

**DISORDERED WATER BALANCE: A NURSING MANUAL
TO DETECT AND TREAT**

by
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TABLE OF CONTENTS

	Page
1. STATEMENT OF THE PROBLEM	1
Background of the Problem	1
Definition of Disordered Water Balance	1
Terms	4
Epidemiology of DWB	5
Etiology of DWB	6
Antidiuretic Hormone	7
Medications Used to Treat Mental Illness	7
Preexisting Alcoholism	8
Obsessive-Compulsive Behavior	8
The Result of DWB	8
Goal	9
2. LITERATURE REVIEW	11
History	12
Early Detection of DWB	12
Monitoring the Patient with DWB	13
Serum Sodium Measures	14
Target Weights	14
Urine Specific Gravity Measures in Addition to Weight Measurement	15
Treatment of DWB	16
Behavioral Interventions	16
Psychological Intervention	17
Pharmacological Treatment	18
Treatment Protocols	19
Summary of Literature Reviewed	20
3. CONCEPTUAL FRAMEWORK	23
Overview	23
Adult Education Principles	23
The Nursing Process	24
Rurality	27
Summary of Theories and Concepts	29
REFERENCES CITED	30
APPENDICES	36
Appendix A--The Manual	37
Appendix B--Defining Characteristics	57
Appendix C--Objectives for Each Level	59

TABLE OF CONTENTS--cont.

Appendix D--Contract	61
Appendix E--Tracking Form	63
Appendix F--Project Evaluation Form	66

ABSTRACT

Disordered water balance is a difficult and complex problem for health care providers in general. Nurses are often the health care provider with the most patient contact in the psychiatric setting and are responsible for designing and implementing strategies to manage the patient with disordered water balance. To provide effective nursing care, nurses must be provided protocols to detect and treat disordered water balance.

This paper provides a thorough review of the literature describing components of prevention and treatment of disordered water balance. The components of prevention and treatment include (a) a method of determining at-risk clients, (b) an assessment of etiological factors, (c) a target weight protocol, (d) measures of urine specific gravity, (e) measures of serum electrolytes, (f) group therapy, (g) social learning, and (h) structured activities.

Based on the suggestions of the existing literature, a prevention and treatment protocol was developed and is thoroughly described.

CHAPTER 1

STATEMENT OF THE PROBLEM

The condition of disordered water balance occurs most frequently in the person experiencing chronic mental illness and challenges the ability of rural nurses to assist the person in the least restrictive environment. Currently, in the State of Montana there exists no manual for the early detection and treatment of disordered water balance. Nurses are responsible for thorough assessment, intervention, and evaluation of strategies designed for the patient with disordered water balance. Clearly, protocols for early detection and treatment are necessary for effective nursing care. Such protocols are presently unavailable.

Little exploration of disordered water balance has occurred within the field of nursing; in fact, only two published works in nursing exist prior to the year 1990. The description of only one manual, The St. Louis Treatment Protocol (Boyd et al., 1992), was available in the literature, and is described in the literature review section of this proposal.

Background of the ProblemDefinition of Disordered Water Balance

Disordered water balance (DWB) is a condition present in the severely psychiatrically disabled population which

first gained the attention of care providers in the early 1980's (Snider & Boyd, 1991). The term DWB is used by many in the literature and defined by few. Boyd et al. (1992) describe the disorder as "intermittent hyponatremia with body fluid overload as indicated by abnormal weight variation" (p. 22). The condition of DWB involves an imbalance of body water and electrolytes, including sodium and potassium, and the physiological characteristics of DWB include thirst and osmotic dysregulation. Due to reasons which remain somewhat unclear, the individual who develops DWB is driven to consume fluids to a point which endangers his/her health. Those afflicted with DWB may experience cognitive changes, such as increased distortion in thought process, as well as behavioral changes, such as increased aggression towards others.

There appear to be differing levels of DWB in the population of the severely psychiatrically disabled. The three categories of level of DWB are defined by Snider and Boyd (1991) as mild, moderate, and severe. Each of these levels is described below, with an indication of receptivity to appropriate nursing intervention.

Those individuals showing symptoms of mild DWB demonstrate diurnal weight gain, and frequent trips to the water fountain and restroom. Individuals with mild DWB are most receptive to psychoeducation and group involvement

because their cognition and attention span have not been impaired by fluid consumption as yet (Snider & Boyd, 1991).

Individuals who may be described as having moderate DWB evidence occasional physiological and behavioral symptoms. Clinical signs include a urine specific gravity between 1.010 and 1.003 as well as diurnal weight gain. A common behavior of persons with moderate DWB is that of unexplained restlessness (including periods of hyperactivity or hypervigilance). Patients are often seen carrying cups of fluids and show signs of alertness in the morning, with deterioration in the afternoon. Patients with moderate DWB may be successfully managed using appropriate behavioral interventions aimed at restricting fluid intake.

Patients with severe DWB have the clinical symptoms of urine specific gravities between 1.003 and 1.000, diurnal weight gain and hyponatremia. Behaviors of patients with severe DWB include a poor response to verbal intervention and impaired attention span. Frequently, such individuals yell and argue with peers and staff. Their thinking is inappropriate and distorted. If the individual is a smoker, his/her smoking increases if fluid consumption is not restricted (Snider & Boyd, 1991). Restricting access to fluids is a priority for staff in treating the individual with severe DWB.

Water intoxication is the drastic and life-threatening condition resulting from severe DWB. The number of reported

instances of water intoxication does not accurately represent the number of individuals experiencing DWB, but instead only that portion of DWB sufferers who have gone untreated or unnoticed long enough to develop this condition. Throughout the literature, terms such as "severe DWB" and "water intoxication" are used interchangeably as though they are synonymous. For the purpose of this paper, "severe DWB" will be used to describe that state in which a patient's health is jeopardized by fluid overload and intermittent hyponatremia.

Terms

There is a plethora of terms used in the existing literature to describe problems which are associated with DWB. It becomes quite confusing to readers, as often such terms are used interchangeably and are not clearly defined. The following medical and nursing terms will be used throughout this paper to most accurately describe the condition of DWB.

DWB: The condition in chronic psychotic patients which is characterized by a large volume of urinary output, a large variation in the patterns of excretion, hypervolemia, hyponatremia, physiological, and resultant behavioral symptoms which result (Snider & Boyd, 1991).

Antidiuretic hormone: A primary water-conserving hormone (Taber, 1985).

Polydipsia: The experience of excessive thirst which may result in excessive ingestion of water, excessive urination, impaired cognitive functioning, and/or water intoxication (Taber, 1985).

Hyponatremia: A condition of low serum sodium which occurs when the amount of water consumed exceeds the kidneys' ability to excrete it (Taber, 1985; Rowntree, 1923).

