

Clinical Practice Guidelines for Urinary Continence Management of Stroke Survivors in Acute and Rehabilitation Settings

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Welcoming Remarks

On behalf of members of the research team, I am pleased to present to you the “Clinical Practice Guidelines (CPG) for Urinary Continence Management of Stroke Survivors in Acute and Rehabilitation Settings”.

Existing clinical practice guidelines for stroke care recommend that nurses from all practice settings assess stroke survivors for urinary continence challenges; however, these guidelines do not include evidence-based recommendations (EBR) for continence care. This document provides detailed evidence-based recommendations for the urinary continence care of stroke survivors to assist nurses and other health care professionals in acute and rehabilitation settings.

We are excited to be involved in the development, implementation and evaluation of CPGs for the urinary continence management of stroke survivors. Working together we have an opportunity to become leading experts in this area of stroke care. We wish you all the very best for a successful implementation.

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To cite these guidelines: Fisher, A, Miller, T., Draper, S., Knowlton-Leblond, S., and McNeil, R. (2008). Clinical Practice Guidelines for Urinary Continence Care of Stroke Survivors in Acute and Rehabilitation Settings. Ottawa: Ottawa Health Research Institute.

Acknowledgments

The research team would like to acknowledge the contributions of expert consultants in strengthening these guidelines. The following individuals provided further guidance and support during the research and evaluation process:

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Guideline Evaluation

An interdisciplinary expert panel consisting of continence experts, clinical nurses, health professionals, administrators and stroke survivors evaluated these clinical practice guidelines using the Appraisal of Guidelines Research and Evaluation (AGREE) tool. The AGREE tool provided expert panel members with a framework to assess the content and clarity of these clinical practice guidelines. Evaluations were synthesized by the research team and used to revise these guidelines.

On February 6, 2008 twenty-five expert panel members participated in a World Café facilitated by Julie Braun, Learning and Development Officer with the Ottawa Hospital, to discuss barriers and facilitators to the implementation of clinical practice guidelines for urinary continence care of stroke survivors in acute and rehabilitation settings. A World Café is focus group method that facilitates the sharing of ideas among participants and researchers. Participants were divided into groups of five to explore three questions:

1. What are the barriers to the implementation of clinical practice guidelines for urinary continence care of stroke survivors?
2. What are the facilitators to the implementation of clinical practice guidelines for urinary continence care of stroke survivors?
3. What strategies do you feel would optimize the implementation of clinical practice guidelines for urinary continence care of stroke survivors?

Participants discussed each question for approximately fifteen minutes, then changed tables to continue discussion of the question for another ten minutes and identify key themes. This information has been used to develop strategies for guideline implementation.

The following barriers to the implementation of these guidelines were identified: a) lack of adequate resources; b) attitudes of health professionals, caregivers, and stroke survivors; and, c) lack of continuity of continence care. Participants identified the following as facilitators to the implementation of these guidelines: a) clinical experiences of nurses; b) existing inter-professional structures; and, c) the availability of clinical experts.

These guidelines will be piloted at three sites: SCO Health Service, The Rehabilitation Centre, and Pembroke Regional Hospital. An education strategy has been developed to support

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the implementation of these guidelines. The education strategy consists of a general presentation, presentation of clinical interventions, and a self-learning package. A survey will be developed to allow nurses to provide feedback regarding the effectiveness of the self-learning package

Chart audits will be completed to assess nurses' uptake of the clinical practice guidelines. Consultations will also be conducted with nurses in order to further revise the guidelines.



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Introduction

Stroke survivors frequently experience bladder dysfunctions, which have a significant impact on well-being and post-stroke recovery. The National Sentinel Stroke Audit reported that 44% of stroke survivors suffer from urinary incontinence at one week post-event (Royal College of Physicians, 2002). The impact of urinary incontinence on stroke survivors has been shown to have an adverse affect on stroke survival, disability and institutionalization rates (Devroey et al, 2003; Patel et al., 2001). A previous study has reported that 29% of stroke survivors experience urinary retention (Kong, 2000). The management of stroke survivors with urinary problems is important in preventing complications such as skin breakdown and urinary tract infections, which may result in prolonged hospital stays. Yet studies identifying and/or evaluating interventions to address bladder dysfunction among stroke survivors have failed to yield comprehensive best practice guidelines (BPGs) for this population.

This study, *Knowledge Translation of Evidence-Based Recommendations for the Continence Care of Stroke Patients in Acute and Rehabilitation Settings*, has developed evidence-based practice recommendations for urinary continence care of stroke survivors. It is intended to improve urinary continence care of stroke survivors and patient outcomes by capitalizing upon existing evidence. A comprehensive review of the literature was carried out to obtain and evaluate published and unpublished information regarding urinary continence outcomes and interventions for stroke survivors. Experts in stroke, geriatric, and continence care were also contacted to obtain further information regarding best practices. Key terms used in this document are outlined in **Appendix A** and the literature search strategy is included in **Appendix B**.

The research coordinator organized published and non-published literature using the Registered Nurses Association of Ontario's (RNAO) *Levels of Evidence* (**Appendix C**). Continence care clinical practice guidelines were evaluated by research team members using the AGREE tool. The resulting information was discussed in meetings by the research team and synthesized into the recommendations outlined in this best practice guideline.

These guidelines are intended for use by nurses and allied health professionals in acute and rehabilitation settings to improve care provided to stroke survivors. Funding for this project was provided by the Ontario Ministry of Health and Long-term Care. The funding agency had no influence upon and assumes no responsibility for the content of these guidelines.

Summary of Recommendations

ASSESSMENT RECOMMENDATIONS

1. Assess stroke survivor’s continence history. Identify pre-existing and emergent co-morbidities and transient causes that may contribute to urinary incontinence and/or urinary retention.
2. Conduct a baseline assessment of both postvoid residual volume and voiding patterns.
3. Assess contributing factors to continence management challenges that may occur due to stroke using data from validated assessment tools. These include changes in medications, nutrition, dietary practices, mobility, cognitive status, and ability to communicate.
4. Discuss stroke survivors’ knowledge, beliefs, cultural attitudes and goals toward urinary continence management.
5. Assess stroke survivors for the presence of urinary tract infections.
6. Assess stroke survivor for constipation by obtaining information about stool frequency, character and consistency of bowel movements and fluid intake
7. Identify environmental barriers to successful toileting.
8. If urinary incontinence is detected, identify the type experienced by the stroke survivor and develop an appropriate management plan.

URINARY INCONTINENCE INTERVENTIONS

9. Assess the type and severity of the stroke survivor’s urinary incontinence using a validated assessment tool.
10. Initiate an individualized prompted voiding schedule based on stroke survivor’s needs as determined by a three-day voiding record.
11. Initiate an individualized timed voiding schedule for stroke survivors.
12. Promote stroke survivors’ dignity by using continence management products, such as pads and pull-ups, to manage incontinence. Product selection is dependent on the type of incontinence and amount of urine lost.

URINARY RETENTION RECOMMENDATIONS

- 13. Ensure optimal patient positioning to promote voiding, taking into account the stroke survivor’s preferences and impairments.
- 14. Establish an appropriate intermittent catheterization plan of care for the management of urinary retention using a voiding record and monitoring intake and output of fluids.
- 15. Use the smallest catheter size available to minimize the discomfort and risk of injury associated with catheterization.

