

Neurogenic Bladder Symptom Score (NBSS) and NBSS-short form (NBSS-SF)

Assessment Overview

Assessment Area

ICF Domain:

Body Functions

Subcategory:

Digestive, Metabolic and
Endocrine

You Will Need

Length:

- **NBSS**, 24 items:
 - Incontinence, 8 questions.
 - Storage and Voiding, 7 questions.
 - Consequences, 7 questions
 - 2 additional questions.
- **NBSS-SF**, 10 items:
 - Incontinence, 3 questions.
 - Storage and Voiding, 3 questions.
 - Consequences, 2 questions.
 - 2 additional questions.

*The two additional questions in both versions are related to the method of bladder management, and the second one is about how the current bladder management method affects the quality of life.

Scoring:

Higher scores indicate more severe symptoms:

- **NBSS**: Score from 0 to 74.
- **NBSS-SF**: Score from 0 to 28.

The domains have been validated as independent subscales, so they can be used in combination or separately, according to clinical utility (Welk et al. 2014).

Summary

The Neurogenic Bladder Symptom Score (NBSS) is a comprehensive and discriminative tool designed by Welk et al. (2013) for patients with neurogenic lower urinary tract dysfunction.

The NBBS has been validated for neurological patients to measure urinary symptoms, signs, quality of life and consequences/complications of neurogenic lower urinary tract dysfunction, thus, NBSS evaluates the effects of a broad range of bladder problems.

In 2020, Welk et al. developed a short version of NBSS (NBSS-SF) composed of 10 items exploring the three same domains as the NBSS original long version (Welk et al. 2020).

Higher scores on the NBSS indicate more severe bladder symptoms.

Availability

Worksheet: Permission for use can be requested [here](#).

Languages:

- **NBSS**: English, Polish, Turkish, Spanish, and Brazilian Portuguese.
- **NBSS-SF**: English, Arabic, and French.

Assessment Interpretability

Minimal Clinically Important Difference

Not established in SCI

Statistical Error

SEM:

- Incontinence: 3.2
- Storage and voiding: 1.7
- Consequences: 1.5
- NBSS QOL Question: 0.5
- NBSS total: 4.7

(Welk et al. 2018; N=609, 410 males, 119 females; 285 cervical SCI, 265 thoracic SCI, 42 lumbar/sacral SCI; 167 ASIA A, 75 ASIA B, 61 ASIA C, 42 ASIA D; mean time since injury = 11.5 years)

Typical Values

Mean score (SD):

- Incontinence: 9.2 (6.9)
- Storage and voiding: 6.9 (4.2)
- Consequences: 6.6 (4.2)
- NBSS QOL Question: 2.0 (1.2)
- NBSS total: 22.7 (10.3)

(Welk et al. 2018; N=609, 410 males, 119 females; 285 cervical SCI, 265 thoracic SCI, 42 lumbar/sacral SCI; 167 ASIA A, 75 ASIA B, 61 ASIA C, 42 ASIA D; mean time since injury = 11.5 years)

Measurement Properties

Validity – Low to High

High Correlation between NBSS and NBSS-SF:

$r = 0.90-0.94$

(Welk et al. 2020; Cohort 1, n=230; Cohort 2, n=1479; and Cohort 3, n=68; NBSS-SF version)

Moderate Correlation between NBSS and:

Qualiveen-SF: $r = 0.53$

American Urological Association (AUA) Symptom Score: $r = 0.76$

International Consultation on Incontinence Questionnaire-Urinary Incontinence (ICIQ-UI): $r = 0.46$

(Welk et al. 2020; Cohort 1, n=230; Cohort 2, n=1479; and Cohort 3, n=68; NBSS-SF version)

Moderate Correlation between NBSS consequences domain and SCI-QOL Bladder Management Complications tool:

$r = 0.50$

Low Correlation between NBSS total score and Bladder management complications score:

$r = 0.28$

(Welk et al. 2018; N=609, 410 males, 119 females; 285 cervical SCI, 265 thoracic SCI, 42 lumbar/sacral SCI; 167 ASIA A, 75 ASIA B, 61 ASIA C, 42 ASIA D; mean time since injury = 11.5 years)

Number of studies reporting validity data: 3

Reliability – High

NBSS:

High Internal Consistency:

Total $\alpha = 0.85 - 0.89$

Incontinence $\alpha = 0.93$

Storage and Voiding $\alpha = 0.76$

Consequences $\alpha = 0.49$

High Test-retest reliability:

Total ICC = 0.79 – 0.91

Incontinence ICC = 0.78

Storage and Voiding ICC: 0.83

(Welk et al. 2018; N=609, 410 males, 119 females; 285 cervical SCI, 265 thoracic SCI, 42 lumbar/sacral SCI; 167 ASIA A, 75 ASIA B, 61 ASIA C, 42 ASIA D; mean time since injury = 11.5 years)

(Welk et al. 2014; N=230, 35% SCI)

NBSS-SF:

High Internal Consistency:

$\alpha = 0.70-0.76$

High Test-retest reliability:

ICC = 0.86-0.91

(Welk et al. 2020; Cohort 1, n=230; Cohort 2, n=1479; and Cohort 3, n=68; NBSS-SF version)

Number of studies reporting reliability data: 3

Responsiveness

Floor/Ceiling Effect:

Not established in SCI

Effect Size:

SMD:

- Incontinence: 3.5
- Storage and voiding: 2.1
- Consequences: 1.5
- NBSS QOL Question: 0.6
- NBSS total: 5.2

(Welk et al. 2018; N=609, 410 males, 119 females;
285 cervical SCI, 265 thoracic SCI, 42
lumbar/sacral SCI; 167 ASIA A, 75 ASIA B, 61 ASIA
C, 42 ASIA D; mean time since injury = 11.5 years)

**Number of studies reporting
responsiveness data: 2**