FACILITATING EVIDENCE-BASED PRACTICE IN A CHRONIC CARE SETTING

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IN A CHRONIC CARE SETTING

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ABSTRACT

The current health care environment, with its dual emphasis on quality care and cost containment, has created an urgency for health care practitioners to have timely access to the best evidence to support decision-making in their areas of practice, whether in policy development or in direct service delivery.

The purposes of this project were to take a broad look at the issues surrounding the facilitation of evidence-based practice, to focus on the specific issues related to evidence-based practice in a chronic care setting, and to demonstrate one method of bringing evidence to practice in the form of an educational intervention. A review of the literature related to research utilization and evidence-based practice revealed barriers and facilitators of both processes in a variety of health care settings. Numerous models to guide the implementation of these processes were described in the literature. However, none of the literature accessed in the review focused specifically on implementing evidence-based practice in a chronic care setting. Key considerations in implementing evidence-based practice were identified as (1) access to relevant evidence from the literature; (2) resources available in the practice environment; (3) expertise of the practitioners; and (4) patients' preferences.

A review of selected literature related to adult education was carried out to ensure that the planned educational intervention not only had content that was evidence-based, but also integrated the principles of adult education into its methodologies. Concepts related to learning styles, critical thinking, and motivation of adult learners were key to the design of the intervention. Management support, available resources, front line staff and the work environment were considerations in planning and piloting the staff education.

The Iowa Model for research utilization was chosen to guide the process of bringing evidence to practice to address the clinical question of how to prevent dehydration in the frail elderly population. The model provided a systematic approach to defining the clinical question, accessing and critiquing the relevant literature, deciding on sufficiency of the evidence, and developing and piloting interventions. Evaluation of the pilot project, and implementation

throughout the rest of the facility are included in the plans for the future.

This project has relevance for clinical leaders and educators in chronic care in that it explores some of the barriers and facilitators of evidence-based practice in that setting, and provides a concrete example of an educational intervention to promote the integration of evidence into practice. It also identified gaps in the research literature related to care of the chronically ill that can point the way for future study in that area.

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Chapter 1

Introduction

Facilitating the transfer of knowledge to practice, particularly new knowledge generated from research in a particular field is a challenge for every educator. What are the factors that influence the success or failure of this process?

In the health care practice environment, research utilization and evidence-based practice are terms that are used in the discussion of the transfer of new knowledge to practice. This project has grown out of an interest in how to best facilitate evidence-based practice (sometimes called "best practice") in a chronic care setting in Ontario.

There has seemingly always been a lag time between research results being published, and their application in the practice of health care professionals (Carroll et al., 1997; Gersten & Brengelman, 1996; Haynes, Sackett, Gray, Cook, & Guyatt, 1997; Kitson, 1999; Lomas, 1993; Mackay, 1998; Thomson, 1998; Waddell, 2002). Some reasons for this may include that curricula for the training of health care practitioners cannot keep pace with the new knowledge being generated, or that resources for continuing education in many workplaces are scarce (Carroll et al., 1997; Gersten & Brengelman, 1996; Richardson, Moreland, & Fox, 2001; Sackett & Parks, 1998; Schulz, 1999). However, a number of changes in the current health care environment are coming together to create pressure or urgency to reduce this lag time. Contributors to this situation are:

Changes in the definition of chronic care as a result of the recommendations of the Health Services Care Restructuring Commission in Ontario (2000). Chronic care at one time was

considered an endpoint in the care continuum, designed for those clients who required more care than a nursing home could provide. The current definition indicates that chronic care is designed for those clients discharged from acute care who continue to require a higher level of care than can be provided in the home or in long term care. Lengths of stay in chronic care are targeted at 60 to 90 days, with discharge planning being an important part of the care planning (Hospital Report Research Collaborative, 2001). It follows, then, that the staff caring for these patients require knowledge and skills beyond what was previously required to provide care for patients who are more acutely ill, and have active discharge planning goals. Examples of the new skills that need to be acquired are technical skills to manage a variety of parenteral therapies, complex respiratory therapies, and pain management.

More informed consumers. Consumers of health care today are more aware of and able to evaluate the care that they receive. They are aware of the choices that they have, and have high expectations of the professionals from whom they seek care. Many present day consumers of health care have access to information from the media, including electronic media, and expect that their caregivers will have current knowledge.

Health care as a commodity, rather than a service. Because the resources available in health care are limited, there is greater emphasis on quality, productivity, and efficiency - terms that only a few years ago were limited to use in business. Professionals working in health care need to be informed of and to implement best practices to continue to receive adequate funding. Consumer choice and greater access to alternative therapies have also contributed to this new paradigm in health care.

The knowledge worker. Related to the previous point is the concept of the knowledge worker -

the health care professional who works to his or her full scope of practice, and continues to learn to meet the ever-rising expectations of the consumer and the health care system (Lau & Hebert, 2001; Schulz, 1999).

Adding complexity to this scenario are, (1) the continuous technological advances within health care that demand financial and human resources, but soon become a part of what the consumer expects from the system, and (2) the growing number of seniors with longer life expectancies and potential future needs for health care (Statistics Canada, 2001). These factors combine to create an environment within which health care professionals are expected to deliver a high quality of care, based on current evidence or best practice, with limited resources, to a consumer group with higher than ever expectations.

There were no studies found through the literature search discussing the extent that evidence-based practice is being applied in chronic care settings. A recent study carried out in the province of Ontario found that evidence was being used in a limited way in long term care settings. Some possible barriers to evidence-based practice in this setting were identified as:

- sparse evidence related to caring or rehabilitative interventions
- clinicians' lack of awareness of results
- studies reporting conflicting results
- demands of practice settings (no time to learn new things)
- accessibility of results
- interdisciplinary teams of caregivers with differing perspectives and approaches

(Richardson, Moreland & Fox, 2001).

Some of the strategies designed and implemented to facilitate research dissemination and

evidence-based practice are:

- the teaching nursing home concept (Mezey & Lynaugh, 1989)
- development of clinical practice guidelines (Fields, 2000; Mentes, 1998; Weinberg, 1995)
- courses to improve the critical thinking and appraisal skills of health care professionals (Kessenich, Guyatt, & DiCenso, 1997; Sackett & Parks, 1998)
- development of resource centres/centres of excellence (Chambers, Goldblatt, Campbell, & Kazda, 1995; Montemuro & Mohide, 1997)
- leadership and role-modelling by clinical nurse specialists and clinical educators (Holland, 2001; Mackay, 1998; Stetler, et al., 1998).

Researchers and clinicians, from the health disciplines, concerned with the process of research utilization and evidence-based practice have designed process models to assist professionals to increase the uptake of new knowledge into practice (Brown & Rodger, 1999; Stetler, 1994; White, Leske & Pearcy, 1995).

Purposes of the Project

The purposes of this project were to take a broad look at the issues surrounding the facilitation of evidence-based practice, and then to focus through the use of a model, on the specific issues related to facilitating evidence-based practice in an institutional chronic care setting.

The model was used to guide the process to address the clinical question of how to prevent dehydration in the institutionalized frail elderly. A curriculum module based on evidence

from the literature and principles of adult education was developed to illustrate one type of intervention to facilitate application of new knowledge to practice.

The scope of this project does not include evaluation of the educational interventions, or the outcomes as evidenced in patient care. Evaluation will be the subject of future work in this area.

Chapter 2

Review of the Literature

To fulfill the purposes of this project, current literature in the areas of research utilization, evidence-based practice and adult education were reviewed. The literature related to research utilization and evidence-based practice provided definitions, identified barriers and facilitators to each of these processes and proposed a number of models designed to assist the transfer of relevant information from research into practice. The literature related to adult education provided principles and techniques for delivering education to adults and identified a number of factors to be considered when developing learning tools for adult learners, and facilitating the desired changes in practice. This chapter will discuss the literature that was reviewed in each of these areas and how it contributed to the development of an educational intervention.

A focused literature search was conducted related to the clinical question of how to prevent dehydration in frail, institutionalized older persons. The search strategies and data bases used will be detailed in Chapter 3 as a step in the process of bringing evidence to practice.

Research Utilization and Evidence-Based Practice

Definitions.

The concept of evidence-based practice originated in the field of medicine in an effort to promote clinical decisions that recognized available evidence from research. Evidence-based medicine has been defined as "the ability to access, summarize and apply information from the

literature to day-to-day clinical problems" (Guyatt & Rennie, 1993). Another definition, although more complex, indicates the many steps or processes involved in evidence-based practice. According to this group, evidence-based practice is "the collection, interpretation, and integration of valid, important, and applicable patient-reported, clinician-observed, and research-derived evidence. The best available evidence, moderated by patient circumstances and preferences, is applied to improve the quality of clinical judgements and facilitate cost-effective health care" (McMaster University Evidence Based Medicine Group, as cited in Tanner, 1999, p.99).

Stetler et al. (1998) examined the concept of evidence-based practice in the context of nursing practice. This definition explains that "evidence-based nursing deemphasizes ritual, isolated and unsystematic clinical experiences, ungrounded opinion and tradition as a basis for nursing practices...and stresses instead the use of research findings, and as appropriate, quality improvement data, other operational and evaluative data, the consensus of recognized experts and affirmed experience to substantiate practice" (p.48). By this definition, Stetler supports the position that evidence comes from a variety of sources, including the results of research. She also acknowledges the contributions of other key factors that contribute to a professional's clinical decision-making. These include one's philosophical or conceptual basis for practice, the regulatory environment of one's practice, and the traditions of both nursing and the practice setting.

Clarke (1999), in an editorial comment, challenges nurses to find the balance between excellence and relevance, supporting the belief that evidence, and its application, need to be considered in the context of the practice environment.

Each of these definitions confirms that the "evidence" contributing to clinical decisions is multifaceted, including use of relevant research evidence, the knowledge of expert clinicians, the context, patient-specific information, and ultimately patient preference or choice.

DiCenso, Cullum and Ciliska (1998) created a model to summarize and illustrate the interdependent factors involved in evidence-based clinical decision-making; evidence from research, the expertise of the practitioner, resources available in the practice environment, and the preferences of the patient or population being served. This model is a helpful tool when considering the application of evidence to practice in a specific context.

Barriers and Facilitators to Evidence-based Practice.

Guyatt and Rennie's (1993) definition identified several steps in the clinical decision-making process of professionals - accessing, summarizing, and applying information. The skills and resources required for each of these steps can be facilitators, if present, or barriers, if absent in a clinical context.

The skills and resources necessary to *access information* include:

- the skill to define the specific clinical question or issue for which information is to be sought
- the ability to decide whether one's knowledge base related to that particular issue is sufficient, or needs to be updated or complemented
- the ability to identify sources of relevant evidence and information through focused literature search, and
- timely access to the literature through online publications, hard copy journals, etc.

