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Evidence-Based Continence Care: An Integrative Review

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Abstract

Purpose: The purpose of this integrative review is to identify the best nurse-managed continence care strategies among rehabilitation patients from the current body of evidence.

Design: The newly designed 2015 Competency Model for Professional Rehabilitation Nursing serves as a conceptual framework to categorize evidence-based recommendations for continence care into the four domains of the model.

Methods: A search of the evidence was completed in December 2015. Literature reviewed was limited to articles published from 2005–2015 in the English language. Search priority was given to systematic reviews and randomized controlled trials.

Findings: Nurse-led interventions include evidence-based clinical assessments with use of validated instruments following stepwise algorithms derived from clinical practice guidelines. The interprofessional team emphasizes role-based continence interventions with shared work to reach goals. Leadership recommendations call for administrative support and allocation of resources for continence care and also empower select bedside nurses to become continence champions. Finally, nurse-patient education and caregiver training target the promotion of successful living. System-based continence recommendations are identified to include rehab-oriented electronic documentation systems, written continence policies and procedures, and ongoing nursing education emphasizing accountability to high performance standards.

Conclusions: Rehabilitation nurses are the team leaders in promoting continence in the rehabilitation setting. They are the cultivators of hope and foster resilience among patients to move forward despite acute or chronic illness and disability. This article is intended to support rehabilitation nurses in their review of clinical evidence in effort to move toward a more uniform approach to bowel and bladder management.

Clinical Relevance: This review equips rehabilitation nurses who seek to improve their practice by identifying the best evidence-based approaches to continence care.

Keywords: Rehabilitation nursing; bowel and bladder; management; evidence-based practice; rehabilitation competency model.

Introduction

The rehabilitation nurse is considered the expert of bowel and bladder management in acute rehabilitation settings (Anderson, Kautz, Bryant, & Clanin, 2011; Jacelon, 2011). Yet many nurses lack assessment skills and knowledge to employ appropriate continence interventions (Booth, 2013; Coffey, McCarthy, McCormack, Wright, & Slater, 2007; Yuan, Williams, & Liu, 2011, Yu et al., 2008). Expectations of nurse practice vary for continence management in current rehabilitation programs (Glenn, 2003). Persisting influences from acute and long-term care focus on containment rather than assessment and management (Booth, Kumlien, Zang, Gustafsson, & Tolson, 2009; Coffey, McCarthy, McCormack, Wright, & Slater, 2008). This diverts the opportunity to identify and rehabilitate elimination problems for affected patients (Torres et al., 1998). Unmanaged incontinence has been shown to negatively influence care transitions with placement into institutional settings rather than to home (Blanchette, 2012; Grandstaff & Lyons, 2012; Mehdi, Birns, & Bhalla, 2013; Roe, Ostaszkiewicz, Milne, & Wallace, 2006; Thomas et al., 2009).

Currently, there are no published practice guidelines for the management of bowel and bladder for rehabilitation patients (Thomas et al., 2014). Current research and recommendations identify the need for practice improvement and written guidelines (Fisher, 2014). The new professional practice model, The Competency Model for Professional Rehabilitation Nursing (Vaughn et al., 2015), addresses this problem and serves as a conceptual framework for this review. The model identifies four major domains, where evidence-based continence tasks and knowledge can manifest in daily bedside care. The objective of this integrative review was to identify the best evidence for nursing management in the promotion of

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bowel and bladder continence to improve rehabilitation care practices. Target audiences include practicing bedside nurses, rehabilitation program leaders, and rehabilitation nurse researchers.

Literature Search Strategy

Regulations and standards for bowel and bladder management exist in the literature for long-term care, but not for acute care settings, including acute rehabilitation (Newman & Wein, 2009). Although bowel and bladder management objectives are identified in the core curriculum for rehabilitation nurses (Jacelon, 2011), no resource publication exists. The purpose of this literature review was to collect relevant evidence where continence improvements were achieved by nursing and/or care team interventions.

