Nurse Delegation to Unlicensed Community Caregivers

By

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Abstract

TITLE: **Nurse Delegation to Unlicensed Community Caregivers: A Longitudinal Descriptive Study**

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The use of psychoactive drugs and the related delivery of nursing services was studied in a sample of 3,454 elderly Medicaid recipients living in Adult Foster Care Homes in Oregon. The aims of the study were to: (1) estimate the statewide and urban and rural proportions of routinely and newly prescribed psychoactive drug use among AFC elders, and (2) to describe the occurrence and timing of nurse delegation visits for those elders receiving newly prescribed psychoactive drugs. Licensed RNs are increasingly being used to teach, delegate, and supervise nursing functions, such as the administration of psychoactive drugs, to unlicensed, paid care providers in board and care settings where elders reside.

Subjects were predominantly female (79%), White (91%), urban-residing (62%), and had a mean age of 82 years. A secondary analysis of Medicaid reimbursement claims and enrollee records from September 1, 1993 through December 31, 1994 was conducted. The receipt of routinely prescribed psychoactive drugs was determined from four months of claims data, while the history of psychoactive drug use and receipt of newly prescribed psychoactive drugs used eight months of claims data. Those subjects who received newly prescribed psychoactive drugs and thus had a high need for a nurse delegation visit were tracked for up to six month of claims data to determine the first nurse visit following the new drug.

Findings revealed that 38.2% (n=1320) of the subjects received routine

psychoactive drugs. The proportion of urban clients who receivied psychoactive drugs routinely (39.8%) was significantly higher than the proportion of rural clients who received psychoactive drugs routinely (35.7%) (χ^2=5.68, df=2, p<.02).

Of those subjects on psychoactive drugs, 18.6% (n=246) received newly prescribed psychoactive drugs and thus had a high need for a nurse delegation visit. The proportion of urban new psychoactive drug users (17%) was significantly less than the proportion of rural new psychoactive drug users (21.5%) (χ^2=4.05, df=1, p<.05).

Only 44.6% (n=103) of the 231 subjects receiving newly prescribed psychoactive drugs and available (remaining in AFC) for a nurse delegation visit received one. The proportion of urban clients who received a nurse delegation visit (61.9%) was significantly greater than the proportion of rural clients who received a visit (18.5%)
(χ^2=42.18, df=1, p<.001).

The overall time interval from the newly prescribed psychoactive drug to the first subsequent nurse visit was expected to occur within 30 days. However, the median number of days to the visit was 43, with the longest time to a visit being nearly nine months.

The mean number days between the date of the new drug and the nurse visit was not statistically significant across geographic areas. The mean number of days to the nurse visit in urban areas was 59 and the mean days to the visit in rural areas was 89 (t=-1.41, df=101, p=.087). While urban and rural mean days to visit were quite different, the difference was not statistically significant because to the large variablility of the days to the visit within groups.

The survival or event analysis of time to the nurse visit showed that at the end of the observation period of six months the majority of clients (55.6%) had not yet received a visit in the context of a new psychoactive drug. At 14 days nearly three-fourths of the clients had not received a visit after the date of the

new drug and at 30 days nearly 60% of the clients lacked a visit within the expected time. Thus, the trend was for clients to receive visits earlier and to receive fewer over time.

Overall, only 40.8% (n=42) of clients received a timely nurse delegation visit on or within 30 days of the date of the newly prescribed psychoactive drug. The proportion of clients who received timely nurse delegation visits was not statisitcally different across geographic areas. In urban areas, 43% of the visits were timely or within 30 days. In contrast, 29.4% of the rural visits were timely ($\chi^2 = 1.08$, df=1, $p > .05$).

This study has identified high rates of psychoactive drug use and low rates of nurse delegation and monitoring visits in geriatric AFC, a setting with quality of care concerns. This statewide study suggests that the high rates of psychoactive drug use and problems with both the occurrence and timeliness of nurse visits are occurring across geographic areas. The study findings call for state AFC program managers to further evaluate these clinical issues and assess the adequacy of current regulations.

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INTRODUCTION

Background

Community-based long-term care (CLTC) facilities are able to provide increasingly complex care to more impaired elders and thus reduce nursing home (NH) use because nurses teach community caregivers to perform care regimens, monitor the safety and quality of care, and make continuous improvements in care (Ladd & Hannum, 1992; Strumpf, 1994; Clark, 1992; Coile, 1995). Thus, community nursing services are crucial to providing effective care to dependent elders in these distant and less supervised settings (DeYoung, Just, & VanKyk, 1994).

Licensed registered nurses (RNs) are increasingly being used to teach, delegate and supervise care to unlicensed, paid providers in group settings where elderly people reside (Ladd & Hannum, 1992; Strumpf, 1994). The delegation of nursing functions to others who are not nurses has expanded the roles of these non-nurse caregivers. Nurse delegation and periodic supervision is a promising approach to providing less costly and consumer-preferred CLTC services and research is needed on this important aspect of nursing service delivery to frail elders (Kane, O'Connor, & Baker, 1995).

Community-Based Alternatives

The CLTC alternatives to nursing homes (NHs) and delivery of

community nursing services to such facilities have experienced explosive growth over the past decade (GAO/HEHS-94-227; Coile, 1995). An ever increasing proportion of the population is in need of CLTC (Kinney, Freedman, Loveland-Cook, 1994). Long-term care has shifted from care in institutional settings, primarliy NHs, to less expensive home and community-based settings (Miller & Saunders, 1993). Medicaid spending for LTC grew at a rate of 13.2% per year from 1989-1993, with expenditures for home and community-based services growing faster than institutional expenditures (GAO/HEHS-95-109).

Most elders (75%) with LTC needs live at home or in small, community residential care settings, such as group homes or supervised apartments (GAO/HEHS-95-26). The elderly population needing long-term care at home or in community settings now totals 5.6 million (GAO/HEHS-95-26). However, information about the number and type of noninstitutional care programs for the aged and disabled is inaccurate, especially when public funding is not involved (Kane & Kane, 1987).

The number of older adults needing LTC is expected to double in the next 25 years (GAO/HEHS-95-109). By the year 2030, 22% of the population will be over age 65 and the number of people over 85 is expected to triple (Kinney, Freedman, & Loveland Cook, 1994). Because LTC need increases significantly with age, especially after age 85, a significant demand is expected well into the next century as the baby boom generation ages (GAO/HEHS-95-26).

Since 1981, Medicaid, through the home and community-based care

waiver provision of section 1915c of the Social Security Act, has allowed states to fund home and CLTC for aged and disabled people who meet Medicaid eligiblility requirements and would otherwise require expensive NH care (Benjamin, 1985; Kinney, Freedman, & Loveland-Cook, 1994). The waiver program has limited NH care and expanded home and CLTC and funding has increased rapidly since 1981 (Spector, Reschovsky, & Cohen, 1996). Nearly all states now have waivers (Kinney, et al., 1994). States with long-standing Medicaid waiver programs, such as Oregon, Washington, and Wisconsin, have been able to provide more services to more people with available funds (GAO/HEHS-95-109).

The increased demand for the less costly and more homelike CLTC alternatives has been attributed to: (a) population aging, improved life expectancy, and increased prevalence of chronic disease and disability (Allert, Sponholz, & Baitsch, 1994; Manton, Corder, & Stallard, 1993); (b) the reduced availability of informal unpaid caregivers for elders due to the rising number of women in the workforce, geographic distance of families, smaller family sizes, more frequent divorces, and evidence of reduced sense of filial obligation in blended families (Hays & Branch, 1994; Manton, Corder, & Stallard, 1993; Binstock, Cluff, & von Mering, 1996); (c) the general preference of the aged and disabled to have services provided, when possible, in their own homes or community settings rather than in NHs (Harrington, 1994), (d) the rapid discharge of elders from hospitals due to managed care (Strumpf, 1994), and (e)

constrained state and federal budgets and Medicaid waiver programs to fund those who would otherwise require expensive NH care (GAO/HEHS-95-109).

The CLTC alternatives vary from state to state and are known under a number of names, including board and care, foster care, personal care, domiciliary care, residential care, congregate care, assisted living, and other terms (Morgan, Eckert, & Lyon, 1995). Alternatives to NHs for persons with chronic disabilities fall into two categories, home care or supportive housing options (Spector, Reschovsky, & Cohen, 1996). The CLTC settings for frail or disabled persons range from private homes accepting a few residents to much larger hotel or apartments (Williams & Temkin-Greener, 1996). The range of services offered by CLTC alternatives varies greatly, although at a minimum, they provide room, meals, 24-hour protective oversight, varying levels of personal assistance, varying levels of medical care, a more homelike environment, and less skilled staff (Spector, Reschovsky, & Cohen, 1996).

The Medicaid 2176 Home and Community-Based Care Waivers have permited states to purchase CLTC for persons with care needs that make them eligible for NH care. In 1989, a policymaker suggested that the use of the waiver would remain small because there are a limited number of individuals who meet both NH medical necessity requirements and can be safely maintain in an AFH (Capitman, 1989). This prediction reveals the confusion and controversy that surrounds the questions of how to finance, organize, and deliver the needed intensity of care to elders in CLTC facilities.

Caregiving and Healthcare Needs

The elderly population has a need for professional healthcare services in the community because they are vulnerable to acute illnesses and unpredictable disease courses (Salzman, 1992). The provision of CLTC services requires multidisciplinary professionals to interact with lay caregivers to meet acute, chronic, medical, and social needs (Topinkova, 1994). Home health policy is designed to provide skilled nursing and therapy services for acute or postacute, short-term needs (Williams, 1994). The consumers of long-term care services are persons with complex chronic illesses that are associated with continuing multiple health and medical care needs, periods of remission and exacerbation, and increasing disability (Mezey, 1996).

Caregiving for dependent elders is complex and involves multiple and interacting needs (Magilvy, 1996). Caregivers need knowledge and skills to manage chronic illness, prevent and manage medical crises, control symptoms, improve function, delay disability, and access community resources (Biegel, Sales, & Schulz, 1991). Thus, care delivery models are increasingly using nurses to transfer professional knowledge about care to nonprofessional or lay caregivers (Arras & Neveloff Dubler, 1994; DeYoung, Just, & Van Dyk, 1994).

Farley-Short and Leon (1990) reported that home care was the most commonly used service by impaired elderly persons in the community who used home and community services from the 1987 National Medical Expenditures Survey. They broadly defined home care to include any professional or

homemaking services provided in the home excluding home-delivered meals. Further, Greene and colleagues (1995) reported that nursing services, also called home nursing, are one of the four CLTC services most often provided to older disabled persons. Nurses are increasingly managing clients in less supervised sites of care and monitoring safety and quality of care (Coile, 1995). Moreover, the number of Medicare-certified home health agencies increased by 98% from 1981 to 1987 (Harrington, 1994).

While the sites of care for disabled elders have become more dispersed and less supervised, the intensity of the medical and nursing care needs of this population has increased over the past decade (Mor, Sherwood, & Gutkin, 1986; Arras & Neveloff-Dubler, 1994). In addition, the newer forms of CLTC in the nation are operated by minimally trained providers and care is delivered by assistants who are untrained and paid minimum wage (Kane & Kane, 1987). Moreover, elders and people with disabilities comprise 27% of the Medicaid beneficiaries and are among the nation's poorest, sickest, and most vulnerable population groups (DeLew, 1995; Riley, 1995).

Because most people needing LTC live in their own communities, services available in the home and community are increasingly important. The provision of more complex care regimens in these settings compels states to increase their knowledge about the delivery of professional healthcare services to vulnerable elders (GAO/HEHS-95-26; Miller & Saunders, 1993).

The practice of nurse delegation in community sites of care has grown

and developed over the past decade and virtually no research exists on the structure, process, or outcomes of delegated care (Kane, et al., 1995). Thus, there is a need to address systematically nursing services provided to dependent elders in CLTC. Research is particularly needed in those states which have widely implemented nurse delegation in the context of CLTC. The findings will be useful to other states who plan to replicate models for increased delegation of nursing functions to lay caregivers in their growing and varied CLTC programs.

A Study of AFC and Nursing Services

Oregon substitutes AFC for persons eligible for NH care and has placement, oversight, and services in place (Feder et al., 1989). The state purports to offer better care at lower cost but the evidence to support this conclusion is needed. Adult foster care, a form of board and care, refers to the provision, usually by non-relatives, of food, housing, personal care, oversight, and varying levels of medical and nursing care (Kane & Kane, 1987). The RNs who serve AFC facilities are usually employed by home health care agencies, visiting nurses associations, nurse staffing agencies, mental health agencies, or are independent consulting professionals who contract for their services (DeYoung, Just, & Van Dyk, 1994).

This study focused on the delivery of delegated nursing services to AFC homes in one state. A single delegated nursing function, the administration and management of newly prescribed psychoactive drugs was chosen because of the: (a) anticipated high use of psychoactive drugs associated with AFC clients,

(b) increasing numbers of elders in CLTC with mental disorders, including dementia (Sky & Grossburg, 1994), (c) powerful main and significant adverse side effects of psychoactive drugs experienced by elders (Salzman, 1992), and (d) clinical knowledge and skills required to administer psychoactive drugs to older persons safely and effectively (Hogstel,1995).

A geriatric board and care study across 10 states (N=2,949) found that 41% of residents received at least one psychoactive drug, primarily on a routine basis (Spore, Mor, Hiris, Larrat, & Hawes, 1995). In addition, a study of 55 rest homes for frail elders in Massachusetts found that 55% of the residents were taking at least one psychoactive drug, with antipsychotics being administered to 39% (Avron, Soumerai, Everitt, Ross-Degan, Beers, Sherman, Salem-Schatz, & Fields, 1989). A study of 282 ambulatory residents of 12 Tennessee NHs found the prevalence of psychoactive drug use to be 58.7% (Thapa, Gideon, Fought, & Ray, 1995). While psychoactive drug use among NH residents has been extensively studied and regulations are in place to protect the institutional population, comparable protections do not exist for the elderly CLTC population.

Prior to OBRA-87 several NH studies reported antipsychotic prescribing rates between 30 and 44% (Avron, Dreyer, Connelly, & Soumerai, 1989; Buck, 1988; Beers, Avron, Soumerai,Everitt, Sherman, & Salem, 1988; Ray, Federspiel, & Schaffner, 1980). Pre-OBRA-87 antidepressant use rates were 14% (Beers et al., 1988), 11% (Buck, 1988), 9% (Avron et al., 1989), and 6% (Burns & Kamerow, 1988). While anxiolytic use rates were the lowest at 8%

(Avron et al., 1889), 7% (Buck, 1988), and 6% (Burns & Kamerow, 1988).

Psychoactive drug use in NHs decreased after implementation of the OBRA-87 regulations. A study of all NHs in Minnestoa (N=33,000) found in the fourth year post-OBRA-87 use rates of 15% for antipsychotics, 16% for antidepressants, and 12% for anxiolytics (Garrard, Chen, & Dowd, 1995). In comparison, the 10-state board and care study by Spore and colleagues (1996) reported that 21.5% used antipsychotics, 14% used antidepressants, and 16% used anxiolytics. These studies show similar rates of psychoactive drug use even though board and care is a non-medically supervised setting.

Oregon provides an ideal setting in which to study nurse delegation. The state has a large, statewide, and well established AFC program and nurse delegation has been widely implemented in AFC for over a decade (GAO/HEHS-94-167; Kane et al., 1995). Further, the state has a high proportion of AFC clients with complex care needs. Among the state's nearly 24,000 beneficiaries for both institutional and noninstututional care, 60% are at the highest dependency level (GAO/HEHS-94-167). Furthermore, Oregon operates under a policy that encourages community-based placement over NH placement (GAO/HEHS-94-167).

In addition, Oregon contains a large number of rural areas where, on a national basis, CLTC settings are disadvantaged by a critical shortage of community nurses (Coward, Bull, Kukulka, & Galliher, 1991). Furthermore, rural physicians have been found to prescribe more psychoactive drugs to NH elders

than those practicing in urban areas (Hulisz, Sumner, Hodge, & Weart, 1991; Ray, Federspiel, & Schaffner, 1980). Thus, the study will fill two important gaps in the literature: (a) access to nurse visits in AFC to delegate nursing functions, in this study, those related to psychoactive drug administration and management, and (b) urban and rural differences related to psychoactive drug use among elderly AFC clients and nursing service delivery. Findings will be used to inform policy makers and providers involved in CLTC programs across the states, and to plan primary research in a program focused on the nurse delegation and supervision process and client outcomes in CLTC.

Study Aims

The purpose of this dissertation study was to estimate psychoactive drug use among the state's elderly AFC population funded by Medicaid and describe the delivery of nursing services in the context of newly prescribed psychoactive drugs.

The specific aims and research questions for the study were to:

Aim 1. estimate the statewide and urban and rural proportions of elderly AFC clients who received psychoactive drugs routinely, including the proportion who were newly prescribed to psychoactive drugs [no psychoactive drug within the four previous months], and thus had a high need for a nurse delegation visit.

(1a) What proportion of clients received psychoactive drugs routinely?

(1b) How did the proportion vary by geographic area?

(1c) Among clients who received routine psychoactive drugs, what proportion received newly prescribed psychoactive drugs?

(1d) How did the proportion who received a newly prescribed to psychoactive drug vary by geographic area?

Aim 2. describe the occurrence and timing of the statewide and urban and rural delivery of nurse delegation visits to AFC providers in relation to older AFC clients who were newly prescribed to psychoactive drugs.

(2a) Among eligible clients who received a newly prescribed psychoactive drug, what proportion received a nurse delegation visit?

(2b) How did the proportion who received a nurse delegation visit vary by geographic area?

(2c) Among eligible clients who received a newly prescribed psychoactive drug, what was the average number of days between the date of the receipt of a newly prescribed psychoactive drug and the date of the receipt of a nurse delegation visit?

(2d) How did the average number of days between the date of the newly prescribed psychoactive drug and the date of the nurse delegation visit vary by geographic area?

(2e) Among clients who received a nurse delegation visit, what was the proportion who received a timely visit?

(2f) How did the proportion vary by geographic area?

The next chapter (1) presents the conceptual basis of the study, (2) reviews

literature on [a] board and care, including AFC, [b] nurse delegation, [c] psychoactive drugs, [d] urban and rural differences related to psychoactive drug use and nursing service delivery, (3) describes the process and timing of nurse visits to elderly AFC recipients. In chapter 3, the methodology for the secondary analysis is presented. Chapter 4 is a presentation of the results. Chapter 5 discusses psychoactive drug use and nursing service delivery in geriatric AFC. The final chapter also presents recommendations for future research in AFC and nurse delegation to unlicensed paid caregivers serving elders in the community.

CHAPTER 2

CONCEPTUAL BASIS OF THE STUDY

This study estimates psychoactive drug use among one states' elderly AFC client population funded by Medicaid and describes the occurrence and timing of community nurse delegation visits to those clients receiving a newly prescribed psychoactive drug. The study methodology is designed to profile psychoactive drug use and community nurse visits among elderly AFC Medicaid recipients across urban and rural areas of one state. Findings can be used to plan more systematic data collection analysis and feedback to policymakers and providers. The goal of the study is the generation, rather than testing, of hypotheses.

This chaper presents the conceptualization of this study, as illustrated in Figure 1, which is based on literature and a working knowledge of community nursing services to older AFC clients funded by Medicaid. In addition background information is provided on the major areas of focus in the study: (1) board and care on a national basis, (2) AFC in Oregon, (3) nurse delegation in general and in Oregon, (4) psychoactive drug therapy in elders and in LTC settings, (5) urban and rural differences related to community-based psychoactive drug use and nursing supervision, and (6) the process and timing of nurse visits to AFHs in Oregon.

Theorectical Jusitification for the Study

The board and care segment of the LTC market has grown rapidly and changed significantly over the decade (Phillips et al., 1995). These changes

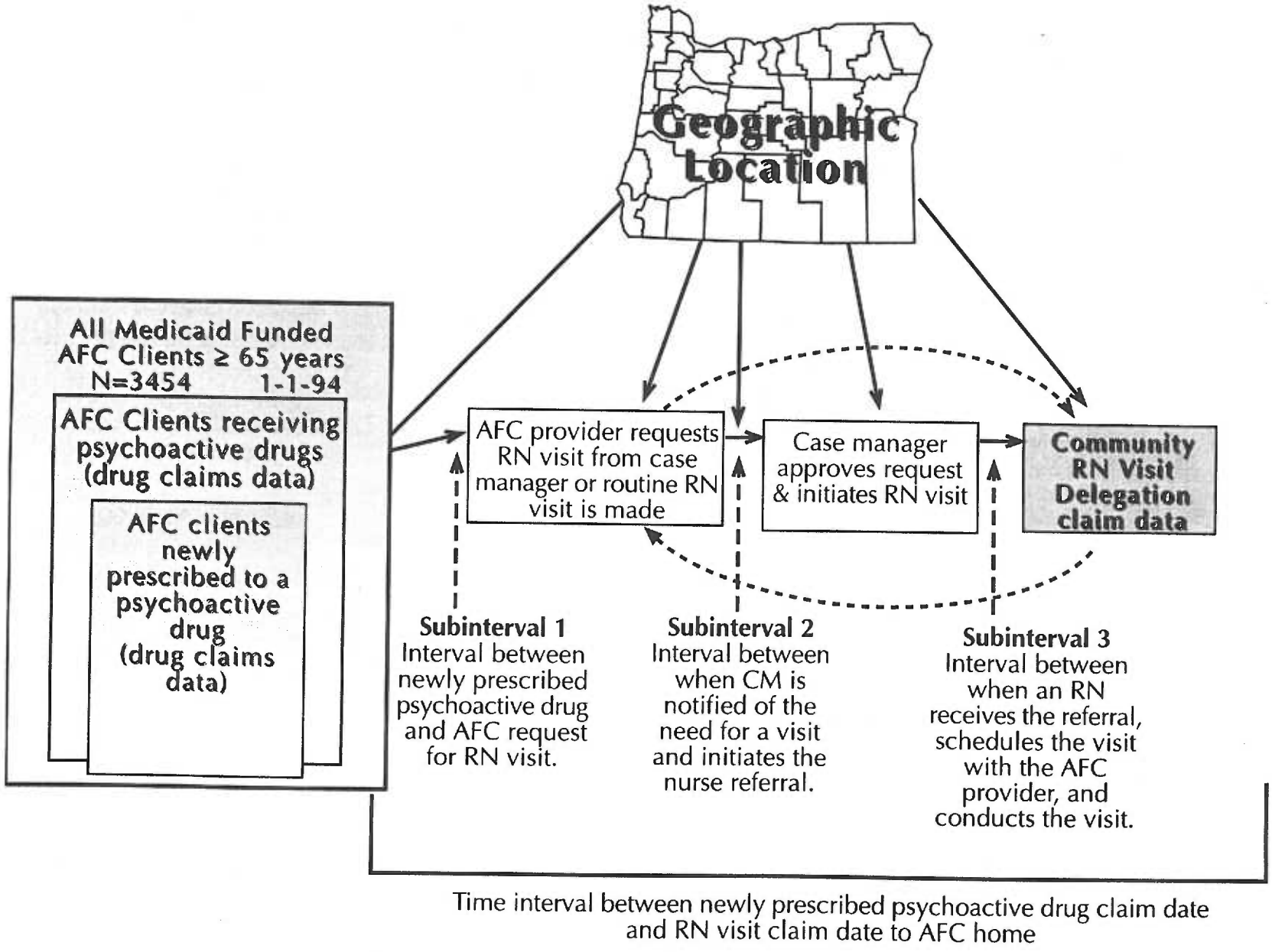


Figure 1. Conceptualization of Study: Nurse Delegation to Unlicensed Community Caregivers

include: (a) board and care facilities now provide more extensive services and protective oversight to a significantly older and more disabled population, (b) the majority of residents live in large facilities with over 50 beds, and (c) a new type of unlicensed home has emerged: retirement apartments and assisted living facilities that provide the relevant services and oversight but are unlicensed (Hawes et al., 1995). The shift to lower cost alternatives to NHs in community-based settings is predicted to continue and noninstitutional services will be at the core of the future LTC system (Kodner, 1996).

