Examining the Geriatric Content of Canada's Newest Undergraduate Medical Program: Are Graduates of the Northern Ontario School of Medicine Acquiring the Basic Competencies to Care for an Increasingly Aging Population?

by

Karen Leclair Smider

Thesis submitted in partial fulfillment
of the requirements for the degree
of Master of Arts (MA) in Human Development

School of Graduate Studies
Laurentian University
Sudbury, Ontario

LAURENTIAN UNIVERSITY/UNIVERSITÉ LAURENTIENNE

School of Graduate Studies/École des études supérieures

Title of Thesis
Titre de la thèse **EXAMINING THE GERIATRIC CONTENT OF CANADA'S NEWEST UNDERGRADUATE MEDICAL PROGRAM: ARE GRADUATES OF THE NORTHERN ONTARIO SCHOOL OF MEDICINE ACQUIRING THE BASIC COMPETENCIES TO CARE FOR AN INCREASINGLY AGING POPULATION?**

Name of Candidate
Nom du candidat **Leclair Smider, Karen**

Degree
Diplôme **Master of Arts**

Date of Defence
Date de la soutenance **November 22, 2012**

Department/Program
Département/Programme **Human Development**

APPROVED/APPROUVÉ

Thesis Examiners/Examinateurs de thèse:

Dr. Lisa Graves
Dr. Nancy Lightfoot
Dr. Elizabeth Wenghofer
(Supervisor/Directeur de thèse)
Dr. Trevor Frise Smith
(External Examiner/Examinateur externe)

Approved for the School of Graduate Studies
Approuvé pour l'École des études supérieures
Dr. Patrice Sawyer
Vice-President, Francophone Affairs, Research and Graduate Studies/Vice-recteur aux affaires francophones, à la recherche et aux études supérieures

Abstract

Inadequate numbers of physicians skilled at providing specialized care of the elderly, has initiated inquiry as to how medical schools will ensure tomorrow's physicians are capable of providing the most appropriate care for Canada's growing population of aging seniors. The Canadian Geriatrics Society has responded to such concerns with the establishment of recommended geriatric learning objectives. This thesis examined the geriatric content of the undergraduate curriculum of Canada's newest medical school, the Northern Ontario School of Medicine, and compared these findings to the Canadian Geriatrics Society's recommended 'Core Competencies in the Care of Older Persons for Canadian Medical Students'. While there was a respectful compliance with the recommendations, findings reveal that five of the twenty recommended competencies were absent in the curriculum objectives. Further, present competencies were found to be unequally distributed across the curriculum in relation to both the year and the teaching setting. The results suggest areas for improvement as recommended competencies are intended as a minimum standard for performance in caring for the elderly.

Acknowledgments

I am immensely fortunate to have worked on my thesis under the direction of three individuals who epitomize professionalism, compassion and leadership in their respective fields. I acknowledge with sincere gratitude the advice, valuable feedback and accessibility I received from my committee members Dr. Lisa Graves and Dr. Nancy Lightfoot.

A special and heartfelt gratitude is extended to my supervisor Dr. Elizabeth Wenghofer for who I have the utmost respect. Dr. Wenghofer exemplifies an ideal educator. Her capacity to facilitate an environment conducive to learning, and to challenge and motivate students is paralleled only by her exemplary patience, tolerance and kindness.

I would also like to acknowledge my appreciation to the respective staff at the Northern Ontario School of Medicine for their helpful insight of the undergraduate medical program.

Table of Contents

Chapter III – Results

Chapter IV - Discussion

List of Figures

List of Tables

List of Diagrams

Operational Definitions

Ageism

Ageism comprises of prejudicial attitudes toward older persons, old age, and the aging process; discriminatory practices against the elderly; and institutional practices and policies which, without malice, perpetuate stereotypic beliefs about the elderly, reduce their opportunities for life satisfaction and undermine their personal dignity (Butler, 1980).

Geriatric Medicine

Geriatric medicine is a medical specialty which is concerned with the prevention, diagnosis, treatment, remedial and social aspects of illness in older people (Royal College of Physicians and Surgeons of Canada, 2011).

Gerontology

Gerontology is the study of the aging processes and individuals as they grow from middle age through later life. It includes the study of physical, mental, and social changes in older people as they age and changes in society resulting from our aging population (Association for Gerontology in Higher Education, 2009).

Senior

Persons aged 65 and older (Statistics Canada, 2010)

Chapter I

Introduction

1.1 Purpose of Study

"What else would you expect at your age…aches and pains are a normal part of growing old" (S. Leclair, personal communication, February 12, 2009)? This was a response given to a 69 year old woman during a routine medical office visit by her family physician of 25 years, and the impetus to this research project. In a youth obsessed, age-defying culture, it is not difficult to recognize the existence of ageist attitudes and the lack of knowledge as to what constitutes normal versus abnormal aging. What we might not expect, is to recognize this existence within the environment of a medical practice. Nevertheless, literature indicates a common dismissal of many abnormal diseases as a normal part of aging among medical professionals (Alliance for Aging Research, 2002; Gunderson, Tomkowiak, Menachemi & Brooks, 2005).

The growth in the number of Canadians aged 65 and older has been well documented, as have the concerns of how our country's healthcare will meet the complex medical needs of an aging population (Diachum, Hillier & Stolee, 2006; Frank, 2010; Statistics Canada, 2010). Canada's changing demographics have contributed to bringing issues relating to healthcare to the forefront. Geriatric

medicine will most certainly increasingly dominate our health system, and the health and social care of seniors will, largely by default, become a central focus to most health care providers in the 21st century (Hazzard, 2000). As Canada's older population grows, we require, and will increasingly require, a well-trained workforce of healthcare providers with knowledge in both gerontology and geriatric medicine.

An aging population will necessitate the inclusion of geriatric medicine in the education and training of future physicians, as routine practice will appreciatively include increased exposure to older patients (Keller, Makipaa, Kalenscher, & Kalache, 2002; World Health Organization, 2005). Such imperativeness lies in the reality that the treatment and care of older patients varies significantly to that of younger patients (Hazzard, 2004). Older patients present unique issues given the "interactions between multiple comorbidities, polypharmacy, and the varied presentation and prognosis of different conditions common to older adults" (Hazzard, 2004 as cited by Diachun, Van Bussel, Hansen, Charise & Rieder, 2010, p.1221). The acquisition of basic skills and knowledge in geriatric medicine is therefore beneficial to most areas of practice, with the apparent exclusion of specialties such as obstetrics and pediatrics. Given the demographic shift to an aging population, one might expect that all graduating doctors of undergraduate medical programs acquire a standardized degree of knowledge, skill and exposure to caring for older patients. However, the Liaison Committee for Medical Education, the accrediting body for Canadian

and United States medical schools, neglects to mandate clinical clerkships containing geriatric rotations (Diachun et al, 2010; Liaison Committee on Medical Education, 2011). However, Canadian medical schools are, to some extent, incorporating geriatric content into the undergraduate curriculum. What is of concern is the lack of consistency in the content and hours dedicated to geriatric material, and the realization that less than half of all Canadian medical schools have implemented required clerkships in geriatric medicine of at least one week in duration (Diachun et al., 2010; Frank, 2010).

The recent establishment of Canada's newest medical school in over 30 years inspires hope. With its pronounced social consciousness and accountability in addressing the needs of the region it serves, one can only hope that population aging was a consideration in the curriculum development of the Northern Ontario School of Medicine. The Northern Ontario School of Medicine is a partnership between Laurentian University and Lakehead University, with main campuses located in Sudbury and Thunder Bay. A unique and fundamental component of the medical school is its community-based placements of students in the culturally diverse, remote, rural and urban communities of Northern Ontario (Northern Ontario School of Medicine, 2011). What will be increasingly apparent in most northern Ontario communities is the significant proportion of older adults. Medical students may therefore have the added challenge of assisting in the complex care of aging patients, in a potentially remote location with limited access to health services and provisions.

The explicit inclusion of geriatric content within the undergraduate curriculum of the Northern Ontario School of Medicine becomes assuredly relevant.

The purpose of this research project is therefore to examine the geriatric content, and more specifically geriatric competencies of the undergraduate curriculum of Canada's newest medical school, and to compare these findings to the learning objectives outlined and recommended by the Canadian Geriatrics Society.

1.2 Literature Review

1.2.1 Theoretical Orientation

This project is interpreted through the lens of a structural functional perspective. Inherent to this approach is the belief that society, through shared values, evolves along a positive trajectory (Hagedorn, 1990; McDaniel & Agger, 1982 as cited by Novak, 1997). The concept of a social system is central to this perspective and is defined by its boundaries, or its identifiable parts, the interdependence of these parts, its needs or requirements, and its maintenance of equilibrium (Hagedorn, 1990). The maintenance of equilibrium is achieved by means of addressing or correcting social problems, or what structural functionalism refers to as dysfunctions (McDaniel & Agger, 1982 as cited by Novak, 1997).

A principle focus of this perspective is the "relationship between social structures and social institutions and the resulting influence on the individual" (McPherson, 1998, p.81). As a micro-macro level theory in Social Gerontology, structural functionalism focuses on how aging individuals adjust to society and in turn, how social structures influence aging individuals (McPherson, 1998). We can view the educational institution of a medical school, or more specifically, NOSM as a social system consisting of multiple parts. Its school curriculum,

respective teaching settings and environment, faculty and preceptors, and medical students are said to be interrelated or interdependent and ultimately reflective of the culture of the institution (Hagedorn, 1990).

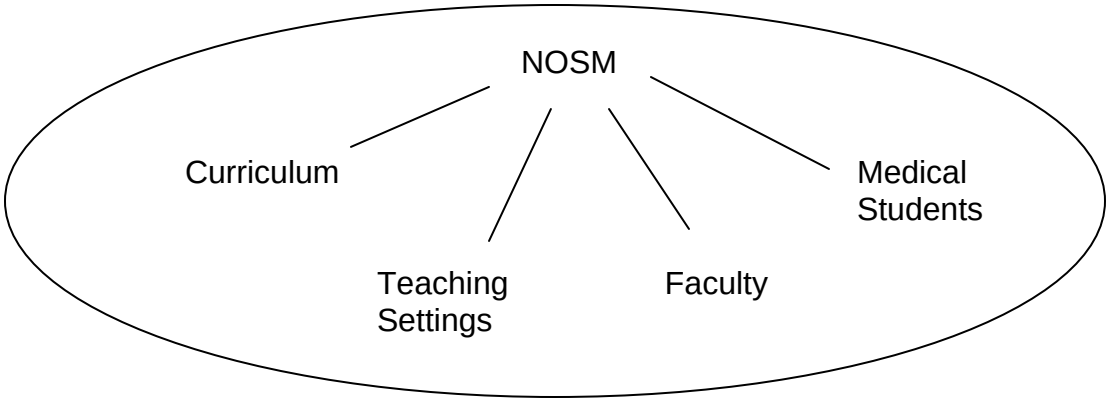


Diagram 1: The Social System of NOSM

As a social system, educational institutions are thought to serve as a positive function in and for society and are thus measured by how well they met the needs of society (Hagedorn, 1990). Meeting the needs of society speaks directly to the social accountability mandate of medical schools. The exponential growth of older persons represents, in many respects, a dysfunction or problem specific to the provision of optimal health care for seniors. Structural functionalism would predict that as a social system, a medical school would out of necessity evolve in a positive direction. As demographic shifts occur, so too will the priorities of a medical school.

1.2.2 The Demographic Shift

Seniors represent one of the fastest growing groups in Canadian society today (Statistics Canada, 2010). The combination of low fertility rates, the aging of the baby boom generation, and the increase in life expectancy is resulting in a record number of adults aged 65 and older (Turcotte & Schellenberg, 2006; Rowe, 2008) are all contributing to the growth in this demographic. In 1951, 7.8 % of Canada's population was over the age of 65 (Aitken, 2008). In 2036, it is projected that one quarter of Canada's population (24.5 %) will be 65 years of age or older. The number of seniors in Canada is projected to increase from 4.7 million to 10.9 million between the years 2005 and 2036 (Statistics Canada, 2010). By the year 2036, the entire generation of baby boomers will have turned 65 years of age and the number of senior citizens will outnumber children for the first time in Canadian history (Statistics Canada, 2010). Canada's median age of the population is also projected to range between 42 and 45 by the year 2036, as compared to the current median age of 39 (Statistics Canada, 2010). The number of seniors in the Province of Ontario alone will increase from 1.8 million in 2009 to a projected 4.2 million in 2036 and by the year 2017, years ahead of national projections, seniors will outnumber the province's population of children aged 0 to14 (Ontario Ministry of Finance, 2010).

The fastest growing segment of Canada's senior population will be individuals aged 80 and older. In 2009, Canada was home to approximately 1.3

million people aged 80 or older, and by 2036, this figure could grow to as high as 3.3 million (Statistics Canada, 2010). By the year 2041, older adults aged 85 and older will represent 4 % of the total Canadian population (Health Canada, 2002). The number of centenarians alone could potentially escalate from the 2009 population of 6,000 to as high as 24,000 by the year 2036 (Statistics Canada, 2010). Life expectancy has increased substantially within the last 50 years. Males born in 1951 could expect to live to the age of 66 and females to the age of 70 (Aitken, 2008). Today, males could expect to live to the age of 77 years and females to the age of 81 (Aitken, 2008). In 2001, the expectancy of years in good health, also referred to as health-adjusted life expectancy, for individuals aged 65 was 12.7 years or 77.7 years of age for males and 14.4 years or 79.4 years of age for females (Aitken, 2008).

1.2.3 Health Status of Today's Older Adult and Service Utilization

Our current generation of Canadian seniors may be aging healthier than previous generations, but their sheer numbers will present challenges for our existing health care system. Approximately 80% of older adults require medical care for chronic conditions such as heart disease, hypertension, and arthritis (Rowe, 2008). Seniors respond to medications and treatments differently than younger populations, and their complex needs present specific challenges for accurate diagnosis and assessment (O'Neil & Barry, 2004). Additionally, older

patients represent one third of all acute-care hospitalizations, they have longer hospital stays and are subject to more repeat admissions, as opposed to patients younger than age 65 (Rotermann, 2006).

In 2008, the *Canadian Survey of Experiences with Primary Health Care* study revealed that the two most commonly reported chronic conditions among older adults were high blood pressure and arthritis, at 47% and 27% respectively (Canadian Institute for Health Information [CIHI], 2011). Findings from the survey also illustrated that seniors reported the following as the five most common combinations of chronic conditions: high blood pressure and arthritis; high blood pressure and heart disease; high blood pressure and diabetes; heart disease and arthritis; and high blood pressure and cancer (CIHI, 2011).

On average, 9 in 10 non-institutionalized seniors took three different types of medication, with 27% of women and 16% of men reportedly taking five types of medication (Rotermann, 2006). "Seniors taking a high number of prescription medications were at a greater risk of experiencing side effects requiring medical attention, yet fewer than half of seniors with chronic conditions reported having medication reviews" (Canadian Institute for Health Information, 2011, p.2). The dangers associated with adverse drug reactions naturally increase with age due to the declining functional ability of the liver and kidneys to metabolize medications (CIHI, 2011). Notably, up to 30% of hospital admissions of seniors are due to medication toxicity (Millar, 1998). Results from the 2008 *Canadian*

Survey of Experiences with Primary Health Care reveal that 6% of seniors who reported having one or more chronic conditions, and who were taking one or two prescribed medications, experienced side effects from their medication that necessitated consultation with a medical doctor (CIHI, 2011). Seven percent of seniors taking three or four prescribed medications reported side effects, as did 13% of seniors who were prescribed and taking five or more medications (CIHI, 2008).

Data from the 2003 Canadian Health Survey indicated that 88% of adults aged 65 and older consulted with a family physician at least once over the course of a year, as compared to 76% in the 12 to 64 age bracket (Rotermann, 2006). Adults aged 65 and older visit physicians on average eleven times per year, whereas those aged 85 and older average fifteen physician visits per year (O'Neil & Barry, 2004). Comparatively, adults between the ages of 45 and 64 visit physicians an average of seven times over the course of a year (O'Neil & Barry, 2004). Adults aged 65 and older were more likely than those aged 12 to 64 to consult with medical specialists other than family physicians, eye specialists, nurses, speech therapists, audiologists or occupational therapists (Rotermann, 2006). Yet fewer seniors have had contact with chiropractors, physiotherapists, social workers, counselors, psychologists, or alternative health care providers (Rotermann, 2006).

As might be expected, hospitalization rates are higher for older adults. As was cited by Rotermann (2006), the 2002-2003 Hospital Morbidity Database specified that individuals aged 65 and older had hospitalization rates of approximately 16,500 per 100,000. The hospitalization rate for individuals under the age of 65 was considerably less at approximately 5,000 per 100,000. The average length of stay in a hospital was typically longer for seniors. Hospital stays for patients younger than 65 average five days, patients aged 65 to 74 average nine days, and those aged 85 and older average fourteen days (Rotermann, 2006).

As was previously stated, geographic location, access to care, and the provision of health care facilities can all play a factor in one's overall health (Sibley & Weiner, 2011), as can local economic and social characteristics. As such, the characteristics associated with the health status of rural residents differ somewhat from their urban counterparts. Canadian rural residents have a higher prevalence of arthritis and rheumatism, increased mortality risk due to circulatory disease, and exhibit fewer healthy behaviours (Des Meules, Luo, Wong, & Pong, 2007). Relative to the province as a whole, northern Ontario residents exhibit higher rates of most chronic diseases such as arthritis, rheumatism, high blood pressure, diabetes, and heart disease (Bains et al., n.d., North West LHIN, 2009). The combined proportion of overweight and obese individuals far exceeds provincial levels. Rates of daily smokers, exposure to second-hand smoke within the home, public spaces and/or vehicles, and alcohol consumption

also exceed provincial levels (Bains et al., n.d., North West LHIN, 2009). The percentage of the northern population that eat a healthy diet consisting of the recommended consumption of fruits and vegetables is lower as compared to the province, as are levels of physical activity (Bains et al., n.d.). In 2008-2009, Ontario's North West Local Health Integration Network (LHIN) had the highest proportion of frail seniors in each of the following age categories: 8% of adults aged 65-74, 15% of adults aged 75-84, and 29% of adults aged 85 and older. The North East LHIN had the second highest proportion of frail scores in the Province of Ontario in the following age categories: 6% of adults aged 65-74, 12% of adults aged 75-84, and 22% of adults aged 85 and older (Bronskill et al., 2010).

The economic and social characteristics of northern Ontario vary from the province as a whole (Strasser & Neusy, 2010). Northern Ontario has higher unemployment rates and lower income levels (Baines et al., n.d.). Fewer individuals in the north have completed high school or post-secondary education and the percentage of the population with less than a grade nine education exceeds provincial levels (Baines et al., n.d.). Northwestern Ontario is home to the largest Aboriginal population within the province at 19.8% versus 2.0% respectively (North West LHIN, 2009). Northeastern Ontario also has a higher than provincial level of Aboriginal identity at a level of 10%. In contrast, northeastern Ontario is home to the largest Francophone population at 24% as compared to the provincial level of 2% (Baines et al., n.d.). However, provincial

levels of Francophone residents exceed levels found within north western Ontario at 4.4% versus 3.5% respectively (North West LHIN, 2009).

1.2.4 Geographic Distribution of Older Adults in Northern Ontario

With the Northern Ontario School of Medicine's "mandate to contribute to improving the health of the peoples and communities of northern Ontario" (Strasser & Lanphear, 2008, p.1) consideration needs to be afforded to the geographical distribution of seniors within the north. In accordance to the 2000-2001 Canadian Community Health Survey, rural areas contain a larger proportion of adults aged 60 and older (DesMeules, Luo, Wong, & Pong, 2007). The proportion of seniors tends to be higher in towns and cities with populations below 10,000 (Aitken, 2008). As such, older Canadians are shaping regional demographics. There appears to be three phenomena at work in regard to how aging influences the geographic distribution of populations: 1) the lower migration propensities of seniors produces 'aging in place', 2) the greater likelihood that younger people will move from the more depressed regions leaves more seniors behind, and 3) the differential choice of destination accentuates the proportion of seniors in specific locations (Aitken, 2008). Seniors, as compared to those in younger age groups, have traditionally been less inclined to change residence. Between the years 1996 and 2001, only 19% of Canadian seniors moved to a different residence (Turcotte & Schellenberg, 2006). Within that

small percentage of older adults who did relocate, it was more likely to have involved seniors in the 65 to 74 age bracket, as opposed to those aged 75 and older (Turcotte & Schellenberg, 2006).

The exodus of youth has become increasingly apparent within communities largely reliant on industries based on natural resources (Statistics Canada, 2006). A decline in the number of males and females within the 20 to 39 age bracket in Northern Ontario, as compared to the balance of the province allude to an out-migration (Bains, n.d.; North West Local Health Integration Network, 2009). As such, the northern Ontario cities of Sudbury and Thunder Bay have both witnessed increased proportions of seniors due to the departure of young adults (Statistics Canada, 2006). Between the years of 1986 to 2004, "Greater Sudbury was one of three census metropolitan areas in which the population comprised of seniors increased most…and among towns with populations under 25,000, Elliot Lake had the highest concentration of seniors, with one-quarter of its residents aged 65 or older" (Turcotte & Schellenberg, 2006, pp. 17-18).

All regions within the Province of Ontario will recognize a shift to an older age structure. However, "regions where natural increase and net migration are projected to become or remain negative will see the largest shifts in age structure" (Ministry of Finance, 2010, p.14). A natural increase in population within northern Ontario is currently negative and is projected to remain so as

population aging accelerates (Ministry of Finance, 2010) Weak migration patterns and negative natural increases in population will result in northeast Ontario maintaining the oldest age structure" (Ministry of Finance, 2010). Seniors aged 65 and older represented 17.0% of northeastern Ontario's population in 2009, yet by 2036, this percentage is expected to increase to 30.6% of the population (Ministry of Finance, 2010).

