

Regional Municipality of Waterloo

**Best Practice in Housing Design
for Seniors' Supportive Housing**

**FINAL REPORT
July 2007**

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Acknowledgements

Many thanks to all individuals involved in this study, especially to the key stakeholders in supportive housing for seniors across the province of Ontario. They very willingly gave their time to discuss their opinions regarding what constitutes best practice in design and the challenges they face on a day-to-day basis in their own settings.

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Main Messages

- Consultation with key stakeholders in housing design is essential, particularly involvement of tenants. Potential residents of any affordable supportive housing community should be involved in the planning, particularly with respect to design and layout of the accommodation;
- Tenant choice is a critical feature in best practice in housing design for seniors' supportive housing
- Older adults like to be where the action is. Common space should be located in front of the building where tenants can see what's going on.
- The location should be close to services such as shopping and public transportation. Site topography should be flat or gently sloping with landscaped outdoor spaces, accessible pedestrian walkways and parking. The building entry should have a weather protected passenger drop off. The building layout should provide for administrative, amenity and hospitality spaces grouped for efficiency and social interaction. There should be an outdoor weather protected amenity and hospitality space with wheelchair access from the indoor common area.
- Building entry should have an automatic opener with buttons in an accessible location at interior and exterior. Exit stairs should be wide with handrails on both sides. Corridors should be wide with handrails on both sides. They should be bright and evenly lighted for visibility. An elevator should be provided in all buildings that are two stories or higher, with an emergency power source such as a stand-alone generator.
- Doors should have low resistance closers (if required) and a paddle type deadbolt. A bathroom shower is preferred for accessibility. Shower or tub should have an adjustable height with 'telephone type' shower fixture and grab bars.
- Kitchen area should provide refrigerator, sink, cooking facilities and cabinets. Water temperature controls should be provided to prevent scalding. The tenant by way of a wall-mounted thermostat should control unit temperature. Other features can include in-suite storage and a balcony/patio.
- Office space for staff is required. An entrance lobby, lounge and activity room should be planned for. A commercial kitchen/serving area and a common dining room are needed. Common laundry rooms are preferred on each floor with a small seating area adjacent. Personal care services for assisted bathing, hairdressing, podiatry and visiting consults should be provided. There should also be scooter storage and tenant storage (if in-suite storage is not available).
- Proper exiting requirements should be provided along with wide exit stairs and a high degree of illumination in the stairs and corridors. Fire alarms and smoke detectors should be planned for at the design stage.
- A tenant activated monitored emergency response system should be made available with a provision for monitoring by a separate agency.

Executive Summary

Background

One of the great success stories of the twentieth century is the fact that the life expectancy has almost doubled, due in large part reduced mortality rates in infancy and childhood as well as reduced mortality rates at older ages (Vaupel, 1997). The fastest growing segment of the group 65 years and over is those aged 85 years and older (Desai, Zhang & Hennessey, 1999). Moreover, the number of centenarians is increasing at a rate of 8 percent per year (Andes, 2004). The senior population is expected to almost double in the next 40 years. By 2041, it will increase to 25 per cent of the population from its current 13 per cent (National Advisory Council on Aging, 2005) With these figures in mind, there is a serious need for policy enhancements regarding alternatives to institutional long-term care facilities (Ontario Coalition of Senior Citizens Organizations, 2003).

In Waterloo Region, the first wave of baby boomers (age 55-64) currently comprise 10 percent of the total population and this wave is expected to increase in size by over 3 percent in the next decade (Region of Waterloo, 2005). Furthermore, the 65+ cohort is expected to double in terms of absolute numbers between 2006 and 2026. Many seniors in Waterloo face increasing physical and mental health challenges as they age. Many (almost 9,000) are also dealing with low incomes.

As the elderly population grows, and subsequently the need for adequate elderly health and housing services grows, the resources to provide services will decrease. Finding a more efficient means of service delivery is of critical importance. The current connections between elderly health and housing are tenuous at best. Few community care plans consider the special needs of older adults and how they might be provided with housing that is more suitable. As an individual's health needs increase, it can be difficult and often impossible to meet one's needs without moving into a long-term care facility, however the majority of seniors want to age without moving. There are very few options in Ontario to support seniors as they strive to maintain their autonomy and independence (MacCourt, 2004). As a result, the most desirable and most cost-efficient method of aging — aging in place — is difficult, even under the most ideal conditions. As independent services, the current systems of health and housing delivery do not meet the need of aging individuals.

Research Objectives

This research involved three key objectives regarding the issue of best practice in housing design for seniors' supportive housing:

1. Become familiar with the *Social, Health and Demographic Profile of Senior's in Waterloo Region Highlights Report (2005)* and the *Proposal for Supportive Housing Services for Senior's: Sunnyside Home (2005)*.
2. Conduct a literature review regarding best practices in housing/building design for seniors' supportive housing within the scope of the client population and service model identified in Schedule "A". Design considerations should include, but not be limited to, layout, physical adjacencies, appropriate mix of units (bachelors, one-bedroom, two-bedrooms), built-in equipment requirements (e.g., ceiling lifts, showers, tubs) etc.
3. Survey a sampling of progressive existing seniors' supportive housing programs within the scope of the client population and service model identified in Schedule "A" in Ontario, nationally, and internationally to identify best practices in housing design for senior's supportive housing as outlined by the Consultants proposal attached as Schedule "B".

Conceptual Framework

The theoretical underpinning of the research is a determinants of health perspective, that is, the ways in which the health and mental health of older persons is affected by individual, community and societal factors. Much of the research is telling us that we need to look at the big picture of health to examine factors both inside and outside the health care system that affect our health. At every stage of life, health is determined by complex interactions between social and economic factors, the physical environment and individual behavior. These factors are referred to as 'determinants of health'. They do not exist in isolation from each other. It is the combined influence of the determinants of health that determines health status. Health Canada's determinants of health include income and social status, social support networks, physical and social environments, etc. (Bryant, Brown, Cogan et al, 2004). Begley (2005) notes that supportive housing can influence the health of seniors by overcoming barriers faced as a result of these multiple factors such as low-income levels, lack of social supports, inadequate physical environments, poor personal health practices, and coping skills, and lack of health services.

Literature Review

A literature review was conducted to provide an overview of best practice in housing design for supportive housing for older adults. This review also identified the findings from the literature on supportive housing for older adults. Research in supportive housing demonstrates that seniors have important values and preferences regarding the physical setting, the people within the setting, and the larger community wherein the housing is situated (Eales, Keating & Damsma, 2001). Renier (2002) also underscores the importance of the participation of

older people in the reviewing and analyzing of design ideas. Study after study has demonstrated that domestic spheres have a significant impact on the capacity that older people have to retain a sense of self-determination. Older people require adequate, accessible, and personalized space to facilitate routine and responsibilities (Percival, 2002). Research has shown the superiority of supportive housing over institutional care, particularly in relation to enhanced quality of life for older people with serious mental illness (Young, 2004). Bagovic (2005) has indicated that the move to supported housing resulted in increased housing satisfaction and decreased depression in a senior population.