A search of the evidence was completed in December 2015. Literature reviewed was limited to articles published from 2005 to 2015 in the English language. Search priority was given to systematic reviews and randomized controlled trials (RCTs). Expert opinions of published articles exploring evidence-based practice in a postacute setting were also reviewed. A search of the CINAHL and PubMed databases included the following terms and MeSH headings, separated by the Boolean operator "OR": bowel management, bladder management, incontinence, constipation, fecal incontinence, and bladder training. The resulting list was then searched with the Boolean operator "AND" with the following neurologic conditions 2 separated by the Boolean operator "OR": stroke, spinal cord injury, Parkinson's disease, multiple sclerosis, brain injury. This search had a total yield of 602 articles. Studies published in peer-reviewed journals that investigated continence or bowel regularity after implementing at least one nurse-led intervention among rehabilitation or neurological patients in both inpatient or outpatient settings were included. A total of 21 systematic reviews and 11 RCTs, three quasi-experimental studies, and 20 mixed-method quantitative studies were found. The Johns Hopkins Evidence-Based Practice Research Evidence Appraisal Tool (2013) was used to evaluate all systematic reviews and RCTs for quality and level of evidence. Twenty-three empirical publications were evaluated using the Rapid Critical Appraisal of Evidence-Based Practice Implementation or Quality Improvement Projects (Melnyk & Fineout-Overholt, 2015).

A second literature search was conducted to identify clinical practice guidelines (CPGs) published within the same time frame and also in the English language. Published standards or practice guidelines were also included from national and international organizations on the topic of bowel or bladder continence. This web-based search yielded a total of 16 publications for urinary management and 10 publications for bowel management. Clinical practice guidelines were reviewed for interventions that may be performed by a nurse or rehabilitation team in a clinical setting. All CPGs were evaluated using the AGREE II Instrument tool (AGREE, 2009).

Conceptual Framework

Vaughn et al. (2015) created a competency model for the professional rehabilitation nurse wherein skills and knowledge are progressively developed through practicebased learning and professional development. The rehabilitation competency model can be utilized as a framework for a nurse-centric evidence-based continence approach for bowel and bladder management for rehabilitation patients. The four domains identified in the model include: nurse-led interventions, leadership, interprofessional care, and promotion of successful living. Continence care requires specialized knowledge and care management that can be categorized into these four domains. Here, the structure of the model provides a methodology for knowledge, skills, and care-coordination required for patient continence. The nurse is presented as a lead decision maker in the implementation of evidencebased continence strategies. (See Appendix A for the adaptation of the competency model for the work of evidence-based continence care.)

Domain 1: Nurse-Led Interventions

Understand Pathophysiology

Rehabilitation nurses must manage a broad spectrum of patients requiring unique approaches to achieve the goal of continence. Studies conducted in long-term and acute care environments have found that nursing staff and interprofessional teams lack a comprehensive physiological understanding of normal controls of micturition and defecation (Coffey et al., 2007; DuBeau, Kuchel, Johnson, Palmer, & Wagg, 2010; Mehdi et al., 2013; Schnelle et al., 2010). Without a scientific appreciation for the underlying pathologies of incontinence, nurses may unknowingly apply inappropriate interventions accompanied by ambivalence and mismanagement (Dingwall & Mclafferty, 2006).

Rehabilitation nurses must understand the etiologies behind elimination disturbance to effectively correct it (King & Pilcher, 2008; Ostaszkiewicz, O'Connell, & Miller, 2008). Such knowledge begins with an appreciation of the central and peripheral nervous systems and the intricate autonomic control mechanisms for bowel and bladder continence (Gray, 2006; Heitkemper, 2006; Kaplan et al., 2013). Nurses must identify risk

factors and comorbidities that exacerbate urinary or gastrointestinal dysfunction such as neurological conditions, medication side effects, pain, cognitive impairment, etc. (DuBeau et al., 2010). Disruption of normal bowel and bladder patterns caused by acute injury and chronic disease should be identified using appropriate clinical terminology (Doughty & Jensen, 2006).

Evidence-based Assessments

Patient problem identification requires a thorough and skilled assessment of bowel and bladder together (Cameron et al., 2015; Chipps, 2011; Kaplan et al., 2013; Ostaszkiewicz, Ski, & Hornby, 2005; Tod, Stringer, Levery, Dean, & Brown, 2007). Systematic evaluation (structured interviews with physical assessments) performed by nurses and care teams have shown positive results for identifying various forms of urinary continence (Coffey et al., 2008; Cournan, 2012; Glenn, 2003; Herr-Wilbert, Imhof, Hund-Georgiadis, & Wilbert, 2010; King & Pilcher, 2008; Torres et al., 1998). In a study conducted by Herr-Wilbert et al. (2010), physiology-based bladder assessment algorithm improved the identification of specific forms of incontinence (urge incontinence, neurogenic bladder and retention, or functional incontinence). Evidence-based bowel assessments include establishing the patient's premorbid bowel history, previous and current use of laxatives, last bowel movement date and consistency, and a physical pelvic, abdominal, and rectal examination (Doughty & Jensen, 2006).