1.2.5 Access to Services

Collectively, northwestern and northeastern Ontario represent 6.5% of the Ontario population, or 802,499 people according to the 2006 census (Bains et al., n.d., & North West Local Health Integration Network (LHIN), 2009). In its entirety, northern Ontario boundaries, as defined by the Ministry of Health and Long-Term Care LHIN's extend from the Manitoba border in the west, the Hudson's Bay in the north, the Quebec border in the east, and to the southern portion of Algonquin Park in the south. Given the expansive landmass, geographic access to care and the provision of health facilities and personnel is recognizably challenging in northern Ontario. "Where people live has been shown to be associated with their health status, health behaviours, and their utilization of health care services" (Sibley & Weiner, 2011, p.2). While highly specialized health services are concentrated in major centres across the north, as many as 38.9% of northern Ontario's population reside in communities with

30,000 or fewer people (Glazier, Gozdyra & Yeritsyan, 2011). As was recently determined by Glazier, Gozdyra and Yeritsyan (2011), of the 25 Ontario communities that lack access to primary care within a 60 minute time frame, 18 of these communities were located in northern Ontario. Of the 185 Ontario communities that were in excess of 30 minutes from an emergency department, 131 were located in northern Ontario. Twenty-seven of these 131 northern communities were designated remote, hence defined as not being on the road network (Glazier, Gozdyra & Yeritsyan, 2011). Additionally, all communities, 55 in total that did not have access to an emergency department within a 60 minute time frame were located exclusively in northern Ontario (Glazier, Gozdyra & Yeritsyan, 2011).

Regrettably, the distribution of seniors does not always coincide with the provision and access to health care providers and services (Turcotte & Schellenberg, 2006). According to the Institute for Clinical Evaluative Sciences (ICES) Physician Workforce Database (2006), the 2001/2002 distribution by physician type within the Province of Ontario consisted of 52% specialists and 48% general practitioners (GP) / family physicians (FP). The vast majority of Ontario's specialists and GP/FPs (93% and 82% respectively) practice within urban centres (Tepper, Schultz, Rothwell, & Chan, 2006). Of the remaining distribution of physicians, 3% of specialists practice in rural communities and 4% in large northern centres, whereas 14% GP/FPs practice in rural communities and 4% in large northern centres (Tepper et al., 2006). The communities of

North Bay, Sudbury, Timmins, Sault Ste. Marie, and Thunder Bay were designated as “large northern centres” and not included in the “urban centres” category.

Relative to their urban counterparts, rural, remote and northern area seniors have access to a smaller range of health care providers and services (Health Canada, 2002; Nagarajan, 2004). Aging-in-place can become increasingly problematic for seniors. Non-acute health care services and social programs for special needs groups such as seniors are often non-existent in rural and remote communities (Health Canada, 2002). Geographic isolation frequently results in decreased social supports and social networks for seniors (Johnson, 1996; Rosenthal & Fox, 2000). Specialized diagnoses and treatment for chronic disease and functional decline often requires lengthy travel to larger communities. Yet transportation remains a significant challenge for many northern Ontario residents (Fucile, 2009). The capacity of a senior to travel for the purpose of health care is contingent upon their physical ability to drive, the provision of an automobile or access to public transportation, safe road and weather conditions, and the financial resources to incur costs associated with such travel (Johnson, 1996; Nagarajan, 2004; Public Health Agency of Canada, 2005; Romanow, 2002). And ultimately, due to a lack of facilities within remote and rural locations, the need for admission to a long-term care facility often necessitates a senior’s relocation to a distant community with a resulting lengthy separation from family and community.

1.2.6 Caring for an Aging Population

With growing numbers of older patients, medical practices are already recognizing a higher prevalence of chronic conditions and the deterioration of normal functioning in patients (Longino, 1997). Increased longevity and the continued aging of baby boomers will result in an even higher prevalence of frailty in the soon-to-be practices of today's medical students and residents. The provision of care for frail older adults requires very specific knowledge and skills including an understanding of the importance of cognitive status and function, of the variances in how acute illness presents in the elderly, and of the necessity in utilizing a multidisciplinary approach to care (Frank, 2010). Care also entails an inherent sensitivity to the vulnerability of older patients, the recognition of how the interplay between social, psychological and physical factors affect the lives of the elderly, and the physician's self-awareness of potential ageist attitudes and how this can influence treatment (General Medical Council, 2003; Hazzard, 2004). Conclusively, optimal care necessitates the recognition that human development includes the process of growing old, it does not cease with the onset of adulthood (Lally & Crome, 2007). As such, the potential for empowerment and patient-centered care continues well into old age.

In Canada, there are three main areas of medicine that provide specialized care of the elderly: geriatric medicine, family medicine with care of the elderly enhanced skills, and geriatric psychiatry (Frank, 2010). To-date, there

remains a dire shortage of geriatricians. In 2006, the estimated need for geriatricians in Canada was between 512 and 607 (Torrible, Diachun, Rolfson, Drumbrell, & Hogan, 2006). The actual number of practicing geriatricians in Canada in 2006 was fewer than 200 (Torrible et al., 2006). Specialization in geriatric medicine requires four years of residency in internal medicine followed by two years of residency in geriatric medicine beyond the undergraduate medical program (Royal College of Physicians and Surgeons of Canada, 2009). In 2000- 2001 there were only seven medical residents in all of Canada entering a program in geriatric medicine (Diachum, Hillier & Stolee, 2006; Hogan, 2001). Ideally, the number of geriatricians would correspond with physician-to-population requirements relative to an increasingly aging population. However, with such little apparent interest, fulfilling the need for geriatricians appears unrealistic.

In a survey conducted by the College of Family Physicians of Canada in 2005-2006, it was estimated that at that time, 130 Canadian family physicians had completed Care of the Elderly training (Frank & Seguin, 2009). The Care of the Elderly training programs were developed in 1989 by the College to provide family medicine residents additional training opportunities to enhance geriatric knowledge and skills (Frank & Seguin, 2009). As of 2009, there were 13 medical schools in Canada that provided the option of 6 or 12 months' additional training in care of the elderly (Frank & Seguin, 2009). In 2010, NOSM began offering

Family Medicine residents the option of an additional 12 month Care of the Elderly Enhanced Skills (NOSM, 2010).

Yet with inadequate numbers of physicians skilled at providing specialized care of the elderly, how are medical schools ensuring that tomorrow's physicians are capable of providing the most appropriate care for our aging population? Demographic shifts will inevitably have implications in the training of future physicians (Ebrahim, 1999). Consideration will have to be afforded to complementary means of enhancing the health care of seniors. The World Health Organization states that "the basic principles of the special care needs of older persons should not be of exclusive concern to specialists" (World Health Organization, 2005, p.5). In reality, adults aged 65 and older represent a disproportionate share in most medical areas and there is a notable presence of older patients in most hospital departments, yet there is decidedly an inadequate curricula specific to the aging process (Diachum, Dumbrell, Byrne, & Esbaugh, 2006; Lally & Crome, 2007). Family physicians alone will spend two-thirds of their practice caring for older adults with many having only received minimal geriatrics training (Dalziel, 2002, as cited by Diachun, Hillier & Stolee, 2006). "Similarly, medical specialists who have received little or no geriatrics training will treat older persons" (Diachun et al., 2006, p.512). Canadian medical programs commonly allocate only two weeks of a four year program to the special problems of the elderly (Dalziel, 2002). As stated by the National Advisory Council on Aging and the World Assembly on Ageing, most health care providers

will require some degree of knowledge and skills specific to frail aging adults (MacKnight et al., 2003). So while the urgency in recruiting medical students into areas that specialize in the care of the elderly remains apparent, the value in training all medical students with a solid foundation in aging appears every bit as important. The undergraduate medical curriculum appears the logical beginning point of such training as it is accommodates the establishment of future learning and practice (General Medical Council, 2003).

A survey conducted by Gordon and Hogan in 2005 examining hours allocated to mandatory geriatric content in the undergraduate 2004-2005 curriculum of 16 Canadian medical schools, was recently updated with the same schools by Gordon to re-examine the geriatric content of the 2008-2009 curricula. Geriatric content was defined as:

> *"the hours of lectures, tutorials, and laboratory or clinical skills sessions that were developed by internist geriatricians, geriatric psychiatrists, or family physicians with additional care-of-the-elderly training…clerkships were differentiated between those in geriatric medicine (supervised by internist geriatricians or family physicians with additional training/expertise in care of the elderly) and those in geriatric psychiatry" (Gordon, 2011, p.34).*

While there was a slight increase in mean hours of pre-clerkship geriatric teaching from 18 hours in 2004-2005 to 21 hours in 2008-2009, two schools had actually decreased pre-clerkship hours. The mandatory clerkship rotations of a

minimum of one week duration had also decreased from eight in 2004-2005 to seven in 2008-2009. The total hours of mandatory undergraduate geriatric content had recognized a slight increase from a mean of 78 hours in 2004-2005 to a mean of 82 hours in 2008-2009. What is particularly noteworthy is the significant range of mandatory hours of undergraduate geriatric content; from 7 to 169 hours in 2004-2005 and from 10 to 299 hours in 2008-2009 (Gordon, 2011). It is important to note that Canada's newest medical school, the Northern Ontario School of Medicine was not a participating facility in Gordon's research presumably because the school was not fully operational until the 2005-2006 academic year. With the creation of the Northern Ontario School of Medicine Canada is currently home to 17 medical schools (The Association of Faculties of Medicine of Canada, 2011).

The emphasis placed on the range of mandatory geriatric hours, as is articulated in Gordon's 2008-2009 research, could arguably be directly associated to the Liaison Committee for Medical Education's lack of accreditation requirement for clinical clerkships containing geriatric rotations in Canadian undergraduate medical programs. The 2010 Functions and Structure of a Medical School: Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree (for schools with full accreditation surveys in 2011-2012) document of the Liaison Committee on Medical Education contains several objectives relating to specific age populations. Content objective ED-13 states that:

"the curriculum of a medical education program must cover all organ systems, and include the important aspects of preventive, acute, chronic, continuing, rehabilitative, and end-of-life care" (p.9). ED-15 states *"…that the curriculum will be guided by the contemporary content from and the clinical experiences associated with, among others, the disciplines and related subspecialties that have traditionally been titled family medicine, internal medicine, obstetrics and gynecology, pediatrics, preventive medicine, psychiatry, and surgery" (p.9).* ED-17 states that *"educational opportunities must be available in a medical education program in multidisciplinary content areas (e.g., emergency medicine, geriatrics) …" (p.10).* ED-22 states that *"…the medical program should include medical student understanding of demographic influences on health care quality and effectiveness (e.g., racial and ethnic disparities in the diagnosis and treatment of diseases). The objectives should also address the need for self-awareness among medical students regarding any personal biases in their approach to health care delivery" (Liaison Committee on Medical Education, 2010, p.11).*

What is not clearly articulated in either ED-13 or ED-17 objectives is the lack of mandate for a curriculum to teach in geriatric medicine. While objective ED-15 states the necessity in preparing medical students to enter any field, geriatrics is

omitted from a list that includes, among others, the discipline of pediatrics. Lastly, objective ED-22 states the relevance of demographic influences on health care neglects to draw on the significance of North America's demographic shift to an aging population.

The fact that the accrediting body of Canadian medical schools does not mandate geriatric content does not prevent the inclusion of such content. As was previously mentioned, schools are to some extent incorporating geriatric content into the undergraduate curriculum. The variance in time allocated to geriatric content by individual medical schools could, however, be perceived as being representative of the initiative and priority given to geriatric medicine by each institution. Of related interest is the explicit versus implicit inclusion of geriatric content within the undergraduate curriculum. How are medical students acquiring geriatric knowledge and skills? Does the curriculum include clearly articulated training specifically in geriatrics, or is a student's geriatric knowledge acquired during most clinical rotations by virtue of general exposure to older patients (Gordon & Hogan, 2006)?

The path to enhancing the geriatric content of medical curriculum is one of longstanding interest. Over three decades ago, the late American Robert Butler MD, the father of modern gerontology (Perry, 2010 as cited by Brown, 2010) spoke of the lack of trained individuals in geriatrics, and of the lack of opportunity within the medical curriculum to study geriatrics (Butler, 1985). This concern for

geriatric content extended beyond North America. In 1991, the Group of European Professors in Medical Gerontology conducted a survey to determine the extent of geriatric content in European undergraduate and graduate medical programs (Stahelin, Beregi, Duursma, Grimley, Evans, Ruiz-Torres & Steen, 1994). Results indicated that while the discipline of geriatrics was well established at the undergraduate level, geriatric courses were not mandatory and remained optional. Postgraduate geriatric training also existed in most European countries yet with wide variances between, and within, individual countries (Stahelin et al., 1994). Recommended goals of the study included the development of a standardized core curriculum in geriatrics, the creation of a chair in geriatric medicine in each medical school, and the provision of continuing education in geriatric medicine (Michel, Huber & Cruz-Jentoft, 2008; Stahelin et al., 1994).

In 1993, the Institute of Medicine published a report based on its five month study examining the geriatric training of physicians in the United States. The *Strengthening Training in Geriatrics for Physicians* report contained recommendations for the improvement of education in geriatrics, undergraduate geriatric curriculum development, expanded geriatrics training in primary and non-primary care residencies, and the enhanced attractiveness of the field of geriatric medicine (Bragg & Warshaw, 2005; Institute of Medicine, 1994). The report ultimately lead to the development of a framework aimed at guiding federal

and state government decisions regarding health policy (Institute of Medicine, 1994).

To assist in the apparent need for enhanced geriatric curriculum, the Education Committee of the American Geriatrics Society developed a recommended set of core geriatric competencies in 1998. The intent was that these recommendations would assist medical educators of United States medical schools in the development of new aging curricula and the evaluation of existing curricula (The Education Committee Writing Group of the American Geriatrics Society, 2000). Subsequent revisions of the original document have occurred with the most recent occurring in 2007. The 2007 document *Minimum Geriatric Competencies for Medical Student* was a bi-product of a National Consensus Conference on Competencies in Geriatric Education hosted by the Association of American Medical Colleges (AAMC) and the John A. Hartford Foundation (JAHF). The established domains of the competencies deemed to be minimum required geriatric knowledge of graduating medical students included: Medication management; Cognitive and behavioral disorders; Self-care capacity; Falls, Balance, Gait disorders; Health care planning and promotion; Atypical presentation of disease; Palliative care; and Hospital care for elders (AAMC / JAHF, 2009).

In 1999, the World Health Organization Ageing and Life Course Programme initiated a qualitative study involving questionnaires, in collaboration

with the International Federation of Medical Students' Associations, to determine if medical curriculum world-wide included content pertaining to aging issues (Keller et al., 2002). The findings of the 'Teaching Geriatric in Medical Education' study revealed a general lack of preparation for adequate care of an increasing aging global population. The authors of the study recommended that "countries with fast aging-rates and/or an already much older population than others, should adequately train their medical doctors to care for higher and constantly growing numbers of older people" (Keller et al., 2002, p.16). Canada's reported rate of population aging was particularly significant. Of the 64 countries involved in the study, Canada, Malta and Switzerland were all expected to have increases of 67% in adults aged 65 and older between the years 2000 and 2025, and the second largest increase in older adults. China and Hong Kong were expected to have the largest increases at 97% (Keller et al., 2002).

The need to establish basic educational requirements of undergraduate medical students in the care of the elderly was equally recognized within Canada. In 2005, the Education Committee of the Canadian Geriatrics Society began work on the creation of a set of core geriatric competencies (Parmar, 2009). "While informed by a parallel American process co-sponsored by the Association of American Medical Colleges and the John A. Hartford Foundation, these core competences were developed for the Canadian context" (Canadian Geriatrics Society, 2008, p.1). In summary, the process began with the gathering of geriatric curricula of all Canadian medical schools, content and educational

objectives were analyzed, and a literature review was performed to identify given characteristics of undergraduate training in the care of the elderly (Parmar, 2009). Initial drafts were circulated to committee members, revised, agreed upon, approved by the Executive Council, and ultimately by general membership during the 2008 Annual Meeting of the Canadian Geriatrics Society (Parmar, 2009). The final outline consisted of 20 core competencies listed under the headings of: Cognitive impairment; Functional assessment (self-care capacity); Falls, balance, and gait disorders; Medication management; Biology of aging and atypical presentation of disease; Adverse events; Urinary incontinence; Transitions of care; and, Health care planning (Canadian Geriatrics Society, 2010). Core competencies were then forwarded to the Committee on the Accreditation of Canadian Medical Schools / Liaison Committee on Medical Education for consideration, and to the Medical Council of Canada with the request that these competencies be included in the objectives of the Medical Council examinations I and II (Parmar, 2009). Additionally, the *Core Competencies (Learning Objectives) for Medical Students in Canada* outlines were sent to deans and undergraduate deans of all Canadian medical schools (Parmar, 2009). The Canadian Geriatrics Society anticipated that medical schools would elect to incorporate the recommended core competencies into their respective curricula (Parmar, 2009).

In 2006-2007, an updated survey of the Group of European Professors in Medical Gerontology's 1991 survey was undertaken collaboratively by the

European Union Geriatric Medicine Society, the European Region of the International Association of Gerontology and Geriatrics, and the European Union of Medical Specialists – Geriatric Section (Michel, Huber & Cruz-Jentoft, 2008). Findings from the 31 participating countries revealed progress from the original 1991 survey; undergraduate and postgraduate geriatric teaching had increased by 23% and 19% respectively, and the number of established chairs in geriatric medicine increased by 45% (Michel, Huber & Cruz-Jentoft, 2008). Yet there remained a lack of standardization as these changes differed from country to country and within individual countries (Michel, Huber & Cruz-Jentoft, 2008).

The International Association of Gerontology and Geriatrics, in collaboration with the World Health Organization, published and made available on their website its recommendations for core curriculum of geriatric medicine for undergraduate medical students in March 2008. In total, 15 competencies were stated as basic knowledge in the care of the elderly. The competencies are similar to that presented by both the American Geriatrics Society and the Canadian Geriatrics Society, yet with several notable additions. Such additions include the explicit recommendation for content related to the current demographic transition, the psychosocial risk factors associated with seniors in the causation of diseases, the holistic life-course perspective of aging, and the development of positive attitudes to aging and the dispelling of negative stereotypes (International Association of Gerontology and Geriatrics, 2008).

1.2.7 The Social Accountability of Medical Schools and the Northern Ontario School of Medicine

The Northern Ontario School of Medicine's mission statement articulates within its 2010 – 2015 Strategic Plan that it is *"…committed to the education of high quality physicians and health professionals, and to international recognition as a leader in distributed, learning-centred, community-engaged education and research".* One of the methods by which the school is said to accomplish this is by "*being socially accountable to the needs and diversity of the populations of Northern Ontario*" (Northern Ontario School of Medicine, 2010). Furthermore, as was conditional in the development of the Northern Ontario School of Medicine, the Values section of the Strategic Plan includes a sub-section that addresses adherence to the World Health Organization's definition of Social Accountability. The World Health Organization (1995) has defined the Social Accountability of Medical Schools as *"the obligation to direct their education, research and service activities towards addressing the priority health concerns of the community, region, and/or nation they have a mandate to serve..."* (Health Canada, 2001, p.1). As is articulated by Health Canada (2001), medical schools are in the enviable position of taking the leadership in preparing future practitioners to respond to the needs of the population.

The Northern Ontario School of Medicine's commitment to being responsive to the needs of the people of the north is reflective in the amount of time students

are immersed, studying in local communities. Over the course of the undergraduate program, students will have spent approximately 40% of their time acquiring knowledge and experience in the diverse communities of northern Ontario (Northern Ontario School of Medicine, 2011). The ties that students develop with these communities begin to take establishment early within their training.

The four-year NOSM undergraduate curriculum is divided into the following three phases: Phase 1 occurs during the first and second year and consists of eleven case-based system focused modules; six modules during the first year (CBM 101, 102, 103, 104, 105 and 106) and five modules in the second year (CBM 107, 108, 109, 110, and 111). Each of the eleven modules contains multiple virtual patient encounters with issues relevant to the central topic and or physiological system of the respective module. At the end of the first year, students spend four weeks studying in an Aboriginal community and a total of eight weeks studying in a small rural community during their second year. Phase 2 occurs during the third year and consists of an eight month comprehensive community clerkship at one of thirteen host communities within northern Ontario. Host communities include Kenora, Sioux Lookout, Fort Frances, Timmons, Nipissing, Sault Ste. Marie, Parry Sound, Bracebridge, Kapuskasing, Dryden, Huntsville, Temiskaming Shores, and Hearst. Phase 3 occurs during the fourth year and consists of seven core rotations and electives in the regional hospitals of Sudbury and Thunder Bay. Fourth year core rotations

include: Internal Medicine, Surgery, Women's Health, Children's Health, Mental Health, Emergency Medicine, and Family Medicine. Additionally, five key themes are central to NOSM's entire four year undergraduate medical program. These themes that are in existence throughout each of the three phases of the curriculum include Theme 1 (Northern and Rural Health), Theme 2 (Personal and Professional Aspects of Medical Practice), Theme 3 (Social and Population Health), Theme 4 (Foundations of Medicine), and Theme 5 (Clinical and Communication Skills in Health Care).