When planning and designing for older populations, the plans for senior housing should be focused upon future needs, as well as the existing requirements of the prospective residents of the dwelling (Goodman & Smith, 1992). Consequently, the design will allow individuals to age in place, as their body changes and as they experience decreased environmental competence. Thus, the setting should be able to change and adjust according to the needs of the resident. The characteristics that make housing safer for **all** groups (children, physically handicapped, mentally ill, frail, developmentally disabled) should be programmed into the environment as standard features (Regnier, 2002). It is important that the environment be free of the dehumanizing institutional accoutrements common to senior communities.

The design of seniors' supportive housing can vary tremendously; primarily because of the many different forms that supportive housing can take. Design features depend on the type of housing, the scale of the project, the type and level of services and supports provided, and the unique development of a particular project. As a result, there is no single or 'best' design for supportive housing for seniors (Options Consulting, 2002). This being said, there are recommended design principles and features that should be considered. These basic features are presented for both the public and private space within and surrounding the supportive housing complex.

Interviews with a systematic random sample of supportive housing providers across Ontario supported the findings on best practice in housing design from the literature. Moreover, these interviews revealed some of the nuances of housing design from individuals working in the field.

INTRODUCTION

“being at home or being in place represents a fundamental human need”

Rowles & Chaudhury, 2006

Older Adults and the Demographics of Aging

One of the great success stories of the twentieth century is the fact that the life expectancy has almost doubled, due in large part reduced mortality rates in infancy and childhood as well as reduced mortality rates at older ages (Vaupel, 1997). The fastest growing segment of the group 65 years and over is those aged 85 years and older (Desai, Zhang & Hennessey, 1999). Moreover, the number of centenarians is increasing at a rate of 8 percent per year (Andes, 2004). The senior population is expected to almost double in the next 40 years. By 2041, it will increase to 25 per cent of the population from its current 13 per cent (National Advisory Council on Aging, 2005) With these figures in mind, there is a serious need for policy enhancements regarding alternatives to institutional long-term care facilities (Ontario Coalition of Senior Citizens Organizations, 2003).

In Waterloo Region, the first wave of baby boomers (age 55-64) currently comprise 10 percent of the total population and this wave is expected to increase in size by over 3 percent in the next decade (Region of Waterloo, 2005). Furthermore, the 65+ cohort is expected to double in terms of absolute numbers between 2006 and 2026. Many seniors in Waterloo face increasing physical and mental health challenges as they age. Many (almost 9,000) are also dealing with low incomes.

Aging, Health and Housing

Aging is an individual process leaving some individuals with extremely limited abilities and others capable of performing at higher levels than some younger people (Young, 1997). As an individual ages, there are a number of physical changes that occur, including changes in vision, hearing, balance, muscles, bones, and joints (Andes, 2004). Consequently, older adults often encounter challenges while attempting to perform daily tasks such as grocery shopping, preparing meals, bathing and showering, and may also have more accidents while performing routine household chores (Andes, 2004). The majority of consumer products, furnishing and devices used in activities of daily living are designed to be used by young, able-bodied people and often require more physical or mental ability than an older person possesses.

“Many people blame the aging process for problems they encounter with daily activities, when instead it is quite often the design of the home itself that creates unnecessary disabilities.”

Bakker, 1999

The Connection between Senior Health and Housing

As the elderly population grows, and subsequently the need for adequate elderly health and housing services grows, the resources to provide services will decrease. Finding a more efficient means of service delivery is of critical importance. The current connections between elderly health and housing are tenuous at best. Few community care plans consider the special needs of older adults and how they might be provided with housing that is more suitable. As an individual's health needs increase, it can be difficult and often impossible to meet one's needs without moving into a long-term care facility, however the majority of seniors want to age without moving. There are very few options in Ontario to support seniors as they strive to maintain their autonomy and independence (MacCourt, 2004). As a result, the most desirable and most cost-efficient method of aging — aging in place — is difficult, even under the most ideal conditions. As independent services, the current systems of health and housing delivery do not meet the need of aging individuals. The health and housing concerns of an elderly individual are often interrelated (Lum, Ruff & Williams, 2005). Health concerns can create or compound the problems of an aging housing stock, and housing concerns can create or compound health problems for aging individuals. When a living environment is affordable and appropriate, an aging individual is more likely to remain healthy and independent. When an individual maintains good health, he or she is more able to keep up with the maintenance of his or her living environment. As the population ages in an aging housing stock, it becomes difficult to distinguish a health concern from a housing concern.

Lawlor (12001) has identified that aging in place with supportive services is the most desirable way of aging, minimizing the provision of inappropriate care, and therefore the overall costs, by offering a range of flexible services and calibrating those services to fit the needs of the individual. Rather than a rigid service-delivery system, aging-in-place strategies create both health care and housing options that provide support at the margin of need as defined by an individual's personal desire and efforts to live independently. Aging in place works best as part of a comprehensive and holistic approach to the support needs of an aging individual and an aging community.

"Most elderly persons feel strongly about their independence and control over their environment and fear a loss of either"

Feingold & Werby, 1990.

The Consumer Perspective on Living Environments

There is growing evidence that mental health consumers' perceptions of what they need in a living environment are the best predictors of success in housing (Nelson & Peddle, 2005). In fact, consumer choice and control over their environment has been posited as the single most important determinant of success and is an important principle of supportive housing. These findings are supported by several studies suggesting that consumers who feel satisfied and perceive a good fit between their needs and the home environment may make a better adjustment (Tsemberis, Rogers, Rodis, Dushuttle & Shrya, 2003). As a result, health and mental health services are increasingly implementing policies that reflect consumer driven or client centered systems.

Supportive Housing: Definition

The Ontario Ministry of Health and Long-Term Care define supportive housing for seniors as the 24-hour availability of personal care and homemaking services (2000). Several community agencies have disagreed with this definition, as they view it as emphasizing individual services. Instead, they prefer to define supportive housing in terms of a holistic, comprehensive and coordinated package of programs and services needed to support the changing needs of seniors aging in place. A report by the former Toronto District Health Council similarly highlights the integration of housing, personal care and supports that link seniors to a broad network of services and enable them to remain in the community rather than in a long term care facility (Robinson, 2002).

The Canada Mortgage and Housing Corporation and the National Advisory Council on Aging utilize the same working definition, namely, housing that helps individuals in their day-to-day lives through the provision of a physical environment that is safe, secure, enabling and home like. This is coupled with the provision of support services including meals, housekeeping and social and recreational activities. It is the type of housing that maximizes independence, privacy, dignity, decision-making and choice and preference (Canada Housing and Mortgage Corporation, 2000; The National Advisory Council on Aging, 2003). In addition, supportive housing services stress flexibility in responding to seniors needs, recognizing that needs change over time as health and mental health improve or decline.

With these key features in mind, supportive housing can be developed in a wide variety of forms, depending on the level and types of services and supports provided, the type of accommodation, and type of tenure desired. In the case of Waterloo Region, a service need has been demonstrated for seniors with limited incomes who are unable to cope in existing home services or supports and are not yet ready for long-term care (Region of Waterloo, 2005). Supportive housing for these individuals represents a cost effective way to fill this gap.

