid discomfort”). Voiding during this phase is performed to avoid the “compelling need to void” that would interrupt activity. Phase 4 (“I am going to have to void now, even stop at the side of the road”) actually may terminate in an incontinence episode.

It can/may be presumed that most healthy individuals do not prolong voiding until ICS-urge is experienced. Therefore, most voids in healthy subjects should be VOC or after the first desire or second desire and not typically with urgency, unless the individual voluntarily deferred for a social reason or toileting was inconvenient or unavailable.

What is experienced and should be measured in the individual who voids frequently to avoid the social impact of urge or voids urgently to avoid pain or incontinence? What is the patient actually requesting from the physician? Do patients with OAB dry (avoiding frequency and urgency) and OAB wet (avoiding incontinence) experience different sensations and request the same or different results? Is urgency “normal” and is the sensation experienced by patients who suffer from urgency a different sensation than experienced by healthy subjects who voluntarily prolong filling?

It would seem logical that few patients would want improvement in the time (“volume until”) until the first sensation is noticed (phase 1); however, this may be a queue for patients with OAB that contributes to the behavior of frequent voiding. Phase 2 and phase 3 are more obvious intervals during which the individual may anticipate that urgency is near. The additional time (additional volume) from simple or increasing desire until urgency episodes (phases 2 and 3) may be a more practical target for intervention. The time (potentially volume-dependent for onset, but not increasingly volume-dependent for progression) experienced between the onset of urgency and the development of pain or incontinence (phase 4) is an obvious target—and the true ICS-oriented phase.

Bladder volume, usually measured as voided volume, represents a stand-alone metric, but also acts as a control for decreased frequency secondary to decreased output. However, daily urinary output is not a reliable indicator because the volume variability associated with individual episodes of urgency that interrupt activity, and urgency episodes that preceded incontinence, are more important than improvements in average volume voided. In fact, the improvement in the number of urgency episodes may not correlate with the actual times of increased volume that is accumulated unless these measurements are demonstrated. For example, if the increased volumes are associated with VOC, not urgency episodes, the effect still may be behavioral.

It would seem likely that in addition to controlling the feeling of ICS-urgency or the time that voiding or pain can be deferred from the onset of ICS-urge, it would be useful to determine whether a particular drug works more effectively within a specific phase of bladder filling. To do so, the metrics would have to measure sensation, time, and volume. Sensation represents the relative feeling of bladder fullness, volume measures the amount of urine held in the bladder until that sensation, and time represents the interval experienced in each phase and ultimately the ability to defer voiding after the onset of ICS-urgency.

To establish norms, using the parameters suggested, investigators must determine normal sensation patterns and describe abnormal sensation patterns as clinically experienced in OAB wet or dry neurogenic patients and patients with sensory syndromes, with the understanding that healthy subjects do not represent or experience the same sensations. Regardless of the definition of urgency, it would seem logical that most patients would prefer an improvement in the ability to tolerate the volume held in the bladder, and the time provided by this improvement, to manage the intervals between the stronger desire to void and true ICS-urgency (phase 3), as well as ICS-urgency and pain or an incontinence episode (phase 4).

Patients may complain of urinary frequency with varying degrees of desire to void. To analyze the true effects of