In a study conducted by Richardson et al. (2001), some of the reasons given for non-use of evidence from the literature in practice were related to the inability to access information. These included clinicians' lack of awareness of research that may assist decision-making, and lack of access to the literature. A third reason given was that in situations where there were attempts to access relevant literature, the results of a search were sparse, and in some cases, of poor quality. Haynes et al. (1997) discussed the dilemma created by a mismatch between the research evidence and the clinical circumstances facing the clinician.

One of the creative responses to the awareness issue has been the concept of the teaching nursing home (Mezey & Lynaugh, 1989) or clinical teaching unit (Montemuro & Mohide, 1997), where researchers and front-line clinicians formed a collaborative alliance with a view to conducting studies based on clinical questions generated in the setting, and then disseminating the results for application and evaluation within that setting. By involving frontline staff in the development and implementation of studies, their awareness is raised, and their commitment to the results is increased. Dawson (1998) described how the establishment of a collaborative research program in long term care contributed to both awareness of and access to research evidence in that setting.

Other strategies that have been implemented to improve access to the literature, are the establishment of resource centres, both actual (Chambers et al., 1995) and virtual (Gagliardi, 1996) which clinicians can access to request or conduct literature searches, and to receive assistance in obtaining relevant publications.

The process of *summarizing information* involves the skills to:

- critically appraise literature to select the evidence that is of the highest quality,

and most appropriately applied to the situation at hand

- understand the criteria used to decide the quality of research results
- make a decision when the research results are inconclusive or conflicting.

Again, the study by Richardson et al. (2001), identified that some clinicians did not use evidence in practice because the available studies reported conflicting results. Another reason that is somewhat unique to the rehabilitative, chronic and long term care settings was that the evidence contributed from different disciplines seemed at times to be in conflict, which in turn resulted in conflict at the interdisciplinary team level.

Strategies to address some of these issues included the publication of clinical practice guidelines, or consensus guidelines by panels of experts who have reviewed the literature and other sources of evidence in a selected area, critically appraised the available evidence, and published the results as guidelines for practitioners. Fields (2000) stated that "ideally, guidelines are the distillation of a large body of knowledge into a convenient, readily available format"(p. 59). The majority of this work was done in the disciplines of medicine and nursing. Examples in medicine are clinical practice guidelines for the management of diabetes, use of anticoagulants and the management of chronic pain. Examples in nursing are clinical practice guidelines for the prevention of falls, prevention of pressure ulcers and the management of incontinence. The University of Iowa School of Nursing has used funding for research to develop a series of clinical protocols that provide research-based practice guidelines to assist nurses working in gerontology (Titler & Mentes, 1999).

Another important resource is the Cochrane Collaboration, which systematically surveys literature in selected areas, critically appraises the studies, and publishes meta-analyses based on

the studies meeting the criteria for selection. The meta-analyses provide a mechanism to evaluate the strength of evidence in a particular area by combining the results of comparable studies that have been conducted in that area. A third useful resource that has become available recently is the publication of evidence-based journals which provide critiques of selected research articles written by experts in the field (Evidence-based Medicine, Evidence-based Nursing, Evidence-based Mental Health). McKibbon and Marks (1998) state that the value of these journals lies in the fact that they include only studies that are of high quality, and provide the key information from the research in a concise format (p. 69).

The *application of evidence* from the literature to clinical decision-making is a complex process, as indicated in the McMaster group's definition (Tanner, 1999), that is impacted by the resources available within the clinical context, and the preferences of the patient or client. The process becomes even more complex if the desired outcome is to create an environment within which every clinician's practice is rooted in an evidence-based philosophy. Kitson (1999), in her discussion of research utilization states "there is scant acknowledgement of the complex interactions, interdependencies, power struggles, and general confusion that characterize most clinical settings" (p.18).

To this point, the discussion of barriers to evidence-based practice has been limited to lack of access to resources, or the inability of the professional to critique the available information. However, creating an environment that facilitates evidence-based practice necessitates a thorough assessment and understanding of the context - human and financial resources, and sociopolitical factors. Lee, Chang and Mackenzie (2002), Palmer (1997), Royle and Blythe, (1998), and Stratman, Vinson, Magee and Hardin (1997), each emphasize the

importance of administrative support in the creation of an environment open to change. Eisch, Colling, Ouslander, Hadley and Campbell (1991) discuss the negative impact that a lack of trust in the leaders of a change initiative can have on the outcome. The study conducted by Palmer (1997) identified lack of time, and staff feelings of disempowerment as significant barriers to the implementation of evidence-based practice. Phillips and Van Ort (1995) and Lee et al. (2002) state that inattention to the sociopolitical factors affecting staff behaviours can create significant barriers to change. Kayser-Jones, Schell, Porter, Barbaccia and Shaw (1999) and Lee et al. (2002) identify insufficient staff and insufficient supervision as barriers to the creation of an environment positive to change. Gerrish and Clayton (1998) cite lack of time, inadequate resources, and lack of support to change practice (particularly from physicians) as barriers to the implementation of evidence-based practice. Dubouloz, Egan, Vallerand and Von Zweck (1999), in examining the perceptions of occupational therapists, discovered that to succeed at educating for evidence-based practice, one must acknowledge and build on what the practitioners value as their knowledge base: professional training, clinical experience, input from colleagues and clients, and information from continuing education workshops (p.452).

For all the reasons cited in the literature, it is difficult for an individual working in the "front lines" in a chronic care setting to access the literature, critically appraise it, apply the relevant information, and evaluate effectiveness. As a result, care activities can become routinized, and unquestioned over time. One solution to this problem is to have a "mediator" or "facilitator" whose job it is to provide the leadership through the transition to an evidence-based practice philosophy. This requires someone who has the time and the skills to assist front line staff to formulate clinical questions, research and appraise the available evidence, determine its

relevance to the specific patient population, formulate recommendations for change as required, and present the information in a way that is meaningful and practical to front line staff.

In addition to clinical knowledge and expertise, this facilitator requires an understanding of the characteristics of adult learners, and what learning activities have been successful in effecting changes in clinical practice. Thomson (1998) in her article addressing the gap between nursing research and practice, presented a summary of the literature regarding types of interventions that have successfully (or unsuccessfully) promoted behavioural change in health professionals. Among the "consistently effective strategies" were education outreach visits, reminders, multifaceted interventions, and interactive educational meetings (p.7). This summary, along with the following literature, influenced decisions in the design of the educational intervention presented in this project.

Adult Learning

Principles.

The principles of adult learning, first proposed by Malcolm Knowles (1980), indicate that adults learn if they can participate; if they can apply the learning; if the learning has meaning or purpose; if there is an environment that facilitates learning; and if the learning builds on their previous knowledge and/or experience. Knowles (as cited in Brundage, Keane & MacKneson, 1997) also designed a program planning model that integrated these principles, and is helpful in constructing a program of learning, whether short or extended. The steps involved in his model are climate setting, needs assessment (awareness of expectations), objective and goal-setting, structure and strategy, implementation/action, and evaluation to provide guidance for change.

Learning Styles.

It is recognized by those involved in a teaching/learning experience that individuals have different learning styles. Kolb (1976) developed what he described as a learning cycle with four points of entry, and proposed that individuals can enter the learning cycle at different points depending on what is being learned, and on their own learning style. These points of entry are reflective of different learning styles. The four, according to Kolb are concrete experiences, reflective observation, abstract conceptualization, and active experimentation. It is acknowledged that all persons have the ability to learn in each of these styles, but usually have a strength in or preference for one or two of the four. The work of Gardner (as cited in Lazear, 1991), in his theory of multiple intelligences, explains the importance of using a variety of teaching strategies in order to engage as many learners as possible in a planned learning experience. His seven intelligences are identified as verbal/linguistic, logical/mathematical, visual/spatial, body/kinesthetic, musical/rhythmic, interpersonal and intrapersonal. Griffin (1997) described the concept of holistic learning, which again identified that people learn in different ways, and that it is important to see the learner in a holistic way in order to provide learning experiences that are meaningful and useful.

Critical Thinking.

Mezirow stated that "critical thinking is a crucial part of adult learning" (1990, p.5). It has also been seen in previous discussions that critical thinking is an important component of evidence-based practice. The ability to reflect on experiences and practices and understand the reasoning and values that underpin beliefs and behaviours are necessary antecedents to any

change in thought processes or behaviours. Brookfield's work on becoming a critically reflective teacher (1995), and developing critical thinking skills in students (1991) stresses that the facilitator of adult learning needs to integrate both critical thinking and reflection into any planned teaching/learning experience. Marshall, Jones, and Snyder (2001) state that "critical thinking or clinical decision-making requires the ability to recognize problems, set priorities, and take appropriate action" (p.79). The goal of an educational intervention to promote evidence-based practice, then, is to bring evidence to the critical thinking process so that decisions made related to priorities and actions are the best for any given patient in his/her context.

Motivating Adult Learners.

Knowles (1980), within his principles of adult education, described some of what motivates adults to learn - the ability to participate in learning activities that have meaning, and that have immediate application in their life or work. Bohlin and Milheim (1994) constructed a model based on their understanding of how adults are motivated to learn. The model proposed that if certain characteristics of the learner are combined with appropriate instructional strategies, the outcomes for the learner will be "attention, relevance, confidence, effort, performance, and satisfaction"(p. 52). This theory supports and builds on the principles of adult learning, reinforcing that learning depends on the learner, the context of the learning, and the strategies used by the instructor/facilitator. Farquharson (1995) advocated that "group teaching is particularly helpful in situations in which learners have to achieve higher order abilities that involve the evaluation, synthesis and application of ideas"(p.98). Group learning would be an appropriate strategy to promote evidence-based practice, as it would provide participants with the

opportunity to reflect on new information, question assumptions, and hear other perspectives as a particular clinical problem or issue is discussed.

Summary from Adult Learning Literature Review.

In summary, the principles derived from the literature review that have guided the development of an educational intervention to support evidence-based practice are that (1) research utilization is only one aspect of evidence-based nursing practice; (2) barriers and facilitators to evidence-based practice must be recognized and acknowledged in the design of an effective intervention; (3) the design of an educational intervention should be guided by what is known about how and why adults learn, and what strategies work best to promote changes in practice; and (4) one must be a reflective and critical thinker in order to facilitate the development of these skills in others.