PURPOSE OF THE RESEARCH

This research involved three key objectives regarding the issue of best practice in housing design for seniors' supportive housing:

4. Become familiar with the *Social, Health and Demographic Profile of Senior's in Waterloo Region Highlights Report* (2005) and the *Proposal for Supportive Housing Services for Senior's: Sunnyside Home* (2005).
5. Conduct a literature review regarding best practices in housing/building design for seniors' supportive housing within the scope of the client population and service model identified in Schedule "A". Design considerations should include, but not be limited to, layout, physical adjacencies, appropriate mix of units (bachelors, one-bedroom, two-bedrooms), built-in equipment requirements (e.g., ceiling lifts, showers, tubs) etc.
6. Survey a sampling of progressive existing seniors' supportive housing programs within the scope of the client population and service model identified in Schedule "A" in Ontario, nationally, and internationally to identify best practices in housing design for senior's supportive housing as outlined by the Consultants proposal attached as Schedule "B".

CONCEPTUAL FRAMEWORK

The theoretical underpinning of the research is a determinants of health perspective, that is, the ways in which the health and mental health of older persons is affected by individual, community and societal factors. Much of the research is telling us that we need to look at the big picture of health to examine factors both inside and outside the health care system that affect our health. At every stage of life, health is determined by complex interactions between social and economic factors, the physical environment and individual behavior. These factors are referred to as 'determinants of health'. They do not exist in isolation from each other. It is the combined influence of the determinants of health that determines health status. Health Canada's determinants of health include income and social status, social support networks, physical and social environments, etc. (Bryant, Brown, Cogan et al, 2004).

Begley (2005) notes that supportive housing can influence the health of seniors by overcoming barriers faced as a result of these multiple factors such as low-income levels, lack of social supports, inadequate physical environments, poor personal health practices, and coping skills, and lack of health services.

LITERATURE REVIEW – RESULTS

A literature review was conducted to provide an overview of best practice in housing design for supportive housing for older adults. In addition, the current literature on supportive housing more generally was examined. Details of the literature review process are provided in Appendix C.

The Importance of Client Centred Residential Care

'Client-centred' is used as a descriptor for care that is congruent with the values, needs and preferences of care recipients. To be client-oriented, care settings must have several features. They should: support care recipients' needs for security, privacy and comfort; support carers' needs for appropriate equipment to assist with such things as lifting, transferring or bathing clients; and provide a physical layout that allows for comfortable interaction between residents and staff (Chapman, Keating & Cormier, 2003). Research in supportive housing demonstrates that seniors have important values and preferences regarding the physical setting, the people within the setting, and the larger community wherein the housing is situated (Eales, Keating & Damsma, 2001). Renier (2002) also underscores the importance of the participation of older people in the reviewing and analyzing of design ideas. He acknowledges the need to explore new methods of eliciting consumer opinions that challenge design decisions and provoke new design ideas.

Supportive Housing for Older Adults

The housing literature indicates that there are key qualities that contribute to a sense of empowerment and recovery, including services and supports that are individualized and consumer controlled, a broad range of social support and help with accessing basic resources (Parkinson & Nelson, 2003). In spite of the fact that studies of supported housing outcomes are relatively recent (Parkinson et al, 1999), results of these studies demonstrate that these housing models increase resident stability and independent living and decrease rates of homelessness (Bolton, 2005). In addition, hospitalization rates (Burek, Toprac & Olsen, 1996; Hanrahan, Luchins, Savage et al, 2001) and psychiatric symptoms (Dixon, Krauss, Myers & Lehna, 1994) are reduced. With respect to psychosocial outcomes, supportive housing has been found to be related to increased involvement in instrumental roles such as work and education, increased community involvement and independent functioning (Nelson, Hall & Walsh-Bowers, 1997).

Although little attention has been given to seniors housing, we do have some knowledge about the needs of those over aged 65. Older persons face a multitude of barriers such as lack of home care, culturally inappropriate services, discrimination, poverty, lack of affordable housing and elder abuse (The Standing Senate Committee on Social Affairs, Science and Technology, 2006; Ontario Coalition of Senior Citizen Organizations, 2003). Although they possess a wide range of abilities, many, at some point, experience physical limitations, including reduced strength or stamina, reach and flexibility, visibility, hearing, and balance. Mental health services are frequently unavailable to older persons in the places where they reside, and a corresponding lack of attention is given to the more limited mobility of this population. In addition, and of particular note, is the discrimination and oppression of gay and lesbian seniors which has had an impact on their identity and health throughout their lives (Brotman, Ryan & Cormier, 2000).

Loneliness and isolation can be a major source of unhappiness and contribute to depression and mental illness in older age (Andrews, Gavin, Begley & Brodie, 2003). There is a clearly documented lack of a full range of services for this group of individuals (Pastalan, 1990). In this context, a positive environment and sense of belonging to a community are critical.

Domestic spheres have a significant impact on the capacity that older people have to retain a sense of self-determination. Older people require adequate, accessible, and personalized space to facilitate routine and responsibilities (Percival, 2002). Studies have shown the superiority of residential care over institutional care, particularly in relation to enhanced quality of life for older people with serious mental illness (Young, 2004). Bagovic (2005) has indicated that the move from non-institutional care resulted in increased housing satisfaction and decreased depression in a senior population.

The effectiveness of the supported housing approach for older homeless persons has been shown (Kaspro, Rosenheck, Fisman et al, 2000). In general, activities of case managers, such as accompanying individuals to the public housing authority and securing additional sources of income, were associated with success in the housing process. Ultimately, the project resulted in the attainment of permanent housing for a large proportion of clients.

There has been a recognized need to change attitudes and practice to enable older individuals to more fully participate in residential settings (Abbott, Fisk & Forward, 2000). Correspondingly, there should be more opportunities for older people to make choices and for more extensive involvement in housing issues (Gilroy, 2003). Gilroy (2003) found that older people gained as individuals and as a group from the housing project, and were able to develop collective influence through a representation role. Consequently, he argues that a foundation of dialogue with older people regarding housing matters is needed.

In summary, the literature focused specifically on older people living in supportive housing settings is limited, despite the proliferation of studies in the supported housing area. The evidence base to date strongly suggests that such housing contributes to enhanced quality of life for older people (Boydell, 2006). Boydell (2006) found that seniors living in supportive housing experienced a strong sense of community, an enhanced social support network, and a significant element of choice and control within their environment. Further themes that emerged consistently throughout in depth interviews with seniors included freedom, stability, meaningful activity, flexible support and a sense of space and belonging.

Aging in Place – Universal Design

The universal design philosophy has been around for more than 20 years, initially focusing on promoting building accessibility for the disabled. However, the concept is gaining more attention as architects, builders and homeowners themselves see the implications of aging. Despite the benefits of universal design, few designers and builders make universal design features standard in new homes. In fact, research demonstrates that homebuilders are aware of a higher percentage of accessible features than were actually used (Belser & Weber, 1995). Many are reluctant to alienate potential buyers, who may not want to face their own advancing age or mistakenly think making a home more aging-friendly means sacrificing aesthetics.