GENERAL RECOMMENDATIONS

- 16. Implement a bowel protocol to ensure proper management, if the stroke survivor is experiencing constipation, and encourage stroke survivors to have healthy intake levels of at least 1500 to 2000ml/day of fluid when medically appropriate. Minimize the intake of caffeine, alcohol, and other bladder irritants.
- 17. Consult with the medical team to determine if a more detailed evaluation of urinary tract function is needed if urinary retention and/or incontinence persists.
- 18. Promote privacy for stroke survivors while toileting.

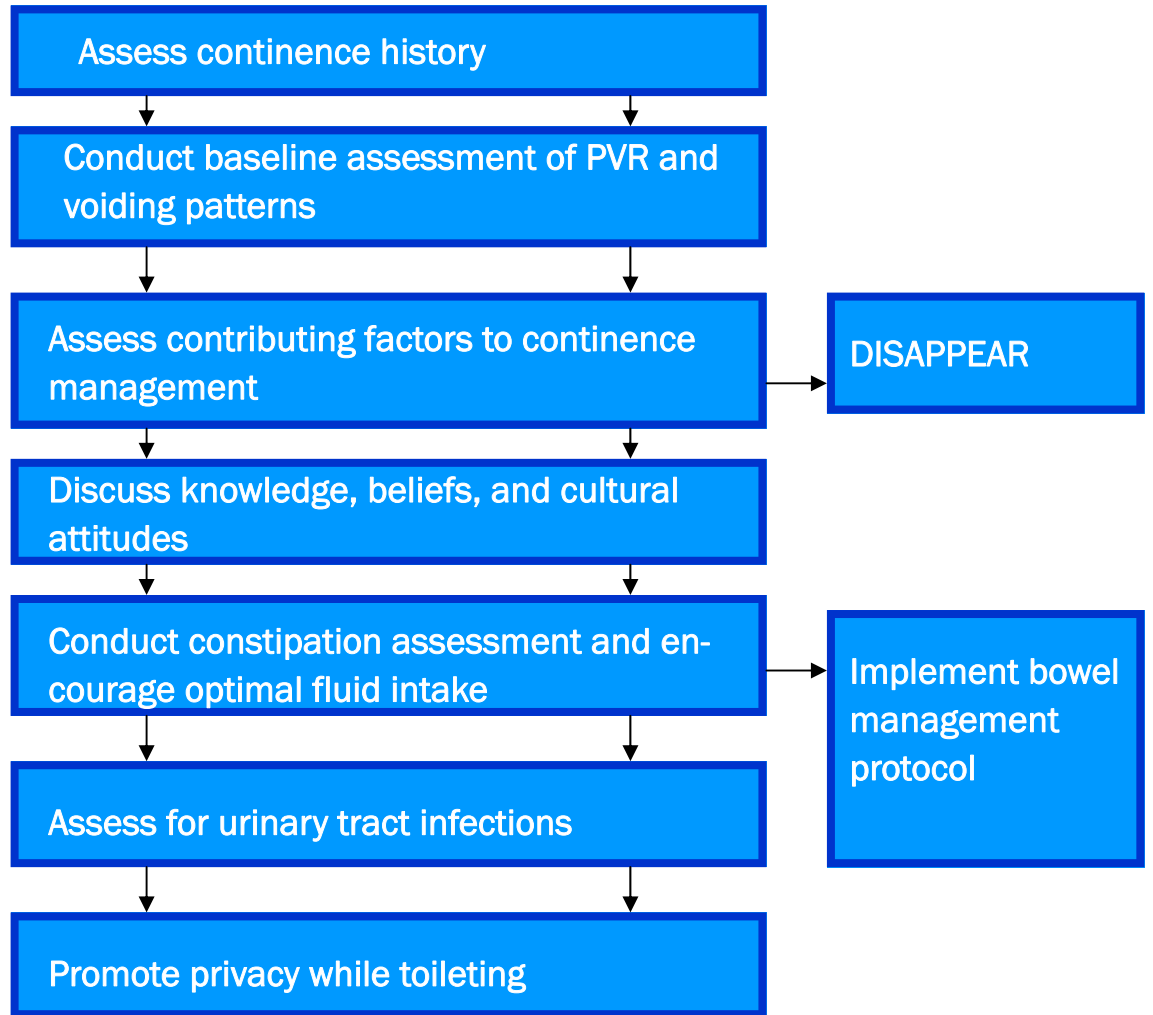
EDUCATION RECOMMENDATIONS

- 19. Nurse educators will conduct educational sessions with health professionals outlining types of incontinence, their respective treatments, and the association between stroke and urinary continence management. Self-learning materials will be made available to augment educational sessions.
- 20. Provide stroke survivors and their caregivers with information regarding continence challenges and management options.

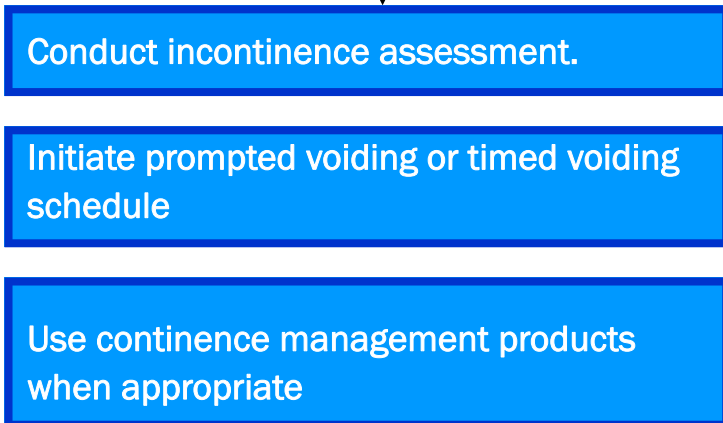
ORGANIZATIONAL AND POLICY RECOMMENDATIONS

- 21. Ensure that the organization has the planning, resources, and organizational and administrative support needed to implement these evidence-based practice guidelines.
- 22. Establish an inter-professional team approach for urinary continence care of stroke survivors.
- 23. Ensure continuity of care for stroke survivors’ between acute, rehabilitation, and complex continuing care settings by documenting management strategies and outcomes.

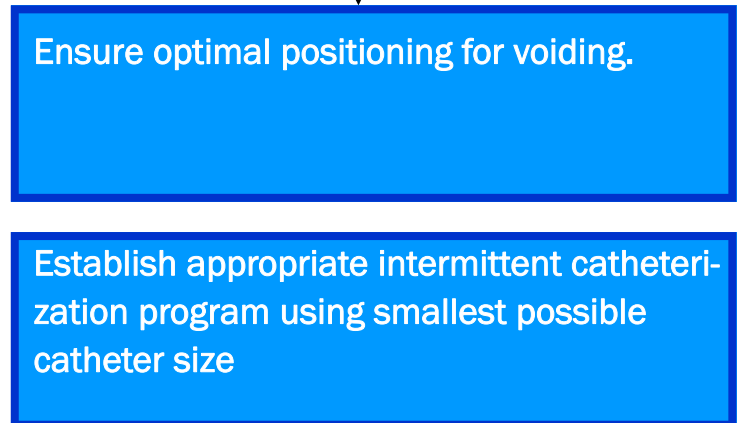
Clinical Algorithm



If urinary incontinence is detected



If urinary retention is detected



Consult medical team if continence challenges persist

Assessment Recommendations

1. Assess stroke survivor's continence history. Identify pre-existing and emergent co-morbidities and transient causes that may contribute to urinary incontinence and/or urinary retention.