Models to Facilitate Research Utilization and Evidence-based Practice

The development of an educational intervention to promote evidence-based practice related to a specific clinical problem is one small piece of a larger process of bringing evidence to bear on day-to-day clinical practice. The literature contains descriptions and applications of a number of models that have been developed over the years to provide a systematic way of utilizing research evidence (Brown & Rodger, 1999; Estabrooks, 1999; Holland, 2001; Stetler, 1994; Titler & Mentes, 1999). Each of the models included steps related to determining a clinical question, reviewing the literature for evidence, assessing the available evidence for its relevance to the question and the context, planning interventions to facilitate change as

necessary, implementing interventions, and evaluating outcomes. The model chosen for this project was the Iowa Model (Titler & Mentes, 1999), designed by members of the Faculty of Nursing at the University of Iowa. This particular model has been used successfully to introduce best practice into a variety of settings, and the process, along with clinical practice guidelines, has been widely published and used by other practitioners working toward this goal. The model is comprehensive, proposing six or seven steps depending on the quality and relevance of the available research evidence. The steps are (1) identification of a problem- or knowledge-focused trigger, (2) assembling the relevant literature, (3) critiquing the literature, (4) determining the sufficiency of the evidence, (5) if the evidence is insufficient, designing a clinical study to add to the relevant data, (6) if the evidence is sufficient, identifying desired outcomes, designing interventions, conducting a pilot, and evaluating and modifying as necessary, and (7) evaluating outcomes after full implementation (Brown & Rodger, 1999, p.14). The next chapter details how this model was used to guide this project to encourage evidence-based practice with respect to the clinical problem of managing hydration in the chronically ill elderly in a complex continuing care setting.

Chapter 3

Addressing a Clinical Problem with a Model for Evidence-based Practice

> "Dehydration is the most common fluid and electrolyte disorder in both the long term care setting and among at-risk community dwelling seniors" (Weinberg, 1995, p.1552).

This chapter describes the process undertaken to address the specific clinical problem of dehydration among institutionalized older persons in a chronic care setting through the development of an educational intervention (learning module and tutorial) in the context of the Iowa Model to implement evidence-based practice. The sections of the chapter are defined by the steps in the Iowa Model as identified at the end of Chapter 2.

The Setting

The setting for this project was a 250-bed chronic care hospital organized into five specialty patient care programs to meet the needs of the population it serves. The five programs are the Behavioural Health Program, the Community Services Program, the Complex Continuing Care Program, The Palliative Care Program, and the Rehabilitation Program. All are inpatient programs except the Community Services Program. The majority of patients are seniors (greater than 65 years of age) with complex medical and/or behavioural issues, whose care needs are addressed by an interdisciplinary team of professionals, and coordinated by Case Managers.

The Behavioural Health Program was chosen as the pilot program for the project for two

major reasons. The first was that this program demonstrated a relatively high prevalence of dehydration when compared with the other programs across the hospital. As a result, the management of hydration was identified as a priority in their continuous quality improvement program. The second reason was that the program was developing a clinical pathway to guide the assessment process for new admissions to the program, and although the assessment of hydration was identified as an important component of this process, there were no existing tools to facilitate the assessment. The task group formed to develop a protocol was staffed by members of the interdisciplinary team from this program.

The patients of the Behavioural Health Program are admitted in the moderate to advanced stages of various types of dementias with behavioural issues that render them unmanageable in a home or long term care environment. They are assessed, and then care plans are formulated by the interdisciplinary team with a goal to reduce difficult behaviours to the point that discharge to another setting could be considered.

The nursing staff of the hospital are regulated health professionals - primarily diploma prepared Registered Nurses (RNs) and Registered Practical Nurses (RPNs) - whose average age is over 45, and many of whom are long time employees of the hospital. The care delivery model is case management, with each nurse case manager having a caseload of fourteen to eighteen patients. The hospital is in the process of preparing RNs and RPNs to function within their full scopes of practice. The environment will be discussed in greater detail as it relates to the development of the educational intervention.

Identification of Problem-or Knowledge-Focused Triggers

The clinical issue of prevention of dehydration was identified as the result of two triggers. The first was the report of the increasing prevalence of dehydration in an institutional scorecard. This facility uses the Resident Assessment Instrument-Minimum Data Set version 2.0 (RAI-MDS) data collection instrument for collecting and reporting patient care data as required by the provincial government. A number of clinical indicators were selected from this data, and are presented internally in the form of a scorecard on a quarterly basis. The scorecard presents comparative data from the eight quarters leading up to and including the current quarter in the form of line graphs. The selected clinical indicators are used as one method of monitoring changes in the institutional patient profile, and also as a method of identifying potential areas for quality improvement. It was noted in the first quarter of 2001-2002 that the prevalence of dehydration had been increasing over the previous three quarters, from a low of three percent to a high of eight percent. The second trigger was that on two occasions, when patients were transferred to an acute care institution in medical crisis, the receiving institution assessed the patients to be dehydrated when this had not been identified prior to transfer by the sending facility. The triggers suggest both a problem focus (a higher than desired prevalence of dehydration) and a knowledge focus (staff failing to recognize dehydration as a possible precipitating factor of other medical complications). Recognition of the issue led the clinical staff to reflect on why this was occurring at this time. Was it a changing patient population? Were staff aware of the signs and symptoms of dehydration in older persons? Did the absence of formal clinical practice guidelines to address the problem contribute to the seeming lack of knowledge or awareness?

This facility prides itself on the care that is provided to its patients, and strives to be a leader in the provision of quality care to older persons with chronic illnesses. It was believed that the prevention and management of dehydration through the application of current best practice would not only ensure the best care for patients, but would also contribute to both the risk management and quality improvement programs.

The selection of this issue as a project focus was also supported by the criteria used to select quality improvement projects. These criteria advocate the selection of issues that deal with high risk, high volume, high cost, and/or resource intensive issues (Wilson, 1999). The prevention and management of dehydration meets all of these criteria. The fact that dehydration is a high risk issue is reflected in the quote that opened the chapter. The patients of this facility are elderly, suffer chronic illnesses that affect both physical and cognitive functioning, and are highly dependent on staff for assistance to meet daily needs. The institutional environment can also contribute to the risk of dehydration due to warm conditions in the summer months, and dry conditions in the winter. By instituting measures to manage the risk of dehydration, the care of a large number of our patients could potentially be improved (i.e. high volume). Failure to prevent or manage dehydration can result in high costs to both patients and staff. The development of dehydration precipitates complications such as confusion, urinary tract or lung infections, loss of functional capacity and skin breakdown (Hoffman, 1991; Mentes, 2000; Mentes & Buckwalter, 1997; Weinberg, 1995). Each of these requires an increase in the number of therapeutic interventions, and contributes to a prolonged stay in hospital or transfer to an acute care facility. The cost to the hospital and system is in increased staff time, and increased use of medical supplies and medications. Prevention of dehydration requires fewer resources than does the

treatment for a patient who has become dehydrated.

To improve the care related to hydration for patients, the staff need to be able to identify those at risk for dehydration and to select the best interventions based on individual needs and characteristics. Although nurses are taught the cardinal signs of dehydration in their training (decreased skin turgor, dry mucous membranes, concentrated urine, dark periorbital circles), many of these are not reliable signs when assessing chronically ill older persons (Mentes, 1998). Also, as a result of a day to day focus on behaviour management, particularly when working with those with cognitive impairment or psychiatric illness, nurses and physicians may fail to recognize or look for a physical cause of challenging or changing behaviour.

Assemble Relevant Research Literature

Although the Iowa Model specifies that one should assemble relevant *research* literature, some valuable resources could potentially be missed if the search for "evidence" or "best practice" is restricted to published results of research as discussed in the previous chapter. Numerous articles have been written detailing the problems of conducting research among vulnerable populations such as the elderly residents of chronic or long term care facilities (Eisch et al., 1991; Palmer, 1997; Phillips & Van Ort, 1995; Richardson, et al., 2001; Sherrell & Buckwalter, 1997). As a result, there are few studies published using samples from this population with outcomes that could be classified as Level A evidence, that is, evidence derived from randomized controlled trials. It should also be noted that much of the research that has been done to study dehydration in the elderly has been conducted in long term care rather than chronic care facilities. This puts into question the generalizability of the results to the chronic

care setting. In this case, the outcomes of less rigorous research combined with expert knowledge and the clinical experience of staff, can still provide some useful guidelines in addressing a clinical problem in this population.

To find the relevant literature, a search was conducted on Medline (1995-2001) and CINAHL (1990-2001) using the following key words - dehydration, elderly, institutionalized and prevention. Articles were included if they addressed the topics of prevention of dehydration, assessment of hydration status, risk factors for dehydration, and/or interventions to promote normal hydration. Articles were excluded if they had no references, if they addressed treatment of dehydration, if they were not published in English, or if they were not available through the hospital's library network, which includes the local university Health Sciences Library. The search, combined with the review of article reference lists, resulted in some primary research articles, some review articles, some articles that could be classed as literature, and a research-based clinical protocol.

The research-based clinical protocol (Mentes, 1998), provided some excellent tools and guidelines as a result of the synthesis of the evidence available at that time, including research, and knowledge contributed from the practice of experts. References were classified as research, literature, or national guidelines and the practice guidelines contained in the protocol were referenced. Some of the articles sourced by the literature search were also referenced in this protocol. A protocol such as this is a facilitator in the pursuit of evidence-based practice, as discussed in Chapter 2. It provided a source of articles already critiqued, and a starting point on which to base facility-specific guidelines and protocols.

Articles that were sourced in addition to the clinical protocol are summarized in Table 1.

Research articles are presented first, and in order of the strength of study design combined with relevance of results. Articles that do not contain reports of research, are classed as literature, and follow the study reports.

Table 1

Results of the Literature Search

Author	Article type	Method	Sample population	Findings/Discussion
Simmons, Alessi & Schnelle (2001)	Research	Controlled clinical intervention; sample randomized into intervention and control groups	63 incontinent residents from 2 community nursing homes	Verbal prompting alone was effective to improve the intake of cognitively impaired residents; preference compliance was needed to increase the intake of those less cognitively impaired.
Gaspar (1988)	Research	Observation of intake and output for 2-24 hr. periods within 1 week. Additional data from charts. Multiple regression analysis	67 subjects from 2 nursing homes: inclusion criteria - no fluid restriction - not tube fed - over 75 years of age	Seven variables identified that put residents at higher risk of dehydration: age of subjects, number of ingestion times per day, level of dependency (semi-dependent most at risk), speaking ability, sex, visual impairment, and water in reach or not.
Gaspar (1999)	Research	Repeat of above study. Observation of intake and output for 2-24 hour periods to record: - food and fluid intake - ingestion behaviours - level of function	Convenience sample of nursing home residents. Inclusion criteria - no fluid restriction - not tube fed - over 70 years of age	Subjects with inadequate fluid intake were: older, semi-dependent for eating, few ingestion sessions per day, intact speech, did not drool, had inadequate nutrient intake.

