



**NEUROGENIC BLADDER PATIENT: INTERMITTENT URINARY
CATHETERIZATION AND INTESTINAL CARE**
**PACIENTE COM BEXIGA NEUROGÊNICA: CATETERISMO URINÁRIO INTERMITENTE E
CUIDADOS INTESTINAIS**
**PACIENTE CON VEJIGA NEUROGÉNICA: CATETERISMO URINARIO INTERMITENTE Y CUIDADO
INTESTINAL**

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ABSTRACT

Objective: to analyze the occurrence of intestinal problems in neurogenic bladder patients using intermittent urinary catheterization. **Method:** descriptive study at a University Hospital in the interior of the State of São Paulo. With Institutional Review Board approval (Opinion 146/2012), the data were collected through an interview, using a semistructured interview. The data were analyzed through descriptive statistics. **Results:** among the 141 (100.0%) interviewees, the majority was male and the mean age was 36.2 years. As to the intestinal habits, 75 (53.2%) perform self-care and 66 (46.8%) need help from a caregiver. Among them, 67(47.5%) mentioned evacuation once per day, 109 (77.4%) use the bathroom, 28 (19.8%) disposable diaper and four (2.8%) colostomy. **Conclusion:** intestinal complications are frequent in neurogenic bladder patients, demanding nursing and multiprofessional team care to grant a better quality of care to these patients. Descriptors: Intermittent Urethral Catheterization; Neurogenic Urinary Bladder; Neurogenic Bowel; Nursing Care.

RESUMO

Objetivo: analisar a ocorrência de problemas intestinais em pacientes com bexiga neurogênica usuários do cateterismo urinário intermitente. **Método:** estudo descritivo num Hospital Universitário no interior do Estado de São Paulo. Mediante aprovação de Comitê de Ética em Pesquisa (Parecer 146/2012), os dados foram coletados por entrevista, com um instrumento semiestruturado, analisados pela estatística descritiva. **Resultados:** dos 141(100,0%) entrevistados, a maioria era do sexo masculino e idade média de 36,2 anos. Quanto aos hábitos intestinais, 75(53,2%) realizam o autocuidado e 66(46,8%) necessitam de ajuda de cuidador. Entre eles, 67(47,5%) referiram evacuar uma vez ao dia, 109(77,4%) utilizam o banheiro, 28(19,8%) fralda descartável e quatro (2,8%) colostomia. **Conclusão:** complicações intestinais são frequentes em pacientes com bexiga neurogênica, sendo necessária a atenção do enfermeiro e da equipe multiprofissional, para proporcionar melhor qualidade de vida a esses pacientes. **Descritores:** Cateterismo Uretral Intermitente; Bexiga Urinária Neurogênica; Intestino Neurogênico; Cuidados de Enfermagem.

RESUMEN

Objetivo: analizar la incidencia de problemas intestinales en pacientes con vejiga neurogénica usuarios de catéteres urinarios intermitentes. **Método:** estudio descriptivo en un hospital universitario en estado de São Paulo. Vez aprobada del Comité de Ética de Investigación (Opinión 146/2012), los datos fueron colectados mediante entrevista con un instrumento semi-estructurado y analizados con estadística descriptiva. **Resultados:** de 141 (100,0%), la mayoría eran hombres y la edad promedio de 36,2 años. Sobre los hábitos intestinales, 75 (53,2%) realizan el autocuidado y 66 (46,8%) los cuidadores necesitan ayuda. Entre ellos, 67 (47,5%) informaron de evacuar una vez al día, 109 (77,4%) utilizan el baño, 28 (19,8%) pañal desechable y cuatro (2,8%) colostomía. **Conclusión:** las complicaciones intestinales son frecuentes en los pacientes con vejiga neurógena, que requiere la atención de enfermería y el equipo multidisciplinario para ofrecer una mejor calidad de vida. **Descriptores:** Cateterización Intermitente Uretral; Neurogénicos Vejiga Urinaria; Intestino Neurogénico; Cuidados de Enfermería.

