COMPARISON OF FLUID INTAKE OF SELF-FEEDING TO ASSISTED-CARE ELDERLY NURSING HOME RESIDENTS

By

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ABSTRACT

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Comparison of Fluid Intake of Self-Feeding to Assisted-Care Elderly Nursing Home Residents

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The status of hydration of forty elderly, who were residing in Lyngblomsten Care Center in St. Paul, Minnesota, was investigated in this study. The subjects were further separated into two groups using the Minimum Data Set (MDS) screening. The MDS was used to screen and assess the subjects for cognitive patterns, communication/hearing patterns, physical functioning and structural problems, and oral/nutritional status. Using the MDS, the subjects were separated into dependent and independent feeding groups.

The amount of food and beverages consumed by each subject was recorded for three consecutive days by the

researcher and staff members. Using the the data collected, the total calorie and water intakes were calculated using the Food Processor Plus software. The actual fluid intake was compared with the recommended fluid level from three standards.

The results obtained from this study showed that many of the dependent and independent feeders were not receiving the recommended amount of fluid. According to standard 1, 68% of dependent feeders and 88.9% of independent feeders did not receive the recommended amount of fluid. According to standard 2, 72% of dependent and 77.8% of independent feeders were below the recommended level. According to standard 3, 90% of dependent feeders and 100% of independent feeders did not achieve the water recommendation level.

The results also showed that variables such as age, gender, weight, and number and frequency of medications did not contribute significantly to the total amount of fluid intake. These findings were consistent with other similar studies done in the past.

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INTRODUCTION

Dehydration has long been considered a major health problem in the elderly. In 1991, dehydration was one of the ten most frequent diagnoses reported for Medicare hospitalizations (Health Care Financing Administration [HCFA], unpublished data) (Warren et al. 1994). The major concern with dehydration is that it is commonly underdiagnosed. For instance, approximately one percent of all hospital admissions is associated with hypernatremic dehydration in which serum sodium levels exceed 148 mEq/liter. In other instances, approximately one million elderly individuals per year are admitted to acute care hospitals with isotonic dehydration as a major component of their clinical presentation (Minaker 1995).

According to researchers and practitioners, dehydration is one of the most long-standing and pressing problems of institutionalized persons (Chidester and Spangler 1997). Federal guidelines for long-term-care facilities require that hydration needs are met. The Minimum Data Set (a multi-disciplinary assessment and screening tool for long-term-care residents) provides examples of situations that trigger a need for additional assessment of dehydration problems.

One of the major risk factors for dehydration is an increase of age; the oldest of old (those between the ages of 85 and 99 years) are six times more likely to be hospitalized for dehydration (Chernoff 1994). This is an alarming rate since the current demographics indicate that by the year 2000, persons 65 and older are expected to represent 13 percent of the population. When elderly persons fail to receive optimal hydration, they are susceptible to problems such as urinary tract infections, pneumonia, pressure ulcers, confusion and disorientation (Chidester and Spangler 1997). The results from studies indicate that 17.42 percent of patients admitted with a principal diagnosis of dehydration died within 30 days after admission (Warren et al. 1994). Those admitted under a variety of other diagnostic categories, but with the concomitant diagnosis of dehydration, were also significantly preventable. Recognizing the scope of the problem and identifying the pertinent risk factors are very important in devising effective strategies for prevention.

The objective of this study is to compare the fluid intake of self-feeding elderly nursing home residents to the fluid intake of elderly residents who are assisted by a care giver. The fluid intake from food and beverages will be compared to the recommended hydration level established for the elderly.

REVIEW OF LITERATURE

Elderly

Definition

Although there is no definite consensus as to what constitutes aging, several concepts are generally being accepted (Neuhaus 1982). Neuhaus stated that the aging process begins at the moment of conception and continues until death. Aging is a gradual process that is hardly noticed by anyone. The aging process usually is examined in terms of chronological, biological, physiological and sociological processes. Changes that occur as individuals age are physical, mental, social and emotional.

According to Roe (1983), old and elderly are derogatory terms suggesting that a person can no longer function efficiently, that thought processes are slowed, or that senility is imminent. From a nutritional point of view, an elderly person appears to be one who may have many factors that impair nutritional status. These factors include; problems with ingestion and digestion of food, difficulties in absorption and utilization of nutrients, impaired metabolism, chronic diseases, and difficulties in ambulating (Neuhaus 1982).

In American society, for example, chronological age is utilized as a basis for judgment about a person's stage in life (Smith 1985). In some situations, society defines the elderly in formal chronological terms, such as when determining eligibility for social security benefits, establishing compulsory retirement, and formulating social and health legislation (Glenn 1974). Clausen (1972) has indicated that aging is a course in life that reflects the passage of individuals along a number of dimensions such as stages of work, career, health and family development.

For the purposes of this research, the age of 65 years and older will be used to indicate the elderly, even though there are many different definitions for elderly. Other terms such as senior citizens, older Americans, and golden ages may be used interchangeably throughout this thesis to indicate the elderly.

Dehydration

Definition

Dehydration can be defined as a depletion in total body water (TBW) content due to pathologic fluid losses, diminished water intake, or a combination of both (Gross et al. 1991). Another definition of dehydration is a rapid weight loss of more that 3 percent of body weight (Huffman

1996). Hoffman (1991) defined dehydration as a deficit of relatively pure water (water alone, rather than water and sodium) which leads to hypernatremia.

Water and sodium imbalances are closely interrelated (Sansevero 1997). Changes in osmotic gradients, such as a gain or loss of salt, have an effect on water balance. Similarly, sodium imbalances occur when there are alterations in water volume. Water and solute imbalances can be classified as isotonic, hypertonic, or hypotonic. Dehydration occurs in isotonic and hypertonic alterations, as defined in Table 1 (Heuther 1997).

Table 1 Water and Solute Imbalances

Tonicity	Mechanism
Isotonic	Gain or loss of extracellular fluid (ECF) resulting in a concentration equivalent to 0.9% sodium chloride solution; no shrinking or swelling of cells takes place.
Hypertonic	Imbalance caused by a water loss or solute gain that produces an ECF concentration greater than 0.9% sodium chloride solution; cells shrink.
Hypotonic	Imbalance caused by a water gain or solute loss that results in an ECF less than 0.9% sodium chloride; cells swell.

Source: Gross CR, Lindquist RD, Woolley AC, et al: Clinical indicators of dehydration severity in elderly patients. J Emerg Med. 1991; (10): 267-74.

Isotonic dehydration occurs when there are equivalent losses of both sodium and water, which results in dehydration

without a change in serum osmolality. Hypertonic dehydration is observed in hypernatremia and hyperosmolality (Minaker 1995)

Weinberg and Kenneth (1995) stated that several forms of dehydration occur and must be distinguished, since the forms dictate the management. According to the authors, isotonic dehydration results from a balanced loss of water and sodium, which can occur during complete fasting.

Vomiting and diarrhea will result in isotonic dehydration because of loss of large amounts of water and electrolytes in gastric contents. Hypertonic dehydration occurs if water losses are greater than sodium losses. The characteristics of hypertonic dehydration are hypernatremia (serum sodium levels > 145 mmol/L) and hyperosmolality (serum osmolality >300 mmol/kg). Fever results in loss of water through the lungs and skin, and when combined with limited ability to increase oral fluid intake; it is perhaps the most common cause of hypernatremic dehydration. Hypotonic dehydration occurs when sodium loss exceeds water loss. The serum sodium is decreased (>135 mmol/L) and the serum osmolality is low (<280 mmol/kg). This type of dehydration occurs primarily with excessive usage of diuretics, causing excess loss of sodium.

Evaluation of Dehydration

To evaluate the causes of dehydration, medications should be reviewed, and medical illnesses, bowel and bladder function, and any mental status changes should be assessed (Weinberg and Minaker 1995). Signs and symptoms of dehydration volume depletion may be vague, deceptive, or even absent in elderly. Therefore, different clinical changes must be evaluated in older patients, specifically targeting function and oral fluid intake. A study on dehydrated states in the elderly emphasizes the need for an age-appropriate assessment. These results show that age-related tendencies, such as loss of autonomic function and the widespread use of vasoactive medications among the elderly, can cloud the issue (Gross et al. 1991).

The mouth is one of the most important features to assess in an older client with suspected dehydration. According to Gross et al. (1991), a set of sensitive signs and symptoms that accurately correlate with clinical dehydration in elderly populations has been identified (Table 2). Note that in Table 2, no one positive indicator can strongly correlate with a dehydrated state. However, several positive indicators from among the list would be important for assessment and diagnosis. Tongue furrows, dry mucous membranes of the mouth, and absent saliva pool are high correlates for dehydration. Tongue furrows should not

be confused with geographic tongue, which is a benign finding characterized by patchy papillary loss giving rise to a map-like appearance.

Skin turgor can be observed in the older patient by tenting the tissue on the forehead or over the sternum, because alterations in skin elasticity are less marked in these areas. However, in Winberg's report, skin turgor assessment is unreliable, and weights may be impracticable in the nursing home setting.

Table 2. Clinical Indicators of Dehydration Severity in Elderly Patients

Strongly correlative	• Tongue furrows • Tongue dryness • Dry mucous membranes of the mouth and nose • Small or absent saliva pool • Tongue coating
Moderately correlative	• Upper body muscle weakness • Speech difficulty • Confusion • Sunken eyes
Weakly correlative	• Tachycardia • Emaciation • Lethargy

Source: Gross CR, Lindquist RD, Woolley AC, et al: Clinical indicators of dehydration severity in elderly patients. J Emerg Med. 1991; (10): 267-74.

Rate and degree of filling of small veins in the foot has also been used to assess hydration status (Robinson and Demuth 1985). A dorsal foot vein can be occluded by finger

pressure at a distal point and emptied of its blood by stroking proximally with another finger. In a well-hydrated patient, the vein will fill instantly when the pressure is released. In a volume-depleted patient, the vein will fill slowly, over a period longer than three seconds. Researchers utilizing this method noted that changes in the rapidity and degree of vein filling in the foot provided the best way for evaluating changes in hydration of elderly subjects (Robinson and Demuth 1985).

Although intake and output (I&O) records are often important in handling patients with fluid imbalances, frequent inaccuracies can make these records less than reliable. According to Pflaum (1979), daily weights may be a more accurate measure of a patient's fluid status, but inaccuracies can also occur in measuring body weights. Therefore, both I&O and weight records should be maintained to check fluid status. In general, a gain or loss of 1 kg body weight in a short period is equivalent to a gain or loss of 1 L of fluid.

Blood pressure is another measure to assess hydration status. Wolanin and Phillips (1981) have indicated that a drop of at least 15 mmHg in the systolic pressure, and 10 mmHg in the diastolic pressure, results when volume-depleted patients are quickly shifted from a lying to a standing position.

Body temperature may be used to observe hydration. In younger individuals, a rise of temperature above normal (37° C [98.6° F]) may be an indicator of dehydration. However, when assessing aged patients, it is important to realize that their normal body temperatures are often lower than 37° C (98.6° F), possibly close to 36.1° C (97° F).

Clearly, dehydration and cognitive impairment are other conditions that affect the progression of disability in older persons. A study was conducted to develop and validate a predictive model that would identify on admission those elders at risk for development of delirium (Inouye et al. 1993). Of 107 elderly medical patients 70 years or older, 27 elders developed delirium during their hospital stay. A predictive model was developed and validated, and results identified four dependent baseline risk factors for delirium:

1. Vision impairment
2. Severe illness
3. Cognitive impairment
4. Dehydration (blood urea nitrogen [BUN]/creatinine > 18:1)

Patients with delirium were more acutely ill, and had greater underlying chronic illness, dementia, and functional disability than other patients. In addition, delirium often

triggers a cascade of adverse events that add to the risk of functional decline. Such complications include falls, use of restraints, urinary catheterization, aspiration, malnutrition, and dehydration (O'Keeffe et al. 1997).

Ratios of blood urea nitrogen to creatinine of 25 or more may be found in dehydrated patients. A serum sodium level greater than 148 mmol per L is also an indicative of dehydration, although normal sodium levels may be observed in isotonic and hypotonic dehydration even when the patient is severely dehydrated (i.e., hypernatremia may be a relatively late-finding in these types of dehydration). If a patient is at risk of developing dehydration, Huffman (1996) recommends early laboratory evaluation consisting of serum electrolyte, urea nitrogen, and creatinine measurements.

Thirst in elderly

Water is one of the most important nutrients needed to maintain homeostasis in older adults (Chernoff 1994). It is also the most abundant solvent or medium in the human body. The loss of water may have profound consequences because of its essential role in the regulation of cell volume, nutrient transport, waste removal, intercellularity, and is limited to the fat free compartment. At birth, total body water is approximately 80 percent, but this is slowly

decreased to 60-70 percent in old age. The amount of intracellular water is closely related to cell mass, the metabolically active body compartment. In a series of cross-sectional studies, it has been demonstrated that the changes in total body water with advancing age are mostly due to decreases in intracellular water, and therefore, to changes in total body cell mass (Fulop et al. 1985).

Table 3. Common Laboratory Findings in Dehydration States

Hypertonic dehydration	• Elevated BUN (>18 mg/dl) • Packed Cell Volume (PCV) (>40% to 50% for men; >37% to 47% for women). • Elevated Hematocreit • Elevated serum Na(>148 mEq/L) • Elevated urine specific gravity (>1.025)
Isotonic dehydration	• Normal serum osmolality (275-295 Osm/kg) • Low hematocrit (<40% to 50% PCV for man; <37% to 47% for women)

Source: Gross CR, Lindquist RD, Woolley AC, et al: Clinical indicators of dehydration severity in elderly patients. J Emerg Med. 1991; (10): 267-74.

From a physiological point of view, fluid balance is maintained in the body by a continuous dynamic interaction between the intracellular and extracellular fluid (ECF) compartments (Sansevero 1997). Osmosis guides the flow of water across a semipermeable membrane from an area of higher concentration to an area of lower concentration. In the

normal healthy state, this homeostatic mechanism is easily maintained. The primary regulating factors for the fluid balance process are antidiruetic hormone (ADH) for water, and aldosterone for sodium. ADH is secreted as a result of an increase in serum osmolality or a decrease in circulating blood volume. Osmolality is a measure used to assess hydration status. It is defined as the number of particles of molecules per weight of water (Heuther 1997). The normal serum osmolality of body fluids is 275 to 295 Osm/kg. When there is a water deficit or an increase in sodium relative to water, an increase of serum osmolality prompts the stimulation of hypothalamic osmoreceptors to induce thirst sensations. The regulation of thirst and ADH secretion is summarized in Figure 1 (Heuther 1997).