Author	Article type	Method	Sample population	Findings/Discussion
Adams (1988)	Research	Cohort study Observed and recorded intake and output of institutionalized and non-institutionalized groups x 3 days and compared	Convenience sample of 30 institutionalized and 30 community-dwelling people aged 65-85 Exclusion criteria: - cognitive impairment - major disabilities - diabetes	Institutionalized older persons had significantly less intake, with 75% intake between 0600 and 1800 hrs (most after 1200) Observations: - most intake of institutionalized older persons was with meals or medications - residents generally drank the amount offered - no complaints of thirst recorded.
Chidester & Spangler (1997)	Research	Observation Food and fluid intake observed x 3 days, and tested against 3 standards for calculation of recommended daily fluid intake.	40 residents from 1 nursing home; 2 age groups: 65-85 and 86-100	Two of three standards were inadequate to calculate daily recommended intake for underweight residents Recommend 1500-2000 ml/day be used as a standard for all, unless contraindicated Noted that number and frequency of medications positively related to fluid intake.
Finestone, Foley, Woodbury & Greene-Finestone, (2001)	Research	Cohort: Compared fluid intake of 2 groups over time	13 patients who were dysphagic post-stroke 7 received enteral feeds and IV; 6 received only oral thickened fluids	Both groups had outcomes indicating insufficient fluid intake. Those on oral thickened fluids only, received 33% of daily fluid requirements Those on enteral feeds dropped from 134% with IV to 43% after IV discontinued.

Author	Article type	Method	Sample population	Findings/Discussion
Weinberg (1995)	Review article	Review of published literature from Medline 1976-95 - not systematic review	Geriatric - institutionalized and at-risk community dwelling older persons	Findings grouped according to: physiology of normal aging; illness and associated clinical reports of dehydration; diagnostic and therapeutic interventions consensus recommendations for physician education and practice related to assessment, treatment and monitoring Recommend 1500-2500 ml/day fluid intake for this population.
Musson, Kincaid, Ryan, Glussman, Varone, Gamarra, et al. (1990)	Program evaluation	3 interventions: Silver Spoon Happy Hour Second Seating	Nursing home residents requiring dysphagia team consult	Findings: generally, the greater the environmental support, the better the fluid intake, and the greater the weight gain. Caution identified: the evaluation was not controlled for possible other contributing factors.
Bennett, (2000)	Literature	Report of current research; Proposed preventive strategies Focus on nursing care	Older persons, both institutionalized and community-dwelling	Discussion of reasons elderly become dehydrated Recommended daily intake: 1500 ml. Role of geriatric nurses in assessment and interventions to prevent dehydration Discussion of issues around dehydration and terminal illness.
Cox (1998)	Literature			Ethical/legal perspectives on withholding food and fluids in terminal illness.

Author	Article type	Method	Sample population	Findings/Discussion
Fainsinger & Bruera (1997)	Text of lecture based on review of literature			Pros and cons of managing hydration in terminal illness.
Hoffman (1991)	Literature			Advice to physicians re: assessment, prevention and treatment strategies.
Kositzke (1990)	Literature			Normal fluid balance; changes in older persons; assessment and intervention strategies for nurses.
Mentes & Buckwalter (1997)	Literature			Relationship of dehydration to acute confusion Prevention strategies Offers case example.

Critique of the Literature

The research-based protocol (Mentes, 1998) categorized journal articles in the reference list as either research or literature, and referenced the articles in the clinical practice guidelines proposed in the protocol. There was, however, no critique of the references in terms of the quality of the methodologies, or the generalizability of the results. Of the articles critiqued for this project, the strongest design was that of Simmons et al. (2001) with a controlled clinical intervention to determine how fluid intake behaviour was influenced by level of cognitive functioning. The sample size in the study was reasonable (63) and the subjects' characteristics of incontinence and cognitive impairment make the results relevant to this project. Several of the ar[illegible] (Adams, 1988; Chidester & Spangler, 1997; Finestone et al., 2001; Gaspar, 1999;

Gaspar, 1988) used methods that involved observation and documentation of fluid intake of various cohorts of subjects, along with audits of records to determine risk factors for dehydration and daily average intake of fluid. Gaspar's 1999 study, a repeat of that done in 1988 but with a larger sample size, adds strength to the original findings related to risk factors. The study from Finestone et al. (2001), although carried out with two small cohorts of post-stroke patients, examined some common interventions used in the treatment of dysphagic patients, and found them largely inadequate to meet daily fluid requirements. Although the study bears repeating to confirm the results, it served to heighten the awareness of clinicians to the risk of dehydration among those patients who are dysphagic, regardless of cause. The review article (Weinberg, 1995) from the AMA Council on Scientific Affairs, presented consensus recommendations primarily aimed at medical practitioners, but acknowledged that interdisciplinary measures for the prevention and management of dehydration are beneficial. Sources of literature, how articles were selected, and a description of how data were collated and analyzed were detailed in the abstract. Evidence from the literature combined with expert opinion from the Council formed the basis for the recommendations put forward in the article. Musson et al. (1990) presented an evaluation of three programs designed to prevent dehydration and undernutrition of nursing home residents. Although the study outcomes were positive, the authors admitted the presence of other factors that may have influenced the results. The remainder of the articles reviewed for the project were not research reports, but did refer to outcomes of research in their discussions of dehydration and related topics. In addition to these discussions, insight was gained through these articles on ethical issues related to management of nutrition and hydration in terminal illness, which was a topic to be addressed, although briefly, in the educational intervention.

Determine the Sufficiency of the Evidence

These articles, in combination with the information from the research-based protocol (Mentes, 1998) provided sufficient data on which to develop an evidence-based clinical protocol for the prevention of dehydration that could be trialed with the patients in this facility. The evidence on which the various components of the protocol were based is supported in the literature as summarized in Table 2.

Table 2

Contributions to the Protocol from the Literature

Components of the Clinical Protocol	Literature contributing to evidence base
Assessment	
- definitions	Weinberg et al. (1995)
- normal physiology; physiology of aging	Simmons et al. (2001)
- risk factors	Gaspar (1988; 1999)
- potential complications	Adams (1988)
- physical assessment	Finestone et al. (2001)
- laboratory assessment	Bennett (2000)
- establishing baseline for future assessment	Chidester & Spangler (1997)
	Hoffman (1991)
	Kositzke (1990)
	Mentes & Buckwalter (1997)
Prevention Strategies	
- 1500 ml./day target intake per person	Simmons et al. (2001)
- defining and complying with likes and dislikes	Chidester & Spangler (1997)
- cueing, offering fluids frequently	Weinberg et al. (1995)
- using medication rounds and gastrostomy tube feedings as opportunities to increase fluid intake	Musson et al. (1990)
	Bennett (2000)
	Hoffman (1991)
	Kositzke (1990)
	Mentes & Buckwalter (1997)

Components of the Clinical Protocol	Literature contributing to evidence base
Monitoring Outcomes/Evaluation	
- ongoing monitoring	Simmons et al. (2001)
- early recognition of changes	Finestone et al. (2001)
- evaluation of programs, protocols	Chidester & Spangler (1997)
	Weinberg et al. (1995)
	Musson et al. (1990)
Outcomes in Terminal Illness	
- ethical considerations	Bennett (2000)
- comfort measures	Cox (1998)
- decision making	Fainsinger & Bruera (1997)

It should be noted that the research based protocol (Mentes, 1998) provided information in all of these areas as the learning package was developed.

Identify Desired Outcomes, Design Interventions, Conduct Pilot Study and Evaluation

Having determined that the available evidence from the literature, although not perfectly matched to setting or patient population, was sufficient to begin to address both the problem and knowledge focus, the next step was to define desired outcomes.

Desired Outcomes.

The desired outcome, for the institutionalized frail elderly, was to prevent dehydration and thereby decrease the prevalence of this clinical problem. Because the patients in this facility are largely dependent on their caregivers to meet their daily care needs, the desired outcome for caregivers was that they understand the risk factors for dehydration, and the benefits of preventing it. To achieve and sustain this outcome for patients, it was determined that a protocol

for the management of hydration should be developed to provide standards of care and guidelines for clinical practice for the staff. This protocol was to be based on the best evidence available from the literature, and relevant to the patient population to whom care was to be provided. Its purpose would be to outline the interventions to be implemented for patients at risk for dehydration. The second step in achieving and sustaining this outcome for patients was to have the staff providing the care be knowledgeable about the issues surrounding dehydration in the elderly, and to integrate into their practice the measures prescribed in the clinical protocol. In recognition of this, it was determined that an educational intervention would be developed for staff.

Designing Interventions for Patient Care.

To develop the standards of care and clinical practice guidelines that would comprise the protocol, a small task group was formed that included a clinical nurse specialist, a dietitian, a speech and language pathologist, a program director and the clinical educator (author). The evidence from the literature was examined in the context of the chronic behavioural population for whom care was being provided. It was decided that the protocol should include guidelines for assessment, planning, interventions and evaluation with the overall goal of prevention of dehydration.

The first task was the development of a dehydration screening tool (see Appendix A) that would be used to assess a patient's hydration status on admission, and based on the results, would guide care planning. This was developed based on the risks identified in the literature, as well as the characteristics of the patients in this chronic care facility. Since there were no tools

found in the literature to give meaning to high-, medium-, or low-risk scores, the screening tool was trialed for three months and then the scores were audited. Based on the audit, values were assigned for this facility, high risk being a score greater than fifteen, medium risk, eleven to fourteen, and low risk, zero to ten. The screening tool was incorporated into the clinical pathway for admission assessment on the pilot program, and continued to be evaluated throughout the pilot.

After the development and trialing of the screening tool, the group proceeded to develop a protocol to include standards of care and clinical practice guidelines to be followed for patients at risk for dehydration. The full text of the protocol can be found in Appendix B.

Evidence from the literature, knowledge of the patient population, and the resources available in the setting were considered in the development of the recommendations. Standards were developed that outline the basic care to be provided to every patient entering the program. For example, the target fluid intake for every patient will be 1500 millilitres per day, unless otherwise indicated by a physician's order. Additional clinical practice guidelines were developed in the form of a decision tree based on the outcome of the screening assessment. For example, if a patient was found to be at moderate risk, this would be noted in the care plan, and the dietitian and physician would be consulted. If a patient was found to be at high risk for dehydration, measures to be initiated would include the measuring of intake and output, notifying the physician, obtaining orders for baseline hematology and urinalysis, and requesting a consult from the dietitian and/or speech and language pathologist.

The documentation of the plans, interventions and outcomes was considered to be an important component of the successful implementation and evaluation of the protocol. To

facilitate accurate and complete documentation, the working group developed (in addition to the screening tool and a pre-existing care plan form), an Intake and Output Record (see Appendix C) that provided space to document observations from physical assessment and laboratory tests, and a Fluid Booster Record (see Appendix D) that provided information about each patient's level of risk, and fluid targets and preferences. The Fluid Booster Record was designed as a working tool for use by those providing between-meal nourishments, and did not become a part of any patient's permanent medical record. The forms for documentation are included with permission as appendices.

