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### Clean intermittent self-catheterization in neuro-urology

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Neurogenic lower urinary tract dysfunction (NLUTD) is commonly encountered in rehabilitation settings, and is caused by a variety of pathologies. The management of spinal cord injury (SCI) has been the model of reference for the management of other pathologies with NLUTD. The introduction of intermittent catheterization (IC) led to decline in renal related mortality in SCI patients and allowed an improvement of quality of life (QoL) in all neurogenic patients with NLUTD. IC could be sterile, aseptic or clean. Sterile intermittent catheterization (SIC) is the preferred method of bladder drainage in emergency medicine units and during spinal shock in SCI patients, but it is costly and time-consuming. Catheterizations performed in institutions, such as rehabilitation hospitals and nursing homes, are done aseptically. Clean intermittent catheterization (CIC), ie self-catheterization (CISC) or third party catheterization, represents the “gold standard” method for bladder emptying in all neuropathic patients with NLUTD: the technique is safe and effective and results in improved kidney and upper urinary tract status, lessening of vesico-ureteral reflux and amelioration of urinary continence. CISC is mandatory in patients NLUTD secondary to detrusor areflexia/hypocontractility and in patients suffering from neurogenic detrusor overactivity with detrusor external sphincter dyssynergia and high post void residual of urine, often in combination with antimuscarinics/bladder relaxants. The review summarizes the most important aspects of IC and CISC. Attention was focused on the history of urethral catheterization, aims, materials, advantages, indications, and present-day techniques of CISC, emphasizing the importance of teaching in order to perform correctly the catheterization technique.

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#### 1. Sterile and aseptic intermittent catheterization techniques:

- A. Should be used at home
- B. Are preferred to clean techniques in hospital settings
- C. increase the risk of bacteriuria and urinary tract infections
- D. Can be performed without gloves after thorough washing of the hands
- E. Depend on the type of catheter used

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2. **According to the guidelines for catheterization in neuro-urology, the bladder volume should remain within:**
- A. 300-500 mLs
  - B. 500-700 mLs
  - C. 300-700 mLs
  - D. 100-700 mLs
  - E. 100-300 mLs
3. **In which case is it advisable to not use intermittent catheters?**
- A. Prostate hypertrophy
  - B. Vesicoureteral reflux
  - C. Detrusor-sphincter dyssynergia
  - D. Bladder diverticula
  - E. Periurethral abscess

## Management of neurogenic bowel dysfunction

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There are several modalities for treating neurogenic bowel dysfunction (NBD), including conservative treatments (diet, medications, biofeedback, transanal irrigation, massage, electrical stimulation, anal plug). When conservative treatments fail, clinicians can choose from a variety of therapeutic options, including colostomies, Malone anterograde continence enemas, sacral anterior root stimulator implantations, graciloplasties, and artificial bowel sphincters. We reviewed the various treatments for constipation and/or fecal incontinence in patients with NBD and propose over-reaching stepwise algorithms for the management of NBD. Our review included English language articles, randomized controlled studies, cohort studies, case-control studies, and retrospective studies (if necessary) that assessed the management of NBD. Our literature search identified 577 articles, of which 79 met our inclusion criteria. There is little evidence for the success of conservative but non-pharmacological treatments. There is strong evidence for the success of pharmacological interventions (*i.e.*, prokinetic agents) in the treatment of chronic constipation. While surgical interventions may be considered, there is little evidence of their effectiveness. Bowel management programs for patients with neurologic diseases require a multi-faceted approach. While a range of medical and surgical treatments are available, there is little evidence for their effectiveness, with the exception of pharmacological interventions.

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- 4 **Upper motor neuron bowel syndrome causes:**
- A. Fecal incontinence
  - B. Reduced anal tone
  - C. Constipation and fecal impaction
  - D. Denervation of external anal sphincter
  - E. External anal sphincter relaxation

5. **In chronic constipation, in which of the following interventions is there the strongest evidence of effectiveness?**
- A. Physical activity
  - B. Transanal irrigation techniques
  - C. Dietary interventions
  - D. Pharmacological agents
  - E. Anal plugs
6. **Transanal irrigation:**
- A. Increases time spent on bowel management
  - B. Reduces time spent on bowel management
  - C. Increases risk of urinary infections
  - D. Is indicated for patients with a known obstruction of the large bowel
  - E. Is used with antegrade irrigation

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See answers on page 690.

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