Sodium accounts for more than 90 percent of the ECF cations and is hormonally regulated by aldosterone, a mineralocoticoid secreted from the adrenal cortex. The secretion of aldosterone is controlled by circulating blood volumes and plasma concentrations of sodium and potassium. Its primary function is to increase the reabsorption of sodium and secretion of potassium by the distal tubule of the kidney. Other regulating factors for sodium and water include the renin-angiotensin system and the natriuretic

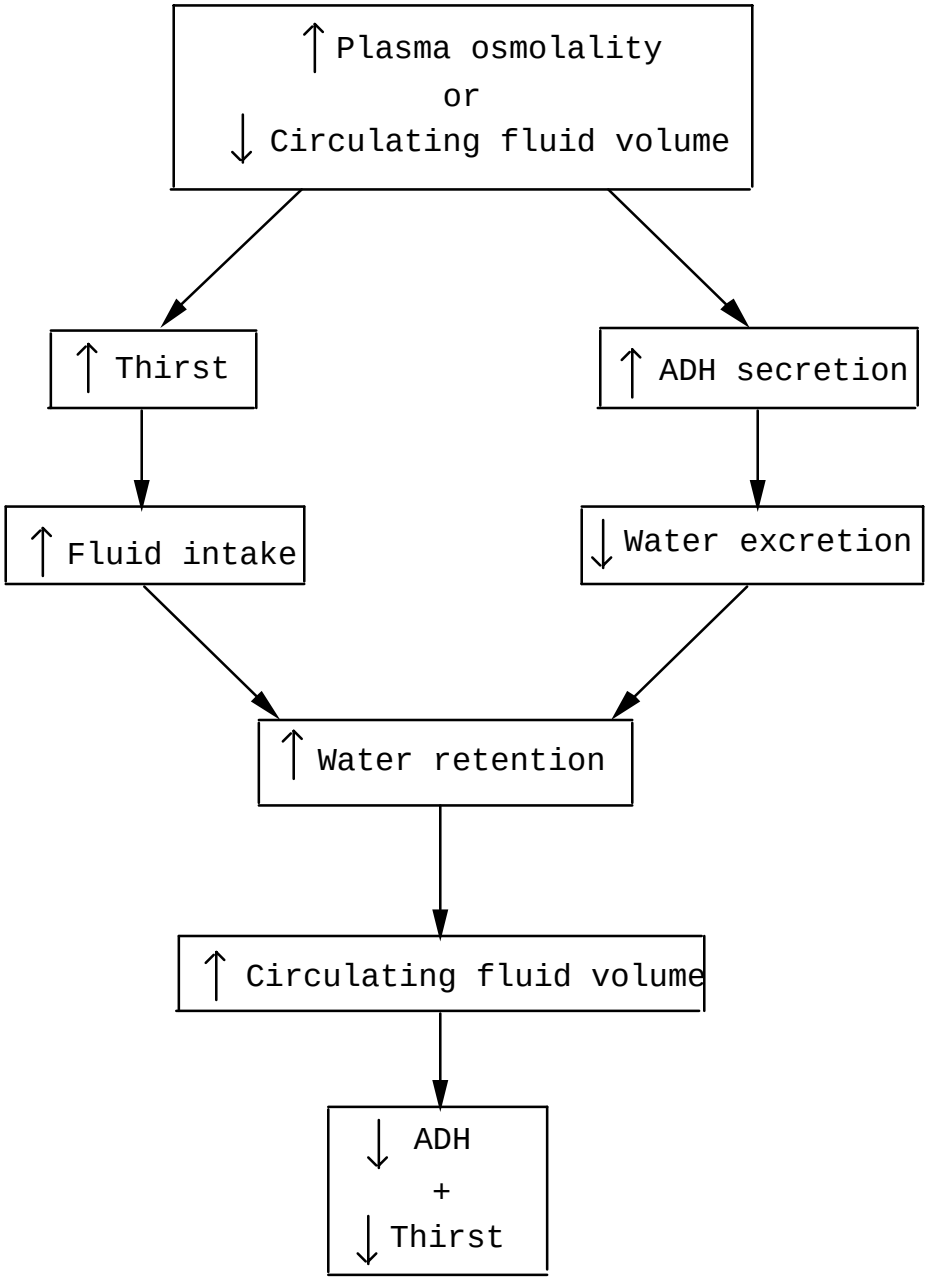


Figure 1. Regulation of thirst and antidiuretic hormone(ADH) secretion.

hormone (Heuther 1997). The renin-angiotensin system increases systemic arterial pressure and regulates renal blood flow through a number of complex physiologic mechanisms. Natriuretic hormone is released when the right arterial pressure increases. It inhibits ADH and dilutes urine, thereby increasing its volume. The overall effect of natriuretic hormone is a reduction in blood volume and pressure (Heuther 1997)

Thirst usually occurs when the need for water has not been realized. Studies have shown that thirst is diminished in older persons, even in normal older people, with high serum sodium and osmolality levels (Chernoff 1994). This may become a serious problem when older individuals become ill, since loss of thirst sensitivity may contribute to severe dehydration, impairment of cognition, and additional loss of water.

Recent studies confirm the long-standing clinical observation that thirst and food intakes are impaired in the elderly (Mineker et al. 1985). In a series of studies, the osmotic threshold for thirst during hypertonic saline infusion was much higher in healthy elderly subjects than in their younger counterparts, with many normal elders not reporting thirst despite elevations of plasma osmolality to levels over 300 mOsm/kg (Murphy et al. 1988). In studies of

water ingestion after intravenously induced hyperosmolality, elderly individuals demonstrate clear reductions, compared with a younger group, in their water intake, and the rate of return of plasma osmolality to baseline. Finally, the same investigators evaluated the influence of free access to water on prevention of osmolality during hypertonic saline infusion. Despite equivalent increases in plasma volume, the older group displayed significantly less water intake, and greater increases in plasma osmolality than did the younger group.

Physiological change in elderly

Structural and functional changes are observed in the elderly as a result of aging. As the human body ages, the quantity of total body water, proportional to body weight, decreases. More specifically, this reduction occurs in the intracellular compartment, making cells more susceptible to dehydration. Typically, the older person’s body contains more fat and less lean muscle mass. These anatomical changes reduce the overall water content, since muscle holds 40 percent of total body water (Lavizzo-Mourey 1987). However, changes in body weight do not directly indicate whether there are changes in body fat or muscle. It is known that there is an increase in proportion of body fat to

muscle with age, which results in a decrease in body water. Young et al. (1963) reported increases in body fatness of 23.1 percent in the fifth decade, 46.0 percent in the sixth decade, and 55.3 percent in the seventh decade in comparison with the third decade.

At age 25, lean body mass constitutes approximately 47 percent of body weight, whereas at age 70, lean body mass decreases to about 36 percent (Nelson 1981). Longitudinal and cross-sectional studies of men and women of different ages, measuring lean body mass by radioactive potassium counting, confirm the continuous decline in lean body mass with age (Forbes and Bruining 1976). Progressive changes in body composition affect changes in individual organs and tissues. According to Munro (1981), compared to a young adult, after the age of 70, skeletal muscle lost 40 percent of the young weight, liver 18 percent, kidneys 9 percent, and lungs 11 percent. Since muscle is the largest tissue in the body, it contributes the major part of the age-associated loss in lean body mass and body water.

Renal function in elderly

The functional decline of the older kidney, is another important age-related change affecting fluid balance. As the kidney ages, there is a gradual loss of glomeruli, which results in a reduced filtering surface. The organ manifests

these changes by losing the ability to concentrate urine effectively (Sansevero 1997). The Baltimore Longitudinal Study on Aging reported a mean decrease in glomerular filtration rate (GFR) of 0.75 mL per minute per year. One third of a sample of 254 normal, elderly subjects reported no decrease in renal function with advancing age, suggesting that a decline in renal function is not immutable. Nevertheless, it has been demonstrated that renal mass does decline, and that renal blood flow declines with age (Chernoff 1994).

Renal concentrating ability reduces with age in humans. In several studies, the maximum urine osmolality, measured following 12 to 24 hours of dehydration, is inversely related to age (Lindeman et al, 1966). In one study, the maximum urine osmolality is 1109 mOsm/kg in 31 subjects with the age of 20 to 39 years. In comparison, the maximum urine osmolality is 1051 mOsm/kg in 48 subjects with the age of 40 to 59 years, and 882 mOsm/kg in 18 subjects with the age of 60 to 79 years (Rowe et al. 1976).

Renal diluting ability is also impaired as a function of age (Crowe et al. 1987). In water-diuresing subjects, minimal urine osmolality is significantly higher (92 mOsm/kg in elderly subjects vs. 52 mOsm/kg in young subjects). Free water clearance is also decreased (5.9 mL/min in elderly subjects vs. 16.2 mL/min in young subjects). The impairment

in free water clearance is largely due to the decrease in GFR. However, when the free water clearance is adjusted for GFR, there is still a significant, but less substantial, decrease in older individuals (Minaker 1995).

Concurrently, ADH has a diminished effect and subtle pH changes are no longer recognized. An important consideration when evaluating laboratory values is that in some cases, older adults may have increased blood urea nitrogen (BUN) levels that may be directly attributable to age-associated changes (Sansevero 1997). On the other hand, insufficient dietary protein can lower BUN levels, and as a result, a nutritionally impaired older adult may show a normal BUN serology, yet have significant impairment in renal functioning (Fischbach 1992).

Overall, the alteration in kidney function means that the older person is less likely to maintain an adequate fluid balance and can, therefore, progress quite rapidly to a potentially lethal state of dehydration and electrolyte imbalance (Aaronson and Seaman 1989).

Among the elderly population, especially those over 75 years of age, the body’s ability to maintain homeostasis declines significantly. This phenomena is directly related to a number of important predisposing factors, such as diminished thirst and decreased renal function, that make the elderly more susceptible to fluid and electrolyte

imbalances. From a clinical perspective, the primary care practitioner has to act as a gatekeeper for those most vulnerable to dehydration. In order to successfully manage dehydration in the elderly, it is critical for practitioners to obtain a working knowledge of these predisposing factors. Thus, preventative strategies can be formulated from the beginning, thus avoiding the ensuring complications.

Clinical factors for dehydration

Acute infections, such as pneumonia and urinary tract infections, are common in the elderly, accounting for up to 20 percent of acute hospitalizations in this population. The associated fever results in increased insensible loss of water from sweating, tachypnea, and increased cellular catabolism. Infection of the upper urinary tract may specifically result in reduction of the renal concentrating ability, that may persist for weeks following resolution of the infection. Excessive urinary losses of water and sodium are very common in the sick elderly patient (Minaker 1995).

The likelihood of developing diabetes mellitus (DM), a relative common glucose disorder, increases with age. When uncontrolled, as in diabetic ketoacidosis, the condition can cause intravascular fluid volume depletion by osmotic diuresis through the kidney (Sansevero 1997). In noninsulin-dependent diabetes (NIDDM), glycosuria and

polyuria may occur when the condition is complicated by hyperosmolar nonketotic coma (HHNKC). This metabolic abnormality is characterized by extreme glucose elevations, resulting in a massive diuresis with water losses between 4.8 and 12.6 g/liter occurring daily. Serum osmolality increases and neurologic changes such as stupor, correlate with the degree of hyperosmolality (Sansevero 1997). Diabetes insidious (DI), a disorder causing insufficient ADH secretion, results in an impairment of urine concentration, prompting large losses of water.

Urinary tract obstruction is a common affliction in the elderly male with prostatic hypertrophy, often exacerbated by anticholinergic medication. Postobstructive diuresis associated with relief of urinary tract obstruction, is physiologically similar to nephrogenic diabetes insidious with its inadequate renal responsiveness to vasopressin.

Gastrointestinal losses of fluid occur with vomiting, nasogastric drainage, diarrhea, and bleeding. In addition to the commonly recognized etiology of diarrhea, laxative abuse is often present but unreported in the elderly. As many as 40 to 60 percent of elderly persons use laxatives regularly, in which the elderly patient may experience unrecognized continuation of regularly ordered laxatives and stool softeners in the setting of diarrhea. The elderly are

especially prone to heat-related fluid loss from excessive sweating with inadequate volume replacement (Minaker 1995).

Often underappreciated in elderly individuals are conditions resulting in inadequate fluid intake. Iatrogenic oral fluid deprivation is commonly ordered before diagnostic or surgical procedures or, inappropriately, for edema, renal insufficiency, or hyponatremia. Also, gastrointestinal problems, such as swallowing disorders, bowel obstruction, and the unrecognized side effects of medication (nausea, vomiting, early satiety), often preclude adequate oral fluid intake. A common, yet infrequently diagnosed, cause of bowel obstruction in the elderly is ischemic bowel disease.

Numerous prescription and over-the-counter drugs can predispose the elderly to dehydration. The most common class of agents at fault is diuretics such as hydrochlorothiazide, furosemide (lasix, SK-Furosemide), or bumetanide (BUMEX). Other serious offenders include excessive use of sedatives, antiphychotics, or major tranquilizers such as diazepam (Valium, Valrelease), lorazepam or haloperidol (Haldol). Although such agents may be effective in managing anxiety, pain, or paranoia, they invariably affect the desire to drink fluids. In addition, alcohol abuse is often overlooked as a possible contributing factor for dehydration in the elderly (Sansevero 1997).

Constipation, which is a common complaint in the elderly, is often treated with laxatives. Overuse of these seemingly innocuous, over-the-counter remedies can induce severe diarrhea and acute dehydration, which can also result in serious electrolyte abnormalities. Nonsteroidal anti-inflammatory drugs (NSAIDS) are frequently used by elders to treat arthritic pain. By inhibiting prostaglandin synthesis, NSAIDS can disrupt fluid and electrolyte homeostasis and cause renal vasoconstriction. Moreover, they are cleared renally, so even a mild impairment in hydration status can potentiate serious damage to vulnerable renal tissue (Sansevero 1997).

From a nutritional point of view, artificial feeding supplements can also predispose the client to dehydration because of their high osmolality. Those receiving total parental nutrition or high-protein tube feedings, or taking nutritional supplements are prone to fluid and electrolyte alterations and need close attention.

Other factors (Hoffman, 1991) that may also have an effect on the fluid intake of the elderly individual include: decreased water access due to immobility, functional dependence, poor visual acuity, or diminished taste and smell which may lead to decreased food and fluid intake, and fear of oral intake due to dysphagia and aspiration. Nutrition intervention, such as high-protein

diets and high-solute tube feedings, may also cause dehydration if extra fluids are not given.

Drug effects on dehydration

For most nursing-care facilities, drug therapy is a key component of resident care. In the United States, persons of age 65 or older, account for 23 to 30 percent of all prescription drug use each year. Surveys reveal that at least 28 percent of residents in long-term care facilities are on some type of medication. Among the elderly, analgesics, cardiovascular agents, laxatives, antacids, vitamins, and sedatives are the most frequently used drugs (Behrens and Blocker 1994).

For drugs to be effective, they must be absorbed into the body, distributed through the blood stream, converted into their active forms, and excreted by the kidneys. Factors that can affect how this process works include: body weight and composition, age, gender, physical condition, food, and/or drug interactions (Behrens and Blocker 1994).

Elderly patients, particularly those with incontinence of urine or those on diuretics, attempt to take their medications with as little fluid as possible. Capsules, more often than tablets, can remain in the esophagus for 5 to 15 minutes. This may cause irritation, ulceration, stricture, or even more serious damages. However, quite

often this delay causes no abnormal esophageal characteristics. Patients particularly at risk are those with hiatus hernia, stricture, and an enlarged left atrium caused by mitral valve disease (Watson 1994).

Correct or incorrect intake of fluids may play an important part in the chain of drug absorption and disposition. Drugs with poor water-soluble characteristics will be absorbed to varying degrees, depending on the amount of fluid used to swallow them. Fluids may still play a more important role. It has been speculated that ice water, which is frequently used in nursing homes, can delay the dissolution of capsules. This could become an important factor in the case of hypnotics where rapid onset to overcome sleep latency is desirable (Watson 1994).

The elderly often show some phase of dehydration in response to a diminished thirst mechanism, decreased fluid intake, or increased fluid excretion. Dehydration leads to a diminished plasma volume. Plasma albumin concentrations may, therefore, appear to be elevated. Conversely, when patients suffer from congestive heart failure or renal impairment, they may see an expanded plasma volume and decreased albumin concentrations (Munro and Young 1978, Mitchell and Lipschitz 1982). Furthermore, lean body masses, the metabolically active tissue, decreases with age. Muscular tissue decreases by 40 percent, the kidney by 9

percent, the liver by 18 percent, and the lung by 11 percent. This decrease is accompanied by an increase in body fat and a decrease in total body water (Munro 1981).

Alterations in urinary excretion often result from changes in urinary pH. Tubular excretion/reabsorption of some drugs follow pH-dependent kinetics. If the urine has an acidic pH, weak basic drugs such as amitriptyline and chloroquine would be excreted because they will form water-soluble salts in the urine. Conversely, if the urine is alkaline, these drugs would remain largely water-insoluble and would be reabsorbed. Thus, a continued dosing at a predetermined level would ultimately lead to toxic plasma levels of the drug.

Balanced protein diets will produce an acid urinary pH (pH 5.9), while low-protein diets usually result in an alkaline urinary pH (pH 7.5). It is interesting to note that citrus fruit juices, contrary to ‘expectations’, produce alkaline urine. Many elderly switch to low-protein diets with advancing age, and it is reasonable to assume that drug elimination may well change simply due to that factor.

Minimum Data Set (MDS)

Providing care to residents of long-term care facilities is complex and challenging work, which requires

clinical competence, observational skills, and assessment expertise from all disciplines to develop individualized care plans. The Resident Assessment Instrument (RAI) helps staff to gather definitive information on each resident's strengths and needs that must be addressed in the plan. The RAI also assists staff to tract changes in the resident's status.

The RAI helps facility staff to look at residents as individuals for whom quality of life and quality of care are mutually significant and necessary. Interdisciplinary use of the RAI meets this emphasis on the quality of care and life. Facilities have found that incorporating disciplines such as dietary, social work, physical and occupational therapy, speech language pathology, pharmacy, and activities in the RAI process has improved resident care and strengthened team communication.