Water intoxication: A condition which occurs when hyponatremia becomes severe or has rapid onset. Water intoxication is a serious physiological problem and is characterized by headache, ataxia, tremor, nausea, vomiting, confusion, lethargy, seizures and coma (Vieweg et al., 1988).

Hypervolemia: A marked increase in circulating blood volume (Taber, 1985).

Polyuria: Excessive urinary output (Taber, 1985).

Epidemiology of DWB

Evenson, Jos, and Mallya (1987) reported that 6.2% of 2,201 psychiatric patients treated in public mental health facilities in Missouri had histories of DWB, and that 73% of these individuals had a diagnosis of schizophrenia. Another such study reported a rate as high as 17.5% of a sample of 241 hospitalized psychiatric patients (Blum, Tempey, & Lynch, 1983). Ripley, Millson, and Koczapski (1989)

estimated that 3% to 18% of chronic psychiatric patients experience DWB. Given such statistics it appears that the more persistent and chronic the symptoms of mental illness, the greater the possibility one will experience DWB. At Montana State Hospital (MSH), in Warm Springs, Montana, 20 patients (approximately 15%) in the Extended Treatment Unit suffer from DWB, which frequently results in water intoxication. Much of this author's interest in the phenomena of DWB has been generated through clinical contact at Montana State Hospital, and this interest has prompted the development of this manual.

Etiology of DWB

The cause of DWB is not well understood. There appears to be a variety of possibilities, and several theories have been explored. Possible explanations for the condition of DWB include (a) disordered secretion and/or release of antidiuretic hormone (Delva et al., 1990; Goldman, Luchins, & Robertson, 1988); (b) side effects of antipsychotic and anticholinergic medications used to treat mental disorders such as schizophrenia (Cosgray, Hanna, Davidhizar, & Smith, 1990; Vieweg, David, Rowe, & Canterbury, 1987; Ripley et al., 1989; Delva et al., 1990; Goldman et al., 1988), (c) preexisting alcoholism (Ripley et al., 1989); and (d) obsessive-compulsive behavior (Cosgray et al., 1990).

The above listed possible explanations for the condition of DWB are only four of many possible factors which have been considered by researchers in exploration of the phenomena of DWB. A brief discussion of each possible etiology follows.

Antidiuretic Hormone

The release of antidiuretic hormone is a process necessary for maintaining homeostasis of fluids in human beings. When the release of antidiuretic hormone is excessively high, symptoms such as polydipsia and marked water retention (in excess of sodium) occur. These symptoms lead to DWB. Possible reasons for the inappropriate release of antidiuretic hormone include stressful situations, therapeutic agents such as antipsychotic medications, and damage to or defect in the hypothalamus and/or limbic system (Delva et al., 1990; Goldman et al., 1988).

Medications Used to Treat Mental Illness

Medications which are used to treat schizophrenia and other serious mental illnesses often have the unfortunate side effect of dry mouth and throat, which may lead to an increase in thirst. Many patients complain of this common side effect and attempt to relieve the symptom by drinking water (Ripley et al., 1989; Delva et al., 1990; Goldman et al. 1988). These medications also may decrease the seizure threshold, and thus contribute to the possibility of the

patient experiencing seizures. As previously stated, seizures are often an outcome of water intoxication (Cosgray et al., 1990).

Preexisting Alcoholism

Ripley et al. (1989) linked DWB to preexisting alcoholism, stating that drinking may be a learned behavior. For the alcoholic, once inside the institution and without access to alcohol, drinking water may be a pleasurable experience. This drinking behavior then may lead to DWB.

Obsessive-Compulsive Behavior

Some individuals appear to drink copious amounts of fluids in an obsessive-compulsive manner which is related to the neurotic symptoms of anxiety. Anxiety appears to be a key indicator of drinking behaviors for those with DWB (Cosgray et al., 1990).

The Result of DWB

Severe DWB is characterized by hyponatremia. When hyponatremia becomes severe, with a serum sodium concentration less than 120 milliequivalents per liter, or when hyponatremia occurs very rapidly, the patient may accumulate excess fluid in the brain which results in aggression and unsteady gait (Goldman, 1991). Hypervolemia, also a result of DWB, may lead to periorbital edema,

distended abdomen, periodically elevated blood pressure, change in skin color, polyuria, incontinence, and hypothermia. Among the chronically psychotic, 3% to 7% experience DWB which, from time to time results in medical emergencies. Because this condition can be extremely dangerous when severe, it is most important to detect and treat DWB in the early stages. DWB is indeed a difficult and complex problem for care providers to detect, treat, and help patients manage.

Goal

Currently at Montana State Hospital, there is a one-page treatment protocol which outlines the care for the individual already intoxicated with water. This includes seclusion or one-to-one supervision, and monitoring until the patient is no longer in danger. The goal of this project is to develop a manual which will guide nursing staff in early detection and treatment of disordered water balance. The manual will clearly outline the protocols for early detection and treatment of each stage of DWB. The manual will also provide rationale for the prescribed measures. The manual will be based on principles of adult education, the nursing process, and rurality. An evaluation

component will be included in this manual to obtain feedback from staff in the use of this manual.

CHAPTER 2

LITERATURE REVIEW

The available literature exploring DWB between 1923 (e.g., Rowntree, 1923) and the present is limited. Research performed primarily by medical professionals has explored various treatment measures. Nursing research available included two published works prior to the year 1990. Only one article was available which reviewed a treatment protocol developed for the early detection and treatment of DWB.

The literature reviewed for this project included five relevant topics: (a) a brief history, (b) early detection of the patient with DWB, (c) monitoring the patient with DWB, (d) treatment of individuals with DWB, and (e) treatment protocols to treat DWB. Literature describing the early detection of DWB includes a review of the Water Intoxication Risk Analysis Form (Bugle, Andrew, & Heath, 1992), serum sodium measures, use of target weights, and use of urine specific gravity measures. The literature reviewed on treatment of those with DWB includes behavioral, pharmacological, and psychological approaches. Each of these areas will be considered in more detail.

History

In 1923, water intoxication (the result of severe DWB) was first reported as a medical problem, and was described as occurring when water was ingested in excess of the ability of the organism to excrete it (Rowntree, 1923). At that time, Rowntree also identified the seriousness of this disorder if untreated and linked the disorder to increased intracerebral pressure. This increased intracerebral pressure resulted from disturbance of the salt/water equilibrium.

The first report of water intoxication in psychiatric patients was made by Barahal (1938). This report was a case study describing a female client diagnosed with dementia praecox, paranoid type, admitted in a state of intoxication from water. Barahal described the patient's acute state of water intoxication, including seizures and coma.