Validated screening tools and instruments can improve assessments and identify barriers to correcting dysfunction (urinary or fecal incontinence and constipation). They can also add value to rehabilitation programs when comparing outcomes of continence interventions after specific measures of time. Specific tools have been used to identify urinary continence problems among rehabilitation patients with the Urogenital Distress Inventory 6, the Neurological Disability Scale, the American Urological Association Symptom Index, and the Incontinence Impact Questionnaire 7 (Dowling-Castronovo & Bradway, 2012; Khan, Pallant, Brand, & Kilpatrick, 2015). Tools to identify problems and level-of-bother from bowel dysfunction include the Self-report Fecal Incontinence and Constipation Questionnaire (Wang, Deutscher, Yen, Werneke, & Mioduski, 2014); the Constipation Risk-Assessment Scale (Richmond & Wright, 2006); the Gastrointestinal Symptom Severity Index (Crowell et al., 2015), and the Fecal Incontinence Severity Index (Cameron et al., 2015). As recommended from the literature, use of validated instruments should be further researched for validity in acute rehabilitation populations.

Care Algorithms

Decision aids and algorithms can assist nursing staff through procedural assessments to plan interventions accordingly. Clinical practice guidelines such as those from the Agency for Healthcare Research and Quality (AHRQ, 2009) and the Association of Rehabilitation Nurses (Folden et al., 2002) establish standardized nursing tasks during assessments and interventions designed to optimize continence outcomes. Algorithms provide structure to guide competent, functional knowledge of the genitourinary and gastroenteric systems (Kaplan et al., 2013). Implementation of pathology-guided algorithms for systematic assessment and intervention-design are useful for guiding new or experienced nurses in rehabilitation practice (DuBeau et al., 2010). These care algorithms can inform the strategic documentation needed to evaluate effective continence care. (See Appendix B for an example of an evidence-based algorithm for bowel and bladder management.)

Evidence-based Bladder Interventions

The aim of a RCT conducted by Khan et al. (2015) was to evaluate the effect of individualized treatments to improve urinary symptoms for patients with multiple sclerosis. Initial treatment began with a urinalysis to screen for infection. Bladder patterns were closely tracked in patients of the treatment group using a 3-day voiding and fluid intake chart. Postvoid residual (PVR) volumes were collected three times within 20 minutes after each consecutive void. Renal and lower urinary tract ultrasonography with urodynamic testing was also performed. Bladder training with introduction of behavioral management interventions including pelvic floor muscle training (PFMT) and time-void and/or double voiding was utilized. Intermittent catheterization was utilized if indicated according to clean-technique. Strict bowel programs were followed up for these patients with a continence nurse and medical office making daily rounds to monitor patient responses to continence interventions.

In another mixed-method study conducted by Vaughn (2009), CPGs for the management of incontinence among adults published by the AHRQ were applied to stroke patients in a rehabilitation unit. Interventions included a urinalysis screening test, maintaining a toileting program, pelvic floor exercises, and a daily supplement of 500 mg Vitamin C. Patient outcomes included improved frequency of continent episodes, discharge to community/home, improved bowel and bladder scores as measured by the Functional Independence Measure (FIM), and normalized white blood cell counts in the urinalysis.

Bladder Training

Bladder training or systematic voiding protocols (Thomas et al., 2014) are specific care approaches as determined by patient cognitive status and functional ability. Prompted voiding (PV; where a nurse or nurse aid suggests it is the time to void) works well for patients with cognitive impairment (Leary et al., 2006; Roe, Milne, Ostaszkiewicz, & Wallace, 2007; Thomas et al., 2009). With PV, care staff assumes full responsibility to assist patients to the bathroom around the clock. PV raises the burden of care, but may accomplish goals of continence (DuBeau et al., 2010; Roe, Flanagan, & Maden, 2015). Habit training or timed voiding are approaches for cooperative and mobile patients who are capable of suppressing the urge to void while following a toileting schedule (Coffey, McCarthy, McCormack, Wright & Slater, 2007; Schnelle et al., 2010). The objective is to improve bladder filling capacity while the patient engages their pelvic floor muscles despite a strong urge to void (Doumolin, Korner-Bitensky, & Tannenbaum, 2005). Researchers consistently acknowledge that PV, habit training, and timed voiding are reeffective interventions in the short term only. Few studies have been conducted to evaluate the long-term success of such bladder training approaches (Flanagan et al., 2012).