Level of Evidence: IV

Discussion

Assessing stroke survivors' pre-stroke continence history helps to identify co-morbidities and possible transient causes, such as psychogenic and functional contributors (Steggall, 2007). Transient causes are typically contributors to urinary incontinence and urinary retention not related to bladder and urethral function (Skelly, 2006; Whytock, 2006). An assessment of transient causes provides insight into management options appropriate for the stroke survivor.

Both Gray (2000a) and Steggall (2007) identify co-morbidities that may cause urinary retention. These include:

Bladder outlet obstruction: Stroke survivors may be experiencing problems with outflow due to blockages, such as lesions or contraction of pelvic floor muscles. Common bladder outlet obstruction problems among men include bladder neck dyssynergia, prostatic urethral obstruction, chronic prostatitis, and prostate cancer. Common bladder outlet obstruction problems among women include bladder neck dyssynergia, intraurethral lesions, and pelvic organ prolapse (Gray, 2000a).

Deficient detrusor contraction strength: Stroke survivors, in particular, may be unable to have adequate detrusor contractility insofar as the detrusor muscle—smooth muscle fibres forming part of the bladder wall—does not contract and trigger the sensation to void when the bladder is full. Other co-morbidities affecting contraction strength include spinal cord injuries, constipation, herpes infections, and polyuria (Gray, 2000a).

The acronym **DISAPPEAR** may be used as a memory prompt for health professionals to assess transient causes of urinary incontinence (Whytock, 2006). Several of the recommendations in the table below are expanded later in this document:

<p>Delirium</p>	<p>Delirium resulting from infection, sleep deprivation, or unmanaged pain may cause the stroke survivor to become confused and unable to find toileting facilities. If delirium is detected, treating the cause and symptoms may resolve urinary incontinence.</p>
<p>Intake of fluid</p>	<p>Monitoring the stroke survivor’s intake of fluid may identify another potential cause of urinary incontinence. There are three things to pay attention to: (a) monitoring the types of fluid consumed may identify diuretics and bladder irritants, such as artificial sweetener, caffeine, and alcohol; (b) the consumption of too little fluid may cause irritation of the bladder and urge incontinence due to highly concentrated urine; and, (c) monitoring the timing of fluid consumption and its relationship to incontinent episodes.</p>
<p>Stool impaction</p>	<p>Stool impaction affects incontinence in two ways: (a) putting pressure on the bladder neck or urethra, therefore causing either urinary retention or overflow incontinence; and, (b) putting undue pressure on the bladder that may cause contractions, thus leading to urge incontinence.</p>
<p>Atrophic vaginitis/ urethritis</p>	<p>Atrophic vaginitis and urethritis, which may occur due to reduced levels of estrogen during and after menopause, causes tissue lining to become dry, thin, and reddened. The subsequent urinary tract symptoms include painful urination, increased urgency to urinate, urine leakage, and urinary tract infections.</p>
<p>Psychological problems</p>	<p>Depression may decrease stroke survivors’ motivation to toilet, thus causing them to experience functional incontinence. If treated, individuals may resume normal voiding patterns.</p>

<p>Pharmaceutical contributors</p>	<p>Medications are a common transient cause of urinary incontinence. Completing a review of medications associated with urinary incontinence may identify better management techniques. Medications associated with urinary retention, which are detailed in Appendix D, may also cause overflow incontinence due to decreased recognition of the need to toilet. Medications associated with urinary incontinence, largely due to sedation, include antidepressants, antipsychotics, sedatives, and alpha-adrenergic blockers (Appendix E)</p>
<p>Excess urine output</p>	<p>Excess urine output may occur for a variety of reasons. For example, swelling of the lower limbs may cause this when the body is shifted and fluid moves to the centre of the body. This increases the frequency and the urgency with which the stroke survivor may have to urinate. Another reason may be that the individual may be taking diuretics.</p>
<p>Abnormal lab values</p>	<p>Conducting lab diagnostics to identify transient causes requiring further medical attention, such as urinary tract infections, delirium, diabetes, and hypothyroidism, may help resolve the stroke survivor's incontinence.</p>
<p>Restricted mobility</p>	<p>Restricted mobility may prevent the stroke survivor from accessing toileting facilities. Assessing the individual's mobility may help to determine whether this causes incontinence.</p>

2. Obtain a baseline assessment of three postvoid residual volumes and voiding patterns (i.e. amount voided and amount of urine scanned in bladder).

Level of Evidence: IV

Discussion

Obtain a baseline assessment of both postvoid residual volume (PVR) and voiding patterns at admission to determine the presence of urinary retention and/or overflow urinary incontinence. This includes the amount voided and urine scanned in bladder.

Intermittent catheterizations may be discontinued for stroke survivors who are voiding and experience 3 consecutive residuals less than 150ml over a 72 hour period (Skelly, 2006). If PVRs remain equal to or greater than 150ml, for three consecutive voiding attempts over a 72 hour period they are experiencing urinary retention (Dunn, 2007). If stroke survivors experience both high PVRs and incontinent episodes, they are experiencing overflow incontinence (Steggall, 2007).

3. Assess contributing factors to continence management challenges that may occur due to stroke using data from validated assessment tools. These include changes in medications, nutrition, dietary practices, mobility, cognitive status, and ability to communicate.

Level of Evidence: Ia, III, IV

Discussion

It is recommended that health professionals use information from validated assessment tools to assess aphasia, cognitive and functional abilities among stroke survivors. Assessment tools are briefly described in Appendix F. This is especially important for stroke survivors, due to the higher prevalence of these challenges among this population. Previous studies have indicated that cognitive impairment, aphasia, and lower functional independence scores were associated with post-stroke urinary retention (Cook et al, 1998; Kong, 2000; Daviet et al, 2004).

It is further recommended that health professionals monitor changes in nutrition and dietary practices that may affect stroke survivors' continence management. This information sheds light on consumption of known bladder irritants, such as caffeine and alcohol, and intake of dietary fibre. Inadequate intake of dietary fibre may cause constipation (Kenny et al, 2001), which may lead to urinary retention and overflow incontinence (Charach, G., Greenstein, A., Rabinovich, P., Groskopf, I., and Weintrab, M., 2001).

Health professionals ought to review stroke survivors' medications to screen for those that contribute to continence management challenges. Lists of medications contributing to urinary retention (**Appendix D**) and urinary incontinence (**Appendix E**) are included in the appendices. For urinary retention, these include anticholinergics and antispasmodics, tricyclic antidepressants, other antidepressants, antipsychotics, anti-parkinsonian, calcium channel blockers, narcotic analgesics, anesthetic agents, and recreational drugs. For urinary incontinence, these include anticholinergics, antidepressants, antipsychotics, and sedatives.