1.2.8 Project Rationale

With the social accountability of medical schools to address the priority health concerns of the community and region they serve, and with the increasing proportion of seniors in northern Ontario, one can only assume that a geriatric thread would be noticeably woven throughout the NOSM undergraduate curriculum. Given the shift in demographic aging, the ultimate goal, particularly within the north, is to ensure that medical students complete their undergraduate training having demonstrated competence in caring for aging individuals. Literature indicates that a lack of interest in geriatric medicine is most often attributed to a lack of knowledge and skills pertaining to the aging process, the absence of positive relationships with seniors, and an acceptance of negative stereotypes of the elderly and of aging. While few studies have examined rural

physicians' attitudes toward the elderly, findings from a 2005 study conducted by Gunderson, Tomkowiak, Menachemi and Brooks revealed the existence of negative perceptions regarding the elderly living within the community and nursing home residents from rural physicians. As stated by the authors, "…these findings are a cause of concern because the rural elderly already face numerous challenges such as chronic disease, functional decline, and geographic isolation" (Gunderson et al., 2005, p.173). By incorporating core geriatric and gerontological learning objectives into the undergraduate curriculum, medical students' knowledge and skills are enhanced, negative attitudes are reduced, and a receptiveness to caring for elderly patients is established.

1.2.9 Research Questions

In recognition of this need, the following exploratory research questions have been developed:

Does the Northern Ontario School of Medicine's undergraduate curriculum meet core competencies in caring for older adults? Does it meet the guidelines established by the Canadian Geriatric Society?

1.2.10 Hypothesis

This research project examines the geriatric content of the undergraduate curriculum of Canada's newest medical school, and compares these findings to the Canadian Geriatric Society's recommended *'Core Competencies in the Care of Older Persons for Canadian Medical Students'* learning objectives. Upon reviewing the literature, it is hypothesized that the undergraduate curriculum of the Northern Ontario School of Medicine will satisfy the learning objectives of the Canadian Geriatric Society. However, it is likely that the learning objectives will be dispersed throughout the curriculum as opposed to being taught in a core geriatrics rotation.

Chapter II

Methodology

2.1 Research Design

The design of this research project was modeled after a study conducted in 2007 by Sinclair, Skoll and Ubhi, examining women's health themes across the undergraduate medical curriculum at the University of British Columbia (UBC), Vancouver, Canada. The primary goal of the research conducted by Sinclair, Skoll and Ubhi (2007), was to determine if the UBC medical curriculum was meeting educational objectives for women's health, and if necessary, to draw awareness to any areas of the curriculum where such objectives were lacking.

The methods utilized in the Sinclair, Skoll and Ubhi (2007) study began with the search of an established guideline for minimum competencies in women's health for medical school graduates. The undergraduate medical education objectives, outlined by the Association of Professors of Gynecology and Obstetrics (APGO) of the United States and the Association of Professors of Obstetrics and Gynaecology (APOG) of Canada were selected as assessment guidelines by Sinclair, Skoll and Ubhi (2007). The researchers subsequently conducted a review of the listed objectives of the UBC undergraduate medical curriculum to determine when and where women's health objectives of the APGO

and APOG were inclusive. The formal objectives of the UBC curriculum were acquired through the Undergraduate Dean's Office and the Faculty of Medicine's MEDICOL (Medicine and Dentistry Integrated Curriculum On-Line) Web CT-based site (Sinclair, Skoll & Ubhi, 2007; UBC Faculty of Medicine, 2011). As is stated on the Faculty of Medicine's MEDICOL website, MEDICOL "…provides students with web access to learning materials such as lecture notes, handouts, presentations, videos, assessments and other materials needed to meet the exit competencies of the undergraduate curriculum" (UBC Faculty of Medicine MEDICOL, 2011).

To make the comparison between the UBC undergraduate medical curriculum and the APGO and APOG guidelines, all four years of the curriculum were analyzed from the perspective of fourteen teaching settings (Sinclair, Skoll & Ubhi, 2007). In this application the term "teaching settings" referred specifically to an area or section of the UBC medical curriculum (i.e., teaching block, lecture, laboratory, clerkship, course). To facilitate the identification of women's health competencies, Sinclair, Skoll & Ubhi, (2007) segregated second year reproductive problem-based learning (PBL) block tutorials, lectures, laboratory sessions, and clinical skills sessions from all other PBL blocks within the UBC undergraduate medical curriculum. Additionally, the third year obstetrics and gynaecology clerkship was segregated from all other clerkships combined, and lastly, the fourth year evidence-based medicine, advanced therapeutics, palliative

care, and professionalism were reviewed. The fourteen teaching settings are provided in Table 1.

Table 1. UBC Undergraduate Medical Curriculum Teaching Settings

- PBL – Reproductive Block
- Lecture and Laboratory Sessions – Reproductive Block
- Clinical Skills – Reproductive Block

- PBL – Other Blocks
- Lecture and Laboratory Sessions – Other Blocks
- Clinical Skills – Other Blocks

- Clerkship – Obstetrics and Gynaecology
- Clerkship – Other

- Doctor, Patient and Society
- Rural Family Medicine
- Evidence-based Medicine
- Therapeutics
- Palliative Care
- Professionalism

The researchers then linked the women's health learning objectives of the APGO and APOG guidelines to the UBC undergraduate medical curriculum by use of keywords (Sinclair, Skoll & Ubhi, 2007). A table in the form of a checklist matrix was used to document the existence of the learning objectives within the curriculum. The analysis of whether the curriculum succeeded in meeting the objectives outlined by the APGO and APOG was based on the curriculum containing objectives found within these guidelines. Sinclair, Skoll & Ubhi, (2007) do not specify within their journal article the quantity of objectives that had to be

met to satisfy the criteria. Rather, the authors state that of the ninety-three women's health competencies outlined by the guidelines, only two competencies were absent within the curriculum.

The present study differs from the above mentioned research of Sinclair, Skoll and Ubhi in that the topic of interest is of geriatric content and not of women's health themes within the medical curriculum. Specifically, this project involves a comparative case study of the geriatric content of the undergraduate medical program of Canada's newest medical school, the Northern Ontario School of Medicine (NOSM).

2.1.1 Evaluation Framework

Similar to the research that was conducted by Sinclair, Skoll and Ubhi (2007), an initial task of this project was to identify potential resources that speak to or explicitly outline recommended core competencies in the care of older adults. A literature review, conducted through the Laurentian University library proxy server, lead to the discovery of three potential sources that could be used as a framework by which to evaluate the NOSM undergraduate curriculum. A recommended set of undergraduate core geriatric competencies were publicly outlined by the American Geriatrics Society in 2007, the Canadian Geriatrics

Society in 2008, and the International Association of Gerontology and Geriatrics in collaboration with the World Health Organization, also in 2008.

The recommended geriatric competencies presented by the American and Canadian Geriatric Societies both contain very specific topics relating primarily to physical health concerns common to geriatric medicine. The American Geriatric Society '*Minimum Geriatric Competencies for Medical Students'* contains 26 competencies listed under the following headings: Medication management; Cognitive and behavioral disorders; Self-care capacity; Falls, balance, gait disorders; Health care planning and promotion; Atypical presentation of disease; palliative care; and Hospital care for elders. The Canadian Geriatrics Society *'Core Competencies in the Care of Older Persons for Canadian Medical Students'* contains 20 competencies listed under headings entitled: Cognitive impairment; Functional assessment; Falls, balance, and gait disorders; Medication management; Biology of aging and atypical presentation of disease; Adverse events; Urinary incontinence; Transitions of care; and Health care planning. The International Association of Gerontology and Geriatrics *'Geriatric Medicine: Basic Contents for Undergraduate Medical Students'* include 15 competencies. These recommendations differ from the American and Canadian Geriatric Societies in that the competencies are less specific in nature and include a more holistic approach to caring for older adults. In addition to a generalized knowledge of the biology and physiology of aging, pharmacology, management of geriatric syndromes, and the recognition that prevention and

rehabilitation are the main goals of geriatric medicine, recommendations also include knowledge of demography, the life course perspective of aging, psychosocial risk factors, symptoms of abuse, the need for caregiver support and the existence of positive attitudes to aging.

The justification in selecting the Canadian Geriatrics Society *'Core Competencies in the Care of Older Persons for Canadian Medical Students'* as the framework for the evaluative tool in this research project are threefold. Firstly, the recommendations for core geriatric competencies were submitted to the Committee on the Accreditation of Canadian Medical Schools / Liaison Committee on Medical Education for consideration and the Medical Council of Canada with the request that they be included in the objectives of the Medical Council examinations (Parmar, 2009). Secondly, the core geriatric competencies were forwarded to deans and undergraduate deans of all Canadian medical schools following final approval by the Canadian Geriatric Society in 2008 (Parmar, 2009). Lastly, the competencies provided in the recommendations are listed and worded in an explicit and adequately detailed nature to facilitate an objective comparative review with the NOSM curriculum.

The Canadian Geriatrics Society 'Core Competencies in the Care of Older Persons for Canadian Medical Students' appears in Appendix A.

2.1.2 Permissions and Ethics

Prior to any form of NOSM curriculum review or data collection, authorization for the researcher to access school documents was required. Subsequent authorization and access to the on-line undergraduate curriculum was initiated and granted by Dr. Lisa Graves, NOSM Associate Dean of Undergraduate Medical Education. Access to the 2010–2011 curriculum was acquired through the NOSM website under the 'My NOSM' link. The 'My Curriculum', located on the 'My NOSM' page, a password protected access, serves as the gateway to all curriculum material for students and faculty alike. The researcher was given full access to curriculum material and was therefore able to review information pertaining to student guides and facilitator / tutor guides.

A protocol of this project was submitted to the Laurentian University Research Ethics Board for review. Upon review, the project was declared by the Board to be exempt from ethics review due to its exclusive reliance on publicly available documentation.

A letter confirming the ethics review exemption from the Laurentian University Research Ethics Board appears in Appendix B.

2.1.3 Curriculum Review

For the benefit of the researcher, the initial step in the analysis of the NOSM undergraduate program began with a broad review of all four years of the on-line curriculum material. This activity was conducted to ensure general familiarity with the curriculum design and respective courses, course schedules, educational settings, forms of instruction, and course objectives. Similar to the method used by Sinclair, Skoll and Ubhi (2007) in their analysis of the UBC curriculum, particular attention was afforded to the listed objectives throughout the entire NOSM curriculum. Objectives are important in that they guide what knowledge, skills and attitudes students acquire during their medical education, and serve as the basis of assessment of course material and subsequent qualifying examinations (Medical Council of Canada, 2011; Sinclair, Skoll & Ubhi, 2007). Upon review of the NOSM undergraduate curriculum, the researcher observed the following objectives:

Phase 1	-	Module Objectives
	-	Student Guide Learning Objectives
	-	Facilitator / Tutor Guide Learning Objectives
Phase 2	-	Theme Course Objectives
	-	Virtual Academic Rounds Module Session Objectives
Phase 3	-	Syllabus Learning Objectives

Prior to beginning the analysis of curriculum documents, key words and phrases in the Canadian Geriatrics Society's *'Core Competencies in the Care of*

Older Persons for Canadian Medical Students' recommendations were selected and highlighted. The Canadian Geriatrics Society's recommendations are categorized into nine sections, with each section entitled by the respective topic. A description of the related competencies that are associated with each of the nine topics are listed within the individual sections. The titles, hence topics, of each section were selected as keywords. Further keywords and phrases were selected from the material contained in the description of the competencies. These keywords and phrases were chosen on the basis of containing pertinent words or phrases that directly or indirectly, reference or correlate to the respective topic headings. In essence, the keywords and phrases succinctly reflect the recommended competencies. The respective keywords and phrases that were used in the curriculum review are displayed in the following table.

Table 2. Curriculum Review Keywords and Phrases
cognitive impairment · cognitive assessment · delirium, dementia, depression
functional assessment, self-care capacity · functional abilities · functional deficits
falls, balance, gait disorder · gait / balance assessment · differential diagnosis, evaluation and management of falls
medication management · medication history · pharmacokinetic changes that commonly occur with aging · medications most likely to cause adverse events

biology of aging / atypical presentation of diseases · usual anatomical / physiological changes seen with aging · atypical presentations of common medical conditions that can be encountered in an older individual
adverse events · potential hazards of hospital / institutional care · indications, risks, alternatives and contradictions of physical and chemical restraints
Urinary incontinence
transitions of care · transfer or discharge plan · caregiver stress · community-based care resources and institutional care options
healthcare planning · advance planning directives

The Canadian Geriatrics Society 'Core Competencies in the Care of Older Persons for Canadian Medical Students', with highlighted keywords and phrases appears in Appendix C.

2.1.4 Data Collection

Similar to the format used by Sinclair, Skoll and Ubhi (2007) to document women's health learning objects, this project utilized a table in the form of a Microsoft Excel checklist matrix to tabulate the occurrence of geriatric objectives within the NOSM curriculum, as are outlined by the Canadian Geriatrics Society.

The vertical axis of the matrix consists of Canadian Geriatrics Society core competencies, listed in an identical manner to that outlined by the Society's document. The horizontal axis is largely divided into three sections, each corresponding to a respective 'Phase' of the curriculum. Phase 1 consists of 11 columns, one column per 'Module' as is found in the first and second years of the program. Each of the 11 'Module' columns is further divided into three sections; Module Objectives, Student Guide Learning Objectives and Facilitator Guide Learning Objectives. Phase 2 consists of 11 columns in total, five columns assigned to a respective 'Theme' and six columns assigned to a respective 'Module' as is found in the third year of the program. Each 'Theme' and 'Module' have one column allotted for their respective objectives. Lastly, Phase 3 consists of seven columns, each column allocated to one of the seven 'Rotations' and their respective Syllabus Learning Objectives assigned during the final year of the undergraduate program. Establishing the matrix in such a manner facilitates quick review of the inclusion and / or exclusion of geriatric competencies. Additionally, it illustrates the year (or years) students are exposed to the knowledge and the 'teaching setting' or Module, Theme, Virtual Academic Round, or Rotation within which the learning occurs.

The analysis of the on-line curriculum began with the search of highlighted geriatric competency keywords and phrases within the curriculum objectives of Phases 1, 2 and 3. Once keywords and phrases were located, the curriculum objective was compared with Canadian Geriatrics Society's recommendations to

ensure an accurate resemblance. The existence of a geriatric competency within the curriculum was evaluated on a dichotomous YES / NO basis. This process of analysis is reflective of the method used by Sinclair, Skoll and Ubhi (2007) during their review of the UBC curriculum for women's health competencies. As with Sinclair, Skoll and Ubhi's methods, the competencies listed in the Canadian Geriatrics Society recommendations had to be formally stated, thus explicitly worded in the undergraduate objectives of the NOSM curriculum. These competencies could not be assumed to be inclusive in a given set of objectives. Students are exposed to older patients during most clinical rotations, yet it can not be assumed that students acquire the recommended competence in geriatric medicine by virtue of exposure to older patients (Gordon & Hogan, 2006).

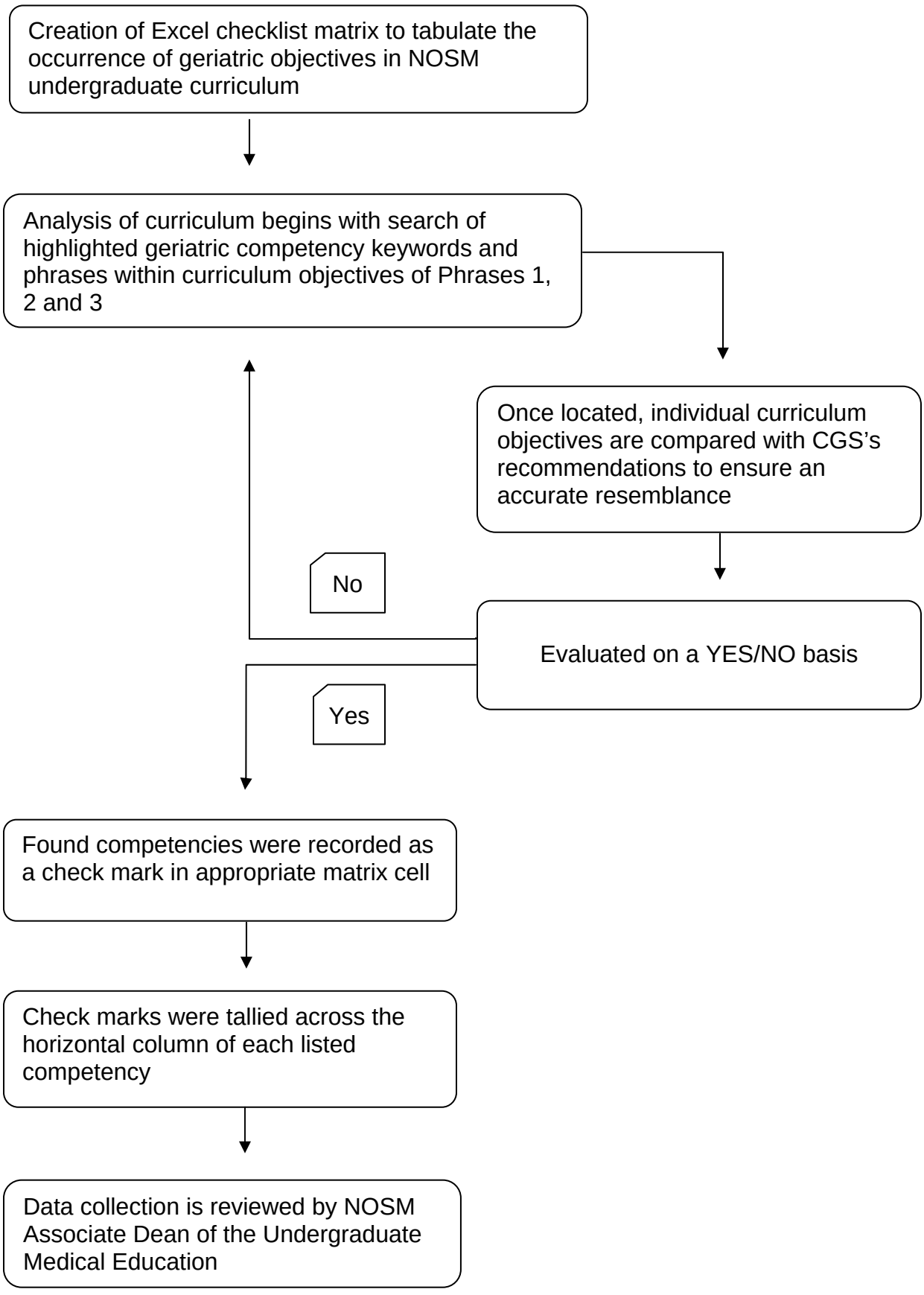
The competencies consistent with the Canadian Geriatrics Society recommendations were recorded as a check mark in the appropriate matrix cell. While the first observation of a competency satisfied adherence to one or more of the Canadian Geriatrics Society recommendations, the tabulation of occurrences continued throughout the balance of the curriculum. Upon completion of the analysis of the curriculum, the check marks were tallied across the horizontal column of each listed competency within the matrix and a comparison was made as to the proportion of competencies evident within the NOSM undergraduate curriculum. The absence of a score is reflective of a lack of explicit inclusion of a specific competency with the NOSM curriculum objectives. The occurrence of geriatric content is reflective of the extent of compliance to the recommendations

for core geriatric competencies and responds to the stated objective of the study by ascertaining the existence of geriatric content in the undergraduate medical curriculum. A total score of one across the horizontal column of any listed competency indicates the existence of that specific recommended competency within NOSM's curriculum. A score exceeding one indicates the existence of a recommended competency within multiple teaching settings across the curriculum. To demonstrate qualitative rigor or trustworthiness, results from the data collection process were reviewed by the NOSM Associate Dean of the Undergraduate Medical Education (Morse, Barrett, Mayan, Olson & Spiers, 2002).

A data collection flowchart is illustrated on the following page in Figure 1

A template of the breakdown of geriatric competencies across all four years of the undergraduate curriculum appears in Appendix D.

Figure1. Data Collection Flowchart



2.2 Analysis

The intent of this research project was to compare the objectives of the NOSM undergraduate curriculum with the recommended competencies of the Canadian Geriatrics Society. As such, judgment regarding full compliance with the recommended competencies was based on whether or not NOSM curriculum objectives formally addressed all 20 competencies. In the project conducted by Sinclair, Skoll and Ubhi (2007), the researchers observed a 98% compliance rate with the APGO / APOG objectives in their analysis of the UBC undergraduate medical curriculum. A total of 91 of the 93 women's health objectives were formally addressed in the curriculum. Although not having observed full compliance with the APGO / APOG objectives, the researchers did conclude that "topics appear to be well addressed" in the UBC curriculum (Sinclair, Skoll & Ubhi, 2007, p.737). While emphasis could be placed solely on the numerical value of NOSM's compliance with the Canadian Geriatrics Society's recommendations, it is equally prudent to draw attention to what competencies, if any, are absent from the curriculum for the purpose of future implementation.

Additionally, the 'when' and 'where' that these objectives are observed in the curriculum warrant further consideration (Sinclair, Skoll & Ubhi, 2007). Compliance with the recommended competencies of the Canadian Geriatrics Society may be of primary concern, but secondary to this is the year and location, or setting, that students acquire knowledge, skills and attitudes in

geriatric medicine. Repetitive exposure to geriatric competencies can certainly reinforce the learning experience of medical students, as can the timing, method and environment of exposure to older adults and geriatric patients.

Chapter III

Results

3.1 The Rate of Compliance

Analysis of the NOSM undergraduate curriculum revealed multiple notable findings. While the curriculum did not adhere to full compliance with the Canadian Geriatrics Society's core recommendations, it did satisfy a respectful 75% compliance rate. In total, 15 of the 20 geriatric competencies were formally addressed in the 2011–2012 undergraduate curriculum; five competencies were found to be absent. As was eluded to in the Methods section of this thesis, adherence to any one particular geriatric recommendation required only a singular observation of that competency within the curriculum.