These factors compel policymakers to address the two most pressing challenges facing board and care: quality of care problems and underdeveloped regulation (Baggett, 1989; Hawes, et al., 1993). Other studies have demonstrated that the board and care population has become older, sicker, and more cognitively and physically impaired over the past two decades (Dittmar et al., 1983; Mor et al., 1986). The trend is to provide expanded medical and nursing services to aged board and care residents who now fit the profile of the intermediate NH population (Baggett, 1989; Spector et al., 1996).

While the intensity of the medical and nursing care needs of this population has increased over the past decade the sites of care for disabled elders have become more dispersed and less supervised (Mor, Sherwood, & Gutkin, 1986; Arras & Neveloff-Dubler, 1994). Board and care operators are struggling with the complex care needs of frail, disabled, acutely, chronically, or terminally ill elders (Magilvy, 1996). Low staffing ratios, minimally trained staff, and a lack of staff

knowledge of care practices and monitoring led researchers to raise questions about whether board and care homes are capable of providing adequate care, particularly medication management (Hawes, et al., 1995).

A survey of board and care officials across 30 states revealed a lack of access to case management and nursing visits (Feder, Scanlon, Edwards, & Hoffman, 1989). In addition, Hawes and colleagues (1995) found limited availability of licensed nurses in 512 board and care homes across 10 states. Furthermore, skilled nurses who provide long-term care are acutely scarce in rural areas (Beaulieu, Rowles, & Myers, 1996).

Psychoactive drugs are a common and beneficial approach to managing symptoms related to dementia, depression and other mental disorders (American Association for Geriatric Psychiatry, 1992). However, the potential risks associated with these drugs are significant, especially for the elderly (Hanlon, 1992). Numerous studies have documented the widespread and hazardous use of psychoactive drugs among NH residents over the past three decades (Zawadski et al., 1978; Ray et al., 1980; Beers, et al., 1988; Garrard et al.,1992). The concerns about overuse, underuse, and inappropriate use of psychoactive drugs in NHs led to federal NH reform legislation (Omnibus Budget Reconciliation Act [OBRA] of 1987) (Elon & Pawlson, 1992). The regulations significantly reduced psychoactive drug use in NHs (Ray et al., 1993; Shorr et al., 1994; Semla et al., 1994; Garrard et al., 1995).

The same controversies and concerns surround psychoactive drug use in

board and care facilities. A limited number of studies have demonstrated high rates of psychoactive drug use, 34%, 55%, 41% respectively, among board and care residents (Dittmar et al., 1983; Avron et al., 1989; Spore et al., 1995). Comparable rates of each of the three major psychoactive drug classes were found in both NHs and board and care facilities, even though board and care are nonmedically supervised settings (Garrard et al., 1995; Spore et al., 1995). Further, psychoactive drug use among NH residents has been associated with increasing rurality, but this has not been studied in rural board and care residents (Hulisz et al., 1991; Ray et al., 1980).

Older AFC recipients in Oregon are expected to be receiving a relatively high proportion of psychoactive drugs because of the nature of this debilitated population and the state's policy to maintain elders in the community (GAO/HEHS-94-167). In addition, preliminary data suggest a high prevalence (34%) psychoactive drug use among a subsample of (n=142) elderly, AFC clients, funded by Medicaid in Oregon (Maylie, 1995).

Residents of board and care facilities receive a range of powerful drugs, including psychoactive drugs (Hawes et al., 1995). Ongoing professional monitoring and appropriate administration of the drugs taken by elderly board and care residents are issues of concern to policymakers and regulators (Morgan et al., 1995). Licensed nurses are required to delegate the knowledge and skills related to psychoactive drug administration to paid nonprofessional caregivers in the community.

Systematic information on the nurse delegation in board and care settings is very limited (Kane et al., 1995) even though Oregon officials report that nurse delegation is central to maintaining elders in the community (GOA/HEHS-94-167). Limited knowledge exists on the adequacy and timeliness of nursing service delivery to the board and care population. However, anecdotal information (cited elsewhere in this dissertaion) about the delivery of nurse visits to board and care facilitie suggests several areas of concern. These include: (a) the process for identifiying the need for and requesting nurse visits for AFC clients is highly variable across the state, (b) the request for a nurse visit can depend upon the AFC provider to initiate the request, (c) the systems to contract, manage, and deploy nurses are variable and generally loosely organized across the state, and (d) the availavbility of community nurses on a statewide basis is unknown.

In summary, the board and care sector is a crucial and substantial component of the LTC continuum, even though only a small body of research exists on board and care (Hawes et al., 1993). National studies of board and care facilities have raised questions about high rates of psychoactive drug use, access to nursing services, effects of rurality on psychoactive drug use and nursing service delivery, and needs for stronger regulation regarding chemical restraint and professional resources. The state of Oregon has a special interest in board and care settings and it is looked to as a national model for this sector of LTC. Adult foster care is the largest board and care setting in the state (Hawes

et al., 1993). Therefore, a description of psychoactive drug use among AFC clients and the delivery of nurse visits to those clients receiving newly prescribed psychoactive drugs was needed.

Board and Care Homes

Housing, Care, and Services for Older People

This section dicusses the board and care home industry on a national basis and AFC in the state of Oregon. Topics include a description of the setting, including financing, organization, regulation, and current trends; and characterisitics of facilities, operators, staff, and residents.

Historically, board and care has evolved from the almshouses for the poor elderly, custodial and then therapeutic care for the mentally ill, publicly paid foster family care programs, boarding houses, proprietary rest homes, and the deinstitutionalization movement (Sherman & Newman, 1988). Now assisted living facilities, apartments and retirement communities are included under the rubric of board and care if they provide the same services as board and care homes (Hawes et al., 1995).

Board and care homes are the most common form of residential setting, excluding NHs, with services for people with disabilities (Hawes et al., 1995). Board and care is a generic or umbrella term for personal care homes, rest homes, domicilliary care homes, homes for the aged, AFC, residential care homes, assisted living, personal care homes, and other titles (Morgan, Eckert, & Lyon, 1995; Hawes et al., 1995). Board and care homes tend to serve those who

are unable to live independently but are not impaired enough to require NH care (Moon, 1989). The major dependent populations served by board and care homes are the mentally ill, mentally retarded, developmentally disabled, physically disabled and dependent elderly (Morgan et al., 1995). The largest group served in board and care homes is a mixed population of physically frail elderly, cognitively imparied elderly, and persons with mental health problems (Hawes, et al., 1995).

It is estimated that approximately one million adults nationwide are housed in more than 65,000 licensed and unlicensed board and care facilities (Spore, Mor, Larrat, Hiris, & Hawes, 1996). The licensed board and care homes are estimated to include 34,000 facilities with more than 613,000 beds (Hawes, et al., 1995). Furthermore, as many as three times this number (3.2 million) are estimated to be at immediate risk or board and care placement, with the majority of these residents being frail elders (McCoy & Conley, 1990). Older people are estimated constitute 40 to 60 percent of the board and care population (Morgan et al., 1995). Approximately 73% of those served under the home and community-based care waivers are aged and physically disabled (GAO/HEHS-94-167).

The legal definitions of board and care vary by local, state, and national statutes and the health and welfare agencies that monitor the homes (Sherman, 1995). Most commonly, board and care refers to nonmedical community-based settings that provide room, meals, 24-hour protective oversight, help with activities of daily living [ADLs], medication supervision, and varying levels of care

and services (Spector, Reschovsky, & Cohen, 1996; Hawes et al., 1995). The care provided can range from minimal assistence with ADLs to skilled nursing care for incontinent, bedfast and confused residents (Sherman, 1995).

Overall, the board and care industry is differentiated between the small (eight or fewer beds) family-type homes with a live-in operator and the larger more "medicalized" homes that are staffed from the outside, run as a business, and regulated by the state (Morgan et al., 1995).

Financing, Organization & Regulation

Residents of board and care pay for the services through Supplemental Security Income (SSI); private pay, including Social Security, VA, and other pensions; or Medicaid (Sherman, 1995). About half of all elderly board and care residents pay for their care with private resources and many states have more than one agency responsible for funding residents and homes (Hawes et al., 1995).

Many support the contention that home and CLTC, once developed, can limit the rise in NH costs without an equally large increase in alternative costs (Meiners, 1996; Greene et al., 1995). However, the demonstrations to evidence this have been fraught with conceptual and methodological problems thus cost-effectiveness questions still exist (Han & Ferraro, 1991; Clark & Rhodes, 1994). The cost to Medicaid of treating the average person in a waiver program is significantly lower than the average cost of a NH day, but this does not necessarily translate into savings for Medicaid if those served in CLTC would not

have actually entered NHs (Weissert et al., 1988). For example, the Medicaid 2176 Home and CBLTC waiver programs in Oregon, Washington, and Wisconsin increased access to CLTC at lower costs and reduced NH bed use (GAO/HEHS-94-167). Assisted living settings in Oregon cost 65% of the price of NH care (Strumpf, 1994).

Board and care programs may be supervised and managed by public agencies, such as state or local (regional, district, county) departments of social services, aging, mental health, MR/DD, VA, hospitals, or other voluntary agencies. A single program may be supervised by different agencies for licensure, placement, and ongoing supervision (Sherman, 1995). It can be difficult to identify the numerous agencies involved in oversight of board and care facilities (Baggett, 1989).

In a national study, using 1980 data, Mor, Sherwood, and Gutkin (1986) reported on the regulatory status of residential care homes. The large facilities in their study were generally regulated by state health departments, while smaller homes were regulated, if at all, by a mix of programs administered by various state agencies (e.g., aging, disabilities, housing, health care, income maintenance, and adult protection).

Board and care has grown rapidly and now delivers a wide range of services in a policy environment of confusion and conflict (Baggett, 1989). Policymakers have had difficulty balancing the noninstitutional and low regulation features with needed protections against abuse and exploitation. In addition, board and care

falls under conflicting and overlapping local, state, and federal jurisdictions (Morgan et al., 1995). Further, the new forms of housing, such as assisted livng are developing so quickly that few regulations are in place (Hyer, 1995).

The Federal government's role in regulating the quality of home and CLTC services is limited to oversight specified in the Keys Amendments (Hawes et al., 1995). The Keys Amendment to the Social Security Act, passed by Congress in 1976, requires states to establish, maintain, and enforce standards in institutions or other group-living arrangements in which a significant number of SSI recipients reside or are likely to reside (Morgan et al., 1995). These standards include admission policies, life safety, sanitation, and civil rights protection (Stone & Newcomer, 1985).

The primary responsibility is on state and local governments to regulate, monitor, and enforce board and care standards. However, this legislation has been largely ineffective (Baggett, 1989). States are reluctant to enforce the state standards by reducing the SSI payment to the resident (Morgan et al., 1995). The Department of Health and Human Services (DHHS) has assisted the states with standards development, established a board and care coordinating unit, and implemented enforcement through withholding Older American Act funds as well as required the Medicaid waivers be contingent upon compliance with the Keys Amendment (Stone & Newcomer, 1985).

There is enormous interstate variation in the degree to which quality of care is monitored or residents rights are protected in board and care (Moon, 1989).

The range of services provided, types of populations served, number of residents per facility, and the nature of the setting makes regulation difficult to design and implement (Bagggett,

1989). The persistence of reports of seriously substandard care led the AARP to sponser a 50-state survey of state board and care regulations which found substantial variation across the states in the regulation of board and care homes (Hawes et al., 1993). The regulatory environments ranged from extensive sets of regulation, inspections, and enforcement of standards in California to a relatively limited regulatory system in Texas (Hawes et al., 1993).

Several major problems face board and care settings serving elders while they are expanding to meet current and future LTC needs. These include the: (a) lack of uniform nomenclature, classification, licensing and enforcement of policy, (b) prevalance of unlicensed board and care homes, (c) lack of systematic information on board and care, (d) concerns about the adequacy and quality of care, (e) lack of widely available community-based services across the country, especially for SSI recipients and mentally ill persons, (e) concerns about the adequacy and quality of care, and (f) doubts that existing regulatory systems can assure safe, appropriate, and adequate care (Hawes, et al., 1993)

Previous research has suggested that state regulation of board and care homes was inadequate, ineffective, and had little or no effect on quality other than to improve the fire safety (Dittmar, et al., 1983; Hawes et al., 1993). However, the Hawes et al (1995) study of 512 board and care facilities across 10

states found substantial and widespread positive effects of regulation on quality in board and care homes. Regulation was associated with better quality in many areas. Findings showed that (1) licensure alone was effective in ensuring that homes provided care above a threshold of minimum performance [preventing the worst performance], (2) states with extensive regulation had fewer unlicensed homes, (3) extensive regulation was associated with better safety, quality of life, and quality of care, [lower use of psychoactive drugs, and contraindicated drugs for elders, operator training, more supportive devices and social aids, increased staff knowledge of the ombudsman program] and (4) licensed homes in extensively regulated states were not more "institutional." The most important implications of the effect of regulation on board and care quality study by Hawes et al (1995) were the need to assure a range of services, adequate staffing, and adequate staff training and knowledge needed to meet the need's of today's residents.

The largest issues surrounding the board and care segment of LTC are the serious concerns about quality and underdeveloped regulation (Hawes, et al., 1995; Morgan et al., 1995). Cases of abuse and neglect and substandard living conditions among residents have been reported extensively, however, efforts to improve public oversight have generally not been effective (McCoy & Conley, 1990; Stone & Newcomer, 1985).

Strengths. Sherman and Newman (1988) found that two-thirds of the homes they studied were family-like, with closer relationships between the provider and

resident than among residents themselves. However, the question is raised as to whether or not the new and larger board and care facilities are maintaining the family-like environment. As board and care facilities and residents increasingly resemble the NH, the potential increases threats to resident needs for privacy, self-determination, and psychosocial support (Baggett, 1989).

Kane et al. (1991) compared 400 NH residents with 400 AFC residents, controlled for disability, and found that AFC residents engaged in more informal socializing, went outside for community activities more, and reported higher satisfaction. However, NH residents participated in more organized activities.

Board and care can delay or avoid the more costly option of NH care (Sherman, 1995). Studies show that CLTC can reduce NH use when it serves people who are likely to enter a NH, but the reduction is usually small (Weissert et al., 1988).

Weaknesses. It is more difficult to monitor settings that are often private, distant, and dispersed in the community (Harrington & Estes, 1994). It has also been suggested that the high degree of attachment between providers and residents might encourage dependence (Sherman, 1995). However, excess dependency may also relate to a lack of provider knowledge of how to maintain and improve function in elders.

A study of 602 board and care homes across seven states showed "a bleakness that reflected insufficient resources, regulation and training for providers, and fragmentation of responsibility, resulting in inadequate caring for

elderly persons who happen to be poor" (Dittmar, et al., 1983 in Moon, et al., 1989, p.3). Because board and care homes can't offer the same level of organized activities that institutions can, community resources need to be available and used (Hawes et al., 1995).

Current trends. The board and care industry has experienced significant growth and change recently in terms of the increased frailty and disability of residents and the higher level of medical and nursing care needs (Hawes et al. 1995). An array of housing and care options for older adults now exist (Baggett, 1989). More recent developments are attributed to the dramatic changes in the acute health care delivery system that have occurred over the past decade. The movement of care away from the hospital and capitation has spurred the growth of nonhospital low-cost providers and emphasized maintenance of function in home and community-based settings (Hyer, 1995).

The largest and most comprehensive study of board and care homes (n=493) and residents (N=2,949) over ten states to date by Hawes and colleagues (1995). Findings revealed that the homes now provide more extensive services and protective oversight and they are larger and often unlicensed.

Facility Characteristics

The board and care regulation survey of the 50 states by Hawes and colleagues (1993) found that board and care homes were called by more than 25 different names, served diverse populations, and ranged in size from one to two

beds in a private house to several hundred beds in a formal and structured setting.

The 10-state board and care study of the effect of regulation on quality by Hawes and colleagues (1995) dispels the widespread belief that homes are small, "homelike" settings. The facilities in their study (n=490) ranged in size from places with two beds to those with more than 1,400 and included family homes, multilevel facilities, and campuses that had board and care as well as congregate apartments and a skilled NH. While many small homes exist, most residents live in medium-sized homes (11-50 beds) or in large homes (51+ beds).

Hawes and colleagues (1995) also documented board and care facility characteristics. Less than 20% of facilities were nonprofit, with licensed homes being less likely to be nonprofit than unlicensed homes.The average occupancy rate was about 80%. The study facilities varied greatly on admission criteria. Admission was refused to mobility-imparied (almost 50%), incontinent (23%), and SSI recipients (19%). However, almost all facilities reporting accepting residents with behavior problems. As residents "aged in place" less than 10% discharged residents who became incontinent, developed behavior problems, or started receiving SSI. Large licensed homes were significantly less likely to admit mobility-impaired residents and were more likely to discharge them than were their unlicensed counterparts.

Services provided, including nursing care. Geriatric foster care operators of

small homes in Hawaii provide range of motion and other exercises, tube feeding, dressing changes, insulin injections, and catheter irrigations among other services (Braun & Rose, 1987; 1989). Some board and care facilities provide extensive services, up to 16 hours per day of licensed nursing, enabling them to serve a very frail population who fit the profile of intermediate-care NH residents (Spector, Reschovsky, & Cohen, 1996). In contrast, other facilities offer few professional services (Dittmar, 1989; Feder et al., 1989).

The board and care homes studied by Hawes et al (1995) provided more care and services than congregate apartments with supportive services and boarding houses but fewer skilled and rehabilitative services, less routine monitoring, assessment, and care planning, and less nursing and restorative care than NHs. In addition, facilities varied in their willingness and ability to arrange for daily or temporary nursing care. Only 21% of the homes provided services with RNs or LPNs who worked full or part time in the home. If a resident needed intermittent skilled nursing care, only 42% of licensed and 21% of unlicensed homes reported that they provided services with facility staff or arranged for a home health agency to provide care. The majority (82%) of the homes were unable or unwilling to provide nursing services to a resident for an illness that lasted longer than 14 days. However, 58% reported that they send the resident to a hospital/emergency room when the resident became ill and needed temporary nursing care. However, 44% of licensed homes and 56% unlicensed would discharge the resident to a hospital or NH.

State officials in Colorado determined that case managers were responsible for excessive use of emergency care for board and care residents and initiated monthly nurse assessments to promote a more appropriate level of care (Feder et al., 1989).

Operator and Staff Characteristics

In the early 1980s, more than three-fourths of board and care facilities were owned by an individual or couple and about one-third were multiple home owners (Dittmar et al., 1983). Similarly, Hawes et al (1995) found that about one-third of the operators reported owning or operating another board and care facility in addition to the one included in the study.

As the board and care population becomes increasingly impaired, the experience, training, and knowledge of the staff providing care becomes more critical. The large 10-state board and care study by Hawes and colleagues (1995) found low staffing ratios, minimal training required for staff, and a lack of appropriate staff knowledge of care practices and monitoring. Staff were tested on their knowledge of what signs are part of "normal aging" and how to handle hypothetical cases (e.g., new onset of incontinence, chest pain). Those who administered medications were tested on correct procedures and symptoms of adverse reactions. Only 14% of the operators and staff scored 76% or higher (possible score of 100%). Moreover, 39% of the staff provided correct answers for half the questions or fewer. For example many believed that confusion, sad mood, and incontinence were normal for the aged.

Hawes et al (1995) reported that nearly 20% of the operators in licensed homes and 33% in unlicensed homes did not require training for staff. Of those who required training, only 23% of licensed homes and 15% of unlicensed homes required that training be completed before caregiving began. Over half of those in the high regulation states required two or more days of training compared to about one-third in states with limited regulation. In almost 25% of the homes, the operator was the only paid staff person. Unlicensed medium and large homes had, on average, more residents per direct care staff than did comparably sized licensed homes, with the average ratio in large unlicensed homes being almost 12 times that of large licensed homes. The researchers questioned the capability of the board and care homes studied to provide adequate care, particularly in managing medications and monitoring the effects.

Resident Characteristics

Board and care residents now more closely resemble the NH population of previous decades (Baggett, 1989). In 1990 McCoy and Conley reported that it was impossible to make meaningful distinctions between the care needs of NH and CLTC populations. The sample of 3,257 board and care residents of the Hawes et al (1995) study were predominantly elderly (78%), female (66%), white (91%), and widowed, divorced, or never married (85%). Further, they were older and more cognitively and physically impaired than the residents described in studies conducted in the 1980s but still significantly less impaired than NH residents. Sixty four percent were age 75 or older and 34% were 85 or older

(Hawes et al., 1995). In contrast, the Denver Research Institute (DRI) 5-state survey of 602 board and care homes and 2,933 residents in the eary 1980s found that only 38 percent were 75 or older (Dittmar, Smith, Bell, Jones, & Manzanares,1983). In addition, Hawes et al (1995) reported that 40% of the residents were cognitively imparied [moderate to severe], 23% had urinary incontinence, 15% used a wheelchair, 7% were bedfast or chairfast, 9% received help with locomotion, and 6% received assistance with eating.

The criterion for NH placement is often requiring assistance in three or more ADLs, thus the findings in the Hawes et al (1995) sample of 12% dependent in three or more ADLs and 40% with cognitive impairment indicates some overlap with the NH population. Hawes et al (1995) used data collected on the NH population in 1993 across 10 states (N=2,100) and found that, on average, board and care residents are much less impaired than NH residents, with 70% NH residents receiving assistance with three or more ADLs. By comparison, Dittmar et al (1983) found 30% of the residents were cognitively impaired, 7% had urinary incontinence, 3% used a wheelchair, and only 2% were bedfast or chairfast. Mor and colleagues (1986) found that 24% were cognitively impaired.

Increasingly, people with substantial impairments are choosing alternatives to NH care and there are CLTC clients who are as severely disabled as those in NHs (GAO/HEHS-94-167; Ladd & Hannum, 1992). Hawes et al (1995) concluded that board and care is aligned more closely with NHs than with other types of residential settings such as boarding homes and congregate

apartments because of the services provided and the characterisitcs of the residents served.

Medications

All of the facilities in the 10-state study by Hawes and colleagues (1995) reported providing medication storage or supervision. In addition, 75% of the residents reported receiving assistance with medications, and many were taking psychoactive drugs. While 73% of staff who administered medications were not licensed nurses, only one state (Oregon) had a program for training and certifying nonnurses to administer medications. Eighteen percent were LPNs and 10% were RNs. Of the staff who gave medications, 26% had received no training on medication supervision or management . Of the staff that gave injections, 28% were not licensed nurses.

Hawes et al (1995) found that residents of licensed homes in states with more extensive regulation had lower use of psychoactive drugs. Although psychoactive drugs have beneficial effects for many, their inappropriate use can be devastating. Moreover, because of the lack of licensed nurses to monitor residents's reactions to psychoactive drugs in board and care home, widespread use among residents has been a particular concern (Avron et al., 1989).