4. Discuss stroke survivor's knowledge, beliefs, goals and cultural attitudes toward urinary continence management

Level of Evidence: IV

Discussion

Discuss stroke survivors' knowledge and beliefs regarding urinary continence in order to better contextualize their plans of care. As Getliffe and Dolman (2003) note, "Attitudes towards incontinence will often determine a person's motivation to comply with treatment or management" (p. 44). Questions may include:

- ◆ What is your understanding of bladder management?
- ◆ What are your beliefs regarding bladder management?
- ◆ What are your bladder management goals?

5. Assess stroke survivors for the presence of urinary tract infections.

Level of Evidence: III

Discussion

Assessing stroke survivors for the presence of urinary tract infections (UTIs) is an important step in determining a primary transient cause of urinary retention. Kong et al (2000) and Garrett et al (1989) indicate that urinary tract infections are common among stroke survivors experiencing urinary retention. Treating a previously undiagnosed UTI may lead to improvement or elimination of continence challenges.

6. Assess stroke survivors for constipation by obtaining information about stool frequency, character and consistency of bowel movements and fluid intake.

Level of Evidence: Ia

Discussion

Because constipation may impair detrusor contractility (Charach, G., Greenstein, A., Rabinovich, P., Groskopf, I., and Weintraub, M., 2001; Gray, 2000a), completing an assessment is an important step in determining a cause of lower urinary tract complications. It is recommended that health professionals obtain information regarding the stroke survivor's stool frequency, character and consistency of bowel movements, and fluid intake in order to determine the presence of constipation among stroke survivors.

7. Identify environmental barriers to successful toileting.

Level of Evidence: IV

Discussion

Experts recommend that environmental barriers to successful toileting be identified. Environmental barriers include both the physical environment and attitudes of health professionals (RNAO, 2005). An assessment of toileting facilities and related factors ought to look at the following:

- ◆ Size of toileting facilities;
- ◆ Proximity of toileting facilities to stroke survivor;
- ◆ Accessibility of commodes;
- ◆ Satisfactory lighting;
- ◆ Availability of nurses, personal care workers, and toileting aids, such as equipment for mobility (ie: walkers) and raised toilet seats (RNAO, 2005); and,
- ◆ Advise stroke survivors to wear easily removable clothing in order to minimize the impact of reduced dexterity (Getliffe and Dolman, 2003; Brooks, 2004).

8. If urinary incontinence is detected, identify the type experienced by the stroke survivor and develop an appropriate management plan.

Level of Evidence: IV

Discussion

Stroke survivors may experience many types of incontinence: transient, stress,

urge, mixed, functional, overflow, or total incontinence. It is important to identify the type of incontinence that they experience in order to develop an appropriate management plan. In order to arrive at an assessment conclusion regarding the type of incontinence, it may be necessary to consult with specialists.



Urinary Incontinence: Intervention Recommendations

9. Assess the type and severity of the stroke survivor’s urinary incontinence using a validated assessment tool.

Level of Evidence: IV

Discussion

It is recommended that health professionals use a validated assessment tool to assess stroke survivors for type and severity of urinary incontinence. A validated assessment tool is included in **Appendix G**.

10. Initiate an individualized prompted voiding schedule based on stroke survivor’s needs as determined by a three-day voiding record.

Level of Evidence: Ia, III, IV

Discussion

The Registered Nurses Association of Ontario (2005) defines prompted voiding as:

A behavioural technique using verbal and physical cues to assist the individual to use the toilet or appropriate receptacle. Prompted voiding is a first-line intervention for some types of urinary incontinence (urge, stress, mixed and functional).

It is a *participatory intervention* “used to teach people with or without cognitive impairment to initiate their own toileting through requests for help and positive reinforcement from carers when they do this” (Eustice et al, 2007, p. 41). Caregivers assist or take patients to toileting facilities and prompt them to void. Communication techniques for prompted voiding that can be found in *Appendix C* of the RNAO’s *Promoting Continence Using Prompted Voiding: Nursing Best Practice Guideline*. **The method is participatory insofar as patients are encouraged to request toileting assistance in order to establish an individualized voiding schedule.**

A recent systematic review outlined the short-term benefits of this intervention (Eustice et al, 2007). There is currently a lack of evidence outlining the long-term benefits of prompted voiding.

7. Initiate an individualized timed voiding schedule for stroke survivors

Level of Evidence: Ia

Discussion

Timed voiding is an intervention that assists patients with voiding at fixed time intervals and is frequently used for patients unable to toilet independently. **It is considered a *passive intervention* insofar as it is caregiver initiated, focusing on helping the patient to avoid incontinence episodes rather than restoring bladder function (Ostaszkievicz et al, 2007).** This is an appropriate intervention for stroke survivors with severe cognitive impairments if they are able to void (Ostaszkievicz, 2007).

It is recommended that health professionals complete a three-day voiding record in order to determine the stroke survivor's micturitional patterns (**Appendix H**). It is important to monitor the intake and output of fluid, as well as the relationship between intake and incontinent episodes. The voiding record may be used to establish a voiding schedule specific to the stroke survivor's needs.

12. Promote stroke survivors' dignity by using continence management products, such as pads and pull-ups, to manage incontinence. Product selection is dependent on the type of incontinence and amount of urine lost.

Level of Evidence: Ia, IV

Discussion

The use of continence management products may be used to address stroke survivors' needs, preferences, and lessen the impact that incontinence has on their day-to-day lives. It is advised that the use of continence management products take into account stroke survivors' needs. For instance, evidence suggests that disposable insert pads are best for managing light urinary incontinence among women (Fader, Cottendem, and Getliffe, 2007).

It is further advised that health professionals refer to these products as continence management products in order to destigmatize their use among stroke survivors.

Urinary Retention: Intervention Recommendations

13. Ensure optimal patient positioning to promote voiding, taking into account the stroke survivor's preferences and impairments.

Level of Evidence: IV

Discussion:

Ensure optimal patient positioning to promote voiding according to the stroke survivor's preferences and impairments.

It is recommended that if possible, male stroke survivors are moved into a standing or sitting position, as bed toileting positions leave men with higher PVRs (Cook et al, 1998). It is recommended that women be placed in a sitting position, if possible.

14. Establish an appropriate intermittent catheterization plan of care for the management of urinary retention using a voiding record and monitoring intake and output of fluids

Level of Evidence: IV

Discussion

It is recommended that health professionals adhere to the following protocol for intermittent catheterization when stroke survivors are medically stable (IC5, 2005):

- ◆ Monitor intake and output of fluid using a voiding record, including caffeinated beverages
- ◆ Encourage healthy intake levels of at least 1500 to 2000ml of fluid per day;
- ◆ Optimize catheterization intervals by developing individualized plans according to the stroke survivor's intake and output levels.

A sample intermittent catheterization protocol is included as **Appendix I**.

Although limited evidence suggests that catheters may be removed at any time of the day in accordance with the stroke survivor's individualized schedule (Gross, 2007)

it is recommended that health professionals consult with the medical team to determine an appropriate schedule. In some settings early morning is the preferred time due to the accessibility of the health care team to respond to any problems.