Early Detection of DWB

Bugle et al. (1992) explored risk factors associated with DWB and developed a table of "specific items relevant to water intoxication" (p. 32) which includes the following factors: neuroleptic drugs, increased agitation, polydipsia, past history, age, smoking, polyuria, urinary incontinence, change in body weight and impaired level of consciousness. These related factors guided the researchers in developing the Water Intoxication Risk Analysis Form

(Bugle et al., 1992). The use of this detection instrument may provide the clinician with a checklist for ongoing evaluation of the psychiatrically disabled client. The score obtained on the Water Intoxication Risk Analysis Form indicates what intervention, if any, is necessary. The authors point out in their discussion that the form does not offer new information about the causes of water intoxication, nor does it offer a new method of treatment. It does, however, provide the clinician with a method of early detection and may prevent more serious outcomes if used. The use of this tool is not complicated or time-consuming. Bugle et al. (1992) state that "the use of this tool could be an important and necessary step in developing a diagnostic and treatment guide" (p. 34).

Monitoring the Patient with DWB

The literature supports a variety of methods which have been implemented in the care and treatment of individuals with DWB. The intervention suggested most consistently throughout the literature is the restriction of fluid intake (a behavioral intervention). Knowing when fluid restriction is necessary, and restricting the fluid however, can be much more difficult than it sounds. Methods which may identify the patient with DWB include: measuring serum sodium, use of a target weight protocol, and urine specific gravity measures. Each of these methods has proven to be helpful in

identifying the patient with DWB. The use of such methods as described in current literature is outlined below.

Serum Sodium Measures

There is support for the use of serum sodium measures as an indicator of fluid/electrolyte balance in the patient with DWB. Goldman and Luchins (1987) and Delva and Crammer (1988) each discussed the effective use of serum sodium levels in patients to indicate the need for fluid restriction. Since hyponatremia (low serum sodium) is the most prevalent feature in individuals with severe DWB, monitoring the level of serum sodium makes sense.

Target Weights

Historical review indicates that the use of a target weight protocol may identify the necessity for fluid restriction among those with DWB (Delva & Crammer, 1988; Goldman & Luchins, 1987; Koszapski et al., 1987). The relationship between body weight and hyponatremia was established by Delva and Crammer (1988), and weight gain was found to be a direct indicator of fluid and electrolyte imbalance. Body weight measurement was recommended by these authors to prevent water intoxication, using calculated target weights for each client.

Delva and Crammer (1988) and Goldman and Luchins (1987) were successful in decreasing the number of individuals who became water intoxicated by using the concept of frequent

weights and identifying individuals who exceeded their target weight. By measuring body weight at specified times throughout the day, the individual who had gained greater than 7% of his/her baseline weight was identified and restricted from fluid intake. Goldman and Luchins (1987) also required serum sodium levels, which were drawn when a client's weight exceeded target weight. The minimum acceptable plasma sodium concentration was 125 mEq/L. Subjects were placed in 24-hour seclusion when their serum sodium level was less than 125 mEq/L. Because of the need for laboratory facilities and a seclusion room, this method of monitoring the patient with DWB would not be possible for many settings (such as group homes). The use of such a treatment method would also be limited in that not all clients would agree to the number of venipunctures required. Koczapski et al. (1987) encouraged the use of target weights as a means of identifying those individuals with DWB who had not yet developed water intoxication.

Urine Specific Gravity Measures in Addition to Weight Measurement

Vieweg, Rowe, Weiss, David, and Spradlin (1985) and Boyd et al. (1992) suggested that the measurement of urine specific gravity in addition to weight measurement would be useful in monitoring the patient with DWB. This intervention is aimed at identifying a significant increase in bodily fluid in an inexpensive and nonintrusive manner.

The protocol developed by Boyd et al. (1992), the measurement of serum sodium level, urine specific gravity, and body weight, is an excellent means by which a client may be identified in the early stages of DWB. Each of these methods of evaluation is well supported in the literature.

Treatment of DWB

Behavioral Interventions

Historical review suggests that a program using behavior modification may be a positive approach to treating DWB. Token economy systems were implemented to reward positive behaviors and response cost procedures used for inappropriate behaviors in three studies (Baldwin, Beck, Menditto, Arms, & Cormier, 1992; Beck, Menditto & Baldwin, 1991; and Bowen, Glynn, Marshall, Kurth, & Hayden, 1990). Tokens, or reinforcers, ranged from cigarettes to hospital discharge, while "time out" was often the response cost for inappropriate behaviors and/or weight gain due to fluid ingestion. Varied rates of success were reported by the researchers among those behavioral treatment programs reviewed.

A social-learning component was included in the treatment program developed by Baldwin et al. (1992). In this study, the problem of DWB was addressed in a social-learning paradigm. The program was designed to decrease self-destructive behaviors and to increase

self-care skills, social problem-solving skills, basic life skills, and instrumental role performance. In managing the problem of DWB, weights were obtained three times daily and a response-cost procedure was used based on these weights.

Psychological Intervention

There is support for the theory that DWB is a result of addiction (Millson et al., 1993; Ripley et al., 1989; Millson, Koczapski, Cook, & Daszkiewicz, 1992). Based on this support, Millson et al. (1993) conducted a study which involved group psychotherapy, the first and thus far only study to use group psychotherapy to treat DWB.

The study was conducted in a hospital setting and consisted of 12 participants. Each participant was involved in two 45-minute sessions of therapy a week for 4 months. The therapy was largely psychoeducational, and groups were conducted by a psychiatry resident and a social worker.

Art therapy was used to facilitate self-disclosure and to focus on the problem of excessive fluid intake. Visual aids were utilized, such as four liter jugs filled with water to demonstrate to patients just how much water one consumes in gaining fluid weight of 5 to 10 pounds (or more). Drawings and medical charts were used to demonstrate health risks associated with excess fluid consumption. Water filled balloons were used to demonstrate what a distended bladder might look like. Complications of excessive fluid consumption were discussed, with the

seriousness of such complications emphasized. The individuals receiving group therapy drank significantly less fluid than did their matched comparison counterparts. When group therapy was discontinued however, the amount of fluids each member consumed quickly increased, which indicates the necessity of ongoing therapy as part of the client's treatment. Findings suggest that patients with DWB may be treated as substance abusers, and that polydipsia in chronic schizophrenia is due in part to psychological factors.

The description of this psychoeducational group did not describe change in patient behaviors from day-to-day nor did it mention the use of a form used to track a patient's involvement from week to week. Two 45-minute sessions per week also appeared to be a very minimal amount of group contact time in attempting to impact such a complex problem.