The RAI consists of the Minimum Data Set (MDS), Resident Assessment Protocols (RAPS), and Utilization Guidelines. The MDS is a core set of screening that forms the foundation of the comprehensive assessment for all residents of long-term care facilities. The set includes clinical and functional status elements including common definitions and coding categories (Allen 1997). The completion of the assessment instrument has been a manual system within each facility. The long-term care facilities

are required to encode and electronically transmit all required MDS records to the State Survey Agency effective June 22, 1998.

METHODOLOGY

Subjects

The subjects for this study consisted of 40 elderly residing in Lyngblomsten Care Center in St. Paul, Minnesota during February of 1999. The subjects included 13 men and 27 women who were all Caucasians and over the age of 60. These subjects were free from acute illness and infections, and did not receive enteral feedings. Due to the personal nature of the study, an agreement between Lyngblomsten Care Center and the University of Wisconsin-Stout was established (Appendix A). The consent form was signed by the directors of Medical Service and Food Service at Lyngblomsten Care center. The main agreement drawn in the consent form was that any risks to the subjects were small, and the potential benefits to Lyngblomsten Care Center could be significant upon the successful completion of this study. The study was to be carried out in a confidential manner and Lyngblomsten Care Center had the right to withdraw permission for participation of all or some of the subjects.

The subjects were divided into two groups, an independent feeding group and a dependent feeding group. In order to divide the subjects into these two groups, the Minimum Data Set (MDS) was used (Allen 1997). The MDS is a

set of screening and assessment elements that form the foundation of the comprehensive assessment for all residents of long term care facilities. Highly skilled nursing units at Lyngblomsten Care Center reviewed the subjects for their cognitive patterns (Section B of MDS), communication/hearing patterns (Section C), physical functioning and structural problems (Section G), and oral/nutritional status (Section K) (Appendix B).

After concluding the MDS review, the subjects who received high marks were placed in the independent feeding group, and the subjects with low marks were placed in dependent feeding group. As a result, the subjects in independent feeding group were able to feed by themselves, and those in dependent feeding group needed full or partial assistance in feeding themselves. In this study, a total of 18 participants were randomly assigned to the independent feeding group and 22 participants were randomly assigned to the dependent feeding group.

Data Collection

In order to facilitate the data collection, the researcher prepared a data sheet (see Appendix C) which contained categories for gender, age, body weight, medication number and frequency, calorie intake, and water

intake. The data were collected for each subject for 3 consecutive days (Tuesday, Wednesday, and Thursday) by direct observation by the nursing staff and researcher. The same data sheet was used for all subjects in the independent and dependent feeding groups.

The total calorie and water intakes were calculated using the Calorie Count Record Sheet (see Appendix D) created by the researcher. The sheet contained the amount of food and beverages consumed by each subject during breakfast, lunch, dinner, and snack times. The same menus were given to all subjects in both groups. Each data sheet represented one full day of meals, and a total of 120 data sheets were collected during this study.

The water intake with medication was recorded by nursing staff on the record sheet. Nursing staff was much more diligent recording snacks, than medications and associated fluid on this sheet. Information regarding the frequency of medication dispensation and the number of medications was recorded for each subject. This information was provided by a food service manager, since the researcher did not have an access to the subjects medical records. The nursing staff recorded the water intake with medication.

The researcher, with the help from resident staff members, was responsible for recording and collecting data. However, the resident staff members were responsible for

recording and collecting data during bed times (10 PM to 6 AM).

Data Analysis

The FPRO (Food Processor Plus) software was used to analyze the total energy (kcal) consumed, and the total fluid (g) taken by each subject per day. To compare the actual fluid intake with the recommended fluid intake, data sheets were used to record the actual body weight of each subject and the total energy consumed by each. The following three standard formulas were used in this study:

Standard 1: 30 mL fluid per kg actual body weight (Chernoff, 1994).

Standard 2: 1 mL fluid per kcal energy consumed (Food and Nutrition Board 1989).

Standard 3: 100 mL fluid per kg for the first 10 kg actual body weight, 50 mL fluid per kg for the next 10 kg actual body weight, and 15 mL fluid per kg for the remaining kg actual body weight (Skipper 1993).

Descriptive data analysis included determination of means, standard deviations, and ranges of actual fluid

intake and recommended fluid intake as determined by using the three standard formulas. A two-tailed t test was used to compare whether there was any significant difference between the groups of actual water or calories consumed. The t-test also compared the values obtained from subtracting each of the three calculated recommended water intake values from actual water intake of the two groups. This statistic indicates whether either of the two groups were significantly more replete or deficient in recommended water than the other.

RESULTS

General Information

The subjects for this study consisted of elderly residing in Lyngblomsten Care Center in St. Paul, Minnesota during February of 1999. The Minimum Data Set was used to separate the subjects into two groups: an independent feeding group and a dependent feeding group. A data sheet (Appendix C), prepared by the researcher, was used to collect the data on gender, age, body weight, medication number and frequency, calorie intake, and water intake for each subject for three consecutive days. The total calories and water intakes were calculated using the Calorie Count Record Sheet (Appendix D).

The FPRO (Food Processor Plus) software was used to analyze the total energy (kcal) consumed by, and the total fluid (g) taken by each subject per day. The three standard formulas were used to compare the actual fluid intake with the recommended fluid intake. Descriptive data analysis including means, standard deviations, ranges, and a two-tailed t test were conducted on the actual and recommended fluid intakes.

Gender and Age

There were 40 participants in the study, 13 males and 27 females (Table 4). The age of participants ranged from 73 to 99, with the mean age of 87 and the median age of 87.5 (Table 5).

Table 4 Gender of Participants

Gender	Number	Percent
Male	13	32.5
Female	27	67.5

Table 5 Age of Participants

Age	Frequency
73[a]	1
76	2
77	3
78	1
82	4
83	2
85	4
86	2
87	1
88	1
89	2
90	6
92	2
93	2
94	1
96	2
97	2
98	1
99	1

[a]Means there is only one person with age 73.

Dependent and Independent Groups

Of the 40 participants, 18 were independent feeders and 22 were dependent feeders. There were 6 males and 16 females in the dependent feeding group and 7 males and 11 females in the independent feeding group (Table 6).

Table 6 Classification by Independent or Dependent Feeders

Groups	Total Number	Males	Females
Dependent	22	6	16
Independen	18	7	11

Dependent feeders were defined as those who needed full or partial assistance in feeding themselves. The age range of dependent feeders was 73 to 99, with the mean age of 86.2 years. Independent feeders had a tendency to be older with the age range of 76 to 97, with the mean age of 87.9 years (Table 7).

Body Weight

The participants ranged from 33.6 kg to 98.2 kg in weight. The mean weight was 63.1 kg and the median weight was 59.85 kg. The body weight ranged from 33.6 kg to 96.4

Table 7 Range of Age in Dependent and Independent Feeding Groups

Dependent	Frequency	Independent	Frequency
73	1	76	1
76	1	78	1
77	3	82	2
82	2	83	1
83	1	85	3
85	1	89	1
86	2	90	3
87	1	92	1
88	1	93	1
89	1	94	1
90	3	96	2
92	1	97	1
93	1		
97	1		
98	1		
99	1		

kg for the dependent feeding group, with the mean of 60.17 kg. The mean body weight of independent feeders was 66.7 kg, which was slightly higher than dependent feeders. The body weight of independent feeders ranged from 41.8 kg to 98.2 kg (Table 8).

Medications

Participants were prescribed from 1 to 10 medications per day, and the mean number of medications was 5.225. The mean number of medications taken by dependent feeders was 4.59, compared to 6 medications taken by independent feeders

(Table 9). The medications were taken once per day to five times per day, with the mean number of 3.15 times

Table 8 Body Weight (kg) of Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
33.6	1	41.8	1
43.9	1	48.2	1
44.5	3	49.5	1
45.0	1	50.5	2
50.0	1	57.3	2
51.4	1	61.8	1
53.4	1	62.3	1
55.5	1	63.2	1
55.9	2	64.3	1
57.9	1	75.5	2
63.6	1	79.5	1
67.3	1	80.0	1
69.3	1	90.2	1
70.0	1	95.0	1
73.6	1	98.2	1
74.5	1		
85.5	1		
87.7	1		
96.4	1		

per day. Both dependent and independent feeders took the medications from 1 to 5 times per day. The mean number of times dependent feeders took medications was 3.22 versus 3.05 times for the independent feeders (Table 10).

Table 9 Number of Medications taken by Dependent and Independent Feeders

Medication	Dependent	Independent	Total
1	3	2	5
2	2	0	2
3	2	0	2
4	5	2	7
5	1	3	4
6	4	3	7
7	3	3	6
8	1	2	3
9	0	2	2
10	1	1	2

Table 10 Frequency of Medications Taken Per Day by Dependent and Independent Feeders

Times/Day	Dependent	Independent	Total
1	1	2	3
3	14	12	26
4	7	3	10
5	0	1	1

Water and Caloric Intakes

The average water intake over the three-day period was 1417 grams, and the individual water intake ranged from 602 to 2374 grams. The average water intake for dependent feeders ranged from 602 to 2374 grams, with the mean water of 1392 grams. This was only slightly, but not significantly, lower than the mean intake of 1447 grams of independent feeders, with the range from 1005 to 2083 grams (Table 11).

The caloric intake over the three days ranged from 546 to 2649 kcal, with the mean caloric intake of 1639 kcal. The calorie intake of dependent feeders for the 3 days ranged from 546 to 2649 kcal, with the mean of 1549 kcal, whereas the calorie intake of independent feeders ranged from 1002 to 2492 kcal, with the mean of 1750 kcal (Table 12).

Table 11 Total Water Intake (g) for Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
602	1	1005	1
669	1	1024	1
678	1	1128	1
738	1	1161	1
886	1	1165	1
1124	1	1170	1
1201	1	1328	1
1221	1	1363	1
1313	1	1426	1
1337	1	1430	1
1461	1	1460	1
1474	1	1480	1
1506	1	1507	1
1567	1	1558	1
1638	1	1776	1
1647	1	1920	1
1676	1	2071	1
1706	1	2083	1
1745	1		
1831	1		
2231	1		
2374	1		

Table 12 Total Energy (kcal) for Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
546	1	1002	1
586	1	1172	1
640	1	1288	1
1169	1	1345	1
1180	1	1399	1
1190	1	1415	1
1320	1	1519	1
1474	1	1526	1
1475	1	1696	1
1505	1	1713	1
1544	1	1795	1
1677	1	1909	1
1734	1	2075	1
1738	1	2172	1
1863	1	2232	1
1924	1	2316	1
1937	1	2444	1
2009	1	2492	1
2081	1		
2302	1		
2649	1		

Comparison of Actual and Calculated Water Intakes

The first method by which recommended water intake was determined, used body weight utilizing the formula, 30 mL water per kg body weight. Only nine of the forty participants consumed equal or greater than the recommended amount of water (Table 13). Of the nine, seven were dependent feeders and only two were independent feeders. Results ranged from –1776 to 214 mL with the mean value of

–553.5 mL for independent feeders and –1441 to 772 mL with the mean value of –413.2 mL for dependent feeders. A (-) negative sign preceding the number indicates mL of water deficiency when compared to calculated value.

When water intake was calculated by the second formula, 1 mL water/kcal consumed, only 10 of the 40 participants consumed equal or greater amounts than the recommended (Table 14). Of the ten, 4 were independent feeders and 6 were dependent feeders. The range for independent feeders was from –1007.0 to 159.0 mL, with the mean value of –303.05 mL. The range for dependent feeders was from –614.0 to 281.0 mL, with the mean value of –157.36 mL.

The third formula was 100 mL fluid per kg for the first 10 kg actual body weight, 50 mL fluid per kg for the next 10 kg actual body weight, and 15 mL fluid per kg for the remaining kg actual body weight. When water recommendation was determined using this formula, only 2 of the 40 participants obtained enough water (Table 15). The two participants who obtained enough water were dependent feeders, and none of the independent feeders obtained enough water. The range for dependent feeders was from –1416.0 to 373.0 mL, with the mean value of –710.6 mL. The range for independent feeders was from –1503.0 to –51.5 mL, with the mean value of –753.0.

Table 13 Difference Between Water Consumed and Calculated by First Method for Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
-1441.0	1	-1776.0	1
-1381.0	1	-1241.0	1
-1170.0	1	-1226.0	1
-1147.0	1	-1137.0	1
-1068.0	1	-1074.0	1
-858.0	1	-827.0	1
-822.0	1	-764.0	1
-729.0	1	-558.0	1
-561.0	1	-470.0	1
-533.0	1	-347.0	1
-449.0	1	-329.0	1
-406.0	1	-249.0	1
-203.0	1	-157.0	1
-188.0	1	-152.0	1
-134.0	1	-55.0	1
2.00[a]	1	-16.0	1
41.0	1	**201.0**	1
96.0	1	**214.0**	1
144.0	1		
326.0	1		
554.0	1		
772.0	1		

[a]Numbers in bold represent the nine participants who obtained adequate water intake when actual water intake was compared to the formula (30 mL water per kg body weight).

Two-Tailed t test on Dependent and Independent Variables

Results from the t test showed t values ranging from 0.3 for water difference consumed using formula 3, to –1.8 for the number of medication types taken. The two-tailed probability estimates ranged from 0.08 for number of medication types taken, to 0.76 for water difference consumed using formula 3. However, there were no

significant differences in any variable (age, medication types and frequency, average Kcal, average water or water differences) as calculated by all three formulas between these two groups (Table 16).

Table 14 Difference Between Water Consumed and Calculated by Second Method for Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
-614.0	1	-1007.0	1
-500.0	1	-725.0	1
-443.0	1	-689.0	1
-418.0	1	-668.0	1
-333.0	1	-667.0	1
-323.0	1	-429.0	1
-304.0	1	-421.0	1
-290.0	1	-396.0	1
-275.0	1	-283.0	1
-273.0	1	-163.0	1
-168.0	1	-138.0	1
-162.0	1	-71.0	1
-118.0	1	-59.0	1
-71.0	1	-2.0	1
-70.0	1	**8.0**	1
-28.0	1	**15.0**	1
56.0[a]	1	**81.0**	1
92.0	1	**159.0**	1
98.0	1		
154.0	1		
247.0	1		
281.0	1		

[a]Numbers in bold represent the nine participants who obtained adequate water intake when actual water intake was compared to the formula (1 mL water per kcal consumed).

Table 15 Difference Between Water Consumed and Calculated by Third Method for Dependent and Independent Feeders

Dependent	Frequency	Independent	Frequency
-1416.0	1	-1503.0	1
-1399.5	1	-1308.5	1
-1358.5	1	-1204.5	1
-1272.0		-1073.0	
-1202.5	1	-999.5	1
-1102.0	1	-898.5	1
-1018.5	1	-849.0	1
-981.5	1	-834.5	1
-901.0	1	-822.0	1
-811.5	1	-722.0	1
-683.0	1	-620.0	1
-666.5	1	-614.5	1
-657.0	1	-594.5	1
-564.5	1	-497.5	1
-530.5	1	-493.0	1
-397.5	1	-329.0	1
-378.5	1	-139.5	1
-333.0	1	-51.5	1
-326.5	1		
-199.0	1		
192.5	1		
373.0	1		

[a]Numbers in bold represent the nine participants who obtained adequate water intake when actual water intake was compared to the formula (100 mL fluid per kg for the first 10 kg actual body weight, 50 mL fluid per kg for the next 10 kg actual body weight, and 15 mL fluid per kg for the remaining kg actual body weight).

Table 16 Comparison of Dependent versus Independent Variables Using Two-Tailed t test

Variables	Groups	Mean	St. Err.	t value	2-tailed
Age	Dependen Independ	86.2 87.9	1.56 1.47	-0.78	0.437
Weight (kg)	Dependen Independ	60.1 66.7	3.47 3.98	-1.24	0.223
Medication	Dependen Independ	4.59 6.00	0.52 0.58	-1.8	0.08
Medication Frequency	Dependen Independ	3.22 3.05	0.14 0.22	0.67	0.51
Ave. Energy (kcal)	Dependen Independ	1549.4 1750.5	113.8 107.0	-1.27	0.21
Ave Water (g)	Dependen Independ	1392.0 1447.5	102.0 78.3	-0.42	0.68
Water diff (formula 1)	Dependen Independ	-413.2 -553.5	130.9 132.3	0.75	0.46
Water diff (formula 2)	Dependen Independ	-157.3 -303.0	52.2 79.5	1.58	0.12
Water diff (formula 3)	Dependen Independ	-710.6 -753.0	105.3 90.8	0.30	0.76

DISCUSSION

Subjects and Caregivers

A study of 40 residents of Lyngblomsten Care Center in St. Paul, Minnesota, was conducted to investigate the adequacy of fluid intakes from meals and nonmeal feedings. Furthermore, these subjects were divided into dependent and independent feeding groups based on Minimum Data Set screening test.