In summary, board and care facilities and residents exist on a continuum from service minimal settings to service intensive settings (Baggett, 1989). The board and care home sector occupies a middle range position between: (a) housing and health care systems, (b) home care and NH care, (c) lay providers

and professionals, (d) family care and professional care, (e) home-like environment and an institutional environment, (f) independent living and skilled nursing care, (g) family homes and big business, (h) public and private systems, and (i) no regulation and heavy regulation (Morgan, et al., 1995; Sherman, 1996). This diversity and flexibility offers both strengths and weakness for the sector. Many consumers value the home-like environment, individualized care and autonomy of board and care over safety, equipment, training, and physical plant. Because many of tomorrow's people with LTC needs will be older, sicker, and more disabled and will require heavier care, there are urgent needs to strengthen and standardize regulation, improve management and service delivery, increase and enhance personnel, and improve the quality of care.

Adult Foster Care in Oregon

Oregon is an ideal setting in which to study nurse delegation to foster care providers because of the state's long history in CLTC and being at the forefront nationally for keeping frail elders in the community. The state has a long-established foster care program and has the resources in place to meet the nursing care needs of geriatric clients (Ladd & Hannum, 1992).

As part of the Omnibus Reconciliation Act (OBRA) of 1981, Oregon was the first state granted a waiver to use federal Medicaid-matching funds for CLTC alternatives to NH care (Clark & Rhodes, 1994). Oregon began receiving such funds in 1983, with the requirement that these services be targeted to Medicaid clients who are NH eligible (either intermediate or skilled care) and who would be

institutionalized without the services (McKenzie, 1990). Oregon, Washington, and Wisconsin lead the nation in the development of community residential care alternatives (GAO/HEHS-94-167).

The Department of Human Resources, Division of Senior and Disabled Services, licenses two major categories of board and care facilities, each of which has three major subcategories of homes: Adult Foster Homes (AFHs), which provide personal care services for one to five elderly residents, and Residential Care Facilities (RCFs), which serve six or more elderly and physically disabled residents, with Assisted Living apartments being the the third subgroup of RCFs (Hawes, et al., 1993).

The subcategories of AFHs are defined as follows: (a) Level I facilities are newly opened and provide room, board, some medical assistance, and some personal care; (b) Level II homes have been in operation for several years, accept bedfast residents, and perform some skilled nursing tasks, (c) Level III homes serve more dependent residents who require a higher level of skilled care and accept post-hospital persons who require temporary skilled nursing services, and accept only one bedfast person (Hawes et al., 1993).

Oregon's AFC program is large, growing, and widely accepted by the public and middle class (Kane, Kane, Hixon-Illston, Nyman, & Finch, 1991). There are currently 3,757 AFC homes in Oregon, having grown from 1000 in 1984. Collectively these facilities have 9,300 licensed beds, two thirds of which are occupied by private pay clients (D. Olson, personal communication, April 11,

1997). Further, in 1994, of the AFHs in the state 1,496 or 36 % were relative AFHs in which Medicaid paid relatives to care for their family members (O'Neill & McKenzie, 1994). The relative AFHs currently number 1,625 and typically care for one client (D. Olson, personal communication, April 11, 1997). The usual costs for AFC are between $1,000 and $2,000 a month but can reach $3,000 depending on the level of care needed (Rubenstein, 1997).

AFC services. In Oregon, AFC homes are licensed to provide 24-hour personal care, housekeeping, social, and supportive services to five or fewer disabled elders (Kane & Kane, 1987). Care is provided in a private home in a residentially zoned area by a resident manager who may or may not be the owner of the AFC home but who must actually live in the home (Stark, Kane, Kane, & Finch, 1995). Most AFC homes in the state are single, private family residences which provide a home-like environment, however, multiple home ownership has steadily increased in recent years (Lane & Mayes, 1994).

Varying levels of health care services are provided, and skilled or licensed nursing care is delivered by community nurses as needed (Ladd & Hannum, 1992). The delegation and supervision of nursing functions to nonprofessional AFC providers is a central feature of AFC in Oregon (GAO/HEHS-94-167). The resident manager or substitute caregiver does housekeeping, personal care, serves meals family style, and may also perform delegated nursing functions (Stark et al., 1995).

Adult foster care providers. Similar to CLTC providers nationally, the majority

of AFC providers in Oregon are lay persons, without health care credentials and background (Ladd & Hannum, 1992). There are no educational minimums or certification requirements to meet, but about one-third of both AFC home owners and non-owner resident managers are certified nurses aides or home health aides (Kane et al., 1990). In 1989, Kane and colleagues reported that the proportion of RN and LPN providers and resident managers in AFC was only 12%.

Potential providers must complete 18 hours of training before receiving their license (Kane et al., 1990; O'Neill & McKenzie, 1994).The Oregon Adult Foster Home Licensing Reform Act (effective 4-1-96) increases training requirements for providers to 30 hours and adds testing to the training process (ORS-411.50.400-411.50.490). The minimum requirements for becoming an AFC provider were intentionally lenient, especially in terms of training, initially in order to encourage the supply of providers (Kane, 1989). Moreover, instability and high turnover among AFC provider-owners, resident managers, and substitute caregivers has been a long-standing problem (Kane, et al., 1990; Mayes & Lane, 1994).

Adult foster care clients. The AFC population in Oregon is debilitated and dependent. Evidence indicates a trend in both AFHs and RCFs in Oregon to provide expanded medical services to aged residents (Baggett, 1989). In 1992, the majority (60%) of AFC clients in Oregon were in the highest dependency and most impaired level of care (GAO/HEHS-94-167). The level of frailty and

disability in AFC in the state is expected to be higher than other states because of the state's policy committment to keep people in the community. In addition, the licensing agency for AFC in Oregon grants exceptions which allow providers to exceed the level of care, and permits clients to age in place until death, given that providers are able to meet client needs (ORS 411-50-443).

The distinctions between the health and functional status of CLTC clients and NH residents have become blurred, and there are CLTC clients who are as severely disabled as those in NHs in Oregon (Ladd & Hannum, 1992; GAO/HEHS-94-167). The majority (69.2%) of AFC clients in Oregon are dependent in one or more activities of daily living (ADL) (mobility, eating, cognition, or toileting) (SDSD, September, 1994). Further, McKenzie (1990) determined that almost 40% of the Oregon Medicaid caseload (N=11,173) receiving NH or CLTC in 1988 were moderately or severely cognitively impaired. Of Oregon AFC clients (N=1,821), only 17% are without cognitive impairment, 55% are minimally cognitively impaired, 23% are moderately cognitively impaired, and 5% are severely cognitively impaired. Moreover, these figures may underestimate the prevalance and severity of cognitive impairment because the data were collected seven years ago, the prevalence of dementia increases with age and most dementias are progressive (DeYoung et al., 1994; Mace, 1990). It is estimated that 50% of those over the age of 85 will be afflicted with dementia (Sky & Grossberg, 1994).

AFH regulation. Hawes and colleagues (1993) described the AFH

regulations in Oregon to include the following. Homes are required to have one staff person on duty at all times unless written physician approval for a resident to be left unattended for a specified amount of time is obtained. An extensive investigation is done at initial licensure and annual inspections are done, usually by a welfare worker and a fire marshall, and a building inspector, nurse, or social worker may accompany the inspectors. Local case managers and ombudsmen do routine spot checks during their regular visits. Corrective action plans are the most widely used enforcement option, in addition to bans on referrals and admissions, warning letters, fines, and license revocation. Fines can range from $50 to $250 a day per resident per incident. In 1990, three homes were fined and six licenses were revoked. State licensure staff reported that some homes fail to meet licensure standards because reimbursement rates are insufficient and facilities "grandfathered" into the program are marginal, not well-maintained, and operate in an outdated business manner.

The inadequate monitoring of private-pay clients in AFHs and RCFs has been a long-standing problem. The Keys Amendment made no provision for oversight of facilities where no SSI recipients resided, thus only the Medicaid funded clients receive periodic monitoring by case managers and have nurse visits paid for by the state (Baggett, 1989). Thus, the same case supervision is not available to two-thirds of the AFC population in the state.

Oregon is also a good state to describe the occurrence and timing of nurse delegation visits in relation to psychoactive drug use because quality of care

issues among AFC homes in Oregon have a risen despite there being an infrastructure in place for providing RN support to these facilities (Heinz, 1995). In 1994 county and state government audits of AFC homes and journalistic investigations revealed problems about the quality of AFHs, including, medication mismanagement and "chemical restraint" in AFC (Blackmer, 1994; Mayes & Lane, 1994). The audit of the largest county in the state found violations in more than two-thirds of the 40 randomly selected homes (Rubenstein, 1997). Violations included leaving residents without supervision, keeping inadequate records, including of medication administration, and a home with one resident intimidating another. Furthermore, prelimiary data suggest need to address drug utilization among elderly AFC clients in Oregon (Maylie, 1994a; Maylie, 1994b; Maylie, 1995). See Appendix E for a summary of pilot studies.

Following the 1994 AFH audits and newspaper reports of problems, legislative reforms were implemented. These included improved screening procedures (criminal record checks) for home operators and personnel, increased operator training requirements prior to licensing, increased oversight of homes, new guidelines to impose sanctions for substandard care (Rubenstein, 1997).

Nurse Delegation

Delegation of function from professional to nonprofessional is the hallmark of community and institutional LTC (Mezey, 1996). The nursing profession has

monitored the regulation, education, and use of unlicensed assistive personnel (UAP) to the RN since the early 1950s (American Nurses Association, 1992). A 1992 survey of nurse practice acts in 50 states revealed that 28 states had specific language about delegation of nursing functions to unlicensed personnel, while acts of the remaining 22 states generally and vaguely permitted the process of delegation (Washton & Hansen, 1994). The increased use of UAP and changes in care delivery sites have caused most states to more clearly define nurse delegation and supervision (del Bueno, 1993; Hansten & Washburn, 1994). However, Kane and colleagues (1995) found significant variability and ambiguity in policies and practices regarding nurse delegation among the states.

The National Council of State Boards of Nursing defines delegation as "transferring or assigning to a competent individual authority to perform a selected nursing task in a selected nursing situation" (Hansten & Washburn, 1994). The American Nurses Association [ANA] (1993) directs the nurse to consider client condition, complexity of the task, competency of the unlicensed caregiver, extent of supervision required, and caregiver workload before making the professional judgment to delegate and being accountable for that decision. As part of delegation, the nurse is also legally required to provide ongoing supervision by directly observing and evaluating the unlicensed delegate's continued ability to perform the task safely (Hansten & Washburn, 1994). The frequency of supervisory visits is also determined by nursing judgment (ANA,

1992).

Nurse delegation in Oregon. The Oregon Nurse Practice Act empowers the RN to assess, educate, supervise and evaluate the care given by those to whom she/he delegates (OARS 851-47-010). Delegated nursing functions include skilled nursing care tasks such as insulin injection, blood sugar monitoring, and new ostomy care. The 1996 Administrative Rules for Licensure of AFHs state that the AFC provider shall not request a psychoactive medication to treat a resident's behavioral symptoms without a consultation from a health professional (doctor, nurse, or mental health practitioner) that includes: (a) discussion and use of behavioral methods, (b) demonstration of provider and all caregivers of psychoactive drug knowledge.

The Oregon Nurse Practice Act permits RNs to delegate the administration of non-injectable medications, including psychoactive drugs, to nonprofessional caregivers in CLTC settings (ORS 851-47-030). Nurse delegation services have allowed the state to reduce NH use and expand community-based alternatives (GAO/HEHS-94-167).

The methods of accessing professional nursing services for AFC client needs in Oregon varies. The Senior and Disabled Services Division (SDSD) administers the AFC program and uses its local case managers (who may be employed by the state, county, or local Area Agency on Aging [AAA]) to assess client service needs, determine financial eligibility, develop and monitor care plans, and authorize services (GAO/HEHS-94-167). The case management

programs are used to hire and deploy independent or home health agency RNs to serve Medicaid-funded clients (Kutza, 1994). Some AFC providers in Oregon hire independent consulting RNs or agency RNs for ongoing contact with physicians, delegation, and care need (Ladd & Hannum, 1992; Kane et al., 1995). The state of Oregon pays for RN visits to Medicaid-funded clients while AFC providers or families pay for RN visits to private pay clients.

The RNs of interest to this study are available through the Medicaid claims data, identified as personal care RN, also called contract RN. The RNs may be hired by the state as independent RNs, home health care agency RNs, mental health agencies, or private duty RNs.

If an AFC client is not seen as expected in the context of a need for nurse delegation by a RN who is reimbursed by SDSD, it is possible that a visit may have been made by a RN from either individual RNs, consultant firms, the Visiting Nurses Association (VNA) or a public service agency. About 25% of the VNA's caseload is to Medicaid-funded AFC clients. It is not possible to account for RN visits to AFC clients outside of the Medicaid reimbursement system. However, the vast majority of RN visits to AFC clients are reimbursed by the Medicaid reimbursement system.

The state specifically defines the role of the nurse in CLTC to be consultative, rather than the direct provision of care. The nurse is to assess, plan care, teach, and delegate (SDSD, 1994). The community nurse is hired by the state primarily to train and monitor unlicensed CLTC caregivers (GAO/HEHS-94-

167). State policies in effect in 1994 required AFC providers to access nurse delegation services when a client is newly prescribed psychoactive drugs.

Oregon is unique in combining Medicaid and Administration on Aging services under one state agency (Clark & Rhoades, 1994). While SDSD provides payment for and oversees LTC services, operational responsibility occurs at the local level through Area Agencies on Aging [AAAs] (Kutza, 1994). In the state, LTC service delivery is provided through a network of local government, private agencies, and regional state offices (Kutza, 1994). Currently, SDSD has about 80 nurses under contract, with about 60 of them actively working, to serve CLTC Medicaid recipients on a statewide basis (C. Spencer, personal communication, August 13, 1996). Additionally, in the context of a need for skilled, direct care nursing services, RNs may also be accessed through home health agencies and private duty registries (SDSD, 1994).

Psychoactive Drug Therapy in Elders

Psychoactive drugs are frequently and appropriately prescribed to elders who suffer from mental disorders such as dementia and depression (AAGP, AGS, & APA, 1992). Such drugs can reduce the distress and disability associated with illnesses for elders and their caregivers (Ancill, Embury, MacEwan, & Kennedy; Lantz, Giambanco, & Buchalter, 1996). However, when used on a regular basis to sedate or control mood, mental status, or behavior, antipsychotic and anxiolytic drugs are often referred to as "chemical restraints" (Sloan & Papougenis, 1992).

Psychoactive drug classes fall under the rubric of drug classes that affect the central nervous system (American Hospital Formulatory Service, 1996). In addition to psychoactive drug classes, many other drug classes are known to have psychiatric effects. These may include analgesics/antiinflammatories, anticonvulsants, antiparkinson agents, cardiovascular agents, histamine blockers, and steriods (Salzman, 1992). The three major psychoactive drug classes of interest in this study include antipsychotics, antidepressants, and anxiolytics (McKenzie, Semradek, McFarland, & Mullooly, 1994). See Appendix A for the list of psychoactive drugs of interest in this study.

Drug therapy among older adults. People aged 65 years or older constitute about 13% of the nation's population and use 30% of prescription drugs (Brooks, 1993; Willcox, Himmelstein, & Woolhandler, 1994). Community-based elders are substantial consumers of drugs, taking an average of 2.7 to 3.9 prescription and nonprescription drugs (Hanlon, Landerman, Wall, Horner, Fillenbaum, Dawson, Schmader, Cohen, & Blazer, 1996).

The use and effects of drugs by older adults are complicated by age-related physical changes, multiple chronic disease states, and multiple numbers of drugs in the regimen (Pollow, Palo-Stoller, Earl-Forster, & Sutin Duniho, 1994). Increased sensitivity to drug effects among elders is due to changes in pharmacokinetics (how the body absorbs, transforms, and excretes drugs) and pharmacodynamics (the effect of the drug on the body) (Ray, Griffin, & Shorr, 1990). Furthermore, the older adult's response to drugs is highly variable and

sometimes unpredictable due to individual sensitivity to the therapeutic and toxic effects of drugs with many drugs having narrow therapeutic ranges (Stoehr, 1995). All of these factors increase the risk and incidence of adverse drug reactions (ADRs) for elders (Lamy, 1990).

Adverse drug reactions (ADRs) among elders. In two geriatric populations, 10% and 31% of hospital admissions were associated with ADRs (Lamy, 1990). Studies of elderly outpatients have demonstrated that the proportion of ADRs ranges from 36% (N=749) to 51% (N=75) with elders being 2-3 times more likely to experience an ADR than persons aged 20 to 30 years (Nolan & O'Malley, 1988).

It has been suggested that the inconsistent monitoring of drugs used by older people is a major contributor to the incidence of ADRs, many of which may have been prevented (Potempa & Folta, 1992). Adverse drug reactions are costly in terms of morbidity and economics. Nurses in every setting of care are responsible for the assessment and follow-up of problems that older adults experience from drugs, and for the education of clients and their caregivers about drugs and how to prevent or reduce ADRs (Ali, 1992). Drug use and drug effects in the aging population is an important and growing clinical concern, especially among the oldest old (those over 85) (Potempa & Folta, 1992).

Psychoactive drug therapy among older adults. Psychoactive drugs are frequently and appropriately prescribed to older adults who suffer from mental disorders such as dementia and depression (Monane, Gurwitz, & Avron, 1993).

The Interpretive Guidelines Related to the Use of Psychoactive Medications (Health Care Financing Administration, 1992) define psychoactive drugs as drugs prescribed to control mood, mental status, or behavior. Used properly, such drugs can reduce the distress and disability associated with psychiatric symptoms for elders and their caregivers (Ancill, et al., 1988; Lantz, et al., 1996).

Among the drug classes prescribed for older adults, psychoactive drugs are the fifth most prescribed drug class (Salzman, 1992). Adverse drug reactions from psychoactive drugs among older adults is estimated to be two to four times higher than in younger adults (Montamat, Cusack,& Vestal, 1989). Any of the drugs used for mental health problems can also cause or increase confusion and agitation in the older person (Cooper, 1989; Soane,et al., 1992).

The medical management of older adults receiving psychoactive drugs require: (a) a clear indication for the drug, (b) the most optimal drug in the class related to the side effect profile in the aged, (c) avoidance of duplicate therapy (two or more different psychoactive drugs in the same class, (d) geriatric dosing, (e) detection of hazardous drug combinations, (f) careful and regular monitoring for main and side effects, and (g) avoidance of long duration of use with no attempt to taper and discontinue the dose (Salzman, 1992; Svarstad & Mount, 1991). See Appendix B for psychoactive drug class information related to aged populations [65 years and older, NH residents, and CLTC clients].

Urban & Rural Differences Related to Psychoactive Drugs and Nursing Service Delivery

Health care delivery for vulnerable populations (including the elderly) living in rural areas is a concern of sufficient magnitude to be reflected in established federal priorities (Bushy, 1994). In the U.S. 24.6% of persons older than 65 live in rural areas (Abraham, Buckwalter, Neese, & Fox, 1994). In most rural communities across the country elders do not have access to as many formal services and health professionals as do their counterparts in more urban and suburban settings (Coward, McLaughlin, Duncan, & Bull, 1994). Access to mental health profesionals and services is particularly difficult (Smith, Mitchell, Buckwalter, & Garand, 1994). Even when available, lack of coordination especially among mental health, medical and aging human service providers impedes the effective delivery of health services to rural elders in one mid-western state (Buckwalter, Smith, Zevenbergen, & Russell, 1991).

Urban and rural differences regarding access to community-based health services have been of increasing concern to the nation (Coward, Bull, Kukulka, & Galliher, 1994; Dansky, 1995). Research has continued to show that rural elders are less likely than their urban counterparts to use nonistitutional service providers (Rabiner, 1995). Significantly, rural elders in need of health and social services are said to face a "no care zone" (Krout, 1994). In addition, the lack of research on specific rural community-based services for older persons reflects a "no-data zone" (Krout, 1994). Simple descriptive data on the conduct, use, and

impact of community-based services for rural elders is needed (Krout, 1994). This study will permit urban and rural comparisons for estimates of psychoactive drug use and related provision of community nursing services among CLTC elders in one state.

Defining what is rural. A single, clear, and standard definition of "rural" has not been accepted by academicians, planners, and policymakers to date (Coward, McLaughlin, Duncan, & Bull, 1994). However, the term "rural" is generally characterized by small population, sparse settlement, and remoteness from a large urban area (Office of Technology Assessment [OTA], 1990). Definitions of rural have been developed primarily by federal and government agencies and have been dichotomous in nature, urban/rural from the Census Bureau and metropolitan/nonmetropolitan from the Office of Budget and Management [OMB] (OTA, July, 1989).

The Census Bureau designations are based on census tracts and towns (OTA, 1990). The Census definitions are based on population size and density, but not on county boundaries (OTA, July, 1989). These definitions are more difficult to use because census tract boundaries vary over time and county level data is more available (OTA, July, 1989; OTA, 1990). Specifically, the Census Bureau defines the rural population as "the population not characterized as urban," and the urban population as those people living (a) in an urbanized area - a central city (or cities) and its contiguous closely settled territory, with a combined population of at least 50,000; and (b) in places [towns, villages, etc.]

outside of urbanized areas with populations of at least 2,500 (Office of Rural Health/OHSU, 1995; OTA, 1990). The Census method is problematic because it excludes small towns which are larger than 2,500, many of whom might be considered rural (OTA, 1990).

Alternatively, the OMB uses counties with relatively stable boundaries to form metropolitan statistical areas [MSAs] to designate urban and rural areas (OTA, July, 1989). An MSA is formed by one or more counties, based population size and density, and degree of economic integration [determined by commuting patterns] (OTA, July, 1989). Specifically, the OMB defines the rural population as "nonmetropolitan" and comprised of people who live outside of an MSA, which includes (a) a city of 50,000 or more residents; or (b) an urbanized area with at least 50,000 eople that is itself part of a county or counties with at least 100,000 residents. Rural areas are the remaining areas that are not captured by the MSA (Office of Rural Health/OHUS, 1995; OTA, 1990).

The problem with the MSA method is that it does not distinguish between urban and rural areas within the same county (OTA, 1990). Commonly, MSAs include large areas of sparsely populated land in outlying areas of the county (OTA, 1990). The Health Care Financing Administration (HCFA) uses the OMB's MSA/nonMSA designations to categorize hospitals as urban or rural for Medicare reimbursement (OTA, 1989).

Both definitions classify areas into only two categories and neither describes the urban/rural continuum or the range of variation that exists within each

category (OTA, 1990). Because the country is too diverse to simply separate it into two parts, the concept of a "contimuum of residence" is being advocated by health services researchers (Coward, et al., 1994). They propose that three factors be used to define the residential continuum (a) the total number of people living in a particular geographic area, (b) the distance of a place from a larger metropolitan service area, and (c) the population density of an area (a combination of population size and space (Coward et al., 1994, p. 3). These criteria place those areas that have few people and are remote from larger places at the farthest end of the continuum. In addition, use of "frontier" areas has been found to be a useful concept. Frontier designations are communities with population densities of six people or fewer per square mile and are often located in the mountain and intermountain regions of the West (Beaulieu, Rowles, & Meyers, 1996).

What is rural in Oregon? The Office of Rural Health, Oregon Health Sciences University (OHSU) reports the following information on the rurality of the state. Oregon is very rural as three-quarters of the incorportated towns and cities have less than 5,000 population. Of Oregon's 36 counties, 9 are designated as metro counties and 27 as non-metro counties. The MSA/nonMSA method underestimates the rural population in Oregon because counties categorized as metro may have substantial rural populations. For example, Polk county is a MSA. However, according to Census Bureau criteria, its population is 60.6% rural, Similarly, Census Bureau criteria characterizes Baker county

[nonMSA] as 58.9% urban and Clackamas county [MSA} as only 42.0% urban. These problems are due to the large unincorporated populations in areas contiguous to the State's most populous cities (The Office of Rural Health/OHSU, 1995).