Designing an Educational Intervention for Staff.

When work on the draft protocol for management of hydration was completed, it became the task of the clinical educator, with input from the rest of the group, to design an educational intervention for staff with the objectives to review and build on their knowledge of fluid balance and dehydration in older persons; provide them with current, research-based information related to this clinical problem; introduce them to the protocol (standards and clinical practice guidelines); provide them with the opportunity to discuss the information and consider how it might apply in their clinical practice; and communicate the expectation that they integrate this new knowledge, and the standards into their clinical practice. Based on these objectives, and information from the literature, the necessary content of the educational intervention was determined. However, how the content would be best presented to achieve the desired outcomes required further assessment and planning, based on the literature related to evidence-based practice and adult education. The educational intervention is described in detail in Chapter 4.

Conducting a Pilot.

The pilot of the interventions is in process at the time of writing. The pilot of the ıucational intervention for staff required that all staff of the pilot program complete the learning ıckage (see Chapter 4) and submit the quiz (see Appendix E). Tutorials, for which attendance as elective, were offered on three separate occasions before the implementation of the protocol. ıe pilot of the "Protocol for Management of Hydration," including the screening tool and forms r documentation was implemented for patients of the pilot program beginning in July of 2002. s mentioned earlier, the screening tool was integrated into the admission assessment for all ıtients newly admitted to the program, and was also being used in assessment of patients who ıve experienced a significant change in health status.

Evaluating and Revising.

The effectiveness of the educational intervention will be assessed by conducting a chart ıdit of those patients admitted after the implementation of the protocol. The audit will look for 'idence of (1) completion of the dehydration screening tool, (2) care planning based on the ıtcome of the screen, and (3) documentation reflecting both implementation and evaluation of easures recommended in the protocol. A repeat administration to the staff of the quiz may be ınsidered as a quick assessment of their knowledge retention related to the care of patients at sk for dehydration. A qualitative survey to obtain staff feedback on the protocol and the lucational interventions will provide useful insights prior to implementation throughout the ıspital.

The effectiveness of the protocol as an intervention to improve patient care should ;monstrate a decreased prevalence of dehydration in the patient population served by the pilot

program. Data specific to the program can be extracted from the MDS quarterly submissions, and will be requested from the facility's Information Technology Department at the time of the next quarterly report.

Evaluating Outcomes after Full Implementation

After the pilot is completed, and modifications made to the protocol based on the evaluation, the plan is to implement both the protocol and the educational interventions hospital-wide, to the remaining three inpatient programs.

Chapter 4

The Educational Intervention

Understanding the Context

The Iowa model guides the process of bringing evidence to practice for a clinical problem, but does not attempt to address the context within which the process takes place; what conditions assist or act as barriers to the process. Barriers and facilitators to evidence-based practice as discussed in the literature review in Chapter 2 confirm that the context or environment can determine the success or failure of the process. Some of the contextual factors that were considered in implementing this project were management support, resources available, characteristics of the front line staff, and their work environment.

Management support.

Management support was identified by numerous authors as essential to the success of any change project (Funk, Champagne, Weise & Tornquist, 1991; McGuire, 1990; Royle, Blythe, Ciliska & Ing, 2000). Management support for the implementation of evidence-based or "best" practice is demonstrated in this facility by (1) the concepts of quality, innovation and excellence being present in the mission, vision and values of the institution; (2) a strategic goal related to the implementation of best practices in patient care, and assignment of responsibility to achieve it; and (3) the commitment of resources to quality improvement projects and continuing education for staff. In addition, the manager of the program where the protocol was to piloted was a member of the working group from its outset, and ensured that the clerical support required was

available as the project progressed. At the time of implementation of the protocol, the manager communicated the expectation that all staff would participate in the education, and would integrate the protocol into their daily work.

Resources Available.

This facility, as many others, has been affected by the shortage of clinical staff, particularly Registered Nurses (RNs) and Registered Practical Nurses (RPNs). As a result, and because patient care is the priority, there is little time available for updating or for new learning. There is a Resource Centre available to staff which provides access to journals, text references, online databases, and other Internet resources. However, this Centre is not staffed. Assistance with literature searches and article delivery are available under a contract with an off-site library. This makes finding and critiquing information difficult for front line staff to accomplish in a timely way. Some of the other resources available in the facility are clinical nurse specialists, a clinical educator, and clinical leaders for all disciplines including nursing. These are the people with the expertise (that most staff lack) to identify, or assist staff to define clinical questions, conduct literature searches and reviews, audit current practice, and recommend and facilitate changes in practice. They need to be both creative and opportunistic in identifying methods to communicate important information, and support the continuous learning and development of staff. Financial resources are limited, so a part of any proposal to implement a change in practice requires assessment of the impact on supplies and staff time not only to initiate the change, but to sustain it.

Characteristics of the Environment and the Nursing Staff.

The current stresses in a health care workplace present challenges for those trying to influence changes in practice. Some of the events of the past few years at the facility have influenced both the attitudes and motivation of nursing staff. These past events include (1) hospital restructuring which brought significant job loss to nurses, and increased patient:staff ratios; (2) recommended closure of the facility by the provincial Health Care Restructuring Commission, followed by reversal of the decision two years later; (3) frequent changes in senior management; and (4) increasingly acute patient profiles resulting in a changing skill set being required by nurses to care for them (venipuncture, recording electrocardiograms, initiating and monitoring intravenous therapy). The first three events have resulted in a reduction of resources for staff development and a lack of trust by some staff of those perceived to be in power positions (senior management, provincial government). The last change has created anxieties among staff regarding their knowledge, skills and abilities to keep up with the change.

Due in part to the average age of the nurses (both RNs and RPNs) being over forty-five, absenteeism rates due to illness and injury are high compared to others employed in the hospital, and because of the pervasiveness of the nursing shortage across all sectors, nurses are working double shifts, often working with fewer than the full complement of staff, and sometimes not being granted their earned vacations when they request them. However, rising above this is a high level of commitment to the patients and families who are being provided care in the various programs within the hospital. The staff are willing to learn new skills and ways of caring, but those providing the leadership need to design methods to facilitate learning that are flexible, accessible, and respectful of the existing expertise of the staff.

As noted earlier, the nursing staff of the hospital are regulated professionals. Both RNs and RPNs have varied levels of knowledge on which to build, depending on such factors as age, year of graduation, and commitment to continuing education and quality improvement. Since studies have shown that both RNs and RPNs tend to consult their peers with clinical questions, rather than consulting with an expert or seeking an answer in the literature (Asselin, 2001; Blythe & Royle, 1993; Royle, DiCenso, Baumann et al., 2000), it is important that all staff participate in the educational intervention, whatever its design, so that all are at least exposed to the same information.

Due to the shortage of nurses and costs of replacement, it is difficult to free staff on work time to attend educational events. Therefore, if all staff are expected to participate, the need for a flexible, accessible method of presentation is reinforced. Recognizing also that individuals learn at different rates, a design that allows some self-pacing would be preferred.

It should be noted that although there are barriers to continuous learning, the facility is one in which the pursuit of excellence through ongoing learning and quality improvement is highly valued as evidenced by clinical nurse specialist and clinical educator resources, a tuition assistance program, support of student placements, and other staff development programs.

The Educational Intervention

Objectives and Methods.

As outlined in Chapter 3, the educational intervention provided to the staff had the following objectives; (1) to review and build on staff knowledge of fluid balance and dehydration in the elderly; (2) to provide current, research-based information related to the clinical problem

of dehydration; (3) to introduce the evidence-based "Protocol for Management of Hydration" developed to guide practice in this facility; (4) to provide an opportunity to discuss and reflect on the information and to consider its application in the clinical setting; and (5) to communicate the expectation that this new standard be integrated into each staff member's clinical practice.

In designing the intervention, the educator was attentive to the literature regarding adult education, motivation, and learning styles, and was also aware of the need to address those elements critical to meeting the objectives - specifically those addressing knowledge base and critical thinking skills. The educational intervention that was designed had two components; a self-paced learning package that was mandatory for all staff to complete, and a tutorial that was optional, but scheduled at a time indicated by staff to be most convenient. Each component will be discussed in relation to how it incorporated information from research and literature, and how it addressed the objectives. The full text of the learning package follows its description in this chapter.

Learning Package.

The learning package incorporates principles of adult learning by building on the learner's previous knowledge, allowing for participation, encouraging reflective and critical thinking, and having immediate application. It allows learners to work as individuals, at their own pace, or in groups, thereby accommodating some differences in learning styles and settings. The information presented in the package was selected based on what was essential information to assist staff in managing hypertonic dehydration in the institutionalized frail elderly, since this is the clinical situation that they are most likely to encounter. Other types of dehydration, as well

as the risks of overhydration, and considerations of hydration management in the terminally ill are included, but not in the same depth as the primary topic.

Sections that build on the learner's previous knowledge, and help to address the first objective, include the "Summary of mechanisms involved in fluid balance" (p.48), the chart related to risk factors (p.50), and the section related to physical assessment to determine hydration status (p.52-54). The package is participative by requiring that some sections be completed by the learner either based on previous knowledge, or from the resources provided with the package. The "Intervention Strategies" section (p.54-56) serves several purposes in that it requires application in the clinical setting (screening and care planning for a selected patient), dialogue with peers (reviewing screening results and care plan), and critical thinking (strategies to improve between-meal intake).

The package presents current, research-based information related to the problem of dehydration in the elderly both in the content of the package, and in the "Protocol for the Management of Hydration" which was developed based on the evidence available from the literature. The meaningfulness of the learning package was increased by the fact that the screening tool was incorporated into a clinical pathway to guide the assessment of new patient admissions, and that the pilot for the protocol was scheduled to begin immediately after the educational interventions were completed. This along with the requirement that the package be completed by all staff, communicated the expectation that the guidelines from the protocol were to be incorporated into the daily work of staff with their patients.

Other characteristics that add to the value of the package are that the protocol and forms to be used for clinical documentation were included in the package so that learners would be

familiar with these on implementation. In addition, a few of the key articles from the reference list were made available to those who were interested in additional reading on the topic.

On completion of the package, each learner is required to submit a quiz formulated to test some of the "need to know" information from the package (see Appendix E). This was designed to provide some immediate, though admittedly limited, feedback on the effectiveness of the package in communicating the required information.

MANAGEMENT OF HYDRATION IN CHRONIC CARE

An Evidence-based Learning Package

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June 2002

Introduction

The prevalence of patients experiencing dehydration is one of the indicators that is taken from the MDS (Minimum Data Set) data to help to determine what are the special needs of our patient population, and where, potentially, we can improve patient care.

Beginning in the first quarter of 2001-2002, the St. Peter's Scorecard reported that the number of patients experiencing dehydration (prevalence) is increasing. This leads one to ask some questions:

- is the patient population changing?
- could it be related to the seasons of the year?
- are we making fluids accessible enough?