While intermittent catheterization is the recommended intervention, it may be necessary to use indwelling catheters in certain circumstances. Indwelling catheters should be limited to the following: stroke survivors with intractable urinary retention; urinary retention that causes persistent overflow incontinence, infection, and/or renal dysfunction; stroke survivors with urinary retention that cannot be managed with intermittent catheterization; stroke survivors experiencing pain during catheter insertion due to enlarged prostate; stroke survivors with skin breakdown, continuous wetness, and the need for urinary monitoring; and, stroke survivors with palliative diagnoses for whom clothing changes are uncomfortable or disruptive (American Medical Directors Association, 2005; Teasel, 2007).

15. Use the smallest catheter size available to minimize the discomfort and risk of injury associated with catheterization.

Level of Evidence: IV

Discussion

It is recommended that health professionals use the smallest possible catheter size in order to minimize stroke survivors' discomfort and risk of injury (IC5, 2005). It is recommended that catheters 10-12 F are used for women and catheters 14F are used for men (Cassel, 2006).



General Recommendations

16. Implement a bowel protocol to ensure proper management, if the stroke survivor is experiencing constipation, and encourage stroke survivors to have healthy intake levels of at least 1500 to 2000ml/day of fluid when medically appropriate. Minimize the intake of caffeine, alcohol, and other bladder irritants.

Level of Evidence: IIa

Discussion

As indicated in the assessment section, constipation is a contributing factor to urinary retention due to the impact that it may have on detrusor contractility. It is recommended that an appropriate bowel management protocol is implemented if stroke survivors are experiencing fecal incontinence or constipation in order to address this transient cause (Gray, 2000a; Charach, G., Greenstein, A., Rabinovich, P., Groskopf, I., and Weintraub, M., 2001).

Healthy intake levels of fluid may decrease bladder irritation caused by a higher concentration of urine. This may cause both urinary retention and overflow incontinence. It is recommended that stroke survivors consume at least 1500 to 2000ml/day and minimize the intake of bladder irritants, such as caffeine, alcohol, and artificial sweeteners.

17. Consult with the medical team to determine if a more detailed evaluation of urinary tract function is needed if urinary retention and/or incontinence persist.

Level of Evidence: IV (Research Team)

Discussion

If urinary retention persists and/or the stroke survivor has complex management needs that the nursing staff are unable to address, then the medical team ought to be consulted in order to develop an appropriate individualized plan of care.

18. Promote privacy for stroke survivors while they are toileting.

Level of Evidence: IV

Discussion:

It is recommended that health professionals promote stroke survivors' dignity by providing privacy while toileting. This may not be possible for stroke survivors at risk of falling

Education Recommendations

19. Nurse educators will conduct educational sessions with health professionals outlining types of incontinence, their respective treatments and the association between stroke and urinary continence management. Self-learning materials will be made available to augment educational sessions and provide those unable to participate with information regarding urinary continence management of stroke survivors.

Level of Evidence: III

Discussion

Evidence suggests that nurse educators have a higher rate of research utilization than staff nurses and clinical managers (Milner, Estabrooks, and Humphrey, 2005). Milner, Estabrooks, and Humphrey (2005) argue that this uniquely positions nurse educators to diffuse nursing interventions among staff at their institutions. It is recommended that nurse educators lead educational sessions with health professionals in order to encourage the uptake of evidence-based recommendations for urinary continence management of stroke survivors. Evidence further suggests that nurse educators may encourage self-learning among health professionals (O'Shea, 2003).

20. Provide stroke survivors and their caregivers with information regarding urinary retention, urinary incontinence and urinary continence management options.

Level of Evidence: III, IV

Discussion

Stroke survivors and their caregivers will be provided with information regarding urinary retention and incontinence and management options. This information will outline the following: (a) general information about incontinence and urinary retention; (b) overview of types of incontinence; (c) overview of transient causes of urinary retention and incontinence; and, (d) continence management recommendations. If urinary retention is managed by intermittent self-catheterization, stroke survivors and their caregivers will participate in appropriate educational sessions.

It is further recommended that information and educational materials provided to stroke survivors and caregivers address diverse literacy needs (Mayeaux et al, 1996). Mayeaux et al (1996) note, "Combining easy-to-read written patient education materials with oral instructions has been shown to greatly enhance patient understanding.

Organizational and Policy Recommendations

21. Ensure that the organization has the planning, resources and administrative support needed to implement these evidence-based practice guidelines.

Level of Evidence: IV

Discussion

RNAO (2005) outlines the important role that systematic planning plays in the implementation of evidence-based practice guidelines. It requires leadership by administrators and health professionals dedicated to improving patient care.

22. Establish an inter-professional team approach for the urinary continence care of stroke survivors.

Level of Evidence: IV

Discussion

Experts recognize the important role that inter-professional teams play in addressing health challenges (RNAO, 2005). Organisations are encouraged to establish inter-professional team approaches to urinary continence management of stroke survivors. Members of inter-professional teams may include: nurses, physicians, pharmacists, physiotherapists, occupational therapists, speech therapists, dieticians, personal support workers, mental health professionals, and specialists. This approach will help to address and manage the complex causes of urinary retention and incontinence among stroke survivors.

23. Ensure continuity of care for stroke survivors between acute, rehabilitation and complex continuing care settings by documenting management strategies and outcomes.

Level of Evidence: Ia, III

Discussion

Sustained continuity of care between healthcare settings has been shown to

consistently improve patient outcomes for those with chronic conditions (Cabana and Lee, 2004). Establishing continuity of care through inter-professional communication may improve continence outcomes among stroke survivors. Research further demonstrates that patients experience greater satisfaction and personalized care when continuity of care occurs between healthcare settings (Hjortdahl and Laerum, 1992). It is recommended that health professionals properly document the assessments and strategies implemented to address urinary continence management needs of stroke survivors.



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Appendix A: Glossary

Urinary incontinence

Urinary incontinence is the involuntary loss of urine resulting from a loss of bladder and/or sphincter control (RNAO, 2005). There are several types of incontinence:

Transient incontinence: Involuntary loss of urine due to outside factors affecting bladder management, such as medications, vaginitis, urethritis, and constipation (RNAO, 2005).

Urge Incontinence: Involuntary loss of urine after feeling the sudden urge to void (RNAO, 2005).

Stress Incontinence: Involuntary loss of urine due to an increase in intraabdominal pressure, which occur when sneezing, coughing, or other movements (RNAO, 2005; Skelly, 2007).

Mixed Incontinence: Loss of urine displaying the characteristics of both urge and stress incontinence (RNAO, 2005).

Overflow incontinence: Involuntary loss of urine due to over-distension of the bladder (RNAO, 2005).

Functional incontinence: Urinary leakage occurring as a result to an inability to access toileting facilities due to functional and/or cognitive impairments (RNAO, 2005).

Total incontinence: Involuntary, unpredictable, and continuous loss of urine (RNAO, 2005)

Urinary retention

Urinary retention is incomplete bladder emptying, typically defined by abnormally high postvoid residual volumes (Doughty, 2000). There are two types of urinary retention

Acute Urinary Retention: Urinary retention characterized by a sudden and painful inability to void (Fitzpatrick and Kirby, 2006).