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INTRODUCTION

Normal micturition involves voluntary and involuntary mechanisms, depending on nervous centers that go from the brain cortex to the intrinsic plexus of the bladder wall. When any nervous injury interferes in this process, changes occur in the bladder functioning, causing a bladder dysfunction of neurological origin, which is also called neurogenic bladder.^{1,2}

The neurogenic bladder has different causes. It can derive from a disease, lesion or congenital defect that affects the brain, spinal cord or nerves leading to the bladder, sphincter or both. When the neurogenic bladder does not receive treatment or appropriate care, it can entail complications like urinary retention, urinary tract infection, formation of kidney stones due to urinary stasis, hydronephrosis, urinary incontinence, dysuria and, in extreme cases, renal function loss, leading to restrictions, constraints and discomfort for the patients in daily, sexual, social, domestic and occupational activities.^{1,2}

Neurogenic bladder patients generally have intestinal function problems, as the absence of central nervous system control alters the functioning of the colon in the storage and elimination process of solid residues from the nutrients.^{3,4} The most common intestinal complications can include: pain, abdominal distension, altered visceral sensitivity, fecal incontinence, constipation, hemorrhoids, anal cracks and rectal prolapse. The absence of treatment can result in fecal incontinence and/or severe intestinal constipation, besides constraints, limitations for social interactions, quality of life problems, difficulties with activities of daily living due to involuntary fecal loss.^{3,5-7}

At an outpatient clinic for nursing care to neurogenic bladder patients using intermittent urinary catheterization, associated intestinal problems are frequent, which should not be treated independently as, in most cases, the urinary tract infections are related to microorganisms coming from the intestinal flora.⁸

When the health professional do not address the intestinal problems or treat them without emphasis, this delays and hampers the rehabilitation process. The rehabilitation of patients using intermittent urinary catheterization is a process that should be planned and developed continuously, involving psychosocial, cultural, political and economic elements of human beings, representing a challenge for health professionals. It is only

effective when its different elements are associated in function of the whole.⁹

The nurse is one of the professionals responsible of the rehabilitation process of patients using intermittent urinary catheterization. Nurses are responsible for developing educational actions and interventions, ranging from planning and logistics for the use of the procedure to interventions that may interfere in this process, among which the intestinal problems are highlighted.

Recently, nurses and physicians working at the health service and at the university joined efforts to implement an outpatient care service for neurogenic bladder patients in rehabilitation using intermittent urinary catheterization at the rehabilitation center of a teaching hospital in an interior city in the State of São Paulo-Brazil. The nurse is responsible for interventions ranging from consultations and individual and/or group interventions in the educative activities; besides the situational diagnosis and the establishment of protocols and targets for the service.⁸

In that context, as intestinal care represents an important part of the rehabilitation process for neurogenic bladder patients using intermittent urinary catheterization, knowing the patients' intestinal habits is necessary to put in practice the rehabilitation process and reflect on this study.

Therefore, in this study, the objective is:

- To identify the intestinal and urinary care of neurogenic bladder patients using intermittent urinary catheterization attended in the rehabilitation process.

METHOD

Descriptive study, developed at the rehabilitation service, urology and pediatric nephrology clinics of a university hospital. After receiving Institutional Review Board Approval from the University of São Paulo at Ribeirão Preto College of Nursing (EERP-USP), opinion 146/2012, in compliance with the ethical premises for research involving human beings, as established in National Health Council resolution 466/2012.

The data were collected through an interview with the help of a semistructured script, after the participants had signed the Free and Informed Consent Form (FICF). The tool used consists of open and closed questions, with items to characterize the interviewees (sex, age, marital situation, education, occupation, family income,

Santos RCR, Fumincelli L, Nassiff A.

Neurogenic bladder patient: intermittent...

primary diagnosis); data on the intermittent urinary catheterization procedure and data on habits, complications and intestinal care. The instrument was based on the literature and official data collection documents used at the service, and was subject to face and content validation by experts.^{8,10,11}

To obtain the results, 141 patients (100.0%) were included in the study, who used intermittent urinary catheterization and were in rehabilitation, attended at the clinic between September 2012 and June 2013, over 18 and/or under 18 accompanied by a responsible caregiver. Patients followed at the clinic who did not use intermittent urinary catheterization were excluded.

