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RELATIONSHIP BETWEEN FUNCTIONAL STATUS, MENTAL STATUS, AND REVERSIBLE PROBLEMS IN THE COMMUNITY-DWELLING ELDERLY

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RELATIONSHIP BETWEEN FUNCTIONAL STATUS, MENTAL STATUS, AND REVERSIBLE PROBLEMS IN THE COMMUNITY-DWELLING ELDERLY

By

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ABSTRACT

RELATIONSHIP BETWEEN FUNCTIONAL STATUS, MENTAL STATUS, AND REVERSIBLE PROBLEMS IN THE COMMUNITY-DWELLING ELDERLY

By

Jean Marie Thiele

The statement of the problem is to determine if community-dwelling elderly can be categorized into low, moderate, or high risk groups by using functional status and mental status profiles in order to determine if an association exists between mental status, functional status, and reversible problems in the community-dwelling elderly. A retrospective chart audit was done. The results of the Pearson product moment correlations between the functional status, mental status, and reversible problems found no relationship. The results of the two-way ANOVA found no differences in the mean number of reversible problems in the low, moderate or high risk community-dwelling elderly. This study strongly supports the need for comprehensive geriatric assessments to be utilized on all community-dwelling elderly with the major portion implemented within the geriatric individuals home environment.

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CHAPTER 1

Introduction

With the steady increase in the geriatric population, the steady decline in their mental and functional well-being and the sudden rise in health care costs of this population, health care providers are seeking innovative ways to care for the geriatric population. At present many health care providers are deeply concerned about the delivery of health care to the elderly. The geriatric population is expanding. According to the U.S. Department of Commerce the number of Americans aged 65 and over is projected to double between 1980 and 2020. Persons 65 years of age and over made up 12 percent of the population in 1982 and are expected to make up 20 percent by 2020. The number of elderly persons grew twice as fast as the rest of the population between 1960 and 1980, and the number of people aged 85 and over increased more than twice as fast within the elderly population (U.S. Department of Commerce, 1990).

Although the health status of the elderly population is improving, their functional status is on the decline. As the current population ages, the remaining years of functional well-being is predicted to decline from ten years of active living at the age of 65 to two to nine years at the age of 85 (Katz, Branch, Branson, Papsidero, Beck, & Greer, 1983). In addition, the elderly as a group tend to have multiple medical problems, longer hospital stays, longer rehabilitation periods, unrecognized symptomatology and current active problems involving multidimensional spheres, for example biological, psychological, social, environmental and spiritual.

Mental status is also on the decline especially in the 85 and older group. Community surveys estimate that severe forms of dementing

illness affect more than five percent of people of the age of 65 years (Gottlieb, 1989). The prevalence of severe dementia rises from approximately one percent at ages 65 to 74 to seven percent at ages 75 to 84, to 25 percent for those over age 85 (U.S. Congress, Office of Technology Assessment, 1987). Fisk and Pannill (1987) in a two-year study of 159 community-dwelling Alzheimer's disease patients found a moderate reduction in cognitive function and physical activities of daily living and a greater dependence in the instrumental activities of daily living. Abnormalities in mental status are probably the biggest risk to independent living and quality of life (Burke, Rubin, Zorumski, & Potter, 1989). Therefore, as a clinician, it is extremely important to screen for cognitive impairment because it places an individual at high risk for institutionalization.

Given the decline in functional and mental status in the 75 and over age group, this population has made significant demands on health care professionals and facilities. As a group, they had 6.3 physician visits a year compared to 4.8 visits for the general population and an admission to nursing home occurs eight times more often than in the younger population (U.S. Department of Commerce, 1990). The majority of health care professionals are unprepared for the challenges and demands that this aging population will place on the health care system in the United States. Gains have been made over the past decade to increase geriatric training in the undergraduate medical education and in residency training. It is discouraging to note, however, that there is relatively low interest in geriatrics among medical students (Anderson, Gilcrist, Mondeika, & Schwartzberg, 1990).

Unfortunately, there was no research to document interest in geriatrics among nursing students, but one author recognized the importance of geriatric education among nurses to assess and treat complex problems in the community-dwelling elderly within a variety of settings. Increased competency and knowledge in gerontological nursing are seriously needed now that growing numbers of nurses in a variety of settings are confronting more elderly people in their case loads (Eliopoulos, 1989).

Because the elderly have multiple problems that span over the biological, psychological, social, environmental, and spiritual realms, there is a need in the primary care setting to develop a screening tool that would provide a systematic way for a primary care provider to identify these problems. This has been supported by Lachs, Feinstein, Cooney, Drickamer, Marottoli, Pannill and Tinetti (1990) who present a discussion about a screening tool utilized to identify problems in the primary care setting. This tool was developed by these physicians to evaluate geriatric patients in their office in a short period of time. Domains assessed included vision, hearing, arm function both distal and proximal, gait evaluation to identify problems associated with falls and mobility, urinary incontinence, nutrition, mental status and depression. No research or testing has been done to establish validity or reliability but this discussion supports the importance for a brief screening tool to be developed in order to accurately assess all community-dwelling elderly.

As documented in research, the most frequent tool utilized to assess and evaluate the elderly is the comprehensive geriatric assessment (CGA) (Pace, 1989; Burke et al., 1989; Rubenstein, 1987;

Bedsine, Wakefield, & Williams, 1988; Lachs et al., 1990). The purported beneficial outcomes of the geriatric assessment include: 1) improved diagnostic accuracy; 2) improved living arrangement; 3) improved functional and mental status; 4) reduced polypharmacy; 5) improved use of nursing resources and acute care services; 6) prolonged survival; 7) more appropriate use of health care services; 8) family awareness and involvement; and 9) reduced health care costs ("Comprehensive Geriatric Assessment," 1987). By utilizing this assessment, problems could be detected early and community resources implemented to maintain the elderly within their home environment.

Even though the CGA improves health care outcomes effectively within the hospital geriatric evaluation units targeted for the frail elderly, these assessments are not recognized by Medicare and third party payers as a unique procedure (Applegate, Deyo, Kramer, & Meehan, 1991; Lefton, Bonstelle, & Frengley, 1983). More specifically, there are no diagnostic or treatment codes established for reimbursement. While certain components of the CGA are similar to the generic history and physical examination, both of which can be billed to Medicare, the majority of the CGA which includes assessment of mental, functional, social, environmental, and spiritual realms is not reimbursable.

In addition to financial reimbursement issues, the implementation of the CGA is extremely time intensive. Basically all components of the CGA tool can be administered in approximately three to five hours and this includes the comprehensive history, physical examination, and implementing the screening tools for identifying problems in mental status, functional status, depression, and caregiver burden. Much of the screening tool looks for preventable problems which could place an

individual at high risk for institutionalization. The preventable problems include issues about falls, unsafe environment, inadequate social support, depression, malnutrition, and polypharmacy. Most physicians are unable to take that amount of time with an elderly individual and therefore some have contracted with registered nurses, specializing in geriatrics, to perform these CGA's. Unfortunately, third party payers and Medicare do not recognize the services of the registered nurse performing the CGA within the home and the cost of the geriatric registered nurse is often absorbed by the practice. But not all physicians involved in the care of the elderly are fortunate enough to be able to utilize a registered nurse to assess the multiple problems of the elderly on a home visit. Therefore, it is imperative to develop a screening tool that could be utilized by all health care providers in the primary care setting to evaluate the community dwelling elderly more efficiently without compromising their independence within their home. The tool would be used to identify individuals who may benefit from further evaluation in the biological, psychological, social, environmental, and spiritual realms. The primary care provider then categorizes the elderly individuals into low, moderate, and high risk groups and the moderate and high risk groups would be referred to the geriatric assessment team for further evaluation. If an individual is in the low risk category it is possible that routine medical care may be sufficient as long as a brief amount of information is collected within the psychological, social, environmental, and spiritual realms.

The geriatric clinical nurse specialist (GCNS) is an important asset to the primary care setting because a nurse in advanced geriatric practice can implement the CGA, is reimbursed by third party payers and

Medicare for home visits, has the knowledge to identify community dwelling elderly at high risk and the clinical expertise to care for and help community dwelling elderly maintain their independence within their home environment. Thus, the unsolved issue is: How can a GCNS efficiently utilize time in the primary care setting to thoroughly assess the elderly without compromising quality of care? More specifically: What kind of assessment tool can be developed by the GCNS which would identify frail elderly in need of further assessment? One possibility would be to take a portions of the CGA, specifically the Folstein mini-mental status tool and the functional status tool, to categorize community dwelling elderly into low, moderate, and high risk groups. By doing so it may be possible that certain screening criteria could be developed for the primary care setting to predict which geriatric individuals in the community would most benefit from the complete CGA process.

Purpose

As stated above, the CGA has many components. The components most important to this research study are mental status and functional status. Because the implementation of the CGA is so time consuming and yet so important to accurately diagnosing the problems of the community dwelling elderly, the purpose of this study is to identify levels of risk according to the geriatric individual's mental status and functional status and to determine if a correlation exists between mental status, functional status and reversible problems. Mental status is defined as an ability of the individual to use appropriate language, be oriented to person, place, and time, have short-term and long-term memory, have visual and spatial orientation, arithmetic and reasoning

ability. Functional status is defined as a person's ability to perform activities of daily living (ADL), i.e., eating, dressing, toileting, continence, mobility, and bathing, and instrumental activities of daily living (IADL), i.e., transportation, shopping, cooking, housekeeping, doing laundry, managing money, taking medication, and using the telephone. Reversible problems for this study are defined as those problems which may lead to a community dwelling elderly's hospitalization or institutionalization if not corrected, such as polypharmacy, malnutrition, inadequate social support, unsafe environment, and altered vision.

By investigating mental status, functional status and reversible problems, the physician and/or GCNS may be able to identify the community dwelling elderly at low, moderate, or high risk for having or developing reversible problems. Practical outcomes of this research for the GCNS would be to establish specific criteria that would help all health care professional screen the community dwelling elderly to determine if their patients were at low, moderate or high risk for reversible problems. Soon after mental and functional deterioration occur, health care providers could provide the community dwelling elderly at risk with a variety of interventions specifically targeted to these individuals. Identification of risk factors for the elderly could stimulate the development of specific strategies designed to reverse or forestall progressive deterioration (Williams & Hornberger, 1984).

Statement of the Problem

The statement of the problem is to determine if community dwelling elderly can be categorized into low, moderate, or high risk groups by using functional status and mental status profiles in order to determine

if an association exists between mental status, functional status, and reversible problems in the community dwelling elderly. Reversible problems is the dependent variable and mental status, functional status, and risk level are the independent variables. The research questions are as follows: 1) Can a combined score of mental status and functional status predict the number of reversible problems in the community dwelling elderly?; and 2) Are there differences in the number of reversible problems identified in the low, moderate and high risk community dwelling elderly?

The relationship of the concepts of mental status, functional status and reversible problems will be described in Roy's adaptation framework. Briefly, the concept of the mental status and functional status is defined in the physiologic needs mode and reversible problems are identified after the patient is assessed for behaviors manifested by stimuli. Risk level then is an outcome of combined information from the functional status and mental status obtained in the physiologic needs mode. All reversible problems become a maladaptive response. Finally, risk level is an adaptation to Roy's framework and is determined by combining functional status and mental status. This study will be a secondary analysis of data in the records of community dwelling elderly with completed comprehensive geriatric assessments.

Overview of the Remaining Chapters

The introduction, background, purpose of this study and statement of the problem are described in Chapter I. In Chapter II the conceptual framework and its relationship to the study variables is described. The study variables are functional status, mental status, risk level, and reversible problems. Also described are the assumptions, limitations

and scope of the framework. In Chapter III a review of the literature and research pertaining to the framework is presented. Research design, methodology and technique for analyzing data are described in Chapter IV. The results are presented in Chapter V and implications for practice and research are included in Chapter VI.

CHAPTER II

Introduction

In this chapter the conceptual framework of Roy's adaptation model as it relates to portions of the CGA is presented. The concepts of mental status, functional status, reversible problems and level of risk in the elderly are examined and defined within the framework. The relevance of the conceptual framework to the research question is discussed. An explanation of the model for nursing practice is described as it applies to this investigation. Finally, the scope and delimitation of the study based on the framework are described.

Conceptual Definitions of the Variable

The major concepts of this study are as follows: 1) mental status; 2) functional status; 3) reversible problems; and 4) risk status in the community dwelling elderly.

Mental Status

Mental function explicitly influences all other areas of individual function. The abilities to interact, communicate autonomously and manage personal affairs are concretely controlled by higher-order cortical function and virtually all activities of daily living are subject to limitation when cognitive or emotional status is disturbed (Gottlieb, 1989).

Normal changes in functional ability of the neurologic system are related to general slowing and wasting of the nervous system which produce a decrement in the ability to react quickly to stimuli (Matteson & McConnell, 1988). Reaction time, or the lag between the stimulation and the initiation of a response increases with age (Hendricks & Hendricks, 1981). It appears that the simpler the movement or action

required the less change in reaction noted. On the other hand, more complex movement requires greater reaction time because more choices are required between two or more responses to various stimuli. Therefore, a normal mental status for the elderly would be one where all cognitive abilities are present but the reaction time to response for certain stimuli would be decreased.

To many, the mental status examination consists solely of a few questions about orientation, for example calculations and the ability to remember three items. But the complete mental status examination encompasses an assessment of the level of consciousness, attention, language capabilities, memory, proverb interpretation, similarities, calculations, writing and construction ability (Gallow, Reichel, & Anderson, 1988). Therefore, mental status of the community dwelling elderly involves higher cortical function which would include information about memory, the capacity to solve day-to-day living situations, the performances of learned perceptual motor skills, the correct use of social skills and the control of emotional reactions. Thus, it is imperative that mental status be screened in the age 65 and older population in primary care settings because the loss of mental status begins to affect many activities of daily living and hinders an elderly individual's ability to remain independent.

In this study mental status is defined as a higher level of cortical functioning which involves short-term and long-term memory, the capacity to solve day-to-day living situations, the correct use of social skills and the control of emotional reactions. The assessment involves areas of attention, level of consciousness, language

capabilities, memory, proverb interpretation, similarities, calculations, writing, and construction ability.

Functional Status

M.E. Williams (personal communication, Sept., 1991) describes functional status as a decrease in muscle weight relative to total body weight and as a characteristic sign of advanced age. There is now data to suggest that late onset of loss of muscle mass suggests that loss of muscles may not be caused by normal aging but rather a result of nutritional deficiency, chronic disuse or other chronic conditions (M.E. Williams, personal communication, Sept., 1991). This perspective shows that functional status is a compilation of physical functioning, physical exercise and nutritional intake.

The domain of functional status includes two elements of physical function: 1) self-care activities, such as hygiene and mobility; and 2) the more complex activities required to maintain the person in the community, such as shopping and food preparation (Johnson & Mezey, 1989). Physical self-care activities have been referred to as activities of daily living (ADL) and more complex self-maintenance functions as instrumental activities of daily living (IADL) (Lawton & Brody, 1971).

In the literature, assessment of ADL include six functions: toileting, feeding, dressing, grooming, physical ambulation and bathing. The assessment of IADL includes eight skills: telephone use, shopping, food preparation, housekeeping, laundry, use of transportation, responsibility for taking medication and ability to manage finances (Johnson & Mezey, 1989). Therefore, it is imperative for a GCNS and health care providers to screen for functional status because it will

establish a baseline of function in all geriatric individuals and will identify need for resources that will help them remain independently within their home. In this study, functional status is defined as the community-dwelling elderly's ability to provide physical self-care activities as well as more complex self-maintenance functions which are labeled as instrumental activities of daily living.

Reversible Problems

In this study, reversible problems in the community-dwelling elderly are those problems identified from the CGA that a clinician can reverse or identify community resources to address the problems, thereby assisting this population in maintaining their independence in their home. Without the reversal of these problems, the elderly may need placement in a long-term care facility (i.e., congregate housing, adult foster care or nursing home). There was no literature that defined reversible problems. The majority of literature stated that the CGA identified new or unique problems but never defined them specifically as the researcher has done in this study. But in clinical practice, this researcher has seen many relationships between mental status and the problems which could be reversed. Cognitive impairment has been shown to affect nutritional status when the individual does not remember to eat or eats many of the same food repetitively. Cognitive impairment affects polypharmacy when the individual cannot remember to take medication. Cognitive impairment affects social support when the individual is reluctant to socialize secondary to wanting to hide memory loss problems. Cognitive impairment can also affect an individual's environment when they forget to turn off appliances or cannot remember their way around their familiar environment. Finally, cognitive

impairment can affect an individual's functional capacity when they do not remember how to use the stove for cooking, how to dress appropriately for warm weather and how to manage their finances. In this study the following reversible problems will be addressed.