The Office of Rural Health/OHSU (1995) has developed its own approach to defining Oregon's rural populations. It uses four categories: (1) not rural, (2) less remote rural, (3) remote rural, and (4) frontier rural. Not rural is also referred to as urban and is defined as any community 30,000 or more, or a smaller community within 10 miles from a community of 30,000 or more. Rural is defined as a geographic area 10 or more miles from a population center of 30,000 or more. In addition to urban, rural areas are categorized into three subcategories of increasing rurality reflecting relative distances between principal health care delivery sites. Less remote rural areas are 30 minutes or less average travel time from a population center of 10,000 or more and are not within a frontier area. Remote rural areas are more than 30 minutes average travel time from a population center of 10,000 or more and are not within a frontier area, and frontier rural areas are counties that have a population density of six people per square mile or less (OAR 572-92-010). See Appendix C for a map that depicts cities in Oregon designated as urban and less remote rural and Appendix D for a map of the designated frontier counties.

This categorization describes Oregon's population as 47.5% rural and 52.5% urban (Office of Rural Health/OHSU, 1995). However, because statistics are

usually available on a county level, the Office of Rural Health/OHSU (1995) also uses county-based MSA/non-MSA distinctions when describing rural populations and making comparisons to national data.

Rural and urban Oregonians. Rural populations in Oregon differ from urban populations. The Office of Rural Health/OHSU (July 31, 1996) report that people who live in rural areas of Oregon are more likely to be (a) elderly, (b) unemployed, underemployed, or working in a resource-dependent industry which is economically unstable, and (c) poor and lack health insurance. The percent of the elderly populatin in rural areas of Oregon [16.7%] is greater than in urban areas [13.3%] (Population Research & Census, 1995). Further, in Oregon rurality is associated with higher rates of (a) impairment from chronic diseases, (b) overall mortality, (c) low birth rates, (d) inadequate prenatal care, and (e) death from accidential causes (Office of Rural Health/OHSU, July 31, 1996). The agency (1996) attributes these negative health indicators to shortages of health care providers, geographical barriers, cultural differences, fragile rural hospitals and lack of community resources. The Office of Rural Health (1996) reports that 363,812 Oregonians live in rural areas with serious or critical unmet health care needs, and nearly 200,000 live in federally-designated Health Professions Shortage Areas (HPSAs).

Geographic location has been shown to influence the receipt of psychoactive drugs. Ray and colleagues (1980) found that physician prescribing of psychoactive drugs increased with increasing rurality of practice. Similarly,

Hulisz, Summer, Hodge, & Weart (1991) found higher rates of antipsychotic drug use among rural NH residents compared to urban NH residents (N=788). More recently, Garrard, Chen, and Dowd (1995) determined that antipsychotic drug use rates were significantly higher in NHs located in counties with lower population densities, (i.e., rural communities), but the density of elderly people per square mile in the county in which the NH was located was positively associated with antipsychotic drug use.

A 1994 assessment of the Medicaid waiver program in Oregon found that AFC homes were fairly evenly distributed across the state (Kutza, 1994). More differences exist in access and utilization of rural community services among rural counties and across rural areas than between rural and urban areas (Magilvy, 1996). This study was able to examine access to nurse visits across three subcategories of rural in a very rural western state.

Process & Timing Nurse Visits to AFHs

The process of accessing nurse delegation services to an AFC home will be described. Nursing services are provided to AFC homes on an intermittent and brief basis, when requested and approved by the case manager (SDSD, 1994). Varying methods are used to access RN services to AFC homes serving Medicaid recipients. When a psychoactive drug is newly prescribed for a client, the AFC provider is required to notify the case manager of the drug and need for a RN visit. Thus, the state primarily relies on lay AFC providers to recognize and initiate the request for a RN visit when there is a high need for RN assessment,

consultation, teaching, and delegation, such as at the onset of new psychoactive drug therapy for frail elders. This is of concern because AFC providers usually have even less training than nursing assistants in institutions and thus may not always be able to identify the need for delegation or the presence of early clinical problems. In contrast to institutional care, in the community, medical therapy is prescribed without the involvement and knowledge of the nurse. Thus, the nurse has to be made aware that the community caregiver is coping with a complex and high risk care or drug regime. This affects the timeliness of the response to needs for nursing services.

In addition to communication from the AFC provider, the case manager (CM) may also become aware of the need for RN delegation services in four other ways. First, in some areas of the state at the local level, community RNs are assigned a caseload of AFC Medicaid recipients, who they routinely visit at least every 2-6 months. These RNs identify new drugs at such visits and provide delegation. Second, some AFC providers call the assigned community RN directly to inform of the need for delegation due to a new psychoactive drug. Third, CMs become aware of the need for RN delegation at the local Multidisciplinary Case Meetings. Finally, the CM may determine the need for nurse delegation by reviewing the Resident Assessment data at the time of admission to an AFC home.

When the AFC provider notifies the CM of the need for a RN visit, the case manager authorizes and initiates a referral to a community RN (also called a

"contract RN"). The time period between the date when the AFC client is prescribed a new psychoactive drug and the date when the RN visit occurs, usually consists of three subintervals. These subintervals vary due to influencing factors which are discussed below.

This study will examine the overall time interval from the date of the newly prescribed psychoactive drug to the date of the first subsequent nurse visit. It is beyond the scope of this study to examine the subintervals. However, the subintervals will be discussed to increase understanding of the overall time interval from drug to visit.

Subinterval 1: time between when the AFC client is prescribed a new psychoactive drug and when the AFC provider calls the CM to request the RN visit. This interval can vary for several reasons. First, the CM, who often does not have a health science background, may not identify the need for, or concur with others on the need for a nurse delegation visit. For example, the CM may not appropriately balance client advocacy with gatekeeping in the allocation of resources (Callahan, et al., 1994). Second, the AFC provider can delay in requesting the RN visit for a variety of reasons, such as workload. Third, the AFC provider may fail to communicate the need for a RN visit to the case manger because of being: (a) unaware of the requirement to request a RN delegation visit in the context of a new psychoactive drug; (b) unable to identify the new drug as psychoactive; or (c) unwilling to be subject to professional scrutiny. Fourth, the AFC provider may lack English speaking skills and/or knowledge of

how to contact the case manager or RN in the complex CLTC system (Maylie, 1994a). Finally, when the system relies on the nurse to determine the need for delegation at a routine visit, only those clients receiving a routine visit will benefit. Furthermore, the time interval between routine visits may vary greatly and result in unmet care needs for extended periods of time.

Subinterval 2: time between when the CM is notified of the need for a RN visit and the initiation of a RN referral. This interval is influenced by the time it takes the case manager to perform the referral function and the availability and response of the community RN. The case management infrastructure and communication system must be sufficiently organized to involve the nurse in the process of care in a timely manner. The provision of nurse delegation services is also dependent upon an adequate number of nursing resources and an effective nurse staffing and deployment system.

Subinterval 3: time between when a RN receives the referral and conducts the visit to the AFC home. This interval is influenced by the timeliness with which the RN responds to the referral, makes contact with the AFC provider, and is able to schedule a visit. Another factor which influences this subinterval is the proximity of the nurse to the AFC facility. Community nurses are known to travel as long as eight hours to conduct an AFC home visit in remote areas of Oregon (C. Spencer, personal communication, December 20, 1995). In addition, the current case load of the community nurse may also influence the time it takes to conduct a visit.

The nonprofessional AFC provider is responsible to carry out medical and nursing therapy with adequate and appropriate professional nursing support and consultation (Ladd & Hannum, 1994). When the community nurse is not involved in the care process in a timely manner, the quality and safety of care can be compromised. Effective nurse delegation in AFC is dependent upon factors related to the CLTC system, case manager, AFC provider, and community nurse. Specific requirements include the timely identification of the need for nursing services, prompt notification of the case manager of the need for a delegation visit, appropriate and timely approval and initiation of the nurse referral, an adequate and timely nurse response to the AFC home, as well as an organized local case management system and adequate nursing resources and deployment strategies.

Timeliness of nurse delegation related to newly prescribed psychoactive drugs. Caregivers who give psychoactive drugs to older adults need drug information and implications for monitoring at the onset of therapy (Salzman, 1992). Defining the limits of the timeliness of such nurse visits can be inferred from several reference points. Current clinical practice guidelines on Depression in Primary Care specify times of assessment by health professionals for patients at the onset of antidepressants to be at 1-2 weeks, at 6 weeks and again at 12 weeks (Agency for Health Care Policy & Research, 1993). The receipt of antipsychotics and anxiolytics should be monitored similarly, according to a nationally recognized geropsychiatrist (B.H. McFarland, MD, Geropsychiatrist,

personal communication, December 20, 1995). In addition, the federal and State of Oregon policies related to the Pre-admission Screening and Annual Resident Review (PASARR) state that NH residents experiencing problems related to severe mental illness receive geropsychiatric nursing services within 7 days and at a maximum within 30 days (OAR 411-70-043 draft, 1994). Therefore, in the context of a new psychoactive drug for a dependent elder, the initial delegation visit should occur within 2-4 weeks.

In summary, the study population includes all elderly Medicaid recipients residing in AFC in Oregon on January 1, 1994. The Oregon waiver program has a long history of substituting AFC for NH care and the majority (60%) of its AFC population are highly dependency and imparied (GAO-HEHS-94-167).

The overuse, underuse, and misuse of psychoactive drugs has been a major clinical concern in both institutional and CLTC. Psychoactive drug use in CLTC is of concern because clients in Medicaid waiver programs have been found to be very frail and more similar to NH elders than to impaired elders living in the community (Laudicina and Burwell, 1988). Furthermore, CLTC settings are much less extensively regulated compared to NHs. Therefore it is justifiable to question what the rates of psychoactive drug use and of intermittent nursing supervision of nonprofessional caregivers are in AFC (Morgan et al., 1995). In addition, although the research base in community-based care is sparse with respect to clinical care, the board and care studies to date have demonstrated: (a) high rates of psychoactive drug use, (b) low rates of nurse visits, and (c) problems

that nonprofessional caregivers experience with medication management (Dittmar, 1989; Hawes et al., 1995; Spore et al., 1996).

In Oregon, substantial variation exists in the CLTC infrastructure at the local level regarding the delivery of nursing services to AFHs. Although it is outside of the scope of this study, the county-based senior services agency organization and availability of resources needs to be investigated. In many counties, it is the responsibility of the AFC provider, who is often without health background, to initiate the request for a nurse visit. Yet, AFC providers may not recognize the need for clinical supervision or may not want the scrunity. In contrast, in a large metropolitian county, nurses under contract are assigned to AFHs to conduct at a minimum one visit every two to six months.

Case managers also vary in their judgments regarding approvals of allocation of skilled nursing services. Data is needed on the characteristics of case managers which affect decisions about health-related resource allocation and care planning.

The availability of sufficient nurses on a statewide basis is a concern given the small number of RNs (60-80) under contract with SDSD and that only 19% of nurses practice in rural settings (C.Spencer, personal communication, August 13, 1996; Coward et al., 1994). Information on the capability of nurse staffing and scheduling systems to serve AFHs is seriously lacking.This study provides a broad screening of nurse visits on a statewide basis. However, the case-managed waiver program in Oregon should be evaluated comprehensively

regarding its home-delivered health service package to elders. Data is especially needed on the outcomes of delegated nursing care.

Therefore, research which provides the statewide and urban and rural proportions of routinely and newly prescribed psychoactive drug use among AFC clients is needed. In addition, data is needed on the occurrence and timing of nurse services to AFC clients who are newly prescribed to psychoactive drugs and thus have a high need for a nurse delegation visit. Findings can be used to direct quality improvements in the AFC waiver program.

CHAPTER 3

METHODS

This chapter presents a description of the study design, setting and sample. Discussion of measurement of the variables, the research procedure, data management and analysis plan follows.

This study was a secondary analysis of Medicaid drug claims data from a larger statewide study, Use of Psychoactive Drugs in Long-term Care Facilities (McKenzie, Semradek, McFarland, & Mullooly, 1994), and nurse visit claims data and eligibility records from the State of Oregon Senior and Disabled Services Division (SDSD). Oregon is a very rural state (Office of Rural Health, OHSU, 1995). Its AFC program is one of the largest and most developed of all of the states (GOA-HEHS-94-167). Thus, it was an ideal state in which to conduct the study.

This descriptive study used a combination cross-sectional and longitudinal design. Subjects were selected at one point in time; those who received routinely prescribed and newly prescribed psychoactive drugs were identified; and those who received newly prescribed psychoactive drugs were tracked up to six months to see if and when they received a subsequent nurse delegation visit. The time period under review in the study was 15 months, September 1, 1993 through December 31, 1994.

The study had two major aims: (1) to estimate the statewide and urban and rural proportions of elderly AFC subjects who received routine psychoactive

drugs including those who received newly prescribed psychoactive drugs and thus had a high need for a nurse delegation visit and (2) to describe the statewide and urban and rural differences in the occurrence and timing of the delivery of nurse delegation visits over a six month time period to older clients who received newly prescribed psychoactive drugs.

Data Sources

Four files from the State of Oregon databases were used for the proposed study: (1) the Service Control file contained eligibility data from the SDSD system, (2) the 360 History file contained demographic data from the SDSD system, (3) the SSVN Expenditures Master file from the Oregon Medical Assistance Program (OMAP) contained nurse visit claims, and (4) the Expenditures file contained drug claims from OMAP.

The first three files were made available through Leslie Hendrickson, PhD, Budget and Legislative Liaison, Senior and Disabled Services Division (SDSD), Salem, Oregon. The fourth file was currently housed at OHSU and made available under the supervision of my sponsor D. McKenzie, P.I on the 1994 study for which these data sets were obtained from SDSD (McKenzie, et al., 1994).

Setting and Sample

The Medicaid reimbursement records used for the study were statewide in nature and allowed the profiling of service use (drugs and nurse services) and geographic variation in the population of elderly AFC Medicaid recipients for

January 1, 1994.

The inclusion criteria for the study required subjects to be 65 years of age or older, receiving Medicaid funding, and residing in an AFC home on January 1, 1994.

The initial sample was estimated to be approximately 3,400 subjects, the number in the total Medicaid caseload of elderly (65 years and older) AFC clients in 1994 (SDSD, 1993-1995). The subsample available for questions related to subjects receiving psychoactive drugs was estimated to be approximately 1,200, or 35% of the elderly AFC clients. This estimate was derived from previous studies that documented psychoactive drug use rates from 34 to 41% (Dittmar, et al., 1983; Spore et al., 1996). Similarly, a 1995 State of Oregon audit of 35 AFC homes revealed that 34% of the 142 elderly clients were receiving at least one psychoactive drug (Maylie, 1995).

Attrition

Although 20% of AFC homes go out of business over one year, AFC clients frequently (34%) transfer to other foster care homes (Kane et al., 1989). Thus, such subjects remained in the system and available for follow-up for this study. Discharges out of AFC were identified from the discontinuation of payments and Medicaid eligibility in the Service Control file from the SDSD System and were eliminated from the nurse visit search thereafter.

Subject mortality and attrition were potential problems within this subsample, given the longitudinal nature of the study and the age, frailty, and rate of

discharge out of AFC. Kane and colleagues (1989) in a study of 405 AFC clients (both Medicaid-funded and private pay) reported that 25% of all AFC clients and only 52% of the "new" clients who had entered AFC had left by the end of a year. Moreover, Kane and colleagues (1989) in a secondary analysis on 6000 Oregon Medicaid AFC clients found that over a six month period 7% had died and 12% had transferred out of AFC.

Power Analysis

Power calculations for one-way analysis of variance (ANOVA) indicated that a subsample of 1200 subjects receiving routine psychoactive drugs was sufficient. A subsample of 120 subjects receiving new psychoactive drugs is necessary for a significance level of .05, an anticipated effect size of .966, and a desired power of .968.

It was determined that if the proportions across the four geographic areas ranged from .30 to .45 (e.g., Urban=.30; Less remote rural=.35; Remote rural=.40; Frontier rural=.45), such variation would be large enough to have important policy and clinical implications. Using an alpha of .05, the power analyses indicated that the above sample and subsample sizes would provide power of greater than .99 to detect such differences in proportion as significant for research questions related to: (1b) how the proportion of clients who received psychoactive drugs routinely varied by geographic area, (1d) how the proportion of clients who received newly prescribed psychoactive drugs varied by

geographic area, and (2b) how the proportion of eligible clients who received a nurse delegation visit varied by geographic area. Likewise, power for research question 2d, was greater than .96 if mean differences in days were large [e.g., 30 to 120 days] (J. Fields & B.J. Stewart, personal communication, April 1, 1996).

Sample Characteristics

It was anticipated that the larger sample for this study would be predominantly female (72%), single (85%), over 75 years (60%), and dependent in one or more activities of daily living [ADL] (69%) (Geritracs, 1995). The most frequent diagnosis in AFC clients in Oregon is dementia (Kane, et al., 1989). The sample was expected to mirror the national board and care population (Mor et al., 1986). The study sample was expected to be 97.5% white (Aging Oregonians, 1993).

Variables and Their Measurement

Drug Variables

Data source. The drug claims data were provided from the OMAP Expenditures file and made available through Darlene McKenzie, RN, PhD. See Appendix F for an example of the computer drug claims data.

Operational definition of psychoactive drugs. For this study, psychoactive drugs were defined as those drugs identified as psychoactive by McKenzie and colleagues (1994). The three psychoactive drug classes studied included antipsychotics, antidepressants and anxiolytics. The antipsychotics studied

included 19 generic and 33 brand drug names; the antidepressants included 18 generic and 25 brand drugs, and the anxiolytics included 15 generic and 31 brand drugs. See Appendix A for a list of the drug classes and generic drug names that were studied.

Operational definition of receipt of routinely prescribed psychoactive drugs. A subject with a claim for at least one psychoactive drug dated within the four month period between January 1, 1994 and April 30, 1994 was considered to be receiving a psychoactive drug "routinely" versus "as needed" if the drug claim between January 1, 1994 and April 30, 1994 showed a drug dispensed for greater than 10 days and less than 60 days. Exceptions to this rule were made for drugs that were unlikely to be used on an "as needed" basis. Thus orders for antidepressants: bupropion, fluoxetine, paroxetine, sertraline, and tranylcypromine and the antipsychotics: clozapine and risperidone were treated as routine drugs regardless of the number of days of the claims.

Operational definition of receipt of newly prescribed psychoactive drugs. A subject was considered to have received a newly prescribed psychoactive drug based on the presence of the first routine psychoactive drug claim dated within the four month period from January 1, 1994 through April 30, 1994 AND the absence of a psychoactive drug claim during the previous four months.

Nurse Visit Variables

Data source. Nurse visit claims data from the Expenditures Master file from OMAP were provided by SDSD on disk. See Appendix G for an example of the

computerized nurse visit claims data.

Operational definition of receipt of RN delegation visit. A client was considered to have received a nurse visit by the presence of at least one paid claim dated during the first six months following the newly prescribed psychoactive claim date. The nurse visit claim date is the date nursing services were provided to the AFC client (D. Scott, personal communication, March 27, 1997).

Operational definition for number of days between the date of the receipt of a newly prescribed psychoactive drug and the date of a RN follow-up visit. This time interval was the difference in days between the newly prescribed psychoactive drug claim date and the first subsequent nurse visit claim date.

Geographic Area Variables

Data source. The location of the AFC home by town/city was provided by SDSD through the Provider Master file from OMAP.

Operational definition of geographic area. The geographic area of the AFC client was considered synonymous with the geographic classification of the city in which the client's AFH was located. The geographic area definitions used for the study were those developed and used by The Office of Rural Health/OHSU (1995) to define Oregon's rural populations. This method of classifying geographic regions is more detailed, accurate, geographically and site specific than the other two major federal methods of urban and rural classification. The other methods are dichotomous: (1) urban/ rural based on population size [used

by the U.S. Bureau of the Census] and (2) metropolitan/nonmetropolitan [used by the Office of Management and Budget] (Weinert & Burman, 1996).

The ORH/OHSU defines geographic areas overall into urban and rural. Not rural, urban is defined as any community 30,000 or more, or a smaller community within 10 miles from a community of 30,000 or more. Conversely, rural is defined as a geographic area 10 or more miles from a population center of 30,000 or more. Rural areas are further classified into subcategories of increasing rurality: less remote rural, remote rural, and frontier rural that reflect relative distances and travel time between principal health care delivery sites. The four categories include: (1) not rural (i.e., urban), (2) less remote rural, (3) remote rural, and (4) frontier rural. For this study, the majority of analyses related to geographic location combined remote-frontier rural into one category.

Less remote rural areas are 30 minutes or less average travel time from a population center of 10,000 or more and are not within a frontier area. Remote rural areas are more than 30 minutes average travel time from a population center of 10,000 or more and are not within a frontier area, and frontier rural areas are **counties** that have population density of six people per square mile or less (OAR 572-92-010). See Appendix C for a map of selected cities designated as urban and less remote rural and Appendix D for a map of the 11 designated frontier rural counties.

Procedure

Consent to participate was not needed for this study because the secondary

data used were recorded in such a manner that subjects could not be identified. The study proposal was approved by the OHSU Committee on Human Research on July 13, 1995 and was considered to be exempt from review.

Data were extracted from the four state data files to form three files limited to this sample: (a) client file , (b) drug file, and (c) nurse visit file. The files were then merged into a single file using the client prime number, also called the Medicaid identification number. The initial sample was generated by identifying AFC Medicaid funded clients age 65 years or older in the length of stay (LOS) file on January 1, 1994.

Drug files. Drug claims were submitted to SDSD at varying times after the point of service and were stored in files as they were submitted. The claims were extracted the files by individuals. Subsequently, the file was sorted in date order.

Receipt of routinely prescribed psychoactive drugs. The psychoactive drugs of interest to the study were extracted from nonpsychoactive drugs using the community-based care drug claims file and the national drug code (NDC) number. This new file of psychoactive drug claims included claims from January 1, 1994 through December 31, 1994. The file was sorted in date order.

The file was searched for the presence of the a routine psychoactive drug claim dated between January 1, 1994 and April 30, 1994.

Medicaid, like all third party payers, allows a period of time for providers to submit bills after rendering service. However, pharmacies are not reimbursed until the claim is submitted. Therefore, the majority of drug claims can be

expected to be submitted within a two month period after the service has been rendered, i.e., drug dispensed. Because eight additional months of drug claims were search beyond the four month window used to determine the first psychoactive drug claim it was highly likely that all late drug claims were captured.

Receipt of newly prescribed psychoactive drugs. To generate this subsample the drug claims file of all subjects previously identified as being routinely prescribed psychoactive drugs was reviewed to establish a history of psychoactive drug use within the **prior** four months.

The date of the first psychoactive drug claim between January, 1994 through April, 1994 was used to establish the time frame for the history of psychoactive drug use. Because this first claim varied among clients, the "outside" or "four previous months" window also varied. For example, for clients with a January 1, 1994 drug claim date, the files were searched for a prior claim dating as far back as September 1, 1993. For subjects with a April 30, 1994 drug claim date, the files were only searched as far back as January 1, 1994.

Receipt of the first nurse visits following the new psychoactive drug. The nurse visit claims from January 1, 1994 through March, 1995 were sorted and date ordered. To identify the receipt of the first nurse visit following the newly prescribed psychoactive drug claim date, RN visit claims were searched for the presence of the first claim dated within six months following the first January1, 1994 through April 30, 1994 new psychoactive drug claim date. The subjects

with a newly prescribed psychoactive drug were matched with the eligibility data and if a discharge out of AFC occurred within one month of the new psychoactive drug, the subject was eliminated from the nurse visit search.