“It is imperative that planning and design schemes are geared toward future needs and not simply providing adequate solutions for current needs.”
Goodman & Smith, 1992

Regnier (1994) provides us with an example of the relationship of space to housing residents who are elderly.

The imagery and appearance of the environment establish how residents, visitors, relatives, and staff perceive a setting. If a setting is viewed as an institution, then residents are often seen as sick, feeble, or unhealthy. Viewed from the perspective of a residential environment, expectations regarding competency, independence, vulnerability, and dependence are often different. The environment becomes a frame that establishes expectations and beliefs. (p. 24)

Lawlor (2001) has identified four key components of aging in place. Although the range of appropriate services can vary depending on how an individual ages, there are these four key elements that have been consistently present in the most successful aging-in-place programs.

1. Choice involves the provision of both health-care and housing options that meet the diverse needs of individuals as they move through the later third of their lives. Options should be affordable along the income spectrum so that all elderly or their caregivers are able to choose from a potential range of alternatives.

2. Flexibility involves offering a range of services that can be applied in a variety of contexts. Flexibility requires that the level of health and housing be adjustable whether an individual lives in a single-family home, rents a privately or publicly managed apartment or resides in an assisted-living facility.

3. Mixed Generations are important in order to maximize a senior citizen's capacity for self-help and his or her ability to contribute to the community. People both old and young benefit from being around each other. Seniors often provide day care, tutoring and general stability when they are involved in the daily routines of young families, and young people can keep seniors engaged, active and looked after as they become frail. While most of this intergenerational mixing can occur naturally, it does take proactive planning to ensure that communities are not designed in such a way as to *prevent* opportunities for generations to mix.

4. Calibrated Support prevents under care or over care, and requires the ongoing assessment of an individual's health and housing condition as well as services that meet a range of different needs.

National and International Literature

National:

Ontario - Peel Region – The Municipal Region of Peel has worked with local builders and contractors to develop their affordability social housing stock. They have also hired consultants to produce reports that focus on the health characteristics and needs of older adults as well as the need for housing. Peel Living, the region's non-profit housing company, is a nationally recognized leader in creating innovative housing projects and developing housing policy. It is the largest property owner in the Region of Peel and one of the largest in the Greater Toronto Area, in Ontario, Canada, providing housing for several thousand households.

Peel Living's hallmark approach to building stronger communities is through mixing tenancies with varying income levels and a commitment to providing well-maintained living environments in each of its thousands of apartment and townhouse units. Success is evident by the strong support of the broader communities. The region has an excellent website that profiles their housing initiatives and resources.

<http://www.region.peel.on.ca/housing/initiatives-resources/programs/millbrook.htm>

Alberta – Smithfield Supporting Housing is a 60-unit structure (built in 2003) which represents an innovative partnership with the local Regional Health Authority (Aspen) and the local housing management body (Westlock Foundation). Twenty of these units are designated as twenty-four hour care, which enables aging in place for all seniors. This facility does not replace long-term care, but does enable couples to live together longer than was previously possible in a typical lodge setting.

Directly adjacent to Westlock Health Care Center, this building provides easy access to those special services offered, one of which includes dialysis (see Aspen home page for more information). This facility offers independent living (each suite has kitchen facilities and stacking washing machine and dryer). The noon meal is included in rent. Room sizes range from 488 square feet to 888 square feet. Individual rooms have plenty of light and space. Each suite has wheelchair accessible bathrooms with separate bedroom, and combined living room and kitchen space and two outside windows (one in the bedroom and one in the living room area).

In addition, Alberta recently created the Affordable Housing Task Force. This group released a report on April 24, 2007, to which the government responded. The task force was responsible for identifying short and long-term housing solutions that will have a positive impact on Alberta's competitiveness and enhance Albertans' quality of life. The Report acknowledges the need for service and supports to be imbedded into the housing first solutions as it is an inter-related system – solutions cannot be applied to one area of the system without impacting others. This is particularly true within seniors housing.

British Columbia – The Simon Fraser University Gerontology Research Centre is a world class research centre that has produced a wide variety of journal articles and reports. The Dr. Tong Louie Living Lab is a research facility built through the collaborative efforts of Simon Fraser University's Gerontology Research Centre and the British Columbia Institute of Technology's Technology Centre. Officially opened in November 1997, the Living Lab conducts research and training activities that aim to improve the relationship between people and their living and working environments. Their goal is to create environments and products that facilitate independent living, and are sensitive to the needs of older adults and persons with disabilities.

Some cities and municipalities have Seniors Housing Authorities in place such as the Vancouver Urban Design Panel, which is responsible for all residential development approvals. In these cases, developers forward their proposals to this Seniors Housing Authority, which then determines if the project is properly designed to meet the criteria set out in their "For Seniors Guidelines". The committee is made up of retired seniors who act as advocates to ensure that proper care be taken in the provision of safety measures as well as "seniors

friendly” components of a project. They are a good sounding board prior to the approval of design proposals for any owner/developer looking to provide housing for older adults (The Royal Canadian Legion, 2003).

International:

United States – the IDEAS Institute in Ohio is comprised of staff who examine the therapeutic potential of the environment—physical, social and organizational—as it relates to frail and impaired older adults. Serving older persons, their caregivers, and the community, the IDEAS Institute seeks to be a premier resource of information and environment. Behavioral research centered on improving care and quality of life for people with chronic forms of physical and cognitive decline, is a key feature of the work. Areas of expertise lie in dementia care, long-term care, environmental design and modifications for older adults and those with dementia, caregiver/staff education and research.

In five European samples, it was found that very old people living in housing that is more accessible perceived their homes as more useful and meaningful in relation to their routines and everyday activities, and they were less dependent on external control in relation to their housing (Nygren, Oswald, Iwarsson et al, 2007). Iwarsson, Nygren, Oswald et al, 2007) found that older people largely live in houses with environmental barriers in hygiene rooms and at entrances.

A *Swedish* study demonstrated that adaptations in the housing of seniors (such as removing thresholds, installing new taps in the kitchen and bathroom, and broadening doorways) resulted in increased outdoor activities, reduced napping during the day, and better sleeping at night (Niva & Skar, 2006). The study participants performed more and new activities when their home environment became accessible.

Supportive Housing Design Features

When planning and designing for older populations, the plans for senior housing should be focused upon future needs, as well as the existing requirements of the prospective residents of the dwelling (Goodman & Smith, 1992). Consequently, the design will allow individuals to age in place, as their body changes and as they experience decreased environmental competence. Thus, the setting should be able to change and adjust according to the needs of the resident. The characteristics that make housing safer for **all** groups (children, physically handicapped, mentally ill, frail, developmentally disabled) should be programmed into the environment as standard features (Regnier, 2002). It is important that the environment be free of the dehumanizing institutional accoutrements common to senior communities.

Too many housing complexes are still thinly veiled warehouses for older adults, rather than nurturing environments that promote health and independence.