To answer these questions, other questions need to be asked:

- what puts someone at risk for dehydration?
- how does one know if someone is dehydrated?
- what is the minimum amount of fluid that should be consumed by an elderly person in 24 hours?
- how can a patient be prevented from becoming dehydrated?

On reviewing the literature, it was discovered that dehydration in the elderly is certainly something that has received attention, but there is little clear evidence to answer these questions.

The purposes of this learning package are to:

1) assist the participant to become more familiar with the evidence that is available

regarding this patient care issue; and

2) introduce standards, tools and strategies developed at this facility based on the evidence from the literature, and the characteristics of the patient population.

The content of the learning package is presented under the following headings:

- definitions
- normal physiology related to maintenance of hydration
- how the aging process affects the normal physiology of fluid balance
- risk factors for dehydration
- consequences of prolonged fluid deficit
- assessing hydration status
- strategies to manage patients who are at high, medium or low risk of dehydration
- the risk of overhydration
- dehydration in palliative patients

The learning package is designed to provide information, and to encourage the learner's participation and critical reflection with the goal of improving the care and management of those patients in this facility who are at risk for dehydration.

On completion of the package, the learner is required to complete the quiz (see Appendix E), and submit it to the Program Clerk.

Tutorials will be offered to discuss any questions learners may have about this content, and to discuss strategies that are suggested from the literature as well as what has been used successfully by the staff in their own clinical experience.

Completion of the package is mandatory for all staff of the pilot program. Attendance at tutorials is optional, but encouraged.

Definitions

Intracellular fluid: fluid inside the cells of the body.

Extracellular fluid: fluid outside the cells (plasma/serum and interstitial)

Osmolality: the number or concentration of particles in solution.

Isotonic dehydration: "results from a balanced loss of water and sodium, which can occur during a complete fast" (Weinberg, 1995, p.1553). This can also be the result of vomiting and diarrhea.

Hypertonic dehydration: "results if water losses are greater than sodium losses" (Weinberg,1995, p.1553). It is characterized by increased serum sodium (Na) levels, increased serum osmolality, and an intake of water less than output. It can result from fever, or inadequate fluid intake.

Hypotonic dehydration: "occurs when sodium loss exceeds water loss" (Weinberg, 1995, p.1553). It is characterized by decreased serum sodium and osmolality and can result from overuse of diuretics, and some disease conditions.

Q: After reading the definitions of the different types of dehydration, which do you think is the most likely to develop among the patients admitted to this facility, and why?

A: _____

_____

_____

_____

_____

Normal Physiology of Fluid Balance

The body maintains a balance of intracellular and extracellular fluids (particularly water) through the complex interaction of a number of physiologic mechanisms involving the adrenal glands, pituitary gland, kidney, and hypothalamus. The goal of these mechanisms is to maintain fluid balance by making sure that fluid intake balances fluid loss. Most fluid loss occurs through the kidneys in urine. However, there are also insensible losses through respiration, evaporation from the skin (increased with high activity or high temperature), and fluid loss with bowel movements.

The following table illustrates the parts of this complex network of checks and balances.

Table 3

Mechanisms Involved in Normal Fluid Balance

Organ/gland	responds to	responds with	outcome
Kidneys	decreased BP	renin	renin combines with angiotensin II to form renin-angiotensin complex which affects adrenals and pituitary.
Adrenal glands	renin-angiotensin	aldosterone	works to make kidneys reabsorb Na+.
Pituitary gland	renin-angiotensin complex formed in response to decreased BP, and messages from the hypothalamus in response to increased serum osmolality	anti-diuretic hormone (ADH)	works in kidneys to reabsorb water.

Organ/gland	responds to	responds with	outcome
Hypothalamus	increased serum osmolality, and renin-angiotensin complex	message to pituitary and to CNS (central nervous system)	pituitary produces ADH; thirst mechanism in hypothalamus stimulates fluid-seeking behaviour.

Age-Related Changes to Fluid Balance Mechanisms

Age-related changes to some or all of these processes make it difficult for the body to maintain fluid balance. Kositzke (1990) identifies the four major age-related changes as follows:

- decrease in total body water: in young, healthy adults, body water comprises about 60% of body weight. However, as a person ages, this percentage falls to about 50%. This results in increased vulnerability to disease and/or environmental stressors.
- altered sense of thirst: for some reason, as the body ages, the cells in the hypothalamus that communicate thirst to the CNS are not as sensitive. As a result, an elderly person may be dehydrated, but not feel thirsty and therefore not be motivated to search out something to drink.
- decrease in the kidneys' ability to concentrate urine: the cells in the kidneys that are programmed to respond to aldosterone have a decreased ability to reabsorb Na+ when needed.
- decrease in the effectiveness of anti-diuretic hormone (ADH): either ADH becomes less effective as a stimulant for the kidneys to reabsorb water, or the cells in the kidneys are less able to respond. The result is that the body is unable to retain water when it is needed to decrease serum osmolality, or increase blood pressure.

Risk Factors for Dehydration in Older Persons

In addition to the normal aging process, the elderly (particularly those in chronic or long term care) will have other factors that may contribute to the risk of dehydration. A list of some of these factors is presented in Table 2.

In light of what you know about the normal physiology of fluid balance, use the space beside each risk factor to briefly explain why each of these might contribute to dehydration.

Table 4

Risk Factors for Dehydration in Older Persons

Risk factor	May contribute to the risk of dehydration because.....
Dysphagia	
Language impairment	
Alzheimer's disease	
Incontinence	
Impaired mobility	
Use of diuretics	
Habitual pacing	
Depression	
Fever	

In the attachment (see Appendix A) you will find a copy of the screening tool that has been developed for use at this facility to help in the identification of those patients who are at high, medium or low risk for dehydration. Once identified, the individual's care plan should be modified to include measures to minimize the risk factors, and decrease the dehydration risk.

Review the tool to ensure that you understand how each of the factors mentioned contributes to the risk of dehydration in the elderly.

Consequences of Prolonged Fluid Deficit

If the dehydrated state is prolonged in an elderly patient, the consequences can be serious, and possibly even irreversible. Some of the potential consequences are:

- delirium; cognitive impairment
- a decrease in functional ability (loss of muscle strength in addition to cognitive losses)
- renal failure
- falls
- predisposition to infection, especially urinary tract or respiratory
- constipation and/or fecal impaction
- decreased skin turgor which predisposes to skin breakdown over pressure points.

All of these outcomes of prolonged dehydration result in a decrease in the patient's quality of life - loss of independence, inability to participate in activities, pain and discomfort, increased risk of injury. The consequences also result in higher care needs of the patients both from a medical and nursing perspective, and higher costs to the health care system. So, the goal in caring for our patients is to decrease the incidence and prevalence of dehydration through risk assessment and the implementation of preventive strategies.

Assessment of Hydration Status

In addition to the screening tool introduced previously, a careful physical and cognitive/functional assessment is necessary to assess a patient's hydration status.

Briefly describe what observations you would make with respect to each of the following:

Skin and mucous membranes _____

_____

_____

Vital signs _____

_____

_____

_____

Gastrointestinal system _____

_____

_____

Urinary system _____

_____

_____

Neurological system _____

_____

_____

_____

Weight _____

Cognitive status_____

_____

_____

Functional status _____

_____

_____

_____

Doing a thorough initial assessment not only provides you with a sense of the patient's risk for dehydration, but also provides baseline information against which future assessments can be compared.

Laboratory testing of blood and urine can also contribute significant information when assessing a patient's hydration status. The following may be indicative of hypertonic dehydration:

serum sodium (Na) >(more than) 148 mmol/l

serum BUN: creatinine ratio > 25

serum osmolality > 300 mmol/kg

BUN > 20 mmol/l

urine specific gravity > 1.029

concentrated urine colour: brown/green

urine output < (less than) 800 ml/day

The screening tool in combination with the results of your assessment of the patient will assist you in identifying whether your patient is at high, medium or low risk for dehydration.

When you have determined your patient's status and level of risk, the standards and guidelines which have been developed at St. Peter's Hospital can be used to guide the care planning process for your patient with respect to hydration.

The Protocol for the Prevention of Dehydration is attached for your reference and use (see Appendix B).

Intervention Strategies

To complete the next section of the package, you are required to:

- select a patient who is currently in your care
- complete a dehydration risk screening tool (see Appendix A) for the patient (or refer to the completed tool, if already done)
- complete a physical assessment to evaluate the patient's current hydration status
- review available laboratory reports
- decide on your nursing diagnosis (high, medium, low risk for dehydration)
- refer to the Protocol for the Prevention of Dehydration (see Appendix B)
- ensure that a patient goal related to hydration has been established, if necessary
- ensure that the care plan reflects the measures required for prevention of dehydration, based on your patient's level of risk
- establish a date for evaluation of the approaches implemented for this patient.

When you have completed all of these steps, review what you have done with a colleague.

It is suggested in the literature that 75-80% of daily fluid requirements should be served with meals, with the other 20-25% being offered at times other than meals. What are some strategies that you have used/could use to improve your patients' between-meal fluid intake?

List some of the criteria that you would use in deciding what fluids might be offered to a particular patient.

It is important to evaluate whether or not your planned interventions are successful in maintaining adequate hydration status in your patients. Some of the outcomes that could serve as indicators of success might include:

- normal skin and tongue turgor

- urine output at 1-1.5 litres per day
- normal urine specific gravity
- pulse and blood pressure normal for the patient
- absence of delirium; normal level of cognitive function for the patient
- fluid intake of at least 1500 ml (1.5 litres) per day
- others?

And ensure that your patient's care plan indicates how frequently the patient's hydration status should be assessed.

Overhydration

Overhydration is defined as "an excess in total body water content due to inappropriate/excess fluid intake or disease state" (Herbert, as cited in Mentes, 1998, p.3).

The risk factors for dehydration have been discussed previously in the package. The risk factors for overhydration include:

- psychiatric illness, specifically schizophrenia or bipolar disorder. Overhydration can be the result of compulsive fluid intake, or can be associated with the use of some psychotropic medications
- congestive heart failure. Decreased efficiency of the heart as a pump decreases blood flow through the kidneys, and results in less efficient output
- polydipsia. This is symptomatic of a variety of disease states; for example, uncontrolled diabetes mellitus
- renal disease. Kidney function is very complex, and therefore can be significantly

affected by a number of disorders that decrease the efficiency of filtration and excretion functions

- syndrome of inappropriate antidiuretic hormone (SIADH).

Some of the signs and symptoms that might cue consideration of the risk of overhydration are:

- an acute increase in weight
- pitting edema in the lower extremities
- distended neck veins when the patient is supine
- excessive output of colourless urine
- decreased serum and urine osmolality
- normal or decreased serum sodium
- BUN/creatinine ratio <10.