Unfortunately, the major obstacle encountered in this study was that these subjects did not eat 100 percent of their meals. The subjects consuming significantly less than 100 percent of their meals could be at risk, since meals themselves do provide various amounts of fluid. For these subjects, the awareness of caregivers and their actions could remedy these situations. For instance, if the meal consumption was routinely low for a particular subject, such that he or she was not consuming enough fluid, then the caregiver could increase fluid intake in nonmeal feedings. The findings suggested that caregivers should concentrate their efforts on all elderly residents, as very few of the population studied met the recommended water levels.

Effects of Age and Weight on Water Intake

The number of women who participated in this study was more than twice the number of men (Table 4). Dependent feeders outnumbered independent feeders 22 to 18 (Table 6), and independent feeders were slightly older than dependent feeders (Tables 7). However, this difference was not significant, and should not have affected calculated values. The slightly, but not significant, higher average body weight of independent feeders (66.7kg), compared to 60.1 kg of dependent feeders (Table 8), should have impacted the calculation of water needs. The range of water intake (Table 11) for dependent feeders (602 g to 2374 g) was greater than the range for independent feeders (1005 g to 2083g), but the difference between them was not significant. Neither dependent nor independent feeders achieved recommendation levels.

Effects of Medication on Water Intake

The average number of medications was 1.41 higher for the independent feeders than the dependent feeders (table 9), but the dependent feeders took medications 0.17 times more frequently than did the independent feeders (Table 10). These differences were not significant and probably added

some, but not significantly, to the total water consumed. The reason for this insignificance might have been that the staff nurses did not record the water taken with medication at night clearly.

Energy and Water Intake

The average calorie of dependent feeders was 1549 kcal, compared to the average intake of independent feeders of 1750 kcal (Table 12). This difference in caloric intake probably added some, but not much, to the total water consumed. However, energy intake correlated significantly with fluid intake. Independent feeders consumed more calories than dependent feeders and had higher water intake than dependent feeders. However, this 200 kcal difference was not significant between the two groups.

Comparison of Actual and Calculated Water Intake

Sixty-eight percent of the dependent feeders compared to 88.9 percent of independent feeders did not obtain the recommended amount of water as calculated by first formulation, 30 mL water per kg body weight (Table 13). However, this was not a significant difference since the majority of participants did not achieve the recommended

level. To put Table 13 into perspective, an additional one-cup of water (250 mL) would put 8 additional people, 3 dependent and 5 independent feeders, into the category of meeting the recommended amount.

There was not a significant difference between the 72 percent of dependent and 77.8 percent of independent feeders who did not meet water recommendation as calculated based on second formulation of kcal intake (Table 14). Those who met the recommended water amount included 6 dependent and 4 independent feeders. One cup of water (250 mL) would have placed 11 participants, 6 dependent and 5 independent feeders, in the adequate category.

Ninety percent of the dependent feeders and 100 percent of the independent feeders did not achieve the water recommendation based on third formulation (Table 15). This meant that only 2 of 40 participants obtained enough water, and both were dependent feeders. In this case, adding 250 mL of water would only bring 3 participants, 1 dependent and 2 independent feeders, to the adequate level. However, there was not a significant difference between the two groups.

Two-Tailed t test

As there were not significant differences in any variable between two groups, age, weight, medication type, and medication frequency probably had little effect on water recommendation of the two groups (Table 16). Also, there were no significant differences between the two groups in meeting the recommendation using any of the three formulations. It is of concern that the number of both groups who did not meet the recommendations calculated by the three methods is quite high. It was found from this study that by drinking one or two cups of water would have brought many more people closer to the recommendation level.

Comparison with Other Studies

Study by Chidester and Spangler

Chidester and Spangler performed a similar study in 1997. In their study, fluid intake was collected for 40 nursing home residents for 3 consecutive days from meal and nonmeal feedings. The collected data were compared with the three standards, which were the standards also used in this study. A two-tailed t test was used to compare actual and recommended fluid intakes. In their study, the subjects

were separated into two age groups: 65 through 85 years, and 86 through 100 years.

The results from their study showed similar trends found in this study. When the actual and recommended fluid intakes were compared using three standards, the subjects received adequate fluid according to standards 1 and 2. However, inadequate fluid amount was consumed according to standard 3. They found that age was not a factor in adequacy of fluid intake, although older subjects tended to be more dependent on fluid from meals to achieve adequate fluid intake. They also found a positive correlation between fluid obtained from nonmeal feedings, and number and frequency of medications.

The findings in this study differed from their study, but showed similar trends. Similar to the Chidester and Spangler (1997) study, the results from this study showed that age did not have a significant impact on fluid intake. Since the subjects were separated into dependent and independent feeding groups, dependent feeders showed a tendency to intake less fluid than independent feeders. This suggested that dependent feeders, who tended to have a higher mean age, may need assistance from caregivers to achieve adequate fluid intake.

Another similarity was that the subjects had difficulties in meeting the water intake recommendation

level calculated by standard 3. In the study by Chidester and Spangler, their subjects received adequate fluid according to standards 1 and 2, but not 3. In this study, although the entire population did not meet any of the three standards' recommendation level, many did meet recommendation levels computed by standards 1 and 2, but over 90 percent did not meet standard 3 level.

There were differences between this study and the one performed by Chidester and Spangler. This study took matters further by studying subjects based on dependent and independent feeding. The results from this study show that caregivers play an important role in providing or offering adequate fluid intake, especially to those who depend on others to feed them. The difference between the two studies was that subjects in Chidester and Spangler study received enough fluid whereas, in this study, there were many who failed to receive the recommended level.

There were some variables that could have contributed to subjects not receiving the recommended amount of water in this study, compared to the Chidester and Spangler study. First, since data were collected by both the researcher and caregivers, some data might have been recorded more accurately than other data. Second, the sample of subjects was different. In the study by Chidester and Spangler, all subjects were able to feed by themselves. However, in this

study, dependent feeders required caregivers' attention. Third, the contribution from nonmeal feedings added to the total fluid intake in their study. In this study, fluid from nonmeal feedings was not significant. A difficulty in data collection could be reliance on the p.m. shift to record fluid intake during the nonmeal feedings. Finally, since the subjects in these studies were from different nursing homes, the role of caregivers could have significantly impacted the results. Education of the health care providers about dangers of dehydration and potential techniques to achieve optimum fluid levels may have also differed in the two studies.

Study by Lavizzo-Mourey, Johnson, and Stolley

Lavizzo-Mourey, Johnson, and Stolley (1988) performed a similar study on identifying the risk factors for dehydration in acutely ill elderly nursing home residents. Their hypothesis was that those nursing home residents who develop dehydration associated with an acute illness, differed from those without dehydration with regard to six categories of clinical variables; underlying diagnoses, type of acute illness, type of medications, level of functional status, and time of year during which the dehydration develops.

In their study, 339 subjects with acute illness requiring hospitalization in 1984 were taken from two nursing homes. A standard laboratory definition of dehydration was used: serum sodium concentration greater than 150 mg/dL, or a blood urea nitrogen to creatine ratio (BUN: Cre) greater than 25. One hundred and seventy-three subjects had a serum sodium of less than 150 mg/dL and a BUN:Cre less than 20. These subjects were designated controls for the purpose of this study. Ninety-one were thought to have significant dehydration and twelve were severely dehydrated. The variables in the study included age, sex, level of care requirement, date of admission to the hospital, underlying diagnoses, acute diagnoses, electrolytes, BUN and creatine on admission to the hospital, medications used within one month of discharge to the hospital, and functional status measures. The functional status measures were based on the subject's ability to eat, toilet, dress, communicate, and walk or transfer from bed to chair without assistance. Three levels of feeding and mobility status were defined: those who did not require any assistance, those who required assistance with feeding, and those who required tube feeding.

The results of their study showed that more female subjects were significant or severely dehydrated than male subjects. The more severe cases have more chronic diagnoses

than the less severe or the controls. There is some trend towards increased medications among the severely dehydrated subjects. All variables except the number of acute diagnoses represented significant risk factors for dehydration. Age, sex, number of chronic diseases, and number of medications were the most important risk factors for dehydration. Of the functional status measures, requiring a skilled level of care and being bedridden, were risk factors for the less severe cases. Among those with severe dehydration, requirements for assistance with transfers or ambulation, as well as being bedridden and requiring a skilled level of care, were associated with a markedly increased risk for dehydration.

There are differences between the study performed by Lavizzo-Mourey, Johnson, and Stolley and this researcher. First, the age and gender did not have significant impact on dehydration in this researcher's study. However, this impact was much greater in the study done by Lavizzo-Mourey, Johnson, and Stolley. They concluded that women over the age of 85 years were at greatest risk for dehydration. Second, the effects of number and type of medications on dehydration were more significant in the study done by Lavizzo-Mourey, Johnson, and Stolley than in this researcher's study. However, this effect might have been significant in our study if the records were more clearly

kept during the data-collecting process. However, one similar conclusion from the two studies is that the subjects who needed the most assistance were in danger of dehydration.

CONCLUSIONS AND FUTURE RESEARCH

Conclusions

In this study, several conclusions could be made with regards to dehydration in elderly. One, it is difficult to make generalizations regarding the elderly since they represent a diverse group with different needs and care. With this in mind, the researcher concludes the following from this study:

1. Age did not have a significant impact on dehydration in elderly. In general, older subjects achieved less fluid and energy intake, but this difference was insignificant. Older subjects tended to eat less, and therefore, consumed less fluid intake.

2. Independent feeding subjects weighed slightly more than dependent feeding subjects. Therefore, independent feeders ate more and achieved slightly higher fluid levels than dependent feeders. This small difference was somewhat surprising, but since the weight difference between the two groups were very slight, this was expected.

3. The number and frequency of medications added very little to the total amount of fluid for both dependent and independent feeders. The number and frequency of medications did not contribute much to the total fluid intake in this study. The main contributor to the total amount in this study came from meal feedings.

4. The actual fluid intake for both groups was, in general, less than the recommended level according to the three standards. Independent feeders achieved a better success than dependent feeders, as was expected. Both groups were more successful in achieving, or coming closer to, the recommended levels calculated by standards 1 and 2, but failed badly for standard 3. In all three cases, if the subjects were to drink one or two cups of fluid, they would have had a much better result.

5. This study compared well with a similar study done by Chidester and Spangler. Both studies concluded similar results and trends. The results from both studies showed that subjects alone cannot control the fluid level; they need professional help in achieving a more desirable fluid level to prevent dehydration.

6. Finally, caregivers in health care facilities need to be educated and trained to understand and properly take care of the needs of elderly. They need to understand the dangers of dehydration, especially in elderly, and know how to treat dehydration. This responsibility should fall on dietetic practitioners.

Future Research

The recommendations for further study as observed by the researcher are as follows:

1. Study the effect of drug interaction in dehydration. It is known that different drugs act differently under similar circumstances, especially for elderly. This may help caregivers to better treat elderly patients in long-term care facilities.

2. Study how the side effects of certain drugs affect the dehydration level in elderly.

3. Conduct a similar study including subjects from different long-term care facilities to be more inclusive. This wide range of subjects could help generalize the dehydration pattern among elderly.

4. Compare elderly subjects from different cities, counties, and/or countries. The advantage of this type of study is to observe the quality of long-term care facilities around the country, and to target specific areas of the country that needs assistance.

5. Identify and include other dependency factors that may contribute to dehydration in elderly. Identification of these factors in future research could be very important.

APPENDIX A

Lyngblomsten Care Center and University of Wisconsin-Stout Consent Form

UW-Stout Institutional Review Board
Consent Form for the Study:
Comparison of Fluid Intake of Self Feeding to
Assisted Care Elderly Nursing Home Residents

The primary purpose of this study is to compare the fluid intake of self-feeding elderly nursing home residents to the fluid intake of elderly residents who are assisted in feeding by a caregiver. Subjects will be 40 residents who are free from acute and chroinc infection and not receiving enteral feedings. Consecutive 3-day foods and fluid intake will be recorded and analyzed by computer for water content. Type, number, and frequency of medications and Minimum Data Set (MDS) information about cognitive skills, physical locomotion, and ability to understand will be obtained. The secondary purpose is to compare fluid intake from beverages and foods to fluid recommendations established for the elderly. The three established standards are 30 mL/kg body weight, 1 mL/Kcal energy consumed, and 100 mL/kg for first 10 kg, 50 ml/kg for next 10 kg, and 15 mL for remaining kg body weight.

We, the undersigned, understand that by returning this consent form we are giving our informed consent and professional authorization as responsible employees of the Lyngblomsten Care Center for the execution of this study. We understand the nature of the study and agree that any risks to the subjects are exceedingly small. We also agree that the potential benefits that might be realized from the successful completion of this research would be significant. We are aware and agree that the information being sought will be provided in a specific, confidential manner so that only minimal identifiers are necessary and overall confidentiality will be guaranteed. We realize that we can withdraw permission for participation for all or some of the subjects. We agree that all concerned will function within standard medical protocols and ethics.

Note: Questions or concerns about this study or the role of Lyngblomsten Care Center or the University of Wisconsin-Stout should be addressed first to the researcher, Samantha Choi, Phone (612) 332-4136, or research advisor, Carol Seaborn, Ph.D., RD, Department of Food and Nutrition, Phone (715) 232-2216 and second to Dr. Ted Knous, Chair, UW-Stout Institutional Review Board for the Protection of Human Subjects in Research, 410 BH, UW-Stout, Menomonie, WI 54751, Phone (715) 232-1126

On Behalf of Lyngblomsten Care Center:

Martha McCusker Date 2/23/99
Martha McCusker, M.D.
Director of Medical Service

Shannon Heinz, RD Date 2/15/99
Shannon Heinz, RD
Director of Food Service

UW-Stout Student Researcher:

Samantha Choi Date 2/15/99
Samantha Choi
Student Researcher

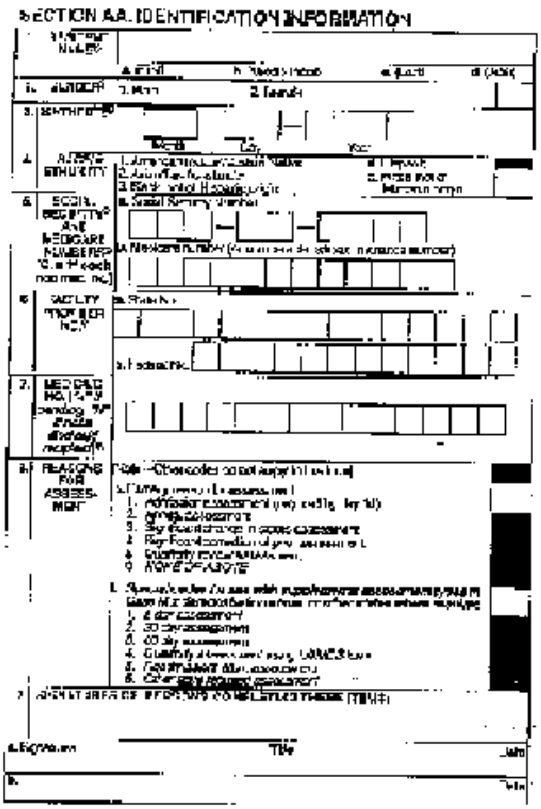
APPENDIX B

Minimum Data Set (MDS) – Version 2.0

MINIMUM DATA SET (MDS) — VERSION 2.0

FOR NURSING HOME RESIDENT Assessment AND CARE SCREENING

BASIC ASSESSMENT TRACKING FORM



Resident _____ Numeric identifier _____

MINIMUM DATA SET (MDS) — *VERSION 2.0*

FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING

BACKGROUND (FACE SHEET) INFORMATION AT ADMISSION

SECTION AB. DEMOGRAPHIC INFORMATION

1. DATE OF ENTRY — Date therapy began. *Note — Does not include readmission if resident was placed on leave of temporary discharge to hospital, etc. In such cases, use prior admission date.*
Month ___ Day ___ Year ___