Pharmacological Treatment

Medications have been used in the treatment of DWB with various rates of success. Vieweg, Rowe, David, and Spradlin (1985) recommended the use of sodium chloride in addition to fluid restriction. Some psychiatrists today prescribe sodium chloride for their patients with DWB; however, reports of success have been few. Illowsky and Kirch (1988) discouraged the use of sodium chloride because the salt consumed is rapidly lost in the patient's urine, thus requiring a higher dose of salt. Vieweg et al. (1985) reported marginal success in using lithium both alone and in

combination with phenytoin to stabilize serum sodium levels in patients with DWB. The use of Declomycin has had reported success in reducing the number of severe hyponatremic episodes in some patients with DWB (Forrest et al., 1988; Goldman & Luchins, 1985; Nixon, Rothman, & Chin, 1982).

The use of Clozaril (an atypical antipsychotic) appears to be an effective means by which a schizophrenic patient with DWB may be managed. Munn (1993) describes the results of case reports which involve four schizophrenic patients with DWB whose condition markedly improved with the use of Clozaril to manage psychotic symptoms. Clozaril is used only in treatment refractory schizophrenic patients due to its possible life-threatening side effects; however, those successfully managed on Clozaril are relatively side-effect free.

Treatment Protocols

Evidence of the development of treatment protocols has been scarce. The one treatment protocol obtained for review was prepared by Boyd et al. (1992). These researchers examined the use of a target weight protocol including urine specific gravity measurement in treatment of DWB. Using the target weight concept, a nonintrusive treatment protocol was established as part of the comprehensive treatment for DWB. Fluid intake was restricted when an individual reached or

surpassed his target weight. Urine specific gravity measures (done each afternoon), daily monitoring of symptoms of water intoxication, and use of target weight to monitor fluid intake were all facets of this treatment protocol. Notably, these are all measures which may take place on an outpatient as well as inpatient basis (Boyd et al., 1992). The treatment protocol utilized in this study improved water balance among those participating and many subjects were able to be discharged to the community successfully, where they were monitored in a group home setting. The author emphasized that the treatment sought, in order to be successful, must be cost effective, nonintrusive, and useful to the client on a long term basis. Additionally, they sought a protocol which could be easily implemented in both acute care and residential settings. The product of the project described above was the development of the St. Louis Hospital Target Weight Procedure (Boyd et al., 1992).

Summary of Literature Reviewed

Each of the regimens described in the treatment of disordered water balance included a weight monitoring component. Boyd et al. (1992) developed a successful and nonintrusive protocol called the St. Louis State Hospital Target Weight Procedure, which was based on the target weight concept and reported success rates among those patients discharged to the community. Baldwin et al. (1992)

designed a program which included weight management and a social-learning component including procedures to decrease psychotic and self destructive behaviors and to increase self-care and problem solving skills. Baldwin and colleagues (1992) also reported success among individuals discharged to the community.

Only one article was available which focused specifically on early detection measures for disordered water balance. Bugle, Andrews, and Heath (1992) developed the Water Intoxication Risk Analysis Form which may be quite useful in determining which psychiatric patients may be most at risk of developing disordered water balance. Another article stood alone in its representation of methods used to treat disordered water balance. Millson et al. (1993) explored using the group setting in providing psychoeducation and emotional support to excessive consumers of water.

Many varied theories of the etiology of polydipsia and disordered water balance were explored by a number of authors. Several of these theories are of particular interest because they provide clues as to how best to plan a prevention and treatment manual.

In conclusion, the literature suggests many necessary components of prevention and treatment of disordered water balance. These include: (a) a method to determine at-risk clients, (b) an assessment of etiological factors, (c) a

target weight protocol, (d) measures of urine specific gravity as necessary, (e) measures of serum electrolytes (sodium and potassium) as necessary, (f) group therapy providing psychoeducation and emotional support, (g) social learning to minimize self-destructive behaviors and to maximize self-care and problem solving skills, and (h) structured activities to minimize drinking behaviors due to boredom.

A prevention and treatment protocol based on the suggestions of the existing literature on disordered water balance has been developed with emphasis on prevention, and can be found in Appendix A. Treatment protocols will be described for each level of disordered water balance: mild, moderate, and severe. Defining characteristics for each level are located in a table in Appendix B, and objectives for each level (mild, moderate, and severe) are located in Appendix C.

CHAPTER 3

CONCEPTUAL FRAMEWORK

Overview

The conceptual framework for this paper is comprised of principles of adult education, the nursing process, and the concept of rurality. Each of these concepts is described in the following paragraphs, giving special attention to the significance each concept has to nursing. These concepts together provide the foundation for the development of "The Manual," designed to detect and treat disordered water balance.

Adult Education Principles

Adult education principles served as the ground floor of the conceptual pyramid guiding the process of manual development. Adult education is based on the "felt need" of the student (Fellenz, 1974). The identified "students" in this educational project were nurses. There has been much concern and voiced demand for a more preventative approach among nurses at Montana State Hospital in reference to the treatment of individuals with DWB. Such voiced demand represents the "felt need of the student."

Designing a learning experience for the adult must be conducted with much careful consideration of three very important principles (Fellenz, 1974). These are (a) the

learning task must have meaning to the adult learner for learning to take place, (b) an atmosphere of confidence and trust must be present within relationships established in the learning situation, and (c) learning is most likely to take place when the adult assumes an active and responsible role. The adult learner usually needs to realize an immediate benefit to learning, and such benefits may include information that is practical and useful, enjoyable, or will add to the learner's sense of self-esteem (Fellenz, 1974). Nurses may find knowledge about DWB practical and timely in working with patients already intoxicated with water.

An atmosphere of confidence and trust will be fostered within the learning situation in various ways. Collaboration among adult learners is encouraged. Questions about the manual are encouraged, as well as feedback in the evaluation form (Appendix F).

The utilization of the manual requires the nurse to take an active and responsible role in his/her own learning process. Playing an active and responsible role in the learning process is very important to adult learners because of the adult's desire to have some control over the learning situation. Adults usually want to be active in their search for, and discovery of, new knowledge.

The Nursing Process

The nursing process is a technique used to identify problems, intervene appropriately, and evaluate the

effectiveness of the intervention methods used. The nursing process is a method which sets the practice of nursing in motion. The professional acknowledgment that this process is pivotal to nursing is evident in many ways. The nursing process is included in the definition of nurse practice acts and in the conceptual frameworks of most nursing curriculums (Carpenito, 1983). The proficient use of the nursing process is necessary for expert and efficient interventions to be implemented. A nurse, expert in this problem-solving technique, may be both skillful and successful in a variety of practice settings (Carpenito, 1983).