Gunts, 1994

The design of seniors' supportive housing can vary tremendously; primarily because of the many different forms that supportive housing can take. Design features depend on the type of housing, the scale of the project, the type and level of services and supports provided, and the unique development of a particular project. As a result, there is no single or 'best' design for supportive housing for seniors (Options Consulting, 2002). This being said, there are recommended design principles and features that should be considered. Cooper and Haselkus (1992) identified six factors that were highly valued and felt to contribute to the success for individuals' living in social housing. Control appeared to be the central construct and was subsumed under the other concepts: safety/security, accessibility/mobility, function, flexibility and privacy. These findings were posited as a working model of environmental control.

Several resources were located that provided comprehensive overviews of promising practice regarding design features of seniors housing that included both private and public spaces. These practices capture the range of considerations that characterize person-environment transactions for design decision makers. Some principles are more appropriate for frail and for those living in settings that have a strong management or organizational component. Others are timeless and universal in their application, reflecting considerations that many different populations consider relevant in their housing (Regnier, 2002). However, these principles and the rationales behind them can help order priorities and identify weaknesses in proposed design. Interestingly, these design features corresponded with the six valued factors identified above. These resources were carefully reviewed, and are summarized below.

"The built environment can help maximize the control older people have over their surroundings and reduce their sense of helplessness."

Christenson, 1990

Public Space:

Neighbourhood/Location

Seniors supportive housing should be integrated into the surrounding neighbourhood. It should ideally be located in an area that is safe, attractive and provides access to community amenities including transit, shopping, services, parks and recreation and activities (Options Consulting, 2002). The Office of Housing and Construction Standards in British Columbia further this by stating that the post office, public library, medical and dental offices and a community centre should be within two blocks. In addition, a comfortable walking

environment should include sidewalks that are wide enough and in good condition, crosswalks that are clearly separated from the vehicular flow, and a flat or minimal slope.

Access/Building/Public entrance/Vestibule/Lobby/Stairs/Elevators

Accessibility is one of the key design issues fostering a successful application of assistive technology in residential settings. Accessibility is “the ability to circulate without hindrance within this (near) environment; the freedom to perform daily living activities; the right and means to maintain privacy; the knowledge that the user is “in control” requiring minimum outside assistance” (Scott-Webber & Koebel, 2001). Attention to maintenance and small details such as picnic benches and seating at the entrance to the building has been viewed as positive.

Easy access to the building is a key requirement for residents. A portable aluminum or fibreglass ramp can be utilized to address curb height barriers and small steps. If the incline is long and/or steep, a permanent or semi-permanent wooden or concrete ramp can be built. The area surrounding the outdoor entrance should have a bright light that turns on automatically. A small accessible shelf should be installed alongside the door for parcels. The main entrance and lobby should include automatic doors, levered handles, non-slip flooring and a rest area or seating within the building to allow for visual surveillance.

Further suggestions regarding the building exterior spaces include parking and the approach to the building itself:

Parking:

- Adequate number of spaces for staff, visitors and residents
- Some stalls designated for people with disabilities in close proximity to the building
- Some stalls designated for side load vans
- Garage door and ceiling height to allow vans (if applicable)

Approach to the Building:

- Easy to read building identification – enter phones and signage should have large scale buttons and large scale, high contrast lettering and numbering – and be accessible to individuals in wheelchairs
- Wide, level or minimal slope pathway to municipal road system, clearly separated from vehicle traffic
- Stairs and ramps to be easily usable
- Handrails on ramps and steps
- Hard (compact, stable) walking surface
- Visual pathway cues and tactile information for people with reduced vision – light along pathways
- Covered drop off area/portico at front door, including curb cut

Outlet for scooter recharging

Common area/Amenities/Leisure space/Garden/Porch

- Accessible common dining room and accessible social area
- Toilet facilities designed to be accessible for individuals using mobility aids, with grab bars installed
- Furniture layout and space planning should accommodate people with a variety of disabilities
- Scooter parking and recharging should be considered
- Room for hairdressing, podiatry, or other personal needs
- Clearly marked exit doors
- Elevator controls designed for accessibility & legibility for visually impaired

If a space is used mainly for dining, for example, permanent or semi-permanent barriers can be constructed. These could be attractive half walls, with planters or latticework above. It may be helpful to look at the ways local restaurants create smaller feeling spaces without completely dividing an area.

If possible, main kitchens should be designed for the unit that has a separate entrance, so food can come onto the unit and trash can leave the unit without crossing other spaces. There should be a place where the food cart can be placed so it is accessible, but not out in the open and visible to all tenants.

Laundry/Garbage disposal

- Access to common garbage disposal system
- Recycling area
- Alternate arrangements for taking out the garbage per individuals who have major difficulties using chute

Private Space:

Minimal required provisions have been suggested for private space within supportive housing in the City of Richmond. Private residential units must be fully self-contained and sufficiently large to provide comfortable, appropriate and accessible accommodation. The minimum unit size is 410 square feet (Options Consulting, 2002). In addition, all units should ideally have 25 sq. ft. of storage area(s), including closets.

Access/Unit

Guidelines suggest a minimum 5' wheelchair-turning radius on the inside of the unit entrance as well as a 5' turning radius in the bedroom, bathroom, kitchenette area, and living room area (without furniture). Flat, smooth surfaces for floors should be considered, such as cork or wood, instead of carpeting. When carpeting is used, thick, soft padding should be avoided and short-pile carpet should be used. The number on the outer door should be easy to read and the door handle should be levered. Locks must accommodate people with reduced

hand strength and flexibility. A viewing peephole must be adjusted to accessible height.

Lighting/Colour

There are some enticing possibilities about being able to create spaces that encourage more activity and participation, or places that are calmer and more restful, but the lack of research hinders designers from being able to apply colors with confidence. There is better knowledge about perception and contrasts, which can support the creation of environments that enhance independent functioning. (Calkins, 2007). Environmental conditions that involve low levels of lighting hinder older people's socialization and jeopardize their safe manipulation of the environment (Regnier, 2002). Older adults require evenly distributed, background illumination and task lighting that is two to three times greater than younger adults. Over the shoulder lamps provide the best light for reading. During night time visits to the bathroom, a night light, lighted toggle switch, chemically-luminous doorknob cover, or motion-sensitive light can increase visual orientation (Hazen & McCree, 2001). A cordless battery operated light can be installed when electrical outlets are lacking. Halogen lights pose a fire risk and should not be used (Fielo & Warren, 2001).

The colors of red or dark neutrals against a light background and yellow or white against a dark background are easier for the elderly person to discern than are greens/blues/purples or pastel shades from each other (Hazen & McCree, 2001). Contrast of colors also can aid a senior to distinguish objects in the environment (Whirlpool, Undated). As positive examples, carpet color can contrast with wall color and different color keys can access different locks. As a negative example, a transparent glass table top is contraindicated.

Research conducted by Calkins (2007) reveals that designers should emphasize what is important. Within any setting, there are key elements that carry important information, such as orientation cues, or views to interesting vistas or activity areas. Close attention should be paid to those elements that have the potential to provide useful information to the cognitively impaired individual, and these can be emphasized with brighter colors, higher contrast with the background, and more light.

