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MOBILITY AND AGING

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Photo provided courtesy of New Westminister Wheelability Team

In this issue of SHUP, we introduce two articles on mobility for seniors: “Driving Restrictions and Aging: Increasing Risk or Preserving Quality of Life?” by Glenyth Nasvadi and “Ready to Roll? Mobility and Social Participation among Wheelchair Users in Residential Care” by Ben Mortenson. These articles continue the theme of ‘mobility’ introduced in previous issues by such articles as “Age-Friendly Communities in North America and East Asia: Sidney on Vancouver Island, British Columbia” (SHUPv18n1) with Sidney’s “pedestrian friendly” downtown and “Age-Friendly New Westminister: Wheelability Assessment” (SHUPv19n1).



Mobility has been defined in various ways. The National Forum on Mobility in Aging (CIHR, 2007) provided an overview of mobility in aging where 'mobility' was defined as the ability "to get around independently and to stay living [at] home."

In fact, issues in mobility in aging range from carer-assisted mobility indoors to independent mobility in challenging environments. Mobility issues include not only "participation in society (e.g., ability to drive and having accessible public transportation) and physical activity, but also the performance of specific manoeuvres such as walking or climbing stairs and the carrying out of instrumental activities of daily living" (CIHR, 2008). Mobility, whether on foot or using various forms of transportation, is a major prerequisite for maintaining autonomy, independence, and quality of life. Mobility is crucial to obtain our daily necessities, to use neighbourhood facilities and to access health and community services. Approximately 13% of seniors who do not live in institutions have mobility impairments and this proportion rises to about 30% by the age of 80; in addition, most seniors in institutions have mobility impairments (CIHR, 2002). Not surprisingly, there is a dire need for more resources and advocates for seniors to live independently in their familiar environment.

Supportive environments positively affect seniors' mobility, independence, and autonomy (Hoehner et al., 2005;

Zimring et al., 2005) (see, for example, "The Olympic Village and Universal Design" SHUPv18n1). A major shift in the way we design our neighbourhoods has been taking place nationally (e.g., Age-Friendly Community Initiative) as the common barriers to outdoor mobility among seniors are addressed (e.g., the lack and poor maintenance of sidewalks, connectivity of roads, rest areas, poor lighting, and road signs) (CAAWS, 2007; CFLRI, 2005).

Well-designed communities facilitate various types of activities in all age groups and improvements of "universal design" features offer better conditions for seniors and other mobility-impaired groups such as children and people traveling with children. On the one hand, there will be the growing number of seniors who are healthier, better educated, and more active; on the other hand, there will be the growing number of the oldest old who experience physical disability, cognitive impairment, and sensory loss. For the latter, mobility is equally important for their quality of life. Age-related loss of mobility does not indicate less desire to be mobile. Rather, it is caused by obstacles and hindrances in the environment and in the transport system (CAAWS, 2007; Mollenkopf et al., 2005). Several psychosocial features of traffic-related factors (e.g., feeling of insecurity from heavy traffic volume and speed) are even more important than typical kinds of traffic conditions. It seems that the key to maintaining outdoor mobility lies within the everyday interaction between an individual and his or her immediate surroundings, friends and family (Mollenkopf et al., 2005). The social and spatial environment is also crucial for a comprehensive understanding of mobility for seniors. Thus, the following two articles focus on the relationship between mobility and engagement in activity and participation in everyday life.

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DRIVING RESTRICTIONS AND AGING: INCREASING RISK OR PRESERVING QUALITY OF LIFE?