3.1.1 Competencies Present in the Curriculum

Competencies specific to older adults formally addressed within NOSM's undergraduate curriculum are illustrated in Table 3. The competencies that are present fall under the Canadian Geriatrics Society's main headings of "Cognitive Impairment", "Functional Assessment", "Falls, Balance and Gait Disorders", "Medication Management", "Biology of Aging and Atypical Presentation of Disease", "Urinary Incontinence", "Transitions of Care", and "Healthcare

Planning". Table 3 explicitly outlines competencies present in the curriculum under each of the respective main headings.

Table 3. Competencies Present in the Curriculum
COGNITIVE IMPAIRMENT (4 of 4 competencies present)
Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.
Define & distinguish between the clinical presentations of delirium, dementia & depression.
Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.
Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.
FUNCTIONAL ASSESSMENT (SELF-CARE) (1 of 2 competencies present)
Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).
FALLS, BALANCE & GAIT DISORDERS (1 of 2 competencies present)
Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.
MEDICATION MANAGEMENT (3 of 3 competencies present)
Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.
Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.
Identify medications that are most likely to cause adverse events in an older individual.
BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE (1 of 2 competencies present)
Describe the usual anatomical & physiological changes seen with aging.
URINARY INCONTINENCE (1 of 1 competencies present)
List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.
TRANSITIONS OF CARE (3 of 3 competencies present)
Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).
Identify & describe the signs & causes of caregiver stress.
Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.

Table 3. Competencies Present in the Curriculum
HEALTHCARE PLANNING (1 of 1 competencies present) Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.

Table 3 illustrates that of the nine main categories of competencies recommended by the Canadian Geriatrics Society, eight categories, in varying extent, are addressed in NOSM's undergraduate curriculum. Five categories of competencies were observed as being fully addressed within the curriculum. This finding is of particular significance for three of these five categories as they contain multiple competencies within their respective category. For instance, all four recommended Cognitive Impairment competencies were present, as were all three of the Medication Management competencies, and all three of the Transitions of Care competencies. The single competencies that were listed under the Urinary Incontinence and Healthcare Planning categories were also present in the curriculum. The remaining categories that were partially addressed in the curriculum included Functional Assessment which contained one of two competencies present; Falls, Balance and Gait Disorders with one of two competencies present; and Biology of Aging and Atypical Presentation of Disease, also with one of two competencies present. As such, three-quarters of all the Canadian Geriatrics Society's recommended competencies were explicitly stated in the curriculum objectives.

3.1.2 Reinforcement of Competencies in the Curriculum

While the initial observation of a recommended competency within the curriculum satisfied adherence to that specific competency, subsequent observations were documented. The analysis revealed that numerous competencies were addressed on multiple occurrences. Of the eight main categories of geriatric competencies observed, six categories contained competencies that were repeatedly addressed. More specifically, ten of the 20 individually recommended geriatric competencies were found to be repeated throughout the stated objectives of multiple teaching settings across the undergraduate curriculum. These ten competencies were found to be explicitly stated in two, three, or four teaching settings.

The category that was most thoroughly represented across the curriculum was that of Cognitive Impairment. Collectively, the competencies within this category were present in the stated objectives of 15 teaching settings. Review of the individual competencies within Cognitive Impairment reveal that the recommendations to “perform a cognitive assessment and obtain collateral history relevant to cognitive and/or functional decline” were present in four teaching settings; “define and distinguish between the clinical presentations of delirium, dementia and depression” also present in four settings; “diagnose delirium, formulate a differential diagnosis for potential causes and develop initial plans for evaluation and management” present in three settings; and “diagnose

dementia, formulate a differential diagnosis for potential causes and develop initial plans for evaluation and management" present in four teaching settings. Of all recommended categories, Cognitive Impairment was the only category to have each of its competencies repeated in multiple teaching settings.

The second most represented category across the curriculum was Transitions of Care with competencies collectively stated in the objectives of six teaching settings. Two of its three competencies were repeated, "communicate the key components of an appropriate transfer or discharge plan" were stated in the objectives of three teaching settings and "describe the spectrum of community-based care resources and institutional care options available for seniors within their province of training" in two teaching settings.

Medication Management was the third most represented category with competencies collectively stated in the objectives of five teaching objectives. However, only one of the three competencies was repeated. The competency to "obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects and an assessment of adherence" were stated in the objectives of three teaching settings.

The remaining categories containing repeated competencies include, in their respective order, Urinary Incontinence, Healthcare Planning, and Functional

Assessment. The singular competency of Urinary Incontinence, “list the causes and outline plans for evaluation and management of acute and chronic urinary incontinence” was stated in the objectives of four teaching settings. The singular competency of Healthcare Planning “define and describe (including the roles of physicians and substitute decision-makers) advance planning directives dealing with personal and financial decision-making, as permitted by legislation” was stated in two teaching settings; and one of two Functional Assessment competencies “evaluate baseline and current functional abilities (basic and instrumental activities of daily living)” was stated in the objectives of two teaching settings.

3.1.3 Competencies Absent in the Curriculum

In contrast, competencies specific to older adults not formally addressed within curriculum fall under the main headings of “Functional Assessment (self-care)”, “Falls, Balance and Gait Disorders”, “Biology of Aging and Atypical Presentation of Disease”, and “Adverse Events”. Table 4 explicitly outlines competencies absent in the curriculum under each of the respective main headings.

Table 4. Competencies Absent in the Curriculum
FUNCTIONAL ASSESSMENT (SELF-CARE) (1 of 2 competencies absent) Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.
FALLS, BALANCE & GAIT DISORDERS (1 of 2 competencies absent) Perform a preliminary gait & balance assessment using accepted standardized assessment tools.
BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE (1 of 2 competencies absent) Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.
ADVERSE EVENTS (2 of 2 competencies absent) Identify & participate in efforts to reduce the potential hazards of hospital/institutional care. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.

In summary, results indicate that of the nine main categories of competencies, one category was entirely absent from the curriculum and three categories lacked specific competencies. As such, both recommended Adverse Events competencies were absent, and one of the two Functional Assessment competencies, one of the two Falls, Balance and Gait Disorders, and one of the two Biology of Aging and Atypical Presentation of Disease competencies were also absent. Consequently, one-quarter of the Canadian Geriatrics Society's recommended competencies were absent in NOSM's undergraduate course objectives.

An appraisal of the entire four year medical program outlining both the present and absent competencies across the undergraduate curriculum is

illustrated in Appendix E. An abbreviated version, outlining the geriatric competencies across the teaching settings of the NOSM's undergraduate curriculum is illustrated in Table 5 on the following pages.

Table 5. Geriatric Competencies within the Curriculum across Teaching Settings

Table 5. Geriatric Competencies within the Curriculum

Canadian Geriatrics Society Core Competencies for Medical Students in Canada	Phase 1				Phase 1			Phase 2						Phase 3				
	Year 1				Year 2			Year 3						Year 4				
								Virtual Academic Rounds						Rotations				
	CBM 103	CBM 104	CBM 105	CBM 108	CBM 109	CBM 110	Theme 5	Module 201	Module 204	Module 205	Module 206	Internal Medicine	Mental health	Family Medicine	Occurrence of Objectives
	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives Facilitator Guide Learning Objectives	Theme Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	
A. COGNITIVE IMPAIRMENT 1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.						✓	✓		✓				✓		4
2. Define & distinguish between the clinical presentations of delirium, dementia & depression.		✓				✓	✓		✓						4
3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.								✓	✓					✓	3
4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.		✓						✓				✓	✓		4

Table 5. Geriatric Competencies within the Curriculum

Canadian Geriatrics Society Core Competencies for Medical Students in Canada	Phase 1 Year 1			Phase 1 Year 2			Phase 2 Year 3					Phase 3 Year 4			
								Virtual Academic Rounds				Rotations			
	CBM 103	CBM 104	CBM 105	CBM 108	CBM 109	CBM 110	Theme 5	Module 201	Module 204	Module 205	Module 206	Internal Medicine	Mental health	Family Medicine	
	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives Facilitator Guide Learning Objectives	Theme Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Occurence of Objectives
B. FUNCTIONAL ASSESSMENT (SELF-CARE)															
5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).			✓					✓							2
6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.															0
C. FALLS, BALANCE & GAIT DISORDERS															
7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.							✓								1
8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.															0

Table 5. Geriatric Competencies within the Curriculum

Canadian Geriatrics Society Core Competencies for Medical Students in Canada	Phase 1 Year 1			Phase 1 Year 2			Phase 2 Year 3					Phase 3 Year 4			
								Virtual Academic Rounds				Rotations			
	CBM 103	CBM 104	CBM 105	CBM 108	CBM 109	CBM 110	Theme 5	Module 201	Module 204	Module 205	Module 206	Internal Medicine	Mental health	Family Medicine	
	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives Facilitator Guide Learning Objectives	Theme Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Occurence of Objectives
D. MEDICATION MANAGEMENT 9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.			✓				✓		✓						3
10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.									✓						1
11. Identify medications that are most likely to cause adverse events in an older individual.									✓						1

Table 5. Geriatric Competencies within the Curriculum

Canadian Geriatrics Society Core Competencies for Medical Students in Canada	Phase 1 Year 1			Phase 1 Year 2			Phase 2 Year 3					Phase 3 Year 4			
								Virtual Academic Rounds				Rotations			
	CBM 103	CBM 104	CBM 105	CBM 108	CBM 109	CBM 110	Theme 5	Module 201	Module 204	Module 205	Module 206	Internal Medicine	Mental health	Family Medicine	
	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives Facilitator Guide Learning Objectives	Theme Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Occurence of Objectives
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE															
12. Describe the usual anatomical & physiological changes seen with aging.			✓												1
13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.															0
F. ADVERSE EVENTS															
14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.															0
15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.															0
G. URINARY INCONTINENCE															
16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.				✓			✓			✓	✓				4

Table 5. Geriatric Competencies within the Curriculum

Canadian Geriatrics Society Core Competencies for Medical Students in Canada	Phase 1 Year 1			Phase 1 Year 2			Phase 2 Year 3					Phase 3 Year 4			
								Virtual Academic Rounds				Rotations			
	CBM 103	CBM 104	CBM 105	CBM 108	CBM 109	CBM 110	Theme 5	Module 201	Module 204	Module 205	Module 206	Internal Medicine	Mental health	Family Medicine	
	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives	Module Objectives Facilitator Guide Learning Objectives	Theme Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Module Course Oblectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Occurence of Objectives
H. TRANSITIONS OF CARE 17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).	✓				✓									✓	3
18. Identify & describe the signs & causes of caregiver stress.			✓												1
19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.								✓	✓						2
I. HEALTHCARE PLANNING 20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.			✓		✓										2

3.2 The “When” and “Where” of Geriatric Competencies

While a compliance rate of 75% does appear encouraging, this in itself does not entirely facilitate the successful acquisition of knowledge, skills and positive attitudes of the aging process. Information regarding the timing, hence year in the program, the context or teaching setting, and the occurrence of exposure to geriatric objectives can be considered equally as significant.

The Canadian Geriatrics Society’s recommended competencies were found to be unequally distributed across NOSM’s four year undergraduate curriculum, in relation to both the year and the teaching setting. As was previously noted, not all competencies were formally addressed in each year of the program. Of the nine main categories or recommended topics, only two categories under the headings of “Cognitive Impairment” and “Transitions of Care” were explicitly stated within curriculum objectives during each of the four years. Competencies listed under the headings of “Functional Assessment”, “Medication Management”, “Urinary Incontinence”, and “Healthcare Planning” were observed, in varying degrees, during two years whereas “Falls, Balance and Gait Disorders” and “Biology of Aging and Atypical Presentation of Disease” were observed in only one year of the program, third and first year respectively.

Furthermore, the percent of geriatric competencies per main category met each year differed. Each of the nine main categories, under the headings of:

"Cognitive Impairment"; "Functional Assessment"; "Falls, Balance and Gait Disorders"; "Medication Management"; "Biology of Aging and Atypical Presentation of Disease"; "Adverse Events"; "Urinary Incontinence"; "Transitions of Care"; and "Healthcare Planning", contain varying quantities of the Canadian Geriatrics Society's recommended competencies. Table 6 illustrated below, outlines the percent of competencies, within each of the nine main categories that are evident during each year of the undergraduate curriculum. Presenting the data in such a manner facilitates a quick review of the strengths and weaknesses of the curriculum as compared to the proposed competencies. However, one still needs to refer back to Table 5 to be apprised of which competency or competencies are absent, present, or repeated in each year of the program.

Table 6. Percent (%) and Numerical Count (#)of Competencies Met over the Course of the Four Year Curriculum

	Year 1		Year 2		Year 3		Year 4	
	%	#	%	#	%	#	%	#
A. COGNITIVE IMPAIRMENT	50	2	50	2	100	4	75	3
B. FUNCTIONAL ASSESSMENT (SELF-CARE)	25	1	0	0	50	1	0	0
C. FALLS, BALANCE & GAIT DISORDERS	0	0	0	0	50	1	0	0
D. MEDICATION MANAGEMENT	33	1	0	0	100	3	0	0
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE	50	1	0	0	0	0	0	0
F. ADVERSE EVENTS	0	0	0	0	0	0	0	0
G. URINARY INCONTINENCE	0	0	100	1	100	1	0	0
H. TRANSITIONS OF CARE	67	2	33	1	33	1	33	1
I. HEALTHCARE PLANNING	100	1	100	1	0	0	0	0
Percentage of Competencies Met per Year	22		14		50		14	
Number of Competencies Met per Year		8		5		11		4

As was formerly articulated, geriatric competencies were also found to be unequally distributed across the curriculum in relation to each of the twenty-nine teaching settings. Competencies were explicitly contained within the stated objectives of fourteen teaching settings, however fifteen teaching settings lacked the explicit inclusion of the recommended geriatric competencies. A summary outlining the teaching settings that include and exclude geriatric competencies is illustrated in Table 7.

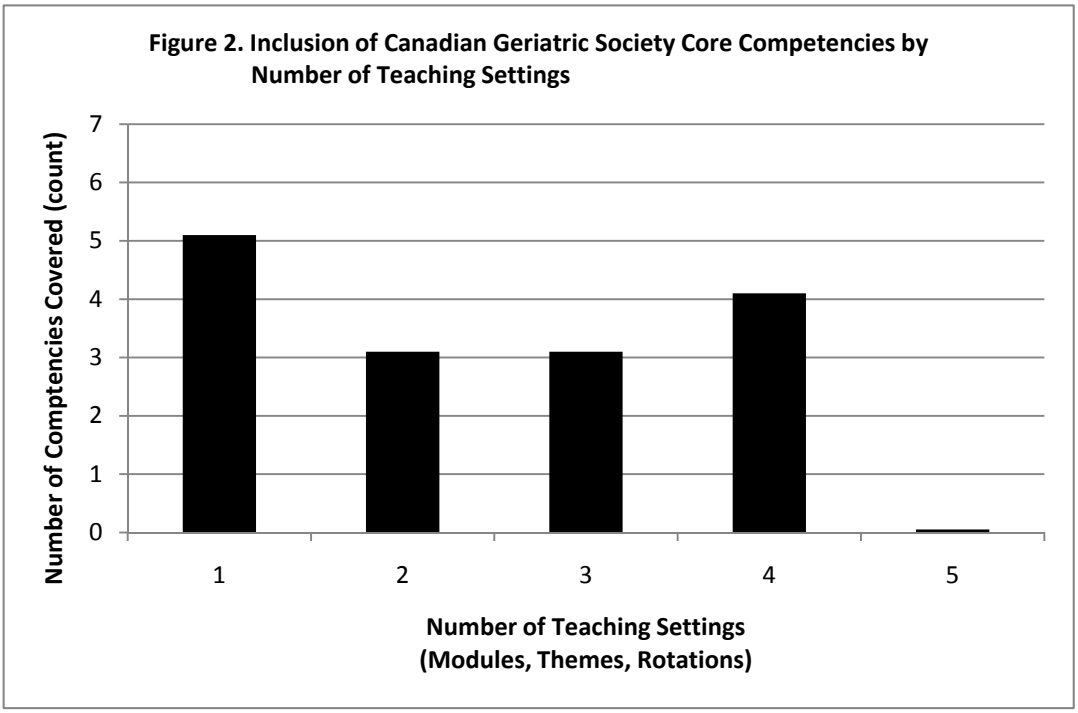
Table 7. Geriatric Competency Distribution Across Teaching Settings

	Phase 1 Year 1						Phase 1 Year 2				
Teaching Settings	CBM 101	CBM 102	CBM 103	CBM 104	CBM 105	CBM 106	CBM 107	CBM 108	CBM 109	CBM 110	CBM 111
Absent	X	X				X	X				X
Present			✓	✓	✓			✓	✓	✓	

	Phase 2 Year 2					Virtual Academic Rounds					
Teaching Settings	Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Module 201	Module 202	Module 203	Module 204	Module 205	Module 206
Absent	X	X	X	X			X	X			
Present					✓	✓			✓	✓	✓

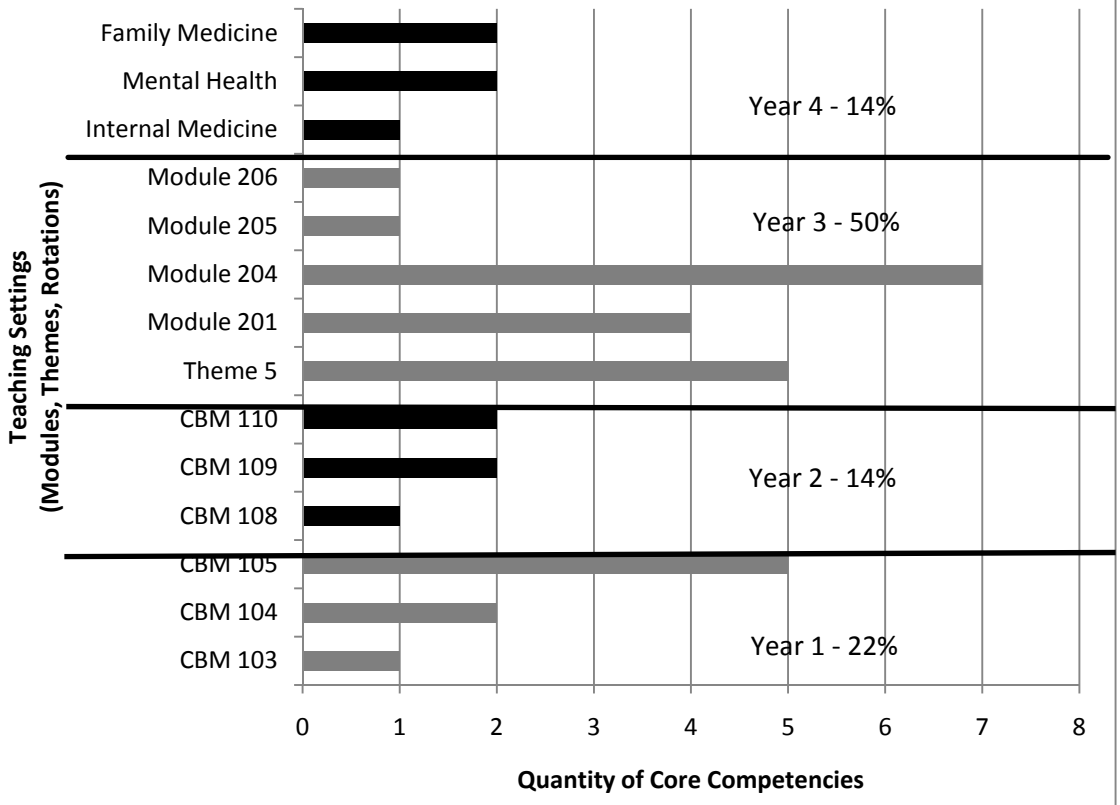
	Phase 3 Year 2 Rotations						
Teaching Settings	Internal Medicine	Surgery	Women's Health	Children's Health	Mental Health	Emergency Medicine	Family Medicine
Absent		X	X	X		X	
Present	✓				✓		✓

The number of geriatric competencies that were formally addressed in their respective teaching settings ranged from three to five. As such, one teaching setting addressed five competencies, two settings addressed three competencies, three settings addresses three competencies, and four settings addressed four competencies. Figure 2 illustrates these findings.



In review, analysis indicates that the largest concentration of recommended geriatric competencies appear in the third year of the medical program. Fifty percent of all competencies were explicitly stated within Year 3 curriculum objectives, specifically Theme 5 and Virtual Academic Round Modules 201, 204, 205, and 206. Comparatively, Year 1 of the curriculum contained only 22% of the geriatric competencies, and Years 2 and 4 respectively contained even fewer competencies at 14% each. A descriptive breakdown of the competencies across teaching settings and by year is evident in Figure 3.

Figure 3. Canadian Geriatric Society Core Competencies Across Teaching Settings



3.3 Patient Encounters

An unanticipated finding presented itself during the analysis of NOSM's undergraduate curriculum. It became apparent that medical students are exposed to patients not only in the teaching context of hospitals and community settings, but also in the context of virtual on-line patients during the first half of the curriculum. While there are mandated types of clinical patient encounters required for graduation, virtual patient encounters may provide some opportunity for the curriculum to accurately represent regional demographics.

As was previously stated in Chapter 1, Phase 1 of the undergraduate curriculum consists of 11 case-based system focused modules. Each of the 11 modules contains multiple virtual patient encounters with issues relevant to the central topic and or physiological system of the respective module. Patients presented during these encounters represent all age groups in varying quantities, however, the majority of encounters involve patients aged 19 to 64. Of the 65 virtual patient encounters, 36 are within this adult age category, 19 encounters include patients under the age of 19 years, whereas only ten encounters are with senior patients aged 65 years and older. Of the 11 case-based system focused modules, seven include virtual patient encounters with adults aged 65 years and older. A summary of the virtual patient age groups is illustrated in Table 8.