Hydration

Fluid intake monitoring is a key to ongoing evaluation of bladder function in the patient with urinary symptoms. Documenting measures of fluid intake and urinary output with a posted 24-hour chart in patient rooms is effective for the collaborative team management of continence (Panicker, Sèze & Fowler, 2010). Patients who have daily fluid goals of at least 1,500–2,500 mL not only achieve optimal hydration (National Institute for Health and Clinical Excellence, 2012); respective urinary patterns are easier to predict as well. The balance of intake and output should be closely monitored by the rehabilitation nurse (Jacelon, 2011).

Pelvic Floor Strengthening

Pelvic floor muscle training has been shown to be an effective behavioral therapy for persons with overactive bladder with or without incontinence, weak pelvic floor muscles, pelvic organ prolapse, and neurogenic bladder dyssynergia (Lucio et al., 2011; Tibaek, Jensen, Lindsckov, & Jensen, 2004; Vaughn, 2009). The success of PFMT is limited by cognitive status and intrinsic patient factors including low motivation and willingness to learn new behaviors (Milne, 2004). Individuals with complete spinal cord injury or advanced chronic degenerative neurological conditions (advanced multiple sclerosis, advanced Parkinson's disease, or late stage dementia) are unlikely candidates for this form of treatment.

Evidence-based Bowel Interventions

A practice guideline was published by the Rehabilitation Nursing Foundation for the management of constipation among adults (Folden et al., 2002). Few rehabilitation programs have adopted these guidelines for lack of an implementation strategy. According to the guideline, the most common bowel complaint among rehabilitation patients is constipation. Diarrhea with or without fecal incontinence is also experienced and commonly occurs as a side effect to strong laxatives in previously constipated patients. Rehabilitation nurses must possess skills to identify colon and rectal complications including loss of appetite and nausea, abdominal distension, fecal impaction, ileus, hemorrhoids, rectal tissue damage, and bleeding.

To achieve bowel regularity, nurses must work to implement the least invasive, lowest care-burden bowel program when possible (Coggrave, Norton, & Cody, 2014; Linari, Schofield, & Horrom, 2011). When invasive bowel care is part of the patient's care plan (use of suppositories, digital stimulation, manual evacuation, bottle-enemas, or transanal irrigation), teaching patients and caregivers for at-home living must be included in the intervention (Gardiner and Wallace, 2014). Pryor and Jannings (2005) evaluated a nurse-educational intervention for patients with spinal cord injury and found seven skills (abdominal massage, digital exam, use of suppositories and enemas, manual removal of stool, and hemorrhoid care) to be a successful teaching package for the self-management of bowel care at home.

Constipation and Diarrhea

Immobile and bed-bound patients from acute care units commonly arrive to acute rehabilitation programs with full bowels having received inconsequential low dose docusate. Constipation with alternating diarrhea and fecal incontinence occurs for many rehabilitation patients. Functional bowel changes occur in patients who have had prolonged orthopedic, spinal, or abdominal surgeries, tube feedings with irritating formulas, and in those who consume opiate medications (Roberts, 2008). Nurses should understand the therapeutic and adverse effects of laxatives and antidiarrheal medications as they are commonly prescribed "as needed." Effective management of pharmacologic interventions is another valued competency for nurse-managed bowel care.

