Elder Planning Counselor Designation Program

Desk Reference Module 1 – Aging & Health Issues

Contents at a Glance

OVERVIEW OF THE EPC DESIGNATION PROGRAM

Congratulations on taking the first step in achieving your Elder Planning Designation (EPC) offered by the Canadian Initiative for Elder Planning Studies (CIEPS). Upon successful completion of the EPC Designation program, you will be in the company of over 4000+ professionals and individuals who, like yourself have dedicated the time required to take this program and achieve their EPC designation. Granted by the Canadian Initiative for Elder Planning Studies since 2003, the EPC is the oldest and largest Canadian educational program for professionals working in a mature market.

We are extremely pleased that you have made the decision to do what it takes to be recognized as a true "professional" who has taken the time to study and learn the needs of our elderly, and how to interact with them.

Currently the program is in the 11th edition, with updates wherever possible. Please understand that in regard to any statistics or facts that are referenced from the Canadian government, such as Stats Can, the most recent information is used.

We would like to take this opportunity to provide you with some information about the Canadian Initiative for Elder Planning Studies, and what benefits you can expect to achieve from this designation program.

OUR GOAL

Our goal is to enrich the knowledge and understanding of all professionals from the many disciplines today. Professions such as Insurance and Financial Advisors, Lawyers and Accountants, Doctors, Nurses, Healthcare workers, Caregivers, Nursing and Retirement Home owners, Funeral Home Directors and Real Estate agents will benefit through education by focusing upon the evolving and specialized needs of Canada's citizens as they age. Eventually, any professional who works with elders will be exposed to the power of having their EPC Designation.

The Canadian Initiative for Elder Planning Studies, believes that working with the maturing client involves a "total needs approach", and that these needs evolve from an individual's early wage-earning years and continue to change as the individual moves through the aging process.

Our Elder Planning Counselor curriculum is a comprehensive education program designed to recognize these needs and provide you with the essential knowledge and tools that are necessary to effectively develop proper rapport and practical solutions.

ARE YOU READY FOR THE "REVOLUTION OF LONGEVITY"? IT IS TAKING THE COUNTRY BY STORM

You already see the changes in advertising. The population is getting older and savvy businesses are adjusting to reach their audiences more effectively. It is not "survival of the fittest" as Darwin said. *Those who survive will be those who can adapt.*

You can adapt. When you do, your business or profession answers the questions that are being asked by your market. If you think today's maturing market is answering the same questions as they asked in the 60s and 70s, you will become irrelevant.

But that does not have to happen. You can learn the questions – and the answers you need to be relevant, trusted and in demand. And, just like elders have changed the markets we work in, the EPC program changed the learning process too. The EPC program is a self-study program with a twist. You can study for yourself, but not by yourself.

WHY EARN YOUR EPC DESIGNATION?

A quote from Mr. Peter Wouters, Faculty Chair CIEPS

"*Anyone interested in developing a specialty and acumen in the unique needs, wants and issues of today's and tomorrows elder population will find this a very worthwhile program. We are confident that much of what you will learn you will not have picked up elsewhere, certainly not in a format geared to actionable items and developing deep meaningful relationships with elders, beyond the numbers and figuring out how much is enough."*

There seems to be some discussion among many professionals regarding the value of earning one or more of the many designations that are available to all disciplines, and of the benefits of promoting them once they have been earned. While simply possessing designations does not guarantee either professional competency or quality of service, there are many benefits to pursuing such credentials.

Regardless of your personal position, it can be safely said that any business professional who has earned a professional designation is likely to be more competent than they were before attending the classes that entitled them to use such designations. The same can be said of those who earn college degrees, pass the bar or earn other professional certifications and designations.

Given this, those that earn the Elder Planning Counselor (EPC) designation are likely to provide a better level of service than those who do not have these credentials.

Training and developing your elder client and prospect relationships will be the largest growth opportunity that you will receive by enrolling in the EPC Designation program.

Our specialized faculty will teach you about the many essential and timely topics that the 50+ populations say are the most relevant issues for them, as they become a significant part of the aging population. However, knowledge and the access to knowledge will not change an individual, regardless of what occupation they are in. As an EPC, you will enjoy many benefits that will give you credibility and recognition.

THE INITIATIVE OFFERS YOU

- The most comprehensive, up-to-date educational content available in the marketplace today.
- Access to quality education from a company that is respected in the Financial Services Professional Development field.
- Educational instruction and content from many nationally recognized qualified educators who are highly regarded in their fields.
- The ability to achieve your EPC Designation through one of our partner Universities or Colleges. Currently Ashton College and Business Career College are offering the program with more being added.
- Chapters that are relevant specifically to your professional practice, together with the flexibility to tailor your learning towards your specific career objectives.