Carpenito and Duespohl (1981) describe nursing as a "therapeutic process involving mutual interaction of the nurse, client, and family, collaborating for the achievement of maximum health potential" (p. 4). The nursing process is an interactional process which is used to identify health goals, client strengths and limitations, and those resources available which may aid in achieving optimal health.

Nursing theorists have spoken to the nursing process and to the necessity of the use of this process in the practice of nursing (Fawcett, 1989). Betty Neuman (1989) presented a nursing process format that is made up of three steps including nursing diagnoses, nursing goals, and nursing outcomes. Neuman's model has proven itself useful in the development of nursing care plans. The model has also been utilized in continuing education in nursing.

Baker (1992) outlined a continuing education program for nurses in a psychiatric hospital based on Neuman's model.

Dorothea Orem (1985) discussed the nursing process throughout the description of her "Self-Care Framework." Orem presents the nursing process as a dynamic activity, with diagnosis viewed as ongoing and nursing systems tentative. The application of Orem's described nursing process has been well-documented in clinical practice, research, and curriculum development.

Roy (1987) also discussed the importance of the nursing process. In her description of the goal of nursing she stated that nursing's goal is to "promote adaptation by the use of the nursing process, in each of the adaptive modes, thus contributing to health, quality of life, and dying with dignity" (p. 43). Roy's Adaptation Model is based on a detailed nursing process defined as "a problem-solving procedure for gathering data, identifying problems, selecting and implementing approaches, and evaluating results in relation to care of the ill or potentially ill person" (Roy, 1976, p. 21).

The nursing process has served to guide this author in the development of this professional project. The need for a clearly outlined protocol for early detection and treatment of disordered water balance was identified through assessment of the existing problem. Each step of diagnosis, planning, intervention, and evaluation is evident in the

structure of the manual provided. The plan was to develop a manual for nurses to guide the process of early detection and treatment. Intervention was the implementation of this manual and an evaluation piece served to provide feedback as to the usefulness of this manual to nursing staff. The nursing process guides the nurse throughout the manual, in identifying and treating the client at risk for, or already experiencing, disordered water balance. The manual will guide users (nurses) in the care of the psychiatrically disabled patient experiencing disordered water balance, just as the nursing process has guided this author in the development of the manual.

Rurality

Nurses in rural practice settings often feel cut off from the professional mainstream (Weinert & Long, 1989). Little collegial support is available to define the practice role and its boundaries. An example of this lack of definition in the "practice role and its boundaries" is the absence of a treatment protocol for nurses to detect and treat DWB at Montana State Hospital.

Two characteristics are consistently present in one's consideration of rurality and what it is or how it is different. The first (Cordes, 1985) is low population density. Low population density affects communication and transportation patterns as well as networks and

interactions. Low population density also impacts the availability (or lack of) specialized services. There are very few nurses in Montana who work in psychiatric settings. Networking and interaction between these nurses is scarce, making information sharing and collegial support scarce also.

The second characteristic is the diversity of the rural environment. In a more densely populated state, in-patient psychiatric settings have specialty units to provide care and treatment to individuals with specific psychiatric diagnoses and/or problems. In a rural setting such as Montana State Hospital, more generalized care is provided on units housing patients with various diagnoses. Nurses in the rural environment must provide diversified care because of the lack of available specialized programs or units. With both of these characteristics in mind, one must plan carefully for potential obstacles which may result in a proposal for change such as the one to detect and treat disordered water balance among the mentally ill.

There exists no unit to specifically treat disordered water balance at MSH as would be the ideal situation. A specific unit to treat the disorder would allow the care provider to more easily restrict fluid access and also to focus the attention of staff on the treatment of this phenomena.

Summary of Theories and Concepts

Developing a manual for nurses involved the careful consideration of several selected theories which have each been summarized in the preceding paragraphs. Three important factors were considered in the development of the manual: (a) Nurses have been provided little information about disordered water balance and access to information about the phenomena is limited; this may be due to the limited continuing education opportunities provided in a rural setting for such a specific problem, (b) currently there exists no treatment manual for nurses at Montana State Hospital for DWB, and (c) there exists no specific unit to treat DWB, making the restriction of access to water among sufferers a difficult task for nursing staff members.

The protocols outlined in the manual (Appendix A) have been designed to meet care needs of patients with DWB on an extended treatment psychiatric unit. With principles of adult education, the nursing process, and the concept of rurality in mind, the development of a manual to detect and treat disordered water balance has been developed.

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APPENDICES

APPENDIX A
THE MANUAL

Disordered water balance (DWB) is a condition present in the severely psychiatrically disabled population, which first gained the attention of care providers in the early 1980's. The disorder has been described as "intermittent hyponatremia with body fluid overload as indicated by abnormal weight variation"¹. The condition of DWB is characterized by an imbalance of fluid and electrolytes (sodium and potassium). There appear to be differing levels of DWB in the population of the severely psychiatrically disabled and each of these levels will be described in the pages which follow. The three levels described are: mild, moderate, and severe DWB. Careful assessment of the patient with DWB is necessary to determine which level of DWB the patient is experiencing. Interventions may be implemented once the severity of the patient's condition has been established.

Individuals with DWB may experience cognitive changes, such as distortion in thought process, as well as behavioral changes, such as aggression and agitation. Water intoxication is the drastic and life-threatening condition which is often the result of severe DWB. Water intoxication is characterized by headache, ataxia, tremors, nausea,

¹ Boyd, M., Williams, L., Evenson, R., Eckert, A., Beaman, M., & Carr, T. (1992). Target weight procedure for disordered water balance. Journal of Psychosocial Nursing, 30(12), 22-26.

vomiting, confusion, lethargy, seizures, coma, and possibly death.

Many terms are used in the description of DWB and the associated problems. A description of such terms follows.

DWB: Term used to describe the condition in chronic psychotic patients which is characterized by a large volume of urinary output, large variation in pattern of excretion, hypervolemia, hyponatremia, and psychological as well as resulting behavioral symptoms (Snider & Boyd, 1991).

Antidiuretic hormone: A primary water-conserving hormone (Taber, 1985).

Hyponatremia: Low serum sodium level (Taber, 1985).

Water intoxication: A condition which occurs when hyponatremia becomes severe. Water intoxication is a serious physiological problem and is characterized by headache, ataxia, tremor, nausea, vomiting, confusion, lethargy, seizures, and coma.

Hypervolemia: Marked increase in circulating blood volume (Taber, 1985).

Polyuria: Excessive urinary output (Taber, 1985).

Polydipsia: The experience of excessive thirst which may result in excessive ingestion of water, excessive urination, impaired cognitive functioning, and/or water intoxication (Taber, 1985).

