

EPIDEMIOLOGY, PATHOPHYSIOLOGY:

Neuro-urological symptoms may be caused by a variety of diseases and events affecting the nervous system controlling the lower urinary tract (LUT). The resulting neuro-urological symptoms depend predominantly on the location and the extent of the neurological lesion.

The prevalence and predominant symptoms are very wide and depend on the causative mechanism and published studies.

DIAGNOSTIC EVALUATION:

- Patient history and physical examination: When diagnosing neuro-urological symptoms, the aim is to describe the type of dysfunction involved. A medical history, physical examination and bladder diary are mandatory before any additional diagnostic investigations. Early diagnosis and treatment are essential in both congenital and acquired neuro-urological disorders.

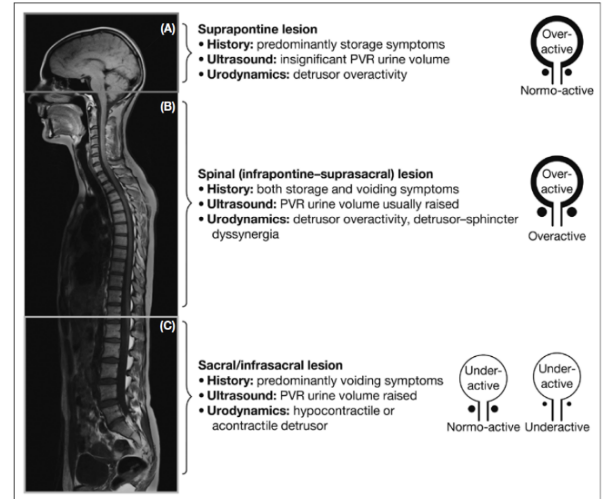
Recommendations	Strength rating
History taking	
Take an extensive general history, concentrating on past and present symptoms.	Strong
Take a specific history for each of the four mentioned functions - urinary, bowel, sexual and neurological.	Strong
Pay special attention to the possible existence of alarm signs (e.g. pain, infection, haematuria, fever) that warrant further specific diagnosis.	Strong
Assess quality of life when evaluating and treating neuro-urological patients.	Strong
Use available validated tools for urinary and bowel symptoms in neuro-urological patients.	Strong
Use MSISQ-15 or MSISQ-19 to evaluate sexual function in multiple sclerosis patients.	Strong
Physical examination	
Acknowledge individual patient disabilities when planning further investigations.	Strong
Describe the neurological status as completely as possible, sensations and reflexes in the urogenital area must all be tested.	Strong
Test the anal sphincter and pelvic floor functions.	Strong
Perform urinalysis, blood chemistry, bladder diary, post-void residual, incontinence quantification and urinary tract imaging as initial and routine evaluation.	Strong

- Urodynamics:

Urodynamic investigation is the only method that can objectively assess the (dys)function of the LUT. Video-urodynamics is the optimum procedure for urodynamic investigation in neuro-urological disorders. Specific uro-neurophysiological tests are elective procedures and should only be carried out in specialised settings.

- Renal function: In many patients with neuro-urological disorders, the upper urinary tract (UUT) is at risk, particularly in patients who develop high detrusor pressure during the filling phase. Periodically assess renal function in at-risk patients.

PATTERNS OF LUTS FOLLOWING NEUROLOGICAL DISEASE



Recommendations	Strength rating
Perform a urodynamic investigation to detect and specify lower urinary tract (dys-)function, use same session repeat measurement as it is crucial in clinical decision making.	Strong
Non-invasive testing is mandatory before invasive urodynamics is planned.	Strong
Use video-urodynamics for invasive urodynamics in neuro-urological patients. If this is not available, then perform a filling cystometry continuing into a pressure flow study.	Strong
Use a physiological filling rate and body-warm saline.	Strong

DISEASE MANAGEMENT: The primary aims for treatment of neuro-urological symptoms, and their priorities, are: protection of the UUT, achievement (or maintenance) of urinary continence; restoration of LUT function and improvement of the patient's quality of life (QoL).

1. NON-INVASIVE CONSERVATIVE TREATMENT:

- Assisted bladder emptying - Credé manoeuvre, Valsalva manoeuvre, triggered reflex voiding: Incomplete bladder emptying is a serious risk factor for infection, high intravesical pressure and incontinence. Methods to improve the voiding process should therefore be practiced.

- Neuro-urological rehabilitation: To date, bladder rehabilitation techniques are mainly based on electrical or magnetic stimulation; however, there is a lack of well-designed studies.

- Drug treatment: A single, optimal, medical therapy is not always available. Commonly, a combination of different therapies is advised to prevent urinary tract damage and improve long-term outcomes, particularly in patients with a suprasacral spinal cord injury (SCI) or multiple sclerosis (MS).

Recommendations	Strength rating
Use antimuscarinic therapy as the first-line medical treatment for neurogenic detrusor overactivity.	Strong
Prescribe α -blockers to decrease bladder outlet resistance.	Strong
Do not prescribe parasympathomimetics for underactive detrusor.	Strong

2. MINIMALLY INVASIVE TREATMENT:

- Intermittent catheterisation is the standard treatment for patients who are unable to empty their bladder. Indwelling transurethral catheterisation and suprapubic cystostomy are associated with a range of complications as well as an enhanced risk for urinary tract infection (UTI).

- Intravesical drug treatment: A significant reduction in adverse events was observed for intravesical administration of oxybutynine compared to oral administration.

- Botulinum toxin injections in the bladder: Botulinum toxin A has been proven effective in patients with neuro-urological disorders due to MS or SCI. Bladder neck incision is indicated only for secondary changes (fibrosis) at the bladder neck.

Recommendations	Strength rating
Use intermittent catheterisation, whenever possible aseptic technique, as a standard treatment for patients who are unable to empty their bladder.	Strong
Thoroughly instruct patients in the technique and risks of intermittent catheterisation.	Strong
Avoid indwelling transurethral and suprapubic catheterisation whenever possible.	Strong

Recommendation	Strength rating
Offer intravesical oxybutynin to neurogenic detrusor overactivity patients with poor tolerance to the oral route.	Strong

Recommendations	Strength rating
Use botulinum toxin injection in the detrusor to reduce neurogenic detrusor overactivity in multiple sclerosis or spinal cord injury patients if antimuscarinic therapy is ineffective.	Strong

3. SURGICAL TREATMENT:

There is considerable heterogeneity in outcome parameters and definitions of cure used to report on outcomes of surgical interventions for SUI in neuro-urological patients.

4. URINARY TRACT INFECTION IN NEURO-UROLOGICAL PATIENTS:

Recommendations	Strength rating
Do not screen for or treat asymptomatic bacteriuria in patients with neuro-urological disorders.	Strong
Avoid the use of long-term antibiotics for recurrent urinary tract infections (UTIs).	Strong
In patients with recurrent UTIs, optimise treatment of neuro-urological symptoms and remove foreign bodies (e.g., stones, indwelling catheters) from the urinary tract.	Strong
Individualise UTI prophylaxis in patients with neuro-urological disorders as there is no optimal prophylactic measure available.	Strong