The data were analyzed using descriptive statistics and the discussion of the results was based on the literature review, relevant to the proposed objective. The results were presented in the form of a discursive report.

RESULTS

The sample consisted of 141 (100.0%) patients, being 91 (64.5%) male and 50 (35.5%) female, 85 (60.3%) single, 39 (27.7%) married, 8 (5.7%) divorced, 5 (3.5%) widowed and 4 (2.8%) living with a fixed partner. The interviewees' mean age was 36.2 years.

The collected data related to education, occupation and family income have been displayed in **Table 1**.

Table 1 - Distribution of patients regarding education, occupation and family income. Ribeirão Preto, 2013.

Education	n* (%)	Occupation	n* (%)	Family income **	n* (%)
Illiterate	20 (14.2)	Employed	6 (4.2)	< 1	12 (8.5)
Unfinished primary	53 (37.6)	Disease aid	32 (22.7)	1	29 (20.6)
Finished primary	19 (13.5)	Retired	46 (32.6)	2 a 3	67 (47.5)
Unfinished secondary	16 (11.4)	Unemployed	15 (10.6)	3 a 4	25 (17.7)
Finished secondary	28 (19.9)	Others***	42 (29.8)	5 a 9	8 (5.7)
Higher education	5 (3.5)				
Total			141 (100.0%)		

*Number of individuals
**1 minimum wage (MW) in Brazil R\$678.00
*** Student, housewife, benefit

According to the interviewees, the primary diagnosis that triggered the neurogenic bladder was: 52 (36.9%) spinal injury, 34 (24.1%) myelomeningocele, four (2.8%) cerebrovascular accident (CVA) and three (2.1%) multiple sclerosis, one (0.7%) cervical stenosis, one (0.7%) lipoma in the sacral region, one (0.7%) narrowing of the spinal canal, one (0.7%) congenital hip spray, one (0.7%) multifocal motor neuropathy, one (0.7%) poliomyelitis and one (0.7%) spinal tumor. Forty-one (29.1%) interviewees could not provide this information.

As regards the use of intermittent urinary catheterization, 138 (97.9%) were trained at a hospital institution and three (2.1%) at Primary Health Care Services. Concerning the start of the intermittent urinary catheterization treatment, eight (5.7%) started between 1982 and 1992, 21 (14.9%) between 1993 and 2003 and 112 (79.4%) between 2004 and 2013.

Among the catheter types used, 131 (93.0%) use polyethylene, eight (5.6%) glass and two (1.4%) lubricated catheters. Concerning intimate hygiene, 115 (82.0%) patients indicate this practice before the urinary catheterization. Seventy-one patients (50.4%) perform the procedure alone, in 67

(47.5%) cases the caregiver performs it and three (2.1%) receive help from health professionals at home.

As regards the replacement of the catheter the subjects use, 115 (81.6%) dispose of it after each is, 10 (7.1%) reuse it during one day, two (1.4%) each week and one (0.7%) every two weeks, while ten (7.1%) could not provide this information. Among the interviewees who use a glass catheter, three (2.1%) replace the catheter in case of rupture.

The data on the use of intermittent urinary catheterization have been described in **Table 2**.

Table 2. Frequency distribution of catheterization, catheter number, use of antiseptics. Ribeirão Preto, 2013.

Frequency catheterization	n* (%)	Catheter number	n* (%)	Use of antiseptic	n* (%)
1x/day	2 (1.4)	4	4 (2.8)	None	118 (83.7)
2x/day	9 (6.4)	6	7 (5.0)	PVPI	10 (7.1)
3x/day	24 (17.0)	8	24 (17.0)	Aqueous Chlorhexidine	4 (2.8)
4x/day	66 (46.8)	10	42 (29.8)	70% alcohol	9 (6.4)
5x/day	14 (9.9)	12	48 (34.1)		
6x/day	16 (11.4)	14	4 (2.8)		
Other**	10 (7.1)	Did not inform	12 (8.5)		
Total			141 (100.0%)		

* Number of individuals
** No regular frequency
Concerning the intestinal habits, 67 (47.5%) indicated evacuation once per day, 16 (11.3%) twice per day and 58 (41.2%) once per week, 109 (77.4%) use the bathroom, 28 (19.8%) disposable diapers and four (2.8%) colostomy.