Etiological Factors

The cause of disordered water balance is not well understood; however, several theories have been explored. Four possible explanations include: (a) disordered secretion and/or release of antidiuretic hormone; (b) side effects from medications used to treat mental illness; (c) preexisting alcoholism; and (d) obsessive-compulsive disorder. A thorough nursing assessment may provide clues as to why the patient drinks. Explanations as to why the patient drinks may then provide the nurse with data on which to base interventions. The patient may state that the medication prescribed causes mouth dryness and this is why fluid is consumed. In this case, it may be wise to suggest to the physician that the patient's medications be adjusted or changed. A trusting relationship (therapeutic alliance one establishes in one-to-one interaction with a selected staff person) may provide the nurse an opportunity to work with the patient in learning more about the benefits and side effects of their medications and what it does. Some patients may experience pleasure drinking water, because it reminds them of the experience of consuming alcohol. These patients may find Alcoholics Anonymous helpful, and also may want to replace the drinking behavior with one such as sucking on hard candy or munching on ice cubes. All patients with DWB, regardless of their reason for drinking,

may benefit from structured activities such as card and board games, as well as work responsibilities.

Educating the Patient

Educating patients about their condition is a necessary step in treating DWB. The amount and kind of education will depend on the patient's condition. Some patients may be very interested in details of the disorder and in learning all that they can to manage their situation. Others may deny that they have a problem with water and will be disinterested in a description of the phenomena or in the proposed treatment. Many patients do not understand that their drinking behavior can jeopardize their health. Education provided the patient should include information regarding the symptoms and treatment of DWB, as well as possible reasons for the condition. Patients may be unaware that they regulate water differently than other people do and that several experts have linked this to mental illness.

The Contract

Once the patient has agreed to work with the treatment team in managing his/her condition of DWB, the contract may be established. Contract establishment includes the patient in the planning and maintenance of behavior change and makes them an "active participant" rather than a bystander to their plan of care. We, as nurses, must assist them in the

planning of health promoting behaviors rather than control them in this process. The contract proposed for use has been developed to best meet the needs of patients and providers, and is included as part of this manual (see Appendix D).

Psychoeducational Group Experience

The psychoeducational group experience is an important aspect of treatment for the patient with DWB. Patients are provided an excellent opportunity to share their struggles and feel accepted by others with the same problems. Patients may benefit from insights shared by others and the group may prompt the formation of supportive relationships among DWB sufferers. The psychoeducational group should include the following characteristics:

- a. Daily 45 minute sessions.
- b. Use of visual aids such as drawings and medical charts, water-filled balloons to illustrate what a distended bladder might look like, water-filled jugs to demonstrate the amount of fluid one consumes with weight gain of, for instance, five pounds.
- c. Discussion of complications caused by excessive fluid intake with emphasis on the seriousness of such complications.

d. A method (form) to track the progress of each individual involved in the group experience (see Appendix E).

Environmental Manipulation

The manipulation of the environment is an important objective of the nursing staff in treating the patient with DWB. Proposed changes must be discussed and agreed upon by the treatment team. The goal of managing any psychiatric patient in the in-patient setting is to do so in the least restrictive environment. The individual with DWB on a nonspecific unit, that is, a unit which is not specifically designed to meet the needs of the patient with DWB, poses several challenges to the caregiver. Restricting the DWB patient's fluid consumption involves careful observation, usually one-to-one observation, or removing access to fluids. Removing access, such as pop machines and drinking fountains, may be a means of keeping the patient with DWB from overconsuming fluids; at the same time it infringes on the rights of other patients who have no such problem.

Patients with DWB are often very determined in their mission to consume fluids. They may be observed drinking not only from drinking fountains and sinks, but also from the shower, tub, toilet, or fish tank. There are even reports of patients with DWB drinking from their own urinals. Manipulating the environment to meet the needs of

the variety of patients one encounters is a challenge to nursing professionals indeed. The agreement and cooperation of the treatment team concerning environmental manipulation is essential.

Self-Monitoring Techniques

Another important aspect of managing DWB is the patient's use of self-monitoring techniques. The fluid intake diary is one example of such a technique. The fluid intake diary is encouraged in patients with DWB, to allow them to think about and keep track of all fluids they consume in a day. Patients are often unable to "backtrack" in describing their intake of fluids for a day and may be unaware of just how much they are actually consuming. The self-monitoring activity (fluid intake diary) provides patients an opportunity to face their behaviors by keeping an accurate and honest inventory. This activity parallels that of "food diaries" which are often used to encourage people who are overweight or diabetic and working toward modifying their behaviors. Modifying behaviors first requires an awareness of target behaviors. Patients will need much encouragement to be consistent in their recordkeeping, especially in the initial stages of this prescribed activity. We, as nurses, need to routinely encourage patients in their attempt to self-monitor and manage DWB.

Structured Activities

The literature suggests that patients with DWB may benefit from structured activities, such as card and board games, as well as group activities, such as arts and craft work. Monotony and boredom experienced in the institution may be contributory to increased drinking behaviors.

One-to-One Sessions

Another important (perhaps the most important) activity that patients benefit from is the one-to-one session. As described by Haber, Hoskins, Leach, and Sideleau (1987), the one-to-one relationship between nurse and patient is a process which leads towards a planned goal(s) or objective(s). It is necessary in the beginning of this helping relationship to establish some ground rules such as when, where, and how long each meeting will take place, who has access to information discussed, and what will be discussed. It is extremely important that the nurse be on time to each scheduled session and be prepared to spend the agreed-upon amount of time with the patient. This time is often sacred to the patient and interruptions should be avoided. The nurse must remember that the relationship is a reciprocal process which evolves over time.

Restricting the Patient's Intake

The patient's fluid intake must be restricted when they have consumed enough fluid to cause harm. Several monitoring techniques such as target weights, serum sodium levels, and urine specific gravity measures will assist the nurse in recognizing such a condition. On a unit which is not designed specifically to treat patients with DWB, it can be difficult to eliminate access to fluids without infringing on the rights of other patients. Turning off the water supply to sinks, bathtubs, and drinking fountains is not usually an option. One-to-one observation is usually the restrictive intervention implemented to curtail the patient's fluid consumption. The staff person assigned the patient is responsible for making sure the patient is provided no opportunity to drink; patients needing to use the restroom must be accompanied by a staff person. The patient must always be within visual range of a staff member which means that to ensure safety the patient must sleep in the observation room. One-to-one observation usually lasts as long as the treatment team deems it necessary. One-to-one observation must be considered when the unit is staffed and therefore the supervisor and staffing office should always be made aware that one-to-one observation is being utilized on the unit.