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Imagine today is Thursday. Your morning stiffness from your arthritis has eased up a little with the movement of getting dressed and having breakfast. You've remembered to take all your meds this morning, and that you have a doctor's appointment in an hour to check out that odd-looking mole that has recently appeared on your face. You instinctively reach for your car keys but they are not in their usual place. With a groan you remember that last week your license was cancelled just because you did not merge quickly enough onto the freeway during your driving test. That's all, just that stupid freeway. You never go on the freeway anyway; just to the store and the coffee shop mostly. The phone rings. It's your friend Sarah. She's calling to say she's very sorry but is not feeling well and will not be able to take you to the doctor after all. You slump down onto the kitchen chair. Now what? The nearest bus stop is four blocks away and anyway, they run only once an hour. You have to book Dial-a-Ride a week in advance. Taxi? Last time you called they took two hours to show up.....

Drivers aged 75 years and older have some of the highest crash rates per kilometre driven (IIHS, 2003). Visual problems, slowed physical reflexes, reduced working memory, and reduced divided attention contribute to difficulties perceiving and reacting to hazards on the road. However, driving is a skill that becomes highly automatized through practice, especially tasks such as steering, accelerating, braking, and using signal indicators, so that under predictable driving situations, most older adults can drive safely. Conversely, under unpredictable conditions such as unfamiliar areas and bad weather, or under high-demand conditions such as freeways and heavy traffic, many older adults are over-challenged.

There is a common perception that

most older drivers recognize their deficits and self-restrict by avoiding the more challenging driving conditions. However, studies have shown that only about one-quarter of drivers over age 65 always avoid, for example, driving at night or during heavy rain (Molnar & Eby, 2008). This suggests many continue to drive in situations that demand more than their skills can handle. As well, since older adults are more physically frail, they are much more likely to be injured or killed in collisions (IIHS, 2001). On one hand, there is a rising concern for the health of frail older adults who continue to drive in high-demand situations, as well as for the well-being of other drivers and pedestrians. On the other hand, there is justified concern that taking away a driver's license will have negative consequences on the quality of life of older adults, and increase the caregiver burden of friends and relatives who must now provide transportation.

For many years, in most Canadian provinces and US states, provisions have been available to accommodate

drivers with physical challenges such as amputations or paraplegia. More recently, these accommodations have been applied to older drivers to permit them to continue driving under restricted conditions, such as within a specific geographical area or only on secondary roads. In fact there is growing support for the concept of "graduated de-licensing" of older drivers, mirroring the successful graduated licensing programs of novice drivers. Since our culture and infrastructure has made us so dependent upon the automobile, loss of a driver's license is seen by most older adults as catastrophic and frequently leads to social isolation, depression, physical decline, and earlier institutionalization (Fonda et al., 2001). Finding ways to keep our elders active, socially connected, and safe was the compelling motivation for this study.

Opponents of licensing restrictions for older drivers argue that the policy keeps drivers on the road who do not have sufficient skill to avoid hazards, resulting in more frequent and more serious crashes.





Even under restricted conditions, it is argued, these drivers will continue to endanger others. Until the current study was completed, it was not known whether license restrictions were successful at allowing older drivers to retain some of their independence, or whether they had the effect of increasing crashes by allowing those who should not be on the roadways to continue driving.

Addressing this question involved in-depth examination of complex licensing and insurance claim crash data for a large cohort of older drivers. This study looked at the driving histories of 151,284 drivers over age 65 in the province of BC, spanning a 7 year period from January, 1999 to June, 2006. Types of restrictions selected for the study comprised three categories of that are most commonly applied to aging drivers: 1) permitted to drive during daylight only; 2) permitted to drive only within a specific geographical area; and 3) permitted to drive only below a specified speed limit.

The study showed that compared to drivers who renewed their driver's license without restrictions, those who had restrictions imposed on their license did indeed have higher numbers of pre-restriction crashes. If these drivers had continued to drive in the manner they had in the past, it is reasonable to expect that they would continue to cause crashes, endangering the general public and themselves. The restricted drivers in the province were more likely to be men (61.2%), and they were also more likely to be older than unrestricted drivers. The most commonly applied restriction was a combination of daylight only plus maximum of 80 km/h, applied to 42% of the restricted drivers. This combination of restrictions is often applied to drivers with

vision-related declines with the assumption that slower driving and better lighting will reduce the requirement for quick visual processing and reaction time.