Nurse visit claims, like drug claims, may be submitted late. Nurse visit claims are designated as expedited/urgent/high priority thus the lag time is usually one month (B. Forsell, personal communication, March 4, 1997). However, nurse claims can be submitted up to three months late (Dan Scott, personal communication, March 25, 1997). The nurse visits file captured 15 months claims records, therefore it was highly likely that any late claim was included in the analysis.

Geographic area of AFH location. The town/city of each subject in the initial sample was identified from the demographic file and manually assigned to either an urban or rural region. Those town/cities in a rural region were further classified into one of three subcategories of increasing rurality: (a) less remote rural, (b) remote rural, and (c) frontier rual.

State of Oregon and county maps (n=36), a curved rule, and a 1995 list of population estimates for the cities, towns, and unincorporated areas of the state from the Center for Population Research and Census, Portland State University were used to determine population size, average travel time and proximity to population centers.

Each subject's geographic area was entered to generate a geographic area variable. The geographic area variable was used to determine geographic

variation by subjects on drugs, with new drugs, receiving a RN visit, average number of days from the new drug to the visit, and timeliness of the nurse visit.

Data Management

The data were examined for completeness when it was extracted from the large computer files at the state. For example, the 360 Resident Assessment file was checked for the completeness of birthdates. Only one birthdate was found to be missing in a review of over 700,000 records (D. Scott, personal communication, March 21, 1997).

When the data were received on disk, the available fields were checked to see that they made sense and were logical. The patterns of data were explored to assure that claims existed as expected. The data were reviewed for inconsistencies or improbable numbers, such as one person having two prime numbers and dates outside the study time periods. Frequencies were done on discrete data and descriptive statistics were done on continuous data to identify outliers. The data were cleaned or corrected by the McKenzie grant programer.

Data Analysis Plan

Data analysis utilized the SPSS software package 6.1 for MS Windows. A probability level of equal to or less than .05 was accepted for statistical significance.

Research question 1a. What proportion of subjects received routinely prescribed psychoactive drugs? The proportion was calculated by dividing the total number of subjects who received psychoactive drugs by the total number of

subjects who resided in AFC on January 1, 1994.

Research question 1b. How did the proportion vary by geographic area? The chi-square test was used to test the relationship between routine psychoactive drug users and geographic area. The significant chi-square test was followed by planned multiple comparisons using linear-by-linear association.

Research question 1c. Among subjects who received routinely prescribed psychoactive drugs, what proportion were newly prescribed psychoactive drugs? The proportion was calculated by dividing the number of subjects with new psychoactive drugs by the total number of subjects on psychoactive drugs.

Research question 1d. How did the proportion who received newly prescribed psychoactive drugs vary by geographic area? The relationship between receiving new psychoactive drugs and the geographic area was analyzed by the chi-square test. The significant chi-square test was followed by planned multiple comparisons using linear-by-linear association of all possible pairs of geographic areas.

Research question 2a. Among eligible subjects who received newly prescribed psychoactive drugs, what proportion received a nurse delegation visit? The proportion was calculated by dividing the number of subjects new to psychoactive drugs with a nurse visit who remained in AFC, by the number of subjects with new psychoactive drugs. In addition, survival or event analysis was used to study the time from the new drug to the nurse visit event.

Research question 2b. How did the proportion of nurse delegation visits to

eligible subjects vary by geographic area? Similar to research question 1d, a chi-square test was used as an overall test of the relationship between the nurse visit and geographic area. The significant chi-square was followed by planned multiple comparisons using linear-by-linear association of all possible pairs of geographic areas.

Research question 2c. Among subjects with newly prescribed psychoactive drugs, what was the average number of days between the date of the receipt of a new psychoactive drug and the date of a nurse delegation visit? The mean number of days between the date of the new psychoactive drug and the date of the nurse delegation visit was programmed and calculated.

Research question 2d. How did the average number of days between the date of the receipt of a newly prescribed psychoactive drug and the date of the first nurse delegation visit, vary by geographic area? A one-tailed t-test for independent groups was used to determine whether the mean number of days between the new drug and the nurse visit varied by urban and rural areas. In addition, a one-way ANOVA was used to compare the mean number of days across geographic areas between the date the client was new to psychoactive drugs and the date of the first nurse follow-up visit.

Research question 2e. Among eligible subjects who received a nurse delegation visit, what was the proportion who received a timely visit? The proportion was calculated by dividing the number of subjects who received a nurse visit within 30 days by the total number of subjects who received a nurse

visit.

Research question 2f. How did the proportion who received a timely nurse visit vary by geographic area? The relationship between receipt of a timely nurse visit and geographic area was tested with chi-square.

CHAPTER FOUR

RESULTS

This chapter presents the results of data analysis. After the sample is described, findings of the analyses are presented.

Description of the Sample

The sample consisted of 3,454 older adults residing in Oregon AFC homes on January 1, 1994. Fifteen subjects were discharged from AFC within the first 30 days after the receipt of the newly prescribed psychoactive drug. Thus, 6% (n=15) were lost to follow up from the subsample of subjects with new psychoactive drugs and eligible for a nurse delegation visit. Reasons for the discharge out of AFC could not be determined from the data. Potential reasons included: a move out of state, transfer to a hospital or nursing home, return to home, or death. All subjects were funded by Medicaid. The mean age of the subjects was 82 years, the range was from 65 to 112 years. The sample was predominantly female (79%) and white (91.4%). The majority of subjects (61.6%) resided in AFC homes located in urban areas, with 28.5% in less remote rural areas, and 9.9% in remote/frontier rural areas, as shown in Table 1.

As shown in Tables 2 and 3, among urban and rural clients there were significantly more women than men, and significantly more women in the oldest-age category and significantly more men in the middle-old age category ($\chi^2=30.68$, df=2, $p<.001$ and $\chi^2=11.43$, df=2, $p<.01$). The distribution of age of subjects across age categories was consistent in both urban and rural clients.

Table 1

Demographic Characteristics of the Sample (N=3,454)

		n	%	M (SD)	Range
Age (years)		3454			
Age categories					
Young-old	65-74	804	23.3		
Middle-old	75-84	1316	38.1		
Oldest-old	85+	1334	38.6		
Ethnic Representation					
White		3158	91.4		
Asian		129	3.7		
Black		59	1.7		
Other		90	2.6		
Unable to determine		9	.5		
Gender					
Female		2727	79.0		
Male		727	21.0		
Geographic Area of AFC Home					
Urban		2127	61.6		
Less Remote Rural		986	28.5		
Remote Rural		193	5.6		
Frontier Rural		148	4.3		

Table 2

Urban Clients by Age and Gender: Chi-Square Analysis (n=2127)

	Age Category			
Gender	Young-old (65-74)	Middle-old (75-84)	Oldest-old (85+)	
Male	149 (32.8%)	168 (37.0%)	137 (30.2%)	454 (21.3%)
Female	355 (21.2%)	637 (38.1%)	681 (40.7%)	1673 (78.7%)
Total	504 (23.7%)	805 (37.8%)	818 (38.5%)	

Note. The obtained $\chi^2 = 30.68$, df=2, $p<.001$

Table 3

Rural Clients by Age and Gender: Chi-Square Analysis (n=1327)

	Age Category			
Gender	Young-old (65-74)	Middle-old (75-84)	Oldest-old (85+)	
Male	82 (30.0%)	100 (36.6%)	91 (33.3%)	273 (20.6%)
Female	218 (20.7%)	411 (39.0%)	425 (40.3%)	1054 (79.4%)
Total	300 (22.6%)	511 (38.5%)	516 (38.9%)	

Note. The obtained $\chi^2 = 11.43$, df=2, $p<.01$

Research Question 1a

Proportion On Psychoactive Drugs Routinely

The first research question addressed the proportion of elders residing in AFC who had received at least one routine psychoactive drug from January 1, through April 30, 1994. The finding was that 38.2% (n=1,320) of the subjects received routine psychoactive drugs.

Research Question 1b

Proportion On Psychoactive Drugs Routinely by Geographic Area

The second research question was to determine if the receipt of routine psychoactive drugs differed depending on the geographic area where the subject's AFC home was located. A chi-square test (see Table 4) was used to test the relationship between routine psychoactive drug use and urban and rural areas. The proportion of urban clients receiving routine psychoactive drugs (39.8%) was significantly higher than the proportion of rural clients receiving routine psychoactive drugs (35.7%).

In addition, the chi-square test was used to analyze the relationship between the receipt of routine psychoactive drugs by geographic area (see Table 5). Planned post hoc multiple comparisons (linear-by-linear association) following the significant chi-square showed that the proportion of urban routine psychoactive drug users (39.8%) was significantly greater than the proportion of less remote rural users (35.2%).

Research Question 1c

Proportion On Newly Prescribed Psychoactive Drugs

The third research question addressed the proportion of those subjects who had received routine psychoactive drugs had received newly prescribed psychoactive drugs. Of the 1,320 (38.2%) subjects on routine psychoactive drugs, 18.6% (n=246) had received newly prescribed psychoactive drugs, and thus had a high need for a nurse delegation visit.

Table 4

Receipt of Routinely Prescribed Psychoactive Drugs by Urban and Rural Areas: Chi-Square Analysis (N=3,454)

	Routine Psychoactive Drugs	
Geographic Area	Yes	No
Urban	846 (39.8%)	1281 (60.2%)
Rural	474 (35.7%)	853 (64.3%)
Total	1320 (38.2%)	2134 (61.8%)

Note. The obtained $\chi^2 = 5.68$, df=1, $p<.02$

Table 5

Receipt of Routinely Prescribed Psychoactive Drugs by Geographic Area (N=3,454)

	Routine Psychoactive Drugs	
Geographic Area	Yes	No
Urban	846	1281
	(39.8%)	(60.2%)
Less Remote Rural	347	639
	(35.2%)	(64.8%)
Remote-Frontier Rural	127	214
	(37.2%)	(62.8%)
Column Total	1320	2134
	(38.2%)	(61.8%)

Note. The obtained $\chi^2 = 6.14$, df=2, $p<.05$. Planned post hoc multiple comparisons: (Linear-by-linear association=5.98, df=1, $p<.02$) showed that the proportion of urban routine drug users was significantly greater than less remote rural users.

Research Question 1d

Newly Prescribed Psychoactive Drugs by Geographic Area

The fourth research question inquired if there was an overall relationship between the receipt of newly prescribed psychoactive drugs and geographic area. The relationship between receiving newly prescribed psychoactive drugs and urban and rural areas was analyzed by the chi-square test (see Table 6). The proportion of urban new psychoactive drug users (17%) was significantly less than the proportion of rural new psychoactive drug users (21.5%).

In addition, the relationship between receiving newly prescribed psychoactive drugs and three geographic areas was analyzed by the chi-square test (see Table 7). The proportion receiving newly prescribed psychoactive drugs differed significantly among the geographic areas (χ^2 =7.20, df=2, $p<.05$). Planned post hoc multiple comparisons using linear-by-linear association showed that the proportion of urban clients receiving new psychoactive drugs (17%) was significantly less than the proportion of remote-frontier clients receiving new psychoactive drugs (26.8%).

Table 6

Number of Routine Psychoactive Drug Users in AFC Homes Who Received Newly Prescribed Psychoactive Drugs (January 1,- April 30, 1994), by Geographic Area (n=1320)

	Newly Prescribed Psychoactive Drugs	
Geographic Area	Yes	No
Urban	144 (17.0%)	702 (83.0%)
Rural	102 (21.5%)	372 (78.5%)
Total	246 (18.6%)	1074 (81.4%)

Note. The obtained χ^2 =4.05, df=1, p<.05

Table 7

Number of Routine Psychoactive Drug Users in AFC Homes Receiving Newly Prescribed Psychoactive Drugs (January 1,- April 30, 1994), by Geographic Area (n=1320)

Geographic Area	Newly Prescribed Psychoactive Drugs: Yes	No
Urban	144 (17.0%)	702 (83.0%)
Less Remote Rural	68 (19.6%)	279 (80.4%)
Remote-Frontier Rural	34 (26.8%)	93 (73.2%)
Total	246 (18.6%)	1074 (81.4%)

Note. The obtained χ^2 =7.20, df=2, p<.05 Planned post hoc multiple comparisons using linear-by-linear association=7.01, df=1, p<.01 revealed that the proportion of urban-dwelling subjects that received newly prescribed psychoactive drugs was significantly

less than the proportion of remote-frontier dwelling subjects receiving newly prescribed psychoactive drugs.

Research Question 2a

Proportion of Nurse Delegation Visits to Eligible Subjects

The fifth research question was to determine what proportion of subjects who had received newly prescribed psychoactive drugs also received a nurse delegation visit. Only those subjects who remained in AFC for more than 30 days of the date of a newly prescribed psychoactive drug were available for this analysis. As noted earlier, 6% (n=15) subjects were lost to follow up for the receipt of a nurse visit because of discharge out of AFC. Although, 231 subjects with newly prescribed psychoactive drugs were available for the receipt of a nurse delegation visit, only 44.6% (n=103) received such a visit.

Research Question 2b

Nurse Delegation Visit to Eligible Subjects by Geographic Area

Research question six examined the overall relationship between the occurrence of a nurse visit and the urban or rural area in which the subject's AFC home was located. A chi-square test was used to test the relationship between the receipt of the nurse delegation visit and geographic area. The proportion of urban clients who received a nurse visit (61.9%) was significantly greater than the proportion of rural clients (18.5%). See Table 8.

In addition, the chi-square test was used to test the relationship between the receipt of the nurse visit and three geographic areas. The receipt of a nurse

visit differed significantly among the three geographic areas (χ^2=42.56, df=2, p < .001). As shown in Table 9 planned post hoc multiple comparisons using linear-by-linear association showed that the proportion of subjects who received a nurse visit in urban areas was significantly greater than the proportion receiving nurse visit in both less remote rural and remote-frontier rural areas.

Table 8

Nurse Delegation Visit to Eligible Subjects with Newly Prescribed Psychoactive Drugs by Geographic Area (n=231)

Geographic Area	Receipt of Nurse Delegation Visit	
	Yes	No
Urban	86	53
	(61.9%)	(38.1%)
Rural	17	50
	(18.5%)	(79.4%)
Total	103	128
	(44.6%)	(55.4%)

Note. The obtained $\chi^2 = 42.18$, df=1, $p<.001$

Table 9

Nurse Delegation Visit to Eligible Subjects with Newly Prescribed Psychoactive Drugs by Geographic Area (n=231)

Geographic Area	Receipt of Nurse Delegation Visit	
	Yes	No
Urban	86	53
	(61.9%)	(38.1%)
Less Remote Rural	13	50
	(20.6%)	(79.4%)
Remote-Frontier Rural	4	25
	(13.8%)	(86.2%)
Total	103	128
	(44.6%)	(55.4%)

Note. The obtained $\chi^2 = 42.56$, df=2, $p<.001$ Planned post hoc multiple comparisons using linear-by-linear association showed that the proportion of subjects who received a nurse visit in urban areas (29.35, df=1, $p<.001$) was significantly greater than the proportion in less remote rural areas (29.35, df=1, $p<.001$) and remote-frontier areas (22.16, df=1, $p<.001$).

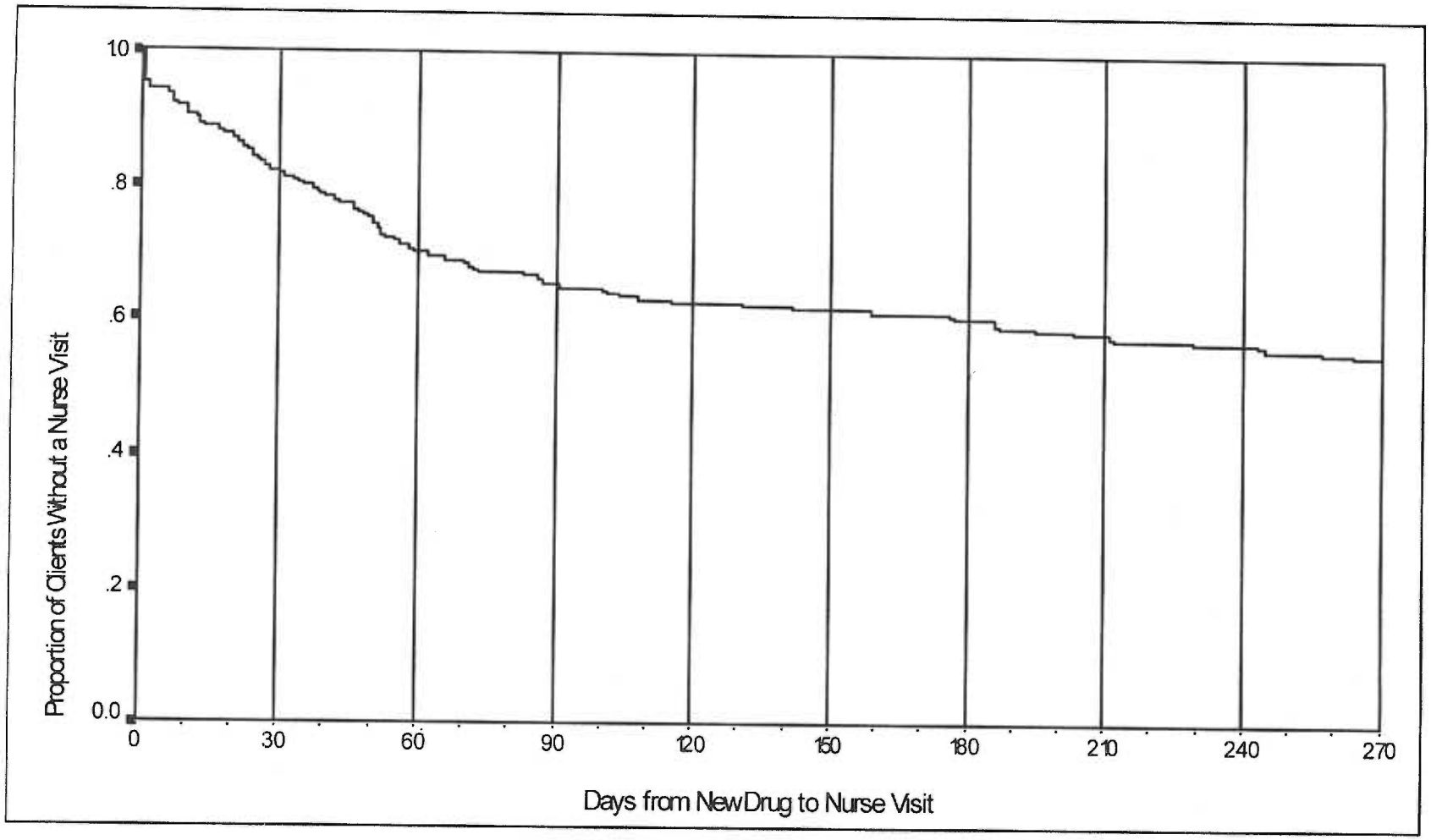
Research Question 2c

Number of Days Between the New Psychoactive Drug and the Nurse Visit

The seventh research question addressed the mean number of days between the date of the newly prescribed psychoactive drug and the date of the first nurse visit. The expected time interval for the nurse visit to occur was on or within 30 days of the date of the newly prescribed psychoactive drug. For subjects who received a nurse delegation visit (n=103), the mean number of days between the new psychoactive drug and the nurse delegation visit was 64 days, with a median number of days of 43 days, a standard deviation of 68 days and a range of 1-264 days.

Survival analysis or event analysis was used to study the time from the new psychoactive drug to the nurse delegation visit event. The proportion of clients who had not yet received a nurse visit event was graphed by date post new drug order (see Figure 2). The event curve indicated that at the end of the observation period of six months, the majority of clients (55.6%) had not yet received a visit in the context of a new psychoactive drug.

At 14 days (after the date of the new drug) 74.8% of the clients had not yet received a nurse visit; 59.2% of the clients still lacked a visit at 30 days. Conversely, one fourth (25.2%) of the clients received a visit within 14 days and 40.8% of the clients received a nurse visit within 30 days. The event curve showed that the trend was for clients to receive visits early or not within a six month time frame.



Note. Of 231 clients eligible for a visit, 103 clients received a visit, and 128 clients without a visit were censored at one year.

Figure 2. Nurse Visit Event Curve: Cumulative Distribution of Proportion of Clients Without a Nurse Visit by Number of Days After the New Drug Prescription.

Research Question 2d

Days Between the New Psychoactive Drug and the Nurse Visit by Geographic Area

The eighth research question was to determine if the mean number of days between the new drug and the nurse visit differed across geographic areas. A one-tailed t-test for independent groups was used to answer the question whether the number of days between the new drug and the nurse visit varied by urban and rural areas (see Table 10). The t-test revealed that the mean number of days to the visit in the urban group was not significantly different from that of the rural group ($t=-1.41$, $df=101$, $p>.05$). The urban and rural mean days to visit were quite different, but not statistically significant because of the large variability of the days to the visit within the groups.

In addition, a one-way ANOVA was used to compare the mean number of days from the receipt of a newly prescribed psychoactive drug to the date of the first nurse delegation visit across geographic areas. The mean differences between days to the nurse visit on geographic area approached but failed to reach significance (see Table 11).

Table 10

Number of Days Between the Date of the Newly Prescribed Psychoactive Drug and the Date of the Nurse Delegation Visit by Geographic Area: t-tests for Independent Samples of Geographic Area (n=103)

Variable	Mean	SD	t	p
Days to Visit Urban (n=86)	59.2	64.4	-1.41	.087
Days to Visit Rural (n=17)	89.2	83.4		

Note. df=101

Table 11

Summary of ANOVA of Number of Days Between the Date of the Newly Prescribed Psychoactive Drug and the Date of the Nurse Delegation Visit by Geographic Area (n=103)

Group	n	M	SD
Urban	86	59.22	64.46
Less Remote Rural	13	103.15	89.57
Remote-Frontier Rural	4	44.25	38.75
Total	103	64.18	68.42

Outcome and Source of Variation	Sum of Squares	df	Mean Squares	F	p
Number of Days From New Psychoactive Drug to Nurse Visit					
Between Groups	23450.25	2	11725.12	2.58	.08
Within Groups	454071.24	100	4540.71		
Total	477521.49	102			

Research Question 2e

Proportion Receiving a Timely Visit

The ninth research question assessed the proportion of elibgible subjects who received a timely nurse delegation visit. Of 103 subjects who received a nurse delegation visit, 40.8% (n=42) were timely, having occurred on or within 30 days of the new psychoactive drug.

Research Question 2f

Timeliness of Nurse Visit by Geographic Area

The tenth and final research question sought to deterine whether or not timely nurse visits varied by geographic area. A chi-square test was used to analyze the relationship between the receipt of a timely nurse visit and geographic area. The timeliness of the receipt of the nurse visit was not significantly different in rural or urban areas (χ^2=1.08, df=1, p>.05 level). In urban areas, 43% of nurse visits were timely. In contrast, 29% of the visits in rural areas were timely, as shown in Table 12.