Use of Gatorade® Every 4 Hours

Gatorade® (or equivalent beverage) is offered in the amount of 6 ounces every 4 hours to the patient who is on fluid restriction. Gatorade® contains necessary electrolytes and minerals which the patient has depleted by overconsuming water.

Monitoring the Patient's Weight

Researchers have established a relationship between patients' weight and serum sodium level. Specifically, with fluid weight gain, serum sodium levels are decreased. Weight monitoring has become an important assessment tool in monitoring the patient's state of DWB, due in part to its nonintrusive nature and accessibility. The patient's weight gives the nurse a good estimate of how much fluid the patient has consumed throughout the day. It is necessary to use the same scale, allow for the same amount of clothing, and measure the weight at precisely the same time every day to ensure as much accuracy as possible. It is also a good idea to have the same person measure the patient's weight every day. This means that on the day shift, the same full-time day staff person should get both the morning and midday weight. During the evening the same full-time evening staff person should complete evening weights daily. The specified times for measuring weight may vary some depending on the meal and medication schedule of the unit, but the

recommended times for measurement are: 0800, 1200, and 1800.

The patient's target weight is that weight which has been calculated, indicating the maximum amount of weight that patient may safely gain in a day. The target weight is based on the patient's baseline weight. The baseline weight is the weight of the patient when he/she has a normal sodium level and urine specific gravity. The target weight for the purpose of this manual is 7% of the patient's baseline weight. If the patient's baseline weight is 100 pounds, the target weight is 107 (7 pounds, which is 7% of 100, added to the baseline weight of 100 pounds). This means that if the patient, when weighed at 1200, weighs 108 pounds, access to fluid must be restricted until the weight is below 107 pounds, and the treatment team has agreed that the restriction may be lifted.

Monitoring Vital Signs

Changes in the patient's blood pressure, pulse, and temperature may occur with increasing hypervolemia and hyponatremia. Vital signs should be monitored daily in individuals with moderate DWB. If the morning vital sign measures are consistent with previously taken measures, it is unnecessary to evaluate them again that day unless the patient's condition escalates to severe DWB. Changes in the patient's vital signs must be reported to the physician on

call; both the psychiatrist and the internal medicine doctor should be notified. The patient may require closer observation and restriction, based on vital sign changes.

Monitor the Patient for Mental Status Changes

Mental status changes may occur as the patient's condition becomes more serious. Mental status changes may be evident in the patient with moderate DWB as well as severe DWB. It is most important that as the patient experiences mental status changes, the staff observe and provide safety measures as they become necessary, such as one-to-one observation and/or seclusion. Mental status changes which one is likely to observe in the patient with moderate or severe DWB include increased restlessness, agitation, excitement, lethargy, pressured speech, increased irritability, increased delusions, aggression, disorientation, and confusion. These symptoms are similar to those of a schizophrenic or bipolar disordered patient who is escalating. It is in fact very difficult, if not impossible, to differentiate between escalating psychotic behaviors and patients with thought and/or mood disorders who have consumed far too much fluid. For this reason, the nurse must take in all the information he/she can, such as weight, vital sign changes, urine specific gravity measures, and serum sodium levels, before deciding the symptoms are due to DWB and not to their mental illness. It must be

emphasized at this point, however, that DWB should always be considered, as oftentimes the clinician concludes that psychotic behaviors or altered mental status are due to the patient's mental illness without first ruling out (or ruling in) DWB.

Physical Changes

The patient with moderate or severe DWB is likely to experience physical changes. Some such physical changes the nurse must observe include change in skin color, edema around the eyes and face, slurred speech, tremors, distended abdomen, nausea and vomiting, excessive urination, incontinence, unsteady gait, fainting, seizures, and coma.

Urine Specific Gravity Measures

Urine specific gravity may be easily measured using a test reagent strip and a small amount of the patient's urine. The measure obtained indicates how concentrated the patient's urine is and, thus, how hydrated (or overhydrated) a patient has become. The lower the measure, the more likely it is that the patient has engaged in excessive fluid consumption. The patient with mild DWB may have a normal urine specific gravity. Patients with moderate DWB have a urine specific gravity between 1.010 and 1.003. The urine specific gravity of patients with severe DWB is between 1.003 and 1.000. Urine specific gravity measures are easily obtained and the procedure is nonintrusive. This is also a

cost-effective manner in which patients may be taught to monitor their own status of DWB when they are discharged from the hospital.

Serum Sodium Levels

Serum sodium monitoring provides the most accurate measure of the patient's state of DWB. Hyponatremia (low serum sodium) is the primary factor attributed to the development of severe DWB which, if untreated, may develop into water intoxication. Thus, it makes sense to monitor the level of serum sodium. Serum sodium levels are drawn by the lab. There presently exists no standing order for a serum sodium level for patients with DWB; therefore, the physician must be called for an order when/if the nurse finds it necessary. Many patients with DWB have daily or bi-weekly orders for electrolytes which includes a sodium level. Such frequent measures may be unnecessary, however. Accurate weight monitoring and urine specific gravity measures are both indicators of the patient's level of DWB. When more information is needed, a serum sodium level should be drawn. It is unnecessary to obtain a serum sodium level when the urine specific gravity measure is normal, the patient's weight is at baseline, and the patient is displaying no physical, vital sign, or mental status changes. It is also unnecessary to obtain a serum sodium level when the patient's urine specific gravity is 1.000, his/her weight is above calculated target weight, and he/she

is displaying physical, vital sign, and mental status changes indicating severe DWB. Serum sodium levels should be drawn when necessary, to provide more information about the patient. Serum sodium levels are also very helpful in assessing a new patient. When a patient is admitted displaying psychotic features, DWB should not be ruled out. Because there is no information to use as baseline for the individual's vital sign measures or weight with a newly admitted patient, the serum sodium level gives the clinician essential information. If the patient is hyponatremic, the weight of the patient is not one which should be used for baseline. Also, if the patient is hyponatremic and hypervolemic, the psychiatrist may want to wait to order psychotropic medication until the patient has had the opportunity to "dry out."

The criterion in the following pages will guide the nurse in the assessment and diagnosis of the patient with DWB. Tables are also provided outlining defining characteristics of DWB (Appendix B) as well as objectives for each level (Appendix C). The contract is located in Appendix D and a tracking form is provided for daily monitoring of the patient with DWB in Appendix E. The reader is invited to complete the evaluation form in Appendix F, which will provide feedback as to the usefulness of this manual.

Mild DWB

Defining Characteristics

Patients exhibit increased fluid consumption, increased diurnal weight gain and increased urine output. Staff may observe such patients making frequent trips to the water fountain and restroom.