If overhydration is suspected as a potential or actual problem, an immediate consult with the most responsible physician would be indicated along with careful monitoring of intake and output, vital signs, and other physical indicators. The physician may recommend a limit to oral fluid intake as a part of the treatment plan.

Hydration Management in the Terminally Ill

The issue of hydration management in the palliative patient is unsettled in the literature. Some sources advocate for a non-interventionist approach, arguing that dehydration in the palliative patient is not uncomfortable, and in fact minimizes the production and collection of

secretions in the respiratory tract as death approaches. Others believe that managing hydration in the dying patient prevents the acute restlessness and confusion that often compromises the quality of life for patients in their final hours or days.

Decisions about hydration management in the terminally ill need to be made collaboratively as part of the "extent of care" discussions with patients and families.

A more complete discussion of these issues can be found in the article by Fainsinger and Bruera (1997) entitled "When to treat dehydration in the terminally ill patient".

Summary

This package has provided a summary of the information available in the literature related to the issue of dehydration in the elderly being cared for in an institutional setting. It has introduced a number of standards, tools and strategies which will be used in addressing hydration management issues of patients in this facility.

Each member of the clinical staff is expected to be alert to the risk factors and early indicators of dehydration in those patients in his/her care, and to implement appropriate measures when patients are identified to be at risk.

Through careful management of hydration, many of the potential complications of dehydration can be averted in our patients. This leads to better quality of life for patients, and supports a timely discharge for those whose goal is to return home or into the community.

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Tutorials

The tutorials were scheduled at a time of day that made them most accessible to nursing staff, although they were open to attendance by the other members of the interdisciplinary team. They were held away from the clinical area in a comfortable classroom setting (comfortable chairs, temperature), and cold bottled water was available to participants. The format was semi-structured in that the facilitator prepared a slide presentation to guide the review and discussion of selected sections of the package, and offered a precis of several of the studies that were referenced in preparing the protocol and learning package. The slide presentation was colourful, with water imagery that contributed to the theme of the discussion. Although the facilitator had the slide presentation available, the actual discussions in each tutorial differed, based on the needs and interests of those staff in attendance.

By organizing the tutorial in this way, the facilitator assisted the learners, in a participative, group learning format, to build on their previous knowledge with new, evidence-based information in a comfortable environment that engaged several of their senses or "intelligences" (Gardner, as cited in Lazear, 1991). Group learning presents further opportunities for critical thinking and reflection as participants exchange ideas and evaluate the information presented in the context of their individual experience and knowledge. Verbal feedback at the conclusion of these tutorials indicated that they were helpful in clarifying information, and in offering the opportunity for group learning in a setting apart from the clinical area.

Chapter Five

Summary: Reflections and Future Plans

Reflections on Purpose

The purposes of this project were to take a broad look at the issues surrounding the facilitation of evidence-based practice, to focus on the specific issues related to evidence-based practice in a chronic care setting, and to demonstrate one method of facilitating evidence-based practice in the form of an educational intervention to introduce an evidence-based protocol. The broad look at facilitation of evidence-based practice, and more specifically in a chronic care setting were accomplished through an extensive literature review. The use of the Iowa Model for research utilization provided a framework for the process of bringing evidence to the clinical question of managing hydration in the frail, institutionalized elderly. The development of the educational interventions incorporated knowledge gained from the literature related to barriers and facilitators of evidence-based practice as well as that focused on adult learning.

Reflections on Key Learning Outcomes

Working through the various stages of the project has resulted in some key learning outcomes which are highlighted here. The first key learning, which was evident early in the literature review, was that research utilization does not equal evidence-based practice. Although these terms seem to be used interchangeably in some contexts, research utilization is one component of evidence-based practice. Evidence encompasses knowledge from research,

combined with knowledge gained through the experience of clinicians, and information specific to the patient or group of patients to whom care is being provided. Evidence-based practice also incorporates the resources available in the practice environment. The literature on research utilization and evidence-based practice is vast. There is good awareness of barriers to both research uptake and evidence-based practice reflected in the literature, but less published on how best to facilitate evidence-based practice specifically in chronic care or geriatric settings. There are multiple models proposed to facilitate either research utilization or evidence-based practice, but few research reports providing evidence of testing the validity or usefulness of the models. The Iowa Model was chosen as the process model for this project because it was developed and tested at the University of Iowa, and widely disseminated along with clinical practice guidelines to assist with implementation of evidence-based practice. One weakness of this particular model that was realized in applying it, was that it did not include a step to assess the setting for its readiness and resources to implement evidence-based practice. A part of this could happen as one is critiquing the literature for its adequacy and suitability to the population to whom care is being provided. However, it is recognized that this model was designed to guide research utilization and not evidence-based practice. Evidence includes more than research findings, and therefore requires a more comprehensive assessment of setting, resources, and care providers.

The literature specific to working within the chronic care environment is sparse. The majority of studies accessed from the literature search had been carried out in long term care settings. These provide some useful guidelines, but generalizing to chronic care must be done with caution, recognizing that patients in a chronic care setting generally require a higher level of care than those in a long term care setting.

Integrating the literature regarding evidence-based practice and that dealing with adult learning reinforced the importance of the context within which learning is to take place, and emphasized the challenge to new learning presented by the current health care work environment.

Reflections on Relevance

This project has provided the opportunity to explore and gain a better understanding of the growing field that is evidence-based practice. It is also recognized that the concept of evidence-based practice can be applied on a number of levels; for example, in day-to-day clinical decision-making, in policy and protocol development, and in the development of educational interventions. The project has made apparent the lack of good evidence from research to guide practice in a chronic care setting, and as a result identifies the need for more research in this field.

This work will be of interest to those holding leadership or educator positions in chronic care as it provided a thorough look at the meaning of evidence-based practice and some of the barriers and facilitators to this type of practice, specifically in the chronic care setting. It provided an example of a process to bring evidence to practice through the development of educational interventions to address a specific clinical question. Both the process used and the format of the learning package can serve as templates in addressing other clinical questions.

To facilitate evidence-based practice using the Iowa model, the clinical educator had the opportunity to act in a variety of roles, and to provide role-modelling of skills to those staff with whom she was working. Leadership and mentoring skills were necessary for the successful implementation of the project. The clinical educator was a leader in assisting staff to define the clinical question, and then to direct the process through literature review and critical appraisal,

development of the protocol and educational intervention, and implementation of the learning package and tutorials. The leadership role will continue as the project is evaluated, and then implemented throughout the hospital. Mentoring of staff in critical thinking and decision making was necessary as they began to apply the information in their clinical settings, and will be an ongoing role as staff work at increasing their skills in these areas. Role-modelling of critical thinking and decision-making was integrated into the design of the educational intervention, and the clinical educator is supported in this by the clinical nurse specialist, and the program director.

As the emphasis in publicly funded health care continues to be on the delivery of quality, evidence-based care with limited resource allocations, and as knowledgeable consumers come to the health care system with higher expectations, the pressure is on health care practitioners to find ways of accessing, implementing and evaluating evidence-based practice. This project has demonstrated one method of facilitating this process.

Future Plans

This project serves as the beginning of an ongoing process to explore methods of sting frontline staff to gain access to the information they need to stay current and competent in their challenging and changing work environments. When the pilot of the "Protocol for gement of Hydration" has been completed, a formal evaluation of the protocol, and the tional interventions will be conducted prior to it being implemented in other programs the hospital. The results of the evaluation will be disseminated through presentations and submitted for publication. The process used to address this clinical question will also ng point in addressing other clinical questions as they are identified.

Beyond this project, the clinical educator, or anyone who takes on the facilitator role, will need to advocate for continued funding to allow for ongoing access to current literature, staff skill development in evidence-based practice, and the implementation and evaluation of evidence-based protocols and procedures. It has been demonstrated that management support is one of the key factors in any successful change process. That support can be communicated, not only with funding, but with recognition for successful improvements in patient care, and encouragement for continued staff development.

The concept of "evidence-based" or "best" practice has gained in recognition and importance both in and outside of the practice and education of health professionals. As a result, practicing health professionals have an obligation not only to understand the meaning of the concept, but to consciously gain the knowledge and abilities required to make it an integral part of their practice.

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St. Peter's HOSPITAL

Appendix A

SCREEN TO IDENTIFY DEHYDRATION RISK

Section A: Fluid intake measurement over three days
(not to include caffeinated drinks)

_____ Average fluid intake of 1500 ml/day or less, **score 5** (For an average greater than 1500 ml/day, **score 0**

Points: _____/5

Section B: Mealtime Observations

_____ Receives thickened fluids
_____ Habitually coughs when drinking fluids
_____ Eats less than 75% of meals for 3 consecutive days
_____ Requires total feeding assistance
_____ Required partial feeding assistance

Points: _____/5

Section C: History
In the **last six months,** *patient has presented with:*

_____ Dehydration
_____ Decrease in mobility status
_____ Depression
_____ Two or more episodes of pneumonia or other respiratory illness
_____ Two or more episodes of diarrhea
_____ Significant skin breakdown
_____ Two or more episodes of vomiting
_____ Two or more UTIs
_____ Significant weight-loss (10% or more)
_____ Confusion
_____ Two or more febrile episodes
_____ Required IV fluids
_____ Internal bleeding
_____ Dizziness/Vertigo

Points: _____/14

Section D: Medications

_____ Diuretics
_____ Regular use of laxatives
_____ Psychotropics, antipsychotics, antidepressants and/or anxiolytics

Points: _____/3

Section C: Factors associated with hydration problems

_____ Age 85 or older
_____ Female
_____ Four or more chronic conditions
_____ More than four regular medications
_____ Can't hold cup because of limitations in upper-limb mobility
_____ Can't get to water because of limitations in lower-limb mobility
_____ Can't request fluids because of language impairment
_____ Unaware of thirst because of cognitive impairment
_____ Incontinent of urine
_____ Patient paces or conducts other rigorous activity for at least 30 minutes each day
_____ Bedridden
_____ Diet restrictions (calorie, salt, potassium, etc.)

Points: _____/12

Section D: Medical problems increasing vulnerability

_____ Hypertension
_____ Uncontrolled diabetes
_____ Kidney disease
_____ Central nervous system disorder
_____ Dementia
_____ Cancer
_____ Sepsis
_____ Dysphagia

Points: _____/8

TOTAL POINTS: _____
Risk Level: low ( ), medium ( ), high ( )

Score: low 0-10; medium 11-15; high >15

Date of Screen: _____

Signature of person conducting screen

Appendix B

ST. PETER'S HOSPITAL

Protocol for the Prevention of Dehydration

Purpose: It is acknowledged both in the literature and in clinical practice that the frail elderly in institutions are at risk for dehydration.
The purpose of this protocol is to provide guidelines for risk assessment and strategies for the prevention of dehydration for those patients identified as "at risk".
These standards and guidelines have been developed based on evidence from current literature.