2. ADMITTED FROM (AT ENTRY)
1. Private home/apt. with no home health services
2. Private home/apt. with home health services
3. Board and care/assisted living/group home
4. Nursing home
5. Acute care hospital
6. Psychiatric hospital, MR/DD facility
7. Rehabilitation hospital
8. Other

3. LIVED ALONE (PRIOR TO ENTRY)
0. No
1. Yes
2. In other facility

4. ZIP CODE OF PRIOR PRIMARY RESIDENCE

5. RESIDENTIAL HISTORY 5 YEARS PRIOR TO ENTRY — (Check all settings resident lived in during 5 years prior to date of entry given in item AB1 above)
- a. Prior stay at this nursing home
- b. Stay in other nursing home
- c. Other residential facility—board and care home, assisted living, group home
- d. MH/psychiatric setting
- e. MR/DD setting
- f. NONE OF ABOVE

6. LIFETIME OCCUPATION(S) (Plus "V" [between two occupations])

7. EDUCATION (Highest Level Completed)
1. No schooling
2. 8th grade/less
3. 9-11 grades
4. High school
5. Technical or trade school
6. Some college
7. Bachelor's degree
8. Graduate degree

8. LANGUAGE — (Code for current response)
a. Primary Language
0. English 1. Spanish 2. French 3. Other
b. If other, specify

9. MENTAL HEALTH HISTORY — Does resident's RECORD indicate any history of mental retardation, mental illness, or developmental disability problem?
0. No 1. Yes

10. CONDITIONS RELATED TO MR/DD STATUS — (Check all conditions that are related to MR/DD status that were manifested before age 22, and are likely to continue indefinitely)
- a. Not applicable—no MR/DD (Skip to AB11)
- MR/DD with organic condition:
  - b. Down's syndrome
  - c. Autism
  - d. Epilepsy
  - e. Other organic condition related to MR/DD
- f. MR/DD with no organic condition

11. DATE BACKGROUND INFORMATION COMPLETED
Month ___ Day ___ Year ___

SECTION AC. CUSTOMARY ROUTINE

1. CUSTOMARY ROUTINE — (In year prior to DATE OF ENTRY in [nursing home, or year last in community if now being admitted from another nursing home]) (Check all that apply; if all information UNKNOWN, check last box only)

CYCLE OF DAILY EVENTS
- a. Stays up late at night (e.g., after 9 pm)
- b. Naps regularly during day (at least 1 hour)
- c. Goes out 1+ days a week
- d. Stays busy with hobbies, reading, or usual daily routine
- e. Spends most of time alone or watching TV
- f. Moves independently indoors (with appliances, if used)
- g. Use of tobacco products at least daily
- h. NONE OF ABOVE

EATING PATTERNS
- i. Strict food preferences
- j. Eats between meals all or most days
- k. Use of alcoholic beverage(s) at least weekly
- l. NONE OF ABOVE

BOWEL PATTERNS
- m. In bed/chair much of day
- n. Wanders (total all or most nights)
- o. Has irregular bowel movement pattern
- p. Showers/bathing
- q. Bathing in PM
- r. NONE OF ABOVE

INVOLVEMENT PATTERNS
- s. Daily contact with relatives/close friends
- t. Usually attends church, temple, synagogue (etc.)
- u. Finds strength in faith
- v. Daily animal companion/pet visit
- w. Involved in group activities
- x. NONE OF ABOVE
- y. UNKNOWN—Patient/family unable to provide information

END

SECTION AD. FACE SHEET SIGNATURES

SIGNATURES OF PERSONS COMPLETING FACE SHEET:

a. Signature of RN Assessment Coordinator — Date

b. Signature — Title — Sections — Date

c. Date

d. Date

e. Date

f. Date

g. Date

NOTE: When letter in box, check if question applies

Resident ______________________ Numeric Identifier ______________

MINIMUM DATA SET (MDS) — *VERSION 2.0*
FOR NURSING HOME RESIDENT ASSESSMENT AND CARE SCREENING
FULL ASSESSMENT FORM

(Status in last 7 days, unless other time frame indicated)

SECTION A. IDENTIFICATION AND BACKGROUND INFORMATION

1.	RESIDENT NAME	a. (First) b. (Middle Initial) c. (Last) d. (Jr/Sr)
2.	ROOM NUMBER	
3.	ASSESSMENT REFERENCE DATE	a. *Last day of MDS observation period* Month – Day – Year b. Original (0) or corrected copy of form (enter number of correction)
4a.	DATE OF REENTRY	Date of reentry from most recent temporary discharge to a hospital in last 90 days (or since last assessment or admission if less than 90 days) Month – Day – Year
4.	MARITAL STATUS	1. Never married 2. Married 3. Widowed 4. Separated 5. Divorced
6.	MEDICAL RECORD NO.	
7.	CURRENT PAYMENT SOURCES FOR N.H. STAY	*(Billing Office to indicate; check all that apply in last 30 days)* Medicaid per diem a. Medicare per diem b. Medicare ancillary part A c. Medicare ancillary part B d. CHAMPUS per diem e. VA per diem f. Self or family pays for full per diem g. Medicaid resident liability or Medicare co-payment h. Private insurance per diem (including co-payment) i. Other per diem j.
8.	REASONS FOR ASSESSMENT *[Note—If this is a discharge or reentry assessment, only a limited subset of MDS items need be completed]*	a. Primary reason for assessment 1. Admission assessment (required by day 14) 2. Annual assessment 3. Significant change in status assessment 4. Significant correction of prior assessment 5. Quarterly review assessment 6. Discharged—return not anticipated 7. Discharged—return anticipated 8. Discharged prior to completing initial assessment 9. Reentry 0. *NONE OF ABOVE* b. *Special codes for use with supplemental assessment types in Case Mix demonstration states or other states where required* 1. *5 day assessment* 2. *30 day assessment* 3. *60 day assessment* 4. *Quarterly assessment using full MDS form* 5. *Readmission/return assessment* 6. *Other state required assessment*
9.	RESPONSIBILITY/ LEGAL GUARDIAN	*(Check all that apply)* Legal guardian a. Other legal oversight b. Durable power of attorney/health care c. Durable power attorney/financial d. Family member responsible e. Patient responsible for self f. *NONE OF ABOVE* g.
10.	ADVANCED DIRECTIVES	*(For those items with supporting documentation in the medical record, check all that apply)* Living will a. Do not resuscitate b. Do not hospitalize c. Organ donation d. Autopsy request e. Feeding restrictions f. Medication restrictions g. Other treatment restrictions h. *NONE OF ABOVE* i.

SECTION B. COGNITIVE PATTERNS

1.	COMATOSE	*(Persistent vegetative state/no discernible consciousness)* 0. No 1. Yes **(If yes, skip to Section G)**
2.	MEMORY	*(Recall of what was learned or known)* a. Short-term memory OK—seems/appears to recall after 5 minutes 0. Memory OK 1. Memory problem b. Long-term memory OK—seems/appears to recall long past 0. Memory OK 1. Memory problem
3.	MEMORY/ RECALL ABILITY	*(Check all that resident was normally able to recall during last 7 days)* Current season a. Location of own room b. Staff names/faces c. That he/she is in a nursing home d. *NONE OF ABOVE* are recalled e.
4.	COGNITIVE SKILLS FOR DAILY DECISION-MAKING	*(Made decisions regarding tasks of daily life)* 0. *INDEPENDENT*—decisions consistent/reasonable 1. *MODIFIED INDEPENDENCE*—some difficulty in new situations only 2. *MODERATELY IMPAIRED*—decisions poor; cues/supervision required 3. *SEVERELY IMPAIRED*—never/rarely made decisions
5.	INDICATORS OF DELIRIUM—PERIODIC DISORDERED THINKING/ AWARENESS	*(Code for behavior in the last 7 days.)* *[Note: Accurate assessment requires conversations with staff and family who have direct knowledge of resident's behavior over this time]* 0. Behavior not present 1. Behavior present, not of recent onset 2. Behavior present, over last 7 days appears different from resident's usual functioning (e.g., new onset or worsening) a. EASILY DISTRACTED—(e.g., difficulty paying attention; gets sidetracked) b. PERIODS OF ALTERED PERCEPTION OR AWARENESS OF SURROUNDINGS—(e.g., moves lips or talks to someone not present; believes he/she is somewhere else; confuses night and day) c. EPISODES OF DISORGANIZED SPEECH—(e.g., speech is incoherent, nonsensical, irrelevant, or rambling from subject to subject; loses train of thought) d. PERIODS OF RESTLESSNESS—(e.g., fidgeting or picking at skin, clothing, napkins, etc; frequent position changes; repetitive physical movements or calling out) e. PERIODS OF LETHARGY—(e.g., sluggishness; staring into space; difficult to arouse; little body movement) f. MENTAL FUNCTION VARIES OVER THE COURSE OF THE DAY—(e.g., sometimes better, sometimes worse; behaviors sometimes present, sometimes not)
6.	CHANGE IN COGNITIVE STATUS	Resident's cognitive status, skills, or abilities have changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated

SECTION C. COMMUNICATION/HEARING PATTERNS

1.	HEARING	*(With hearing appliance, if used)* 0. *HEARS ADEQUATELY*—normal talk, TV, phone 1. *MINIMAL DIFFICULTY* when not in quiet setting 2. *HEARS IN SPECIAL SITUATIONS ONLY*—speaker has to adjust tonal quality and speak distinctly 3. *HIGHLY IMPAIRED*/absence of useful hearing
2.	COMMUNICATION DEVICES/ TECHNIQUES	*(Check all that apply during last 7 days)* Hearing aid, present and used a. Hearing aid, present and not used regularly b. Other receptive comm. techniques used (e.g., lip reading) c. *NONE OF ABOVE* d.
3.	MODES OF EXPRESSION	*(Check all used by resident to make needs known)* Speech a. Writing messages to express or clarify needs b. American sign language or Braille c. Signs/gestures/sounds d. Communication board e. Other f. *NONE OF ABOVE* g.
4.	MAKING SELF UNDERSTOOD	*(Expressing information content—however able)* 0. *UNDERSTOOD* 1. *USUALLY UNDERSTOOD*—difficulty finding words or finishing thoughts 2. *SOMETIMES UNDERSTOOD*—ability is limited to making concrete requests 3. *RARELY/NEVER UNDERSTOOD*
5.	SPEECH CLARITY	*(Code for speech in the last 7 days)* 0. *CLEAR SPEECH*—distinct, intelligible words 1. *UNCLEAR SPEECH*—slurred, mumbled words 2. *NO SPEECH*—absence of spoken words
6.	ABILITY TO UNDERSTAND OTHERS	*(Understanding verbal information content—however able)* 0. *UNDERSTANDS* 1. *USUALLY UNDERSTANDS*—may miss some part/intent of message 2. *SOMETIMES UNDERSTANDS*—responds adequately to simple, direct communication 3. *RARELY/NEVER UNDERSTANDS*
7.	CHANGE IN COMMUNICATION/ HEARING	Resident's ability to express, understand, or hear information has changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated

☐ = When box blank, must enter number or letter ☐a. = When letter in box, check if condition applies

MDS 2.0 10/18/94

Resident ____________ Numeric Identifier ____________

SECTION D. VISION PATTERNS

1.	VISION	(Ability to see in adequate light and with glasses if used) 0. ADEQUATE—sees fine detail, including regular print in newspapers/books 1. IMPAIRED—sees large print, but not regular print in newspapers/books 2. MODERATELY IMPAIRED—limited vision; not able to see newspaper headlines, but can identify objects 3. HIGHLY IMPAIRED—object identification in question, but eyes appear to follow objects 4. SEVERELY IMPAIRED—no vision or sees only light, colors, or shapes; eyes do not appear to follow objects	
2.	VISUAL LIMITATIONS/ DIFFICULTIES	Side vision problems—decreased peripheral vision (e.g., leaves food on one side of tray, difficulty traveling, bumps into people and objects, misjudges placement of chair when seating self)	a.
		Experiences any of following: sees halos or rings around lights; sees flashes of light; sees "curtains" over eyes	b.
		NONE OF ABOVE	c.
3.	VISUAL APPLIANCES	Glasses; contact lenses; magnifying glass 0. No 1. Yes	

SECTION E. MOOD AND BEHAVIOR PATTERNS

1. INDICATORS OF DEPRESSION, ANXIETY, SAD MOOD

(Code for indicators observed in last 30 days, irrespective of the assumed cause)
0. Indicator not exhibited in last 30 days
1. Indicator of this type exhibited up to five days a week
2. Indicator of this type exhibited daily or almost daily (6, 7 days a week)

VERBAL EXPRESSIONS OF DISTRESS		h. Repetitive health complaints—e.g., persistently seeks medical attention, obsessive concern with body functions	
a. Resident made negative statements—e.g., "Nothing matters; Would rather be dead; What's the use; Regrets having lived so long; Let me die"		i. Repetitive anxious complaints/concerns (non-health related) e.g., persistently seeks attention/reassurance regarding schedules, meals, laundry, clothing, relationship issues	
b. Repetitive questions—e.g., "Where do I go; What do I do?"		**SLEEP-CYCLE ISSUES**	
c. Repetitive verbalizations—e.g., calling out for help, ("God help me")		j. Unpleasant mood in morning	
d. Persistent anger with self or others—e.g., easily annoyed, anger at placement in nursing home; anger at care received		k. Insomnia/change in usual sleep pattern	
e. Self deprecation—e.g., "I am nothing; I am of no use to anyone"		**SAD, APATHETIC, ANXIOUS APPEARANCE**	
f. Expressions of what appear to be unrealistic fears—e.g., fear of being abandoned, left alone, being with others		l. Sad, pained, worried facial expressions—e.g., furrowed brows	
g. Recurrent statements that something terrible is about to happen—e.g., believes he or she is about to die, have a heart attack		m. Crying, tearfulness	
		n. Repetitive physical movements—e.g., pacing, hand wringing, restlessness, fidgeting, picking	
		LOSS OF INTEREST	
		o. Withdrawal from activities of interest—e.g., no interest in long standing activities or being with family/friends	
		p. Reduced social interaction	

2.	MOOD PERSISTENCE	One or more indicators of depressed, sad or anxious mood were not easily altered by attempts to "cheer up", console, or reassure the resident over last 7 days 0. No mood indicators 1. Indicators present, easily altered 2. Indicators present, not easily altered	
3.	CHANGE IN MOOD	Resident's mood status has changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated	

4. BEHAVIORAL SYMPTOMS

(A) Behavioral symptom frequency in last 7 days
0. Behavior not exhibited in last 7 days
1. Behavior of this type occurred 1 to 3 days in last 7 days
2. Behavior of this type occurred 4 to 6 days, but less than daily
3. Behavior of this type occurred daily

(B) Behavioral symptom alterability in last 7 days
0. Behavior not present OR behavior was easily altered
1. Behavior was not easily altered

	(A)	(B)
a. WANDERING (moved with no rational purpose, seemingly oblivious to needs or safety)		
b. VERBALLY ABUSIVE BEHAVIORAL SYMPTOMS (others were threatened, screamed at, cursed at)		
c. PHYSICALLY ABUSIVE BEHAVIORAL SYMPTOMS (others were hit, shoved, scratched, sexually abused)		
d. SOCIALLY INAPPROPRIATE/DISRUPTIVE BEHAVIORAL SYMPTOMS (made disruptive sounds, noisiness, screaming, self-abusive acts, sexual behavior or disrobing in public, smeared/threw food/feces, hoarding, rummaged through others' belongings)		
e. RESISTS CARE (resisted taking medications/injections, ADL assistance, or eating)		

5.	CHANGE IN BEHAVIORAL SYMPTOMS	Resident's behavior status has changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated	

SECTION F. PSYCHOSOCIAL WELL-BEING

1.	SENSE OF INITIATIVE/ INVOLVEMENT	At ease interacting with others	a.
		At ease doing planned or structured activities	b.
		At ease doing self-initiated activities	c.
		Establishes own goals	d.
		Pursues involvement in life of facility (e.g., makes/keeps friends; involved in group activities; responds positively to new activities; assists at religious services)	e.
		Accepts invitations into most group activities	f.
		NONE OF ABOVE	g.
2.	UNSETTLED RELATIONSHIPS	Covert/open conflict with or repeated criticism of staff	a.
		Unhappy with roommate	b.
		Unhappy with residents other than roommate	c.
		Openly expresses conflict/anger with family/friends	d.
		Absence of personal contact with family/friends	e.
		Recent loss of close family member/friend	f.
		Does not adjust easily to change in routines	g.
		NONE OF ABOVE	h.
3.	PAST ROLES	Strong identification with past roles and life status	a.
		Expresses sadness/anger/empty feeling over lost roles/status	b.
		Resident perceives that daily routine (customary routine, activities) is very different from prior pattern in the community	c.
		NONE OF ABOVE	d.