Floors represent an important functional element, not just a surface to be decorated. High contrasting, bold patterns should be avoided, as should high contrasting borders within rooms or in hallways. Color change at doorways or transitions between rooms is appropriate, although if the change is distinctive (high color or value contrast), it is best to make sure there are handrails for people to hold onto while making the transition.

Chair seats should contrast with the floor so that people can see where the edge of the chair is. Similarly, sink basins should contrast with the surrounding counter/vanity top. The toilets or toilet seats should contrast with the floor and

surrounding walls to render them more visible. Table settings should provide high contrast between the plates (which are usually white or pale coloured) and the table/tablecloth/placemats (dark colour).

Bathroom/Bedroom/Kitchen

Due to the myriad activities that take place in living rooms, kitchens and bathrooms, and the requirements that people use their bodies in many different ways; these rooms may demonstrate to individuals that their abilities are lagging (Andes, 2004). Reach capacity and muscle strength limitations can affect stooping, bending, sitting and standing. Furthermore, most accidents and injuries occur in kitchens and bathrooms (Andes, 2004). Consequently, older adults often have difficulty manipulating controls such as windows, doors, heating, ventilation, and appliances. Consequently, it is critical to design and build these two areas of the home to support the maintenance of independence, control and freedom (Scott-Webber & Koebel, 2001).

The literature review uncovered the following key elements to be considered in supportive housing units for seniors:

Bathrooms

- Manoeuvring space for mobility aids
- Toilet with grab bars along the wall
- Raised toilet seats
- Wall colour that contrasts with sanitary facilities
- Non-slip and non-glare flooring
- Lever style faucets in the sink and shower
- Full clearance below sink to allow for wheelchair use
- Grab bars within shower stall
- Rocker light switches
- Adjacent to bedroom for fast and convenient access
- Seating to make it easier to dress/undress
- Walk-in shower accessible to people in wheelchairs
- Build wide seat in shower/add seat to tub

When people are using showers, it is important to have stable grab bars to hold onto for balance. For many years, we have relied on stainless steel grab bars, which are aesthetically unappealing and often cold and hard to the touch. There are a variety of powder coated grab bars that come in decorative colors and have a non-slip grip (which is important), which are much more appealing (Calkins, 2007).

The bathroom remains one of the most significant remnants of the old institutional model, where efficiency and utility were valued more than the psychological and emotional comfort of the individual being bathed. Changing cultural values about long term care have resulted in recognition and support of

the cognitive, emotional, psychological and spiritual needs of older adults as well as consideration of the spaces required to meet these goals. This is particularly true when the most personal care such as bathing is provided (Calkins, 2001).

Bedrooms

- Room for mobility aids to manoeuvre around the bed
- Provision for call button by bed
- Closet with adjustable height rod and shelf
- Telephone jack
- Ceiling light fixture
- Switched outlet (e.g. three-way switch for bedside lamp)
- Provision for closet lighting
- All electrical outlets a minimum of 18" above the floor
- All switches and thermostats a minimum of 3'6" above the floor
- Flush thresholds
- Lower beds

Kitchens

- Durable, easy-to-clean counter tops
- Elevate dishwashers 12" above the floor to facilitate loading/unloading
- Set counter tops at varying heights to accommodate standing or sitting
- Sink with single lever style handle
- Refrigerator mounted on cabinetry base to reduce bending and stretching
- Task lighting
- Water temperature regulator
- Electrical switches and outlets within easy reach
- Cabinets designed to accommodate reduced upper and lower reach
- Not less than 1000 mm of clear, continuous counter space, excluding the sink
- Stove with front controls
- Manoeuvring space for mobility aids

Safety features/Burn and fall features/Exit, refuge & emergency alarms

Seniors experience a high rate of accidents and these result in more than twice the number of resulting deaths than other age groups (Regnier, 2002). The most serious accident related issues result from falls and burns. Falls represent a critical accident hazard for the elderly and the harder the floor surface, the greater the risk of fracture (Wilkinson, 2000). Fielo and Warren (2001) suggest several alterations that can be made to decrease the risk of falls. For example, non-skid mats and abrasive strips decrease falls in the bathtub or shower, as do grab bars installed on the walls. These bars must be attached through the tile to

structural supports in the wall. The wall may need a built in block to support at least 250 pounds. Bars may also be installed near the toilet and a raised toilet seat will accommodate those with compromised joint mobility. Slip resistant vinyl flooring or indoor-outdoor carpeting installed on top of tile lessens the chance of slipping and also softens the surface.

The policy and bylaw guide for seniors' supportive housing in British Columbia also extends safety to include security and alarms. They suggest provision for accessible reset on smoke alarms, with the wiring to be done at time of construction), the provision of a visual fire alarm in addition to audible alarms, and consideration of an intermittent auditory fire alarm. Exits should be accessible and well signed, and refuge areas to accommodate residents should be provided on each floor.

In terms of security, a lever-type door handle with a lock has been demonstrated as easiest to use (Fielo & Warren, 2001). The key disengages both the door and the door latch in a single motion. For wheelchair users, a second peephole at a lower height may be installed in the main door. A metal door and electronic security system can be installed for added safety.

Program of Supports/ Office space

Best practice indicates that seniors' supportive housing should provide an emergency call system with 24-hour on-site response, group activities, and at least one meal per day. Prior to initiating design, the type and level of support services need to be defined so that the physical environment appropriately matches the supports to be provided (Options Consulting, 2002). It is critical that there is office space for staff available, be they on site or visiting health care professionals.

KEY STAKEHOLDER INTERVIEWS - METHOD

In-depth, semi-structured telephone interviews were conducted with a proportional random sample of all supportive housing programs for seniors across the province.¹ The list of supportive housing providers was produced by the Ontario Ministry of Health and Long-Term Care. More than one hundred (N=108) programs were identified. See Table 1 for the breakdown of programs by region and the sample surveyed for each.

¹ Key stakeholders included individuals working in supportive housing for seniors across Ontario. They included executive directors, managers, front-line service staff, and others identified as information-rich (e.g. architect on housing project).

TABLE 1
SAMPLE OF SUPPORTIVE HOUSING PROGRAMS FOR SENIORS

Region	Total Number	Number Sampled
Central East	18	4
Central South	8	2
Central West	11	3
Eastern	3	1
Northern	19	4
South West	15	4
Toronto	34	7
TOTAL	108	25

Interviews were about 30 minutes in length and were conducted primarily with the managers of supportive housing as well as personal support workers as most of the organizations listed provided a broader array of services. In some instances, the executive director of the organization was also interviewed, as were other individuals who were suggested. For example, in one case, an architect was interviewed; in another, a board member.

Key stakeholders were introduced to the researcher and the study purpose – to identify best practice in housing design in supportive housing for seniors. They began by describing the housing service and supports that their organization provided and then proceeded to identify some of what they considered essential in thinking about the home environment for older adults. They were also encouraged to discuss some of the barriers they currently faced across a number of dimensions (including common space, accessibility, mixing populations, size of units, etc.). The interviewees were very gracious, not only giving of their time, but in many cases, extended a personal invitation to visit their housing. Several respondents also requested a sharing of email addresses to keep further informed of ongoing developments in the area of supportive housing design.