Since prior crashes are predictive of subsequent crashes (Daigneault et al., 2002), it would be expected that the crash rate of the restricted driver group would increase over time. In fact, the study found that after restrictions were applied, the total number of crashes caused by restricted drivers declined 36% when measured over the same number of days pre- and post-restriction. The older age of the restricted drivers also predicted that they would be involved in more collisions. In fact, this was not found. Instead, the study found that the same proportion of restricted and unrestricted drivers caused crashes. In other words, permitting more frail elders to continue to drive under controlled conditions did not increase the risk to the public as argued by opponents of restricted licenses. More detailed analysis of drivers restricted to daylight-only driving revealed only 3.1% of the crashes occurred during the dark, suggesting compliance with restrictions was not a major issue.

Among drivers who did cause a crash, the mean number of days (survival time) from license renewal until the crash was significantly longer for drivers with restricted than unrestricted licenses (651.13 compared to 533.99 days), confirming that driving restrictions do prolong the period of safe driving. Results of Cox PH regression revealed that after adjusting for age and gender, restricted drivers had 11% lower odds of causing a crash than unrestricted drivers. Furthermore, no difference in severity of crashes was found, with both groups having approximately equal proportions of major and minor material damage collisions, collisions involving injuries or fatalities, and number of vehicles involved in the collisions. Again, since restricted license holders were older, their projected crash severity would be greater. Consequently, it may be concluded that the levelling-off demonstrates, in effect, a reduction in crash severity.

In keeping with Person-Environment theory (Lawton, 1980; Lawton & Nahemow, 1973), results of this study may

be interpreted as meaning that licensing restrictions resulted in a better fit between the resources of the older driver and the demands of the road environment. For some older drivers, imposed driving restrictions may be needed to maintain this balance. It is possible that some of the lowered crash rates found in this study occurred because very frail drivers greatly reduced their driving or ceased driving altogether. This does not negate the findings. In these cases the individual has been afforded the opportunity to maintain self-respect by retaining a license and making personal choices not to drive. The finding that restricted licenses may permit an older person to remain licensed, even though the driving must be reduced, is important to the lives of many individuals seeking to maintain an independent lifestyle, and may facilitate community living as opposed to institutionalization. Further studies are needed to document these benefits.

(Editor's Note: This article is based upon Glenyth Nasvadi's MA thesis: Nasvadi, G. (2007). An evaluation of crash risk among older drivers with restricted licenses in BC. M.A. Thesis, Department of Gerontology (Supervisor: A. Wister)).

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READY TO ROLL? MOBILITY AND SOCIAL PARTICIPATION AMONG WHEELCHAIR USERS IN RESIDENTIAL CARE¹

Ben Mortenson (PhD, Fellowship in the Area of Mobility in Aging from CIHR - Institute of Aging)

In Canada, most individuals in residential care² use wheelchairs for mobility (Clarke et al., 2009; Shields, 2004) and as a result of being a long-time volunteer and an occupational therapist who prescribes wheelchairs in these settings³, I became aware of serious wheelchair-related issues that residents encounter. Therefore, for my doctoral research, I conducted a study to explore the impact of wheelchairs on those living in residential care and to discover ways to improve their mobility and social participation.

Many facilities provide basic wheelchairs, but studies have shown that the equipment residents receive is often inadequate and may contribute to problems such as discomfort, poor positioning and reduced mobility (Fuchs & Gromak, 2003). Furthermore, wheelchairs in these settings are sometimes used as a means of restraining rather than enabling

resident's mobility (Smithers, 1990).