Table 12

Timeliness of the Nurse Delegation Visit by Geographic Area (n=103)

	Geographic Area		
Timeliness of Visit	Urban	Rural	Row Total
Timely <=30 days	37 (43.0%)	5 (29.4%)	42 (40.8%)
Untimely >30 days	49 (57.0%)	12 (70.6%)	61 (59.2%)
Column Total	86 (83.5%)	17 (16.5%)	103 (100%)

Note. The obtained χ^2 =1.08, df=1, p=.2967

Power Analysis

The power calculations for this study utilized the SOLO Power Analysis (SPA) software system (1991) (J. Fields, personal communication, May 7, 1997). Power calculations for chi-square were conducted on the actual study data. Of the total sample (N=3,454), a subsample of 1320 subjects received routine psychoactive drugs across three geographic areas. The obtained $\chi^2=6.09$, df=2, $p<.05$ indicated an effect size of .04 and power of .59 (SPA, 1991). This effect size is very small (J. Fields, personal communication, May 7, 1997).

Summary

The use of psychoactive drugs and the related delivery of nursing services was studied in a sample of 3,454 elderly Medicaid recipients living in Adult Foster Care Homes in Oregon. The aims of the study were to: (1) estimate the statewide and urban and rural proportions of routinely and newly prescribed psychoactive drug use among AFC elders, and (2) to describe the occurrence and timing of nurse delegation visits for those elders receiving newly prescribed psychoactive drugs. Licensed RNs are increasingly being used to teach, delegate, and supervise nursing functions, such as the administration of psychoactive drugs, to unlicensed, paid care providers in board and care settings where elders reside.

Subjects were predominantly female (79%), White (91%), urban-residing (62%), and had a mean age of 82 years. A secondary analysis of Medicaid reimbursement claims and enrollee records from September 1, 1993 through

December 31, 1994 was conducted. The receipt of routinely prescribed psychoactive drugs was determined from four months of claims data, while the history of psychoactive drug use and receipt of newly prescribed psychoactive drugs used eight months of claims data. Those subjects who received newly prescribed psychoactive drugs and thus had a high need for a nurse delegation visit were tracked for up to six month of claims data to determine the first nurse visit following the new drug.

Receipt of Routine Psychoactive Drugs

Findings revealed that 38.2% (n=1320) of the subjects received routine psychoactive drugs. The proportion of urban clients who receivied psychoactive drugs routinely (39.8%) was significantly higher than the proportion of rural clients who received psychoactive drugs routinely (35.7%) (χ^2=5.68, df=2, p<.02).

Receipt of New Psychoactive Drugs

Of those subjects on psychoactive drugs, 18.6% (n=246) received newly prescribed psychoactive drugs and thus had a high need for a nurse delegation visit. The proportion of urban new psychoactive drug users (17%) was significantly less than the proportion of rural new psychoactive drug users (21.5%) (χ^2=4.05, df=1, p<.05).

Occurrence of a Nurse Visit

Only 44.6% (n=103) of the 231 subjects receiving newly prescribed psychoactive drugs and available (remaining in AFC) for a nurse delegation visit

received one. The proportion of urban clients who received a nurse delegation visit (61.9%) was significantly greater than the proportion of rural clients who received a visit (18.5%)

(χ^2=42.18, df=1, p<.001).

Days Between the New Drug and the Nurse Visit

The overall time interval from the newly prescribed psychoactive drug to the first subsequent nurse visit was expected to occur within 30 days. However, the median number of days to the visit was 43, with the longest time to a visit being nearly nine months.

The mean number days between the date of the new drug and the nurse visit was not statistically significant across geographic areas. The mean number of days to the nurse visit in urban areas was 59 and the mean days to the visit in rural areas was 89 (t=-1.41, df=101, p=.087). While urban and rural mean days to visit were quite different, the difference was not statistically significant because to the large variablility of the days to the visit within groups.

The survival or event analysis of time to the nurse visit showed that at the end of the observation period of six months the majority of clients (55.6%) had not yet received a visit in the context of a new psychoactive drug. At 14 days nearly three-fourths of the clients had not received a visit after the date of the new drug and at 30 days nearly 60% of the clients lacked a visit within the expected time. Thus, the trend was for clients to receive visits earlier and to receive fewer over time.

CHAPTER V

DISCUSSION

In this chapter, the findings are discussed with respect to the literature and their implications for nursing research, practice, and theory.

Older AFC Medicaid Recipients

The sample of elders represents men and women who reside in small board and care homes funded by Medicaid. About one-third of all AFC clients in Oregon are Medicaid recipients (Kane et al., 1990). In contrast, about half of the national board and care population is publicly funded (Mor et al., 1986; Hawes et al., 1995). The total size of the AFC population in Oregon is not known because data are not collected on private pay clients. However, all homes and beds are licensed. The number of licensed beds is 9,300, but the occupancy of private pay beds is unknown.

Medicaid recipients are more likely to be poor, chronically ill, and have higher rates of alcoholism, drug abuse, and health care utilization than the general population (Bright, et al., 1989; Sena & Pashko, 1993). However, the characteristics of the sample are similar to board and care residents nationally, irrespective of welfare status (Hawes et al., 1995).

Age. In this study, the average age of clients was 82 years. The vast majority (78%) of elderly AFC Medicaid recipients in Oregon are 65 years or older (SDSD, 1993-1995). In this study, 23.3% were in the young-old group of 65

to 74 years; 38.1% in the middle-old group of 75 to 84 years; and 38.6% in the old old-group of 85 years and older. By comparison, a 1985 Medicaid national home and community-based waiver survey found that 81% clients were 65 years or older, 25% were 65 to 74 years, 34% were 75 to 84 years, and 22% were 85 years or older (Laudicina & Burwell, 1988). Thus, Oregon AFC waiver clients had slightly fewer young-old, somewhat more middle-old and substantially more old-old than the national sample. This result is expected because of the documented level of frailty and disability in AFC in Oregon and the state's policy committment to keep elders in the community (GAO/HEHS-94-167). Also, there is a difference of nine years between the data sets of the study and national waiver sample. In contrast, the sample of the 10-state study of 3,257 residents, both private and public pay, in 510 board and care facilities by Hawes et al. (1995) found that the mean age of residents was 75 years, with 14% age 65 to 74 years, 30% age 75 to 84 years and 34% age 85 and older. Thus, the Oregon AFC recipients are older and have the greatest proportion of very old than the sample with both payers. The "old-old" are of population of considerable interest. The fastest-growing population in the U.S. are those over 100, followed by those over 85 who are expected to double in 30 years (Lamm & Lamm, 1996).

Gender. In this study, Oregon AFC recipients were predominantly female (79%). In comparison, 1985 waiver clients were 75% female and the Hawes et al (1995) board and care residents were 66% female (Laudicina & Burwell, 1988). A 1980 survey of residential care found that 66.8% of the residents were female

(Mor et al., 1986). Board and care residents have been found to be largely female since the studies of the 1980s (Dittmar et al., 1983). One would expect a sample of older people to have a larger proportion of females as women live on average 6.9 years longer than men (Ebersole & Hess, 1994) .

Ethnic representaion. The study sample was 91.4% White, 1.7% African American, and 1.5% Hispanic. In comparison, Hawes et al (1995) found that board and care residents were 91% White, 7% African American, and 5% Hispanic. In addition Dittmar et al (1983) found that board and care residents across seven states were 85.8% White. The study sample had fewer minorities than the Hawes et al. (1995) sample. However, compared to the U.S. as a whole, Oregon is a relatively non-diverse state in terms of the racial and ethnic composition of the population, with older Oregonians being even less racially and ethnically diverse than younger Oregonians (Aging Oregonians, 1993).

Geographic area of AFH. In this study, the majority (61.6%) of AFHs were located in urban areas, with 28.5% in less remote rural areas, and 9.9% in remote-frontier rural areas. In comparison, Mor et al. (1986) found that 84.3% of facilities were located in urban areas and 15.7% in rural areas. Adult foster care homes are reported to be fairly evenly distributed across Oregon (Kutza, 1994). The licensing agency, SDSD, reports the number of AFC homes on an Area Agencies for Aging (AAA) district basis, not on a per county basis (SDSD, 1996).

The vast majority of Oregon's elderly population (87%) live in the 18 counties of western Oregon (Aging Oregonians, 1993). The challenges in

providing services to elders arises not from the absolute number of elderly, but from their concentration within a relatively small population base (Aging Oregonians, 1993).

Psychoactive Drug Use Among AFC Clients

A major aim of this study was to estimate routine and new psychoactive drug use among the state's elderly AFC population funded by Medicaid. The high proportion (38.2%) of AFC clients in this sample who routinely received psychoactive drugs is comparable to the rates found in other board and care studies (34% to 55%) (Dittmar et al., 1983, Avorn et al., 1989; Hawes et al., 1995; Maylie, 1995).

The rate, as expected, is higher than that of community-living elders diagnosed with Alzheimer's Disease. A study of 671 elders in the community found that 31% received at least one psychoactive drug, 13.2% received antipsychotics, 9.2% received antidepressants, and 15% received anxiolytics (Semla et al., 1995).

The rate is comparable to NH rates prior to the reforms associated with the Omnibus Budget Reconciliation Act of 1987 (OBRA-87). Pre-OBRA-87, 53% of NH residents received psychoactive drugs with 26% receiving antipsychotics, 14% receiving antidepressants, and 28% receiving anxiolytics (Beers et al., 1988). The OBRA-87 regulations were effective in reducing psychoactive drug use among NH residents (Rovner et al., 1992; Shorr et al., 1994).

The board and care population has higher rates of antipsychotic and

anxiolytic use and the same rate of antidepressant use as the NH population. A study of 33,000 NH residents in Minnesota four years post-OBRA-87 found that antipsychotics were used by 15%, antidepressants were used by 16%, and anxiolytics were used by 12% (Garrard et al., 1995). In comparison, a study of 2,949 board and care residents in ten states found that antipsychotics were used by 21%, antidepressants were used by 16%, and anxiolytics were used by 14% (Spore et al., 1996).

A substantial proportion of the sample (18.6%) received newly prescribed psychoactive drugs during the study period. The rate at which psychoactive drugs are newly prescribed to NH or board and care residents has not been studied. The rate of "new cases" among AFC clients demonstrates a need for nurse delegation and supervision visits.

The Medicaid claims data used in this study suggest high rates of psychoactive drug use in AFHs. High psychoactive drug use rates do not automatically lead to the conclusion that they are inappropriate or excessive. Further information on the presence of a mental condition, follow-up by a physician or mental health professional, and individual client data are needed to make such a determination. However, because of the NH experience with broad psychoactive drug use for behavior control, it is reasonable to ask if problematic use is occurring in AFC as well. The potential for overuse, misuse, and underuse of psychoactive drugs exists in AFC.

The use of such drugs in many cases is likely to be appropriate given the

many board and care residents nationally and the AFC clients in Oregon with dementia, chronic mental illness, and other psychiatric disorders (Spore et al., 1995; McKenzie, 1990). Antipsychotics can relieve some of the major symptoms of psychosis and improve chaotic and frightening experiences (Garrard et al., 1995). Thus, such quality of life outcomes may offset the risk for irreversible tardive dyskinesia, confusion, delirium, and blunted emotions and behavior (Spore et al., 1995; Garrard et al., 1995). Other common side effects associated with antipsychotic drug use include: movement disorders, orthostatic hypotension, gait disturbance, urinary retention, dry mouth, and constipation (Spore et al., 1996).

The concern is that AFHs are non-medically supervised settings, they do not have medical directors and they usually do not have licensed nursing staff (Spore et al., 1995). Nonetheless, AFHs serve an increasingly frail and impaired population (Hawes et al., 1995). Thus, the issues for policymakers, program managers, and the public are the lack of professional supervision of drug administration and monitoring and the often unskilled and minimally trained staff who may not be capable of identifying older people at risk of harm from drug effects. The AFC paid caregivers store and administer drugs with little or no training in medication management, particularly with respect to older people (Hawes et al., 1995).

The potential for overuse or misuse of psychoactive drugs in board and care facilities parallels the NH experience which stimulated regulations

(regarding Preadmission Screening and Annual Resident Review [PSARR], chemical restraints, and unnecessary drug use). The literature suggests that regulations have been effective in reducing antipsychotic use among NH residents (Rovner, et al., 1992; Shorr et al., 1994).

Compared to NHs, board and care facilities serve a less impaired population which is less likely to need on-going daily nursing care (Spore et al., 1996). However, several studies indicate that substantial numbers of board and care residents have significant impairment and frailty and fit the profile of NH residents (Dittmar, 1989; Mor et al., 1986; Hawes et al., 1995). In contrast to NHs, however, board and care facilities and their "nursing practices" are subject to markedly less stringent regulation and oversight (Spore et al., 1996). The question of what level of codes, standards, and regulations would be optimal in board and care is complex. Consumers want independence, autonomy, a humane and normal environment, and the benefits of both the social and the medical models. Moreover, protections for frail elders related to staffing levels, training, and professional oversight are associated with a costly institututional model. The challenge is to prevent substandard care and maintain quality with appropriate regulations but not to restrict care and re-create NH conditions (Buckwalter et al., 1996).

In conclusion, the estimated rates of routinely and newly prescribed psychoactive drug use found in this study suggests that systematic drug utilization review and further study into psychoactive drug use be conducted in

AFC.

Psychoactive Drug Use and Geographic Variation

An aim of this study was to describe the receipt of routinely prescribed and newly prescribed psychoactive drugs by geographic area (urban, less remote rural, and remote-frontier rural).

The higher proportion of urban-dwelling AFC clients receiving routine psychoactive drugs (39.7%) compared to less remote rural-dwelling clients (35.1%) was unexpected. Contrary to this finding, other studies have demonstrated a relationship between greater antipsychoatic drug use and rurality, however, the support is not strong. A study of 5,902 NH residents, funded by Medicaid, found that physicians with large NH practices (more than 10 patients), prescribed 81% of the total antipsychotics studied, and were most often family practitioners, practicing in rural counties (Ray et al.,1980). A study of seven NHs found that the lowest rate of antipsychotic drug use was in a NH located in an urban area and the highest antipsychotic drug use rate (40%) was in a NH in a rural facility (Hulisz et al., 1991). A statewide study in Minnesota found that antipsychotic drug use rates were significantly higher in NHs located in counties with lower population densities (e.g., rural communities), and higher densities of elders (Garrard et al., 1995).

A higher rate of antipsychotic drug use is associated with younger NH residents (Thapa, et al., 1995). Garrard and colleagues (1995) also found higher rates of antipsychotic use associated with a higher percentage of NH residents in

the young-old age category (Garrard et al., 1995). However, in this sample there was no difference in the distribution of clients across the three categories of older age by geographic area. Thus, age does not appear to account for the higher proportion of psychoactive drug users in the urban clients.

Although the proportion of routine psychoactive drug users in urban areas (39.8%) was significantly greater than the proportion of routine psychoactive drug users in less remote rural areas (35.2%), the difference just reaches statistical significance. The proportions of routine psychoactive drug users are all high across all geographic areas terms of clinical significance. This suggests a systematic problem, not one unique to a geographic area.

The higher rate of urban routine psychoactive drug users may be due to the ability of urban AFHs to maintain more cognitively impaired clients than rural AFHs because resources are more available in urban areas compared to rural areas. Alternatively, the higher rate of urban psychoactive use may be related to a greater availability of specialists offering psychopharmacotherapy in urban compared to rural areas. Moreover, higher urban rates of psychoactive drug use may be due to the use of AFC homes for older adults funded by Medicaid who have had long standing psychiatric histories and treatment with psychoactive drugs (B. Hoeffer, personal communication, April, 29, 1997). Further, the rural culture may lead to less treatment due to the higher acceptance of things the way they are (Coward et al.,1994).

In contrast, to the above findings, this study found that the proportion of

urban-dwelling AFC clients receiving newly prescribed psychoactive drugs (17%) was significantly less than the proportion of remote-frontier rural-dwelling clients (27%). This result suggests that fewer clients are being started on psychoactive drug therapy in urban areas. This finding is difficult to explain. However, it may be that urban prescribers instituted earlier reductions in psychoactive drug prescribing than rural prescribers. This may reflect more informed prescribing patterns of physicians with urban practices, the availability in urban areas of geriatricians, mental health consultants, and professional educational opportunities compared to rural areas. In addition, urban licensed nursing staff may be more informed about avoiding "chemical restraint" and using behavioral methods to manage behavior disturbance because of access to experts, information, and continuing education compared to rural nurses. However, data on client characteristics, such as diagnosis, length of stay, etc. are needed in order to make conclusions about the prescribing rates of routine and new psychoactive drugs (B. McFarland, personal communication, April 29, 1997).

Occurrence and Timing of Nurse Delegation Visits

A major aim of this study was to describe the delivery of nursing services to the state's elderly AFC population funded by Medicaid in the context of a high need for a nurse delegation visit due to newly prescribed psychoactive drugs. The expected standard time interval between the date of the new drug and the date of the first nurse deleagion visit was 30 days. The standard was determined using Agency for Health Care Policy and Research clinical practice guidelines for

persons in primary care with depression and the OBRA-87 PASARR provisions for Nhs. Given the age and disability of clients and absence of onsite professional supervision in AFHs 30 days is a liberal standard.

Less than half (44.6%) of the 231 clients who remained in AFC for more than 30 days after the receipt of the newly prescribed psychoactive drug received a nurse delegation visit. This finding suggests inadequate delivery of nursing services to AFHs. The SDSD funds RNs to teach AFC caregivers the clinical knowledge and skills required to administer psychoactive drugs to older clients safely and effectively. Education and ongoing monitoring by professionals are needed because older people are vulnerable and more sensitive to drugs than younger people due to (a) multiple age-related physical changes, (b) multiple chronic disease states, (c) multiple number of drugs taken, (d) higher risk of adverse drug reactions [ADRs], and (e) the highly variable response of elders to drugs (Pollow et al., 1994; Ray et al., 1990; Stoehr, 1995; Lamy, 1990). Inconsistent monitoring of drugs used by older people contributes to ADRs, many of which are preventable (Potempa & Folta, 1992). Adverse drug reactions are costly in both individual and economic terms.

The lack of nurse visits to delegate and supervise the administration of psychoactive drugs to AFC caregivers threatens the safety and quality of care of clients who are among the nation's poorest, sickest, and most vulnerable population groups (DeLew, 1995). This study raises concerns about the adequacy of nursing service delivery to AFHs.The low rate of nurse visits is

consistent with the findings of others (Dittmar, 1989; Feder et al., 1989; Hawes et al., 1995).

The reasons why the visits did not occur could not be determined from this study. However, access to services is related to availability, awareness, appropriateness, acceptability, affordability, and adequacy (Magilvy, 1996). There are several factors that may explain the lack of nurse visits found in this study. First, case managers may not be able to balance client advocacy with gatekeeping. Community service agencies nationally are known to be reluctant to allocate nursing resources to elderly board and care residents and community-based care elders respectively because of budget constraints (Feder et al., 1989; Greene et al., 1995). In addition, case managers without medical training may not realize that the need for a nurse visit exists.

Second, the system generally relies on over-worked and minimally trained AFC providers to communicate changes in the condition of the client or medical plan of care and the need for nursing delegation services to the case manager. No direct line of communication to the nurse of the need for nursing care exists in the community as it does in institutional care. Thus, in the community the nurse may not even be aware that the caregiver is coping with a complex or high risk regime without nursing assessment, teaching, delegation, and supervision. AFC providers may be unwilling to call in nursing services for several reasons. These include: (a) they don't recognize that services are needed or available, (b) they are unwilling or lack the knowledge or English-speaking skills to arrange the

services, or (c) they are unwilling to undergo the professional scrutiny.

Third, the same complexity in financing, organization and delivery that pervades LTC appears to exist in the AFC program (Harrington, 1992). The systems in place to request and deploy a nurse to AFHs vary across local agencies that serve the aged. While many agencies rely on the AFC provider to notify the casemanager of the need for a nurse visit, at least one metropolitan agency is organized and has the resources to assign each AFH in the county to a nurse who routinely visits every two months and can determine the need for delegation and notify the case manager. Case managers may also become aware of the need for a nurse visit by reviewing the client assessment data at the time of admission to the AFH or by attending local Multidisciplinary Case Meetings. However, most of the local agencies do not have methods for nurse staffing, scheduling, or assignment. Further, only those clients who receive routine nurse visits benefit. Also, the interval between drug prescribing and visits can vary greatly as demonstrated in this study and thus result in unmet needs for care for extended periods of time.

Finally, the provision of nursing services is influenced by the number of nurses available to respond and the proximity of the nurse to the facility. More information is needed on the number of nursing resources and community visit caseloads across the state.

The time interval from the new psychoactive drug to the nurse delegation visit found in this study was long. The median number of days between drug

prescribing and the visit was 43, with the longest interval being nearly nine months. The time interval between the receipt of the newly prescribed psychoactive drug and the nurse visit can vary due to an AFC provider delay in notifying the case manager, the timing of the routine nurse visit, the workload of the case manager, the availability and caseload of the nurse, the time it takes the nurse to schedule a visit, and proximity of the nurse to the AFH. The timeliness with which the nurse intervenes in the care process can effect resident outcomes as well as caregiver burden.

Analysis and probability modeling of the National LTC Channeling Demonstration data revealed that nurses were underused due to their short-run costs which reduced the cost-effectiveness of CLTC services in the long-term by increasing NH placement (Greene, et al., 1995). The impact of nursing care hours on risk for those with major health impairments was strong and statistically significant (Greene et al., 1995). Therefore, due to many factors AFC clients can be a very underserved population in terms of professional nursing services. The consequences are that nonprofessionals are left to cope with complex clinical needs and a high risk drug regimen without support. Therefore, quality of care may be threatened.

Nursing Service Delivery and Geographic Variation

The proportion of urban-dwelling clients who received a nurse delegation visit was significantly higher (61.9%) than the proportion of both less remote rural-dwelling (20.6%) and remote-frontier-dwelling clients (13.8%). In urban

areas, 43% of the nurse visits were timely. In contrast, 29% of the nurse visits in rural areas were timely. These findings are not unexpected given the large literature on access to rural health care.

Several factors affect access in rural areas, such as distance from services, number and distribution of services and providers, infrastructure or organizational problems, fragmentation of services, transportation issues, lack of knowledge of services, lack of acceptability to rural elders, and difficulities that small agencies have in serving large areas (Magilvy, 1996). The rural culture has been found to be a barrier to the provision of formal community-based services (Krout, 1994). Research has demonstrated that rural elders are less likely to use formal community-based services than their urban counterparts (Coward et al., 1994). The reasons that rural clients received significantly fewer nurse visits need to be studied in order to plan for and improve service delivery.

In summary, on a statewide basis, not even half of the elderly AFC clients who has a high need for a nurse delegation visit in the context of a newly prescribed psychoactive drug received one. Of those who received nurse visits, urban clients fared significantly better than rural clients. Further, on a statewide basis, not even half of the visits were timely. Thus, this study suggests high rates of psychoactive drug use and low rates of nurse delegation and supervision among AFC Medicaid recipients.

Limitations of the Study

The sample of Medicaid recipients affects external validity. The AFC clients

do not represent all board and care elders. However, while the absolute proportions found in this study cannot be generalized to all board and care clients nationally, they suggest that most states would have similar problems. Other states may even have more problems due to their shorter experience with community-based care compared to Oregon.

Administrative claims data can be used to screen, profile, target problems on an aggregate level and plan further research. There are small validity issues related to the drug and nurse visit claims data. Drug use could be overestimated if the drug was dispensed and paid for but never used. Nurse visits could have occurred but not been related to the delegation of psychoactive drug administration. In addition, visits could have occurred but not been recorded. However, it is much more likely that drugs that are dispensed are used. It is highly likely that nurses who monitor older AFC clients are focused on psychoactive drug use.