Among the interviewees, 75 (53.2%) perform intestinal self-care and 66 (46.8%) need help from a caregiver.
Table 3 demonstrates the complications and intestinal care the patients mentioned.

Table 3- Distribution of patients regarding intestinal care and complications. Ribeirão Preto, 2013.

Intestinal care**	n (%)	Intestinal complications	n (%)
Nutritional control	54 (38.4)	Fecal impaction	33 (23.4)
Abdominal massage	22 (15.0)	Bleeding	14 (9.9)
Intestinal wash	13 (9.2)	Hemorrhoid	6 (4.3)
Digital anal examination	12 (8.5)	Not mentioned	88 (62.4)
Manual removal of feces	6 (4.3)		
Anal suppository	7 (5.0)		
Fleet enema	6 (4.3)		
Laxatives	16 (11.4)		
Mineral oil	4 (3.0)		
Magnesium milk	3 (2.1)		

*More than one response per subject

Also among the 141 patients, 41 (29.1%) had a uroculture test recently, 33 (80.5%) of whom tested positively for Escherichia coli 18 (54.5%), Klebsiella pneumoniae 10 (30.3%), Enterococcus faecalis 2 (6.0%), Pseudomonas aeruginosa 1 (3.0%), Morganella morgana 1 (3.0%) and Proteus mirabilis 1 (3.0%).

DISCUSSION

The rehabilitation process of neurogenic bladder patients is complex, involves a range of factors and requires the training of the health team to promote the necessary conditions for individuals to recover, maintain and promote their health.
In line with other authors,^{12,13} in the research sample, young and male patients are predominant, who are more exposed to accidents and other forms of violence, with a primary diagnosis of spinal injury, which caused the neurogenic bladder. Most patients are single, with a low education level, low income and lack of professional activity.
The grouping of these factors impairs the practice of self-care and health maintenance and, in addition, limits the individuals' capacity to understand and interpret information related to their treatment.¹³

In the rehabilitation process, the family income appropriate to the health, housing and leisure conditions is fundamental to maintain the treatment, mainly in patients who need to reorganize the social, family and job context to attend to the treatment requirements and/or who give up part of their domestic resource to purchase medication and material to support their treatment.
The primary diagnoses that lead to the development of the neurogenic bladder in most patients in the study sample were neurological injuries with different causes, which affect both spontaneous micturition and satisfactory intestinal elimination. In that context, among the treatments used, the appropriate use of clean intermittent urinary catheterization and intestinal care are fundamental.
What the practice of intermittent urinary catheterization is concerned, a growing search for this treatment has been observed in recent decades, due to the increase in scientific evidence proving the efficacy of its use. The patients interviewed experience difficulties to accomplish the catheterization procedure, represented by hygiene techniques and the use of inappropriate catheters. Most patients

perform the urinary catheterization procedure alone and about half needs help from another professional and/or caregiver, which influences the family organization and structure, compromises the daily routine and the family's economic situation, due to the need for support, normally assumed by a close family member.

Most individuals who underwent urine culture tests showed positive results, revealing the presence of bacteria from the intestinal flora. A study on the incidence of urinary tract infection (UTI) appointed the bacteria *Escherichia coli* as the main cause of UTI, a microorganism with a high virulence factor for the urinary system, as it adheres easily to the urethral cells and can even reach the kidneys.¹⁴

A significant part of the sample refers inappropriate intestinal frequency and the need for help from a caregiver to evacuate. The large majority uses the bathroom, but some use disposable diapers due to complete physical immobility or the presence of fecal and/or urinary incontinence.