Table 8: Phase 1 (Years 1 & 2) On-Line Virtual Patient Encounters			
	Child (Birth – 18)	Adult (19 - 64)	Older Adult (65 +)
CBM 101	0	2	0
CBM 102	3	3	1
CBM 103	1	2	3
CBM 104	2	5	0
CBM 105	1	3	2
CBM 106	2	3	1
CBM 107	2	4	0
CBM 108	2	3	1
CBM 109	3	2	1
CBM 110	2	5	0
CBM 111	1	4	1
Total Count	19	36	10

A detailed and itemized master list of on-line virtual patient encounters with the respective age and gender is illustrated in Appendix F.

Chapter IV

Discussion

4.1 Discussion Relating to Hypothesis

Based upon the initial literature review, it was hypothesized that NOSM's undergraduate curriculum would satisfy the learning objectives of the Canadian Geriatrics Society. Additionally, it was thought that the learning objectives would be dispersed throughout the curriculum as opposed to being taught in a core geriatric rotation. Of the twenty recommended geriatric competencies, fifteen were formally addressed in the curriculum's objectives. While three-quarters of the learning objectives were evident, five objectives remain unaddressed. As such, findings from the curriculum analysis do not fully support the first half of the hypotheses. The second half of the hypothesis is supported. Geriatric competencies were dispersed, albeit unequally, throughout the four year undergraduate program as opposed to a singular geriatric rotation. While the curriculum did contain a three hour block exclusive to the topic of "The Geriatric Interview" within case-based system focused module 105 (CBM 105), the curriculum did not contain a rotation specifically for geriatrics.

To reiterate, the Canadian Geriatrics Society's 'Core Competencies in the Care of Older Persons for Canadian Medical Students' was chosen as the evaluation framework by which to assess NOSM's undergraduate curriculum for several key reasons. Firstly, the recommended core geriatric competencies were submitted to the Committee on the Accreditation of Canadian Medical Schools / Liaison Committee on Medical Education for consideration and the Medical Council of Canada with the request that they be included in the objectives of the Medical Council examinations (Parmar, 2009). Secondly, and most notably, the core geriatric competencies were forwarded to deans and undergraduate deans of all Canadian medical schools in 2008 (Parmar, 2009). As such, one might expect to observe a noticeable presence of geriatric competencies within the NOSM undergraduate curriculum.

Collectively, the recommended geriatric competencies were determined by the Canadian Geriatrics Society as a necessary means of establishing a minimum standard in the care of older patients (Canadian Geriatrics Society, 2008). Older adults are acknowledged as presenting unique issues given increases in chronic and degenerative diseases (Ebrahim, 1999), the potential for multiple comorbidities, polypharmacy, and the differing presentation and prognosis of ailments common to that age group (Hazzard, 2004; Diachun et al., 2010, p.1221). As such, the medical treatment and care of older adults varies considerably to that of younger adults (Hazzard, 2004). A review of surveys completed by graduating medical students from the United States and Canada

revealed that the majority of graduates felt they had acquired inadequate exposure to geriatric medicine (Freter, Gordon, & Mallery, 2006). Furthermore, responses from the Association of American Medical Colleges 2002 Medical School Graduate Questionnaire indicate that only 68% of students felt adequately prepared to care for seniors requiring acute care, and as few as 50% felt the same in regard to caring for seniors requiring long term care (Eleazer et al., 2005). Yet equally daunting is the realization that as many as 30% of the students responding to the questionnaire indicated that they did not feel adequately prepared to care for healthy seniors (Eleazer et al., 2005). Establishment of the Canadian Geriatrics Society's recommendations for core competencies provide a foundation in ensuring that Canadian medical students complete their undergraduate medical education, having acquired a minimum standard for performance and knowledge of geriatric medicine (Leipzig, Granville, Simpson, Brownell Anderson, Sauvigne, & Soriano, 2009). Implementation is, however, at the discretion of individual medical schools.

An initial postulation was that the undergraduate curriculum of NOSM would satisfy the learning objectives of the Canadian Geriatrics Society. Yet analysis of NOSM's curriculum revealed that five of the twenty recommended core geriatric competencies were absent. These findings raise questions about the effects of this absence on medical students' acquisition of knowledge and skills specific to those absent competencies. Competencies absent in the curriculum are as relevant to the health outcomes of older patients as are those that are present,

and their inclusion is therefore every bit as important (Leipzig et al., 2009). A lack of inclusion leads one to question whether there are a standardized level of knowledge and skills in geriatric competencies relating to the topics of functional assessment; falls, balance and gait disorders; the biology of aging and atypical presentation of disease; and adverse events (Canadian Geriatrics Society, 2008). The topic of falls, balance and gait disorders is increasingly significant, and of concern given that falls are the leading cause of injury and death among individuals aged 65 and older (Ontario LHIN, 2011). To the extent that falls prevention has been identified as a priority by the Ontario Ministry of Health and Long-Term Care and in 2010, the Integrated Provincial Fall Prevention Project was jointly initiated and led by Ontario's fourteen LHINs and thirty-six Public Health Units (Ontario LHIN, 2011). The North East LHINs and respective Public Health Units within northeastern Ontario have subsequently established programs such as 'Stay on Your Feet' and 'Stay Up, Keep Up' as a means of reducing falls and injury among seniors (North East LHIN, 2012). The urgency in addressing such concerns is even more pressing in northern Ontario given that the rates of falls among seniors are forty percent higher than the provincial average (North East LHIN, 2012).

The care of older adults varies from the care of younger adults and children in that the focus of older adults is on the maximization of function and independence in the presence of chronic disease (Alford, 2004; van Zuilen et al., 2001). The skills a recent physician has developed for assessing and managing

older adults with functional deficits relates to the maximization of function and independence of the older adults. These skills would include the use of adaptive interventions in collaboration with interdisciplinary team members or performing gait and balance assessments (Canadian Geriatrics Society, 2008). Also related is a physician's knowledge and skill in recognizing and evaluating often subtle and vague changes and atypical presentations of common medical conditions that are frequently encountered in older individuals (Canadian Geriatrics Society, 2008). And further, the skill of a recently graduated physician in identifying and participating in efforts to reduce potential hazards of hospital and institutional care, or capacity in describing indications, risks, alternative, and contraindications of physical and chemical restraints also relates to the maximization of function and independence in older adults (Canadian Geriatrics Society, 2008).

A lack of knowledge and skill in geriatric medicine could contribute to the potential of error. If the symptoms of a disease in an older adult are mistakenly identified as normal aging, treatment may not occur and the health status of that individual could deteriorate to the extent that treatment is no longer as effective (Beall, Baumhover, Maxwell, & Pieroni, 1996). Conversely, if normal age-related change is mistaken as a symptom of disease, an older adult may be subject to unnecessary medical tests, invasive medical procedures and the prescription of medications with potential side effects, all to treat a non-existent disease (Beall et al., 1996). Furthermore, an inaccurate diagnosis can lead to a loss of

independence, admission to an acute care hospital or premature institutional placement (Dalziel, 2002).

4.1.1 Discussion Relating to the "When" and "Where" of Geriatric Competencies

In the analysis of NOSM's undergraduate curriculum objectives, it was revealed that students were formally exposed to less than one quarter of the Canadian Geriatrics Society's recommended core geriatric competencies during their first year, and even fewer during their second year, and fourth year which consisted of clinical rotations in the regional hospitals of Sudbury and Thunder Bay. The bulk of the competencies were met during the students' third year. Consequently, NOSM students are not formally exposed to a significant portion of geriatric competencies, in accordance to stated course objectives, until they begin their Comprehensive Community Clerkships during their third year.

Literature indicates that early clinical exposure to geriatric medicine and older adults is beneficial in training undergraduate medical students in the care of the elderly (Duque, Gold & Bergman, 2003; Lally & Crome, 2007; Wilkinson, Gower & Sainbury, 2002). Early exposure is said to facilitate an improved understanding of knowledge, assist in the development of clinical skills, and within the proper context, promote positive attitudes toward older individuals (Duque, Gold & Bergman, 2003; Wilkinson, Gower & Sainsbury, 2002). Further,

Littlewood et al. (2005) articulated that early exposure in clinical and community settings is a means by which to "foster a socially responsive career orientation" (p. 389), and in the interest of this project, perhaps a receptiveness to geriatric medicine. In addition to influencing students' understanding of subject matter and refining clinical skills, Littlewood et al. (2005) stated that early exposure in clinical and community settings can nurture student empathy toward patients, develop their self awareness and confidence, respond to their feelings of uncertainty, and assist them in acquiring insight into the social issues of 'real people' within the communities they train. The opportunity for students to acquire early experience in clinical and community settings is evident within NOSM's undergraduate curriculum, as students spend four weeks studying in an Aboriginal community at the end of their first year and a total of eight weeks studying in a small rural community during their second year. In respect to fostering community awareness, NOSM does exceedingly well. A notable strength of the curriculum is its capacity to impart the realities, in a broad sense, of the communities the school serves. The theme of Northern and Rural Health was found to be clearly visible throughout the entire curriculum.

A medical student's initial exposure to an elderly person most typically occurs in the setting of a hospital or long-term care facility (Varkey, Chutka & Lesnick, 2006; Westmoreland et al., 2009). In these settings, the elderly are often acutely ill, they may have several chronic conditions, be on multiple medications, confused as a result of delirium, or cognitively impaired (Varkey,

Chutka & Lesnick, 2006; Westmoreland et al., 2009). "For an inexperienced medical student, elderly patients with complex medical problems can be frightening, frustrating, and at times, overwhelming" (Varkey, Chutka & Lesnick, 2006, p.227). Unfortunately, the initial exposure to these frail elderly can negatively influence a student's perception of growing old (Westmoreland et al., 2009).

It has been repeatedly stated in the literature that medical students' exposure to older individuals in a variety of environments, outside of the traditional hospital setting is an effective venue for improving attitudes and sensitivity to geriatric issues (Adelman, Hainer, Butler, & Chalmers, 1988; Eleazer, Doshi, Wieland, Boland & Hirth, 2005; Fitzgerald et al., 2003; Freter, Gordon & Mallery, 2006; Golden et al., 2010; Jogerst & Hartz, 1999). Home visits to seniors living independently in the community or semi-independently in retirement homes and assisted living settings have been found to not only increase comfort levels in being with seniors, but also to increase the awareness of community resources and areas of rehabilitation (Eleazer et al., 2005; Jogerst & Hartz, 1999). Furthermore, exposure to those who have made positive adaptations and continue to function independently, allow students the occasion to appreciate the strengths of older adults (Robinson & Rosher, 2001). Eleazer et al., (2005) imply that the utilization of the alternative teaching sites of retirement homes and assisted living settings could serve as prerequisites to caring for the elderly in long-term care facilities, given that the former locations

enhance student comfort levels with the elderly. Nondidactic clinical experiences during the clerkship years in ambulatory and acute care settings were also found to increase students' comfort in caring for older patients (Eleazer et al., 2005). Awareness surrounding the context of training is important. Diachun, Hillier and Stolee (2006) cite the significance of medical students having the opportunity to interact and form relationships with older patients. It has been recognized that certain environments are more conducive to enhancing relationships than others (Chodosh et al., 1999). Hospital based experiences were perceived as a barrier to establishing relationships as compared to opportunities in ambulatory care settings (Chodosh et al., 1999).

In regard to the specific location or "where" of geriatric competencies within the undergraduate curriculum, it was noted that 15 of the 20 recommended competencies were dispersed throughout NOSM's four year program in various teaching settings. According to Supiano, Fitzgerald, Hall & Halter (2007), it is not at all uncommon for medical education objectives to be presented throughout the entire undergraduate curriculum as opposed to one discrete course. Yet "the distributed nature of this content imposes a number of challenges, including student identification of this content and the appropriate evaluation of student performance" (Supiano et al., 2007, p.1650). That being said, there are advantages to integrating objectives in this manner. Integrating objectives vertically, or across all years of the curriculum allows for an increase in time dedicated to a given topic because learning objectives can be incorporated into

more than one existing course (Eleazer, Egbert, Caskey, Egbert & Hornung, 1994; Eleazer et al., 2006). In turn, incorporating objectives across multiple courses can improve student knowledge and retention of concepts (Sinclair, Skoll & Ubhi, 2007). Favorably, the analysis of NOSM's undergraduate curriculum did reveal that many of the Canadian Geriatrics Society's recommended competencies were listed in the stated objectives of multiple courses. The ultimate goal is to ensure that all recommended geriatric competencies are present in multiple themes across the entire curriculum.

4.2 Medical Students Attitudes Toward Older Adults

Research undertaken at the University of British Columbia – Okanagan by Allan and Johnson (2009) revealed findings consistent with previous research in that undergraduate university students often have negative attitudes toward older adults and that men exhibited more ageist attitudes than women. Furthermore, Allan and Johnson (2009) observed a relatively low level of knowledge regarding aging among the undergraduate students, and even though one third of the participants had regular contact with older adults, the nature of the students' contact appeared to influence the students' level of anxiety toward aging (aging anxiety). Undergraduate students with regular contact with the elderly at work exhibited lower levels of aging anxiety, whereas students with daily contact with elderly family members residing in their home exhibited higher levels of aging anxiety (Allan & Johnson, 2009). Allan and Johnson (2009) concluded that the students with the greatest knowledge of aging exhibited the least anxiety toward aging, and that this reduction in anxiety, led to a reduction in ageist attitudes.

The notion that such negativity or anxiety toward older adults or the aging process exists within the general undergraduate student population, and that these attitudes are potentially carried forward by students who continue into medical school is concerning (Bernard, McAuley, Belzer & Neil, 2003). It is, however, perhaps naive and idealistic to deny that incoming medical students' attitudes are not to some degree reflective of the ageism so prevalent in today's

youth-oriented society (Alford, Mouton, Toni, Espino, Parker, & Amaya, 2003). In a multi-campus, longitudinal study conducted by Reuben, Fullerton, Tschann, and Croughan-Minihane (1995) that examined first year medical students' attitudes toward older adults and their medical care, it was determined that students had already formed negative impressions and were exhibiting age discrimination. Medical students were found to be less likely to provide aggressive treatment to an 85 year old patient as compared to a 10 year old patient (Reuben et al., 1995). Furthermore, the medical students stereotypically described a 70 year old patient as having been more personally unacceptable, dependent and ineffective than the 35 year old patient (Reuben et al., 1995). Other studies have described medical students' attitudes of older adults as being inactive, dull, disagreeable, economically burdensome, unattractive, and old-fashioned (Caruthers McCray, 1998; Shue, McNeley & Arnold, 2005).

Additional evidence of age discrimination was also found in Europe (Bowling, 2007). Advice regarding preventative health measures for cardiac health was more often given to patients aged 55 as compared to patients aged 75 in a study conducted by Arber, McKinlay, Adams, Marceau, Link, & O'Donnell (2004 as cited by Bowling, 2007) and in a study examining how care was influenced by a patient's age in the receipt of cardiac interventions, patients under the age of 65 were found to be treated more aggressively than patients over the age of 65 (Harries, Forrest, Harvey, McCelland, & Bowling, 2007).

An investigation conducted by Fitzgerald, Wray, Halter, Williams, and Supiano (2003) supported evidence from previous findings that incoming medical students had very little knowledge regarding aging. In the Fitzgerald et al. (2003) study which was conducted to assess medical students' interest in geriatrics, survey responses revealed that participants exhibited only moderately positive attitudes toward older adults and minimal interest in geriatric medicine. While the majority of students had experienced meaningful relationships with older adults, few had experience caring for older adults (Fitzgerald et al., 2003). Yet those who had experience caring for older adults revealed more positive attitudes toward the elderly and a greater interest in geriatric medicine (Fitzgerald et al., 2003). The authors espoused the importance in maintaining and developing students' positive attitudes surrounding the care of older adults during their training at medical school (Fitzgerald et al., 2003).

In a study performed at the University of Texas Medical School at San Antonio, incoming medical students' attitudes toward their own impending old age were examined (Alford et al., 2003). Students were asked directly, "How do you feel about the fact that you will one day grow old?" (Alford, 2003). Approximately one-half of all first-year medical students expressed negative and/or fearful attitudes about the thought of their own aging (Alford et al., 2003). The work undertaken by Alford et al. (2003) illuminates the potential in utilizing reflective learning as a tool in shifting negative attitudes directed toward aging and the aged (Lloyd-Williams & MacLeod, 2004; MacLeod, Parkin, Pullon, &

Robertson, 2003). The opportunity for medical students to reflect upon their own personal assumptions, beliefs and experiences with the elderly, has the capacity to facilitate transformative learning (MacLeod, Parkin, Pullon, & Robertson, 2003; Westmoreland et al., 2009). Medical institutions are not in the position to underestimate the influence of attitudes in the training of future physicians. Rather, personal attitudes should be viewed upon as the "mediating link between clinical competence (knowledge and skills) and clinical performance" (Newble, 1992, as cited by Woloschuk, Harasym & Temple, 2004, p.522). As such, attitudes are important in setting the tone of how a medical student will ultimately practice medicine (Woloschuk, Harasym & Temple, 2004).

4.2.1 Knowledge, Skills and Attitudes

Drickamer, Levy, Irwin, and Fogrbaugh (2006) assert that knowledge, skills and attitudes are overlapping and dependent on each other.

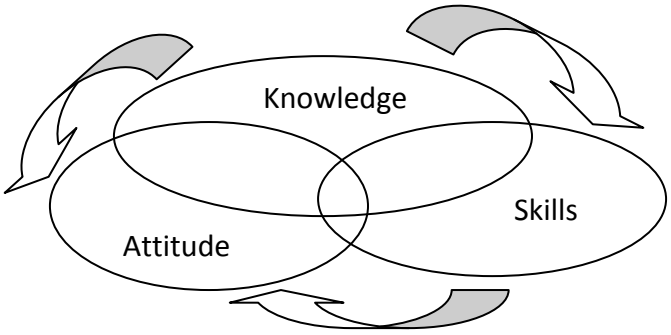


Diagram 2: The Connection Between Knowledge, Skills and Attitudes (Drickamer et al., 2005)

Negative attitudes toward aging often stem from a lack of knowledge about the aging process, a lack of comfort in being with older individuals, and a personal fear about one's impending aging (Drickamer et al., 2006; Levy, 2001). A lack of knowledge and skill in caring for older individuals can lead to an apprehensiveness and disrespect of older patients (Drickamer et al., 2006). This reinforces the importance of undergraduate medical students acquiring knowledge about the aging process, the aged, and the skills and comfort in caring for older adults.

According to Rogan and Bowen (2001), the acquisition of correct information about older adults has the potential to immediately alter negative attitudes. The retention of positive attitudes does, however, require additional reinforcement for maintenance and is contingent upon repeated positive feedback in an environment that advocates favorable attitudes (Rogan & Bowen, 2001). The observations of Rogan and Bowen (2001) can be applied to medical students and the material they learn from within the curriculum. Newly obtained knowledge has the capacity to change many preexisting thoughts and beliefs regarding the care of the elderly patients, but it is the context and culture that students continue to acquire their knowledge in that can influence long-standing attitudes in the care of the elderly.

4.3 The Institutional Culture of Medical School and the Care of the Elderly

The realization that students can enter medical school with ageist attitudes intact and that these biased attitudes toward the elderly continue to persist, or even worsen throughout the course of their medical training is cause for concern (Bernard, McAuley, Belzer & Neil, 2003). What is perhaps of greater concern is when students who enter medical school with an expressed interest in older adults, begin to rapidly lose their interest during their final two years of training (Triana & Teasdale, 2002, as cited by Hought, 2005). In reality, as was asserted by a fourth-year Canadian medical student, "many of the values, attitudes and beliefs that clinical trainees internalize are learned not within the formal curriculum but through a more latent hidden curriculum" (Stall, 2012, p. 728), influences that come from the institutional structure and culture (Hafferty, 1998).

Medical students' attitudes are decidedly influenced by the attitudes of their role models during their training, especially by faculty and residents (Davis, Nelson, Sahler, McCurdy, Goldberg & Greenberg, 2001). This unwritten, informal curriculum that occurs between the educator and the student is a highly interpersonal means of teaching and learning (Hafferty, 1998). Students slowly begin to transition into their new role of physician through the course of mimetic identification, by imitating their role models (Noone Parsons, Kinsman, Bosk, Sankar & Ubel, 2001). Accordingly, some students will come to accept derogatory comments directed at the elderly (Wear, Aultman, Varley & Zarconi,

2006). Comments such as ‘gomer’ and ‘toad’ which refer to older patients as being debilitated and weak can be audible during clerkships (Hafferty & Franks, 1994; Ludmerer & Fox, 2001; Noone Parsons et al., 2001). Furthermore, communication with older patients will at times be recognized as being patronizing, less engaging, and over-simplified (Leung, LoGludice, Schwarz & Brand, 2011). Unfortunately though, literature over the past thirty years has indicated an indifferent or negative attitude toward the elderly among medical faculty and residents (Alford et al, 2001) and adherence to many of the damaging stereotypes (Bernard et al., 2003; van Zuilen, Rubert, Silverman & Lewis, 2001).

Yet literature has also espoused a capacity for the positive reformulation of student attitudes (Cammer Paris et al., 1997 as cited by Caccaro & Miles, 1984; Rogan & Bowan, 2001). However, as was previously stated, improving the attitudes of medical students regarding the care of elderly patients is largely contingent upon the influences of the environment (Rogan & Bowan, 2001). Knowledge that the formation of student attitudes is in constant balance with their environment and the culture of their institution speaks directly to the theoretical orientation of this project. A structural functional approach is based on the premise that the components of a social system, hence medical institution, are interrelated and interdependent (Hagedorn, 1990). As such, the structure and content of the curriculum, the teaching settings, faculty and preceptors, and fellow students are collectively in dynamic equilibrium (Carmmer Paris et al., 1997) with student attitudes.