SECTION G. PHYSICAL FUNCTIONING AND STRUCTURAL PROBLEMS

1. (A) ADL SELF-PERFORMANCE—(Code for resident's PERFORMANCE OVER ALL SHIFTS during last 7 days—Not including setup)

0. INDEPENDENT—No help or oversight —OR— Help/oversight provided only 1 or 2 times during last 7 days
1. SUPERVISION—Oversight, encouragement or cueing provided 3 or more times during last 7 days —OR— Supervision (3 or more times) plus physical assistance provided only 1 or 2 times during last 7 days
2. LIMITED ASSISTANCE—Resident highly involved in activity; received physical help in guided maneuvering of limbs or other nonweight bearing assistance 3 or more times —OR—More help provided only 1 or 2 times during last 7 days
3. EXTENSIVE ASSISTANCE—While resident performed part of activity, over last 7-day period, help of following type(s) provided 3 or more times:
— Weight-bearing support
— Full staff performance during part (but not all) of last 7 days
4. TOTAL DEPENDENCE—Full staff performance of activity during entire 7 days
8. ACTIVITY DID NOT OCCUR during entire 7 days

(B) ADL SUPPORT PROVIDED—(Code for MOST SUPPORT PROVIDED OVER ALL SHIFTS during last 7 days; code regardless of resident's self-performance classification)

0. No setup or physical help from staff
1. Setup help only
2. One person physical assist
3. Two+ persons physical assist
8. ADL activity itself did not occur during entire 7 days

			(A) SELF-PERF	(B) SUPPORT
a.	BED MOBILITY	How resident moves to and from lying position, turns side to side, and positions body while in bed		
b.	TRANSFER	How resident moves between surfaces—to/from: bed, chair, wheelchair, standing position (EXCLUDE to/from bath/toilet)		
c.	WALK IN ROOM	How resident walks between locations in his/her room		
d.	WALK IN CORRIDOR	How resident walks in corridor on unit		
e.	LOCOMOTION ON UNIT	How resident moves between locations in his/her room and adjacent corridor on same floor. If in wheelchair, self-sufficiency once in chair		
f.	LOCOMOTION OFF UNIT	How resident moves to and returns from off unit locations (e.g., areas set aside for dining, activities, or treatments). If facility has only one floor, how resident moves to and from distant areas on the floor. If in wheelchair, self-sufficiency once in chair		
g.	DRESSING	How resident puts on, fastens, and takes off all items of street clothing, including donning/removing prosthesis		
h.	EATING	How resident eats and drinks (regardless of skill). Includes intake of nourishment by other means (e.g., tube feeding, total parenteral nutrition)		
i.	TOILET USE	How resident uses the toilet room (or commode, bedpan, urinal); transfer on/off toilet, cleanses, changes pad, manages ostomy or catheter, adjusts clothes		
j.	PERSONAL HYGIENE	How resident maintains personal hygiene, including combing hair, brushing teeth, shaving, applying makeup, washing/drying face, hands, and perineum (EXCLUDE baths and showers)		

MDS 2.0 10/18/94

Resident ____________________ Numeric Identifier ____________________

2.	BATHING	How resident takes full-body bath/shower, sponge bath, and transfers in/out of tub/shower (EXCLUDE washing of back and hair.) *Code for most dependent in self-performance and support.* (A) BATHING SELF-PERFORMANCE codes appear below 0. Independent—No help provided 1. Supervision—Oversight help only 2. Physical help limited to transfer only 3. Physical help in part of bathing activity 4. Total dependence 8. Activity itself did not occur during entire 7 days *(Bathing support codes are as defined in Item 1, code B above)*	(A) (B)
3.	TEST FOR BALANCE (see training manual)	*(Code for ability during test in the last 7 days)* 0. Maintained position as required in test 1. Unsteady, but able to rebalance self without physical support 2. Partial physical support during test; or stands (sits) but does not follow directions for test 3. Not able to attempt test without physical help a. Balance while standing b. Balance while sitting—position, trunk control	
4.	FUNCTIONAL LIMITATION IN RANGE OF MOTION (see training manual)	*(Code for limitations during last 7 days that interfered with daily functions or placed resident at risk of injury)* (A) RANGE OF MOTION: 0. No limitation; 1. Limitation on one side; 2. Limitation on both sides (B) VOLUNTARY MOVEMENT: 0. No loss; 1. Partial loss; 2. Full loss a. Neck b. Arm—Including shoulder or elbow c. Hand—Including wrist or fingers d. Leg—Including hip or knee e. Foot—Including ankle or toes f. Other limitation or loss	(A) (B)
5.	MODES OF LOCOMOTION	*(Check all that apply during last 7 days)* Cane/walker/crutch a. Wheeled self b. Other person wheeled c. Wheelchair primary mode of locomotion d. NONE OF ABOVE e.	
6.	MODES OF TRANSFER	*(Check all that apply during last 7 days)* Bedfast all or most of time a. Bed rails used for bed mobility or transfer b. Lifted manually c. Lifted mechanically d. Transfer aid (e.g., slide board, trapeze, cane, walker, brace) e. NONE OF ABOVE f.	
7.	TASK SEGMENTATION	Some or all of ADL activities were broken into subtasks during last 7 days so that resident could perform them 0. No 1. Yes	
8.	ADL FUNCTIONAL REHABILITATION POTENTIAL	Resident believes he/she is capable of increased independence in at least some ADLs a. Direct care staff believe resident is capable of increased independence in at least some ADLs b. Resident able to perform tasks/activity but is very slow c. Difference in ADL Self-Performance or ADL Support, comparing mornings to evenings d. NONE OF ABOVE e.	
9.	CHANGE IN ADL FUNCTION	Resident's ADL self-performance status has changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated	

SECTION H. CONTINENCE IN LAST 14 DAYS

1.	CONTINENCE SELF-CONTROL CATEGORIES *(Code for resident's PERFORMANCE OVER ALL SHIFTS)*	0. *CONTINENT*—Complete control [includes use of indwelling urinary catheter or ostomy device that does not leak urine or stool] 1. *USUALLY CONTINENT*—BLADDER, incontinent episodes once a week or less; BOWEL, less than weekly 2. *OCCASIONALLY INCONTINENT*—BLADDER, 2 or more times a week but not daily; BOWEL, once a week 3. *FREQUENTLY INCONTINENT*—BLADDER, tended to be incontinent daily, but some control present (e.g., on day shift); BOWEL, 2-3 times a week 4. *INCONTINENT*—Had inadequate control BLADDER, multiple daily episodes; BOWEL, all (or almost all) of the time	
a.	BOWEL CONTINENCE	Control of bowel movement, with appliance or bowel continence programs, if employed	
b.	BLADDER CONTINENCE	Control of urinary bladder function (if dribbles, volume insufficient to soak through underpants), with appliances (e.g., foley) or continence programs, if employed	
2.	BOWEL ELIMINATION PATTERN	Bowel elimination pattern regular—at least one movement every three days a. Constipation b. Diarrhea c. Fecal impaction d. NONE OF ABOVE e.	
3.	APPLIANCES AND PROGRAMS	Any scheduled toileting plan a. Bladder retraining program b. External (condom) catheter c. Indwelling catheter d. Intermittent catheter e. Did not use toilet room/commode/urinal f. Pads/briefs used g. Enemas/irrigation h. Ostomy present i. NONE OF ABOVE j.	
4.	CHANGE IN URINARY CONTINENCE	Resident's urinary continence has changed as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved 2. Deteriorated	

SECTION I. DISEASE DIAGNOSES

Check only those diseases that have a relationship to current ADL status, cognitive status, mood and behavior status, medical treatments, nursing monitoring, or risk of death. (Do not list inactive diagnoses)

1.	DISEASES	*(If none apply, CHECK the NONE OF ABOVE box)* ENDOCRINE/METABOLIC/NUTRITIONAL Diabetes mellitus a. Hyperthyroidism b. Hypothyroidism c. HEART/CIRCULATION Arteriosclerotic heart disease (ASHD) d. Cardiac dysrhythmias e. Congestive heart failure f. Deep vein thrombosis g. Hypertension h. Hypotension i. Peripheral vascular disease j. Other cardiovascular disease k. MUSCULOSKELETAL Arthritis l. Hip fracture m. Missing limb (e.g., amputation) n. Osteoporosis o. Pathological bone fracture p. NEUROLOGICAL Alzheimer's disease q. Aphasia r. Cerebral palsy s. Cerebrovascular accident (stroke) t. Dementia other than Alzheimer's disease u. Hemiplegia/Hemiparesis v. Multiple sclerosis w. Paraplegia x. Parkinson's disease y. Quadriplegia z. Seizure disorder aa. Transient ischemic attack (TIA) bb. Traumatic brain injury cc. PSYCHIATRIC/MOOD Anxiety disorder dd. Depression ee. Manic depression (bipolar disease) ff. Schizophrenia gg. PULMONARY Asthma hh. Emphysema/COPD ii. SENSORY Cataracts jj. Diabetic retinopathy kk. Glaucoma ll. Macular degeneration mm. OTHER Allergies nn. Anemia oo. Cancer pp. Renal failure qq. NONE OF ABOVE rr.	
2.	INFECTIONS	*(If none apply, CHECK the NONE OF ABOVE box)* Antibiotic resistant infection (e.g., Methicillin resistant staph) a. Clostridium difficile (c. diff.) b. Conjunctivitis c. HIV infection d. Pneumonia e. Respiratory infection f. Septicemia g. Sexually transmitted diseases h. Tuberculosis i. Urinary tract infection in last 30 days j. Viral hepatitis k. Wound infection l. NONE OF ABOVE m.	
3.	OTHER CURRENT OR MORE DETAILED DIAGNOSES AND ICD-9 CODES	a. ____ b. ____ c. ____ d. ____ e. ____	

SECTION J. HEALTH CONDITIONS

1.	PROBLEM CONDITIONS	*(Check all problems present in last 7 days unless other time frame is indicated)* INDICATORS OF FLUID STATUS Weight gain or loss of 3 or more pounds within a 7 day period a. Inability to lie flat due to shortness of breath b. Dehydrated; output exceeds input c. Insufficient fluid; did NOT consume all/almost all liquids provided during last 3 days d. OTHER Delusions e. Dizziness/Vertigo f. Edema g. Fever h. Hallucinations i. Internal bleeding j. Recurrent lung aspirations in last 90 days k. Shortness of breath l. Syncope (fainting) m. Unsteady gait n. Vomiting o. NONE OF ABOVE p.	

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2.	PAIN SYMPTOMS	(Code the highest level of pain present in the last 7 days) a. FREQUENCY with which resident complains or shows evidence of pain: 0. No pain (skip to J3) 1. Pain less than daily 2. Pain daily	b. INTENSITY of pain: 1. Mild pain 2. Moderate pain 3. Times when pain is horrible or excruciating	
3.	PAIN SITE	(If pain present, check all sites now or recently affected by pain)		
		Back pain	a. Incisional pain	i.
		Bone pain	b. Joint pain (other than hip)	j.
		Chest pain while doing usual activities	c. Soft tissue pain (e.g., lesion, muscle)	k.
		Headache	d. Stomach pain	l.
		Hip pain	e. Other	l.
4.	ACCIDENTS	(Check all that apply)		
		Fell in past 30 days	a. Hip fracture in last 180 days	c.
		Fell in past 31-180 days	b. Other fracture in last 180 days	d.
			NONE OF ABOVE	e.
5.	STABILITY OF CONDITIONS	Conditions/diseases make resident's cognitive, ADL, mood or behavior patterns unstable—(fluctuating, precarious, or deteriorating)		a.
		Resident experiencing an acute episode or a flare-up of a recurrent or chronic problem		b.
		End-stage disease; 6 or fewer months to live		c.
		NONE OF ABOVE		d.

SECTION K. ORAL/NUTRITIONAL STATUS

1.	ORAL PROBLEMS	Chewing problem		a.
		Swallowing problem		b.
		Mouth pain		c.
		NONE OF ABOVE		d.
2.	HEIGHT AND WEIGHT	Record (a.) height in inches and (b.) weight in pounds. Base weight on most recent measure in last 30 days; measure weight consistently in accord with standard facility practice - e.g., in a.m. after voiding, before meal, with shoes off, and in night clothes		
		a. Height:	b. Weight:	
	WEIGHT CHANGE	a. Weight loss—5 % or more in last 30 days, or 10 % or more in last 180 days. 0. No 1. Yes		a1.
		b. Weight gain—5 % or more in last 30 days; or 10 % or more in last 180 days 0. No 1. Yes		b1.
4.	NUTRITIONAL PROBLEMS	Complains about the taste of many foods	a. Leaves 25% or more of food uneaten at most meals	e.
		Regular repetitive complains of hunger	b. NONE OF ABOVE	d.
5.	NUTRITIONAL APPROACHES	(Check all that apply in last 7 days)		
		Parenteral/IV	a. Dietary supplement between meals	f.
		Feeding tube	b.	
		Mechanically altered diet	c. Plate guard, scoop dish, built-up utensil, etc.	g.
		Syringe (oral feeding)	d.	
		Therapeutic diet	e. On a planned weight change program	h.
			NONE OF ABOVE	i.
6	PARENTERAL OR ENTERAL INTAKE	(Skip to Section L if neither 6a nor 6b is checked)		
		a. Code the proportion of total calories the resident received through parenteral or tube feedings in the last 7 days. 0. None 1. 1 % to 25% 2. 26% to 50% 3. 51% to 75% 4. 76% to 100%		
		b. Code the average fluid intake per day by IV or tube in last 7 days 0. None 1. 1 to 500 cc/day 2. 501 to 1000 cc/day 3. 1001 to 1500 cc/day 4. 1501 to 2000 cc/day 5. 2001 or more cc/day		

SECTION L. ORAL/DENTAL STATUS

1.	ORAL STATUS AND DISEASE PREVENTION	Debris (soft, easily movable substances) present in mouth prior to going to bed at night	h.
		Has dentures or removable bridge	b.
		Some/all natural teeth lost—does not have or does not use dentures (or partial) (a/p)	c.
		Broken, loose, or carious teeth	d.
		Inflamed gums (gingivitis), swollen or bleeding gums; oral abscesses, ulcers or rashes	e.
		Daily cleaning of teeth/dentures or daily mouth care by resident or staff	f.
		NONE OF ABOVE	g.

SECTION M. SKIN CONDITION

1.	ULCERS (Due to any cause)	(Record the number of ulcers at each ulcer stage—regardless of cause, if none present and stage, record "0" (zero). Code all that apply during last 7 days. Code #1-5 on admit.) (Requires full body exam.)	Number of Stages
		a. Stage 1: A persistent area of skin redness (without a break in the skin) that does not disappear when pressure is relieved	
		b. Stage 2: A partial thickness loss of skin. Appears (but presents primarily as an abrasion, blister, or shallow crater	
		c. Stage 3: A full thickness of skin is lost, exposing the subcutaneous tissue; presents as a deep crater with or without undermining adjacent tissue	
		d. Stage 4: A full thickness of skin and subcutaneous tissue is lost exposing muscle or bone	
2.	TYPE OF ULCER	(For each type of ulcer, code for the highest stage in the last 7 days (using scale in item M1—i.e., 0=none, stages 1, 2, 3, 4)	
		a. Pressure ulcer—any lesion caused by pressure resulting in damage of underlying tissue	
		b. Stasis ulcer—open lesion caused by poor circulation in the lower extremities	
3.	HISTORY OF RESOLVED ULCERS	Resident has an ulcer that was resolved or cured in LAST 90 DAYS 0. No 1. Yes	
4.	OTHER SKIN PROBLEMS OR LESIONS PRESENT	(Check all that apply during last 7 days)	
		Abrasions, bruises	a.
		Burns (second or third degree)	b.
		Open lesions other than ulcers, rashes, cuts (e.g., cancer lesions)	c.
		Rashes—e.g., infection, eczema, drug rash, heat rash, herpes zoster	d.
		Skin desensitized to pain or pressure	e.
		Skin tears or cuts (other than surgical)	f.
		Surgical wounds	g.
		NONE OF ABOVE	h.
5.	SKIN TREATMENTS	(Check all that apply during last 7 days)	
		Pressure relieving device(s) for chair	a.
		Pressure relieving device(s) for bed	b.
		Turning/repositioning program	c.
		Nutrition or hydration intervention to manage skin problems	d.
		Ulcer care	e.
		Surgical wound care	f.
		Application of dressings (with or without topical medications) other than to feet	g.
		Application of ointments/medications (other than to feet)	h.
		Other preventative or protective skin care (other than to feet)	i.
		NONE OF ABOVE	j.
6.	FOOT PROBLEMS AND CARE	(Check all that apply during last 7 days)	
		Resident has one or more foot problems—e.g., corns, calluses, bunions, hammer toes, overlapping toes, pain, structural problems	a.
		Infection of the foot - e.g., cellulitis, purulent drainage	b.
		Open lesions on the foot	c.
		Nails/calluses trimmed during last 90 days	d.
		Received preventative or protective foot care (e.g., used special shoes, inserts, pads, toe separators)	e.
		Application of dressings (with or without topical medications)	f.
		NONE OF ABOVE	g.