Intestinal care is an important part of the rehabilitation process. Most patients with spinal injury or individuals affected by Cerebrovascular Accident, myelomeningocele, multiple sclerosis and/or Parkinson's disease experience intestinal constipation, fecal incontinence and/or fecal impaction, to different extents according to the etiology of the disease.^{7,15,16}

Fecal incontinence can be defined as the loss of voluntary control over the feces. It is mainly due to abnormal conformation among the rectum, sigmoid and rectal-anal reflexes, besides the absence of voluntary control over the external anal sphincter.⁶

Among the interviewees, a small number of subjects referred intestinal problems. The measures mentioned to control intestinal eliminations were nutritional control, abdominal massage and digital anal examination. In addition, some mention the continuing use of laxatives, intestinal wash and manual removal of feces. Among the main complications mentioned, fecal impaction and bleeding are highlighted.

Intestinal constipation affects about 60.0% of the patients in rehabilitation and was observed in the patients in the sample. The most frequent complications of this problem are related to fecal impaction, anal cracks, presence of hemorrhoids, bleeding, among others. It can be characterized by an evacuation frequency of less than three times per week, hardened fecal consistency, efforts

for the sake of effective elimination and feeling of incomplete voiding of the rectal funnel. It is frequently associated with the use of laxatives, intestinal wash and/or anal suppositories. One of the main aggravating factors of intestinal constipation is impaired physical mobility, as it can cause inappropriate abdominal pressure, hampering the evacuation process.^{7,15}

The initial treatment indicated for fecal constipation should include nutritional and lifestyle orientations and behavioral therapy. In addition, privacy and comfort are essential elements to achieve the expected results. The main interventions to treat neurogenic bowel dysfunction include diet, gastrocolic reflex, abdominal massage, digital rectal stimulation, manual evacuation, suppositories, enemas, laxatives and transanal irrigation. When conservative treatments do not produce the expected results, surgical interventions are needed, including colostomy and ileostomy.^{5,15}

Fecal incontinence is the release of fecal material or flatulence, in an uncontrolled manner, characterized in individuals over four years of age. It cannot be considered a diagnosis, but a signal and symptom of another clinical problem.¹⁷ Fiber-rich foods, when associated with fruits, vegetables and integral foods, can increase the intestinal transit and favor the intestinal elimination.^{5,18}

Abdominal massage significantly reduces the abdominal distension and fecal incontinence, besides increasing the frequency of evacuations. It should be accomplished by rubbing the hand palm against the abdomen in a circular movement from right to left, which increases the intestinal transit and movement of the feces towards the rectum.^{4,5}

The digital rectal investigation is a moderately invasive procedure that helps to detect the presence of feces in the rectum. It can also be considered effective to increase the intestinal transit, as it produces a rapid response when compared to suppositories. It should be conducted appropriately, avoiding rectal damage and taking the necessary hygiene care.^{5,15} Manual removal of the feces is recommended to avoid excessive abdominal distension, consequently damaging the rectal reflex function. It is a very invasive procedure with low patient and caregiver acceptance that can damage the rectal mucosa.⁵

The use of laxatives is indicated in case of occasional constipation and, when taken over a lengthy period, result in colic, abdominal pain, abdominal distension, fecal incontinence, besides negatively affecting the intestinal function in the long term.¹⁵

The use of suppositories and fleet enemas is indicated to establish a satisfactory intestinal pattern and maintain the patient's independence. In rectal suppositories, the use of chemical agents is common, which results in a significantly shorter duration of intestinal care.^{15,18} Colon enemas minimize fecal incontinence and can be administered by patients or caregivers to promote bowel voiding.¹⁶ If used over a lengthy period, however, these can cause abdominal colic, irritation of the rectal mucosa, besides the risk of retaining dirt from the suppositories applied.⁵

The rehabilitation process of patients with bladder-sphincter and bowel dysfunctions involves psychosocial, cultural, economic and political elements and helps to promote the patients and/or caregivers' independence and social readaptation. The nurses and health teams should act immediately, guaranteeing bladder and bowel voiding through urinary catheterization and/or intestinal wash, as well as through educative actions and interventions that provide the patients and caregivers with the training needed to maintain care, aiming for urinary self-catheterization, the reestablishment of regular and effective fecal elimination control, with continence, avoiding constipation and/or other complications associated with neurogenic bowel dysfunction.^{4,5}

CONCLUSION

In neurogenic bladder patients, the urinary and intestinal eliminations are problematic and therefore deserve professionals and patients' increased attention.

