

## W38: ICS Core Curriculum (Free): Management of infection and neurogenic bladder

Workshop Chair: Emmanuel Chartier-Kastler, France

06 September 2019 11:30 - 13:00

Start	End	Topic	Speakers
11:30	11:35	introduction	Emmanuel Chartier-Kastler Chair of the NU promotion committee
11:35	11:45	Definitions and recommendations for urinary infection in neurogenic patients	Desiree Vrijens
11:45	11:50	Questions	All
11:50	12:00	Urodynamics and bacteriuria	Sanjay Sinha
12:00	12:10	Self catheterisation and bacteriuria	Giulio del Popolo
12:10	12:15	Questions	All
12:15	12:25	Botulinum toxin and bacteriuria	Desiree Vrijens
12:25	12:35	Neuro-urological surgery and perioperative antibiotics policy	Sanjay Sinha
12:35	12:40	Questions	All
12:40	12:50	Disease specificity : MS and urinary infection (with regards on MS treatments)	Giulio del Popolo
12:50	13:00	Discussion	Emmanuel Chartier-Kastler Desiree Vrijens Sanjay Sinha Diulio del Popolo

### **Aims of Workshop**

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To describe through 10 minutes talks dedicated to producing MOOC diagnosis and management of bacteriuria, urinary infection and clinically significant urinary infection in neurogenic bladder. This workshop is the following of the WS produced within the last three years by the NU promotion committee in the aim to produce video material available for long term on ICS website

### **Learning Objectives**

To summarise the management of main situations that nurses, physiotherapists and physicians may face in the neurogenic patients based on the recent international guidelines and recommendations.

### **Target Audience**

Urology

### **Advanced/Basic**

Advanced

### **Suggested Learning before Workshop Attendance**

ICI guidelines 2017, EAU Guidelines 2019

## **Definitions and recommendations for urinary infection in neurogenic patients:**

**Desiree Vrijens, urologist, NL**

In this presentation the definitions of bacteriuria and urinary tract infections in neurogenic patients according to the ICS guidelines will be presented. Recommendations regarding work-up, treatment and follow-up are made. In addition, the latest developments about urinary infection and treatment, which aren't in the guidelines yet will be discussed shortly.

## **Urodynamics and bacteriuria - Neurourological surgery and perioperative antibiotics policy**

**Sanjay Sinha, urologist, India**

Patients with neurogenic bladder have an increased risk of developing urinary tract infection following invasive procedures. Abnormal lower urinary tract function, need for catheters or collection devices, altered upper tract morphology, urolithiasis, bowel problems and perineal colonization are some factors that contribute to this risk. Infection can cause significant morbidity and may necessitate admission into a critical care facility. In addition to the economic burden infections can also result in progressive renal scarring and initiate or accelerate renal damage. Given that many of these patients are committed to a lifetime of procedures such as periodic urodynamics, policies with regard to antimicrobial prophylaxis are vital in the care of these patients. However, there is lack of high quality evidence to take these decisions and guidelines have limited discussion on the subject. Decisions are confounded by the fact that colonization of the urinary tract is common and symptoms of infection may be masked or mimicked implying that urine examination or microbiology cannot be used in isolation for making a diagnosis of infection. Finally, there is some data to suggest that treatment of asymptomatic bacteriuria might increase the likelihood of symptomatic infection.

The SUFU Best Practice Policy Panel 2017 on urodynamic antibiotic prophylaxis in the non-index patient recommends prophylaxis for high-risk patients. This includes neurogenic bladder (LOE IV), patients with asymptomatic bacteriuria (LOE IV), patients with indwelling catheters or using collection devices and those on intermittent catheterization (LOE IV). Most neurogenic bladder patients would qualify for prophylaxis on more than one count.

Urodynamics in spinal cord injury patients without prophylaxis is associated with a urinary tract infection rate between 9.7% and 15.8%. Observational data suggests that rates are higher in individuals on triggered voiding as against intermittent catheterization. Even patients with documented sterile urine have a post-procedure UTI rate of 9.7% suggesting that lack of bacteriuria is not a reliable marker for low risk of UTI. Hence the panel has recommended universal prophylaxis for all neurogenic bladder patients regardless of their microbiological status. The guidelines panel also recommends prophylaxis in situations where neurogenic bladder is suspected but is as yet unproven.

Most national guidelines recommend the use of prophylaxis for urodynamics in high-risk patients but define 'high-risk' differently. The EAU (European) guidelines specify neurogenic bladder as 'high risk'. While other guidelines such as AUA (American), CUA (Canadian) and JUA (Japanese) do not specifically mention neurogenic bladder they include use of catheters (indwelling or intermittent) as a high risk factor.

The SUFU panel recommendations for prophylaxis at urodynamics are based on a dipstick urine analysis and the assumption that urine culture reports will only be available in retrospect for those at high risk. Hence, prophylaxis is not based on an assessment of the microbiological flora in the individual patient. Prophylaxis of  $\leq 24$  hours duration and preferably a single dose given within 1 hour of the test is recommended. In the absence of good quality studies comparing different antimicrobials, the first line recommended is trimethoprim-sulphamethoxazole. Alternatives include cephalosporins, fluoroquinolones, amoxi-clav and aminoglycosides.