Neurogenic Bowel

Neurological conditions (stroke, spinal cord injury, traumatic brain injury) or chronic central or peripheral neurological conditions (multiple sclerosis, Parkinson's disease, spina bifida, and dementias) are closely associated with constipation, fecal incontinence, or both (Coggrave et al., 2014; Lim & Childs, 2013). Rehabilitation nurses must demonstrate skills in assessment and problem identification with a ready set of appropriate interventions to promote bowel pattern regularity. Such interventions include a daily mobility plan (Coggrave, Burrows, & Durand, 2006; Flanagan et al., 2013), fiber supplementation (Bliss et al., 2014; Plummer, 2006; Schnelle et al., 2010), administration of a laxative regimen (Coggrave & Norton, 2010), providing adequate toileting facilities to promote safety and privacy (Coffey et al., 2007), overseeing timed toilet sitting (Velde, Biervliet, Bruyne, & Winckel, 2013), use of abdominal massage (Ayaş, Leblebici, Sözay, Bayramoglu, & Niron, 2014; McClurg, Hagen, Hawkins, & Lowe-Strong, 2011), and administering transanal irrigation or mini-enemas as appropriate (Christensen, Andreasen, & Ehlers, 2011; Tod et al., 2007).

Domain 2: Interprofessional Care

The interprofessional team must be committed to establishing continence and to maintaining an optimistic approach with rehabilitation patients. The work of the team is goaloriented and routinely evaluates patient responses to team interventions. Evidence-based findings from clinical studies have shown successful outcomes where interactions between and instructive (King & Pilcher, 2008).

Staff Sensitivity

The circumstances under which patients arrive to acute rehabilitation settings often involve crisis, loss, suffering, and sorrow. Sensitivity to patient vulnerability requires a supportive team all the while constructively challenging patients to achieve their functional goals (Coffey et al., 2007). In a performance improvement project initiated by King and Pilcher (2008), survey results showed that urinary incontinence had a negative impact on the carer–patient relationship. Sensitivity training for the multidisciplinary team was provided by nurse leaders to improve interactions through flexible, supportive, and nurturing continence care. Increased patient satisfaction ratings and motivation to manage incontinence validated the educational intervention as effective.

Rehabilitation nurses and nurse-aids must acknowledge how incontinence negatively impacts patient quality of life and utilize sensitive language during interactions with vulnerable patients. Though we seek to improve nursing practice through standardized care delivery, no two patients are alike and therefore no single intervention applies to all. A continence philosophy must underpin the daily, relentless work of nurses to achieve continence goals. Successful partnerships with patients depend upon clear communication, flexibility to revise intervention strategies, and a commitment to reach goals.

Team Activities for Continence

The nurse manages the goal for continence through communication and coordination of the continence plan (Chipps, 2011; Jacelon, 2011). Communication and collaboration among the team must be consistent when presenting patients with messages about bowel and bladder management. In a study conducted by Cournan (2012), the roles of the interprofessional team were described with specific continence responsibilities identified. Every clinician of the interprofessional team assumed a role in care planning toward achieving the goal of continence. For the 35 patients in the study, significant bladder FIM score improvement (2.83) was observed ($p < .01$).

In the team's routine management, the physician determines the best pharmaceuticals to optimize bladder continence and bowel regularity. Physical therapists target pelvic floor strengthening and gait-training techniques to safely ambulate to and from the bathroom. Occupational therapists identify optimal devices and strategies for toileting, perineal hygiene, and clothing management. Speech therapists develop communication strategies where patients learn to signal or articulate their toileting needs. The neuropsychologist assists the patient to cope with the struggle of regaining continence. The case manager arranges family training sessions with team members to address management of continence in the home. Continence is thereby a goal of every interprofessional team member.

Daily Standard Work

Toileting support must be a shared responsibility among the entire rehabilitation team. Team goals for continence must reflect an even distribution of the work to follow a patient's toileting program (Ostaszkiewicz et al., 2013). Unlicensed as well as licensed staff must commit to reaching the goal of daily continence and coordinate schedules and therapies for optimal outcomes (White, Gutierrez, Davis, Olson, & McLaughlin, 2012). Although toileting assistance has long been a task delegated to unlicensed staff, this should not be the case among rehabilitation teams. The team reinforces each member's efforts to achieve continence goals. The work of the physical and occupational therapists aligns with the nursing interventions, and the nurse's work reinforces the patient's goals

in therapy. The plan for continence is a synchronized system of interventions (Cournan, 2012). Never should any one team member see the work of toileting as the responsibility of only unlicensed staff. Toileting and continence is a shared responsibility of all.