4.3.1 Does the Structure of the Curriculum Speak to the Value of Older Adults?

A question most applicable to this project is 'what influence, if any, did the aging population have in the curriculum development of Canada's most recent medical teaching institution'? One can reflect again on the mandate of social accountability and in the need for medical schools to respond to the health concerns of the communities they serve (World Health Organization, 1995, as cited by Health Canada, 2001). Furthermore, Boelen and Woollard (2011) stress the importance to project preparedness for society's foreseeable future in regards to demography. NOSM continues to establish itself as a socially responsive institution in its presence of student engagement within the communities of northern Ontario, and in its recognition of the unique challenges associated with practicing medicine in rural and northern locations (Boelen & Woollard, 2011). But how does the institution assess its competency in caring for the vulnerable populations within the north, the vulnerability of older individuals, and more specifically, the subset of elderly who are most frail?

Efforts to develop and implement a new curriculum, speak not only to what is valued, but also to what should be valued within the community (Hafferty, 1998). In 2004 during NOSM's curriculum development stage, seven 'curricular threads' were introduced and identified as Aboriginal health, addiction, cancer, chronic and elderly care, injury, occupational health, and research (Lanphear, 2009). In 2005, the curricular threads were revised to Aboriginal health,

interprofessional education and work, health effect of social problems, WSIB (Workplace Safety and Insurance Board) concepts / curriculum, dementia project, gender issues, and CMPA patient safety curriculum (Lanphear, 2009). The 2004 curricular thread specific to older adults, 'chronic and elderly care' had been modified to 'dementia project' in 2005. As of 2012, the 'dementia project' had not yet been implemented into the curriculum but was undergoing development (L. Graves, personal communication, March 1, 2012).

Fourth year core rotations in the NOSM undergraduate curriculum are based on the broad specialties of Internal Medicine, Surgery, Women's Health, Children's Health, Mental Health, Emergency Medicine, and Family Medicine. A visible absence of geriatric medicine as a core rotation is consistent with most other medical schools within North America (Diachun et al., 2010; Gordon & Hogan, 2006). Of the 17 medical schools in Canada, only five included mandatory geriatric medicine or geriatric psychiatry rotations, and of the one hundred and twenty-six United States medical schools, only nine reported a geriatric clerkship rotation (Diachun et al., 2010). Barriers to implementation have been cited as being a lack of suitable faculty and insufficient resources and time (Karani, Leipzig, Callahan & Thomas, 2004). However, in medical programs that do contain geriatric rotations, placements have been found to increase student knowledge and improve attitudes about older people (Lally & Crome, 2007; Sainsbury Wilkinson & Smiths, 1994).

In general, “medical schools have yet to make the same commitment to geriatrics that they have made to pediatrics” (O’Neill & Barry, 2004, p.19). Unlike geriatric medicine, core rotations in pediatrics are mandatory in all medical schools (Diachun et al, 2010). Yet as with children, older individuals have different medical needs than younger adults (Alliance for Aging Research, 2002), with age-specific diagnostic and treatment approaches (Diachun et al., 2010). Geriatric medicine is said not to be valued to the same extent, older patients continue to be marginalized (Alliance for Aging Research, 2002), and the distinct knowledge and skill set applicable to geriatric medicine continues not to be fully recognized (Diachun et al., 2010). This is perplexing especially in Ontario given that by the year 2017, the number of adults over the age of 65 within the province will outnumber the provincial population of children aged 0 to 14 (Ontario Ministry of Finance, 2010).

Questions posed to medical educators by H. Thomas Aretz (2011) inevitably stimulate meaningful inquiry in light of the demographic shift to an aging population. “What do you want your doctor to look like in twenty years?” “Would you send your mother to anyone of your graduates?” (Aretz, 2011, p.608). In developing a curriculum that matches the needs of a society it serves, one would anticipate medical schools to factor the impact of an aging society (Aretz, 2011). A factor that is increasingly relevant within the north. NOSM, which spans and serves northwestern and northeastern Ontario, has the highest and second highest proportion, respectively of frail seniors within the province of

Ontario (Bronskill et al., 2010). While adults aged 65 and older represented 17% of northeastern Ontario's population in 2009, in just over twenty years time this percentage is expected to increase to almost 31% of the population (Ontario Ministry of Finance, 2010). Statistics further accentuated by the reality that weak migration patterns and negative natural increases in the population will result in northeastern Ontario maintaining the oldest age structure in the province (Ontario Ministry of Finance, 2010). As Canada's newest medical school, NOSM remains posed to proactively become an agent for change in the care of the elderly (Burdick, Amaral, Campos & Norcini, 2011).

4.4 Recommendations

Over the years, medical schools have incorporated numerous approaches in their attempts to increase geriatric content and knowledge, and to improve the attitudes of students toward older people and geriatric medicine. Approaches have included geriatric medicine rotations, mini-courses in geriatric medicine, the vertical integration of geriatric content into the curriculum, and senior mentor programs (Eleazer, Wieland, Roberts, Richeson & Thornhill, 2006). The implementation of any approach or component there of, is expectedly contingent upon its ability to work within the unique characteristics of each medical institution. That being said, implementations that have been initiated at both the University of Michigan Medical School and the University of South Carolina School of Medicine contain notable recommendations that, in some capacity, can assumedly be integrated into most medical programs.

During the academic year of 2002 / 2003, the University of Michigan Medical School established a vertically integrated undergraduate curriculum intervention in geriatric medicine (Supiano et al., 2007). In a cohort study examining the effects of this intervention, Supiano (2007) and his colleagues found that students in their graduating year exhibited improved performances in geriatric functional assessments and geriatric knowledge tests. Changes to the school's existing curriculum included the enhancement of geriatric content in preclinical courses; the creation of a geriatric functional assessment standardized

patient instructor; the implementation of student attendance at a geriatric clinic during the ambulatory component of the internal medicine clerkship; and the development of web-based geriatric portfolios used to record individual student's learning of geriatric competencies derived from the American Geriatrics Society's recommendations (Supiano et al., 2007).

The enhancement of geriatric content in preclinical courses involved a review of the undergraduate curriculum to identify where opportunities existed to integrate content specific to the process of aging and older adults (Supiano et al., 2007). The second intervention included an addition of a geriatric functional assessment standardized patient instructor to the standardized patient program. Standardized patients therefore rated medical students' skills in functional assessment and communication skills during the assessment (Williams, Hall, Supiano, Fitzgerald & Halter, 2006). More specifically, students were taught and rated on their assessment of activities of daily living and instrumental activities of daily living functions, cognitive impairment, depression, gait and mobility, and screening for falls (Supiano et al., 2007). The third intervention was added to the internal medicine clerkship. Following an outpatient clinic, students were required to "submit a written history, physical and assessment of an older patient they encountered" to a geriatrician (Supiano et al., 2007, p.1651). Students also met with a geriatrician one hour each week for geriatric rounds during their four week rotation (Supiano et al., 2007). The final intervention was the development of student web-based geriatric portfolios that were used by the students to record

their learning of geriatric competencies, information regarding geriatric patients' diagnosis and assessment tasks (Supiano et al., 2007).

In the year 2000, as part of a mandate to increase geriatric content in 40 United States undergraduate medical schools, the American Geriatrics Society and the John A. Hartford Foundation funded what was to become a Senior Mentor Program at the University of South Carolina School of Medicine (Eleazer, 2006). The program entailed the pairing of first year medical students with healthy volunteer senior mentors who resided independently within the community (Eleazer et al., 2006). Students and seniors meet regularly every two to three months for a period of four years, the duration of the undergraduate program (Eleazer et al., 2006). The objectives of the program were to provide the opportunity for students to interact with healthy older adults and to develop a longitudinal relationship to increase knowledge and skills in an off campus environment, and to increase geriatric content in the curriculum (Eleazer et al., 2006). Nine years later in an evaluation of 20 United States Senior Mentor Programs, Eleazer, Stewart, Wieland, Anderson and Simpson (2009) reported the programs as having succeeded in developing positive attitudes toward older adults and in increasing American Geriatrics Society's recommended core competencies in the curriculum. The medical schools also benefitted as they reported an increased visibility of geriatric medicine within the schools, and enhanced school profiles within their communities (Eleazer et al., 2009). More so, Senior Mentor Programs facilitate medical students' appreciation that not all

older adults are ill and frail as many continue to maintain relative health in their old age (O'Neil & Holland, 2005). And yet, students also gain insight into the effects of disease and life changes through their relationships with their senior mentors (Tomkowiak & Gunderson, 2004).

As was stated at the onset, implementation of any curricular intervention to assist in the enhancement of student knowledge in geriatric medicine and positive attitudes toward older adults, necessitates consideration of the unique characteristics of any medical school NOSM not withstanding. NOSM differs considerably from that of other medical schools. The school is a partnership between Laurentian University in Sudbury and Lakehead University in Thunder Bay, northern Ontario campuses separated by over one thousand kilometers (Strasser & Neusy, 2010). "NOSM is a rural, community-based medical school" (Strasser & Neusy, 2010, p.778) that "relies heavily on electronic communication to support distributed, community engaged learning (Strasser & Lanphear, 2008, p.2). "Students, both in classroom and clinical settings, explore cases as if they were physicians in Northern Ontario communities" (Strasser & Lanphear, 2008, p.1). NOSM students participate in community-based placements for one month during their first year, two one-month placements during their second year and eight months during their third year Comprehensive Community Clerkship, prior to their final year of clinical rotations. During their Comprehensive Community Clerkship, students are based in family practices in rural and northern Ontario; this placement furthers the rationale for this project. Family physicians are said

to spend two-thirds of their practice caring for older adults (Dalziel, 2002 as cited by Diachun, Hillier & Stolee, 2006). This is increasingly pertinent given that northeastern Ontario will maintain the oldest age structure in the province (Ontario Ministry of Finance, 2010) and northwestern and northeastern Ontario are home to the highest and second highest proportion of frail seniors in the province (Bronskill et al., 2010).

The premise of this project was to compare NOSM's geriatric curricular content to the recommendations set forth by the Canadian Geriatrics Society. In the end, it determined that NOSM's curriculum did not fully comply with the recommended core geriatric competencies. As such, the first priority is to achieve full compliance with the recommendations by incorporating absent competencies into the existing curriculum. Further, in light of research that accentuates the benefits of early exposure to geriatric medicine (Duque, Gold & Bergman, 2003; Lally & Crome, 2007; Wilkinson, Gower & Sainbury, 2002), it is desirable that geriatric competencies be 'front heavy' in NOSM's undergraduate curriculum. The vertical integration of competencies is still advocated, yet it is suggested that students have considerable exposure to geriatrics during their pre-clerkship years (Duque, Gold & Bergman, 2003; Supiano et al., 2007). Supplementary, experiences at the McGill University Faculty of Medicine indicate that exposure to an integrated one week training in geriatric medicine prior to clerkship, resulted in improved student clinical skills, attitudes toward geriatrics, and clerkship performance (Duque, Gold & Bergman, 2003). In light of an

awareness that a vertical curriculum format is thought to challenge students in identifying integrated content (Supiano et al., 2007), a one week 'mini-course' in geriatric medicine during the first or second year could help establish it as a distinct discipline. There are, however challenges associated with the development and implementation of such a course given the limited number of geriatricians within northern Ontario (L. Graves, personal communication, August 16, 2012).

The introduction of a geriatric functional assessment standardized patient instructor, as was implemented at the University of Michigan Medical School (Supiano et al., 2007) could serve as an additional means of addressing competencies within the curriculum. This is especially relevant given the absence of competencies under the Canadian Geriatrics Society's categories of 'Functional Assessment' and 'Falls, Balance and Gait Disorders'.

Furthermore, NOSM's reliance on electronic communication to facilitate a virtual learning environment is ideally suited to the addition of student web-based geriatric portfolios, as was implemented at the University of Michigan Medical School (Supiano et al., 2007). This application is used to tabulate student acquisition of core geriatric competencies. Optimistically, it can also assist in fostering student awareness of the importance of competencies in caring for the elderly and the necessity in acquiring the respective knowledge and skills.

A recommendation to implement a Senior Mentor Program does require additional effort to organize and coordinate than previous recommendations, yet yields tremendous outcomes in respect to the acquisition of knowledge and positive attitudes toward older adults (Eleazer et al., 2009). It is during the early stages of medical training that students begin to develop professional attitudes that will follow them throughout their careers (Leung et al., 2011). Exposing students to healthy older adults early in the medical curriculum can contribute to positive attitudes toward caring for the elderly (Bernard, 2004; Leung et al., 2011). An appealing feature of Senior Mentor Programs from the perspective of curriculum development is the flexibility available in program design (Eleazer et al., 2009). The duration of student experiences in the program can vary from one to three years, the program can be a required or elective component of the curriculum, and while the primary objective of the program is to positively impact students' attitudes, a secondary objective to implement geriatric competencies does exist (Eleazer et al., 2009). The first and second year of the NOSM curriculum is a theoretically suitable period to implement such a program, prior to the third year Comprehensive Community Clerkship.

As was previously articulated in the Results section of this thesis, an unanticipated finding was observed during the analysis of NOSM'S undergraduate curriculum. In addition to the patients seen in hospitals and community settings, it was discovered that NOSM students are also exposed to virtual on-line patients during the first two years of the program. Given that

virtual patient encounters are selected purposively and to a large extent are controllable, recommendations might also include an increase in the number of senior virtual patients to enhance the presence of geriatric medicine. Further, in reference to the "Key Questions and Issues" evident in the Facilitator Guide, where possible, it would be helpful to include questions and / or issues specific to the age of an older patient. Explicitly highlighting age as a factor requiring further consideration due to the unique challenges involved in caring for a geriatric patient is recommended. This could be included under the heading of "Health Delivery in a Northern Community" due to reality that students need to examine the unique challenges of aging within the context of northern and rural communities.

In summary, recommendations for NOSM's undergraduate curriculum include:

- The enhancement of undergraduate geriatric content; full compliance of Canadian Geriatrics Society recommended core geriatric competencies.
- The introduction of a geriatric functional assessment standardized patient instructor.
- The development of student web-based geriatric portfolios.
- The development of a Senior Mentor Program.
- An increased presence of geriatric patients in on-line virtual patient encounters.

4.5 Limitations

It is important to acknowledge the inherent limitations of this investigation. First and foremost is the fact that this analysis was based solely on the documented course objectives within NOSM's undergraduate curriculum. The existence of a geriatric competency within the curriculum was evaluated on a YES / NO basis, therefore an explicit inclusion of the competency was required. As such, it was the existence of competencies within the curriculum that were evaluated as opposed to the quality of the curriculum. Additionally, because the analysis pertained only to course objectives, it did not factor variances in other areas of the curriculum that could contribute to a student's acquisition of geriatric competencies. The experiences that students will have in their hospital and community teaching settings will inevitably vary considerably with each student, but not to the same extent of the variances in experiences that will present during each student's Comprehensive Community Clerkship. The exposure to geriatric competencies during these clerkships will be at the mercy of the preceptor and the context of their practice during this period. That being said, there are opportunities for students to acquire knowledge and skills in the care of older patients that is not evident in the stated course objectives and therefore, not factored into the analysis of this project. To reiterate, one needs to keep in mind that the results of this analysis pertained specifically to the explicit inclusion of geriatric competencies within NOSM's curriculum, recommended by the

Canadian Geriatrics Society as being the minimum standard necessary in the care of older patients.

Further, because this analysis pertained exclusively to core geriatric competencies, consideration was not afforded to the content of potential elective courses or the review of curriculum schedules. An additional notable limitation was that this project did not assess or confirm the actual teaching of the respective geriatric competencies (Sinclair, Skoll & Ubhi, 2007). Competencies as per stated course objectives were not confirmed to be covered. Consultation with faculty and preceptors to confirm the execution of geriatric competencies was beyond the scope of this investigation.

Lastly, one cannot speak to the limitations of this project without acknowledging the potential for subjectivity in the interpretation of what constituted the presence of competencies within curriculum objectives. A constant comparison was made between the geriatric competency keywords and phrases and course objectives to facilitate the most accurate interpretation possible. Furthermore, results from the data collection were reviewed by Dr. Lisa Graves, NOSM Associate Dean of the Undergraduate Medical Education as a means of ensuring consistency in the data collection, void of bias interpretation.

4.6 Directions for Future Research

This investigation provides ample opportunity for further inquiry regarding the acquisition of knowledge, skills and attitudes in caring for the elderly. While this present analysis pertained exclusively to NOSM course objectives, subsequent analysis could involve other areas of the curriculum such as program schedules, respective placements, and elective courses. Additionally, research could focus on the qualitative responses of NOSM administration, medical students, Family Medicine residents, and preceptors. Given that the purpose of this project was to compare the geriatric content of NOSM's curriculum to the recommended core geriatric competencies of the Canadian Geriatrics Society, confirmation of having received the recommended competencies is necessary. Personal interviews with respective administrative personnel would provide such information, in addition to insight regarding the school's perception as to the current status of competencies within the curriculum and the need for a geriatric rotation. Interviews might also provide insight regarding what role the large proportion of seniors in the north had in the development of the curriculum.

In addition, NOSM medical students could be interviewed to examine what areas of the curriculum or experiences during the program they have come to view as being positive and / or negative in training and caring for the elderly? Responses would inevitably provide insight and potentially new ideas in enhancing student experiences in geriatric medicine. Interviews could also

address whether or not students felt that the undergraduate curriculum would adequately prepare them to care for older patients. Knowledge of students' perceptions regarding the quantity of geriatric competences and the nature of their exposure to geriatric medicine within NOSM's undergraduate curriculum would elicit practical outcomes in respect to program evaluation. Further, studies investigating NOSM student's attitudes toward older persons, and their interest in geriatric medicine and in working with older adults could draw emphasis to required areas of improvement.

The results from previous Medical Council of Canada Qualifying Examinations could be reviewed to assess the competencies of NOSM students in regards to objectives specific to geriatric medicine. Additionally, a broad assessment of student's knowledge of aging and ageist attitudes could be performed through the administration of instruments such as the Palmore (1977) Facts on Aging Quiz and the Aging Semantic Differential (Rosencratz & McNevin, 1969).

Alternatively, inquiry could extend beyond undergraduate medical students and the undergraduate program. Individuals who have entered the NOSM Family Medicine Residency program could provide information regarding their intent to conclude their training with the PGY3 program in the Care of the Elderly. Again, the objective is to examine factors that surround favorable or unfavorable attitudes regarding older adults that might propel the trajectory of a medical

student's career choice. Was there a factor outside of medical education that influenced their decision? Or was there an experience or course during their undergraduate training; perhaps a faculty member or preceptor persuaded or dissuaded their decision?

A final direction of inquiry could be directed at the preceptors who are located in the heart of northern and rural Ontario. What are their attitudes and perceptions as to the content of geriatric competencies within the undergraduate curriculum? Do they succeed in meeting the stated course objectives specific to the Canadian Geriatrics Society's recommended competencies? Do they feel that medical students arrive at their place of clerkship with a strong preliminary foundation in geriatric knowledge or do they recognize areas of weakness? Feedback from the preceptors could provide a significant contribution to the curriculum.

4.7 Conclusions

This research project supplements an existing body of literature highlighting aging demographics and the impending challenges associated with meeting the complex medical needs of an aging population. Inadequate numbers of physicians skilled at providing specialized care of the elderly, has initiated inquiry as to how medical schools will ensure tomorrow's physicians are capable of providing the most appropriate care for our aging seniors. This is not a recent topic of discussion; dialogue began decades ago. What is surprising is the rate at which geriatric enhancements are being implemented into the curricula of undergraduate medical programs.

One might expect to observe the largest improvements in recognition of geriatric medicine within the curriculum of Canada's newest medical program, at the very least, a distinctive theme in aging. What does exist is a respectful compliance with the recommended core geriatric competencies set forth by the Canadian Geriatrics Society, a visible presence of several key components across the entire curriculum, and the exposure to geriatric interviewing skills in the first year of the program. Yet what remains visibly absent are the recommended competencies that are not inclusive within the curriculum, a geriatric medicine rotation, and an explicit 'curricular thread' in aging.

References

Aitken, B.W. (2008). An introduction to gerontological studies. Huntington University Federated with Laurentian University: Sudbury, ON.

Adelman, R., Hainer, J., Butler, R.N., & Chalmers, M. (1988). A well elderly program: An intergenerational model in medical education. *The Gerontologist*, 28(3), 409-413.

Alford, C. (2004). Reconceptualizing aging. *Academic Medicine*, 79(7 suppl), Svii-Sviii.

Alford, C.L., Mouton, C.P., Miles, T.P., Espino, D.V., Parker, R.W., & Amaya, I. (2003). Medical student attitudes toward their own old age. *Journal of the American Geriatrics Society*, 51(4 suppl), S114.

Allan, L.J. & Johnson, J.A. (2009). Undergraduate attitudes toward the elderly: The role of knowledge, contact and aging anxiety. *Educational Gerontology*, 35, 1-14.

Alliance for Aging Research. 2002. Medical Never-Never Land: Ten Reasons Why America is Not Ready for the Coming Age Boom. Retrieved August 19, 2011, from http://www.policyarchive.org/handle/10207/bitstreams/8801.pdf.

Association of American Medical Colleges / John A. Hartford Foundation, Inc. (2009). July 2007 Consensus Conference on Competencies in Geriatrics Education. *Academic Medicine*, 84(5), 604-610.

Association for Gerontology in Higher Education (2009). What is gerontology? Geriatrics? Retrieved November, 26, 2009, from http://www.aghe.org/templates/System/details.asp?id=40634&PID=500217

Arber, S., McKinlay, J., Adams, A., Marceau, L., Link, C., & O'Donnell, A. (2004). Influence of patient characteristics on doctors' questioning and lifestyle advice for coronary heart disease: a UK / US video experiment. *British Journal of General Practice*, 54(506), 673-678.

Aretz, H. T. (2011). Some thoughts about creating healthcare professionals that match what societies need. *Medical Teacher*, 33, 608-613.