Any evaluation of antimicrobial policy needs to take into account heterogeneity of the neurogenic bladder population and procedures performed on them:

1. Not all patients carry similar risk of sepsis.
2. Not all patients have similar implications in the event of a sepsis episode
3. Not all procedures carry similar implications of infection

With regard to surgery, national guidelines make no specific recommendations regarding policy for prophylaxis in neurogenic bladder patients undergoing surgical interventions. However, guidelines recommendations for the non-neurogenic population can provide some clues. Since the risk of urinary tract infections is unlikely to be any lesser in the neurogenic population (and is likely higher), logically prophylaxis must be used for all procedures where it is recommended in the non-neurogenic population.

The AUA, EAU, JUA and the CUA guidelines recommend use of prophylaxis in the following situations (Ivan and Sindhvani, Int Urol Nephrol 2018):

1. Antibiotic prophylaxis is recommended for all patients undergoing prostate resection or biopsy. Guidelines differ bladder tumor resections (EAU: only for large burden tumors; CUA for high-risk patients; AUA for all).
2. Prophylaxis is recommended for extracorporeal shock wave lithotripsy for high-risk patients.

3. Universal prophylaxis is recommended for ureteroscopic stone surgery by all guidelines (except EAU: graded approach). Prophylaxis is uniformly recommended for all percutaneous surgeries by all guidelines. In contrast, IDSA 2019 guidelines recommend screening for and treating asymptomatic bacteriuria prior to endoscopic urological surgeries that breach mucosal continuity (Strong recommendation; moderate quality evidence).
4. Prophylaxis is recommended for all patients undergoing bowel-related surgery such as augmentation cystoplasty.
5. Prophylaxis is recommended for all patients undergoing implantation of prosthetic devices such as a penile implant. IDSA 2019 Guidelines recommend prophylaxis but recommend against screening for or treating asymptomatic bacteriuria (Weak recommendation; very low quality evidence).
6. Prophylaxis is recommended for catheter removals (for instance after surgical intervention) only for high-risk patients.

A key difference in patients with neurogenic bladder is the high probability of bacterial colonization. Bacteriuria has been noted in 23-89% of patients with spinal cord injury on clean intermittent catheterization (EAU Guidelines 2019). In those on long-term indwelling catheters, at 98%, it is almost universal.

Hence, there are three possible options:

1. Broad-spectrum antibiotic 1- or 2-dose without obtaining a urine culture
2. Culture-specific prophylaxis 1- or 2-dose
3. Culture-specific therapeutic course prior to surgical intervention

While the first two options have a clear well-defined pathway, the last option needs to be defined better. Should sterile urine be documented after antibiotics? And if so, when? Could harmful escalation result when the urine fails to become sterile?

One must also consider the significant differences in microbiological spectrum in the neurogenic population. Infections are less likely to be due to E coli (although this remains the commonest organism) and isolates are more likely to demonstrate drug resistance.

### **Self Catheterisation and Bacteriuria**

**Giulio del Popolo, Urologist**

Recurrent UTI in patients with neuro-urological disorders may indicate suboptimal management of the underlying urinary dysfunction. In particular in SCI patients Prevalence of bacteriuria in those performing clean IC varies from 23-89%. Definitions of bacteriuria or symptomatic UTI are not always clear and there are some border line clinical pattern to decide how to manage that will be discussed. In the presentation will be showed the guidelines for neurogenic bladder in patients managed by intermittent catheterization (IC) including treatment for the achievement of incontinence and prevention of complications such as recurrent urinary tract infections. The epidemiology of UTIs in different neurological population, the various techniques (sterile, clean and aseptic) and different types (hydrophilic, prelubricated, single use, re-usable, coated ...) of IC and their correlation with UTIs will be discussed. The evidence of preventive and prophylactic measures in recurrent UTIs and the existing recommendations will be presented.

### **Botulinum Toxin and Bacteriuria**

**Desiree Vrijens, Urologist, NL**

-Botulinum toxin is a common treatment for neurogenic bladder, but what is the association with bacteriuria and urinary tract infection? In this presentation the association between intravesical Botulinum injections and bacteriuria is discussed according to the latest literature. How to prevent it? What is the best way to treat a possible infection? Is botulinum toxin a good treatment choice in the case of bacteriuria? These are questions which will be addressed in this talk.

### **Disease specificity : MS and urinary infection (with regards on MS treatments)**

**Giulio del Popolo, urologist**

Data regarding the epidemiology of neurogenic bladder in multiple sclerosis will be reported. The risk of UTIs in this type of population who are mainly female should be considered as result from neurogenic bladder, hormonal status, specific gender issue, and immunological response also due to MS treatment such as IFN. Urinary disorders are uncommon in the initial phases of multiple sclerosis, but increase in frequency as the disease progresses, with a negative impact on quality of life. A protocol for the diagnosis and treatment of urinary disorders in multiple sclerosis, based on data from the scientific literature and on the clinical experience will be discussed. In particular, the following clinical aspects were considered: what to do with patients with asymptomatic multiple sclerosis; what to do with symptomatic patients; how and when to perform a second-level diagnostic evaluation; and how to treat urinary disorders. A diagnostic-therapeutic algorithm is proposed, that can be applied in the daily clinical practice. Therapeutic strategies among the evolution of the neurological illness (from initial status to an advanced progression) will be described and correlated to UTIs incidence. The impact of N-LUTDs in MS with low acceptance to catheterization will be compared with patients managed by standard care. International and national guidelines regarding different management and follow-up of N-LUTDs in MS patients will be showed and analyzed.