SECTION N. ACTIVITY PURSUIT PATTERNS

1.	TIME AWAKE	(Check appropriate time periods over last 7 days) Resident awake all or most of time (i.e., more than one hour per time period) in the:		
		Morning	a. Evening	c.
		Afternoon	b. NONE OF ABOVE	d.
(If resident is comatose, skip to Section O)				
2.	AVERAGE TIME INVOLVED IN ACTIVITIES	(When awake and not receiving treatments or ADL care) 0. Most—more than 2/3 of time 1. Some—from 1/3 to 2/3 of time 2. Little—less than 1/3 of time 3. None		
3.	PREFERRED ACTIVITY SETTINGS	(Check all settings in which activities are preferred) Own room	a. Outside facility	d.
		Day activity room	b.	
		In-room NH/unit	c. NONE OF ABOVE	e.
4.	GENERAL ACTIVITY PREFERENCES (adapted to resident's current abilities)	(Code all PREFERENCES whether or not activity is currently available to resident) Cards/other games	a. Trips/shopping	g.
		Crafts/arts	b. Walking/wheeling outdoors	h.
		Exercise/sports	c. Watching TV	i.
		Music	d. Conversing on phone	j.
		Reading/writing	e. Talking or conversing	k.
		Self-help/religious activities	f. Helping others	l.
			NONE OF ABOVE	m.

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5.	PREFERS CHANGE IN DAILY ROUTINE	Ease for resident preferences in daily routines 0. No change 1. Slight change 2. Major change a. Type of activities in which resident is currently involved b. Extent of resident involvement in activities

SECTION O. MEDICATIONS

1.	NUMBER OF MEDICATIONS	(Record the number of different medications used in the last 7 days; enter "0" if none used)
2.	NEW MEDICATIONS	(Resident currently receiving medications that were ordered during the last 90 days) 0. No 1. Yes
3.	INJECTIONS	(Record the number of DAYS injections of any type received during the last 7 days; enter "0" if none used)
4.	DAYS RECEIVED THE FOLLOWING MEDICATION	(Record the number of DAYS during last 7 days; enter "0" if not used. Note—enter "1" for long-acting medication less than weekly) a. Antipsychotic b. Antianxiety c. Antidepressant d. Hypnotic e. Diuretic

SECTION P. SPECIAL TREATMENTS AND PROCEDURES

1.	SPECIAL TREATMENTS, PROCEDURES, AND PROGRAMS	a. SPECIAL CARE—Check treatments or programs received daily in the last 14 days TREATMENTS: Ventilator or respirator; Chemotherapy; Dialysis; IV medication; Intake/output; Monitoring acute medical condition; Ostomy care; Oxygen therapy; Radiation; Suctioning; Tracheostomy care; Transfusions PROGRAMS: Alcohol/drug treatment program; Alzheimer's/dementia special care unit; Hospice care; Pediatric unit; Respite care; Training in skills required to return to the community (e.g., taking medications, housework, shopping, transportation, ADLs); NONE OF ABOVE b. THERAPIES - Record the number of days and total minutes each of the following therapies was administered (for at least 15 minutes a day) in the last 7 calendar days (Enter 0 if none or less than 15 min. daily) [Note—count only post-admission therapies] (A) = # of days administered for 15 minutes or more; (B) = total # of minutes provided in last 7 days a. Speech - language pathology and audiology services b. Occupational therapy c. Physical therapy d. Respiratory therapy e. Psychological therapy (by any licensed mental health professional)
2.	INTERVENTION PROGRAMS FOR MOOD, BEHAVIOR, COGNITIVE LOSS	(Check all interventions or strategies used in last 7 days – no matter where received) Special behavior symptom evaluation program Evaluation by a licensed mental health specialist in last 90 days Group therapy Resident-specific deliberate changes in the environment to address mood/behavior patterns—e.g., providing by-laws in which to rummage Reorientation—e.g., cueing NONE OF ABOVE
3.	NURSING REHABILITATION/ RESTORATIVE CARE	Record the NUMBER OF DAYS each of the following rehabilitation or restorative techniques or practices was provided to the resident for more than or equal to 15 minutes per day in the last 7 days (Enter 0 if none or less than 15 min. daily) a. Range of motion (passive); b. Range of motion (active); c. Splint or brace assistance TRAINING AND SKILL PRACTICE IN: d. Bed mobility; e. Transfer; f. Walking; g. Dressing or grooming; h. Eating or swallowing; i. Amputation/prosthesis care; j. Communication; k. Other

4.	DEVICES AND RESTRAINTS	(Use the following codes for last 7 days) 0. Not used 1. Used less than daily 2. Used daily Bed rails a. — Full bed rails on all open sides of bed b. — Other types of side rails used (e.g., half rail, one side) c. Trunk restraint d. Limb restraint e. Chair prevents rising
5.	HOSPITAL STAY(S)	Record number of times resident was admitted to hospital with an overnight stay in last 90 days (or since last assessment if less than 90 days). (Enter 0 if no hospital admissions)
6.	EMERGENCY ROOM (ER) VISIT(S)	Record number of times resident visited ER without an overnight stay in last 90 days (or since last assessment if less than 90 days). (Enter 0 if no ER visits)
7.	PHYSICIAN VISITS	In the LAST 14 DAYS (or a new admission if less than 14 days in facility) how many days has the physician (or authorized assistant or practitioner) examined the resident? (Enter 0 if none)
8.	PHYSICIAN ORDERS	In the LAST 14 DAYS (or a new admission if less than 14 days in facility) how many days has the physician (or authorized assistant or practitioner) changed the resident's orders? Do not include order renewal without change. (Enter 0 if none)
9.	ABNORMAL LAB VALUES	Has the resident had any abnormal lab values during the last 90 days (or since admission)? 0. No 1. Yes

SECTION Q. DISCHARGE POTENTIAL AND OVERALL STATUS

1.	DISCHARGE POTENTIAL	a. Resident expresses/indicates preference to return to the community 0. No 1. Yes b. Resident has a support person who is positive toward discharge 0. No 1. Yes c. Stay projected to be of a short duration (discharge projected within 90 days) (do not include expected discharge due to death) 0. No 2. Within 31-90 days 1. Within 30 days 3. Discharge status uncertain
2.	OVERALL CHANGE IN CARE NEEDS	(Resident's overall self-sufficiency has changed significantly as compared to status of 90 days ago (or is new last assessment if less than 90 days)) 0. No change 1. Improved—requires fewer supports, needs less restrictive level of care 2. Deteriorated—requires more support

SECTION R. ASSESSMENT INFORMATION

1.	PARTICIPATION IN ASSESSMENT	a. Resident: 0. No 1. Yes b. Family: 0. No 1. Yes 2. No family c. Significant other: 0. No 1. Yes 2. None
2.	SIGNATURES OF PERSONS COMPLETING THE ASSESSMENT:	

a. Signature of RN Assessment Coordinator (sign on above line)

b. Date RN Assessment Coordinator signed assessment: ___ (Month) — ___ (Day) — ___ (Year)

c.	Other Signature	Title	Sections	Date
d.				Date
e.				Date
f.				Date
g.				Date
h.				Date

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MDS QUARTERLY ASSESSMENT FORM

A1. RESIDENT NAME — a. (First) b. (Middle Initial) c. (Last) d. (Jr/Sr)

A2. ROOM NUMBER

A3. ASSESSMENT REFERENCE DATE
a. Last day of MDS observation period
Month — Day — Year
b. Original (0) or corrected copy of form (enter number of correction)

A4a. DATE OF REENTRY — Date of reentry from most recent temporary discharge to a hospital in last 90 days (or since last assessment or admission if less than 90 days)
Month — Day — Year

A6. MEDICAL RECORD NO.

B1. COMATOSE (Persistent vegetative state/no discernible consciousness)
0. No 1. Yes (Skip to Section G)

B2. MEMORY (Recall of what was learned or known)
a. Short-term memory OK—seems/appears to recall after 5 minutes
0. Memory OK 1. Memory problem
b. Long-term memory OK—seems/appears to recall long past
0. Memory OK 1. Memory problem

B4. COGNITIVE SKILLS FOR DAILY DECISION-MAKING (Made decisions regarding tasks of daily life)
0. INDEPENDENT—decisions consistent/reasonable
1. MODIFIED INDEPENDENCE—some difficulty in new situations only
2. MODERATELY IMPAIRED—decisions poor; cues/supervision required
3. SEVERELY IMPAIRED—never/rarely made decisions

B5. INDICATORS OF DELIRIUM—PERIODIC DISORDERED THINKING/AWARENESS (Code for behavior in the last 7 days.) [Note: Accurate assessment requires conversations with staff and family who have direct knowledge of resident's behavior over this time].
0. Behavior not present
1. Behavior present, not of recent onset
2. Behavior present, over last 7 days appears different from resident's usual functioning (e.g., new onset or worsening)
a. EASILY DISTRACTED—(e.g., difficulty paying attention; gets sidetracked)
b. PERIODS OF ALTERED PERCEPTION OR AWARENESS OF SURROUNDINGS—(e.g., moves lips or talks to someone not present; believes he/she is somewhere else; confuses night and day)
c. EPISODES OF DISORGANIZED SPEECH—(e.g., speech is incoherent, nonsensical, irrelevant, or rambling from subject to subject; loses train of thought)
d. PERIODS OF RESTLESSNESS—(e.g., fidgeting or picking at skin, clothing, napkins, etc; frequent position changes; repetitive physical movements or calling out)
e. PERIODS OF LETHARGY—(e.g., sluggishness; staring into space; difficult to arouse; little body movement)
f. MENTAL FUNCTION VARIES OVER THE COURSE OF THE DAY—(e.g., sometimes better, sometimes worse; behaviors sometimes present, sometimes not)

C4. MAKING SELF UNDERSTOOD (Expressing information content—however able)
0. UNDERSTOOD
1. USUALLY UNDERSTOOD—difficulty finding words or finishing thoughts
2. SOMETIMES UNDERSTOOD—ability is limited to making concrete requests
3. RARELY/NEVER UNDERSTOOD

C6. ABILITY TO UNDERSTAND OTHERS (Understanding verbal information content—however able)
0. UNDERSTANDS
1. USUALLY UNDERSTANDS—may miss some part/intent of message
2. SOMETIMES UNDERSTANDS—responds adequately to simple, direct communication
3. RARELY/NEVER UNDERSTANDS

E1. INDICATORS OF DEPRESSION, ANXIETY, SAD MOOD (Code for indicators observed in last 30 days, irrespective of the assumed cause)
0. Indicator not exhibited in last 30 days
1. Indicator of this type exhibited up to five days a week
2. Indicator of this type exhibited daily or almost daily (6, 7 days a week)

VERBAL EXPRESSIONS OF DISTRESS
a. Resident made negative statements—e.g., "Nothing matters; Would rather be dead; What's the use; Regrets having lived so long; Let me die"
b. Repetitive questions—e.g., "Where do I go; What do I do?"
c. Repetitive verbalizations—e.g., calling out for help, ("God help me")
d. Persistent anger with self or others—e.g., easily annoyed, anger at placement in nursing home; anger at care received
e. Self deprecation—e.g., "I am nothing; I am of no use to anyone"
f. Expressions of what appear to be unrealistic fears—e.g., fear of being abandoned, left alone, being with others
g. Recurrent statements that something terrible is about to happen—e.g., believes he or she is about to die, have a heart attack
h. Repetitive health complaints—e.g., persistently seeks medical attention, obsessive concern with body functions
i. Repetitive anxious complaints/concerns (non-health related) e.g., persistently seeks attention/reassurance regarding schedules, meals, laundry, clothing, relationship issues

SLEEP-CYCLE ISSUES
j. Unpleasant mood in morning
k. Insomnia/change in usual sleep pattern

SAD, APATHETIC, ANXIOUS APPEARANCE
l. Sad, pained, worried facial expressions—e.g., furrowed brows
m. Crying, tearfulness
n. Repetitive physical movements—e.g., pacing, hand wringing, restlessness, fidgeting, picking

LOSS OF INTEREST
o. Withdrawal from activities of interest—e.g., no interest in long standing activities or being with family/friends
p. Reduced social interaction

E2. MOOD PERSISTENCE — One or more indicators of depressed, sad or anxious mood were not easily altered by attempts to "cheer up", console, or reassure the resident over last 7 days
0. No mood indicators 1. Indicators present, easily altered 2. Indicators present, not easily altered

E4. BEHAVIORAL SYMPTOMS (A) Behavioral symptom frequency in last 7 days
0. Behavior not exhibited in last 7 days
1. Behavior of this type occurred 1 to 3 days in last 7 days
2. Behavior of this type occurred 4 to 6 days, but less than daily
3. Behavior of this type occurred daily
(B) Behavioral symptom alterability in last 7 days
0. Behavior not present OR behavior was easily altered
1. Behavior was not easily altered

	(A)	(B)
a. WANDERING (moved with no rational purpose, seemingly oblivious to needs or safety)		
b. VERBALLY ABUSIVE BEHAVIORAL SYMPTOMS (others were threatened, screamed at, cursed at)		
c. PHYSICALLY ABUSIVE BEHAVIORAL SYMPTOMS (others were hit, shoved, scratched, sexually abused)		
d. SOCIALLY INAPPROPRIATE/DISRUPTIVE BEHAVIORAL SYMPTOMS (made disruptive sounds, noisiness, screaming, self-abusive acts, sexual behavior or disrobing in public, smeared/threw food/feces, hoarding, rummaged through others' belongings)		
e. RESISTS CARE (resisted taking medications/injections, ADL assistance, or eating)		

G1. (A) ADL SELF-PERFORMANCE—(Code for resident's PERFORMANCE OVER ALL SHIFTS during last 7 days—Not including setup)
0. INDEPENDENT—No help or oversight —OR— Help/oversight provided only 1 or 2 times during last 7 days
1. SUPERVISION—Oversight, encouragement or cueing provided 3 or more times during last 7 days —OR— Supervision (3 or more times) plus physical assistance provided only 1 or 2 times during last 7 days
2. LIMITED ASSISTANCE—Resident highly involved in activity; received physical help in guided maneuvering of limbs or other nonweight bearing assistance 3 or more times —OR—More help provided only 1 or 2 times during last 7 days
3. EXTENSIVE ASSISTANCE—While resident performed part of activity, over last 7-day period, help of following type(s) provided 3 or more times:
— Weight-bearing support
— Full staff performance during part (but not all) of last 7 days
4. TOTAL DEPENDENCE—Full staff performance of activity during entire 7 days
8. ACTIVITY DID NOT OCCUR during entire 7 days