Staff Objectives:

1. educate the patient about his/her condition of DWB;
2. establish a contract with the client suffering from DWB;
3. address the etiology of DWB with the client through careful history taking and observation;
4. facilitate psychoeducational group experience;
5. therapeutically manipulate the environment as agreed upon by the treatment team;
6. educate the client about self-monitoring behaviors;
7. provide more structured activity time to deter drinking due to boredom;
8. meet the client daily for one-to-one sessions; and
9. monitor patient's weight.

Moderate DWB

Defining Characteristics

Patients evidence occasional physiological and behavioral symptoms. Clinical symptoms include, a urine specific gravity between 1.010 and 1.003, as well as diurnal weight gain. Patients often experience unexplained restlessness and hyperactivity. Many times patients are observed making frequent trips to the water fountain and restroom, and carrying cups of fluids with them wherever they go. Patients with moderate DWB often show signs of alertness in the morning with deterioration in the afternoon.

Staff Objectives:

1. present the patient the option to drink (Gatorade®, 6 ounces) every 4 hours, otherwise restrict the patient's fluid intake;
2. monitor the patient's weight;
3. monitor the patient for mental status changes;
4. monitor the patient's vital signs and report significant changes as appropriate;
5. monitor the patient for physical changes;
6. monitor urine specific gravity;
7. monitor serum sodium, if necessary;
8. include the patient in psychoeducational group if appropriate;

9. include the patient in one-to-one session if appropriate; and
10. provide structured activity time, if appropriate.

Severe DWB

Defining Characteristics

Patients with severe DWB have urine specific gravities between 1.003 and 1.000 as well as diurnal weight gain. Such patients do not respond well to verbal intervention and have an extremely short attention span. They often yell and argue with peers and staff; their thinking is distorted and inappropriate. If the patient is a smoker, his/her smoking increases also. Restricting fluids is a priority in managing the individual with severe DWB.

Staff Objectives:

1. provide one-to-one observation for fluid restriction;
2. monitor serum sodium level, if necessary;
3. monitor urine specific gravity;
4. monitor weight;
5. provide patient an opportunity to drink Gatorade® (6 ounces) every 4 hours, and otherwise restrict fluids;
6. communicate client's condition with appropriate treatment team members;

7. monitor physical, vital sign, and mental status changes; and

8. provide structured activity, if appropriate.

APPENDIX B
DEFINING CHARACTERISTICS

Note: The more severe the fluid imbalance, the more cognitive, behavioral and physical changes one will see.

MILD DWB

- Least impaired cognition and attention span.
 - Most receptive to group involvement.
 - Most receptive to psychoeducation.
 - Frequent trips to water fountain and restroom.
 - Most receptive to one-on-one therapy sessions.
 - Diurnal weight gain.
 - Increased fluid consumption.
 - Increased urine output.
-

MODERATE DWB

- Cognition and attention span moderately impaired.
 - Hyperactive and hypervigilant -- unexplained restlessness.
 - Diurnal weight gain.
 - Urine specific gravity between 1.010 and 1.003.
 - Alert in the morning with deterioration in the afternoon.
 - May drink uninterruptedly.
 - Frequent trips to the bathroom.
-

SEVERE DWB

- Urine specific gravities between 1.003 and 1.000.
 - Diurnal weight gain and hyponatremia.
 - Respond poorly to verbal intervention.
 - Thinking is often distorted and inappropriate.
 - Often yell and argue with peers and staff.
 - Can result in headaches, ataxia, tremors, nausea, vomiting, convulsions, lethargy, and seizures.
 - Not usually responsive to group therapy.
 - Increased smoking.
 - Drink constantly.
 - Large urine output.
 - Not usually receptive to group or one-on-one therapy.
-

APPENDIX C
OBJECTIVES FOR EACH LEVEL

MILD DWB

1. Educate the patient about early detection and screening procedures.
 2. Establish contract with the DWB patient.
 3. Address the etiology of DWB with the patient.
 4. Facilitate psychoeducational group experiences.
 5. Therapeutically manipulate the environment as agreed upon by treatment team.
-
6. Educate the patient about self monitoring.
 7. Provide more structured activity time.
 8. Meet the patient daily for one-on-one sessions
 9. Monitor the patient's weight.
-

MODERATE DWB

1. Present the patient the option to drink at specified times; otherwise restrict fluid intake.
 2. Monitor the patient's weight.
 3. Monitor the patient for mental status changes.
 4. Monitor the patient for vital signs changes.
 5. Monitor the patient for physical changes.
 6. Monitor urine specific gravity.
 7. Monitor serum sodium if necessary.
 8. Psychoeducational group if appropriate.
 9. One-on-one therapy if appropriate.
 10. Structured activity time.
-

SEVERE DWB

1. One-on-one observation or seclusion if necessary.
 2. Monitor serum sodium level if necessary.
 3. Monitor urine specific gravity.
 4. Monitor weight.
 5. *Restrict fluids.* May offer Gatorade (6 oz) every 4 hours.
 6. Communicate patient's condition to appropriate treatment team members (i.e., psychiatrist and supervisor).
 7. Monitor physical/mental status and vital sign changes.
 8. Structured activity if appropriate.
-

APPENDIX D
CONTRACT

I, _____,
agree to actively participate in my treatment plan. This
may include attending psychoeducational groups, being
weighed, meeting with my designated therapist when
appropriate, and allowing blood samples and urine specimens
to be taken. I am willing to take part in the planning of
interventions and to work toward the goals negotiated with
my therapist.

Treatment Goals:

Negotiated Interventions:

Signed:

Patient

Date

Nurse

Date

APPENDIX E
TRACKING FORM

Patient Name: _____

Diagnosis: _____

Level of DWB (Mild, Moderate or Severe): _____

Month: _____ Year: _____

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
One-on-one session															
Psycho-educational group therapy															
Weight at 8:00 am															
Weight at 12:00 noon															
Weight at 6:00 pm															
Urine specific gravity (if appropriate)															
Serum sodium level (if appropriate)															
Seclusion or one-on-one observation															

Staff Signatures

Initials

_____	_____
_____	_____
_____	_____
_____	_____

[illegible]

APPENDIX F
PROJECT EVALUATION FORM

Indicate the correct response by filling in the appropriate circle.	Excellent	Average			Poor
1. Description of DWB and its treatment was thorough.	0	0	0	0	0
2. Manual well organized and easy to follow.	0	0	0	0	0
3. Presentation of manual clear and concise.	0	0	0	0	0
4. Stimulation of interest in DWB.	0	0	0	0	0
5. Manual was sensitive to the learning needs of the nurse and his/her role in psych setting.	0	0	0	0	0
6. Anticipated effectiveness of the manual.	0	0	0	0	0

Please offer any Open Response comments below.