Despite representing a small percentage of the sample, in these patients, the complications related to intestinal eliminations are frequent and demand the professionals' attention. It is important to acknowledge that neurogenic bladder patients using intermittent urinary catheterization are vulnerable to the development of neurogenic bowel dysfunction.

In that context, the nurse and multidisciplinary team need to get to know the physiological, social and psychological implications associated with this fact in order to offer better treatment conditions, helping with the care needed for urinary catheterization practice, encouraging self-care, the need for a correct diet, appropriate fluid intake and effective intimate hygiene.

REFERENCES

1. O'leary M, Dierich M. Botulinum Toxin type a for the treatment of urinary tract dysfunction in neurological disorders. *Urol Nurs* [Internet]. 2010 [cited 2013 Mar 12];30(4):228-34. Available from: <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=0a276957-7f96-40bf-8bfe-3e9b62ad695b%40sessionmgr111&vid=1&hid=10>
2. Benedetto PD. Clean intermittent self-catheterization in neuro-urology. *Eur J Phys Rehabil Med* [Internet]. 2011 [cited 2013 Oct 29];74(4):651-59. Available from: <http://www.minervamedica.it/en/getfreepdf/AjqASgbDL9dCNSWWT%252FCb%252BUcwCSvt p9ezQCtzM85NIQLL4IJdVtll9lriFqsgdv7ZF0PtGNceoR1kBPzajCm3g%253D%253D/R33Y2011N04A0651.pdf>.
3. Pardee C, Bricker D, Rundquist J, Macrae C, Tebben C. Characteristics of Neurogenic Bowel in Spinal Cord Injury and Perceived Quality of Life. *Rehabil Nurs* [Internet]. 2012 [cited 2014 Feb 24];32(3):128-35. Available from: http://www.readcube.com/articles/10.1002/2FRNJ.00024?r3_referer=wol&tracking_action=preview_click&show_checkout=1&purchase_referrer=onlinelibrary.wiley.com&purchase_site_license=PUBLICATION_OUTSIDE_OF_LICENSE_PERIOD
4. Furlan MLS, Caliri MHL, Defino HL. Intestino neurogênico: Guia prático para pessoas com lesão medular - Parte I. *COLUNA/COLUMNA* [Internet]. 2005 [cited 2013 Oct 29];4(3):113-68. Available from: http://www.plataformainterativa2.com/coluna/html/revistacoluna/volume4/vol_04_03_151-157_2005.pdf
5. Coggrave M. Neurogenic continence. Part 3: Bowel management strategies. *Br J Nurs* [Internet]. 2008 [cited 2013 Mar 12];17(15):962-8. Available from: <http://web.b.ebscohost.com/ehost/pdfviewer/pdfviewer?sid=b9242b33-ac91-4aeb-922e-16b4d9b66b6c%40sessionmgr110&vid=1&hid=10>
6. Awad RA. Neurogenic bowel dysfunction in patients with spinal cord injury, myelomeningocele, multiple sclerosis and Parkinson's disease. *World J Gastroenterol* [Internet]. 2011 [cited 2014 Feb 24];17(46):5035-48. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3235587/pdf/WJG-17-5035.pdf>
7. Dourado CC, Engler TMNM, Oliveira SB. Disfunção intestinal em pacientes com lesão cerebral decorrente de acidente vascular

Santos RCR, Fumincelli L, Nassiff A.