Validity of Drug Claims Data

A drug claim is an easily identifiable health expenditure line item (Sena & Pashko, 1993). It indicates that the prescription has been filled and suggests that the person is receiving the drug. Drug use is inferred or measured indirectly through claims, thus error is introduced into the analyses (Melnychuk, Moride, & Abenhaim, 1993). It is possible that drug use could be over estimated if the drug was dispensed and paid for but never actually used by the patient. However, Medicaid and other insurance claims data have been accepted as valid

indicators of drug use and are widely used for a variety of applications in health services research conceptually similar to that proposed in this study (O'Connell, Chance, & Bowman, 1994). Insurance drug claims are frequently used as a proxy measure for studying prescribing patterns and estimating drug use in pharmacoepdidemiologic studies (McFarland-Barbour, Lamont-Hume, Assaf, & Carleton, 1993). Advantages to using insurance claims data for clinical research are that they can provide large samples of geographically dispersed subjects, longitudinal records, data already collected and defined sampling frames (Jollis, et al., 1993). Further, claims data are less expensive and do not have the problem of selective nonparticipation in a study (Weiner, Powe, Steinwachs, & Dent, 1990); are a data source well suited to population-based studies (Weiner et al., 1990); and their size permits the detection of rare events (Sena & Pashko, 1993).

Claims data are an actual record of service use (Loranger & Rogal, 1995). Medicaid claims provide a record of each health care service received by eligible enrollees, such as physician, laboratory, procedures, inpatient care and drugs (Sena & Pashko, 1993). Overall, large health insurance databases and Medicaid and Medicare claims data of all types of services and expenses have been used in health services research to: (a) screen and profile patterns of care across patient, provider groups, and states, (b) study geographic variation, such as urban and rural, (c) target prescribers, pharmacies, and patients warranting intervention, (d) flag problems, and (e) plan future research (Zimmerman, Collins,

Lipowski, & Sainfort, 1993; Weiner, Powe, Steinwachs, & Dent, 1990; Weiner, Parente, Garnick, Fowles, Lawthers, & Palmer, 1995).

Strengths of drug claims data. Medicaid drug data represent only filled prescriptions, rather than being just a record of what was prescribed (Bright, Avorn, & Everitt, 1989). In addition, routinely collected claims data can be more accurate than

self-reported data which are subject to issues of recall bias (Fox & Phua, 1994). Claims data has the potential to provide a level of detail that cannot always be captured by surveys (Loranger & Rogal, 1995). Another advantage of retrospective drug claims data is its ability to identify aggregate provider-centered prescribing problems (Lipton & Bird, 1993).

Drug utilization review (DUR). For over three decades, researchers have used Medicaid drug claims to study individual and aggregate patterns of drug prescribing, also called drug use evaluation (DUE) and pharmacoepidemiologic analysis (Rosenberg, Berenson, Kavaler, Gorelik, & Levine, 1976; Brown & Lipowski, 1993). Drug utilization review was developed and instituted in 1965 when the Department of Health, Education and Welfare (DHEW) assisted the states in forming the Medicaid Management Information Systems [MMIS] to monitor drugs in order to control costs (Lipton & Bird, 1993). The typical DUR is in a Medicaid program, HMO, or insurance company and it is a retrospective, computer-generated drug use review and feedback program (Lipton & Bird, 1993). The growth of DUR programs and use of drug claims data have been

attributed to the OBRA 1990 requirement that all state Medicaid programs implement a DUR program to detect and correct patterns of fraud, abuse, gross overuse or underuse, and inappropriate or unnecessary drug use by January 1, 1993 (Sandusky, 1993). The goals of DUR also include improving drug therapy and improving patient compliance (Sena & Pashko, 1993). The OBRA 1990 Medicaid DUR requirements call for both retrospective and prospective reviews but prospective DUR is more comprehensive in scope than existing regulation (Zimmerman, Collins, Lipowski, & Sainfort, 1994).

Importantly, prescriptions have been reported to be the most reliable and valid data source in Medicaid (Bright, Avorn, & Everitt, 1989). Bright and colleagues (1989) referred to a validation study done at the Research Triangle Institute in 1984 in which 94% of pharmacy records for Medicaid recepients (N=1,661) were found to have corresponding prescription claims in the Medicaid dataset.

Limitations of Medicaid data. Administrative databases are designed for processing and paying claims, not for research, thus methodological problems exist in using these data for DUR such as the lack of patient-specific and detailed clinical data (Sena & Pashko, 1993; Zimmerman et al., 1993). While claims data offer breadth (aggregate data) the data lack depth and detail. They can document an event according to service, provider, and patient but they do not provide the information about the outcomes of care that are found in the medical record, thus quality of care can only be inferred from claims data (Weiner, Powe,

Steinwachs, & Dent, 1990). The lack of clinical detail often prevents secondary analyses from being conclusive, thus results are usually considered preliminary or exploratory and do not substitute for the more definitive collection of primary data in clinical research. The Joint Commission on Accreditation of Healthcare Organizations (JCAHO) has determined that the monitoring of claims database elements can demonstrate that further investigation needs to occur in order to decide if opportunities exist for improvement and that the reliability and validity of such indicators needs to be established through field-testing (JCAHO, 1990).

A disadvantage of retrospective drug claims data is that it only impacts future prescribing and does not effect the patients who have received the drugs (Lipton & Bird, 1993). The major drawback of Medicaid drug claims databases is that the data are limited to the drugs which are reimbursed by Medicaid (Collins & Zimmerman, 1992).

Researchers using drug claims data are required to define which assumptions are made with respect to drug use. An assumption can be made that the patient took the drug over a 30 day period just as described, starting on the day the prescription was filled. However, it is most likely that such an assumption would be at least a little inaccurate in many subjects (Bright, Avron, & Everitt, 1989). Thus, error has to be accounted for.

The focus of DUR is often only on cost containment factors such as use of cheaper drugs; decreasing unnecessary duplication, suboptimal choice of drug; and avoiding dangerous drug-to-drug interactions, wrong dose, and

inappropriate schedule or duration (Lipton & Bird, 1993). The usual type of DUR can impact both cost and patient outcomes (suffering, morbidity, and mortality) by reducing unnecessary physician visits, emergency care and hospitalizations. However, even more comprehensive, patient-centered and prospective DUR programs could have a greater influence on patient outcomes if they took into account the unique clinical context so that the failure to prescribe a needed drug and the prevention of adverse drug reactions were also detected.

The many sources of secondary databases vary greatly in associated costs, timeliness of data, scope of data elements, quality of the data, missing or inaccurate data, and ability to provide support to users of their data (Loranger & Rogal, 1995). In addition, constraints within organizations such as staffing problems and workload may cause difficulties in the releasing of the data to researchers. The quality and appropriateness of the data provided require a cooperative and supportive relationship between the person supplying the data and the researcher, from the point of data request to the receipt of data files. Sufficient interaction between the two parties is required to result in an effective and efficient secondary data analysis. Knowledge of variation in length of enrollment (eligibility data files), delay in the submission of claims (lag times), and the often needed merging of related data sets are fundamental to working with large insurance databases (Loranger & Rogal, 1995).

Potential data management problems exist with large data bases. These may include extraordinarily large files,widely different file structures, format

compatibility issues, large storage needs, costs related to substantial amounts of computer time and resources for reading, merging, sorting, and performing statistical procedures (Paul, Weis, & Epstein, 1993).

The Mediciaid population is not representative of the general population (Collins & Zimmerman, 1992). The population of Medicaid recipients are more likely to be poor, chronically ill, and have higher rates of drug abuse, alcoholism, and health care utilization than the general population (Bright, Avorn, & Everitt, 1989; Sena & Pashko, 1993). Thus, bias may be an issue issue in using Medicaid claims data and the findings of the study cannot be generalized directly to persons who are not Medicaid enrollees (Ray, Federspiel, Baugh, & Dodds, 1987). However, with respect to this sample, data cited earlier indicate that the characteristics of the sample are similar to board and care elders nationally, irrespective of welfare status (Hawes et al., 1995). In addition the sample represents one state.

Reliability of drug claims data. The reliability of data processed, collected, and entered by others is always subject to the threat of clerical error (Jabob, 1985; Lange & Jacox, 1993). When drug information is entered into the computer data base errors are possible. The drug or dosage can be omitted from entry and incorrect agents and dosages can be entered (McFarland-Barbour et al., 1993). Administrative data bases are large, contain millions of records, consist of data from multiple sites, and often have missing data issues (Sena & Pashko, 1993). However, the amount of error is often minimized with financial

and billing data because they are more reliable and objective and incentives exist for payers and providers to assure accurate and complete data (Brown & Semradek, 1992). Furthermore, drug claims are subject to federally-mandated audits and edits to confirm accuracy and appropriateness before payment is made (Fox & Phua, 1994). In Oregon, this is accomplished through systematic computerized edit checks initiated by the federally mandated DUR and within SDSD. The use of nondiagnostic codes such as for drugs are considered to be more reliable and less ambiguous than diagnostic codes which are subject to reimbursement bias (Sena & Pashko, 1993).

Weiner and colleagues (1990) cited four studies by Roos and colleagues done in the 1980s in which over 80% of the claims data for type of drug, procedure type, and date of service was validated from other sources. Shorr and colleagues (1994) found that Medicaid drug claims correctly estimated 88% of the antipsychotic drug use recorded in the Medication Administration Records (MARs) of 378 residents in four NHs over a six month time period. McKenzie and colleagues (1995) compared 1991-1994 Oregon Medicaid psychoactive drug claims of NH residents (N=205) to MARs in NHs. Results indicated that the agreement between claims data and chart data regarding whether or not client was receiving a drug from that class was 82% for antipsychotics, 91% for antidepressants, and 81% for anxiolytics. The reliability of the claims data used for this study is expected to be comparable to that reported by McKenzie and colleagues (1995) given that the data are subject to similar error sources and

also use similar edits and audits. The amount of expected error is judged to be modest and acceptable for the applications such as that proposed in this study.

The use of secondary data can pose a threat to validity to the extent that the data may become outdated and therefore not reflect current practice patterns. In the proposed study the data are over 2 years old. However, there is no reason to believe that practice patterns related to psychoactive drug use or nurse visit follow-up have changed substantially in the interim. Furthermore, the benefits of using the Medicaid data sets far outweigh any age related disincentives of using the data; they are population-based, inexpensive, readily available, and longitudinal in nature.

Validity of nurse visit claims data. Claims data are well suited to examine utilization rates of services categorized by type of patient and provider and frequency of visits (Weiner et al., 1990), to follow subjects longitudinally, and to evaluate of variations in health care delivery patterns (Paul, Weis, & Epstein, 1993).

When a RN visit was made to an AFC home subsequent to the new prescribing of psychoactive drugs, it was inferred that the nurse provided delegation and supervision services relative to the new psychoactive drug. There are three reasons to believe the RN visit claim date serves as a valid indicator and proxy measure for the provision of delegation services at the visit. First, the primary role of the community nurse was clearly defined by Senior and Disabled Services Division (SDSD) as consultative and focused on teaching, delegation

and supervision. The nurse was specifically directed not to provide direct care, but rather to assess, plan, teach, delegate, and supervise care in AFC homes (SDSD, 1994). Additionally, the SDSD (1994) defined the administration of psychoactive drugs by AFC providers to be a delegated nursing task in the Community Care Contract Nurse Training Handbook.

Second, the Oregon Nurse Practice Act standards in effect in 1994 specifically mandated the nurse to teach AFC providers about drugs, provide written instructions, specific parameters for PRNs, periodic supervision, and document the process and outcomes of these services (ORS 851-47-020). And the community standard of prudent nursing practice as well required the visiting nurse to conduct a complete assessment of the frail elder who received potent psychoactive drugs and attend to any drug administration or management issues.

Third, a qualitative pilot study involving interviews with community nurses hired by SDSD to serve AFC homes revealed that all three nurses reported it was standard procedure to assess medication management at every visit because problems usually exist with medication delivery by the AFC providers and psychoactive drugs are "high risk delegated medications."

Assessment of the provision of nursing services usually involves consideration of effectiveness and quality. However, information gaps exist in the nurse visit claims data because they only include the occurrence and timing of RN visits and measure process factors, not client outcomes. Nurse visit claims

data lack the detail and evidence of the nurse assessment and provision of the delegated administration and management of psychoactive drugs. Documentation on the client record in the AFC home of the nurse visit and the outcomes of teaching and delegation would provide a more direct indicator of the process and outcomes as would direct observation of the visit and client, or an interview of the AFC provider about the process and outcomes of delegation. The nurse visit claims do permit a broad screening of expected services in the context of a newly prescribed psychoactive drug.

One small threat to the validity of the nurse claims data exists. The reason for this threat is that nurse visits can be made by nurses other than by the nurses contracted with and reimbursed by the Medicaid program. Because the older AFC clients are also funded by Mediare, the potential exists for nurse visits being made by Medicare funded nurses. These may include visits by mental health nurses, hospital discharge nurses, and visiting nurse association (VNA) nurses. Medicare pays for intermittent skilled nursing care visits. However, Medicare visits are focused on a specific skilled function, such as wound care. Medicare home visits are not likely to attend to psychoactive drug administration and management issues.

Attempts were made to request the Medicare claims linked to the subjects in this sample from Oregon Medical Professional Review Organization (OMPRO), Aetna, and Blue Cross of California who pay for all home health care for Medicare in Oregon. However, it was not possible to link aggregate data

(Dennis Gosai, personal communication, September 11, 1996). Thus, it was not possible to account totally for the number of such community nurse visits made to older AFC clients funded by Medicaid throughout 1994 that were conducted by nurses other than the nurses that SDSD contracted with and paid. The Visiting Nurses Association (VNA) estimates that 25% of its statewide caseload of nurse visits are made to elders funded by both Medicare and Medicaid in AFC homes (B. Quint-Gable, personal communication, September 11, 1996).However, the state Medicaid claims data has been estimated to capture 95% of any RN service visit made to older AFC clients (B. Forsell, personal communication, March 6, 1997).

Professional oversight of psychoactive drugs in AFC is expected to be minimal or nonexistent from Medicare reimbursed nurses. Pharmacists and physicians also may have provided teaching and delegating of psychoactive drug administration and management to AFC providers. However, the research has suggested that pharmacist's involvement in drug use management in board and care is minor or nonexistent (Spore et al., 1995). Written drug information at the point of service is provided by pharmacists in Oregon. Such information is not usually tailored to the geriatric population. Physicians and phramacists are not known to focus on implementing illness and treatment regimens, nonpharmacological behavioral interventions and coping with the responses and life adjustments to illness. Thus, the absence of a nurse visit is a strong indicator of the absence of ongoing professional monitoring.

Reliability of nurse visit claims data. In Oregon, nurse visit claims were reviewed and randomly sampled and passed through a number of audits and edits required by the federal government that confirmed eligibility, verified accuracy of procedure codes, dates, Medicaid recipient identification ("prime") numbers, and validated appropriateness of service by provider before payments were made (L. Hendrickson, personal communication, March 6, 1995). In addition, after payments were made, surveillance utilization reviews occurred at the Oregon Medical Assistance Program (OMAP). If nurses were not paid enough they reported it quickly. They had a strong incentive to correct it if overpaid to avoid the threat of Medicaid fraud. Thus, the nurse visit claims for this study were thought to document reliably the provision of community nurse visits to the AFC client and AFC provider.

The strengths associated with service date events that apply to nurse visit claims data were identified and supported with citations in the drug claims data section previously. Both drug claims and nurse visit claims can be used to profile service use, link practice pattern variation with geography, and serve as a first-cut tool to identify problem areas for further study. Information on health service use by dependent frail elders can assist accountable groups to increase the provision of needed services and decrease the provision of unnecessary services (Weiner et al., 1995).

Reliability and validity of geographic location data. The geographic location of the AFC home data was highly reliable because it was linked to AFC

provider licensing and reimbursement. The geographic location of the AFH was determined by the city of the AFH address. This is a standard and valid determination of of the location and it is based upon state and county maps. The method used to classify cities and towns into one of four urban and rural areas is long established and has been used by the state for determining tax credits for rural physicians and student loan repayment programs for those who serve in rural areas (T. Ennis, personal communication, March 18, 1997).

The geographic area classifications of the sample and all listed cities and towns (n=293) was submitted to the ORH/OHSU to T. Ennis on April 11, 1997 for interrater reliability purposes. In addition, the geographic area classifications were compared with those made by the research assistant on the larger study. Therefore, its application was appropriate in this study.

Implications for Theory, Practice, Research & Policy

Ignorance about psychoactive drug use in AFC and related community-based nursing service delivery is such that the more research is needed. The high rate of psychoactive drug use (38.2%) among older AFC clients found in this study needs to be examined in greater depth and detail. A smaller sample would permit the collection of comprehensive client information. Data on the client levels of cognitive and functional impairment, health conditions, treatments and care is needed to determine the appropriateness of psychoactive drug therapy in this population. Further, the study of psychoactive drug therapy needs to include information on drug class, dosage, duration, duplicate therapy, optimal

drug choice for elders, and other related factors.

No research exists on the knowledge and skill levels of Oregon AFC direct caregivers who store, administer, and monitor medications. Of particular interest is whether behavioral and environmental strategies for dementia care are known and effectively implemented.

Hawes and colleagues (1995) recommended that the "training NH" concept be applied to AFHs. This model could form the basis for a demonstration project. Selected AFHs could be provided a teaching and training intervention regarding medications, monitoring, and physical and chemical restraints and compared with other AFHs on psychoactive drug use.

The low rates of nurse visits and the delay to the needed visits found in this study are unacceptable. Both ethical and liability issues are associated with not adequately supervising the care of nonprofessionals. Thus, the community system for the delivery of nurse visits needs to be studied in more depth. Nursing service delivery in the community is complex and variable compared to the institutional system.

A study of a sample of counties could be used to gather basic descriptive data on: (a) how many nurse visits are being made, (b) who are initiating the nurse referrals and for what purpose, (c) how the case manager determines need and approval, (d) what determines the response time of the nurse to the visit, (e) what the contract nurse caseloads are like, (f) what the awareness of the need for nurse visits is, and (g) what the availability of nurses is. Information

is needed on how the AFC provider determines the need for a nurse visit and how effective this method is. The other methods that result in a nurse visit need to be examined as well.

The clients in this study had a high need for a nurse delegation visit. Therefore, a study of those cases who lacked a visit need to be examined in order to determine where and why the breakdown in the AFC program occurred. These findings could be used to institute improvements.

Two major clinical questions exist related to the older AFC clients. First, are the clients with health care needs having those needs met? Second, what are the outcomes of care in the AFHs?

The study of the process of nurse deleagation relates to the outcomes of care. Community-based nursing services assist older AFC clients to remain in the community, to prevent illness and complications, and to maintain the highest level of health possible. The lack of available, accessible, or appropriate nursing services for community-based AFC clients can result in higher morbidity and mortality rates, inappropriate use of the health care system, unnecessary and extended hospital stays, inappropriate or premature NH placement, and increased health care expenditures (Moneyhan & Scott, 1997). Studies are needed to assess if the outcomes of nurse-supervised care differ from care without nurse supervision. Evidence is needed on the results of delegated care. Both the process and outcomes of nurse delegation in AFC need to be evaluated.

The states, particularly Oregon, have shifted the long-term care of disabled older persons who fit the NH profile to community-based settings of care. This policy decision requires appropriate financing, organization, and delivery of services to meet the health and social needs of one of the most vulnerable population groups. Regulatory systems on the federal and state levels need to be accountable for the quality reforms in board and care settings as they did for NHs in the 1980s. The findings of this study call for state AFC program managers to further assess psychoactive drug use and related nurse delegation services in Oregon.

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Appendix A

Study Psychoactive Drug List

Appendix A

Study Psychoactive Drug List:

Major Therapeutic Drug Classes & Generic/Brand Drug Names In Use During 1994

ANTIPSYCHOTICS Also called neuroleptics or major tranquilizers	ANTIDEPRESSANTS Also called mood elevators	ANXIOLYTICS Also called antianxiety drugs, benzodiazapines or minor tranquilizers
Acetophenazine/ Tindal	Amitriptyline/ Elavil	Alprazolam/Xanax
Chlorpromazine/ Thorazine	Amoxapine/Asendin	Chlordiazepoxide/Librium
Chlorprothixene/ Taractan	Bupropion/Wellbutrin	Clonazepam/Klonopin
Clozapine/Clozaril	Clomipramine/Anafranil	Clorazepate/Tranxene
Droperidol/Inapsine	Desipramine/Norpramin	Diazepam/Valium
Fluphenazine/ Prolixin	Doxepin/Sinequan	Estazolam/ProSom
Haloperidol/Haldol	Fluoxetine/Prozac	Flurazepam/Dalmane
Loxapine/Loxitane	Imipramine/Tofranil	Halazepam/Paxipam
Mesoridazine Desylate/ Serentil	Isocarboxazid/Marplan	Lorazepam/Ativan
Molindone/Moban	Maprotiline/Ludiomil	Midazolam/Versed
Perphenazine/ Trilafon	Nortriptyline/Pamelor	Oxazepam/Serax
Pimozide/Orap	Paroxetine/Paxil	Prazepam/Centrax
Prochlorperazine/ Compazine	Phenelzine Sulfate/Nardil	Quazepam/Doral
Promazin/Sparine	Protriptyline/Triptil	Temazepam/Restoril
Risperidone/Risperdal	Sertraline/Zoloft	Triazolam/Halcion
Thioridazine/Mellaril	Tranylcypromine/Parnate	
Thiothixene/Navane	Trazodone/Desyrel	** Buspirone/Buspar
Trifluoperazine/ Stelazine	Trimipramine/Surmontil	** Is an anxiolytic not related to the benzos, barbiturates, or other sedative/anxiolytics. No potential for abuse, physical/psychological dependence; less sedating, preferred for dementia-related agitation. Is not considered a psychoactive drug by OBRA.
Trifluopromazine/ Vesprin		

Note. Only one brand name is listed for each generic name, however, all brand drugs for each generic drug will be assessed.

Appendix B

Psychoactive Drug Class Information

Related to Older Adults

Appendix B
Psychoactive Drug Class Information Related to Older Adult Populations

Antipsychotics				
Incidence and Prevalence by Population	Indications and Contraindications	Prevalence of Use by Population	Adverse Drug Reactions	Policies Governing Use Among Older Adults
<u>Psychosis among 65+</u> Most common types: Schizophrenia, Organic brain syndromes, e.g. Alzheimer's disease (AD) (Swonger & Burbank, 1995). Delusional symptoms 4% (Plopper, 1993) Severe dementia in 85+ 50% (Sky & Grossburg, 1994). Most prevalent dementia-Alzheimers disease 60% (Salzman, 1992). <u>Psychosis among NH residents</u> 70% due to AD or other organic mental illness (Sloane et al, 1991). <u>Dementia-related behavior disturbance (BD) among community 65+</u> 25% (Spector, 1991)	<u>Indications</u> To treat: Symptoms of psychosis: delusions, hallucinations, thought disorders, Nocturnal delirium Schizophrenia Organic brain syndrome (Swonger & Burbank, 1995). Limited and weak evidence to treat non-psychotic BD: wandering, shouting, aggression (McFarland, 1994) <u>Contradictions</u> Central nervous system (CNS) depression, Respiratory depression (Katzung, 1991). No longer appropriate for general sedative purposes (Swonger & Burbank, 1995).	<u>Rates of Use among CLTC clients</u> 39% (Avron et al, 1989) 13% (N=2054), (Spore et al,1995) <u>Rates of use among NH residents</u> **Pre-OBRA** the most commonly ordered drug class was antipsychoatics: 43% (N=5902) (Ray et al, 1980) 21% (N=3,191) (Garrard et al, 1991) 32% (N=823) (Avron et al, 1992) **Post-OBRA** In 4 NH's (N=378) Two teaching NHs decreased from 29 days of use per 100 person days by 21 days (a 72% decrease) The control NHs decreased by 4 days/100 (Shorr, et al., 1994). Rates of use in old Minnesota NHs decreased by 1/3 from 23% at 3 years pre-OBRA to 15% at 1 year post-OBRA.(Garrard, 1995)	<u>Paradoxical reactions</u> Increase BD (Devanand et al 1988) <u>Agranulocytosis and allergic reactions</u> Urticaria Photosensitivity Retinopathy Blindness Cholestatic jaundice <u>Extra-pyramidal motor effects</u> Dystonia/tonic contraction of muscles of neck, mouth, & tongue Drug-induced Parkinsonism Akathisia [restless pacing] Tardive dyskinesia (TD) [abnormal, involuntary movements, waling & feeding problems, disfiguring & disabling serious maybe irreversible] (Swonger & Burbank, 1995; Johnson & McFarland, 1993; Devanand et al 1988)	<u>OBRA-87 regulations</u> Target this dug class Require a risk/benefit analysis prior to decision to treat (Swonger & Brubank, 1995). Premit for treatment of psychotic disorders organic mental syndromes associated with dangerous BD (Semla et al 1994) Require use of behavioral methods before drug therapy. Require gradual dose reductions (Tapering) Require drug holidays (Elon & Pawlson, 1992) <u>Inappropriate Use</u> Wandering Poor self-care Restlessness Impaired memory Anxiety Depression without psychotic features. Insomnia Indifference to surroundings Fidgeting Nervousness Uncooperativeness Non-dangerous agitated behaviors (Swonger & Burbank, 1995).