Polypharmacy. Terezhalmy (1989) and Goldberg and Roberts (1983) describe the risk for polypharmacy in the elderly as compared to the younger population. The elderly absorb, distribute, metabolize, and excrete medications differently compared to the younger population. They need less medication to cause the same effect in the younger population and they are prescribed more medications related to the multiple chronic problems associated with increasing age. It is estimated that as many as 75 percent of the office visits to general medicine practitioners and internists are associated with initiation or continuation of medications (Terezhalmy, 1989). Therefore the elderly are at high risk for polypharmacy related to the number of medications prescribed by different health care providers, having more chronic illness and the possible interaction with over-the-counter medications.

Lavizzo-Mourey (1989) discusses the adverse drug reactions caused by polypharmacy. Many adverse reactions are related to interactions among medication and medicine misuse. Therefore, the potential for adverse reactions would logically increase with the number of consumed medications. Surveys indicate that the community-dwelling elderly take between five to eight prescription medications regularly, and may take as many or more nonprescription medications (Vener, 1979). Given the documented positive correlations between the number of medications and the risk of adverse reactions, the elderly have increased incidence of

adverse drug reactions related to chronic illness and consumption of medications (Klein, 1984; Lavizzo-Mourey, 1989).

Therefore, polypharmacy is defined as the use of prescribed and over-the-counter medication of greater than four in total number that can cause adverse reaction in the elderly related to the physical changes of the aging body, multiple chronic illnesses, and ambiguous guidelines for prescribing medications in the elderly. Thus, polypharmacy was considered a reversible problem because all chronic illnesses do not need treatment with medication but if medication needs to be prescribed, then attempts to reverse polypharmacy should be followed.

Malnutrition. There is some controversy from scientists about what constitutes appropriate nutritional status in the elderly and whether or not the recommended daily allowance requirements should differ from the younger population. Studies conducted in the U.S., (Yearick, Wang, & Pisias, 1980; and McGandy, Russell, & Hartz, 1986) demonstrate that adult energy intakes decline linearly from about 2700 kilocalories per day at age 30 to 2100 kilocalories per day at age 80. This age related reduction in energy was linked to few possibilities such as a decline in the basal energy metabolism which was parallel to the reduction in lean body mass and a reduction in energy expenditures of about 400 kilocalories per day was related to decreases in physical activity with age. Serum albumin levels are lower in the elderly and do not seem to be related to inadequate protein intake but an increase protein requirement in the elderly due to less effective utilization of amino acids for protein synthesis and slightly higher rate of protein

breakdown per unit body cell mass in the elderly (Zheug & Rosenberg, 1989).

In order to make a judgment about the need for nutritional interventions or the possibility of malnutrition in the elderly, it is necessary for the GCNS to conduct a thorough, multidimensional nutritional assessment because each elderly individual has a different effect on the biochemical and hematologic test used to measure nutrition. To evaluate the elderly adequately, a thorough nutritional assessment should include: 1) appraisal of physical appearance; 2) oral health; 3) social and environmental situation; 4) potential physical and psychological disabilities; 5) medical and drug history including performance of anthropometric measurement; 6) evaluation of biochemical hematologic and immune function; and 7) obtainment of comprehensive dietary history (Mitchell & Chernoff, 1991).

Malnutrition is the consequence of chronically inadequate intake of essential nutrients. Essential nutrients are defined as food from the four basic food groups, vitamins, minerals and fluid. Malnutrition is considered a reversible problem because the GCNS could utilize Roy's adaptation framework to identify stimuli that would lead to a decrease in nutritional status. Then appropriate resources would be ordered to assist the elderly patient in maintaining or improving their nutritional status. In this study, malnutrition is defined as inadequacies in physical appearance, social and environmental situations, medical history and polypharmacy, and inadequacies in food intake from the four basic food groups.

Inadequate Social Support. Social functioning is a broad concept that embraces all human relationships and activities in society (Kane &

Kane, 1989). Social functioning is correlated with physical and mental functioning and changes in patterns of activities or relationships adversely affect physical or mental health. Social well-being enhances the ability to cope with health problems and to maintain autonomy despite functional limitations (Kane & Kane, 1981).

Inadequate social supports are defined, in this study, as the lack of physical or emotional help from family, friends and the community. Essential elements in the social assessment should include the individual, family and community (Matteson & McConnell, 1988). Essential content in the assessment of the individual includes: 1) perception of current life situation; 2) current roles and recent role changes; 3) life-style; 4) culture background; 5) location; 6) financial resources; 7) mental status; and 8) goals and plans for the future (Matteson & McConnell, 1988). Important content for assessment of family and friends include: 1) perception of the family or caregiver of the client's life situation and goals; 2) family structure; 3) family patterns of functioning; and 4) role of client's friends. Essential content in the assessment of the client's community includes: 1) special resources in the environment; and 2) special demands of the current environment. Therefore, inadequate social support is considered a reversible problem because the GCNS can identify a problem in the elderly individual's support system and prescribe appropriate community resources available or communicate with family and friends on how they can help to improve the inadequacy.

Unsafe Environment. Environment, as defined geographically, may be as large as a community, neighborhood or institution or as small as a ward, home or an individual room. Environment includes quantity and

quality of various objects and people within a geographic boundary. Examples would include frequency of interaction, lighting intensity, noise level, colors, temperature and spatial arrangements, and size and type of specific objects such as furniture (McConnell, 1988). Unsafe environment in the elderly is considered a reversible problems because fractures are the twelfth leading cause of death in the United States and people over 65 years of age represent three quarters of all fatal falls (Louis, 1983; Notelwicz & Ware, 1982). It has been documented that fifty percent of all falls are caused by environmental factors such as floor obstacles (electrical cords, scatter rugs, low or broken furniture), poor lighting, improper fitting shoes or clothes and congested traffic patterns (Galton, 1976).

Therefore, an unsafe environment would be defined as those areas within an elderly individual's home environment that would place this individual at high risk for falls. A thorough assessment of the home environment would be necessary by the GCNS looking at conditions in the home which are hazardous to the elderly in a variety of ways. Once these conditions are identified, the GCNS makes recommendations to the elderly and their family to make some changes. If the individual is no longer to remain in their environment, then appropriate referrals would be made to other areas where the individual could live within the community with some supervision.

Altered Vision. Altered vision, as it pertains to the elderly, is related to normal changes in vision in the elderly. These include decreased visual acuity, decreased tolerance of glare, decreased ability to adapt to dark and light and decreased peripheral vision. Matteson & McConnel (1988) observed visual acuity longitudinally in almost five

hundred subjects ranging in age from 63 to 90 over a five-year period. It was found that visual acuity became worse in 26 percent and actually improved in 25 percent of the subjects. These are not considered reversible eye problems in the elderly but cataracts are considered the most common cause of adult blindness. Therefore, altered vision could be considered a reversible problem because once the diagnosis of cataracts is made, extraction can improve vision immediately providing that no other causes for loss of vision are present (Matteson, 1988).

Level of Risk

There is no literature to define level of risk in the community-dwelling elderly as it relates to this study. For the purposes of this study, to have a low level of risk would mean that the individual is functionally and cognitively unimpaired, for an individual to be at high risk means that the individual has an impairment of their mental and functional abilities in that they cannot think for themselves and cannot function by themselves without the assistance of another individual, and moderate risk level is defined as the area in between low and high risk which is considered somewhat of a gray area clinically speaking. The moderate risk level could include either difference in mental or functional status or both but not to the extent as in the high risk group.

Theoretical Framework

To determine an approach to the research questions, a framework that allows the GCNS to gather data about mental status, functional status and reversible problems must be utilized. The framework must also allow the GCNS the freedom to categorize geriatric individuals into low, moderate and high risk groups by using mental status and functional

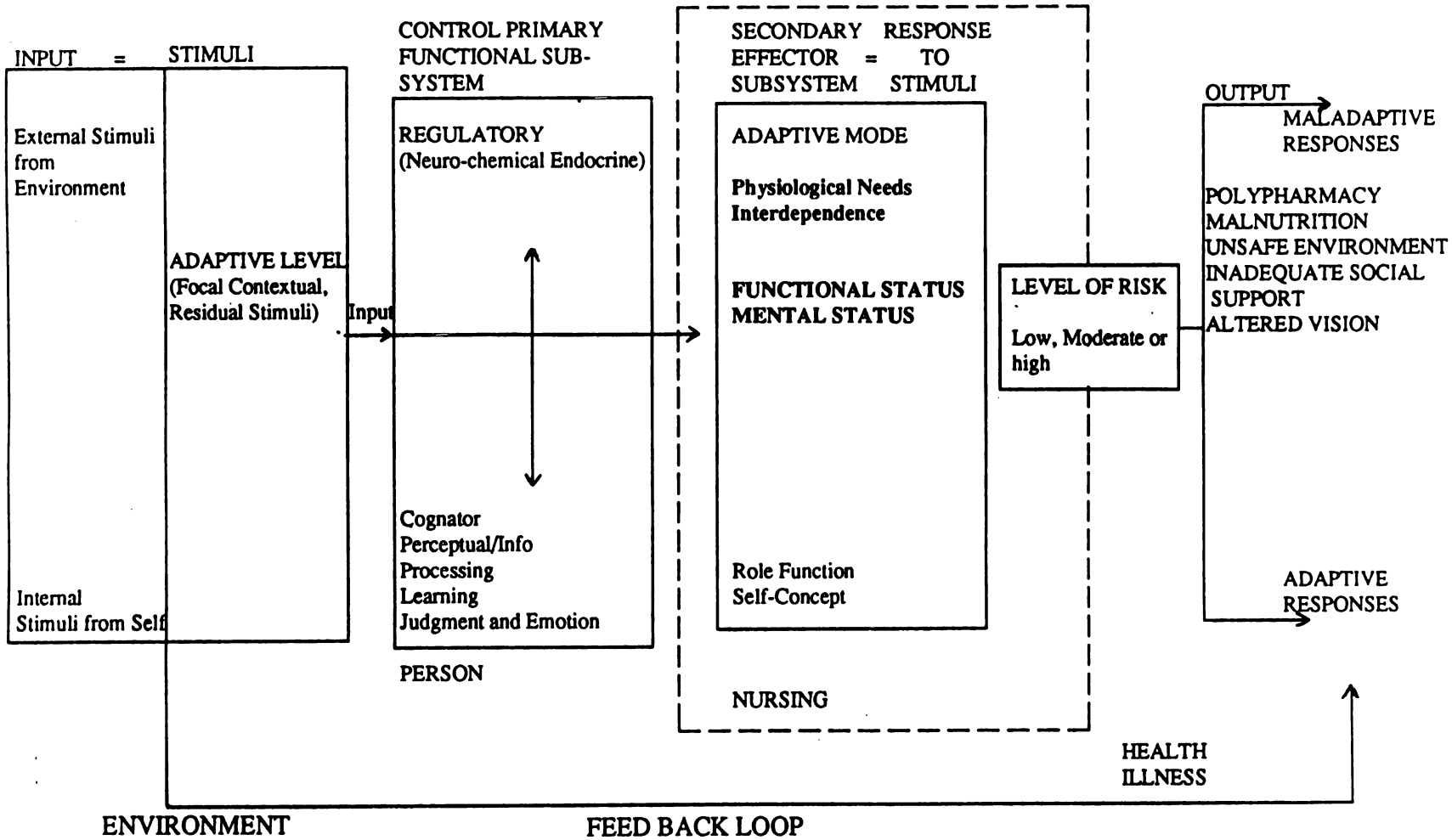
status. This information could later be used to predict the number of reversible problems present in the community-dwelling elderly.

A brief discussion follows to demonstrate the applicability of Roy's conceptual framework to the problem under study. Figure 1 is the model for the application of Roy's adaptation framework to this study. The GCNS utilizes Roy's adaptation model to establish an association between mental status, functional status, reversible problems and level of risk. Within Figure 1, labeled input on Roy's adaptation framework, information about the internal and external environment of the geriatric individual is present. Adaptation level is defined from the combination of external and internal stimuli. It is important to note that the adaptation level according to Roy is constantly changing which represents the person's own standard and range of stimuli that can be tolerated with ordinary stress. People have biologic and psychologic abilities to cope with a changing environment. Some biologic measures are genetically determined and others are acquired through the process of learning. Therefore, whatever the change in the environment, the elderly individual has mechanisms to cope with the changing environment.

The information from the input system is then processed through the control primary functional subsystem (Figure 1). The regulatory subsystem receives input from the external and internal environment. This regulatory subsystem processes the changes through the neurochemical endocrine channels to produce a response which is only manifested in the physiologic needs adaptive mode. The cognator subsystem also takes information from the internal and external stimuli. These inputs from the cognator involve psychological, social and physiological realms. These stimuli are processed through perceptual

Figure 1

Roy's Adaptation Framework With Modification and Study Variables



and information processing, learning, judgment and emotional processes. Perceptual information processing is the person's internal activity of selective attention, coding and memory. Learning is the process of imitation, reinforcement and insight. Judgment process includes problem solving and decision making. Emotional pathways include the use of defense to seek relief and affective appraisal. The input system is defined as the elderly individual's physical being (Roy, 1976).

In the secondary effector subsystem (Figure 1), the response to the stimuli from the cognator and the regulatory subsystem within the primary functional subsystem are manifested in the adaptive modes labelled physiologic, self-concept, role function and interdependence. Physiologic needs mode contains information about oxygenation, nutrition, elimination, rest and activity, skin integrity, protection, the senses, fluid and electrolytes, neurological function and endocrine function. The self-concept mode contains information about physical self, self-consistency, self-ideal and moral ethical spiritual self. Role function contains information about primary role, secondary role and tertiary role in society. Interdependence contains information about contributive behaviors and recessed behaviors. Functional and mental status as it is defined in this study is a response that is manifested in the physiological needs mode and the interdependence mode only.