Research not specific to wheelchair users in these settings has revealed concerns with activity engagement and quality of life among residents. Observational studies have found that residents spend most of their time doing little or no activity (Ice, 2003; Voelkl et al., 2003) and that boredom is a common problem (Slama, & Bergman-Evans, 2000). Ethnographic research has demonstrated dehumanizing aspects of care provision in these settings (Bland, 2007; Diamond, 1992; Fiveash, 1998; Gubrium, 1975; Kayser-Jones et al., 2003). Unfortunately, there is a widespread assumption that life for these residents is unalterable poor which may, in fact, discourage efforts to improve it (Kane, 2003).

The overall purpose of my two-phase doctoral research study⁴ was to explore what life is like for residents who use wheelchairs as their primary means of mobility and to identify predictors

of their mobility and frequency of social participation. The first phase of this research project was a year-long ethnographic study. Sixteen residents from two facilities took part in participant observations, and these residents or their surrogate family members completed a series of in-depth interviews. Based on the findings from this research, we carried out a second cross-sectional study. We administered a standardized measure to over 250 residents (or to their surrogate respondents) from 11 facilities in the Lower Mainland of British Columbia. We measured the extent and frequency of their mobility, and the frequency of their participation in formal and informal activities. To identify the most important predictors of their mobility and frequency of activity participation, we compared scores on these outcome measures with personal information (age, depression, cognitive ability, etc.), wheelchair-related data (handling ability, wheelchair fit, type of wheelchair, etc.) and environmental variables (perceived environmental barriers and social support).

Our research revealed serious wheelchair-related issues in these settings. Most residents were in need of seating intervention to address problems such as discomfort, poor positioning, and pressure ulcers. Although these results are similar to findings from other facilities in Canada (Forward & Miller, 2000), the need for seating intervention represents a serious concern for residents who frequently spend the bulk of their day in wheelchairs and likely lack the financial resources to purchase more suitable equipment.

Despite the existence of least restraint policies at all the facilities in the study, many residents were restrained in and



with their wheelchairs. A proportion of proxy respondents had wheelchairs that could not be self-propelled, and almost half had a seat-belt that could not be self-released. These numbers are typical of most Canadian facilities, which have some of the highest levels of physical restraint use internationally (Feng et al., 2009). Such restraint use continues despite research that indicates that these devices may not be effective in reducing injuries, may contribute to agitation, and can cause death due to asphyxiation (Capezuti, et al., 2008; Tilly & Reed, 2008).

Our research identified three predictors of mobility that might be amenable to intervention. First, residents with better wheelchair handling abilities went more places, more frequently. As a clinician in residential care, I rarely had time to train residents to use their wheelchairs, but it is possible that wheelchair training programs may improve their mobility. Second, residents with power wheelchairs were significantly more mobile than residents with manual wheelchairs. Power mobility is essential for independent mobility for some residents (Mortenson et al., 2005) and may be beneficial for other residents as well. Such equipment is rarely provided by residential care facilities, and bearing the cost personally may be prohibitive for many residents. Finally, residents with more weekly visits from friends and family were also more mobile. Given staffing limitations in these settings (Mass et al., 2008), families play a critical role (Gaugler, 2005) and may facilitate mobility in residents generally, as has been found by Aneshensel et al. (1995) for residents with dementia. In this regard, efforts to encourage visitors may improve a resident's mobility and produce

other benefits as well.

Residents who used wheelchairs in these settings experience serious issues with social participation. As less than one-quarter of participants were independently mobile outside their facilities, most residents relied on facility programs as a way to occupy their time. Half of study participants, however, indicated they were often bored; over one-third of study participants reported that they rarely or never participated in organized social activities. Due to resource limitations in these settings, recreation programs were generally provided using a group format. This kind of programming may not be successful at meeting the needs of individual residents (Thomas, 1994). Furthermore, recreational program funding levels meant that there were limited recreational activities on evenings and weekends, and programs were sometimes cancelled because of a lack of vacation and sick time coverage for staff.