Chronic Urinary Retention: Patients experiencing chronic urinary retention have a non-painful bladder that remains palpable and percussible after voiding (Abrams et al, 2002)

Systematic review

A systematic review involves the “application of a rigorous scientific approach to the preparation of a review article” (RNAO, 2005, p. 16). They use explicit, systematic methods to obtain and evaluate information.

Evidence

Evidence is defined as “an observation, fact, or organized body of information offered to support or justify inferences or beliefs in the demonstration of some proposition or matter at issue” (Madjar & Walton, 2001, p. 28).

Clinical practice guidelines

Systematically developed statements incorporating the best available evidence that are intended to assist health professionals in making clinical decisions (RNAO, 2005).

Appendix B: Literature Search Strategy

Introduction

A comprehensive review of the literature was undertaken to obtain published and non-published information about urinary practices for stroke and geriatric patients. Experts in stroke and geriatrics were contacted to obtain further information about best practices. The research team conducted an assessment of urinary practices for stroke patients at three sites in the Champlain region.

There were four key components of the literature search strategy: (a) identifying variables to guide inquiry; (b) identifying academic databases and other clinical sources; (c) reviewing documents and compiling a references database; and, (d) developing and implementing a reporting mechanism to organise and synthesize findings. These components are outlined below.

Literature Review Variables

A list of variables and keywords was developed by the research team to optimize the literature review. Identifying key variables ensured that the original research questions were addressed, but also that the search was rigorous. Variables were identified in four strategic categories: (a) population; (b) interventions; (c) outcomes; and, (d) timeframe.

Population

- ◆ The research team identified specific populations and demographics relevant to the study that needed to be captured by the literature review. The identified variables were as follows: stroke patients; brain injury patients; acute care patients; rehabilitation care patients; long-term care patients; inpatient care patients; community care patients; geriatric populations; gender; class; and cross-cultural characteristics
- ◆ The research team decided to exclude persons under eighteen years of age.

Interventions

- ◆ The research team identified interventions and documentation to be gathered and assessed during the literature review. The identified variables were as follows: peer-reviewed articles; clinical research; clinical practice guidelines; best practice guidelines; diagnostic tools; management techniques; self

- ◆ The research team determined that interventions for the following conditions are to be excluded: urinary disorders; post-partum incontinence; bariatric surgery.

Outcomes

- ◆ Outcomes were identified by the research team to best capture current continence care practices: urinary incontinence; nurse-sensitive outcomes; techniques.

Timeframe

- ◆ The research team decided to restrict the literature search to documents published after the Registered Nurses Association of Ontario embraced evidence-based research in 1995.

Language

- ◆ Only English and French documents were included in the literature search.

Identify Sources

A comprehensive survey of research and grey literature to identify causal factors, clinical interventions, and organisational support of EBR is necessary to inform best practices guidelines. This literature review relies on two key sources:

1. *Academic databases*

- ◆ Databases containing relevant clinical research include CINAHL, Medline, PubMed, Sage Publications; Embase, Nursing Abstracts, and Ebsco.

2. *Grey literature*

- ◆ RNAO has compiled a comprehensive list of relevant sources of grey literature that is to be used.
- ◆ Contact organisations identified by the research team in order to obtain clinical guidelines and supporting documents.

Review and Compile Research

A comprehensive review of the literature will be completed. Sources were compiled in *Reference Manager* [references.rmb] and available sources were archived into a shared directory [To be created on Ottawa Hospital shared drive]. The references will be organized to encompass the following variables: author, year published, country, funding source [if known], research affiliation [institution], team composition, care setting, target population, case series, methodology, intervention, findings, comments, frequently referenced in other publications.

Develop EBR Reporting Mechanism

The RNAO (2005) levels of evidence were used to organize and rank evidence for this study.

Appendix C: Levels of Evidence

The research team used the RNAO (2005) levels of evidence to assess information. The levels of evidence are as follows:

<p>Ia. Evidence obtained from meta-analysis or systematic review of randomized controlled trials.</p>
<p>Ib. Evidence obtained from at least one randomized controlled trial.</p>
<p>IIa. Evidence obtained from at least one well-designed controlled study without randomization.</p>
<p>IIb. Evidence obtained from at least one other type of well-designed quasi-experimental study without randomization.</p>
<p>III. Evidence obtained from well-designed non-experimental descriptive studies, such as comparative studies, correlation studies, and case studies.</p>
<p>IV. Evidence obtained from expert committee reports or opinions and/or clinical experiences of respected authorities</p>

Appendix D: Medications Linked to Urinary Retention

Drugs associated with urinary retention (Karch, 1997; Carnahan et al, 2006)		
<p>Carnahan et al (2006) identify anticholinergics that may cause complications in patients by the severity of symptoms caused in patients. The drugs below have the following affect: Level 3=markedly anticholinergic; Level 2=sometimes anticholinergic; and, Level 1= potentially anticholinergic (Carnahan et al, 2006)</p>		
Anticholinergics (Level 3)	amitriptyline atropine benztropine brompheniramine carbinoxamine chlorpheniramine chlorpromazine clemastine clomipramine clozapine darifenacin Desipramine dicyclomine dimenhydrinate diphenhydramine doxepin flavoxate hydroxyzine	hyoscyamine imipramine meclizine nortriptyline orphenadrine oxybutynin procyclidine promethazine propantheline protriptyline pyrilamine scopolamine thioridazine tolterodine trihexyphenidyl trimipramine
Anticholinergics (Level 2)	carbamazepine cimetidine cyclobenzaprine cyproheptadine disopyramide loxapine meperidine	methotrimeprazine molindone oxcarbazepine pimozide ranitidine

<p>Anticholinergics (Level 1)</p>	<p>alprazolam amantadine ampicillin azathioprine bromocriptine captopril cefamandole cefoxitin cephalothin chlordiazepoxide chlorthalidone clindamycin clonazepam clorazepate codeine cortisone cycloserine cyclosporine dexamethasone diazepam digitoxin digoxin diltiazem Dipyridamole divalproex sodium estazolam famotidine fentanyl fluoxetine fluphenazine Flurazepam fluticasone-salmeterol fluvoxamine furosemide gentamicin hydralazine</p>	<p>hydrocortisone isosorbide isosorbide dinitrate isosorbide mononitrate ketotifen ophthalmic loperamide lorazepam methylprednisolone midazolam morphine nifedipine nizatidine olanzapine oxazepam oxycodone pancuronium paroxetine perphenazine phenelzine piperacillin prednisolone prednisone prochlorperazine sertraline temazepam theophylline thiothixene tramadol triamcinolone triamterene triazolam trifluoperazine valproic acid vancomycin warfarin</p>
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Tricyclic antidepressants	<ul style="list-style-type: none"> ◆ Amitriptyline ◆ Amoxapine ◆ Clomipramine ◆ Doxepin ◆ Imipramine ◆ Nortriptyline ◆ Protriptyline ◆ Trimipramine
Other antidepressants (reduced risk)	<ul style="list-style-type: none"> ◆ Bupropion ◆ Paroxetine ◆ Sertraline ◆ Trazodone
Antipsychotics	<ul style="list-style-type: none"> ◆ Chlorpromazine ◆ Clozapine ◆ Perphenazine ◆ Promazine ◆ Thioridazine
Antiparkinsonian	<ul style="list-style-type: none"> ◆ Amantadine ◆ Bromocriptine ◆ Levodopa
Calcium channel blockers (when combined with other agents)	<ul style="list-style-type: none"> ◆ Nifedipine ◆ Verapamil
Narcotic analgesics (when combined with other agents)	<ul style="list-style-type: none"> ◆ Morphine ◆ Meperidine
Anesthetic agents	<ul style="list-style-type: none"> ◆ General anesthesia ◆ Spinal anesthesia ◆ Epidural block
Recreational drugs	<ul style="list-style-type: none"> ◆ Cannabis