After a nurse gathers information about behaviors manifested in the secondary effector subsystem, then a judgment is made about the behaviors as to whether or not they are maladaptive or adaptive. This judgment in Roy's adaptation framework is not labelled; therefore, the framework was modified (Figure 1) to better explain how a GCNS could

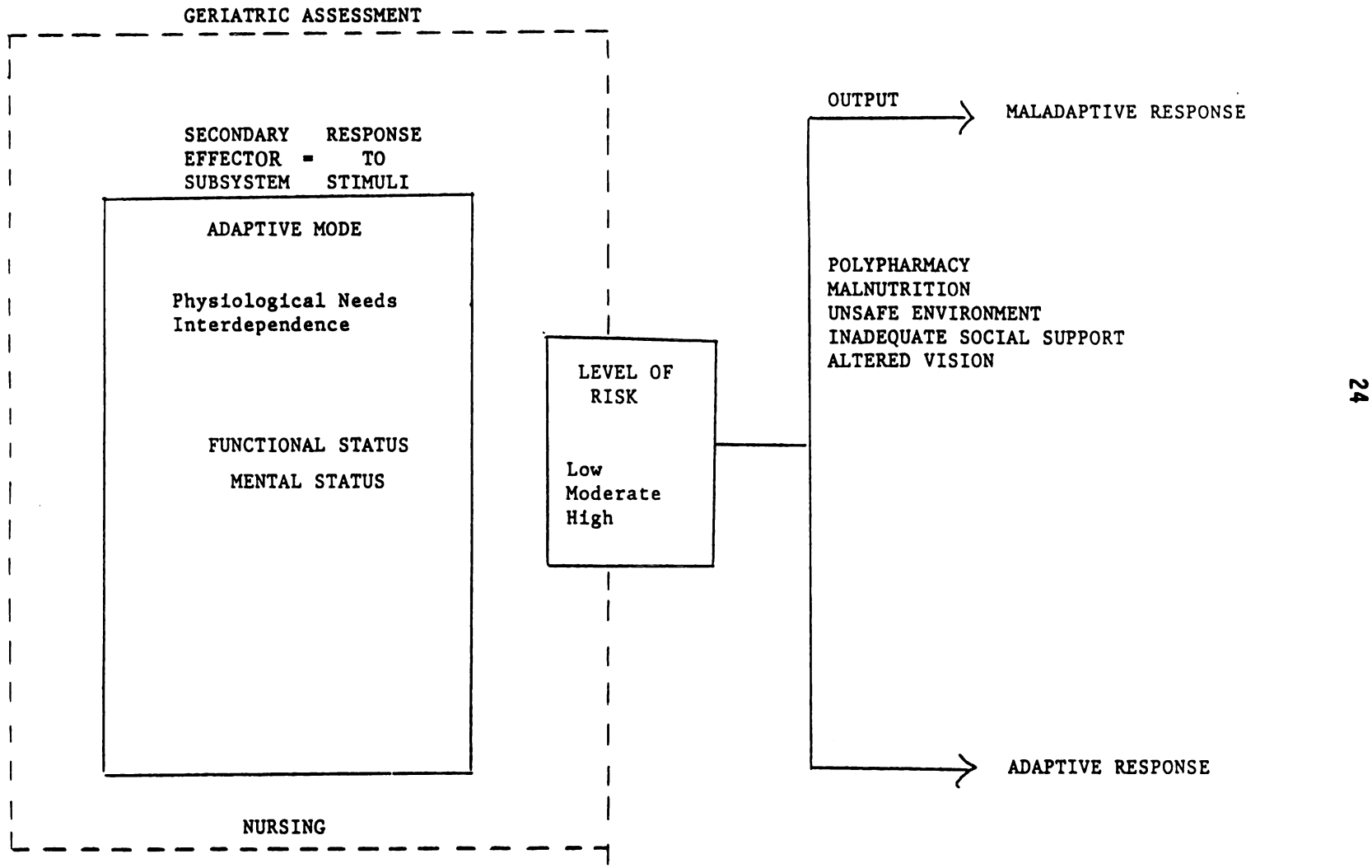
utilize Roy's adaptation framework to make a judgment about an individual's risk level. The level of risk was defined by combining the assessment of mental status and functional status from the physiologic needs mode and interdependence mode. A low, moderate and high risk level would be assigned to each geriatric individual according to the mental status and functional status score. By categorizing the community-dwelling elderly into low, moderate and high risk levels, the GCNS utilizes Roy's adaptation framework to predict the number of reversible problems present in the geriatric individual. The area in Figure 1 labelled output defines health and illness for the elderly individuals and includes the dependent variables of the study which are reversible problems (polypharmacy, malnutrition, inadequate social support, unsafe environment and altered vision). The next area of this chapter is the scope and delimitation of the study based on theory.

The Scope and Delimitation of the Study Based on Theory

Although all portions of Roy's nursing model are pertinent to obtaining a comprehensive and holistic assessment of the elderly individual, only certain areas will be utilized to describe how information will be gathered about an elderly individual. For purposes of this study, only information gathered under the secondary effector subsystem and the output will be utilized (Figure 2). Within the secondary effector subsystem, the only adaptive modes that will be utilized to determine an individual's mental status and functional status will be within the physiologic needs mode and the interdependence mode. As stated before, an addition to this framework has been identified as a level of risk which will be determined by the GCNS after obtaining information from the secondary effector subsystem (mental

Figure 2

A Portion of Roy's Adaptation Framework for this Research with Modification and Study Variables



status and functional status). Once the levels of risk are determined as low, moderate or high, then differences in the number of reversible problems found in the output section can be identified for each risk group. If the GCNS is successful through research in demonstrating that a combined score of functional status and mental status can predict the number of problems in the community-dwelling elderly by establishing a correlation, this would assist health care providers in categorizing all elderly individuals who come into the primary care setting. Therefore, the elderly population would be taken care of efficiently and quality of care would not be affected. This screening procedure would possibly save the health care system the cost of doing a comprehensive geriatric assessment which is a time intensive procedure on all geriatric individuals.

Since this research study only includes a retrospective chart audit, a brief description of how a GCNS would utilize this framework to collect data and make diagnoses about a geriatric individual will be described by using Roy's adaptation framework. Initially, the GCNS will receive information about the individual's internal and external environment and their adaptation level relative to the situation. As these stimuli enter the person, the control process of regulatory and cognator coping mechanisms are activated. These processes involve chemical, neuroendocrine and cognitive emotional pathways. This includes information that will determine the individual's mental status. Response to these stimuli then are classified into four categories and for purposes of this study, the physiologic needs mode and the interdependence mode from Roy's adaptation framework will be described. The GCNS in the first level of assessment systematically looks at

behaviors in these two adaptive modes. In the physiologic needs mode, information would be gathered about neurological functioning (mental status) and functional status (responses to the individual's ability to perform ADL's). Specifically, information about eating, dressing, toileting, continence, mobility and bathing. Information out of the interdependence mode would include information about an individual's functional status as it relates to IADL's, for example transportation, shopping, cooking, housekeeping, doing laundry, managing money, taking medications and using the telephone.

When the first level of assessment is completed, a tentative judgment is made about whether or not the behavior of mental status or functional status is adaptive or maladaptive. Criteria according to Roy in making this judgment include: 1) whether or not the behavior promotes integrity of the individual; 2) whether or not there is a regulatory or cognator effectiveness; and 3) whether or not the patient perceives the behavior as being adaptive. When the GCNS uses Roy's adaptation framework to make this judgment, the nurse, along with the family, is looking at the risk level for a particular geriatric individual. Once the risk level is determined, then individuals in the moderate and high risk would have a second level of assessment which involves the assessment of the stimuli that influences the behaviors for functional status and mental status. For purpose of this study, information would be gathered on polypharmacy, malnutrition, inadequate social supports, unsafe environment and altered vision which all could have an effect on functional status and mental status.

When the nurse has set priorities and identifies the most significant behaviors related to these five reversible problems, then

identification of focal, contextual and residual stimuli influencing or contributing to these behaviors are identified. Focal stimuli are described as a degree of change that precipitate the behavior being observed and is also the stimuli that is most immediately confronting the person. It is the assumption of the researcher here that the nurse and the geriatric physician have made accurate decisions about the external and internal stimuli which were affecting the geriatric individual going through the comprehensive geriatric assessment. Contextual stimuli are also identified and these are all other stimuli present that affect the behavior being observed. For example, these may have to do with cultural beliefs.

The third step of the nursing process is nursing diagnosis. After the nursing assessment has been obtained by the GCNS, the nurse then makes a nursing diagnosis. Nursing diagnosis, as it relates to this research study, would be considered a maladaptive response which includes the five reversible problems.

The remaining portions of the nursing process labelled planning, intervention and evaluation will not be utilized within this study since the information had already been gathered by the geriatric nurse and physician at the MidMichigan Regional Medical Center. Therefore, Roy's adaptation framework will be used by the GCNS in this study to determine if a combined functional status score and mental status score can categorize individuals into a low, moderate or high risk group and then further assessment would be done to determine if these individuals have problems that are reversible.

Explication of Applicability and Relevance of Conceptual Framework to Problem Under Study

The outcomes of the geriatric assessment that pertain to this study are mental status, functional status, number of reversible problems and level of risk in the elderly. The main goal of the geriatric assessment process is to gather a comprehensive data base and determine if a geriatric individual is coping effectively or ineffectively. If they are coping ineffectively, the geriatric assessment team identifies personal and community resources to maintain or improve the individual's functional well-being on the biological, psychological, social, environmental and spiritual realms. The similarities between the comprehensive geriatric assessment and Roy's adaptation model are the following: 1) information is gathered systematically; 2) information is holistic in the biological, psychological, social, environmental and spiritual realms; 3) mental status is assessed; 4) functional status is assessed; 5) behaviors are assessed as response to internal and external stimuli both in the home and in the office; and 6) both Roy's model and the CGA process allow for conclusions of effective (adaptive) or ineffective (maladaptive) responses to be drawn after information is gathered.

Therefore, the condensed version of the Roy's adaptation framework for this research study allows the GCNS to accurately assess functional and mental status within the physiologic needs mode and the interdependence mode. Once this assessment is done, the nurse then diagnoses an individual and categorizes them into low, moderate or high risk. Once the risk levels are determined, information, which is pertinent to maintaining an elderly individual within the home, is

assessed. The ability to maintain or improve their mental status and functional status would be the information found in the output section in Figure 2 of Roy's adaptation models, specifically the maladaptive responses of polypharmacy, malnutrition, unsafe environment, inadequate social support and altered vision.

Summary

In this chapter the conceptual framework of Roy's adaptation model as it related to portions of the CGA was presented. The concepts of mental status, functional status, reversible problems, and level of risk in the elderly were examined and conceptually defined within the framework related to current research. The research questions were discussed with their relationship to the conceptual framework and an explanation of the model for nursing practice was described as it applied to this investigation. Finally, the scope and delimitation of the study framework was described.

CHAPTER III

Introduction

This chapter includes a discussion of major research findings related to the concepts under investigation and an examination of the strengths and weaknesses of the studies. First, a discussion about a paper written by a task force to determine recommendations for screening the geriatric population in the 1990's will be outlined. The next set of studies that follow will establish a relationship between using functional status and mental status which are components of the comprehensive geriatric assessment to identify problems in the community dwelling elderly and the institutionalized elderly. None of these studies identify problems as being reversible. There was only one research study (Ramsdell, Swart, Jackson, & Renvall, 1989) that utilized all concepts except risk level to look at unique problems found in the home. Other studies (Currie, Moore, Friedman, & Warshaw, 1981; Williams, Williams, Zimmer, Hall, & Podgorski, 1987) lend support to performing a home visit along with the CGA. Still other studies (Altkorn, Ramsdell, Jackson & Renvall, 1991; Fisk & Pannill, 1987; Scholer, Potter & Burke, 1990; Williams, 1987; Williams, Hadler & Earp, 1982) include concepts to establish risk levels which were determined by mortality and use of long-term care services to identify problems in the community-dwelling elderly and the institutionalized elderly. A few other studies (Aske, 1990; Nolen, 1987) established a correlation between mental status and functional status. Finally, one study (Larson, Kukull, Buchner, & Reifler, 1987) established a relationship between mental status and polypharmacy.

Low, Moderate and High Level of Screening in the Elderly for the 1990's

In examining the previous work done with the comprehensive geriatric assessment (CGA), which includes all of the concepts investigated in this study, it is difficult to draw similarities and conclusions between studies due to the broad application of the CGA in multiple and diverse settings. This does not seem to be related to problems in any individual study but in the broad application of the comprehensive geriatric assessment in multiple and diverse settings. Heterogeneity, which forms the very heart and soul of geriatrics, creates the problem (Cohen, 1991). Therefore, the heterogeneity is in the patient population, the settings where geriatric care is provided and the variety of health care professionals involved.

Rubenstein, Applegate, Burton, Hyer, Pawlson, and Winograd (1991) convened on three occasions over a two-year period to prepare a report recommending guidelines to Medicare for the possible establishment of reimbursement for geriatric assessment. One recommendation was the need to identify low, moderate and high levels of screening for problems in the elderly in the biological, psychological, social, spiritual, environmental and functional realms. It also described major sites for conducting geriatric assessment within the hospital, office, home and nursing home. For purposes of this study, since the interest is on community-dwelling elderly, a description of how the author defines low, moderate and high risk level of screening will be discussed in the outpatient setting.

Outpatient geriatric screening was considered the lowest level of screening which involved a 30 to 60 minute office visit utilizing screening tools like the Folstein mini-mental status exam, Katz ADL and

the depression scale to determine if a geriatric individual would be eligible for an intermediate or CGA. This required a nurse, social worker or physician. Intermediate outpatient geriatric assessment was considered to be similar to the outpatient CGA but less time intensive. It would be done by a physician, nurse and social worker and take approximately three hours. Patients requiring an intermediate assessment are usually impaired in two or more domains but have less co-morbid illness and are less frail (Rubenstein et al., 1991). Therefore, intermediate level screenings are based on impairment in mental status, functional status or one other domain and few medical diagnoses. The age range for having an intermediate outpatient CGA may be from 65 to 75 and older.

The outpatient CGA requires collaboration by a physician, nurse and social worker utilizing a variety of multidimensional tools. The entire process may take up to six hours. To be eligible for outpatient CGA, an elderly person should have impairment in two or more domains and presence of functional impairment, sentinel event or syndrome (i.e., falls, confusion, post-hospitalization, incontinence, death of spouse, polypharmacy, failure to thrive); or use of formal in-house services, adult day care, or board and care facilities (Rubenstein et al., 1991). Exclusion criteria is urgent need for hospitalization and absence of functional impairment.

It was also interesting to note that Rubenstein et al., (1991) perceived the home visit as a useful part of any CGA. Specifically, indications for a home visit were included and were similar to the CGA criteria: 1) recent change in physical, mental or functional status; 2) recent change in caregiver situation; 3) dementia and patient living

alone or with compromised support/caregiver; 4) major mobility/disability problems; 5) frequent emergency room or hospital admissions; 6) major sensory impairment; 7) temporary hospice care; and 8) suspected psychological and social problems such as depression or social isolation (Rubenstein, 1991). Rubenstein (1991) supports the importance of utilizing two assessment tools that measure two separate domains. Unfortunately, it was not specified which domains to assess when screening for problems that would place community-dwelling elderly into a low, moderate or high risk screening process.

Mental Status, Functional Status and Patient Problems

Ramsdell, Swart, Jackson and Renvall (1989) utilized the concepts of mental status, functional status and problems in the community-dwelling elderly to test the hypothesis that a home visit would detect a greater number of problems and result in more specific recommendations than an office visit. The sample included 154 frail elderly with a mean age of 75. Problems were identified by a geriatric nurse practitioner in the home visit and an internist/geriatrician in an outpatient office setting. Patient records were the source of data. Mental status was measured by using the Mini-Mental Status Exam (MMSE) and functional status was measured with the Katz Index which measured ADL and IADL. The number, the type and frequency of each problem and the recommendations for the internist and nurse practitioner were recorded for each patient. The findings in this study indicated that a home visit by a nurse practitioner during the course of an interdisciplinary assessment identified important problems that were not noted at the initial physician's office evaluation. These problems related directly to the patient's medical care and well-being, for example, 22.8 percent

could have resulted in death or serious morbidity and 74.5 percent had less serious morbidity or loss of functional ability.

Social or environmental problems identified by physicians in Ramsdell et al. (1989) were seldom specific enough to permit the development of a meaningful treatment plan. In contrast, the home visit record contained significant recommendations pertaining to such things as patient safety issues in 81 percent of the patients and caregiver issues in 52 percent of the patients. There were also no factors apparent in the clinic visit that predicted major risk factors in the home but the presence of important risk factors in the home increased with the number of problems detected during the home visit. This suggests that it is very difficult to predict the yield of a home visit based on a regular history and physical done in the office setting. But when problems are found, they are often serious and the risk associated with each individual problem increases with the total number of problems.

Katz, Dube and Calkins (1985) explored the extent to which the physician-administered multifaceted assessment could meet the needs of a geriatric assessment team and also provide for the comprehensive functional assessment for the elderly patient. Fifty-one consecutive consultation patients with a mean age of 78 were evaluated. The majority of consultations were to transfer presumably stable patients to low-cost housing. The domains measured were physical health, mental health, socioeconomic resources and activities of daily living. Findings from assessments in the above domains were that 45 percent of the cases had potentially harmful drug interactions. Assessment of each patient's medical problems resulted in previously unrecognized problems

in 57 percent of the subjects studied. Cognitive dysfunction was noted in 22 percent of the subjects; depression, social isolation and visual impairment were detected in 28 percent of the subjects and additional findings were: a) 18 percent of the patients were incontinent; and b) 39 percent needed strength and social support. Therefore, the majority of the problems identified appeared to be reversible and this study lends support to performing assessments in the physical, psychological, socioeconomic and functional realms to identify substantial numbers of reversible problems in the hospital patient. However, this does not support the notion that information collected about functional status and mental status could be used to predict the number of problems in an individual in the community. The screening tool helps to identify problems but not predict them.