			(A)
a.	BED MOBILITY	How resident moves to and from lying position, turns side to side, and positions body while in bed	
b.	TRANSFER	How resident moves between surfaces—to/from: bed, chair, wheelchair, standing position (EXCLUDE to/from bath/toilet)	
c.	WALK IN ROOM	How resident walks between locations in his/her room	
d.	WALK IN CORRIDOR	How resident walks in corridor on unit	
e.	LOCOMOTION ON UNIT	How resident moves between locations in his/her room and adjacent corridor on same floor. If in wheelchair, self-sufficiency once in chair	
f.	LOCOMOTION OFF UNIT	How resident moves to and returns from off unit locations (e.g., areas set aside for dining, activities, or treatments). If facility has only one floor, how resident moves to and from distant areas on the floor. If in wheelchair, self-sufficiency once in chair	
g.	DRESSING	How resident puts on, fastens, and takes off all items of street clothing, including donning/removing prosthesis	
h.	EATING	How resident eats and drinks (regardless of skill). Includes intake of nourishment by other means (e.g., tube feeding, total parenteral nutrition)	

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i.	TOILET USE	How resident uses the toilet room (or commode, bedpan, urinal); transfer on/off toilet, cleanses, changes pad, manages ostomy or catheter, adjusts clothes	
j.	PERSONAL HYGIENE	How resident maintains personal hygiene, including combing hair, brushing teeth, shaving, applying makeup, washing/drying face, hands, and perineum (EXCLUDE baths and showers)	
G2.	BATHING	How resident takes full-body bath/shower, sponge bath, and transfers in/out of tub/shower (EXCLUDE washing of back and hair.) Code for most dependent in self-performance. (A) BATHING SELF-PERFORMANCE codes appear below 0. Independent—No help provided 1. Supervision—Oversight help only 2. Physical help limited to transfer only 3. Physical help in part of bathing activity 4. Total dependence 8. Activity itself did not occur during entire 7 days	(A)
G4.	FUNCTIONAL LIMITATION IN RANGE OF MOTION	(Code for limitations during last 7 days that interfered with daily functions or placed residents at risk of injury) (A) RANGE OF MOTION: 0. No limitation; 1. Limitation on one side; 2. Limitation on both sides (B) VOLUNTARY MOVEMENT: 0. No loss; 1. Partial loss; 2. Full loss a. Neck b. Arm—Including shoulder or elbow c. Hand—Including wrist or fingers d. Leg—Including hip or knee e. Foot—Including ankle or toes f. Other limitation or loss	(A) (B)
G6.	MODES OF TRANSFER	(Check all that apply during last 7 days) Bedfast all or most of time a. Bed rails used for bed mobility or transfer b. NONE OF ABOVE f.	
H1.	CONTINENCE SELF-CONTROL CATEGORIES	(Code for resident's PERFORMANCE OVER ALL SHIFTS) 0. CONTINENT—Complete control [includes use of indwelling urinary catheter or ostomy device that does not leak urine or stool] 1. USUALLY CONTINENT—BLADDER, incontinent episodes once a week or less; BOWEL, less than weekly 2. OCCASIONALLY INCONTINENT—BLADDER, 2 or more times a week but not daily; BOWEL, once a week 3. FREQUENTLY INCONTINENT—BLADDER, tended to be incontinent daily, but some control present (e.g., on day shift); BOWEL, 2-3 times a week 4. INCONTINENT—Had inadequate control BLADDER, multiple daily episodes; BOWEL, all (or almost all) of the time	
a.	BOWEL CONTINENCE	Control of bowel movement, with appliance or bowel continence programs, if employed	
b.	BLADDER CONTINENCE	Control of urinary bladder function (if dribbles, volume insufficient to soak through underpants), with appliances (e.g., foley) or continence programs, if employed	
H2.	BOWEL ELIMINATION PATTERN	Fecal impaction d. NONE OF ABOVE e.	
H3.	APPLIANCES AND PROGRAMS	Any scheduled toileting plan a. Bladder retraining program b. External (condom) catheter c. Indwelling catheter d. Ostomy present i. NONE OF ABOVE j.	
I2.	INFECTIONS	Urinary tract infection in last 30 days j. NONE OF ABOVE m.	
I3.	OTHER CURRENT DIAGNOSES AND ICD-9 CODES	(Include only those diseases diagnosed in the last 60 days that have a relationship to current ADL status, behavior status, medical treatments, nursing monitoring, or risk of death) a. ______ b. ______	
J1.	PROBLEM CONDITIONS	(Check all problems present in last 7 days) Dehydrated; output exceeds input c. Hallucinations i. NONE OF ABOVE o.	
J2.	PAIN SYMPTOMS	(Code the highest level of pain present in the last 7 days) a. FREQUENCY with which resident complains or shows evidence of pain 0. No pain (skip to J4) 1. Pain less than daily 2. Pain daily b. INTENSITY of pain 1. Mild pain 2. Moderate pain 3. Times when pain is horrible or excruciating	
J4.	ACCIDENTS	(Check all that apply) Fell in past 30 days a. Fell in past 31-180 days b. Hip fracture in last 180 days c. Other fracture in last 180 days d. NONE OF ABOVE e.	

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J5.	STABILITY OF CONDITIONS	Conditions/diseases make resident's cognitive, ADL, mood or behavior status unstable—(fluctuating, precarious, or deteriorating) a. Resident experiencing an acute episode or a flare-up of a recurrent or chronic problem b. End-stage disease, 6 or fewer months to live c. NONE OF ABOVE d.	
K3.	WEIGHT CHANGE	a. Weight loss—5 % or more in last 30 days; or 10 % or more in last 180 days 0. No 1. Yes b. Weight gain—5 % or more in last 30 days; or 10 % or more in last 180 days 0. No 1. Yes	
K5.	NUTRITIONAL APPROACHES	Feeding tube b. On a planned weight change program h. NONE OF ABOVE i.	
M1.	ULCERS (Due to any cause)	(Record the number of ulcers at each ulcer stage—regardless of cause. If none present at a stage, record "0" (zero). Code all that apply during last 7 days. Code 9 = 9 or more.) (Requires full body exam.) a. Stage 1. A persistent area of skin redness (without a break in the skin) that does not disappear when pressure is relieved. b. Stage 2. A partial thickness loss of skin layers that presents clinically as an abrasion, blister, or shallow crater. c. Stage 3. A full thickness of skin is lost, exposing the subcutaneous tissues - presents as a deep crater with or without undermining adjacent tissue. d. Stage 4. A full thickness of skin and subcutaneous tissue is lost, exposing muscle or bone.	Number at Stage
M2.	TYPE OF ULCER	(For each type of ulcer, code for the highest stage in the last 7 days using scale in item M1—i.e., 0=none; stages 1, 2, 3, 4) a. Pressure ulcer—any lesion caused by pressure resulting in damage of underlying tissue b. Stasis ulcer—open lesion caused by poor circulation in the lower extremities	
N1.	TIME AWAKE	(Check appropriate time periods over last 7 days) Resident awake all or most of time (i.e., naps no more than one hour per time period) in the: Morning a. Afternoon b. Evening c. NONE OF ABOVE d.	

(If resident is comatose, skip to Section O)

N2.	AVERAGE TIME INVOLVED IN ACTIVITIES	(When awake and not receiving treatments or ADL care) 0. Most—more than 2/3 of time 1. Some—from 1/3 to 2/3 of time 2. Little—less than 1/3 of time 3. None	
O1.	NUMBER OF MEDICATIONS	(Record the number of different medications used in the last 7 days; enter "0" if none used)	
O4.	DAYS RECEIVED THE FOLLOWING MEDICATION	(Record the number of DAYS during last 7 days; enter "0" if not used. Note—enter "1" for long-acting meds used less than weekly) a. Antipsychotic b. Antianxiety c. Antidepressant d. Hypnotic e. Diuretic	
P4.	DEVICES AND RESTRAINTS	(Use the following codes for last 7 days: 0. Not used 1. Used less than daily 2. Used daily Bed rails a. — Full bed rails on all open sides of bed b. — Other types of side rails used (e.g., half rail, one side) c. Trunk restraint d. Limb restraint e. Chair prevents rising	
Q2.	OVERALL CHANGE IN CARE NEEDS	Resident's overall level of self sufficiency has changed significantly as compared to status of 90 days ago (or since last assessment if less than 90 days) 0. No change 1. Improved—receives fewer supports, needs less restrictive level of care 2. Deteriorated—receives more support	

R2. SIGNATURES OF PERSONS COMPLETING THE ASSESSMENT:

a. Signature of RN Assessment Coordinator (sign on above line)

b. Date RN Assessment Coordinator signed as complete ___ Month — ___ Day — ___ Year

	Title	Sections	Date
c. Other Signatures			Date
d.			Date
e.			Date
f.			Date
g.			Date

APPENDIX C

Subject Information Data

Dependent Feeders

ID		Gender	Age	Body Wt. (kg/lb.)	Med. #	Med. Freq.	Total Energy (Kcal)	Total Water Intake(g)
1	D1	M	76	74.5/164	3	3	1924	1506
2	D2	M	82	96.4/212	6	3	1863	1745
3	D3	F	90	45.0/99	2	3	2009	1676
4	D4*	F	77	53.4/117	2	3	2649	2374
5	D5*	F	97	55.5/122	6	4	1734	1706
6	D6*	F	90	51.4/113	1	3	2081	1638
7	D7	F	86	55.9/123	6	3	1544	1474
8	D8	F	86	55.9/123	4	3	2302	2231
9	D9	M	87	67.3/126	5	4	1677	1831
10	D10	F	89	70.0/154	6	3	1320	1567
11	D11	M	73	87.7/193	4	3	1475	1313
12	D12	F	88	57.9/127	7	4	1169	669
13	D13*	F	83	33.6/74	7	4	546	602
14	D14*	F	90	63.6/140	8	4	640	738
15	D15	F	77	69.3/152	4	4	1544	1221
16	D16	M	82	85.5/188	4	3	1738	1124
17	D17	F	99	50.0/110	1	1	586	678
18	D18	F	92	43.9/96	10	3	1180	1461
19	D19	M	85	44.5/98	3	3	1474	1201
20	D20*	F	93	44.5/98	4	3	1505	1337
21	D21	F	77	73.6/162	1	3	1937	1647
22	D22	F	98	44.5/98	7	4	1190	886

total dependent feeders(22) M: 6 F: 16

Independent Feeders

ID		Gender	Age	Body Wt. (kg/lb.)	Med. #	Med. Freq.	Total Energy (Kcal)	Total Water Intake(g)
1	I1	F	82	62.3/137	5	3	2075	2083
2	I2	F	93	63.2/139	6	4	1345	1426
3	I3	M	97	50.5/111	4	3	1526	1363
4	I4	F	85	41.8/92	7	3	1288	1005
5	I5	F	90	61.8/136	5	3	2232	1507
6	I6	F	94	57.3/126	8	4	1002	1161
7	I7	M	83	80.0/176	6	3	2492	2071
8	I8	M	90	90.2/198	5	3	1909	1480
9	I9	F	90	75.5/166	1	1	1795	1128
10	I10	F	76	57.3/126	1	1	2316	1920
11	I11	M	85	75.5/166	10	5	1713	1024
12	I12	M	78	98.2/205	6	3	1172	1170
13	I13	M	85	95.0/209	8	3	2444	1776
14	I14	F	92	64.3/141	4	3	2172	1165
15	I15	M	89	48.2/106	7	3	1415	1430
16	I16	F	96	49.5/109	9	3	1399	1328
17	I17	F	96	79.5/175	9	4	1696	1558
18	I18	F	82	50.5/111	7	3	1519	1460

Total independent feeders (18) M: 7 F: 11

APPENDIX D

Calorie Count Record Sheet

CALORIE COUNT RECORD SHEET

NAME:_____ ROOM #:_____ DIET: General/2-5 GRAM_____ _____DAY 1

Please check Yes or No on each meal or snack time if the resident needed assistance. Assistance includes any of the following: feeding self, drinking fluids, reaching food on tray, holding eating utensils, cutting meat, or opening packages.

OBSERVATION OF FOOD INTAKE

BREAKFAST **Did resident need assistance ?** **Yes** ____ **No**_____

Food Items	0%	25%	50%	75%	100%
ORANGE JUICE					
RALSTON					
SOFT COOKED EGG					
SAUSAGE LINK					
WHEAT TOAST					
Comments					

Food Items	0%	25%	50%	75%	100%
JELLY					
COFFEE/ TEA					
8 oz. 2% MILK					

LUNCH **Did resident need assistance?** **Yes**____ **No** _____

Food Items	0%	25%	50%	75%	100%
APPLE JUICE					
BEEF STEW					
BISCUIT					
FRUIT SALAD					
HONEY					
Comments					

Food Items	0%	25%	50%	75%	100%
MARGARINE					
COFFEE/ TEA					
4 oz. 2 % MILK					

DINNER **Did resident need assistance?** **Yes** **No**_____

Food Items	0%	25%	50%	75%	100%
FRESH BANANA					
GRCHZ ON WHITE					
TOMATO SOUP					
DUTCH APPLE PIE					
CRACKERS					
Comments					

Food Items	0%	25%	50%	75%	100%
MARGARINE					
COFFEE/ TEA					
4 oz. 2 % MILK					

SNACKS **Did resident need assistance ?** **Yes** _____ **No**_____

Food Items	0%	25%	50%	75%	100%
DONUT HOLES					
FRESH FRUIT					
Comments					

Food Items	0%	25%	50%	75%	100%

BEVERAGE/ FREE WATER/ WATER WITH MED.

Items	2 oz.	4 oz.	6 oz.	8 oz.
Comments				

Items	2 oz.	4 oz.	6 oz.	8 oz.

CALORIC COUNT RECORD SHEET

NAME:_____ ROOM # _____ DIET: GENERAL/ 3.5 GRAM SODIUM DAY 2

Please check Yes or No on each meal or snack time if the resident needed assistance. Assistance includes any of the following: feeding self, drinking fluids, reaching food on tray, holding eating utensils, cutting meat, or opening packages.

OBSERVATION OF FOOD INTAKE

BREAKFAST **Did resident need assistance ?** **Yes** **No**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
ORANGE JUICE						JELLY					
CORNMEAL						MARGARINE					
SOFT COOKED EGG						COFFEE/ TEA					
WHITE TOAST						8 oz. 2% MILK					
MINI DANISH											
Comments											

LUNCH **Did resident need assistance?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
LG PARSLEY SPRIG						COFFEE/ TEA					
FRIED CHICKEN						4 oz. 2 % MILK					
RICE FLORENTINE											
DICED CARROTS											
PEACH SAUCE											
Comments											

DINNER **Did resident need assistance?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
TARTAR SAUCE						POPPYSEED CAKE					
FISH CHZ BURGER ON BUN						COFFEE/ TEA					
TATER GEMS						4 oz. 2 % MILK					
COLESLAW											
Comments											

SNACKS **Did resident need assistance ?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
YOGURT Jr.											
Comments											

BEVERAGE/ FREE WATER/ WATER WITH MED.

Items	2 oz.	4 Oz.	6 Oz.	8 Oz.	Items	2 oz.	4 oz.	6 oz.	8 oz
Comments									

CALORIC COUNT RECORD SHEET

NAME:_____ ROOM # _____ DIET: GENERAL/ 3.5 GRAM SODIUM DAY 2

Please check Yes or No on each meal or snack time if the resident needed assistance. Assistance includes any of the following: feeding self, drinking fluids, reaching food on tray, holding eating utensils, cutting meat, or opening packages.

OBSERVATION OF FOOD INTAKE

BREAKFAST **Did resident need assistance ?** **Yes** **No**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
ORANGE JUICE						JELLY					
CORNMEAL						MARGARINE					
SOFT COOKED EGG						COFFEE/ TEA					
WHITE TOAST						8 oz. 2% MILK					
MINI DANISH											
Comments											

LUNCH **Did resident need assistance?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
LG PARSLEY SPRIG						COFFEE/ TEA					
FRIED CHICKEN						4 oz. 2 % MILK					
RICE FLORENTINE											
DICED CARROTS											
PEACH SAUCE											
Comments											

DINNER **Did resident need assistance?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
TARTAR SAUCE						POPPYSEED CAKE					
FISH CHZ BURGER ON BUN						COFFEE/ TEA					
TATER GEMS						4 oz. 2 % MILK					
COLESLAW											
Comments											

SNACKS **Did resident need assistance ?** **Yes_____** **No_____**

Food Items	0%	25%	50%	75%	100%	Food Items	0%	25%	50%	75%	100%
YOGURT Jr.											
Comments											

BEVERAGE/ FREE WATER/ WATER WITH MED.

Items	2 oz.	4 Oz.	6 Oz.	8 Oz.	Items	2 oz.	4 oz.	6 oz.	8 oz
Comments									

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