Detailed field notes were taken throughout the interview process and these notes included direct quotes from respondents where possible. These notes were entered into a word document and then analyzed for general thematic content as well as for unique examples of 'best practice'. What follows are some of the themes that recurred repeatedly across all interviews.

KEY STAKEHOLDER INTERVIEWS – RESULTS

Supportive Housing Design Considerations

Although all individuals interviewed mentioned several of the essential design features as outlined in the literature, they also identified what worked and what did not work in their specific settings. Many noted that they had to work with what they had, which often proved extremely challenging.

“Supportive housing is a hidden gem in the community service sector”.

Accessibility

Access was a key element identified by interviewees. Doorway entrances and hallways need to accommodate wheelchairs and walkers. Many scenarios were provided that illustrated the challenges encountered in this area. In one housing setting, two people could not pass each other in the hallway if they were using walkers; one had to back down the entire hallway to allow the other to pass.

“We had our doors fixed so that when you insert a key, the door opens automatically.”

In many other cases, respondents identified the ‘getting around the bed’ issue, and ‘navigating the bathroom’. Many apartment units were not designed to accommodate a mobility device, and for those who required a personal support worker to assist with bathing, there was often no room for two people in a tiny bathroom. A walk in shower was mentioned frequently as ideal, a ‘blessing’, even if it was a common one, shared by many. Many individuals mentioned the need for raised toilets and transfer benches. The importance of making this room as non-institutional as possible was also highlighted.

Door sills that had even the tiniest lip on them proved problematic, and respondents stressed that they need to be flush with the flooring. In some situations, they were replaced with a ramp.

Accessibility extended beyond the actual building itself, to include the importance of access to the wider local community. Many respondents mentioned the importance of access to resources in the community, particularly the means of getting there. In several cases, mention was made of the need for proximity to the local drugstore, library or church.

Colour and General Design Features

A pervasive theme identified in all interviews was the importance of colour and general design issues. The importance of contrasting colours was identified repeatedly. For example, the doors to individual units are more easily identifiable

when painted a darker colour than the surrounding walls. Interviewees suggested that the end of hallways and corridors should be painted the same contrasting colour as the doors to clearly mark the space. In one case, a dining room painted a dark colour, was indistinguishable from the seat coverings. This proved such a problem that the room had to be repainted. In another housing unit, a dull and dark living room with artificial lighting was used only rarely. Brightness and natural light was revealed as being extremely important. Windows should be low enough so that a tenant is able to see outside when sitting down. Plants were recognized as being important to the general environment of the housing.

One interviewee felt very strongly that the kitchen cupboards should never be white. She illustrated a situation in which the cupboard had to be marked in red so that the tenant could distinguish the cupboards from the rest of the kitchen. Many managers of supportive housing mentioned that levered faucets and door handles made it very easy for older adults to manoeuvre in their day-to-day lives.

Social Space and Common Areas

Interviewees stressed the importance of social space allocated within the housing setting and its relationship to social interaction and a sense of community. Many mentioned the fact that they had space that could be reserved to accommodate the family members of tenants. In this manner, a large dinner or holiday celebrations could be held.

The importance of the aesthetic value of the space was identified repeatedly. In one case, a supportive housing manager described their common living room as being very dull and dark with lots of artificial light. Consequently, residents very rarely used this unattractive public space.

Many respondents indicated that older individuals like to be able to see what is going on in the world. In one supportive housing location situated in a rural community, a covered screen back porch was available for residents to socialize, however it was hardly ever used. Residents preferred to sit at the front of the dwelling instead, where they could see the action; the everyday activities of the local community. Consequently, public space within the building should be located where residents can be privy to all of the *comings and goings* associated with the residence. It was also mentioned that, in an ideal world, there would be two public spaces – one located in the front of the building where the action typically is, and the other located in a more private space for those who prefer to get away from it all.

“Seniors love hanging around the entrance. They sit out there all day, watching people and saying hello to all.”

In addition, tenants preferred to be in the front of the building, near the entrance, which also served as a safety feature. When a stranger enters the building, they

know. In one case, a tenant took a fall in front of the building and help was immediately available. In another, an intruder was easily identified.

“People see the good and the bad. They serve a monitoring function.”

Many interviewees identified that a common dining room served many important functions. This room was viewed as an important place for socialization, good nutrition and encouraged many tenants to get dressed and leave their individual apartments. One executive director of a supportive housing complex for seniors stated that breakfast did not work, as tenants were on very different schedules, however, lunch and/or dinner was met with much success.

Storage space was a need that was also frequently mentioned. In one housing setting there was storage space, however, it was equipped with sliding doors that did not fully open, hence the space was unusable. Several individuals mentioned that storage should include space for scooters and other mobility devices.

Many supportive housing managers also identified the importance of providing outdoor space. Multiple seating areas on the adjacent property encourage social interaction and act as motivators for tenants to leave the confines of the building itself. Supportive housing managers stated that getting tenants out of their apartments and involved in a variety of activities avoids depression, keeps people active and alert and delays or prevents the need for long-term care.

Safety Features

Many safety features were mentioned in the stakeholder interviews, and included the need for a voice system in the elevator, coloured tape at the first and last step for enhanced depth perception, a safety element on the stove, and an emergency response system with 2-way communication.

“The 24 hour call button in all units make the tenants feel a lot safer.”

The voice activation at the front entrance was identified as not being particularly useful, as in many cases, older adults would state that they did not know who it was, but let them in anyways. Preference was indicated for a television/video system, where tenants could actually see who was entering the building.

Mixing Tenants

Interviewees had mixed opinions regarding the policy to mix different types of individuals, whether it is by age, physical or mental health status. Mixing inter

generationally was generally thought to be a good idea, however, several people raised caution.

“Mixing ages, mental health, cultural groups and the physically frail can work, but it depends on the approach.”

The only exception individuals noted was when tenants were in their 20's and 30's. Younger adults tend not to desire living in a building identified as a 'seniors' building. It is important to construct carefully the manner in which the housing is presented, and thus perceived. For example, is it supportive housing (for all ages) or housing for older adults? Interviewees felt that this was an important distinction.

“Older adults do not feel safe, they're scared, it's noisy, people knock over their walkers...they prefer being in an all seniors building.”

Office Space

A common complaint was the lack of private office space in many supportive housing buildings. This compromised the effectiveness of in service and community workers who lacked a private area.

“We need room for the foot lady, the hairdresser, and others who come in to provide supports and services.”

Several interviewees noted that the workers did not want to usurp the common space in the buildings, but that they often had no other choice.

The Importance of Client Centred Residential Care

One aspect of the design process that was thought to be important was the participation of older people in the reviewing and analyzing of design decisions. Elicitation of opinions provides the opportunity to challenge design decisions and provoke new design ideas. Many interviewees stated that they had a tenant advisory committee and detailed the benefits that ensured as a result. Many of the best ideas regarding design arose from the meetings where tenants identified their needs.

We have a very active residents association and people love living here.”