Epstein, Hall, Fretwell, Feldstein, DeCiantis, Tognetti, Cutler, Constantine, Besdine, Rowe and McNeil (1990) evaluated the effectiveness of consultive geriatric assessment and limited follow-up for ambulatory patients. They randomized 600 elderly into three groups: 1) consultation by a geriatric assessment team; 2) consultation by a second-opinion internist; and 3) only traditional health maintenance organization services (control patients). The study population was fairly healthy, and about one fourth of the sample (N=80) scored less than 25 on a Folstein test meaning that the large majority had no impairments. Both the geriatric assessment team and the internist identified new diagnosis in 30 percent of the patients and changes in medications in 30-40 percent of the patients. The significant differences between the internist and the geriatric assessment team were that the geriatric assessment team made more new diagnoses and provided

psychological and social evaluations more frequently, suggested changes in medications, regimen, problems of the home and community services more often as compared to consultation by a second-opinion internist giving traditional health maintenance organization services. In summary, the Epstein et al. (1990) study showed that the single consultive geriatric assessment with telephone call follow-up did not produce any substantial health benefits for the ambulatory elderly population. But it did lend support to this research in that the data collection in the multidimensional fields could help the health care provider to identify problems in the ambulatory elderly. The limitation of the Epstein et al. (1990) study is that it does not specifically support the ability to use functional status and mental status alone to predict number of problems in the elderly and its main purpose was to identify differences in the outcomes of the geriatric assessment administered by a geriatric team versus an internist.

Fields, MacKenzie, Charlson and Sax (1986) conducted a prospective study to analyze whether clinical outcomes differed between patients with or without cognitive impairment when modifying variables of severity of illness, sex and age were controlled. The prevalence of cognitive impairment was 20 percent (Folstein < 24). The in-hospital mortality and morbidity rates were higher in the cognitively impaired patients than the cognitively unimpaired patients. This could be explained by greater severity of illness, instability and co-morbidity. The cognitive impaired patients had longer length of stay, related to awaiting placement. These findings suggest that cognitive impairment on admission may be regarded as a marker for patients with poor prognosis. Therefore, the strength of this study is that the mini-mental status

exam (MMSE) could identify individuals with cognitive impairment and predict that their length of stay and complications may be greater especially if the cognitive impairment is associated with severe illness. The limitation is that the information could not be generalized to the community-dwelling elderly.

Williams and Horneberger (1984) evaluated the contributions of other functional measurements such as lower extremity performance, mental status and overall strength to provide a more useful tool for anticipating change in the status of institutionalized older people. The purpose of this study was to evaluate the contribution of other functional measures such as lower extremity performance, mental status and overall strength to predict stability and chronic deterioration in a cohort of frail older persons. The sample consisted of 40 patients who resided in either the community or an institution and who were 65 and older. The variables of manual ability, mental status, upper extremity strength, mobility, activity, active and resolved medical problems, current medications, performance of ADL's and change in care requirements. Subjects were evaluated and followed over a two-year period. The change in care needs were defined as: 1) patients who maintained long-term care needs; 2) patients whose extreme irreversible acute events result in death or transfer to skilled care unit; and 3) patients who require transfer to skilled nursing home for all reasons except acute events. The results showed that at least four dimensions of functional measurement, i.e., upper extremity performance, ambulation, grip strength and mental status can be used to make accurate predictions regarding overall stability of an institutionalized frail older person. Other observations, such as number of medications used,

number of diagnoses or findings on physical exam, were not associated with changes in level of care. The findings supplement the observations by showing that individuals who require intermediate level care exhibit less than optimal manual skill. The researchers concluded that predictions may improve by adding measurements of ambulation, grip strength and mental status.

Currie, Moore, Friedman and Warshaw (1981) support the practice and importance of home visits for the elderly. Their sample consisted of 50 high-risk patients as evidenced by frailty, need for overall assessment or overall decline leading to placement in a long-term facility. Mental status and functional status were evaluated along with physical health, and environmental status, and living arrangements. The mean age was 78; 36 patients were female and 19 lived alone. The maximum mean number of problems identified was 3.8. The outcome of the assessment was that 36 percent had new diagnoses; the most common being depression and dementia. Adjustment in medication schedule and advice about support and placement were given. No predictions were made about the home visit, decreasing mortality, or institionalization, but screening for mental status, functional status, physical, environmental and living arrangements resulted in the identification of 36 percent new diagnoses.

Support for the CGA to Maintain Elderly in their Home

The next set of studies demonstrates the importance of the home visit. Williams, Williams, Zimmer, Hall and Podgorski (1987), conducted a randomized control clinical trial to evaluate the effectiveness of the team-oriented geriatric assessment approach versus the traditional care. One hundred seventeen subjects 65 years and over were randomly assigned

to receive CGA's by a multi-disciplinary team (treatment) or by one of a panel of community internists (controls). The screening criteria included frail older persons with changing medical and social needs. No differences were found between groups. The treatment group had slightly more hospital admissions than the control group but used less hospital days. Overall institution costs were reduced by 25 percent in the treatment group. Therefore, people in the treatment group were able to stay in their homes. However, no significant differences were noted in the patient's or caregiver's satisfaction with the evaluation process, functional ability or health status.

This study supports the idea of screening frail elderly in the multidimensional domains to maintain them within their home. Although Williams et al. (1987) did not link mental status and functional status with identified reversible problems, the study did show that hospital length of stay decreased. In addition, problems to prevent those issues from occurring were identified and interventions were implemented to prevent long-term care admissions.

Mental Status, Functional Status, and Risk Level

The next set of articles mentions a risk level not as it is defined in the present research study but as the risk for long-term care service use and mortality. Altkorn, Ramsdell, Jackson and Renvall (1991) determined the frequency of recommendations regarding home health and the change in residence resulting from a comprehensive geriatric assessment. The association of risk factors to a recommendation for a change in living situation was used to determine the usefulness of the risk factors in screening for the need for further home evaluation. The mean age of patients was 75 years (s.d. 7.3). Two-thirds were females

and 62 percent had memory problems. A mean Folstein score of 19.1 (s.d. 8.8) was reported. Seventy-four percent of the subjects had a diagnosis of dementia, the mean number of medical diagnoses was 5.6 and the mean number of medications as 2.5. In the findings, 58 percent of the recommendations were for no change in living situation, 20 percent were for increase in home support, and the remaining 22 percent were for placement.

The major finding was that most patients evaluated in an outpatient geriatric assessment clinic required no changes in living situations. Risk factors involved in recommendations for change in living situation were dementia, an increase in number of diagnoses, a high school education or less, vision defects and functional limitations on the Katz score. The strength in the Altkorn et al. (1991) study, as it relates to the present research study, is that mental status and functional status were utilized to determine the risk level in addition the study lends support to holistic data collection.

Williams (1987) conducted a study to determine if a clinician could utilize the manual test to objectively measure function in elderly called the Williams Manual Test (WMT). The WMT consists of determining time opening and closing of different doors, fasteners and other subtests that measure gross and fine motor skills (Scholer, 1990). The test would also classify geriatric individuals at high risk so that the clinician could identify in advance specific interventions that would reverse or forestall the progressive deterioration. The sample included 86 individuals undergoing geriatric evaluation (76% female, 89% white, 32% married and 38% widowed, 44% lived alone).

The results showed that timing manual performance in vulnerable older persons allowed prospective identification of geriatric individuals likely to require long-term care services. Other health observations, such as age, sex, type or number of medical problems in medication use were not as discriminating. Independent persons performed the WMT quickly while persons requiring services took more time to complete tasks. Risk factors for increasing long-term care services were determined by retrospective analysis of a sample of elderly in hospitals and inpatient geriatric evaluation units. Increasing age and impaired mental status were most frequently associated with the use of additional post-hospital care. This research showed that objective measurement of functional status can be used as a predictor for long-term care service needs.

In the research study by Williams, Hadler and Earp (1981), the goal was to discover markers associated with institutional placement. Domains that were assessed were manual ability, morale, social support, mental status, medical problems, current medications, rheumatology, and neurological abnormalities for the relationship to dependency. Specifically, the purpose was to determine the degree to which manual skills were a marker of dependency when compared with other characteristics such as mental status or social support. The sample included 56 white females over the age of 60 who were ambulatory, fully continent and could use one upper extremity. There were three groups of dependency, i.e., most dependent, intermediate dependent, and least dependent. Dependency was defined as the need for supervision or assistance to perform the ADL. The high dependency group included individuals who were institutionalized, the low dependency group

included women who had total self-maintenance, and the intermediate level of dependence group included women who needed support for continued living outside an institution.

The results showed that age, strength of social network, level of income, number of past medical problems, and number of abnormalities on physical exam did not contribute to an explanation of dependency. When manual skill index was used as a covariate with degree of dependence, the total number of drugs used remained significant. Therefore, if an individual's manual skill index is known, no other variable except the number of medications taken as information provides an explanation of the difference between dependency and groups. Manual ability is a very sensitive measure of dependency in the study population. Three specific manual skills (the time to close the door on a panel, the time to write a simple sentence with a nondominant hand, and the time to perform the simulated task using the dominant hand) accurately distinguished the three groups. By timing the manual skills, the authors felt that a prolongation of skilled time was missed by traditional ADL assessments. In fact, all patients evaluated in this study could perform all ADL tasks. The added sensitivity that timing normal skills is important for judging progress and deterioration of a function. Social network strength did not vary between groups. This was a mysterious finding since dependency implied an imbalance between environmental demands and individual resources.

Using the findings of Williams et al. (1981), Scholer, Potter and Burke (1990) hypothesized that the Williams Manual Test (WMT) would predict which older adults would increase their use of long-term care services and that the tests would be reproducible. A hundred and

seventeen subjects met the criteria for analysis. Domains assessed were manual ability, mental status, morale, functional abilities, physical health, and caregiver stress. The use of long-term care services was ascertained by a social worker during an interview on an initial visit and by a phone interview at six and twelve months to determine if the patient was dead, institutionalized or residing in the community with what services were being used (formal support). Following Williams protocol, it was predicted that an individual would use additional formal services by the time of the six and twelve month follow-up phone call if he or she took more than 350 seconds to complete the WMT during the initial visit. Study results revealed that the greater caregiver stress and poor cognitive function would increase service utilization in subjects with good hand function (as determined by WMT). Better performances on the IADL scale reduced service use among subjects with poor hand function; however, 74 percent of the subjects who took longer than 350 seconds to complete the test were utilizing services by the twelfth month follow-up visit. This supports the WMT as a predictor of service use.

In order to identify the best predictors of service use in the study, subjects were divided into service users and non-service users at twelve months. Only baseline Family Burden Interview and mini-mental status exam scores were significant predictors of service use at twelve months. The WMT was not an independent discriminator of service use but it may have been the best assessment of objective need. As measures of function, the ADL and IADL scales measured the patient's reported capacity to perform those tasks, whereas the WMT measured actual performance. Therefore, Scholer et al. (1990) supported utilizing

objective measurement of function to predict possible service use in the future.

Finally, a study by Fisk and Pannill (1987) described the management of community-dwelling elderly with dementia and the assistance that could be given to the family and caregivers. The sample was comprised of 1,028 patient who were seen at an outpatient clinic and 156 of these were diagnosed with dementia. The mean age was 77; 73 percent were female; 44 percent were widowed; 84 percent were white. The mean Folstein score was 15.3, they had 3.4 medical problems, and 2.2 medications per patient were documented. Seventy-four percent of the patients had mildly impaired social supports, 47 percent lived alone, and the mean value for physical activities of daily living was 3.2 with the highest score being four. There was a significant reduction in IADL with a mean value of 1.7 and the highest possible score being 3.3.

An eighteen month follow-up on 159 patients revealed that 51 percent were living at home, 35 percent in a nursing home, and 13 percent had died. Not being married significantly increased the likelihood of nursing home placement. The mental status score was lower for patients who later went into a nursing home (12.4 versus 16.6) and there was no difference between groups and patient function.

The Fisk and Pannill (1987) study found that appropriate treatment of associated medical illness determined after a thorough medical evaluation was critical to maintain patients in their homes. Elimination of a number of unnecessary medications and a reduction of the dosage of medications increased cognitive function. The initial assessment of patients who later went into a nursing home was surprising because their mean ADL and IADL scores were not significantly different

from the non-nursing home patients. They were not seriously impaired, cognitive or functionally, when first seen. They may have deteriorated rapidly by the time of nursing home placement, which the author doubted, but not being married may have had a major influence on institutionalization. This Fisk and Pannill (1987) study is important to the current study because it defines community-dwelling elderly who have dementia and what factors are important in having them lose their independence within the home environment. In summary, community-dwelling elderly are at risk for losing their independence within the home when they have a loss of mental status and an objective loss of functional status. Level of risk was not determined by combining functional status and mental status but was determined by use of long-term care services or mortality.

Relationship Between Mental Status and Functional Status

Nolen (1987) found a direct correlation between mental status and functional status in the elderly with late stages of dementia. Nolen (1987) looked at whether the regression noted in elderly persons with dementia bears any similarity to normal childhood development. The assumption was that dependencies in eating, mobility, and self-care are not isolated events tied to physical limitations or to behaviors of caregivers to encourage helplessness. Instead dependencies seem to be tied to cognitive and sensory motor changes which occur with dementia. The study's purpose was to demonstrate that loss of sensory motor function and activities of daily living skills can be anticipated in the late stages of dementia and can be tied to the easily recognizable pattern of childhood development. This finding would make care planning easier for the caregiver of patients with dementia in institutions or

communities. One hundred and fifty-two patients made up of 138 women and 14 men from a long-term facility were included in this study. The Geriatric Functional Developmental Screening Scale was utilized to examine mobility, hand use, sensory motor status, cognition, socialization, repetitive language (comprehension), expressive language, feeding, toileting, and self-care skills. This scale can be compared to the Katz tool in that it measures some of the similar things in both the ADL and IADL tools, socialization, mobility, and hand use. The scale included seven developmental levels, i.e., 0 months, 2 months, 6 months, 18 months, 48 months, 72 months, and 96 months. An occupational therapist did the rating. The average functional age was highly correlated with the dependent variables. Feeding, cognition, and mobility affected this result the most and socialization the least. The MMSE also showed a high degree of correlation with function. The most significant contributing variables were receptive language, mobility, sensory motor status, and cognition. Toileting and self-care skills were least related. Therefore, there was a negative correlation between mental status and functional status in that the most severely impaired person showed the lowest functional age in months. A major limitation of this study was that the sample was predominantly women. The direct correlation occurred only when MMSE scores were below 19. The direct correlation was that functional status declined as mental status declined only when the scores for mental status were 19 or below. Therefore, generalizing to the community-dwelling elderly could not be done, since their scores are generally above 19.

Another study by Aske (1990) examined the correlation between MMSE score and the Katz ADL status score among dementia patients to determine

a way of screening veterans for participation in the Veterans Affairs Adult Day Health Care Center. Subjects had to be male veterans, nursing home bound without day care centers and dependent in two or more functional activities of daily living. Because of these requirements, it was important for the interdisciplinary staff to determine if the Mini-Mental Status Score correlated with the patient's Katz ADL status. If so, this should give the clinician a broader picture of how the patients would function at the day care center. There was significant negative correlation between Mini-Mental Status Scores and Katz index scores among the 37 demented subjects at the day care center. Limitations of this study were small sample size, convenience sample, one-half to one-third of the population had dementia, and this group had a high degree of dependence compared to the general population.

Mental Status and Reversible Problems

Much of the research done that would describe a relationship between mental status and nutrition, polypharmacy, inadequate social support, unsafe environment, and altered vision were descriptive studies. Only one study showed a correlation between mental status and polypharmacy. Larson, Kukull, Buchner, and Reifler (1987) studied 308 patients who were enrolled prospectively in ongoing studies of the diagnostic evaluation of outpatients with suspected dementia. Criteria for enrollment were: age greater than 60 years, global cognitive impairment, and willingness to undergo a diagnostic evaluation. The evaluation included a clinical exam as well as laboratory tests and x-ray tests. The results showed that 35 patients were found to have adverse drug reactions causing cognitive impairment. Twenty-seven patients were taking only one drug that classified as primarily

responsible, whereas the others were judged to have potentially contributed to the patient's problem. In all cases cognition improved when the drugs were withdrawn. It was also found that adverse drug reactions not only caused cognitive impairment in these patients but also exacerbated underlying dementia. Most demographic variables were not significantly different for patients with adverse drug reactions compared with patients without adverse drug reactions. Patients with adverse drug reactions took an average of four prescription drugs per patient compared with two in the group without adverse drug reactions. A step-wise multiple logistic regression process identified use of sedatives and use of antihypertensives adding significantly to predictions of adverse drug reactions after adjusting for age duration of dementia symptoms in a number of prescription drugs. And finally as the number of prescription drugs increased, so did the relative odds of adverse drug reaction. This study clearly shows a relationship between polypharmacy and mental status.