Standards: Following are the standards which guide clinical practice for the prevention of dehydration at St. Peter's Hospital.

- Each patient is screened for hydration status on admission.
- Each patient is weighed on admission, and then at least monthly for ongoing monitoring.
- Each patient will have intake and output measured and recorded for 3 days following admission, and then as required for ongoing monitoring.
- If dehydration risk is identified on admission, the Clinical Practice Guidelines for the Prevention of Dehydration are followed.
- Each patient at St. Peter's will be offered between-meal fluids at least twice per day.
- The minimum daily intake goal for each patient is 1500 ml. of non-caffeinated fluids.

These standards will apply to all patients admitted to St. Peter's unless otherwise clinically indicated (eg. palliative care, risk of overhydration).

Assessment: 1. **Risk Assessment**: The "Screen to Identify Dehydration Risk" will be completed for each patient within the first four days following admission to St. Peter's. (See Appendix A)
Risk level is:

- **low** if the patient's score is 10 or less on the screen.
- **medium/moderate** if the score is 11-15
- **high** if the score is >15

2. **Physical Assessment:** While conducting the admission physical assessment, the nurse should be alert to the following:

- dry oral mucous membranes
- dry tongue, lengthwise furrows
- upper body muscle weakness
- recent onset speech difficulties
- recent onset or worsening confusion

3. **Laboratory assessment:** The following laboratory tests will assist in assessing risk for dehydration:

- BUN
- Creatinine
- BUN/Creatinine ratio
- serum Na
- urine specific gravity
- serum osmolality
- urine osmolality

Documentation: Documentation related to the assessment of risk of dehydration will be on the following forms:

- Screen to Identify Dehydration Risk (Appendix A)
- Fluid Intake and Output Record (Appendix C)
- Progress Record as required.

Planning and Intervention:

1. The outcome of the assessment will indicate the patient's level of risk for dehydration.
2. Based on the assessment, the Clinical Practice Guidelines for the Prevention of Dehydration will be initiated.
3. **Note:** If the patient is found to be significantly dehydrated on admission, an immediate consult with the MRP and dietitian should be arranged to discuss measures to resolve this problem in a timely manner.

Documentation: Documentation of planned strategies and interventions will be on the following forms:

- Fluid Intake and Output Record as required
- Care Plan in the "Nutrition Care" section and Goal section
- Fluid Booster Sheet
- Progress Record as required to document progress toward the goal.
- Weight Record

Evaluation: Evaluation will be carried out as directed in the protocol according to the patient's defined level of risk.

Low risk: The screening tool will be repeated when there is a significant change in the patient's clinical status

Medium/moderate risk: The screening tool will be repeated quarterly or as clinically indicated for significant change in patient status.

High risk: Recording of intake and output continues until daily intake is 1000-1500 ml. per day for three consecutive days. Weight is recorded weekly. Weekly notation in Progress Record to indicate progress toward goal.

Documentation: Documentation of evaluation will continue on those forms indicated for planning and intervention.

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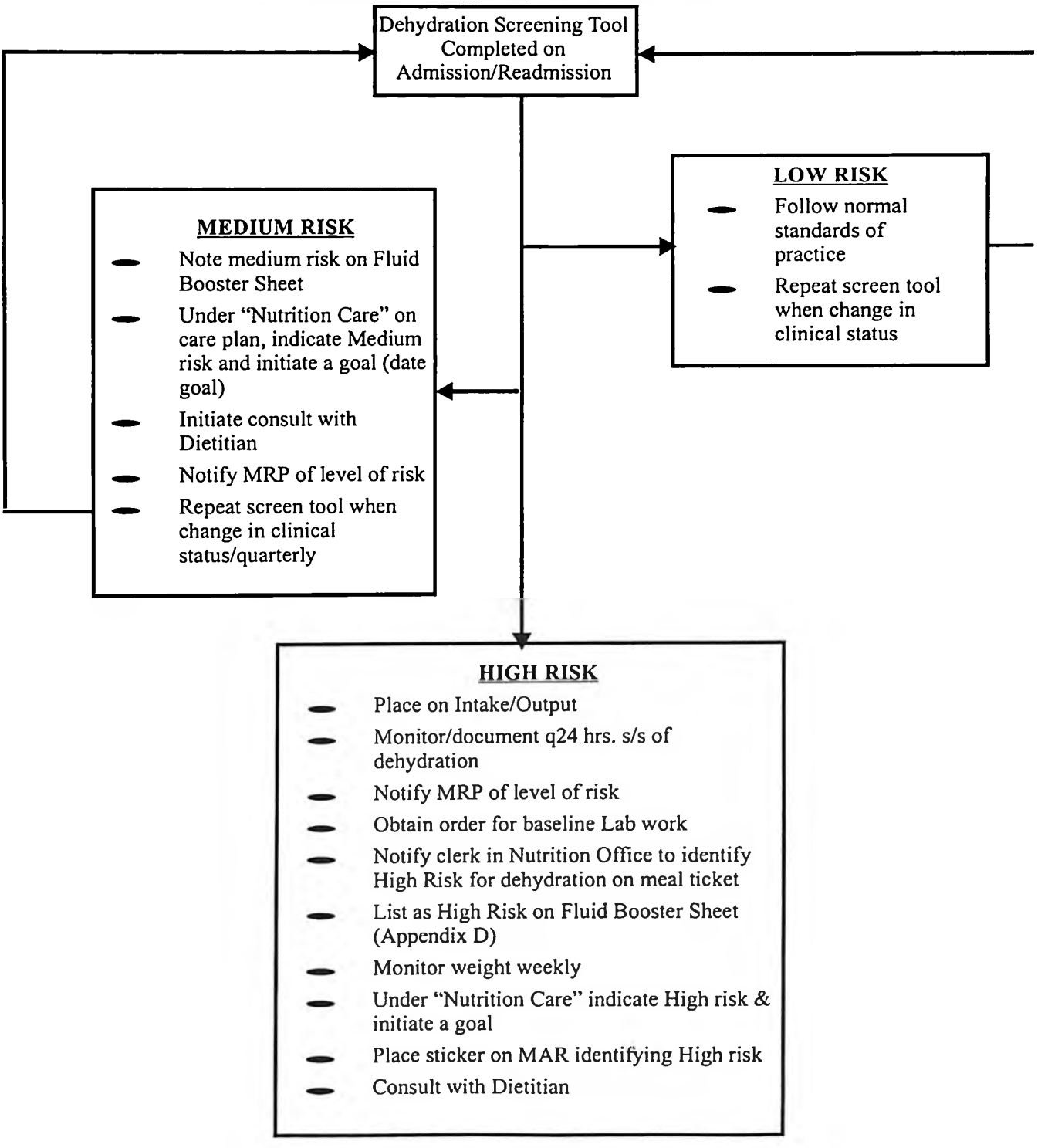
CLINICAL PRACTICE GUIDELINES FOR THE PREVENTION OF DEHYDRATION



Appendix C

St. Peter's HOSPITAL™

FLUID INTAKE & OUTPUT RECORD

- juice glass - 110cc
- foam cup - 150cc
- pop can-355cc
- milk carton-110cc
- milkshake carton-180cc
- thick mild- 85cc
- thick juice-110cc
- thick ensure-85cc
- jello-100cc
- ice cream-80cc
- pudding-85cc
- mousse-85cc
- yogurt-95cc
- ensure glass-115cc
- ensure can-200cc
- hot cereal-100cc
- soup-110cc

INTAKE				OUTPUT		
	Item	Oral Amt.	Other Amt.	Time	Voided	Catheter
Breakfast				0700		
				0800		
				0900		
				1000		
				1100		
A.M.				1200		
				1300		
Lunch				1400		
				1500		
				1600		
				1700		
				1800		
				1900		
P.M.				2000		
				2100		
Supper				2200		
				2300		
				2400		
				0100		
				0200		
				0300		
Evening				0400		
				0500		
				0600		
24 hr. Total				24 hr. total		

Signs/Symptoms of Dehydration Noted	Lab Results
☐ Dry furrowed tongue	☐ BUN/Creatinine ratio
☐ Rapid pulse	☐ Serum Sodium
☐ Concentrated urine (dark yellow)	☐ Hematocrit
☐ Decrease output	☐ Urine - specific gravity
☐ Sunken eyes	☐
☐ Muscle weakness	☐

St. Peter's
HOSPITAL™

BEHAVIOURAL HEALTH PROGRAM

FLUID BOOSTER RECORD

UNIT: ____________

PATIENT NAME	DEHYDRATION RISK LEVEL	PREFERENCES	DIET RESTRICTIONS

01.10.11

Appendix E

ST. PETER'S HOSPITAL
Management of Hydration
Quiz

Name _____ Date _____

1. The type of dehydration that is most likely to occur in patients at St. Peter's is:
   a) isotonic dehydration
   b) hypertonic dehydration
   c) hypotonic dehydration
   d) osmolar dehydration

2. Age-related changes to fluid balance mechanisms include all of the following except:
   a) decrease in total body water
   b) decreased sense of thirst
   c) increase in the body's ability to retain water
   d) decrease in the kidney's ability to concentrate urine

3. Consequences of prolonged fluid deficit can include:
   a) delirium
   b) falls
   c) urinary tract infection
   d) all of the above

4. One of the most reliable indicators of dehydration in the elderly is:
   a) decreased perspiration
   b) dry furrowed tongue
   c) decreased skin turgor
   d) fever

5. Which of the following lab findings would contribute to a diagnosis of dehydration?
   a) increased serum sodium
   b) decreased BUN (blood urea nitrogen)
   c) decreased urine specific gravity
   d) all of the above

6. Indicators of successful management of dehydration could include:
    a) normal skin and tongue turgor
    b) urine output of 1000 - 1500 ml. per day
    c) normal urine specific gravity
    d) all of the above

7. Using the "Screen to Identify Dehydration Risk", the patient is considered to be at moderate risk if his/her score is:
    a) 5-10
    b) 11-15
    c) 16-20
    d) 21-25

8. If the patient is identified to be at high risk for dehydration, all of the following measures will be implemented except:
    a) weight monitored daily
    b) "high risk" sticker placed on MAR (medication administration record)
    c) weekly documentation in the Progress Record related to a dehydration goal
    d) continued measurement and recording of intake and output

9. According to the literature, the patient who is most at risk for dehydration is:
    a) totally dependent for care
    b) semi-dependent for care
    c) independent for care
    d) cognitively impaired

10. Which of the following might trigger you to think that a patient is at risk for overhydration?
    a) a diagnosis of congestive heart failure
    b) a sudden decrease in weight
    c) very concentrated urine
    d) a diagnosis of depression