Bains, N., Dall, K., Hay, C., Pacey, M., Sarkella, J., & Ward, M. (n.d.). Population health profile: North East LHIN, Health System Intelligence Project. Retrieved September 3, 2011, from http://www.nelhin.on.ca/WorkArea/showcontent.aspx?id=744.

Beall, S.C., Baumhover, L.A., Maxwell, J.J., & Pieroni, R.E. (1996). Normal versus pathological aging: Knowledge of family practice residents. *The Gerontologist*, 36(1),113.

Bernard, M. (2004). Overcoming ageism one student at a time. *Geriatrics*, December, 2004, 1-2.

Bernard, M.A., McAuley, W.J., Belzer, J.A., & Neal, K.S. (2003). An evaluation of a low-intensity intervention to introduce medical students to healthy older people. *The Journal of the American Geriatrics Society*, 51, 419-423.

Boelen, C., & Woollard, R. (2011). Social accountability: The extra leap to excellence for education institutions. *Medical Teacher*, 33, 614-619.

Bragg, E.J., & Warshaw, G.A. (2005). ACGME requirements for geriatrics medicine curricula in medical specialties: Progress made and progress needed. *Academic Medicine*, 80(3), 279-285.

Bronskill, S.E., Carter, M.W., Costa, A.P., Esensoy, A.V., Gill, S.S., Gruneir, A., Henry, D.A., Hirdes, J.P., Jaakkimainen, R.L., Poss, J.W., & Wodchis, W.P. (2010). Aging in Ontario: An ICES Chartbook of Health Service Use by Older Adults. Institute for Clinical Evaluative Sciences. Retrieved October 22, 2010, from http://www.ices.on.ca.

Brown, E. (2010, July 7). Robert N. Butler dies, father of modern gerontology was 83. The Washington Post, B07. Retrieved April 18, 2011, from http://www.washingtonpost.com?wp-dyn/content/article/2010/07/06/AR2010070605125_pf.html.

Burdick, W., Amaral, E., Campos, H., & Norcini, J. (2011). A model for linkage between health professions education and health: FAIMER international faculty development initiatives. *Medical Teacher*, 33, 632-637.

Butler, R.N. (1980). Ageism: A forward. *Journal of Social Issues*, 36(2), 8-11.

Butler, R. N. (1985). Summary remarks: Geriatric medical education imperative. *Academic Medicine*, 61(6), 565-572.

Cammer Paris, B.E., Gold, G., Taylor, B., Fields, S.D., Mulvihill, M.N., Capello, C., & deBeer, K. (1997). First year medical students attitudes toward the elderly: A comparison of years. *Gerontology & Geriatrics Education*, 18(1), 13-22.

Canadian Geriatric Society (2008). Core Competencies for Medical Students in Canada. Retrieved November 18, 2010, from http:dom.lhsc.on.ca/dom/divisions/geriatrics/CGS%20Core%20Comps.pdf.

Canadian Institute for Health Information. (2011). Seniors and the health care system: What is the impact of multiple chronic conditions? Retrieved September 4, 2011, from http://secure.cihi.ca/cihiweb/products/air-chronic_disease_aib_en.pdf.

Caruthers McCray, C. (1998). Ageism in the preclinical years. *The Journal of the American Medical Association*, 279(13), 1035-1036.

Chodosh, J., Tulsky, A., Naumburg, E., Branca, L., Frankel, R.M., McCann, R.M., Katz, P.R., & Hall, W.J. (1999). What residents want to know about geriatrics: An approach to curriculum development. *Gerontology & Geriatrics Education*, 20(2), 19-34.

Dalziel, W.B. (2002). Future of health care for the elderly in Canada. *Geriatrics Today*, 5, 3-4.

Davis, B.E., Nelson, D.B., Sahler, O.J.Z., McCurdy, F.A., Goldberg, R., & Greenberg, L.W. (2001). Do clerkship experiences affect medical students' attitudes toward chronically ill patients? *Academic Medicine*, 76(8), 815-820.

DesMeules, M., Luo, W., Wang, F., & Pong, R. (2007). Rural places: Variations in health. *Health Policy Research Bulletin*, 14. Retrieved July 14, 2010, from http://www.hc-sc.gc.ca/sr-sr/pubs/hpr-rpms/bull/2007-people-place-gens-lieux/rural-ruraux-eng.php

Diachum, L.L., Dumbrell, A.C., Byrne, K., & Esbaugh, J. (2006). But does it stick? Evaluating the durability of improved knowledge following an undergraduate experiential geriatrics learning session. *Journal of the American Geriatrics Society*, 54(4), 696-701.

Diachum, L.L., Hillier, L.M., & Stolee, P. (2006). Interest in Geriatric Medicine in Canada: How can we secure a next generation of geriatricians? *Journal of the American Geriatrics Society*, 54 (3), 512-519.

Diachun, L.L., Van Bussel, L., Hansen, K.T., Charise, A., & Rieder, M.J. (2010). "But I see old people everywhere": Dispelling the myth that eldercare is learned in nongeriatric clerkships. *Academic Medicine*, 85(7), 1221-1228.

Drickamer, M.A., Levy, B., Irwin, K.S., & Rohrbaugh, R.M. (2006). Perceived needs for geriatric education by medical students, internal medicine residents and faculty. The Journal of Internal Medicine, 21, 000-000.

Duque, G., Gold, S., & Bergman, H. (2003). Early clinical exposure to geriatric medicine in second-year medical school students – the McGill experience. *The Journal of American Geriatrics Society*, 51, 544-548.

Ebrahim, S. (1999). Demographic shifts and medical training. *British Medical Journal*, 319(7221), 1358-1360.

Eleazer, G.P., Doshi, R., Wieland, D., Boland, R., & Hirth, V.A. (2005). Geriatric content in medical school curricula: Results of a national survey. *Journal of American Geriatrics Society*, 53(1), 136-140.

Eleazer, G.P., Egbert, C.R., Caskey, S., Egbert, J.R., & Hornung, C.A. (1994). Incorporating geriatrics in a medical school curriculum. *Gerontology & Geriatrics Education*, 14(3), 65-76.

Eleazer, G.P., Stewart, T.J., Wieland, D., Anderson, M.B., & Simpson, D. (2009). The national evaluation of senior mentor programs: Older adults in medical education. *Journal of American Geriatrics Society*, 321, 321-326.

Eleazer, G.P., Wieland, D., Roberts, E., Richeson, N., & Thornhill, J.T. (2006). Preparing medical students to care for older adults: The impact of a senior mentor program. *Academic Medicine*, 81(4), 393-398.

Fitzgerald, J.T., Wray, L.A., Halter, J.B., Williams, B.C., & Supiano, M.A. (2003). Relating medical students' knowledge, attitudes, and experience to an interest in geriatric medicine. *The Gerontologist*, 43(6), 849-855.

Frank, C. (2010). Caring for an increasing number of elderly patients. Retrieved May 16, 2011, from http://theconference.ca/caring_for_an_increasing_number_of_elderly_patients.

Frank, C. & Seguin, R. (2009). Care of the elderly training: Implications for family medicine. *Canadian Family Physician*, 55, 510-11.e1-4.

Freter, S., Gordon, J., & Mallery, L. (2006). Development and evaluation of a mandatory course in geriatric medicine for fourth year medical students. *Medical Education*, 11(14), 1-6.

Fucile, W. (2009). Rethinking Health Care in Rural and Northern Ontario: Speaking Notes for the Rural and Northern Health Care Panel. Retrieved January 28, 2011, from http://www.rnao.org?Page.asp?PageID=122&ContentID=3120&SiteNodeID=390.

General Medical Council. (2003). Tomorrow's doctors. London General Medical Council. Retrieved June 7, 2011, from http://www.gmc-uk.org/TomorrowsDoctors_2003.pdf_27493401.pdf.

Glazier, R.H., Gozdyra, P. & Yeritsyan, N. (2011). Geographic access to primary care and hospital services for rural and northern communities: Report to the Ontario Ministry of Health and Long-Term Care. Institute for Clinical Evaluative Sciences. Retrieved September 8, 2011, from http://www.ices.on.ca/file/Geographic_Access_to_Care_Eng.pdf.

Golden, A.G., van Zuilen, M.H., Mintzer, M.J., Issenberg, S.B., Silverman, M.A., & Roos, B.A. (2010). A fourth-year medical school clerkship that addressed negative attitudes toward geriatric medicine. *Journal of the American Geriatrics Society*, 58(4), 746-750.

Gordon, J.E. (2011). Updated survey of the geriatrics content of Canadian undergraduate and postgraduate medical curricula. *Canadian Geriatrics Journal*, 14(2), 34-39.

Gordon, J.E. & Hogan, D. (2006). Survey of the geriatric content of Canadian undergraduate and postgraduate medical curricula. *Canadian Journal of Geriatrics*, 9(Suppl 1), S6-11.

Gunderson, A., Tomkowiak, J., Menachemi, N., Brooks, R. (2005). Rural physicians' attitudes toward the elderly: Evidence of ageism? *Quality Management in Health Care*, 14(3), 167-176.

Hagedorn, R. (1990). *Sociology* (4th ed.). Toronto, ON: Holt, Rinehart and Winston of Canada, Limited.

Harries, C., Forrest, D., Harvey, N., McCelland, A., & Bowling, A. (2007). Which doctors are influenced by a patient's age? A multi-method study of angina treatment in general practice, cardiology and gerontology. *Quality & Safety in Health Care Journal*, 16(1), 23-27.

Hazzard, W.R. (2000). The department of internal medicine: Hub of the Academic Health Center response to the aging imperative. *Annals of Internal Medicine*, 133 (4), 293-296.

Hazzard, W.R. (2004). I am a geriatrician. *Journal of the American Geriatric* Society, 52, 161.

Health Canada (2001). Social Accountability: A Vision for Canadian Medical Schools. Retrieved September 6, 2010, from http://www..afmc.ca/fmec/pdf/sa_vision_canadian_medical_schools_en.pdf

Health Canada (2002). Canadian's Aging Population. Retrieved November 7, 2009, from http://www.phac_aspc.gc.ca/seniors_aines/pubs/fed_paper/pdfs/fedpager_e.pdf

Health Canada (2007, November). Population Patterns in Canada. Health Policy Research Bulletin, Retrieved June 17, 2010, from http://www.healthcanada.gc.ca/hpr-bulletin

Hogan, D.B. (2001). Human resources, training and geriatrics. *Geriatrics Today: Journal of Canadian Geriatrics Society,* February 2001, 7-10.

Hogan, D.B., Beattie, B.L., Bergman, H., Dalziel, W.B., Goldlist, B., Macknight, C., Molnar, F., Patterson, C., Power, B., Rockwood, K., Soucie, P., & Turner, D. (2002). Submission of the Canadian Geriatrics Society to the commission on the future of health care in Canada. *Geriatrics Today*, 5, 7-12.

Hought, J. (2002). Confronting ageism: The maturing of medical school curricula. *Geriatric Times*, 3(6), 1-5.

Institute of Medicine, Committee on Strengthening the Geriatric Content of Medical Education, Division of Health Care Services. (1994). Training Physicians to Care for Older Americans: Progress, Obstacles, and Future Directions. Retrieved August 26, 2011, from http://www.nap.edu/openbook/NX007172/html/44.html.

International Association of Gerontology and Geriatrics (2008). World Health Organization – International Association of Gerontology and Geriatrics, Geriatric Medicine: Basic Contents for Undergraduate Medical Teaching. Retrieved October 29, 2009, from http://www.iagg.com.br/webforms/index.aspx.

Jogerst, G.J., & Hartz, A.J. (1999). Assessment of geriatric training by medical schools. *Gerontology & Geriatrics Education*, 19(4), 19-34.

Johnson, J. (1996). Social support and physical health in the rural elderly. *Applied Nursing Research*, 9(2),61-66.

Karani, R., Leipzig, R.M., Callahan, E.H., & Thomas, D.C. (2004). An unfolding case with a linked objective structured clinical examination (OSCE): A curriculum in inpatient geriatric medicine. *Journal of American Geriatrics Society*, 52, 1191-1198.

Keller, I., Makipaa, A., & Kalenscher, T. (2002). Global Survey on Geriatrics in the Medical Curriculum. World Health Organization. Retrieved July 3, 2011, from htt://www.who.int/ageing/publications/alc_tegeme_survey.pdf.

Lally, F. & Crome, P. (2007). Undergraduate training in geriatric medicine: getting it right. *Age and Ageing*, 36, 366-368.

Lanphear, J. (2009). Building a new curriculum for NOSM. In G. Tesson, G. Hudson, R. Stasser, & I. Hunt (Eds.), The making of the Northern Ontario School of Medicine: A case study in the history of medical education (pp. 82-113). Montreal, QC: McGill-Queen's University Press.

Leipzig, R.M., Granville, L., Simpson, D., Brownell Anderson, M., Sauvigne, K., & Soriano, R.P. (2009). Keeping granny safe on July 1: Consensus on minimum geriatric competencies for graduating medical students. *Academic Medicine*, 84(5), 604-610.

Leung, S., LoGiudice, D., Schwarz, J., & Brand, C. (2011). Hospital doctors' attitudes towards older people. *Internal Medicine Journal*, 41, 308-314.

Levy, B.R. (2001). Eradication of ageism requires addressing the enemy within. *The Gerontologist*, 41(5), 578-579.

Liaison Committee on Medical Education. (2010). Functions and Structure of a Medical School. Standards for Accreditation of Medical Education Programs Leading to the M.D. Degree. Retrieved April 3, 2011, from htt://www.lcme.org/functions2010jun.pdf.

Littlewood, S., Ypinazar, V., Margolis, S.A., Scherpbier, A., Spencer., & Dornan, T. (2005). Early practical experience and the social responsiveness of clinical education: Systematic review. *British Medical Journal*, 331, 387-391.

Longino, C.F. Jr. (1997). Pressure from our aging population will broaden our understanding of medicine. *Academic Medicine*, 72(10), 841-847.

Lloyd-Williams, M. & MacLeod, R.D. (2004). A systematic review of teaching and learning in palliative care within the medical undergraduate curriculum. *Medical Teacher*, 26(8), 683-690.

McDaniel, S., & Agger, B. (1982). *Social problems through conflict and order*. Don Mills, ON: Addison-Wesley.

McPherson, B.D. (1998). *Aging as a social process: An introduction to individual and population aging* (3rd ed.). Toronto, ON: Harcourt Brace & Company, Canada.

MacKnight, C., Beattie, B.L., Bergman, H., Dalziel, W.B., Feightner, J., Goldlist, B., Hogan, D.B., Molnar, F., & Rockwood, K. (2003). Reponse to the Romanow report: The Canadian Geriatrics Society. *Geriatrics Today: Journal of Canadian Geriatrics Society*, 6, 11-15.

MacLeod, R.D., Parkin, C., Pullon, S., & Robertson, G. (2003). Early clinical exposure to people who are dying: Learning to care at the end of life. *Medical Education*, 37, 51-58.

Medical Council of Canada. (2011). Objectives overview. Retrieved November 17, 2011, from http://www.mcc.ca/en/exams/objectives/index.shtml.

Michel, J., Huber, P., & Cruz-Jentoft, A.J. (2008). Europe-wide survey of teaching in geriatric medicine. *Journal of the American Geriatrics Society*, 56, 1536-1542.

Millar, W.J. (1998). Multiple medication use among seniors. Statistics Canada. *Health Reports*, 9(4), 11-17. Retrieved September 4, 2011, from http://www.statcan.gc.ca/studies-etudes/82-003/archive/1998/3682.pdf.

Ministry of Finance (Spring 2010). Ontario Population Projections Update, 2009-2036. Retrieved September 02, 2010, from http://www.fin.gov.on.ca/en/economy/demographics/projections/projections2009-2036.pdf.

Morse, J.M., Barrett, M., Mayan, M., Olson, K., & Spiers, J. (2002). Verification strategies for establishing reliability in qualitative research. *International Journal of Qualitative Methods*, 1(2), 1-19.

Nagarajan, K.V. (2004). Rural and remote community health in Canada: Beyond the Kirby Panel Report, the Romanow Report and the federal budget of 2003. *Canadian Journal of Rural Medicine*, 9(4), 245-251.

Newble, D.I. (1992). Assessing clinical competence at the undergraduate level. *Medical Education*, 26, 504-511.

Noone Parsons, G., Kinsman, S.B., Bosk, C.L., Sankar, P., & Ubel, P.A. (2001). Between two worlds: Medical student perceptions of humor and slang in the hospital setting. *Journal of General Internal Medicine*, 16, 544-549.

North West Local Health Integration Network. (2009). Population health profile: North West LHIN. Retrieved September 3, 2011, from http://www.northwestlhin.on.ca/

Northern Ontario School of Medicine. (2011). About us: A Unique Approach. Retrieved June 13, 2011, from http://www.nosm.ca/about_us/default.aspx?id=68.

Northern Ontario School of Medicine. (2010). About our PGY3 Programs. Retrieved November 29, 2010, from http://www.nosm.ca/education/pgme/general.aspx?id+490.

Northern Ontario School of Medicine (2010). Strategic Plan 2010 – 2015. Retrieved September 13, 2010, from http://www.nosm.ca/strategicplan.

Novak, M. (1997). *Aging in society: A Canadian perspective* (3rd ed.). Toronto, ON: International Thomson Publishing Nelson.

O'Neil, G. & Barry, P.P. (2004). Training physicians in geriatric care: Responding to critical need. *Public Policy and Aging Report*, 13(2), 17-21.

O'Neil, P.A., & Holland, M. (2005). Lessons for curriculum development and for education in caring for older people: The AAMC-Hartford Geriatrics Curriculum Program. *Medical Education*, 39, 655-656.

Ontario Local Health Integration Network (2011). Integrated Provincial Falls Prevention Framework & Toolkit. Retreived August 31, 2012, from http://www.nelhin.on.ca/page_priority.aspx?id=1037&ekmensel=e2f22c9a_394_402_10372_6.

Parmar, J. (2009). Core competencies in the care of older persons for Canadian medical students. *Canadian Journal of Geriatrics*, 12(2), 70-73.

Public Health Agency of Canada. (2005). The Rural Think Tank 2005: Understanding Issues Families Face Living in Rural and Remote Communities. Retreived September 19, 2011, from http://www.phac-aspc.gc/ca/hp-ps/dca-dea/publication/rtt-grr-2005/index-eng.php.

Ragan, A.M. & Bowen, A. M. (2001). Improving attitudes regarding the elderly population: The effects of information and reinforcement for change. *The Gerontologist*, 41(4), 511-515.

Robinson, S.B., & Rosher, R.B. (2001). Effect of the “half-full aging simulation experience” on medical students’ attitudes. *Gerontology & Geriatrics Education*, 21(3), 3-12.

Romanow, R. (2002). Building on Values: The Future of Health Care in Canada. Retreived September 18, 2011, from http://dsp-psd.pwgsc.gc.ca/Collection/CP32-85-2002.pdf.

Rosenthal, T. & Fox, C. (2000). Access to health care for the rural elderly. *Journal of the American Medical Association*, 284(16), 2034-2036.

Rotermann, M. (2006). Seniors’ health care use. Statistics Canada. *Health Reports*, 16, 33-45. Retrieved August 27, 2011, from http://www.statcan.gc.ca/pub/82-003-s/2005000/pdf/9088-eng.pdf.

Rowe, J.W. (2008). Statement before the Special Committee on Aging, U.S. Senate, April 16, 2008. Retrieved September 09, 2010, from http://www.iom.edu/Reports/2008/Retooling-for-an-Aging-America-Building-the -Health-Care-Workforce.aspx.

Royal College of Physicians and Surgeons of Canada (2009). Specialty Descriptions: Geriatric Medicine. Retrieved November 16, 2009, from http://www.royalcollege.ca/index_e.php

Reuben, D.B., Fullerton, J.T., Tschann, J.M., & Croughan-Minihane, M. (1995). Attitudes of beginning medical students toward older persons: A five-campus study. *Journal of the American Geriatrics Society*, 43(12), 1431-1436.

Sainsbury, R., Wilkinson, T.J., Smith, C.W. (1994). Do the clinical years change medical students’ attitudes to old people? *Medical Education*, 28, 307-311.

Shue, C.K., McNeley, K., & Arnold, L. (2005). Changing medical students' attitudes about older adults and future older patients. *Academic Medicine*, 80(10), S6-S9.

Sibley, L.M. & Weiner, J.P. (2011). An evaluation of access to health care services along the rural-urban continuum in Canada. *BMC Health Services Research*, 11(20), 1-11. Retrieved September 4, 2011, from http://www.biomedcentral.com/content/pdf/1472-6963-11-20.pdf.

Sinclair, N., Skoll, A., & Ubhi, J. (2007). Women's health themes across the undergraduate medical curriculum at the university of British Columbia. *Journal of Obstetrics and Gynaecology Canada*, 29(9), 737-745.

Stahelin, H.B., Beregi, E., Duursma, S.A., Grimley, J., Evans, J.P., Ruiz-Torres, M.A., & Steen, B. (1994).Teaching medical gerontology in Europe. *Age and Ageing*, 23(3), 179-181.

Stall, N. (2012). Time to end ageism in medical education. *Canadian Medical Association Journal*, 184(6), 728.

Statistics Canada. (2006). Older Canadians Shaping Regional Demographics, Retrieved September 13, 2010, from http://www41.statcan.ca/2006/3867/ceb3867_001-eng.htm

Statistics Canada (2010, May 26). Population projections: Canada, the provinces and territories. *The Daily*, Retrieved August 26, 2010, from http://www.statcan.gc.ca/daily-quotidien/100526/dq100526b-eng.htm

Statistics Canada (2010). A Portrait of Seniors in Canada, Retrieved August 26, 2010, from http://www.statcan.gc.ca/pub/89-519-x2006001-eng.htm

Strasser, R. & Lanphear, J. (2008). The Northern Ontario School of Medicine: Responding to the needs of the people and communities of northern Ontario. *Education for Health*, 20 (3), 1-11.