Implications for the Present Study

There is very little literature which attempts to demonstrate the relationship between mental status, functional status, and reversible problems through the use of empirical methods. Many of the studies did discuss the number of problems or unique problems found within the home and utilized functional status and mental status as screening tools to identify problems within the home. But no conclusions were made about using mental status and functional status to predict the number of reversible problems within the home environment. Risk levels were looked at in a number of articles but their definition of risk included things such as mortality and use of long-term services in that people in

the high risk categories had a higher mortality and used more long-term care services. Therefore, these articles did not describe risk level as the researcher did in this study. It is certain that more research needs to be done on the clinical benefits of utilizing portions of the comprehensive geriatric assessment as a screening tool so that health care providers can better identify individuals at low, moderate or high risk and prescribe community resources that would assist these elderly in maintaining independence within their home environment.

Summary

In summary, no literature supports the utilization of mental status and functional status screening tools to predict the number of reversible problems in the community-dwelling elderly. The literature does support utilizing the CGA to assess the community-dwelling elderly because multiple problems are identified by the health care provider that would have been missed using traditional medical assessment. Mental status and functional status are considered risk factors when determining recommendations for relocation from the home environment. Objective measures of functional status can be used to predict long-term care service utilization which would decrease the need to institutionalize an elderly person from their home environment. Finally, mental status is the greatest risk to independent living.

CHAPTER IV

Introduction

This chapter includes a description of the design, the sample and the operational definitions of the variables. Instrumentation including a description of the Katz tool, Folstein tool, and their known validity and reliability is also described. Data collection procedures, data analysis, assumption and limitations, and human rights protection are discussed.

Design

The research design utilized in this study is a retrospective chart audit of a portion of the comprehensive geriatric assessment. It is an ex post facto investigation of the relationship and association between mental status, functional status, reversible problems and risk level.

The purpose of this study was to determine if a combination of mental status and functional status could be utilized to determine a low, moderate and high risk level and predict the number of reversible problems found in the community-dwelling elderly. Reversible problems is the dependent variable and mental status, functional status and risk level are the independent variables. The research questions were as follows: 1) can a combined score of mental status and functional status be used to predict the number of reversible problems in the community-dwelling elderly? and 2) are there differences in the number of reversible problems identified in the low, moderate and high risk community-dwelling elderly?

Sample

The sample was comprised of 64 records identified from an audit performed by the business manager of the geriatric assessment program at MidMichigan Regional Medical Center. From the 100 medical records of patients seen between April 1, 1990, and April 1, 1991, 64 charts met the screening criteria chosen for this investigation. These criteria were: 1) home visit conducted to obtain medical, nursing and environmental history; 2) physical examination performed in the office setting by a geriatric physician; 3) demographic information such as age, sex and living arrangements available; 4) medical diagnoses documented; 5) Folstein mini-mental status score recorded; 6) Katz ADL and IADL functional status score recorded; 7) vision score recorded; and 8) reversible problems, for example polypharmacy, malnutrition, inadequate social support, unsafe environment and altered vision documented.

Operational Definitions of the Variable

Mental status, functional status, risk level and reversible problems were operationally defined in the following manner:

Mental Status

Mental status was defined as the documented score of the Folstein mini-mental status questionnaire, which had been administered by the geriatric nurse in the home setting. Possible scores range from 0-30. A documented score of 30 describes an individual who is cognitively unimpaired and a score of 24 or less describes an individual who is cognitively impaired. The lower the score, the worse the impairment. When administering the Folstein mini-mental status screening tool, special adjustments in the scores were made to allow for sensory loss

related to vision, hearing or inability to write with a pen related to a functional loss of the hands.

Functional Status

Documented score on the Katz functional questionnaire which was also administered in the home was utilized to define an elderly individual's functional status. The instrument was a measure of an individual's ability to independently accomplish 14 basic and instrumental activities of daily living. A score of 6 out of 6 in the ADL test identified independence in those six activities while a score of 8 out of 8 identified an individual who was independent in all eight activities.

Reversible Problems

These are those problems identified by the nurse or physician after completing the geriatric assessment process on the geriatric individual. These problems were documented under the analysis portion of the nurse's or physician's dictation note. The criteria utilized to define the reversible problems in the study are the same criteria utilized by the nurse and the physician on the geriatric assessment team to determine the reversible problems. The criteria for identification of individual reversible problems are as follows:

Polypharmacy. Polypharmacy was defined as greater than four medications, either prescription or over-the-counter, or an abnormal blood level for Digoxin, Dilantin, Theophylline and Synthroid.

Malnutrition. Malnutrition was defined by an albumin level of less than 3.5 and/or documentation of malnutrition in the nursing diagnosis. The following information was considered by the nurse in determining

malnutrition: height, weight, diet recall, food in the cupboard and refrigerator and use of Meals on Wheels or restaurant use.

Inadequate Social Support. Inadequate social support was determined by utilizing the information in the following areas: name of family members, address, phone and relationship, available friends, daily routine, life stressors (i.e., death, change in living arrangement, change in financial arrangement, change in health), use of community resources, and transportation ability. These areas were assessed and difficulties noted in the record.

Unsafe Environment. Unsafe environment was identified by utilizing information in the home assessment and/or an elderly individual's history of falls. Information on unsafe environment was documented on the environmental assessment. The categories assessed include number of rooms available to the individual, stairs used, home cleanliness, home ventilation, insulation and heat, signs of neglect, overloaded electrical outlets, poor lighting, cluttered furniture, frayed carpets, use of throw rugs, missing or broken smoke alarms and safety equipment installed in the bathroom.

Altered Vision. Altered vision was defined as a score of less than 20/50 for both eyes as determined with a Snellen eye chart. There was no attempt made to test the left eye and the right eye separately. The results were documented in the record.

Risk Level

There was no literature available on the community-dwelling elderly population that categories them into low, moderate or high risk levels by utilizing Folstein, mini-mental status exam score and Katz functional status scores. The risk levels were developed by the

researcher and the geriatrician at the MidMichigan Regional Medical Care Center by utilizing knowledge of dementia, functional impairment and clinical judgment in evaluating many geriatric patients. A combined mental status and functional status score was utilized to operationally define risk level. Low risk was a Folstein score of 30 and a Katz score of 6 on the ADL measure and more than 6 on the IADL measure, meaning that there was no mental or functional impairment. Moderate risk was defined as a Folstein score between 25 and 29 and a Katz score of 6 on the ADL measure and 1-6 on the IADL measure, meaning that there was moderate functional and mental impairment. A high risk level was defined as a Folstein score of 24 or less and a Katz score of 0 on the IADL measure and 5 or less on the ADL measure, indicating a low level of cognitive and mental impairment. The rationale for allowing higher ADL levels in determining risk level is that individuals who are unable to perform IADL's are at higher risk for loss of independence within the home environment provided that appropriate community resources cannot be utilized for financial reasons or reasons related to cognitively impaired individual forbidding community resources in the home environment.

Instruments

Copies of the Folstein instrument, the Katz instrument and the data collection tool developed for the study and a copy of the geriatric assessment tool are included in Appendix A. Two instruments were utilized in clinical practice to determine mental status and functional status in the charts audited for this research study. The Folstein or mini-mental status exam (MMSE) was used to document mental status in the

record and the Katz functional status instrument was used to document functional status in the record.

Folstein Mini-Mental Status Exam

The accuracy and specificity for the Folstein (MMSE) exam to predict dementia for a score of less than 24 is about 90 percent (Anthony, LeResche, Niaz, VonKorf & Folstein, 1982; Can, Jackson & Alguire, 1990). In a validation study (Anthony et al., 1982) a cutoff score of 23 or below was used to demonstrate cognitive impairment. The MMSE has a sensitivity of 87 percent and a specificity of 82 percent, a false-positive ratio of 39.4 percent and a false-negative ratio of 4.7 percent. All subjects with false-positives had less than nine years of education and many were 60 years or older. The sample subjects were not seeking psychological help and also contain subjects with low socioeconomic status and education level. The sample subjects were patients on a general medical ward. Folstein, Anthony, Parhad, Duffy, & Gurenberg, (1985) administered the MMSE to two groups of subjects; one group was 18-64 years and the other group included those over 65 years of age (from the Eastern Baltimore area). No differences were found between males and females and blacks and whites of equal education. When comparing the 65 and over group to the 18-64 age groups, the 65 and over sample had lower scores on the MMSE (between 0 and 23). The 65 and over population also had lower educational levels, but the low scores on the MMSE were not related to the educational effects alone. The researchers could not be confident that the education of the old was comparable to the young. Many elderly with low scores had a mental disorder. Thirty-three percent of the elderly scored high on the Folstein mini-mental status exam and did not have a mental disorder and

therefore prevalence of dementia from all causes was six percent of the population over 65.

Carr, Jackson and Alguire (1990) used the MMSE to screen for cognitive impairment. A score of 27 or more out of a possible 30 is found in normal adults and a score of less than 20 has been shown to identify dementia with concurrent validity of 78 percent and 66 percent when compared to the Wechsler Adult Intelligence Scale (WAIS) verbal and performance score, respectively. Horton, Sloan and Shapiro (1987) demonstrated that neuropsychometrics correlated with the MMSE. The Pearson product correlation suggested a moderate association of the MMSE with the Wechsler memory scale ($r=.17$). Small sample size was a limitation to this study. Therefore, the MMSE has been used in other correlation studies and has been a reliable and valid tool.

It is important to note that the validity of the mental status examination depends on the clinician's ability to accurately judge the constructs measured (Kane & Kane, 1988). Validity is affected if the sample of behaviors observed during the testing procedures does not accurately reflect the elderly individual's capabilities. For example, elderly persons may become anxious and unable to accurately answer questions from the MMSE especially if the test is administered in surroundings other than their own home. Other things that could hamper validity and reliability is failure by the examiner to distinguish apparent cognitive and affective disturbances that one actually has sensory deficits (for example, loss of vision or loss of hearing). For the original data collection, in the present study the Folstein exam was administered by one nurse who had been trained and was also aware of sensory perceptual problems that are often present in the elderly.

Katz Index

For the Katz index of ADL, the validity and reliability are quite good. The index has been carefully studied and is well known (Brorrson & Asberg, 1984; Kane & Kane, 1988). Katz and his colleagues (Kane & Kane, 1988) have shown a natural progression in the loss of ADL capacity and return of these abilities with recovery after going through a rehabilitation program. The pattern of recovery from a disabling illness in later life was similar to the order of development of primary function in children (feeding, continence, transfer, toileting, dressing and bathing) which supports its validity. Staff of the Hebrew Rehabilitation Center for Aged report in unpublished data that the Katz index utilizing a Guttman Scale is highly reproducible with coefficients of reproducibility of .948 for patients in the home care study and .976 for the patients in a sheltered housing sample. Brorrson and Asberg (1984) conducted a study on 100 patients at a general hospital in Sweden. The results indicated that activities are ranked according to a cumulative scale and the index is reliable. The patients independent in ADL had shorter hospitalization and were discharged home more often than were the dependent party. This indicates that this score was valid.

It is important to note that a three tiered scale (independent, needs some assistance, and dependent) for the ADL was found to be more reliable and is reproducible even when scored by personnel with minimal training (Gallow, Reichel & Anderson, 1988). It is also important to note that the ADL scale is used for assessing individuals classified into the frail elderly group because most community-dwelling elderly would be able to perform the activities without much difficulty.

No reliability or validity studies have been done on the IADL scale used within this study. It is important to note though that special consideration needs to be taken when measuring IADL's because these were the tasks that were commonly performed by women and may put males at a disadvantage because of social roles (Matteson & McConnell, 1988). Therefore, adjustments may be needed in the tool when assessing males secondary to their social roles preventing them from performing such activities such as shopping, cooking cleaning and laundering.

Data Collection Procedures

A data collection tool was developed after obtaining information from the original chart audit. Information in the areas of demographics, functional status, mental status, medical diagnoses, reversible problems specifically polypharmacy, malnutrition, inadequate social support, unsafe environment and vision were documented. Refer to a copy of the data collection tool in Appendix A.

Data Analysis

Frequency and appropriate measures of central tendencies on modifying variables and each study variable (mental status, functional status and reversible problems) were done.

A description of the sample included information on age, sex, living arrangements and medical diagnoses. Pearson product moment correlations between a combined functional status score and mental status score and each individual reversible problem and mean number of reversible problems were calculated. The actual mental status score and functional status score were added together to obtain a total risk level. A two-way ANOVA was utilized to compare the mean number of reversible problems within the risk levels determined by mental status

and functional status. Low risk was a high mental status and a high functional status. Moderate risk was a moderate mental status and a moderate functional status. High risk was a low mental status and a low functional status. Low, moderate and high mental status and functional status were operationalized previously within this chapter. Mean number of reversible problems was determined by taking the average of all reversible problems (polypharmacy, malnutrition, inadequate social support, unsafe environment and altered vision) for each of the 64 cases.

Methodological Assumptions and Limitations

The major assumption of this study was that data and records were accurate.

The limitations of the study were small sample size, retrospective chart audit, and selection of a convenience sample. The researcher was unable to actively manipulate the independent variables and unable to randomly assign individuals to experimental groups. Therefore, the possibility of faulty interpretation was present. The results of the study cannot be generalized to other groups.

Human Rights Protection

When the patient comes to the MidMichigan Regional Medical Center for a geriatric assessment, an individual sheet is signed stating they will release the records to the insurance company and any other referring physicians who request information on their chart. Patients consented to the home assessment and to release of information to others as necessary. This researcher did the review of records and did not identify individuals in any way. No risk or harm to the patient was done as a result of the chart review. Approval of proposed methods to

protect the rights and welfare of human subjects was obtained from the Michigan State University Committee on Research Involving Human Subjects (See Appendix A).

Summary

In summary, a description of the research design was discussed and included a retrospective chart review, independent variables, dependent variables, statement of the problems, and research questions. Operational definitions were discussed and included mental status, functional status, reversible problems, and risk level. Instruments were identified and known reliability and validity were discussed and supported by the literature for the Folstein Mini-Mental Status Exam and the Katz functional tool. The sample selection was described and included information regarding sample size, demographics, modifying variables, Folstein score, functional score, and reversible problems. Data collection procedures, data analysis, assumptions, limitations, and human rights protection were also discussed.

CHAPTER V

Results

Overview

The results of the analysis of data are presented in this chapter. The study sample is described and descriptive data is provided for all variables. Analysis of the data to answer the research questions is emphasized.

Description of the Sample

The sample was comprised of 64 charts with information about geriatric individuals who went through a comprehensive geriatric assessment at the MidMichigan Regional Medical Center between April of 1990 and April of 1991. The subjects represented by the records ranged in age from 58 to 87 with a mean age of 80.2 years (s.d. 7.2). Twenty-nine percent (n=19) were male. Most subjects were living alone (n=31, 48%) while 25 percent (n=17) were living with spouse, 17.2 percent (n=11) were living with a relative and 5 percent (n=5) were living in congregate housing in the community. Of the 64 charts audited, hypertension was reported in 35.9 percent of the records (n=23), coronary artery disease was reported in 45.3 percent of the records (n=29), arthritis was reported in 51.6 percent of the records (n=33), GI problems were reported in 40 percent of the records (n=26), sensory problems were reported in 56 percent of the records (n=36), and depression was reported in 35 percent of the records (n=23). The mean number of medical diagnoses per individual chart was 3.5 (s.d. 1.7).

Study Variables

Means and standard deviations were computed for each study variable. The actual range of values for Folstein score was from 0-30

with a mean score of 22.2 (s.d. 8.0). Katz ADL scores ranged from 2-6 with a mean score of 5.2 (s.d. 1.2). Katz IADL score ranged from 0-8 with one IADL score missing and a mean score of 4.6 (s.d. 2.7). If data was missing, this meant that the researcher could find no reference to the variable within the record. Frequencies were calculated on all reversible problems (Table 1). The percentage of charts found to have polypharmacy was 70.3 (n=45). Abnormal laboratory values for Digoxin, Dilantin, Synthroid and Theophylline were reported in few cases (Table 1). Regarding the number of medications taken, 68.8 percent (n=44) were documented to be taking greater than four medications including over the counter medications. Charts with documented malnutrition problems were 59.4 percent (n=38). Of these charts only 6.6 percent (n=4) had an abnormal albumin level and there were three records that had missing data. Problems with inadequate social support were documented in 59.4 percent of the records (n=38). Charts with documented unsafe environment were 79.7 percent (n=51) and only 21 percent (n=13) had problems with vision documented.