Appendix E: Medications Linked to Urinary Incontinence

Drugs linked to urinary incontinence (Skelly, 2007)	
Antidepressants	<ul style="list-style-type: none"> • Amitriptyline • Doxepin • Imipramine • Nortriptyline • Trazodone
Antipsychotics	<ul style="list-style-type: none"> • Chlorpromazine • Clozapine • Loxapine • Promazine • Thioridazine
Sedatives	<ul style="list-style-type: none"> • Lorazepam • Oxazepam • Diazepam
Diuretics	<ul style="list-style-type: none"> • Furosemide • Hydrochlorothiazide • Caffeine • Alcohol

Appendix F: Assessment Tools

The research team is unable to provide copies of tools due to copyright concerns; however, the tools described in the table below may be used to assess stroke survivors.

Barthel Index
<p>The Barthel Index is an independence assessment tool that may be used to score improvements in patients' functional abilities.</p> <p>Mahoney FI, Barthel D. "Functional evaluation: the Barthel Index." <i>Maryland State Medical Journal</i> 1965;14:56-61.</p> <p>Available: http://www.strokecenter.org/trials/scales/barthel.pdf</p>
Functional Independence Measure (FIM)
<p>The Functional Independence Measure (FIM) is an assessment tool that may be used to assess patients' functional abilities. It was developed to assess functional abilities that may be impacted by neurological trauma.</p> <p>Available: http://www.birf.info/pdf/tools/famform.pdf</p>
Constipation Assessment Scale (CAS)
<p>The Constipation Assessment Scale (CAS) is a scoring system that may be used to determine the presence of constipation in patients.</p> <p>McMillan SC, Williams F: Validity and reliability of the constipation assessment scale, <i>Journal of Cancer Nursing</i>, 12:183-188, 1989.</p>
Constipation Scoring System
<p>The Constipation Scoring System may be used to determine the presence of constipation in patients.</p> <p>Agachan et al. A constipated scoring system to simplify evaluation and management of constipated patients, <i>Diseases of the Colon and Rectum</i> 39 (1996), pp. 681-685.</p>

Functional Status Index

The Functional Status Index is an assessment tool developed to assess patients' functional abilities, including mobility and ability to complete basic tasks.

Jette AM, Deniston OL: Inter-observer reliability of a functional status assessment instrument, *Journal of Chronic Disease*, 31:573-580, 1978.

Mini-Mental State Assessment

The Mini-Mental State Assessment is an assessment tool used to evaluate patients' cognitive status.

Mini-Mental State. A Practical Method for Grading the Cognitive State of Patients for the Clinician. *Journal of Psychiatric Research*, 12(3): 189-198, 1975.

Montreal Cognitive Assessment (MOCA)

The Constipation Assessment Scale (CAS) is a scoring system that may be used to determine the presence of constipation in patients.

McMillan SC, Williams F: Validity and reliability of the constipation assessment scale, *Journal of Cancer Nursing*, 12:183-188, 1989.

Appendix G: Continence Assessment

Source

Cassell, B. and Skelly, J. (2006) Assessment of Urinary Incontinence. In P. Eyles (ed.) Promoting Continence Care: A Bladder and Bowel Handbook for Care Providers. Hamilton, ON: McMaster University Press.

Patient's Name		Date of birth/age	
Gender (circle)	1) Male 2) Female	Date assessed	

Incontinence History			
1) Onset	1) Sudden		2) Gradual
2) Duration	1) <6 months	4) 2-5 years	5) > 5 years
	2) 6 months - 1 year	3) 1-2 years	
3) Symptoms over the past 6 months?	1) Worsening	3) Improving	4) Fluctuates
	2) Stable		
Days		Evenings	Nights
4) How often do you go to the toilet?			(after going to bed)
5) How often do you have accidents?	1) 1/day 2) >1/day 3) ___/week 4) None	1) 1/day 2) >1/day 3) ___/week 4) None	1) 1/day 2) >1/day 3) ___/week 4) None
6) How much leakage do you have?	1) Soil/wet underwear only 2) Soil/wet outer clothing 3) Soil/wet bedding 4) Run down legs 5) Pool on the floor 6) Amount varies 7) Contained	1) Soil/wet underwear only 2) Soil/wet outer clothing 3) Soil/wet bedding 4) Run down legs 5) Pool on the floor 6) Amount varies 7) Contained	1) Soil/wet underwear only 2) Soil/wet outer clothing 3) Soil/wet bedding 4) Run down legs 5) Pool on the floor 6) Amount varies 7) Contained

Stress Loss						
7) Do you leak urine with physical stress? (e.g. cough, laugh, sneeze, lift, jump)	1) Yes	2) Yes, just after	3) No	4) Unable to answer		
Urge Loss						
8) Do you have to rush to the bathroom when you feel the urge to void?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
9) Do you leak urine on your way to the bathroom?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
10) On average, how long can you hold on after feeling the first urge?	1) Not at all	2) <5 mins	3) _____ mins	4) Unknown	4) Unable to answer	
Overflow						
11) Do you feel that you completely empty your bladder when you pass urine?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
12) Are you aware of the urge to void?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
13) Are you aware of urine being passed?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
14) Are you aware when you are wet?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
15) Do you have trouble starting to pass urine (hesitancy)?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
16) Do you have to strain or push to pass urine?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
17) Do you have dribbling after you finish passing urine?	1) Yes	2) No	3) Occasionally	4) Unknown	4) Unable to answer	
Product Use						
18) What type of product is used for containment?				____ Unknown ____ Unable to answer		
19) How many are used every 24 hours?				____ Unknown ____ Unable to answer		