Domain 3: Leadership

Administrative Support

Rehabilitation program leaders such as medical directors, program administrators, therapy coordinators, nurse managers, and charge nurses must agree that continence for the rehabilitation patient population is a priority. Incontinence containment is costly (Flanagan et al., 2013) as absorbent products and plastics, catheters, and other containment devices can be used quickly. Encouraging administrators to recruit key informal nursing staff leaders to share in the decision making may improve bedside continence care practices. In a study conducted by Wright, McCormack, Coffey, and McCarthy (2006), leadership, staff attitude, and care priorities must be oriented toward continence. Strategies to improve supply usage should be balanced with a team commitment to adhere to toileting schedules to reduce bowel or bladder accidents.

A Continence Champion

In a systematic review of incontinence interventions for stroke survivors, a continence nurse advisor who provided ongoing assessment and clinical support with intervention planning achieved statistical improvement of urinary symptoms and overall patient satisfaction with continence care (Thomas et al., 2009). A continence champion is preferably a nurse with advanced continence training who can provide in-depth and ongoing education to clinical staff, reinforce evidence-based bedside practice, audit outcomes, suggest improvements, and monitor overall quality of care. The continence champion serves as a resource to the interprofessional team to troubleshoot or revise strategies to achieve continence. The continence champion evaluates performance according to standards and collects and interprets data (number of incontinence episodes among various diagnoses, rates of constipation, or fecal incontinence, etc.) (Schnelle et al., 2003; Williams et al., 2005).

In a performance improvement initiative conducted in a subacute rehabilitation health system in Australia, Ostaszkiewicz (2006) sought to enhance the leadership strata of nurses with continence leaders. In this study, 15 volunteer nurses from six nursing wards were trained as ward-based continence resource nurses (WBCRNs). Didactic and direct-supervisory training was provided to educate the nurse volunteers of evidence-based strategies to manage elimination needs of hospitalized patients. The WBCRNs met monthly to discuss current practices in their various wards. From these discussions, the WBCRNs designed two specific improvement initiatives for their health system: (1) improved bowel elimination documentation, and (2) improved education about incontinence management in the home environment for patients and their caregivers. The WBCRNs were available to any direct-care nurse across the health system to aid in the management of continence needs of patients. This leadership model suggests how continence champions in rehabilitation programs can maintain accountable practice for patient elimination needs.

Domain 4: Promotion of Successful Living

Humiliating toileting experiences in an acute hospital stay exacerbate anxiety for patients upon reaching the rehabilitation setting (Coffey et al., 2008). Losing voluntary control over normal elimination patterns has negative effects on the individual's psyche. Physical dependence for assistance with toileting challenges a person's dignity and increases the risk of degrading experiences (Booth, 2013). Such negative experiences become teaching barriers for self-management of elimination needs (Jones & Riazi, 2011; Krogh, Christensen, Sabroe, & Laurberg, 2006). Loss of toileting privacy adds distress to an already anxious patient coping with other functional losses (Coffey et al., 2008).

Patient/Family Education

The education and training of a patient's family and/or friends as caregivers may introduce new barriers for a home-discharge (Akkocß et al., 2013). The burden on family members to assist their loved ones with toileting may create apprehension or discomfort (Cassells & Watt, 2003). The rehabilitation nurse must assess readiness to learn and make a determination about education techniques. The rehabilitation team must identify barriers and risks (path to and size of the home bathrooms) to provide continence training with recommendations for home-safety equipment (grab bars, over-the-toilet commodes, floor-ceiling poles, etc.). The whole team is responsible for preparing patients and families to successfully return home where continence can be maintained (Pryor & Jannings, 2005). Adherence to toileting regimens (PV, habit training, or timed voiding), stool and urine diary keeping, use of containment products, application of skin protectants, and promoting perineal hygiene are elements of caregiver and patient education. Materials for patients

should be clear and easy to understand. They should align with the strategies employed during the rehabilitation stay.

Support Structures for Continence Care

Written Policies

Bowel and bladder care standards should be written into rehabilitation program policies with descript procedures and protocols derived from clinical evidence. Policy should clearly define relevant patient populations and terms, clinical problems, and describe nursing management guidelines to optimize continence. The procedures should describe the roles and responsibilities of the nurse, the interprofessional team members, and the collaborative work necessary to achieve patient continence. Protocols and algorithms for comprehensive assessment, goal setting, and appropriate interventions should be clearly presented. Clinical decisions following strategic algorithms can guide the interprofessional team to formulate care management strategies and troubleshoot barriers to achieve patient continence.