SUMMARY

The literature review indicated multiple studies that have demonstrated the benefits of supportive housing for older adults. Supportive housing for older persons is providing the core values identified as essential to best practice in the provision of housing and supports for individuals with mental illness (Parkinson & Nelson, 2003). These key values include consumer choice and control, access to valued resources and community participation and integration (Boydell, 2006). Other values include respect, hope, and the non-judgmental approach of staff, flexibility and acceptance. Valued resources such as meaningful activity, social support and finances are the important link between consumer choice and participation in the community. The resource base is necessary in order that empowerment and community integration are experienced (Nelson & Peddle, 2005).

The literature review also indicated that supportive housing is cost effective. The evidence from both United States and Canada demonstrates cost savings when compared to psychiatric hospitalization, long-term care settings, and hostels. Specifically, supportive housing results in cost savings to the larger system in terms of reduced 911 calls, reduced emergency room visits, and reduced hospitalizations (both for physical and mental health reasons).

Several resources were located that provided comprehensive overviews of promising practice regarding design features of seniors housing that included both private and public spaces. These practices were summarized in this report and capture the range of considerations that characterize person-environment transactions for design decision makers. Some principles are more appropriate for frail and for those living in settings that have a strong management or organizational component. Others are timeless and universal in their application, reflecting considerations that many different populations consider relevant in their housing (Regnier, 2002). However, these principles and the rationales behind them can help order priorities and identify weaknesses in proposed design. Interestingly, these design features corresponded with six valued factors: (1) control; (2) safety/security; (3) accessibility/mobility; (4) function; (5) flexibility; and (6) privacy.

“By placing the user at the center of the equation from the beginning, empathy and understanding follow, and with it good design.”

Cassim, 2007

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APPENDIX A

Schedule "A"

This research involved three key objectives regarding the issue of best practice in housing design for seniors' supportive housing:

Become familiar with the *Social, Health and Demographic Profile of Senior's in Waterloo Region Highlights Report* (2005) and the *Proposal for Supportive Housing Services for Senior's: Sunnyside Home* (2005).

Conduct a literature review regarding best practices in housing/building design for seniors' supportive housing within the scope of the project. The project plans to serve approximately 6-10 people with mental health issues who are also experiencing some physical health issues ages 45 and older and approximately 20-24 frail seniors ages 60 and over with or without mild cognitive impairments (it is anticipated that some tenants may also have addictions issues). The building will include 3 floors, and it is currently assumed that it will include some configuration of shared space, staff office/s and congregate dining to offer one noon meal daily. Design considerations should include, but not be limited to, layout, physical adjacencies, appropriate mix of units (bachelors, one-bedroom, two-bedrooms), built-in equipment requirements (e.g., ceiling lifts, showers, tubs) etc.

Survey a sampling of progressive existing seniors' supportive housing programs within the scope of the client population identified above and service model identified in the *Proposal for Supportive Housing Services for Senior's: Sunnyside Home* (2005), in Ontario, nationally, and internationally to identify best practices in housing design for senior's supportive housing as outlined by the Consultants proposal attached as Schedule "B".

APPENDIX B

THE REGIONAL MUNICIPALITY OF WATERLOO
 Social Services - Social Planning, Policy & Administration • Logic Model
 May - June 2007

ACTIVITY	PLANNED APPROACH / METHODS	INDICATOR/DELIVERABLE
1. Preparation & background work;	<ul style="list-style-type: none"> • Review of service delivery and organizational documentation provided by the program team; • <i>Social, Health and Demographic Profile of Senior's in Waterloo Region Highlights Report (2005)</i> and the <i>Proposal for Supportive Housing services for Senior's: Sunnyside Home (2005)</i>; 	Detailed description of the background and planning process (this will become part of the final research report)
2. Review of the extant literature, both peer reviewed as well as grey literature;	<ul style="list-style-type: none"> • Literature will comprise part of the final report and summarize current literature regarding best practices in building design for senior's supportive housing; • Literature will identify best practice in the field; highlighting what works and challenges in the field 	Critical Overview of the Pertinent Literature
3. Conducting the research;	<ul style="list-style-type: none"> • Discussion with identified collaborators to discuss the research project; • Interviews/surveys/consultation with key informants in existing seniors supportive housing programs, locally, nationally and internationally; • Document analysis; Field Notes; 	Field notes and detailed audit trail of the research process
4. Data Analyses; 5. Report Write up	<ul style="list-style-type: none"> • Quantitative and qualitative data analysis will occur in this phase; • Writing of report; 	Detailed documentation of the analysis procedures taken
6. Presentation of final results of the work;	<ul style="list-style-type: none"> • Face to face/teleconference meeting with the team to share study results; discuss further dissemination of results on the program, knowledge translation and next steps 	Final report (1-3-25) on the program; knowledge translation.

APPENDIX C

LITERATURE REVIEW - METHOD

A tightly focused literature search examined the extant literature in the following fields: supportive housing for seniors and older adults; supportive housing for people with mental illness; aging in place, universal design, housing design for older adults; and, seniors' mental health. A focused search of both the published and unpublished (grey) literature was undertaken. Keyword search strategies were developed, on-line searches of bibliographic databases for potentially relevant publications were conducted, abstracts were screened to identify studies for further review, and the references sections of publications were reviewed for potentially useful studies. Selected articles and reports were selected and summarized.

The following bibliographic databases were searched from 1980 to 2006 for relevant publications.

Ovid (Ovid Technologies) including:

All Evidence Based Medicine (EBM) Reviews, including:

Cochrane Database of Systematic Reviews (DSR)

American College of Physicians (ACP) Journal Club

Database of Abstracts of Reviews of Effects (DARE)

Cochrane Central Register of Controlled Trials

Books@Ovid

Cumulative Index to Nursing & Allied Health Literature (CINAHL)

Journals@Ovid Full Text

OVID Medline 1966-Present

Your Journals@Ovid

EBSCOhost Research Databases (EBSCO Publishing) including:

Academic Search Premier (ASP)

General Science Abstracts

Social Sciences Abstracts

ProQuest Dissertations and Theses – Full Text

Web of Science, including:

Science Citation Index Expanded (SCI Expanded) 1945-Present

Social Science Citation Index (SSCI) 1956-Present

Arts & Humanities Citation Index (A&HCI) 1975-Present

World Wide Web using the search engines: Google (www.google.ca) and Vivisimo (<http://vivisimo.com>).

Search of specific journals for relevant articles, including:

Environment and Behaviour
Canadian Journal of Community Mental Health
Canadian Journal of Psychiatry
Canadian Medical Association Journal
Community Mental Health Journal
Evidence Based Mental Health
Health and Social Care in the Community
Health Services Research
International Journal of Psychosocial Rehabilitation
International Psychogeriatrics
Journal of Community Psychology
Journal of Community Mental Health
Journal of Housing for the Elderly
Journal of Mental Health
Journal of Psychiatric & Mental Health Nursing
Psychiatric Services
Social Science and Medicine

Conference Proceedings

Technology and Aging
Policy and Research on Aging

Newspaper, Newsletter and Magazine Articles

Seniors' Housing Update²
Mature Medicine
Canada Mortgage and Housing Corporation Reports