When determining problems documented in the area of polypharmacy, malnutrition and unsafe environment, at least two areas of information determine their definition. As can be seen in Table 1, generally the problem with polypharmacy was related to the number of medications rather than to abnormal blood levels. Fewer cases of malnutrition were documented by abnormal albumin level but more than half of the problems related to malnutrition were documented by the geriatric nurse on initial assessment. Finally, either a history of falls or an unsafe environment were equally considered when unsafe environment was documented by the nurse or the physician. There were few missing data.

Table 1

Frequency and Percent of Reversible Problems

Problem	Frequency	Percent
Polypharmacy	45	70.3
Abnormal Digoxin	2	
Abnormal Dilantin	0	
Abnormal Theophylline	3	
Abnormal Thyroid	8	
Greater than 4 medications	44	
Over-the-counter medications	45	
Malnutrition	38	59.4
Abnormal Albumin	4	
Malnutrition	37	
Inadequate Social Support	38	59.4
Unsafe Environment	51	79.7
History of Falls	41	
Environment	42	
Altered Vision	13	21.7

Note: Some records documented more than one area for polypharmacy, malnutrition and unsafe environment.

Presentation of Data Related to Research Question

In this section the data analysis procedures used to answer the research questions are presented. The research questions are: 1) Can the combined score of mental status and functional status be utilized to predict reversible problems in the community-dwelling elderly? and 2) Are there differences in the number of reversible problems identified with high, moderate and low risk community-dwelling elderly?

Pearson product moment correlations were calculated to answer the first question and no significant correlations were found between mental status scores and the number of reversible problems (r=-.02), functional status scores and the number of reversible problems (r=.04), or a combined functional and mental status score and number of reversible problems (r=.01). Therefore, the functional status and mental status cannot be utilized to predict the number of reversible problems in the community-dwelling elderly. Thus, the screening tool that measures mental status and functional status cannot be utilized within the primary care setting either separately or combined to determine or identify how many reversible problems the community-dwelling elderly would possess.

In order to answer the second research question, the risk levels were identified using functional status score and mental status score as defined in Chapter IV. A cross-tabulation was done (Table 2) using the mental status score and the functional status scores to determine the number of cases in the low, moderate and high risk groups. The definition of low, moderate and high risk classified only 25 cases into clearly identified low, moderate and high risk groups. Four cases were identified as having high functional status and high mental status and

Table 2

Risk Status Identification

	MENTAL RISK		
FUNCTIONAL RISK	High Risk	Moderate Risk	Low Risk
High Risk	14 (87.5%)	2 (12.5%)	0
Moderate Risk	12 (54.5%)	7 (31.8%)	3 (13.6%)
Low Risk	3 (12.0%)	18 (72.0%)	4 (16.0%)

therefore were low risk. Seven cases were identified as having moderate functional status risk and moderate mental status risk and were classified as moderate risk and fourteen cases were identified as having low functional status and low mental status that were classified as high risk. The rest of the sample was put into a variation of these risk levels. For example, eighteen cases fell into a category of moderate mental status risk with high functional status risk, and three cases were categorized having low mental status risk and high functional status risk. Refer to Table 2 for the risk level of the remaining cases. Therefore, 39 cases would be lost to further analysis if the method risk status identified was not altered. The researcher's question was then altered to observe mean differences for any combination of risk status.

A decision was made to utilize the nine-cell matrix that would classify all cases according to their functional and mental status and risk status. This analysis was done by two-way ANOVA which compared the dependent variables of mean number of reversible problems by the independent variables of functional status and mental status score (Risk Status). Table 3 shows the mean number of reversible problems within each risk level. There was some missing data in the high risk category and three cases were dropped from this risk level. The range of the mean number of reversible problems was 2.33 to 4.00. The highest mean number of reversible problems (4.0) was found in two cases with low functional risk and moderate mental risk. The next highest number of reversible problems (3.5) was found in the four cases in the lowest risk group. The remaining risk groups had an average of 3.0 reversible

Table 3

Mean Number of Reversible Problems by Risk Status

	MENTAL STATUS RISK		
FUNCTIONAL STATUS RISK	High Risk	Moderate Risk	Low Risk
High Risk	2.64 11	4.00 2	0
Moderate Risk	3.09 11	2.71 7	3.00 3
Low Risk	2.33 3	2.61 18	3.50 4

Table 4

Comparisons of Living Arrangement with Risk Level Percentage of Individuals in Each Cell

Risk1	Risk2	Risk3	Risk4	Risk5	Risk6	Risk7	Risk8	Risk9
3 75%	13 72.2%	2 66.7%	3 100%	1 14.3%	8 66.7%	0	0	1 7.1%
1 25%	3 16.7%	1 33.3%	0	4 57.1%	0	0	1 50%	7 50%
0	1 5.6%	0	0	1 14.3%	3 25%	0	1 50%	4 28.6%
0	1 5.6%	0	0	1 14.3%	1 8.3%	0	0	2 14.3%

Risk1=high functional and high mental status risk.
Risk2=high functional and moderate mental status risk.
Risk3=high functional and low mental status risk.
Risk4=moderate functional and high mental status risk.
Risk5=moderate functional and moderate mental satus risk.
Risk6=moderate functional and low mental status risk.
Risk7=low functional and high mental status risk.
Risk8=low functional and moderate mental status risk.
Risk9=low functional and low mental status.

problems. There were no differences in the mean number of reversible problems within each risk level (F=.269, NS). Although there was no significant difference in the mean number of reversible problems, it was interesting that the cases with some of the highest mean number of problems were those in the lowest risk group.

A follow-up analysis utilizing the variables of living arrangement to describe a possible relationship that might exist between risk status and whether an individual lived alone or not. A cross-tabulation of the nine risk status categories with the four areas of living arrangement was calculated (Table 4). As seen in Table 4 seventy-five percent of the cases (n=3) with the lowest risk status (Risk I) lived alone while 93 percent of the cases (n=13) in the highest risk category lived with other individuals. By looking at Table 4, it appears that almost half of the people lived alone regardless of what their functional status and mental status were.

Summary

Therefore, in this chapter the study sample was described and answers were given to the first and second research questions. Further analysis was done on the second research question when 39 of the cases were lost by the researcher's definition of risk level. The next chapter will have interpretation of the data and how these findings will be utilized in advanced nursing practice, education, and nursing research.

CHAPTER VI

Summary, Interpretation and Conclusions

Overview

In this study a summary of the study results are presented. The summary and interpretation includes a review of previous chapters followed by a discussion of the characteristics of the sample. Findings for the research questions are discussed within the context of previous related research and limitations of the study are addressed. Interpretation of the data and implications of the study for nursing practice, nursing education and nursing research are presented.

Summary of the Research Study

A descriptive study of the relationship between mental status, functional status, level of risk and reversible problems in the community-dwelling elderly was conducted to determine if the Folstein screening tool and the Katz functional screening tool could be administered to categorize the population into low, moderate and high risk groups. Once the population was categorized, the study was also conducted to determine if there was a difference in the number of reversible problems between each group. A modification of Roy's adaptation nursing theory provided a framework in which to examine a relationship between mental status, functional status and reversible problems and the combination of mental status and functional status variables to determine a risk level. Data was collected from 64 geriatric assessment charts between April of 1990 and April of 1991. Data was analyzed utilizing descriptive studies, Pearson product moment correlation and two-way ANOVA. According to the study results, there were no significant relationships between mental status, functional

status and reversible problems. Therefore, mental status and functional status could not be utilized to predict the number of reversible problems found in the community-dwelling elderly. A combination of mental status and functional status was used to determine low, moderate and high risk levels and to identify mean number of reversible problems within each level. On average, the same mean numbers of reversible problems were found in all risk levels.

Comparison of Sample Characteristics to the Literature

The community-dwelling elderly represented by the records had similar sample characteristics compared to other studies reported in the literature. The range in the number of years in age was from 58 to 87 with a mean age of 80.2. The mean age was slightly higher than the mean age in the Katz et al. (1985), Fisk et al. (1987), Ramsdell et al. (1989), and Altkorn et al. (1991) studies. Twenty-nine percent of the population were male and 70 percent were female. There were a few more females in this study compared to the Ramsdell et al. (1989) and Williams et al. (1987) studies. Forty-eight percent lived alone and three percent lived with spouse, 17 percent lived with a relative and five percent lived in congregate housing. Compared to Ramsdell et al. (1989), the percent of elderly living alone was considerably higher and the percent of elderly living with spouse was considerably lower in this study. The living arrangement compared to subjects in the Currie et al. (1981) study were very similar. The number of diagnoses compared to the Ramsdell et al. (1989) study were quite a bit higher at 4.5. The mean value for Folstein scores in this study was 22.2. This was similar when compared to the subjects in the Williams et al. (1982), Scholar et al. (1990) and Altkorn (1991) studies but were significantly higher than

subjects in the Katz et al. (1985) and Fisk et al. (1987) studies. A mean score of 5.2 on the ADL tool and 4.6 on the IADL tool were documented. These scores were similar to those documented in the Fisk et al. (1987) study. Studies used different functional status tools and it was difficult to compare these to the present study. The mean number of reversible problems per risk level was approximately 3.0 for this study. But the researchers in other studies did not define reversible problems as the researcher in this study and therefore no comparisons will be made. The combined score of mental status and functional status could not be used to predict the number of reversible problems found within the community-dwelling elderly. This outcome is similar to Ramsdell et al. (1989) in that no variables or a combination of variables were associated with one or more risk level at the home visit. There was no literature to support or criticize the definition of risk level and therefore no comparisons were made with other studies.

Conclusions Regarding Study Findings

Study findings related to reversible problems support utilizing the CGA compared to the traditional medical review of systems to identify but not predict reversible problems. Seventy percent of charts had polypharmacy, 59 percent had malnutrition, 59 percent had inadequate social support, 80 percent had unsafe environment and 21 percent had altered vision. These problems are reversible and if not recognized by a health care provider could jeopardize the independent home life of the community-dwelling elderly. These problems were found on a home visit and not in the office setting. Thus, it is extremely important to utilize the home visit as part of the CGA.

Related to the first research question, there are many explanations for the lack of relationship between mental status, functional status and reversible problems. A simple quantitative screening tool may be unable to predict complex problems in the community-dwelling elderly. For example, the Folstein (MMSE), that measure areas an elderly individual may not utilize in their every day life like mathematics and spelling may not accurately reflect their mental status. Also the Katz index has limitations when measuring function in that the information is subjective and many of the IADL tasks such as shopping, cooking and housekeeping are performed by a female spouse providing biased results for female subjects. Therefore, documentation of an individuals functional level may be higher for women when measuring function with the Katz tool. Statistically speaking, by utilizing these two screening tools, combined scores may have been higher causing less variability in the 64 cases and thus no statistical significance. The ranges utilized to operationally define low, moderate and high risk using mental status and functional status may not have been correct. If ranges utilized to define low, moderate and high risk were adjusted to include lower scores than more variability may have been found between groups leading to greater statistical significance. Fewer problems may have been identified by the patient and the nurse/physician related to different perceptions of the problems defined in this study. Overall, the range for possible reversible problems was small (0-5), resulting in potential decreased variability among subjects. The timing of the CGA may have been crucial to the number of reversible problems found because community resources may have already

been implemented and adjustments made by caregivers to reverse problems and therefore causing fewer problems to be identified.

Related to the second research question, mean number of reversible problems were identified in the low, moderate and high risk groups and living arrangement was examined to determine a cause for small differences among risk levels. In the lowest risk group with 3.5 reversible problems three lived alone and one with a spouse. In the moderate risk group with 2.71 reversible problems one lived alone, four with a spouse and two in congregate housing. In the high risk group with 2.64 reversible problems, one lived alone, seven with spouse, four with relative and two in congregate housing. In Risk level 8 which was defined as a moderate mental status and a low functional status, these cases had the highest mean number of reversible problems (4.0) where one lived alone and one lived with spouse. Risk level 6 which was defined as moderate functional status and low mental status had 3.09 reversible problems and living arrangement showed that eight lived alone, none with a spouse, three with relatives and one in congregate housing. Finally, in Risk level 4, defined as high mental status and moderate functional status, 3.00 reversible problems were found and all cases (n=3) lived alone. Therefore, on average, there were small differences in the mean number of reversible problems between all risk levels and these differences were not significant. It was also interesting to note that living risk level did not have any effect on arrangement. More specifically, a community-dwelling elderly individual could have a low mental status and a moderate functional status and still live alone. This lends support to utilizing Roy's Adaptation model because many of these individuals or their caregivers adapt before receiving help from

their health care provider. Therefore, it is extremely important to assess all community-dwelling elderly by utilizing the CGA within the home environment to objectively assess their living situation.

Given the above information, the following changes could be made within Roy's Adaptation Model to improve the study. Other modifying variables could be considered that may have an effect on the relationship between these study variables. The modifying variables are socioeconomic status, educational level and finances, community resources utilized and caregiver burden. Roy's Adaptation Model would be revised by redefining the concept of risk level and changing the dependent variable to mental status and functional status and the independent variable to reversible problems. The concept of risk would include objective measurements of polypharmacy, malnutrition, inadequate social support, unsafe environment, altered vision, and the objective measurement of functional status. The outcome or adaptive response would be independence within the home environment and the maladaptive response would be use of adult foster care or institutionalization related to their functional and mental status.

Implications for Advanced Nursing Practice

Since there were no relationships found between mental status, functional status, risk level, and reversible problems, the Folstein screening tool and Katz screening tool could not be utilized in the office setting to predict the number of problems in the community-dwelling elderly. In clinical practice, the implication for the GCNS is that screening tools should be utilized to establish a baseline to assess change and to identify the need for further evaluation of reversible problems in the community-dwelling elderly. Also, this

finding strongly supports the need to assess the elderly across multiple domains utilizing the CGA. The need still exists to develop a screening tool that is more practical but just as comprehensive as the CGA. Some of the domains to be screened for in the primary care setting should include vision, hearing, upper and lower extremity range of motion, presence of urinary incontinence, nutrition status, mental status, depression, Williams Manual Test for functional level, home environment, and social support.

When utilizing the mental status screening tool and the functional status screening tool certain rules should be followed when evaluating the elderly. When utilizing the mental status tool a brief description of hearing and vision sensory losses as well as educational level should be documented. When utilizing the functional status tool, documentation should be made about assistance with independent activities of daily living; for example, shopping, cooking, preparing meals, or finances. All of these issues could cause the score on the MMSE and the functional status tool to be different if not taken into consideration.

When the community-dwelling elderly are placed into low, moderate and high risk categories by utilizing mental status and functional status, the lowest risk group had the highest mean number of reversible problems. This strongly supports the need to assess all elderly in the primary care setting. When living arrangement had no effect on risk level this finding emphasized the importance of the home visit on all elderly because many of the problems were reversible and could have an impact on maintaining an individual's independence in the home environment. The home visit also allows for an objective assessment of the patient and caregiver relationship, specifically caregiver

responsibilities and relationship with spouse and caregiver burden issues. The home visit allows the GCNS to objectively assess the home environment of an individual who is cognitively impaired, living alone and unable to express his/her reversible problems. It is imperative that a home visit be done on those individuals with memory loss because their health history information is questionable. In this situation it is also important to contact the spouse or other family members to contribute objective information about the cognitively impaired elderly individual. This research study lends support to the home visit and these findings improve the chances of demonstrating to Medicare and other third party payers that identifying reversible problems must be done in the home and also earlier identification can result in savings to the health care system and insurance companies.

Implications for Education

Implications for education would involve the community-dwelling elderly, family members and the health care providers performing CGA's in the primary care settings. Related to the findings already stated, the implications for community-dwelling elderly are to educate individuals and their families about what constitutes a problem and when to contact a health care professional for assistance with a problem. When these two issues are identified, they will become more aware of changes in their health care status and how to deal with them. The majority of problems caused by misdiagnosis of problems in the elderly could be related to the lack of communication between the patient and the health care provider. The key issue is to establish a rapport over time so a level of trust develops. If there is no rapport established between patient, family, and health care provider, then information may

not be as accurate and problems may not be identified for fear that the individual may become more dependent and closer to needing community resources. The fear that is generated by the individual and family is that they may not be able to afford community resources and the alternative than would be institutionalization which is not a consideration for these individuals. Therefore, it is important to educate the health care providers about establishing a rapport with the community-dwelling elderly and their caregivers and also make the health care providers aware of the fears associated with admitting to problems that may require a change in living situation.