Documentation Systems

Some rehabilitation hospitals have successfully developed their own specialty-focused documentation systems (Cervizzi & Edwards, 1999). However, with the exception of the FIM instrument, the majority of acute rehabilitation settings must be adapted to existing acute hospital-based medical record systems. This limits documentation of continence assessments and interventions (i.e., 2-hour toileting regimens, intermittent catheterization routines, bladder scanning recording, quality of stool consistencies, bowel care routines, and the education involved; Mehdi et al., 2013; Ostaszkiewicz et al., 2008). Bowel and bladder documentation should include detailed functional and physiologic assessments with interventions and outcomes related to continence care (Doughty & Kisanga, 2010; Newman & Wein, 2009). Documentation systems should reflect the procedures and algorithms followed by each interprofessional team member; they should enhance visibility of interprofessional interventions and outcomes among clinical disciplines.

Staff Education and Performance Evaluation

Once established, structured protocols and algorithms become the teaching tools for new team members and evaluation tools for quality of care. Compliance and accountability may be achieved with written policies and care standards (Rahman, Schnelle, & Osterweil, 2014). Rehabilitation program leaders and nurse managers can monitor ongoing quality of continence care and identify opportunities for improvement during performance evaluations. Quarterly and annual reviews of clinical measures such as averaged bowel and bladder FIM gains can reflect overall program performance. Such data can be continuously monitored as continence care practices are improved.

Conclusion

All rehabilitation patients have one thing in common: they have experienced loss. Loss of memory, speech, balance, mobility, and continence—all of which equate to lost independence. Loss of continence and regularity negatively impacts quality of life for inpatients and community dwellers (Wilde, Bliss, Booth, Cheater, & Tannenbaum, 2014). The interactive care philosophy of rehabilitation nurses is one which cultivates hope and fosters resilience to move forward despite acute or chronic illness and disability. Rehabilitation nurses are in a unique position to collectively review clinical evidence and propose a formal standard of practice for bowel and bladder management (Vaughn et al., 2015). Expert rehabilitation nurses who seek to improve practice are the future leaders and writers of a bowel and bladder practice guideline.

This integrative review has proposed evidence-based recommendations for rehabilitation nurses to improve their professional practice as guided by the conceptual framework of the new professional rehabilitation nurse competency model. Evidence-based recommendations from quantitative studies (RCTs, systematic reviews, and mixed-method studies) and CPGs were categorized into the four domains of the professional competency model. By integrating research-based recommendations into our current practice, goals of treating and managing bowel and bladder dysfunction may be achieved more efficiently.

This review was limited by the quality and volume of current evidence. More than half of the studies retrieved were quasi-experimental or descriptive study designs. Interventions were largely based upon empirical evidence or expert opinion. Few studies among acute rehabilitation patients were found, with only two meeting the standard for RCTs. The majority of the quantitative studies evaluated bowel and bladder function separately. Continence interventions and outcome measures were observed to be highly variable throughout this literature review. Systematic reviews evaluating toileting regimens were inconclusive, especially for neurological patients.

Ongoing research is needed regarding these recommended continence interventions for acute rehabilitation patients. As the body of evidence grows, rehabilitation nurse experts are presented with opportunities to formalize guidelines for continence care. A partnership with a national nursing organization may be the best approach toward publishing bowel and bladder practice guidelines for rehabilitation nurses.

Key Practice Points

- The interprofessional team emphasizes role-based continence interventions with shared work to reach goals.
- Nurse-led interventions include evidence-based clinical assessments with use of validated instruments following step-wise algorithms derived from clinical practice guidelines.
- Leadership recommendations call for administrator support and allocation of resources for continence care and also to empower select bedside nurses as continence champions.
- Nurse–patient education and caregiver training target the promotion of successful living.