Fluid Intake						
20) How much do you drink in a day?	Type of Fluid (e.g. water, juice, thickened juice)			Quantity (1 cup=250ml)		
–Breakfast						
–Mid AM						
–Lunch						
–Mid PM						
–Supper						
–Evening						
–Total						
Caffeine Intake						
21) Do you drink beverages containing caffeine?	1) Yes	2) No	3) Unknown	4) Unable to answer		
If yes—how much? (1 cup=250ml)			2) Unknown	3) Unable to answer		
Alcoholic Intake						
22) Do you drink any alcoholic beverages?	1) Yes	2) No	3) Unknown	4) Unable to answer		
If yes—how much? (1 cup=250ml)			2) Unknown	3) Unable to answer		
Bowels						
23) How often do you have bowel movements?	1) 2-3/day	2) Daily	3)___/week	4) Unknown	5) Unable to answer	
24) Do you frequently have hard or difficult bowel movements?	1) Yes	2) No	3) Occasionally	4) Unknown	5) Unable to answer	
25) Are laxatives/suppositories/enemas used for regulation?	1) Yes	2) No	3) Occasionally	4) Unknown	5) Unable to answer	
If answer to question #25 is 'yes' specify:						
Medical History (select all that apply)						
26) Trans Urethral Prostatectomy (TURP)			27) Diabetes Mellitus			
28) Hysterectomy			29) Fractured Hip			
30) Bladder Repair			31) Urinary Tract Infection			

Medical History (continued)					
32) Stroke (CVA)			33) Acquired Brain Injury		
34) Parkinson's Disease			35) Dementia		
36) Multiple Sclerosis			37) Arthritis		
38) Other diagnosis					
Medication review (any medications with the following actions)					
39) Anticholinergic	1) Yes	2) No	40) Sedative	1) Yes	2) No
41) Cholinergic	1) Yes	2) No	42) Antidepressant	1) Yes	2) No
43) Diuretic	1) Yes	2) No	44) Antispasmodic	1) Yes	2) No
45) Antipsychotic	1) Yes	2) No			
Weight					
46) Weight			2) Unknown		3) Unable to answer

Environmental Barriers			
47) Do you have ready access to:			
- Toilet	1) Yes	2) No	3) Unable to answer
- Commode	1) Yes	2) No	3) Unable to answer
- Urinal or Bedpan	1) Yes	2) No	3) Unable to answer
48) Are there any physical or chemical restraints being used?	1) Yes	2) No	3) Unable to answer
If answer to question #48 is "yes", specify:			

Functional assessment	
49) Ambulation (circle all that apply)	
1) Ambulates within residence or about one block distance	3) Bedridden more than half the time
2) Ambulates with assistance of A) Cane B) Walker C) Wheelchair	4) Needs help getting in and out of bed/chair A) No assistance required B) With one person assisting C) With two persons assisting D) With mechanical lift

Abilities Assessment				
50) Aware of urge to void	1) Yes	2) No	3) Occasionally	4) Unable to answer
51) Able to find the toilet	1) Yes	2) No	3) Occasionally	4) Unable to answer
52) Able to understand reminders or prompts	1) Yes	2) No	3) Occasionally	4) Unable to answer
53) Can ask for assistance	1) Yes	2) No	3) Occasionally	4) Unable to answer
54) Can remove clothing to toilet	1) Yes	2) No	3) Occasionally	4) Unable to answer
55) Can sit on the toilet/hold the urinal	1) Yes	2) No	3) Occasionally	4) Unable to answer
56) Motivated to be continence	1) Yes	2) No	3) Occasionally	4) Unable to answer
57) Socially aware of appropriate place to pass urine	1) Yes	2) No	3) Occasionally	4) Unable to answer

Physical Assessment			
58) Voided volume		59) Residual volume	
60) Urine dip stick	1) Negative 2) Positive	61) Send for C & S	1) Yes 2) No
62) Perineum	1) Intact 2) Redness 3) Excoriation 4) Other	63) Voiding record initiated	1) Yes 2) No
64) Stool present in the rectum?	1) Yes 2) No	65) Fecal straining around the anus?	1) Yes 2) No

Contributing Factors (circle)			
66) Urinary Tract Infection	67) Cognitive	68) Environmental factors	69) Mobility
70) Constipation	71) Fluid intact	72) Caffeine intake	73) Alcohol intake
74) Weight	75) Medications	76) Other (specify)	

Types of incontinence (circle)			
77) Stress	78) Urge	79) Overflow	80) Functional
81) Other (please specify):			

Treatment Options	
82) Prompted voiding	
83) Fluid intake changes	
84) Caffeine reduction	
85) Intermittent catheterization	
86) Beside commode	
87) Personal hygiene	
88) Incontinence product	
89) Other	

Appendix H: Voiding Record

Voiding Record For Patients With Urinary Incontinence												
Day 1 Date yyaa ____ mm ____ dj ____				Day 1 Date yyaa ____ mm ____ dj ____				Day 1 Date yyaa ____ mm ____ dj ____				
Time	Void	Total Intake	Wet Event	Time	Void	Total Intake	Wet Event	Time	Void	Total Intake	Wet Event	
1:00				1:00				1:00				
2:00				2:00				2:00				
3:00				3:00				3:00				
4:00				4:00				4:00				
5:00				5:00				5:00				
6:00				6:00				6:00				
7:00				7:00				7:00				
8:00				8:00				8:00				
9:00				9:00				9:00				
10:00				10:00				10:00				
11:00				11:00				11:00				
12:00				12:00				12:00				
13:00				13:00				13:00				
14:00				14:00				14:00				
15:00				15:00				15:00				
16:00				16:00				16:00				
17:00				17:00				17:00				
18:00				18:00				18:00				
19:00				19:00				19:00				
20:00				20:00				20:00				
21:00				21:00				21:00				
22:00				22:00				22:00				
23:00				23:00				23:00				
24:00				24:00				24:00				

From RNAO Guidelines "Promoting Continence Using Prompted Voiding" 1. Place X in box to indicate time of voiding 2. Enter amount of fluid intake 3. Place X in box of wet event when incontinent

Appendix I:

Intermittent Catheterization Protocol

Source: St. Joseph's Healthcare. (2007). Rehabilitation Bladder Scanning and Intermittent Catheterization Protocol. St. Joseph's Healthcare, Hamilton, ON.

Scanning and Intermittent Catheterization Protocol:

This is determined by the amount of fluid intake and output

Intake should be between 1500 - 2000 cc/day

Scanning and catheterization times should be adjusted so that over distention does not occur.

Intake -- 1400 - 1800 cc/24 hours

Scan q 8 hours, e.g., 0600, 1400, 2200

Catheterize patient if bladder scan demonstrates equal to or greater than 300cc of urine

Intake -- 1800 - 2400 cc/24 hours

Scan q 6 hours, e.g., 0600, 1200, 1800, 2400 hours

Catheterize patient if bladder scan demonstrates equal to or greater than 300cc of urine

Intake -- 2400 - 3000 cc/24 hours

Scan q 4 hours, e.g., 0600, 1000, 1400, 1800, 2200, 0200 hours

Catheterize patient if bladder scan demonstrates equal to or greater than 300cc of urine

If intake is greater than 3000 cc/24 hours, an indwelling Foley Catheter would be more useful, until intake is within more manageable limits, or if patient is incontinent (more accurate measurement).

REASSESSMENT of BLADDER SCANNING AND INTERMITTENT CATHETERIZATION

Catheterization Times **MUST** adjusted when fluid intake increases or decreases.

After 48 hours reassess the need for bladder scanning and intermittent catheterizations. If patient has 3 consecutive voids with residuals of less than 150 cc and does not complain of discomfort discontinue bladder scanning and intermittent catheterization procedure.

Notes

Notes

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