Education for physicians and other health care providers about the role of the GCNS is also imperative. This description should include the many roles of the GCNS which are consultant, collaborator, assessor, researcher, clinician, educator, and patient advocate and how these roles are implemented during the assessment process of all community-dwelling elderly.

Education would also involve information to other health care providers on how to administer screening tools to the elderly population in order to obtain the most accurate baseline data. The information taken by the primary care provider could then be used as baseline data to monitor patients' functional improvements or declines over time within the primary care setting. Education should also include the importance of assessing the population over 65 in the biological, psychological, social, spiritual, and environmental realms to make a diagnosis more accurate and to individualize treatment plans.

Finally, this research should be used to educate hospital administrators and the nursing home administrators that shortcuts for

assessment of the elderly should not be utilized with the geriatric population secondary to the complex nature of their health status. CGA's may be the best way to accurately diagnose problems and in the future would be cost effective for third party payers and Medicare to reimburse for these services. Utilizing CGA's, the community-dwelling elderly may remain independent longer within their home environment.

Implications for Nursing Research

In terms of implications for nursing research, this investigation was done to determine if two screening tools which measure mental status and functional status could be utilized on the community-dwelling elderly to predict the number of reversible problems they possess and to determine an individual's risk level (low, moderate, or high). The limitation in this research is that the complex problems of the geriatric population could not be screened by utilizing the mental status tool and the functional status tool alone. Therefore, this researcher recommends looking at another investigation in the future that would include multiple tools for screening the community-dwelling elderly and assessing their risk level. Reliability and validity would need to be determined with these screening tools. The domains that should be assessed include vision, hearing, upper and lower extremity functioning, gait assessment, urinary incontinence, nutrition, mental status, polypharmacy, social assessment, legal issues, and evidence of depression. The tool would be developed so that it could be administered by nurses, physicians, and social workers, and administered in less than twenty minutes. Number of problems would be identified and a greater range of problems would be utilized in order to possibly increase the variability and the number of problems identified.

Other research to be done by the GCNS would be an experimental design targeted to a specific group of geriatric community-dwelling elderly that is prospective in nature. Screening criteria would include community-dwelling elderly over the age of 80, degree of functional impairment, presence of geriatric conditions (i.e., incontinence and confusion), particular diagnostic information, psychological information, social and environmental information, living arrangement, recent stressors present in the individual's life, and economic status. Exclusion criteria would include individuals with severe dementia, terminal illness, or inevitable nursing home placement. This study would take place over a time which would include a longitudinal study and also a cohort study.

In conclusion, because functional status and mental status screening tools could not be used to predict the number of reversible problems within the community-dwelling elderly or allow the GCNS to categorize individuals into low, moderate and high risk groups, it is imperative that the GCNS continue research within this area with the community-dwelling elderly population. Because of the expansion in the geriatric population, the increase in health care costs, the functional and mental status decline, and the lack of interest in geriatrics, it is imperative that the GCNS find ways that the geriatric community-dwelling elderly can be screened to identify problems in the primary care setting by all health care professionals. The GCNS must continually educate families, individuals and health care providers about the GCNS role and about the unique problems in the geriatric population so that these individuals may receive better care in the future.

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APPENDIX A

J. Christopher Hough, M.D.
5912 Eastman Road
Midland, Michigan 48640
517 • 839 • 0028 Fax 517 • 839 • 0336

MIDMICHIGAN
REGIONAL MEDICAL CENTER
FAMILY AND ADULT MEDICINE

May 4th, 1992

Rachelle Schiffman, Ph.D.
College of Nursing
Michigan State University
A230 Life Sciences Building
East Lansing, Michigan

Dear Dr. Schiffman:

I have been informed that Jean Thiele has referenced MidMichigan Regional Medical Center in her thesis as the source of the charts from which her research data was collected. She has received my permission to cite our organization specifically in her work.

Please let me know if there is anything further you need in this regard.

Sincerely,

Diane K. Welk
Manager, Geriatric Services
Business Manager, Physician Service Division

J. Christopher Hough, M.D.
5912 Eastman Road
Midland, Michigan 48640
517 • 839 • 0028 Fax 517 • 839 • 0336

MIDMICHIGAN
REGIONAL MEDICAL CENTER
FAMILY AND ADULT MEDICINE

AUTHORIZATION FOR PAYMENT

I have granted permission for a home visit to be done by the geriatric nurse from Family and Adult Medicine. I understand that the charge for this visit is included in the total assessment fee. If, for whatever reason, I do not undergo a comprehensive assessment, I agree to pay for the home visit as a separate charge. I have been informed that home visits are not a covered Medicare benefit and I will personally be responsible for the bill.

---------- ----------
Patient Signature Date

---------- ----------
Witness Date

SENIOR ASSESSMENT INTAKE

DATE_____

NAME_____ PHONE_____

ADDRESS_____

AGE_____ DATE OF BIRTH_____ SEX M F MARITAL STATUS M S W D

REFERRED BY_____ PHYSICIAN_____

NEXT OF KIN_____ RELATIONSHIP_____

ADDRESS_____

PHONE_____

INSURANCE INFORMATION

NAME_____ POLICY NOS._____

ADDRESS_____

MEDICARE_____ MEDICAID_____

SOCIAL SECURITY NO._____

RELEASE OF INFORMATION-CONSENT FOR SERVICES

I AUTHORIZE FAMILY AND ADULT MEDICINE TO RELEASE MY COMPLETE MEDICAL RECORDS TO HOSPITALS, PHYSICIANS, AND OTHER SOCIAL AGENCIES OR INSTITUTIONS AS NECESSARY. I ALSO AUTHORIZE MY PHYSICIAN, HOSPITAL, OR OTHER AGENCIES TO RELEASE TO THE FAMILY AND ADULT MEDICINE ANY PORTION OF MY MEDICAL RECORDS WHICH MAY BE DEEMED NECESSARY.

_____ _____

CLIENT OR PERSON LEGALLY RESPONSIBLE DATE

_____ _____

WITNESS DATE

REASON FOR REFERRAL:

_____

_____

_____

R.N. ASSESSMENT_____ DICTATED_____

DR. ASSESSMENT_____ TC_____

FAMILY CONF._____ FOLLOW-UP VISIT_____

DR. LETTER_____

REFERRED TO: HOME CARE_____ ADULT DAY CARE_____ COA_____

LAB_____ X-RAY_____ PHYSICIAN_____ OTHER_____

TRAVEL INSTRUCTIONS:

_____

_____

COMMENTS:

_____

_____

_____

_____

_____

_____

_____

COMPREHENSIVE GERIATRIC ASSESSMENT
SUMMARY SHEET

NAME _____ AGE ___ DOB __/__/__ INITIATED __/__/__

	PROBLEM	RECOMMENDATION
PROBLEMS		
MENTAL		
SOCIAL		
LEGAL		
ECONOMIC		
ENVIRONMENT		
ADL / IADL		

HEALTH MAINT. FLU __/__/__ PNEUMO __/__/__ TET __/__/__ PPD __/__/__

PAP __/__/__ MAMMS __/__/__ SIG __/__/__ HCLT __/__/__

EYE __/__/__ HEAR __/__/__ PE __/__/__ DENT __/__/__

VALUES CODE Y / N HOSP Y / N MED Y / N INVEST Y / N TU/VENT Y / N

LT CARE PLAN _____

COMPREHENSIVE GERIATRIC ASSESSMENT

NAME _____ AGE ___ DOB ___/___/___ INITIATED ___/___/___

CURRENT MAJOR COMPLAINT: _____

_____

PHYSICAL EXAMINATION (CIRCLE AND DESCRIBE ABNORMALITIES IF NECESSARY)

VITAL SIGNS / GENERAL

HT:____/____ WT:_____ TEMP:_____ PULSE:_____ RESP:_____

SITTING BP ____/____ STAND BP ____/____ VISUAL W/ OU___/___ W/O OU___/___

HEARING SCREEN: NORMAL VOICE Y / N WHISPER Y / N WATCH TICKING Y / N

APPEARANCE: HYGIENE DRESS GROOMING POSTURE EYE CONTACT CACHEXIA OBESITY

MOOD/AFFECT: APPROPRIATE LABILE DEPRESSED AGITATED ANXIOUS HOSTILE

HEAD & HAIR

SYMMETRY SHAPE DISTRIBUTION BALDNESS HAIR LOSS

DESCRIBE _____

FACE

EXPRESSION MUSCLE WEAKNESS PALSY STARE

DESCRIBE _____

EYE

COLOR VISION PTOSIS PUPILS VISUAL FIELDS EOM NYSTAGMUS STRABISMUS

CONJUNCTIVA SCLERA LIDS CATARACT GLASSES FUNDI ARCUS SENILIS

DESCRIBE _____

_____

EAR

AURICLES CANALS TM CERUMEN IMPACT HEARING AID AC>BC RT AC>BC LT WEBER

DESCRIBE _____

NOSE

PATENCY SEPTUM DEVIATION MUCOSA POLYPS

DESCRIBE _____

MOUTH & THROAT

TEETH EDENTULOUS PARTIAL DENTURE FULL DENTURE DENTURE FIT ORAL HYGIENE

LIPS MUCOSA TONGUE PHARYNX GAG PHONATION UVULA/TONGUE MIDLINE TESTING

DESCRIBE _____

_____

NECK

RANGE OF MOTION THYROID BRUIT CAROTID PULSE ADENOPATHY MASS

DESCRIBE _____

_____

BREAST

SYMMETRY SKIN NIPPLE DISCHARGE MASS AXILLARY NODES TENDER MASTECTOMY

DESCRIBE _____

LUNGS AND THORAX

SYMMETRY EXCURSIONS AP DIAMETER KYPHOSIS SCOLIOSIS THORACIC SPINE ROM

BONY TENDERNESS CVA TENDERNESS

BREATH SOUNDS RALES WHEEZING RHONCHI BASILAR CREPITATIONS RUBS

DESCRIBE _____

_____

CARDIOVASCULAR

LIFT THRILL PMI LBCD RUB RATE RHYTHM S1 S2 SPLIT MURMUR GALLOP

S3 S4 JVD HEPATOJUGULAR REFLUX CYANOSIS PREMATURE CONTRACTIONS

EDEMA: PEDAL SACRAL HANDS GRADE:_____+

DESCRIBE _____

_____

_____

ABDOMEN

CONTOUR SCARS HERNIA PULSATIONS SOUNDS LIVER SIZE ___ CM ABD AORTA

BRUIT FEMORAL BRUIT MASS TENDERNESS SPLENOMEGALY KIDNEY

DESCRIBE _____

_____

PENIS & SCROTUM

RASH FORESKIN TESTICLE MASS VARICOCELE TENDERNESS DISCHARGE HERNIA

DESCRIBE _____

PELVIC

VULVAR SKIN CHANGES URETHREAL MEATUS VAGINA VAGINITIS ATROPHY CERVIX

CERVICITIS . POLYP PROLAPSE HYSTERECTOMY UTERUS ADNEXA CYSTOCELE

RECTOCELE MASS TENDERNESS . SUPPORT PAP DONE ____

DESCRIBE _____

_____

RECTUM

TAGS SPHINCTER TONE FISSURE HEMORRHOIDS RECTAL MASS PROSTATE ENLARGED

PROSTATE MASS FECES FECAL IMPACTION PROLAPSE HEMOCULT _____

DESCRIBE _____

pulses reflexes

MUSCULOSKELETAL

musculoskeletal — ROM

	right	left	comments
upper extrem			
lower extrem			
hand function			
feet			

other neurologic

FOOT: CALUSES BUNIONS NAILS ULCERS DEFORMITY HAMMER TOES

DESCRIBE: _____

GAIT ASSESSMENT:

0 = CAN'T DO
1 = LIMITED
2 = NORMAL

SCORE _____

BALANCE	GAIT	
__ SITTING	__ INITIATION	OSTEOARTHRITIS
__ RAISING	__ STEP LENGTH	RHEUMATOID ARTHRITIS
__ IMED STAND	__ STEP HEIGHT	VASCULAR DEFICIENCY
__ PROL STAND	__ STEP CONTINUITY	ONYCHOGRYPHOSIS
__ NUDGE	__ STEP SYMMETRY	
__ ROMBERG	__ WALK STANCE	__ UP FROM FLOOR
__ TURNING 360	__ TRUNK SWAY	__ CABINET REACH
__ SIT DOWN	__ PATH DEVIATE	__ FLOOR REACH

DESCRIBE _____

_____

NEUROLOGICAL

PATHOLOGIC REFLEXES: BABINSKI SNOUT/SUCK GRASP

SENSATION: VIBRATION L / R UP / DOWN POSITION L / R UP / DOWN

DESCRIBE _____

_____

CRANIAL NERVES: 1 2 3 4 5 6 7 8 9 10 11 12 NORMAL / ABNORMAL

COORDINATION: FINGER-TO-NOSE HEEL-TO-SHIN RHOMBERG RAPID FINGER MOVEMENT

MOVEMENT DISORDER: PARKINSON RESTING TREMOR TARDIVE DYSKINESIA BRADYKINESIA
INTENTION TREMOR COGWHEEL REGIDITY HEMIPARESIS OTHER

DESCRIBE _____

_____

SKIN

COLOR TURGUR WART LESION SEBORRHEIC KERATOSES NEVI ACTINIC KERATOSES
STASIS DERMATITIS

DESCRIBE _____

_____

COMMENT: _____

_____

_____

_____

_____

_____

FAST SCALE	STAGE	DDX CONSIDERATIONS
NO FUNCTIONAL DECREMENT SUBJECTIVELY OR OBJECTIVELY	1	
COMPLAINS OF FORGETTING LOCATION OF OBJECTS/SUBJECTIVE WORK DIFFICULTIES	2	ANXIETY NEUROSIS, DEPRESSION
DECREASED FUNCTIONING IN DEMANDING WORK SETTING EVIDENT TO COWORKERS/DIFFICULTY TRAVELING TO NEW LOCATIONS	3	DEPRESSION / SUBTLE MANIFESTATION OF MEDICAL PATHOLOGY
DECREASED ABILITY TO PERFORM COMPLEX TASKS (PLANNING, FINANCES, SHOPPING)	4	DEPRESSION, PSYCHOSIS, FOCAL CEREBRAL PROCESS (GERSTMANN)
REQUIRES ASSISTANCE SELECTING ATTIRE MAY REQUIRE COAXING TO BATHE PROPERLY	5	DEPRESSION
DIFFICULTY DRESSING PROPERLY	6A	ARTHRITIS, SENSORY DEFICIT, STROKE, DEPRESSION
REQUIRES ASSITANCE BATHING, FEAR OF BATH	6B	SAME AS 6A
DIFFICULTY WITH MECHANICS OF TOILETING	6C	SAME AS 6A
URINARY INCONTINENCE	6D	URINARY TRACT INFECTION, OTHER CAUSES OF INCONTINENCE
FECAL INCONTINENCE	6E	INFECTION, MALABSORPTION, OTHER CAUSE OF INCONTINENCE
VOCABULARY LIMITED TO 1-5 WORDS	7A	STROKE, OTHER DEMENTIAS
INTELLIGIBLE VOCABULARY LOST	7B	SAME AS 7A
AMBULATORY ABILITY LOST	7C	PARKINSONISM, NEUROLEPTIC INDUCED OR OTHER EXTRAPYRAMIDAL SYNDROME, CREUTZFELDT-JAKOB DISEASE, NORMAL PRESSURE HYDROCEPHALUS, HYPONATREMIC DEMENTIA, STROKE, ARTHRITIS, HIP FRACTURE, OVERMEDICATION
ABILITY TO SIT LOST	7D	ARTHRITIS, CONTRACTURES
ABILITY TO SMILE LOST	7E	STROKE
ABILITY TO HOLD UP HEAD LOST	7F	HEAD TRAUMA
ULTIMATELY, STUPOR OR COMA		METABOLIC ABNORMALITY, OTHER MEDICAL ABNORMALITY, OVERMEDICATION, ENCEPHALITIS OTHER CAUSES