A lack of activity engagement was especially evident among residents with cognitive impairments. Proxy respondents participated significantly less frequently than self-respondents. This finding echoes research by Perrin (1997) that found that residents with dementia had severely limited opportunities to participate in meaningful activities.

We identified two predictors of social participation that might be modified. First, as was noted by Tinetti and Ginter (1990), residents who were more mobile participated more frequently in activities. Thus, interventions that facilitate mobility may have a beneficial effect on the frequency of a resident's social participation. Second, as previously documented (Voelkl et al., 1995), residents who were less depressed participated more frequently. As half of residents in the study had significant depressive symptoms and health care professionals tend to under-recognize depression among residents (Davison et al., 2007), interventions aimed at decreasing depression in this population seem paramount. Looking beyond pharmacological interventions, it may be possible to alleviate the symptoms of what could represent a reactive depression, precipitated by facility admission (Ron, 2004), by improving the living conditions of residents in these settings.



Overall, the study findings emphasize the pivotal role that wheelchairs play in the lives of residents, reveal institutional practices that may curtail their mobility and participation, suggest potential policy and practice changes, and lay the groundwork for future research.⁵ Some of these changes would require only limited financial resources. For example, as new wheelchairs are purchased, equipment that cannot be self-propelled could be replaced with devices that facilitate independent mobility. As well, restraint use could be reduced through additional staff training and monitoring programs. Additional resources, however, would also be required to provide residents with better wheelchairs and wheelchair seating and additional staffing would be necessary to enable better wheelchair training, device prescription, and consistent recreational programming that better suited the needs of residents with dementia. There are those who reject increased public spending in a time of financial constraint.⁶ If a society should be judged by the way it treats its most vulnerable members (Humphries, 1977), then better funding is required to avoid perpetuating the existence of institutions that are seen as places worse than death (Mattimore et al., 1997).

In an effort to effect some of these changes in these settings, I have presented the findings of my research back to residents, families and staff at participating facilities and will be making presentations to policy and decision makers at local health authorities. Additionally, we have created a video, with funding



from the Disability Health Research Network (DHRN), to vividly illustrate the findings of our research. <http://www.dhrn.ca/video.php?categoryID=6>

(EDITOR'S NOTE: Ben Mortenson, BScOT, MSc, PhD, completed his doctoral studies at the University of British Columbia in 2009. He is currently a Post-Doctoral Fellow with Dr. Sixsmith at the Gerontological Research Centre and Dr. Louise Demers at the Centre de recherche de l'institut universitaire de gériatrie de Montréal. His research interests include assistive technology, social participation, and outcome measurement.)

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NOTES:

- 1) This research was conducted with Dr. Bill Miller, Dr. John Oliffe, and Dr. Catherine Backman, as co-investigators and my thesis committee members.
- 2) These settings are commonly referred to as nursing homes, but this term does not acknowledge the non-nursing services that residents receive and use of the word "home" to describe these settings is also contested. See Reed-Danahey, D. (2001). 'This is your home now!': Conceptualizing location and dislocation in a dementia unit. *Qualitative Research*, 1, 47-63.
- 3) I spent 12 years as a volunteer at a facility in Edmonton, before starting work as an occupational therapist in residential care in Vancouver in 1998.
- 4) Personal funding for my doctoral research was provided by a Strategic Training Fellowship in Rehabilitation Research from the Canadian Institutes of Health Research (CIHR) Musculoskeletal and Arthritis Institute, CIHR and Michael Smith Foundation for Health Research Fellowships and the Canadian Occupational Therapy Foundation (COTF). Funding for the study was provided by CIHR, COTF and the BC Network for Aging Research.
- 5) For my post-doctoral work, I am conducting an intervention study that explores the impact of assistive technology on community dwelling users and their non-paid caregivers. Based on the expertise I acquire during this project I will apply for funding to conduct intervention studies to look at the efficacy of wheelchair skill training programs in among individuals in residential care.
- 6) Or at any time for that matter.