Neurogenic bladder patient: intermittent...

cerebral e traumatismo craniencefálico: estudo retrospectivo de uma série de casos. Texto Contexto Enferm [Internet]. 2012 [cited 2013 June 01];21(4): 905-11. Available from: <http://www.scielo.br/pdf/tce/v21n4/22.pdf>

8. Mazzo A, Souza Júnior VD, Jorge BM, Nassiff A, Biaziolo CFB, Cassini MF, et al. Intermittent urethral catheterization: descriptive study at a Brazilian service. Appl Nurs Res [Internet]. 2014 [cited 2013 Mar 12];27(3):170-4. Available from: http://ac.els-cdn.com/S0897189713001389/1-s2.0-S0897189713001389-main.pdf?_tid=1df40720-fe2d-11e4-b79f-00000aacb35f&acdnat=1432043225_bdd6fc3794febba6b258484896033d3d

9. Logan K, Shaw C, Webber I, Samuel S, Bromme L. Patient's experiences of learning clean intermittent self- catheterization: a qualitative study. J Adv Nurs [Internet]. 2008 [cited 2014 Feb 24];62(1):32-40. Available from: <http://onlinelibrary.wiley.com/doi/10.1111/j.1365-2648.2007.04536.x/epdf>

10. Center for Disease Control and Prevention. Guideline for prevention of catheter-associated urinary tract infections. Atlanta: CDC [Internet]. 2009 [cited 2013 May 05]. Available from: <http://www.cdc.gov/hicpac/pdf/CAUTI/CAUTIguideline2009final.pdf>.

11. Geng V, Emblem EL, Gratzl S, Incesu O, Jensen K. Urethral catheterization. In: European Association of Urology Nurses. Good practices in health care [Internet]. 2006 [cited 2013 May 05]. Available from: http://www.uroweb.org/fileadmin/user_upload/EAUN/EAUN1.pdf.

12. Souza Junior MF, Neves ACA, Medeiros AAA, Jallageas DN. Características epidemiológicas do trauma raquimedular na Amazônia: análise prospectiva de 250 casos. J Bras Neurocir [Internet]. 2003 [cited 2013 Mar 12];14(3):97-104. Available from: http://www.abnc.org.br/ed_art.php?artcod=232

13. Fumincelli L, Mazzo A, Jorge BM, Mendes IAC. Eliminações urinárias do paciente clínico hospitalizado: implicações para o cuidado de enfermagem. J Nurs UFPE on line [Internet]. 2013 [cited 2014 June 10];7(3):788-93. Available from: <http://www.revista.ufpe.br/revistaenfermagem/index.php/revista/article/view/3219/pdf/2207>

14. Moura LB, Fernandes MG. A incidência de infecções urinárias causadas por E. Coli. Olhar Científico. 2010;1(2):411-26.

15. Emmanuel A. Managing neurogenic bowel dysfunction. Clin Rehabil [Internet]. 2010 jun [cited 2013 Mar 12];24(6):483-88. Available from:

<http://www.minervamedica.it/en/getfreepdf/o5SIYD6El0CldeofhQM2Z%252BYpHy%252BRzXLBo2t5bzMH27JudFkbXUdXL7wfm6ckFRL1C2RBqzTvNCst%252FWcfLmNd1g%253D%253D/R33Y2011N04A0661.pdf>

16. Kort LM, Bower WF, Swithinbank LV, Marschall-Kehrel D, Jong TP, Bauer SB. The Management of Adolescents with Neurogenic Urinary Tract and Bowel Dysfunction. Neurourol Urodyn [Internet]. 2012 [cited 2013 Mar 12];31(7):1170-74. Available from: <http://onlinelibrary.wiley.com/doi/10.1002/nau.22206/epdf>

17. National Institute for Health and Clinical Excellence. Faecal Incontinence: The Management of Faecal Incontinence in Adults. London: NICE [Internet]. 2007 [cited 2013 Aug 14]. Available from: <http://tinyurl.com/587wbf>.

18. Krassioukov A1, Eng JJ, Claxton G, Sakakibara BM, Shum S. Neurogenic bowel management after spinal Cord injury: a systematic review of the evidence. Spinal Cord [Internet]. 2010 [cited 2014 June 10];48(10):718-33. Available from: <http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3118252/pdf/nihms1767.pdf>

Santos RCR, Fumincelli L, Nassiff A.

Neurogenic bladder patient: intermittent...

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