COMMENT: _____

_____

_____

_____

COMPREHENSIVE GERIATRIC ASSESSMENT

NAME:_____ DATE INITIATED ___/___/___

TELEPHONE:_____ DOB: ___/___/___ AGE ___ M/F RACE: C/B/A/I

MEDICAL HISTORY

PAST MEDICAL HISTORY

_____

_____

_____

_____

CURRENT MAJOR COMPLAINT

_____

_____

_____

_____

_____

_____

_____

HOSPITALIZATIONS AND SURGERIES

DIAGNOSIS / SURGERY	HOSPITAL	DATE
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___
_____	_____	___/___/___

OTHER MEDIAL HISTORY LAST COMPLETE PHYSICAL ___/___/___

PAP SMEAR ___/___/___ MAMMO ___/___/___ SIG ___/___/___ HCLT ___/___/___

UA ___/___/___ DENTAL ___/___/___ EYE ___/___/___ HEAR ___/___/___

FLU ___/___/___ PNEUMO ___/___/___ PPD ___/___/___ TET ___/___/___

SMOKER: NEVER QUIT (YR) _____ YES PPD _____ x YRS _____ = _____ PACK YRS

ALCOHOL HISTORY _____

DIET: REGULAR LOW FAT LOW CHOLESTEROL DIABETIC LOW FIBER HIGH FIBER

OTHER _____ EXERCISE _____

SEAT BELT USE: _____ FALLS/ACCIDENTS _____

SELF EXAMS: _____ MENOPAUSE/OSTEO _____

MEDICATIONS

	NAME	DOSE	FREQUENCY	PURPOSE
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				
11				
12				
13				
14				

OVER-THE-COUNTER DRUGS

	NAME	DOSE	FREQUENCY	PURPOSE
1				
2				
3				
4				

PRESCRIBING PHYSICIAN: _____

PHARMACY & PHONE: _____

MEDICATION ALLERGIES: _____

_____

PATIENT CAN PREPARE AND TAKE MEDS RELIABLY BY SELF: YES / NO

REVIEW OF SYSTEMS (CIRCLE ABNORMALITIES AND EXPLAIN)

GENERAL: WEIGHT CHANGE, FATIGUE, FEVER/CHILLS, INSOMNIA

EXPLAIN: _____

_____

HEENT: HEADACHES VISUAL CHANGES, CATARACT, GLAUCOMA, DIZZINESS, VERTIGO

GLASSES Y / N HEARING IMPAIRMENT: NONE SOME TOTAL, TINNITUS,

HEARING AID: Y / N DENTURES: Y / N U / L DRY MOUTH, EPISTAXIS

SWALLOWING NECK MASS, BRUIT, ADENOPATHY, THYROID ENLARGEMENT .

EXPLAIN: _____

_____

_____

RESPIRATORY: DYSPNEA, COUGH, WHEEZING, HEMOPTYSIS, SPUTUM

EXPLAIN: _____

_____

CARDIOVASCULAR: CHEST PAIN, ORTHOPNEA, PND, CLAUDICATION, PALPITATIONS

ORTHOSTATIC HYPOTENSION, SOB, SYNCOPE, EDEMA: PEDAL SACRAL HANDS,

PHLEBITIS, HYPERTENSION

EXPLAIN: _____

_____

GASTROINTESTINAL: DYSPHAGIA, ABDOMINAL PAIN, CONSTIPATION, DIARRHEA,

BLOOD IN STOOL, DYSPEPSIA, N/V, HEMORRHOIDS

BOWEL HABITS: _____

EXPLAIN: _____

_____

DIET: _____ APPETITE: G F P

WEIGHT: GAIN / LOSS AMOUNT _____

24 HR DIET RECALL:

BREAKFAST	LUNCH	DINNER

SNACKS	FLUID INTAKE	OTHER

EXPLAIN: _____

GENITOURINARY: DYSURIA, NOCTURIA, POLYURIA, HEMATURIA, HESITANCY, STREAM, STRAINING, FREQUENCY, URGENCY, VAGINAL BLEEDING, DISCHARGE

GRAVIDA _____, PARA _____, AB _____, HYSTERECTOMY ___/___/___

BREAST: MASS, DISCHARGE, RASH, ABNORMAL SHAPE/CONTOUR, SURGERY

EXPLAIN: _____

_____

INCONTINENCE: BLADDER / BOWEL STRESS / URGE / OVERFLOW / FUNCTIONAL

EXPLAIN: _____

_____

MUSCULOSKELETAL: STIFFNESS, JOINT PAIN, LIMITATION OF MOTION, DEFORMITY, ATROPHY, MUSCLE PAIN, WEAKNESS, SWELLING, ROM, ARTHRITIS

JOINTS INVOLVED: _____

EXPLAIN: _____

MOVEMENT EQUIPMENT: CANE WALKER WHEELCHAIR SPECIAL BED CRUTCHES

EXPLAIN: _____

_____

SKIN: RASH, ITCHING, DECUBITUS, LUMPS, DERMATITIS, PSORIASIS, BRUISING

EXPLAIN: _____

_____

NEUROLOGICAL: VERTIGO, SYNCOPE, DIZZY / LIGHTHEADED, TIA, SEIZURE, APHASIA, APRAXIA, TREMOR, BLACK OUTS, AMNESIA, DIPLOPIA, MEMORY LOSS, MOOD SWINGS, VISUAL DISTURBANCE, WEAKNESS, PARALYSIS, DEPRESSION, DISRUPTIVE BEHAVIOR, WANDERING, MEMORY IMPAIRMENT, HALLUCINATIONS, ANXIETY

EXPLAIN: _____

_____

NURSING DIAGNOSIS / RECOMMENDATIONS:

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

_____

SOCIAL ASSESSMENT

FAMILY MEMBERS

NAME	ADDRESS	PHONE	RELATIONSHIP

HOBBIES AND INTERESTS (INCLUDING OUTSIDE ACTIVITIES): _____

_____

DAILY ROUTINE: _____

_____

_____

WHO DO YOU FEEL YOU ARE CLOSE TO AND HOW IS THAT DEMONSTRATED?

_____

LIFE STRESSORS:

_____ DEATH(S) _____

_____ CHANGES IN LIVING ARRANGEMENTS _____

_____ CHANGES IN FINANCIAL STATUS _____

_____ CHANGES IN HEALTH _____

COMMUNITY RESOURCES USED (AGENCY AND PHONE):

_____ _____

_____ _____

_____ _____

FINANCIAL SITUATION (IS MONEY A PROBLEM FOR YOU?)

_____

_____

LEGAL ISSUES - DPA, GUARDIANSHIP, CONSERVATOR (NAME AND ADDRESS):

_____

_____

LIVING WILL ISSUES (CODE STATUS):

_____

_____

DO YOU OWN OR OPERATE A AUTOMOBILE? _____

INCOME: _____

SOCIAL SECURITY _____

SSI _____

PENSION _____

OTHER _____

_____

MONTHLY EXPENSES: _____

FOOD _____

HOUSING _____

HEATING _____

TRANSPORTATION _____

MEDICATION _____

OTHER _____

FUNCTIONAL STATUS

ADL SCALE — Independent

1. Bathing Receives either no assistance or assistance in bathing only one part of the body. Y / N
2. Dressing Gets clothes and dresses without any assistance except for tying shoes. Y / N
3. Toileting Goes to toilet room, uses toilet, arranges clothes, and returns without any assistance. May use cane or walker for support and may use bedpan/urinal at night. Y / N
4. Transferring Moves in and out of bed and chair without assistance, but may use cane or walker. Y / N
5. Continence Controls bowel and bladder completely by self, without occasional accidents. Y / N
6. Feeding Feeds self without assistance, except for help with cutting meat or buttering bread. Y / N

SCORE _____ / 6

IADL SCALE

Ability to use telephone	
Operates phone on own initiative	1
Dials a few well-known numbers	1
Answers phone but does not dial	1
Does not use phone at all	0
Shopping	
Takes care of all shopping needs	1
Shops independently for small items	0
Needs assistance for any shopping	0
Completely unable to shop	0
Food preparation	
Plans, prepares, and serves on own	1
Prepares meals if supplied w items	0
Prepares meals, but inadequate diet	0
Needs to have meals prepared/served	0
Housekeeping	
Maintains house alone w occas asist	1
Performs light daily tasks	1
Light daily tasks, but inadequate	1
Needs help with all maintenance	1
Does not participate in hskeeping	0
Laundry	
Does personal laundry completely	1
Launders small items	1
All laundry must be done by other	0
Mode of transportation	
Travels independently or drives	1
Travels via taxi, not public	1
Travels public when accompanied	1
Travel limited taxi/car w assist	0
Does not travel at all	0
Responsibility for medications	
Takes correct dose on time	1
Takes if prepared in advance	0
Is not capable of dispensing meds	0
Ability to handle finances	
Manages financial matters independ	1
Manages purchases, needs help bank	1
Incapable of handling money	0

SCORE _____ / 8

MENTAL STATUS

FOLSTEIN

DATE	1.___
YEAR	2.___
MONTH	3.___
DAY	4.___
SEASON	5.___
HOSPITAL	6.___
FLOOR	7.___
TOWN/CITY	8.___
COUNTY	9.___
STATE	10.___
BALL	11.___
FLAG	12.___
TREE	13.___
93	14.___
86	15.___
79	16.___
72	17.___
65	18.___
OR	
WORLD = DLROW	
NUMBER PLACED CORRECTLY	___
BALL	19.___
FLAG	20.___
TREE	21.___
WATCH	22.___
PENCIL/PEN	23.___
NO IFS, ANDS, OR BUTS.	24.___
TAKES IN RIGHT	25.___
FOLDS	26.___
PLACES ON FLOOR	27.___
CLOSE YOUR EYES	28.___
SENTENCE	29.___
DRAWS PENTAGONS	30.___
SCORE	_____

POPOFF INDEX

1. O. EVERYTHING IS AN EFFORT
   H. I HAVE A LOT OF ENERGY
   C. MAYBE I'M JUST GETTING OLDER

2. H. I'VE GOT A LOT OF PEP
   C. I TIRE EASILY
   O. I'M TIRED ALL THE TIME

3. C. I'M IN A RUT
   O. THINGS ARE NOT GOING WELL
   H. I'M PLEASED WITH THE WAY THINGS ARE GOING

4. O. I DON'T HAVE MUCH TO LOOK FORWARD TO
   H. I LOOK FORWARD TO THE FUTURE
   C. I GO ALONG AS BEST I CAN

5. H. I ENJOY GETTING UP IN THE MORNING
   C. I PUSH MYSELF TO GET GOING IN THE MORNING
   O. I FIND IT HARD TO FACE THE DAY

6. C. I DON'T FEEL RESTED AFTER SLEEPING
   O. I'VE BEEN HAVING TROUBLE SLEEPING LATELY
   H. I SLEEP FINE AND FEEL RESTED

7. O. I HAVEN'T BEEN EATING AS WELL LATELY
   H. I ENJOY EATING
   C. FOOD DOESN'T TASTE AS GOOD AS IT USED TO

8. H. SEX IS PLEASURABLE TO ME
   C. SOMETIMES I'M TOO TIRED FOR SEX
   O. I'VE LOST SOME INTEREST IN SEX LATELY

9. C. I FORCE MYSELF TO DO MY WORK
   O. I DON'T HAVE MUCH AMBITION
   H. I AM ABITIOUS

10. O. I DON'T FEEL LIKE DOING MUCH LATELY
    H. I ENJOY DOING A LOT OF THINGS
    C. I DON'T GO OUT MUCH BECAUSE I AM TOO TIRED

11. H. THINGS ARE GOING GOOD
    C. SOMETIMES EVERYTHING GOES WRONG
    O. I CAN'T COPE WITH THINGS VERY WELL LATELY

12. C. I'D DO BETTER IF I FELT BETTER
    O. SOMETIMES I CAN'T DO ANYTHING RIGHT
    H. THINGS ARE RUNNING SMOOTHLY

13. O. I'M DEPRESSED
    H. I'M HAPPY
    C. I DON'T LET MYSELF GET DEPRESSED

14. H. I'M HAPPY WITH THE WAY I'M DOING THINGS
    C. EVERYBODY FEEL THEY COULD DO BETTER
    O. I'M NOT DOING THINGS AS WELL AS I USED TO

15. O. SOMETIMES I FEEL LIKE GIVING UP
    H. I'M ENJOYING MY LIFE
    C. I FIGHT IT WHEN I FEEL DISCOURAGED

O _____ C _____

ENVIRONMENTAL ASSESSMENT

1. How many rooms are available to the patient?

____ Own bedroom If shared, with whom? _____
____ Bathroom
____ Kitchen
____ Living/sitting room

2. Must patient use stairs in house? Y / N If yes, how many? _____

3. Is the house clean? Y / N

4. Does the house seem adequately?

Insulated Y / N
Ventilated? Y / N
Heated Y / N

5. Are there signs of neglect?

Old food in the refrigerator? Y / N
Unwashed dishes? Y / N
Accumulated dirty clothes? Y / N

Other: _____

_____

6. Safety checklist

Can the patient?
Call for help with phone Y / N
Safely transfer all locations Y / N

Are there obvious dangers?
Overloaded electrical outlets Y / N
Poor lighting Y / N
Cluttered furniture Y / N
Frayed carpets or broken floors Y / N
Missing or broken smoke alarm Y / N

EXPLAIN: _____

_____

APPENDIX B

APPENDIX B

ID 1 2 3 4

DATA COLLECTION INSTRUMENT

A. Demographics 1) Age _____ 5 6 7

2) Sex _____ 8

3) Living Arrangement

a) Alone _____ 9

b) With spouse _____ 10

c) With relative _____ 11

d) With other _____ 12

B. Katz Score

ADL _____ 13

IADL _____ 14

C. Folstein Score _____ 15 16

D. Vision (OU)_____ 17 18 19

E. Medical Diagnoses

1) Hypertension 20

2) CHD 21

3) Arthritis 22

4) DM 23

5) Stroke 24

6) COPD 25

7) Parkinson's 26

8) GI problems 27

9) ASHD 28

10) Sensory loss 29

11) Depression 30

12) Other (list out) 31

F. Reversible problems 32

1) Polypharmacy

a) Abnormal values for one or more

	Yes	No	
1) Digoxin	_____	_____	33
2) Dilantin	_____	_____	34
3) Theophylline	_____	_____	35
4) Thyroid	_____	_____	36

ID 1 2 3 4

b) More than 4 medications prescribed
Yes _____ No _____ 37

c) Documentation OTC Yes _____ No _____ 38

2) Malnutrition
a) Abnormal albumin level <3.5 Yes _____ No _____ 39

b) Documentation of Malnutrition in Nursing Diagnosis Yes _____ No _____ 40

3) Inadequate Social Supports
a) Documented in Nursing or Medical Diagnosis Yes _____ No _____ 41

4) Unsafe Environment
a) History of falls Yes _____ No _____ 42
b) Documented in nursing or medical diagnosis under environment Yes _____ No _____ 43

5) Vision
a) Documented problem if less than 20/50 Yes _____ No _____ 44

APPENDIX C

MICHIGAN STATE UNIVERSITY

OFFICE OF VICE PRESIDENT FOR RESEARCH
AND DEAN OF THE GRADUATE SCHOOL

EAST LANSING • MICHIGAN • 48824-1046

March 6, 1992

Jean M. Thiele
1514 Bookness St.
Midland, MI 48640

RE: RELATIONSHIP BETWEEN FUNCTIONAL STATUS, MENTAL STATUS AND REVERSIBLE PROBLEMS IN COMMUNITY DWELLING ELDERLY, IRB #92-057

Dear Ms. Thiele:

The above project is exempt from full UCRIHS review. The proposed research protocol has been reviewed by another committee member. The rights and welfare of human subjects appear to be protected and you have approval to conduct the research.

You are reminded that UCRIHS approval is valid for one calendar year. If you plan to continue this project beyond one year, please make provisions for obtaining appropriate UCRIHS approval one month prior to March 5, 1993.

Any changes in procedures involving human subjects must be reviewed by UCRIHS prior to initiation of the change. UCRIHS must also be notifed promptly of any problems (unexpected side effects, complaints, etc.) involving human subjects during the course of the work.

Thank you for bringing this project to my attention. If I can be of any future help, please do not hesitate to let me know.

Sincerely,

David E. Wright, Ph.D., Chair
University Committee on Research Involving
Human Subjects (UCRIHS)

DEW/deo

cc: Dr. Rachel Schiffman