Appendix B
Antipsychotics continued

Incidence and Prevalence by Population	Indications and Contraindications	Prevalence of Use by Population	Adverse Drug Reactions	Policies Governing Use Among Older Adults
<u>Dementia-related BD among NH residents</u> 36 % (Whall et al, 1993)	<u>Relative Contradictions</u> Parkinsonism Tardive dyskinesia (Swonger & Burbank, 1995).	Thapa et al., (1994) found BD did not increase in those NH residents who discontinued antipsychotic drug.	Long duration of exposure, older age, and severe dementia increase risk for TD (Kane et al 1982; Devanand et al, 1988). <u>Anticholinergic Effects</u> Blurred vision Dry mouth Tachycardia Urinary retention Constipation Confusion (delirium) (Gomez & Gomez, 1990) Dry skin and mucosol membranes (Swonger & Burbank, 1995) Sedation Orthostatic hypotension Cardiotoxicity Drowsiness Impaired alertness Blunted affect Social withdrawal (Swonger & Burbank, 1995; Thappa, et al, 1994) Falls (Granek et al 1987; Ray et al 1987) <u>Drug-to-drug interaction</u> CNS depressants (e.g. anxiolytics on sedative tricyclic antidepressants (Swonger & Burbank, 1995)	Require that PRN does be used no longer than 2x in 1 week without further assessment titrating to lowest possible effective dose (Swonger & Burbank, 1995)

Appendix B
Antidepressants

Incidence and Prevalence by Population	Indications and Contraindications	Prevalence of Use by Population	Adverse Drug Reactions	Policies Governing Use Among Older Adults
Depression among 65+ Affects 15% Is most common psychiatric illness among older adults (Dunner, 1994; Smith & Buckwalter, 1992) Depression among CLTC clients 21% [N=70] (Katz, 1990) Depression among NH residents 50-75% mild to moderate; and 10-20% severe (Blazer, 1989).	Indicators Major depression, especially with vegetative depression, Depression with dementia, Dysthymic disorder with insomnia (Plopper, 1993; Swonger & Burbank, 1995). Sleep disturbance Nutritional problems Migraine To augment analgesics in chronic pain (Flaherty et al, 1993). Contraindication for Tricyclic Antidepressants Central anticholinergic syndrome Acute onset of confusion Orthostatic hypotension Cardiac Arrhythmia Urinary retention Bundle Branch block Narrow-angle glaucoma Prostatic hypertrophy Seizure disorder (Plopper 1993; Janick et al 1993)	Rates of use among NH residents **Pre OBRA-87** 5% [N=5752 14% [N=850] (Garrard et al 1992; Burns, 1988) 11% [N=20,037] 9% [N=837] 6% (Buck 1988;Avron 1989; Burns & Kamerow, 1988) 13% [N=832] (Avron et al 1992) **Post-OBRA** 14-16% No Change (Shorr et al 1993) Increase (McKenzie et al., 1995) Serotonin Selective Reuptake Inhibitors [SSRIs] As effective as tricyclics Better tolerated than tricyclics in aged (Sussman, 1994)	Tricyclics Cause the most frequent and severe adverse effects for the aged Dyscrasia Anticholinergic effects dry mouth constipation blurred vision urinary retention central anticholinergic syndrome Extrapyramidal effects sedating orthostatic hypotension cardiac thimius mild Parkinsonian reactions Falls (Plopper, 1993 Swonger & Burbank 1995; & Granek et al., 1987) Nausea Diarrhea Headaches Sexual dysfunction (Dunner, 1994) Iincrease blood pressure Smaller variety and severity of side effects (Swonger & Burbank 1995)	HCFA Guidelines for NH Psychoactive Medication Use Require residents be free from unnecessary drugs (a) in excessive doses (specify geriatric doses) (b) for excessive duration (c) without monitoring (d) without adequate indications for use (e) in presence of adverse consequences that indicate the dose should be reduced or discontinued. Clinical geriatric guidelines "Start low and do slow". Use half-life to determine small, incremental increase in dosage to reach therapeutic levels. Amitriptyline: least desirable tricyclic for aged; most sedating; cardiotoxic anticholinergic (Gomez & Gomez 1992) Professional geropsychiatric group position: The problem with depression in elderly NH residents is not overuse, but under use.

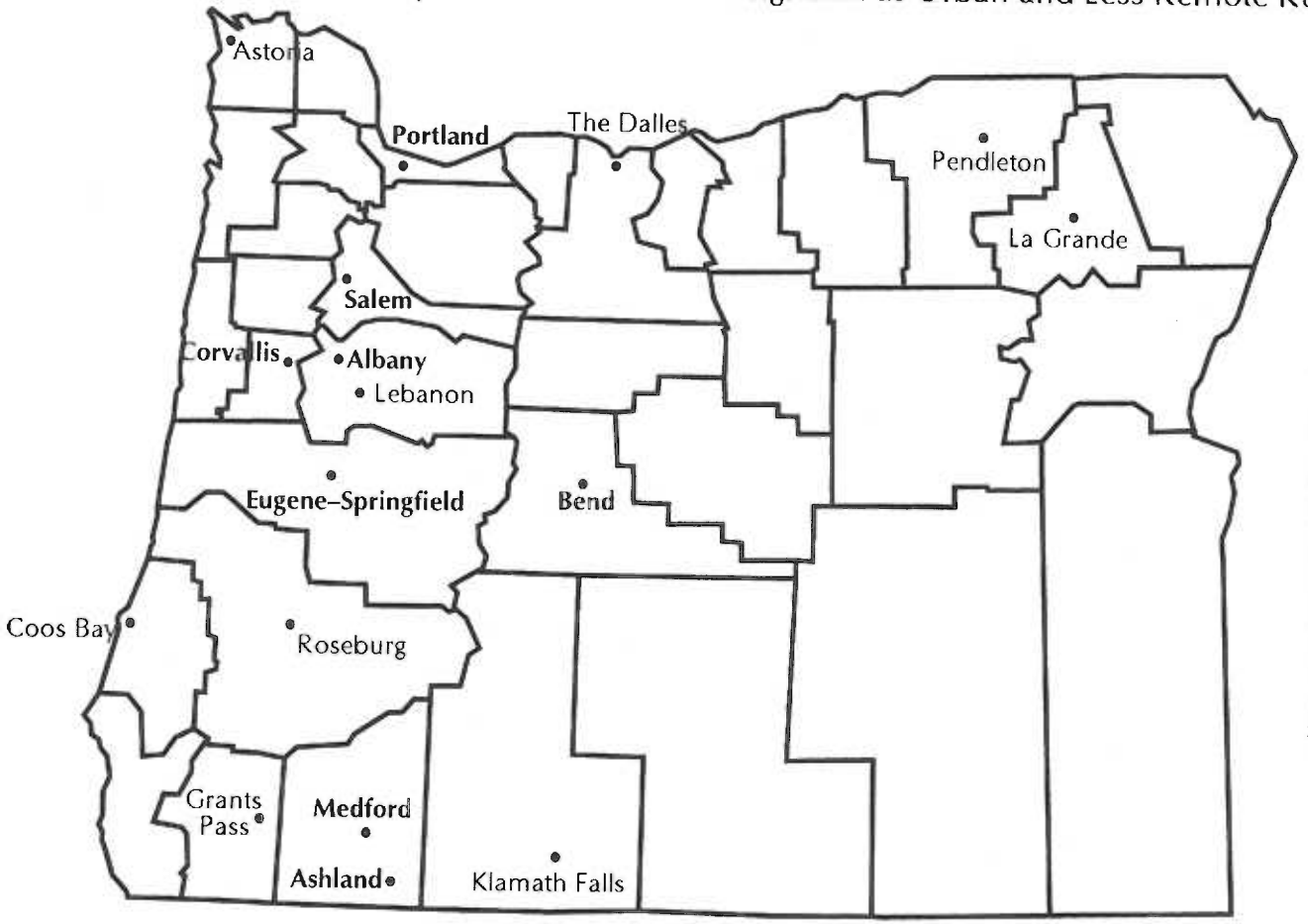
Appendix B **ANXIOLYTICS**				
Incidence and Prevalence by Population	Indications and Contraindications	Prevalence of Use by Population	Adverse Drug Reactions	Policies Governing Use Among Older Adults
<u>Anxiety among 65+</u> 17% males 22% females (Hummelfarb, Murreil, 1984) 40% insomnia (Stewart, 1989)	Generalized anxiety disorder Severe situational anxiety Ssleep disorders (Katzung & Way, 1991) Aacute agitation (for <u>short-term</u>) (Plopper 1993; Swonger & Burbank 1995) Phobias Post traumatic stress disorder Obsessive-compulsive disorder Panic disorder Agoraphobia (Gomez & Gomez 1994) Barbiturates contraindicated in elders (Greene & Taylor, 1992)	<u>U.S. 65+ Benzodiazepines</u> Most frequently used to treat anxiety in older adults. (Gomez & Gomez, 1994) <u>NH Residents</u> **Pre-OBRA-87** 6-14% (Burns & Kamerow, 1988; Buck 1988; Avron et al, 1989; Billing et al 1991) **Post-OBRA** No significant change in benzodiazephine use. (Ray 1993; Shorr, 1994; Garrard et al 1995)	<u>Benzodiazepines</u> Sedation Memory impairment My increase cognitive impairment with dementia Impaired coordination Falls (Kunik et al 1994) Physical dependence & withdrawal Psychological dependence Sedation Lethargy Respiratory depression Memory disturbance Confusion Ataxia Amnesia Increase depression Increase confusion (Plopper, 1993) A single dose can cause cognitive impairment Hip fracture	Are to be prescribed on as needed, not on a continuous basis (Plopper, 1993). OBRA-87 regulations specify that benzodiazepines be: *short-acting *infrequently used *<4 months *not for sole purpose of chemical restraint *gradual dose reduction *geriatric dose * no duplicate drug therapy with sedative effect

Appendix C

Map of Oregon Cities Designated as Urban and Less Remote Rural

Appendix C

Map of Selected Cities Designated as Urban and Less Remote Rural



Albany – Urban
Ashland – Urban
Astoria – Less remote rural
Bend – Urban
Coos Bay – Less remote rural
Corvallis – Urban
Eugene–Springfield – Urban
Grants Pass – Less remote rural
Klamath Falls – Less remote rural
La Grande – Less remote rural
Lebanon – Less remote rural
Medford – Urban
Pendleton – Less remote rural
Portland – Urban
Roseburg – Less remote rural
Salem – Urban
The Dalles – less remote rural

Note. Cities are classified into **urban** or **less remote rural areas.**

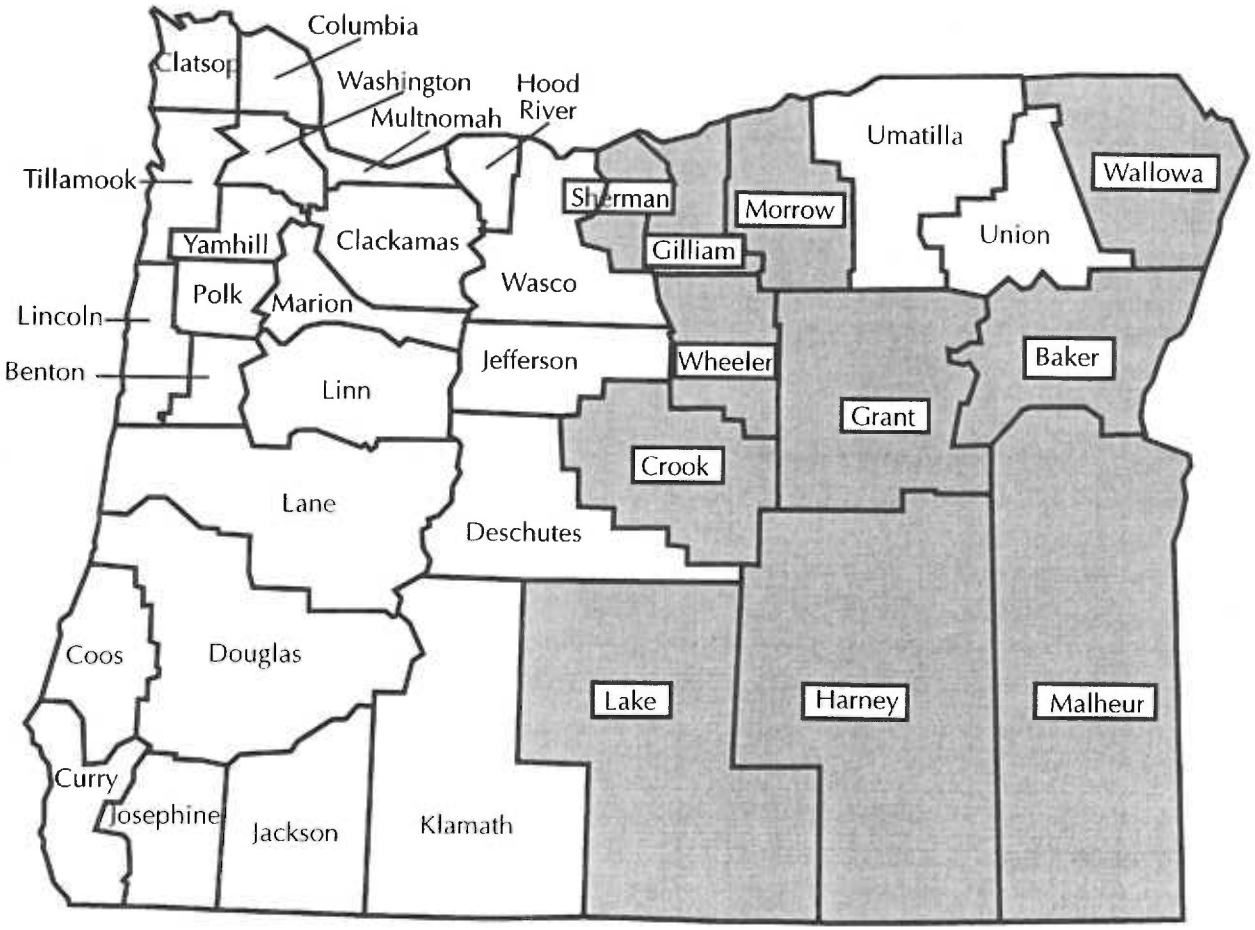
Appendix D

Map of State of Oregon Counties

Designated as Frontier Rural

Appendix D

State of Oregon Counties and Designated Frontier Counties (n=11)



Note. Any city within a designated frontier rural county is designated as a **frontier rural area.**
The **remote rural areas** are not depicted, but are 30 minutes average travel time from a community of 10,000 or more.

Appendix E

Summary of Three Preliminary Studies

Appendix E

Preliminary Studies

Taken together the three preliminary studies I conducted: (a) confirmed that concerns exist about psychoactive drug therapy for elders in the community and that further study is warranted, (b) oriented me to the community nurse role in delegation and nursing care of the psychogeriatric client in AFC, (c) oriented me to the administration and operations of the AFC program, and (d) enabled me to establish working relationships with key people associated with AFC in the state. Each study is described below.

"Behavior Disturbance (BD) and Psychoactive Drug Use Among Older Clients in AFC," (June 6, 1994). I conducted a qualitative study which involved face to face interviews with AFC providers (n=2) and community nurses (n=3). Key findings of this study underpin this proposal. Community nurses reported that many AFC providers had insufficient knowledge about psychoactive drug therapy in elders and behavioral approaches to manage dementia-related behavior disturbance. All three professional informants reported that it is standard procedure for a community nurse to assess medication management at every visit because associated problems are frequent with medication delivery and psychoactive drugs are high risk "delegated medications."

> *[Nurse]..." for the psychotropic drugs I do more teaching, I want the providers to understand what to look for and when to call the doctor, I make sure they know the system well enough to know who to call and how to initiate a change in the medication."*

Analysis of data from this study also demonstrated that AFC providers need more knowledge and skills in the areas of medication administration and psychoactive drug therapy:

[Nurse] "...I have found them [AFC provider] giving the generic as well as the brand name and they're getting both of them so I have to pick up on that; it's not fault of the provider, I mean how would they know?"

"Some just really don't comprehend the danger of the swallowing problems... "

"Some providers are not skilled enough to pick up on adverse reactions, especially if English-speaking skills are lacking."

Community nurses transfer professional knowledge to AFC providers about non-drug BD management strategies, such as, psychosocial, behavioral, and environmental interventions:

[Nurse]" I had one client who would be fine all day but when the kids got home from school she'd get really agitated so I told the provider that was too much stimuli for her...and she'd be fine at the daycare program but after it she was off the wall because she was wasn't fed properly (diabetic diet) and her energy expenditure was so different at the daycare program."

The study provided background on the role of the contract nurse in relation to delegation of psychoactive drug administration and management to the AFC provider:

[Nurse] "...when we get a foster care provider who abuses psychoactive drugs I communicate that to the doctor or his nurse so they tune into it and then I just have to make visits more often to titrate the medication..."

"An Analysis of Qualitative Descriptions of 120 AFC Home Audits," (November 29, 1994). In this study, I reviewed the quantitative data of the 120 AFC audits, conducted by the state, for completeness and accuracy. I also content-analyzed the qualitative evaluative summary descriptions of the AFC homes. This study is relevant to the proposed study for three reasons. Like the first study, it demonstrated limitations in the knowledge and skills of non-professional caregivers regarding safe and proper medication administration procedures:

> *[Field auditor] "...meds were lying in disarray, loose, and out of containers in the kitchen, ... not charted for a week, ...the medical order, med record, and label on med bottle were not consistent, ...provider didn't know purpose and side effects of the meds, ...the wrong med was given to a client, and ... a large amount of med wasn't being administered to the client."*

Second, the study confirmed that clients were receiving psychoactive drugs inappropriately:

> *[Field auditor] "...a provider was administering psychoactive drugs for caregiver convenience, the client was found to be overmedicated as he slept most of the day and needed to be awakened during the day to urinate, and another client who was receiving a PRN antipsychotic twice a day without nurse delegation and without justification, provider was giving it because client gets "fidgety" in the afternoon."*
>
> *"... a client was receiving an antipsychotic daily even though the client had 4 falls in the past 2 weeks, and did not have a history of falls, provider response was*

"old people get unsteady."

"An Analysis of Psychoactive Drug Audit Data from Adult Foster Homes " (March 2, 1995). The state conducted an audit of 35 homes in one suburban area in Oregon in December, 1994. In addition to routine quality information, data were collected on the psychoactive drugs received by the clients, which I collated and analyzed. The information was used to target specific clients and providers for further assessment and intervention by regulators and health professionals.

If these data are representative, there may be a high prevalence and incidence of psychoactive drug use among elderly clients in AFC. Of the 142 clients, 34% (n=48) from the sample of 35 AFC homes were receiving at least one psychoactive drug, a high rate of use compared to current use among NH residents. The study also suggested problems with psychoactive drug prescribing. Importantly, 27% of the AFC clients were receiving drug therapy which violated clinical guidelines for psychoactive drug therapy among elders. For example, one client was receiving a long-acting benzodiazepine (Valium) on a regular scheduled basis, rather thanon an as needed basis, as it was ordered, to be given and the dose exceeded geriatric dosing, and was given for an extended duration. In addition, this pilot study allowed me to develop methods of estimating the proportion of clients receiving psychoactive drugs and interpreting drug data that I will use in the proposed study.

Appendix F

Medicaid Drug Claims

Example of Computer Data

Appendix F

Medicaid Drug Claims Records: Example of Computer Data

PRIME #	SEX	AGE	TH CL	NDC	CLAIM DATE	UNITS	DAYS SUPP	DRUG STRENGTH	DESCRIPTION
AC66044B	F	076	07	00378021401	02/13/94	90.0	30.0	2 MG	HALOPERIDOL
BP43878A	F	080	11	00182125901	02/22/94	90.0	30.0	. 50 MG	TRAZODONE
AC66044B	M	078	07	00003018550	03/15/94	20.0	10.0	2.0 MG	DIAZEPAM
B011256A	F	083	11	00378312501	03/22/94	15.0	15.0	25 MG	DOXEPIN
KVQ4439A	F	087	07	00009002902	09/10/94	30.0	30.0	0.25 MG	XANAX

Note. * Indicates the data item is of interest to the study.

PRIME NUMBER =	Client prime number; unique recepient identification number; Medicaid number.*
TH CL =	Therapeutic Drug Class.*
NDC =	National Drug Code.*
CLAIM DATE =	Date prescription filled at the pharmacy.*
UNITS =	Quantity of drug per day.
DAYS SUPPLY =	Determined by the pharmacist; 76% of NH claims are for 30 days (28-34 days); how long the client has to use the drug.
DRUG STRENGTH =	Dosage per unit; individual dose, eg. in mg/ml.
DESCRIPTION =	Generic name of drug.*
STRENGTH (MASTER FILE) =	Same as drug strength; individual dose .

Appendix G

Medicaid Nurse Visit Claims Records

Example of Computer Data

Appendix G

Medicaid Nurse Visit Claims Records: Example of Computer Data

CLIENT PRIME NUMBER [a]	DATE CLAIM SERVICE BEGINNING [b]	DATE CLAIM SERVICE ENDING [c]	PROVIDER TYPE [d]	EXP-REC-TYPE-CODE [e]	AGENCY [f]	PROCEDURE CODE [g]
0000826A	01/25/94	01/25/94	RA	P	41100	ONIII
0000436A	06/01/94	06/01/94	RA	P	41100	ONIII
0000616A	09/09/94	09/09/94	RA	P	41100	ONIII
00004954B	06/29/94	06/29/94	RA	P	41100	ONIII
00003342B	12/28/94	12.28/94	RA	P	41100	ONIII

Note. [a] Is the unique recepient number, also called the Medicaid number, examples are ficticious numbers. [b] Date of provison of first nurse service visit (over a two week pay period). [c] Date nurse visit services ended. [d] RA is a second code for personal care RN to verify correct data was being extracted. [e] Indicates is the record for a regular claim, not a credit, check void or adjustment. [f] Is SDSD.
[g] Indicates a personal care R.N. submitted the Agency Provider Invoice In-Home Service for billing purposes.