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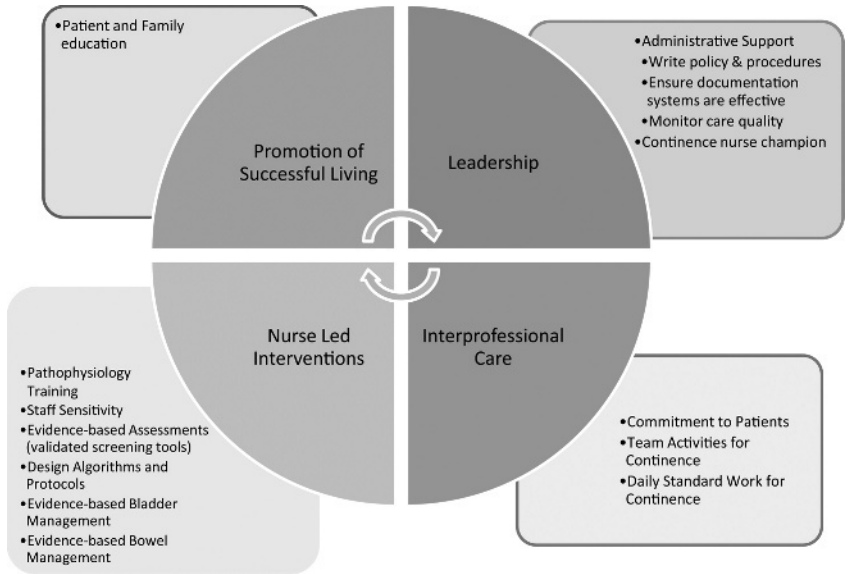
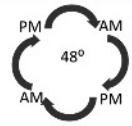
Appendix A: Adaptation of the Competency Model for Professional Rehabilitation Nursing Practice pertaining to continence care. Note. Continence care model adapted from "The Competency Model for Professional Rehabilitation Nurses" by Vaughn et al., 2015, Rehabilitation Nursing Journal, 41, p. 35.



Appendix B: Sample bowel and bladder protocol for the rehabilitation nurse

Bowel Management	Systematic assessment & interview	Bladder Management
Abdominal/Anorectal/Pelvic Exam		Abdominal/Genitourinary/Pelvic Exam
Constipation Diarrhea Fecal Incontinence New Ostomy	Problem identification	Urinary incontinence Urinary urgency/frequency Foley/Device use Urinary retention
Identify primary and secondary diagnoses Define pathophysiology of barriers • Contributing medications • Physiology involved • Infectious disease process Identify extrinsic/functional barriers (equipment unavailable, unsafe transfer status) Identify intrinsic factors (motivation, insight, memory , cooperation, communication)	Determine etiology & pathophysiology of problems	Identify primary and secondary diagnoses Define involved pathophysiology of barriers • Contributing medications • Neurologic physiology involved • UTI present Identify extrinsic/functional barriers (Foley in place, unsafe transfer status, equipment unavailable) Identify intrinsic factors (motivation, insight, memory , cooperation, communication)
Are symptoms of infection present? (loose stools or diarrhea with incontinence) Obtain stool sample and culture	Rule out infectious process	Urinalysis and culture if indicated (urinary urgency/frequency with foul smelling, cloudy, or discolored urine) Obtain urine sample for urinalysis and culture
Defecation Diary & Fiber Management Develop a plan with laxatives and fiber	72 hour Monitoring: Pattern Plan Predict	Bladder Diary & Fluid Management Establish toileting schedules, communication agreement, and how to use equipment Collect PVR 15 min post void x 3 consecutive voids Coordinate with physiatrist to diagnose
Goal: Daily or EOD--*passable stool* 48 hour cycles of evaluation  Monitor frequency/consistency of bowel movements: Develop a daily plan	Patient goal setting Evaluate Reevaluate Problem solve Recruit continence champion support	Goal: Continence or self-managed containment 24 hour cycle of evaluation – 4 hour increments  Monitor urge, frequency, volumes and fluids Treat UTI/Initiate ICP training Bladder volumes DNE 400-500mL/void Plan strategies for overnight bladder management
Dietary & supplemental fiber Scheduled & PRN laxatives Antidiarrheal Probiotics	Physiatrist & pharmacologic support	Fluid management and cut-off window Dietary restrictions to reduce irritants Antimuscarinics for OAB/UI Cholinergics for Urinary retention Alpha Blockers for outlet obstructions (BPH)
PT-Pelvic floor and balance/gait OT-toileting aids, devices, strategies	Team involvement	PT-Pelvic floor and balance/gait OT-toileting aids, devices, strategies

Note: (Jantl, Newman, and Collig, 1996; Hunskaar, 2005; Madersbacher, 2005; Deveaux and Galandiuk, 2006; Chaliha and Khullar, 2008; Kujawa and Betts, 2008; Wishin, Gallagher and McCann, 2008)