Strasser, R. & Neusy, A-J. (2010). Context counts: Training health workers in and for rural and remote areas. *Bulletin of the World Health Organization*, 88, 777-782.

Supiano, M.A., Fitzgerald, J.T., Hall, K.E., & Halter, J.B. (2007). A vertically integrated geriatric curriculum improves medical student knowledge and clinical skills. *Journal of the American Geriatrics Society*, 55(10), 1650-1655.

Tepper, J.W., Schultz, S.E., Rothwell, D.M., & Chan, B.T.B. (2005). Physician Services in Rural and Northern Ontario: ICES Investigative Report. Toronto: Institute for Clinical Evaluative Sciences. Retrieved October 23, 2010, from http://www.ices.on.ca.

The Association of Faculties of Medicine of Canada. (2011). Our Faculties. Retrieved June 19, 2011, from http://www.afmc.ca/faculties-e.php.

The Education Committee Writing Group of the American Geriatrics Society. 2000. Core competencies for the care of older patients: Recommendations of the American Geriatrics Society. *Academic Medicine*, 75(3), 252-255.

The Gerontological Society of America (2008, April 25). Baby boomer health care crisis looms. *Science* Daily. Retrieved February 9, 2009, from http://www.sciencedaily.com/releases/2008/04/080417111300.htm

Tomkowiak, J., & Gunderson, A. (2004). When patients teach their doctors: A curriculum for geriatric education. *Educational Gerontology*, 30, 785-790.

Torrible, S.J., Diachun, L.L., Rolfson, D.B., Dumbrell, A.C., & Hogan, D.B. (2006). Improving recruitment into geriatric medicine in Canada: Findings and recommendations from the geriatric recruitment issues study. *Journal of the American Geriatrics Society*, 54(9), 1453-1462.

Triana, E.M. & Teasdale, T.A. (2002, May). *Determination of the extent of ageism from an informal curricula in the medical schools at the Texas Medical Center*. Poster session presented at the American Geriatrics Society annual scientific meeting, Washington, D.C.

Turcotte, M., & Schellenberg, G. (2006). Statistics Canada: A portrait of seniors in Canada. Retrieved April 12, 2010, from http://www.statcan.cg.ca/ads-annonces/89-519-x/index-eng.htm

University of British Columbia Faculty of Medicine (2011). Welcome to MEDICOL. Retrieved November 2, 2011, from http://www.medicol.med.ubc.ca.

van Zuilen, M.H., Rubert, M.P., Silverman, M., & Lewis, J. (2001). *Gerontology & Geriatrics Education*, 21(3), 31-40.

Varkey, P., Chutka, D.S., & Lesnick, T.G. (2006). The aging game: Improving medical students' attitudes toward caring for the elderly. *Journal of American Medical Directors Association*, May, 2006.

Wear, D., Aultman, J.M., Varley, J.D., & Zarconi, J. (2006). Making fun of patients: Medical students' perceptions and use of derogatory and cynical humor in clinical settings. *Academic Medicine*, 81(5), 454-462.

Westmoreland, G.R., Counsell, S.R., Sennour, Y., Schubert, C.C., Frank, K.I., Wu, J., Frankel, R.M., Litzelman, D.K., Bogdewic, S.P., & Inui, T.S. (2009). Improving medical student attitudes toward older patients through a “Council of Elders” and reflective writing experience. *Journal of American Geriatrics Society*, 315-320.

Wilkinson, T.J., Gower, S., & Sainsbury, R. (2002). The earlier, the better: The effect of early community contact on the education of medical students to older people. *Medical Education*, 36, 540-542.

Williams, B.C., Hall, K.E., Supiano, M.A., Fitzgerald, J.T., & Halter, J.B. (2006). Development of a standardized patient instructor to teach functional assessment and communication skills to medical students and house officers. *Journal of the American Geriatrics Society*, 54, 1447-1452.

Woloschuk, W., Harasym, P.H., & Temple, W. (2004). Attitude change during medical school: A cohort study. *Medical Education*, 38, 522-534.

World Health Organization. (2005). Teaching geriatrics in medical education II. Retrieved July 3, 2011, from *http://www.who.int/ageing/projects/TeGeMe_II.pdf*.

Appendix A – Canadian Geriatrics Society 'Core Competencies in the Care of Older Persons for Canadian Medical Students

When providing care to an older patient, the graduating medical student will be able to:
A. Cognitive Impairment 1. Perform a cognitive assessment and obtain collateral history relevant to cognitive and/or functional decline. 2. Define, and distinguish between the clinical presentations of delirium, dementia and depression. 3. Diagnose delirium, formulate a differential diagnosis for potential causes, and develop initial plans for evaluation and management. 4. Diagnose dementia, formulate a differential diagnosis for potential causes, and develop initial plans for evaluation and management.
B. Functional assessment (self care capacity) 5. Evaluate baseline (premorbid) and current functional abilities (both basic and instrumental activities of daily living) using reliable sources of information. 6. Develop initial plans for the assessment and management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.
C. Falls, balance and gait disorders 7. Construct a differential diagnosis (including risk factors) and initial plans for the evaluation and management of falls. 8. Perform a preliminary gait and balance assessment using accepted standardized assessment tools.
D. Medication management 9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects and an assessment of adherence. 10. Outline the pharmacokinetic changes that commonly occur with aging and demonstrate the ability to modify drug regimens to account for age related decreases in renal function. 11. Identify medications that are most likely to cause adverse events in an older individual.
E. Biology of aging and atypical presentation of disease 12. Describe the usual anatomical and physiological changes seen with aging. 13. Demonstrate the ability to recognize and evaluate atypical presentations of common medical conditions (e.g. acute coronary syndrome, infections, acute abdomen, depression) that can be encountered in an older individual.
F. Adverse Events 14. Identify and participate in efforts to reduce the potential hazards of hospital/institutional care (e.g. delirium, falls, immobility, pressure ulcers, incontinence, indwelling catheters, medication-related adverse events, malnutrition). 15. Describe the indications, risk, alternatives, and contraindictions of physical and chemical restraints.
G. Urinary Incontinence 16. List the causes, and outline initial plans for evaluation and management of transient (acute) and established (chronic) urinary incontinence.
H. Transitions of care 17. Communicate the key components of an appropriate transfer or discharge plan (e.g. accurate medication list, need for support services, plans for follow-up). 18. Identify and describe the signs and causes of caregiver stress. 19. Describe the spectrum of community-based care resources and institutional care options available for seniors within their province of training.
I. Healthcare planning 20. Define and describe (including the roles of physicians and substitute decision-makers) advance planning directives dealing with personal and financial decision-making, as permitted by legislation in their province of training.

Appendix B – Laurentian University Research Ethics Board Exemption Letter

LaurentianUniversity
UniversitéLaurentienne

Research Ethics Board
Research Ethics Office
L-313
(705) 675-1151, ext 3213
(705) 671-3850
jdragon@laurentian.ca

This is to certify that the protocol entitled «*EXAMINING THE GERIATRIC CONTENT OF CANADA'S NEWEST UNDERGRADUATE MEDICAL PROGRAM: ARE GRADUATES OF THE NORTHERN ONTARIO SCHOOL OF MEDICINE ACQUIRING THE BASIC COMPETENCIES TO CARE FOR AN INCREASINGLY AGING POPULATION*» (#2011-10-04), has been submitted to the Laurentian University Research Ethics Board by Karen Smider (Human Development — Laurentian University) and Dr. Elizabeth Wenghofer (supervisor) on October 14th 2011.

Your project falls under the article 2.2 of the Second TCPS (public documents) which states: ***Research that relies exclusively on publicly available information does not require REB review*** *when: (a) the information is legally accessible to the public and appropriately protected by law; or (b) the information is publicly accessible and there is no reasonable expectation of privacy.* Thus, the project has been declared by the Laurentian University Research Ethics Board to not be subject to ethics review.

Any modification of the purpose of the project will immediately require a new REB application.

Jean Dragon Ph.D. (Ethics officer — LU) for Susan James Ph.D.
Acting Chair of LU's REB

Date: October 14th 2011

Appendix C – Highlighted Keywords and Phrases within the Canadian Geriatrics Society 'Core Competencies in the Care of Older Persons for Canadian Medical Students'

When providing care to an older patient, the graduating medical student will be able to:
A. Cognitive Impairment 21. Perform a cognitive assessment and obtain collateral history relevant to cognitive and/or functional decline. 22. Define, and distinguish between the clinical presentations of delirium, dementia and depression. 23. Diagnose delirium, formulate a differential diagnosis for potential causes, and develop initial plans for evaluation and management. 24. Diagnose dementia, formulate a differential diagnosis for potential causes, and develop initial plans for evaluation and management.
B. Functional assessment (self care capacity) 25. Evaluate baseline (premorbid) and current functional abilities (both basic and instrumental activities of daily living) using reliable sources of information. 26. Develop initial plans for the assessment and management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.
C. Falls, balance and gait disorders 27. Construct a differential diagnosis (including risk factors) and initial plans for the evaluation and management of falls. 28. Perform a preliminary gait and balance assessment using accepted standardized assessment tools.
D. Medication management 29. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects and an assessment of adherence. 30. Outline the pharmacokinetic changes that commonly occur with aging and demonstrate the ability to modify drug regimens to account for age related decreases in renal function. 31. Identify medications that are most likely to cause adverse events in an older individual.
E. Biology of aging and atypical presentation of disease 32. Describe the usual anatomical and physiological changes seen with aging. 33. Demonstrate the ability to recognize and evaluate atypical presentations of common medical conditions (e.g. acute coronary syndrome, infections, acute abdomen, depression) that can be encountered in an older individual.
F. Adverse Events 34. Identify and participate in efforts to reduce the potential hazards of hospital/institutional care (e.g. delirium, falls, immobility, pressure ulcers, incontinence, indwelling catheters, medication-related adverse events, malnutrition). 35. Describe the indications, risk, alternatives, and contradictions of physical and chemical restraints.
G. Urinary Incontinence 36. List the causes, and outline initial plans for evaluation and management of transient (acute) and established (chronic) urinary incontinence.
H. Transitions of care 37. Communicate the key components of an appropriate transfer or discharge plan (e.g. accurate medication list, need for support services, plans for follow-up). 38. Identify and describe the signs and causes of caregiver stress. 39. Describe the spectrum of community-based care resources and institutional care options available for seniors within their province of training.
I. Healthcare planning 40. Define and describe (including the roles of physicians and substitute decision-makers) advance planning directives dealing with personal and financial decision-making, as permitted by legislation in their province of training.

Appendix D – Geriatric Competencies Across the Curriculum (Template)

		Phase 1																			
		Year 1																			
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		CBM 101			CBM 102			CBM 103			CBM 104			CBM 105			CBM 106			
		Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	
A. COGNITIVE IMPAIRMENT																					
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.																				
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.																				
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.																				
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.																				
B. FUNCTIONAL ASSESSMENT (SELF-CARE)																					
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).																				
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.																				
C. FALLS, BALANCE & GAIT DISORDERS																					
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.																				
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.																				
D. MEDICATION MANAGEMENT																					
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.																				
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.																				
	11. Identify medications that are most likely to cause adverse events in an older individual.																				
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE																					
	12. Describe the usual anatomical & physiological changes seen with aging.																				
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.																				
F. ADVERSE EVENTS																					
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.																				
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.																				
G. URINARY INCONTINENCE																					
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.																				
H. TRANSITIONS OF CARE																					
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).																				
	18. Identify & describe the signs & causes of caregiver stress.																				
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.																				
I. HEALTHCARE PLANNING																					
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.																				

		Phase 1														
		Year 2														
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		CBM 107			CBM 108			CBM 109			CBM 110			CBM 111		
		Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives
A. COGNITIVE IMPAIRMENT																
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.															
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.															
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.															
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plan for evaluation & management.															
B. FUNCTIONAL ASSESSMENT (SELF-CARE)																
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).															
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.															
C. FALLS, BALANCE & GAIT DISORDERS																
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.															
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.															
D. MEDICATION MANAGEMENT																
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.															
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.															
	11. Identify medications that are most likely to cause adverse events in an older individual.															
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE																
	12. Describe the usual anatomical & physiological changes seen with aging.															
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.															
F. ADVERSE EVENTS																
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.															
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.															
G. URINARY INCONTINENCE																
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.															
H. TRANSITIONS OF CARE																
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).															
	18. Identify & describe the signs & causes of caregiver stress.															
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.															
I. HEALTHCARE PLANNING																
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.															

		Phase 2											
							Virtual Academic Rounds						
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Module 201	Module 202	Module 203	Module 204	Module 205	Module 206	
		Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	
A. COGNITIVE IMPAIRMENT													
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.												
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.												
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.												
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.												
B. FUNCTIONAL ASSESSMENT (SELF-CARE)													
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).												
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.												
C. FALLS, BALANCE & GAIT DISORDERS													
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.												
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.												
D. MEDICATION MANAGEMENT													
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.												
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.												
	11. Identify medications that are most likely to cause adverse events in an older individual.												
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE													
	12. Describe the usual anatomical & physiological changes seen with aging.												
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.												
F. ADVERSE EVENTS													
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.												
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.												
G. URINARY INCONTINENCE													
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.												
H. TRANSITIONS OF CARE													
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).												
	18. Identify & describe the signs & causes of caregiver stress.												
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.												
I. HEALTHCARE PLANNING													
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.												

		Phase 3						
		Rotations						
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		Internal Medicine	Surgery	Women's Health	Children's Health	Mental health	Emergency Medicine	Family Medicine
		Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives
A. COGNITIVE IMPAIRMENT								
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.							
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.							
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.							
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.							
B. FUNCTIONAL ASSESSMENT (SELF-CARE)								
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).							
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.							
C. FALLS, BALANCE & GAIT DISORDERS								
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.							
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.							
D. MEDICATION MANAGEMENT								
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.							
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.							
	11. Identify medications that are most likely to cause adverse events in an older individual.							
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE								
	12. Describe the usual anatomical & physiological changes seen with aging.							
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.							
F. ADVERSE EVENTS								
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.							
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.							
G. URINARY INCONTINENCE								
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.							
H. TRANSITIONS OF CARE								
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).							
	18. Identify & describe the signs & causes of caregiver stress.							
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.							
I. HEALTHCARE PLANNING								
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.							

Appendix E - Analysis of Geriatric Competencies Across the Curriculum

		Phase 1																			
		Year 1																			
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		CBM 101			CBM 102			CBM 103			CBM 104			CBM 105			CBM 106			
		Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives
A. COGNITIVE IMPAIRMENT																			
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.																		
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.										✓								
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.																		
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.										✓								
B. FUNCTIONAL ASSESSMENT (SELF-CARE)																			
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).													✓					
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.																		
C. FALLS, BALANCE & GAIT DISORDERS																			
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.																		
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.																		
D. MEDICATION MANAGEMENT																			
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.													✓					
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.																		
	11. Identify medications that are most likely to cause adverse events in an older individual.																		
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE																			
	12. Describe the usual anatomical & physiological changes seen with aging.													✓					
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.																		
F. ADVERSE EVENTS																			
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.																		
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.																		
G. URINARY INCONTINENCE																			
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.																		
H. TRANSITIONS OF CARE																			
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).							✓											
	18. Identify & describe the signs & causes of caregiver stress.													✓					
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.																		
I. HEALTHCARE PLANNING																			
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.													✓					

		Phase 1															
		Year 2															
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		CBM 107			CBM 108			CBM 109			CBM 110			CBM 111			
		Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives	Module Objectives	Student Guide Learning Objectives	Facilitator Guide Learning Objectives
A. COGNITIVE IMPAIRMENT																	
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.												✓				
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.										✓						
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.																
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.																
B. FUNCTIONAL ASSESSMENT (SELF-CARE)																	
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).																
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.																
C. FALLS, BALANCE & GAIT DISORDERS																	
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.																
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.																
D. MEDICATION MANAGEMENT																	
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.																
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.																
	11. Identify medications that are most likely to cause adverse events in an older individual.																
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE																	
	12. Describe the usual anatomical & physiological changes seen with aging.																
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.																
F. ADVERSE EVENTS																	
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.																
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.																
G. URINARY INCONTINENCE																	
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.				✓												
H. TRANSITIONS OF CARE																	
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).							✓									
	18. Identify & describe the signs & causes of caregiver stress.																
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.																
I. HEALTHCARE PLANNING																	
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.							✓									

		Phase 2											
							Virtual Academic Rounds						
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		Theme 1	Theme 2	Theme 3	Theme 4	Theme 5	Module 201	Module 202	Module 203	Module 204	Module 205	Module 206
		Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Theme Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives	Module Course Objectives
A. COGNITIVE IMPAIRMENT												
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.					✓				✓		
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.					✓				✓		
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.						✓			✓		
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.						✓					
B. FUNCTIONAL ASSESSMENT (SELF-CARE)												
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).						✓					
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.											
C. FALLS, BALANCE & GAIT DISORDERS												
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.					✓						
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.											
D. MEDICATION MANAGEMENT												
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.					✓				✓		
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.									✓		
	11. Identify medications that are most likely to cause adverse events in an older individual.									✓		
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE												
	12. Describe the usual anatomical & physiological changes seen with aging.											
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.											
F. ADVERSE EVENTS												
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.											
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.											
G. URINARY INCONTINENCE												
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.					✓					✓	✓
H. TRANSITIONS OF CARE												
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).											
	18. Identify & describe the signs & causes of caregiver stress.											
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.						✓			✓		
I. HEALTHCARE PLANNING												
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.											

		Phase 3						
		Rotations						
Canadian Geriatrics Society Core Competencies for Medical Students in Canada		Internal Medicine	Surgery	Women's Health	Children's Health	Mental health	Emergency Medicine	Family Medicine
		Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives	Syllabus Learning Objectives
A. COGNITIVE IMPAIRMENT								
	1. Perform a cognitive assessment & obtain collateral history relevant to cognitive &/or functional decline.					✓		
	2. Define & distinguish between the clinical presentations of delirium, dementia & depression.							
	3. Diagnose delirium, formulate a differential diagnosis for potential causes & develop initial plans for evaluation & management.							✓
	4. Diagnose dementia, formulate a differential diagnosis for potential causes, & develop initial plans for evaluation & management.	✓				✓		
B. FUNCTIONAL ASSESSMENT (SELF-CARE)								
	5. Evaluate baseline & current functional abilities (basic & instrumental activities of daily living).							
	6. Develop initial plans for the assessment & management of patients with functional deficits, including the use of adaptive interventions, in collaboration with interdisciplinary team members.							
C. FALLS, BALANCE & GAIT DISORDERS								
	7. Construct a differential diagnosis (including risk factors) & initial plans for the evaluation & management of falls.							
	8. Perform a preliminary gait & balance assessment using accepted standardized assessment tools.							
D. MEDICATION MANAGEMENT								
	9. Obtain a detailed medication history that includes a list of all medications being taken, dosages, frequencies, indications, evidence of benefit, side effects & an assessment of adherence.							
	10. Outline the pharmacokinetic changes that commonly occur with aging & demonstrate the ability to modify drug regimens to account for age related decreases in renal function.							
	11. Identify medications that are most likely to cause adverse events in an older individual.							
E. BIOLOGY OF AGING & ATYPICAL PRESENTATION OF DISEASE								
	12. Describe the usual anatomical & physiological changes seen with aging.							
	13. Demonstrate the ability to recognize & evaluate atypical presentations of common medical conditions that can be encountered in an older individual.							
F. ADVERSE EVENTS								
	14. Identify & participate in efforts to reduce the potential hazards of hospital/institutional care.							
	15. Describe the indications, risks, alternatives, & contraindications of physical & chemical restraints.							
G. URINARY INCONTINENCE								
	16. List the causes & outline plans for evaluation & management of acute & chronic urinary incontinence.							
H. TRANSITIONS OF CARE								
	17. Communicate the key components of an appropriate transfer or discharge plan (e.g. medication list, need for support services, plans for follow-up).							✓
	18. Identify & describe the signs & causes of caregiver stress.							
	19. Describe the spectrum of community-based care resources & institutional care options available for seniors within their province of training.							
I. HEALTHCARE PLANNING								
	20. Define & describe (including the roles of physicians & substitute decision-makers) advance planning directives dealing with personal & financial decision-making, as permitted by legislation.							

Appendix F - On-Line Virtual Patient Encounters

Phase 1

CBM 101		
25	year old	female
28	year old	male

CBM 102		
	newborn	male
6	year old	male
16	year old	female
33	year old	female
51	year old	male
53	year old	male
75	year old	female

CBM 103		
70	year old	female
4	year old	female
42	year old	male
76	year old	female
76	year old	female
30	year old	male

CBM 104		
2	year old	male
15	year old	female
58	year old	male
55	year old	male
61	year old	female
40	year old	female
51	year old	male

CBM 105		
41	year old	male
70	year old	female
58	year old	male
45	year old	female
6	year old	male
76	year old	female

CBM 106		
78	year old	male
30	year old	female
2	year old	female
45	year old	female
5	year old	male
53	year old	male

CBM 107		
15	year old	female
44	year old	female
22	year old	female
16	year old	female
47	year old	female
31	year old	male

CBM 108		
5	year old	female
60	year old	female
32	year old	female
70	year old	male
45	year old	male
13	year old	male

CBM 109		
9	year old	male
	newborn	male
72	year old	female
24	year old	male
28	year old	female
4	year old	female

CBM 110		
18	year old	male
41	year old	male
19	year old	female
48	year old	female
23	year old	male
45	year old	male
8	year old	male

CBM 111		
65	year old	male
53	year old	female
3	year old	male
38	year old	male
63	year old	female
30	year old	female