CONTINUING EDUCATION CREDITS

With the "LIVE" Classroom or webinar instruction as well as the Distance Learning program, you will have the freedom and choice to achieve the EPC designation in a method that suits you and your busy lifestyle or professional schedule. Continuing Education Credits are currently available for financial services Provincial Life, A&S and General (P&C) License Renewals, CFP*, IIROC**, Advocis and many other professional associations. Please check with your various associations.

*** CFP Designation Verifiable CE credits -** As per the below, these CE Credits could be used for any of the following – Financial Planning, Practice Management, Professional Responsibility, Product Knowledge or Giving Back as per the definition of each.

"We have reviewed the Guidelines for Providers of Continuing Education Programs from the Financial Planners Standards Council and have developed this program with these guidelines in mind.

Although we will provide the necessary verification of attendance, we understand it is up to the individual CFP licensee to determine whether completion/attendance at this seminar/program/course qualifies for CE credits."

****IIROC** – Investment Industry Regulatory Organization of Canada (formerly the IDA)

Please see the IIROC website for information on CE credit requirements for the current cycle.

CODE OF PROFESSIONAL CONDUCT

The Canadian Initiative for Elder Planning Studies and its member Elder Planning Counselors stand for the highest of professional principles and standards regardless of their profession. This Code of Professional Ethics sets forth the minimum ethical conduct for all members. Voluntary compliance at the very highest levels is our expectation. The EPC designation is an earned privilege and CIEPS reserves the right to deny anyone membership for behavior it determines detrimental to its members and principles.

Elder Planning Counselors will always:

- **Place the needs, objectives and interests** of their clients, customers, patients, and prospects above their own always.
- **Protect their clients, customers, patients and prospects** from unscrupulous business and professional activities.
- **Give clients, customers, patients and prospects the same advice** and service they would expect themselves if the circumstances were the same.
- **Keep confidential** all personal and business details of their clients' affairs they become aware of during the program of their work.
- **Keep the quality** of their recommendations high through continuing education and training.
- **Abide by the letter and spirit of the law** or any applicable regulations or professional codes in all their business or professional activities.
- **Shield the CIEPS and fellow EPCs from dishonour** by agreeing to immediate suspension of their membership if charged with an office of a criminal or civil nature or professional misconduct until a full review has been completed by the CIEPS Compliance Department.
- **Charge a fair and appropriate fee** (If on a fee for service basis) based on the time, skill and expertise required.

THE CURRICULUM

Part of becoming a competent *"Elder"* professional requires the Elder Planning Counselor to become familiar with the differences and complexities that are prevalent within the elder population. Throughout the following curriculum, you will learn about why and how past events in and elder's life will influence any planning for their future.

The curriculum at a glance:

Module 1 – Aging & Health Issues

- Situation Critical – Our population is Aging
- Principles, Progression & Effects of Aging
- Understanding Chronic Conditions
- Dementia & Our Aging Society
- Nutrition & Fitness

Module 2 – Social & Psychological Issues

- Long Term Care Issues
- Housing Options
- Caregiving in Canada
- End-Of-Life Planning Issues
- Funeral Planning
- Bereavement – Grief and the Healing Process

Module 3 – Financial Issues

- Social Security & Medicare Programs
- Retirement Planning & Investing
- Generating Retirement Income
- Legacy Planning
- Travelling or Moving Abroad
- Income Tax Planning

Module 4 – Communication and Other Timely Issues

- The Social Aspects of Aging
- Communicating with Elders
- Marketing to Elders
- Elder Fraud and Financial Exploitation
- Elders and Ethics
- Putting It All into Perspective

THE EPC DESK REFERENCE MANUALS

When the Desk Reference refers to facts, figures and statistics, we have used the most recently published materials that are available in the marketplace today. As these numbers change, so will the information in the volumes.

We would like to remind you that as this happens, you will have access to any updated information on the ***EPC member site –*** *www.epcmember.org***.**

ELDER FACTS

We all grow old. Aging is a biological process that begins at births and ends in death. Being a 'senior or elder', on the other hand, is a social definition - identified in the past, with having one is sixty-fifth birthday. At one time most Canadians retired at 65 and began to draw a pension, but even that is changing. Human rights legislation in many provinces has removed the provision for mandatory retirement at a given age. Our society is changing and so is the way we look at elders.

WHAT IS GERONTOLOGY?

The growing interest in understanding the process of aging has given rise to the many fields of gerontology - the study of the biological, psychological, and social aspects of aging. Gerontologists include researchers and practitioners in such diverse fields as biology, medicine, nursing, dentistry, psychology, sociology, economics, political science, and social work.

These individuals are concerned with many aspects of aging, from studying and describing the processes involved, to seeking ways of improving the quality of life for older people.

ELDERS EXPECT MORE

The EPC Designation program will improve your options and give you more control over your business and the way that you interact with our aging society. Before taking the EPC Designation program, many of our targeted professions treated the 50+ populations in the same way as they did their younger clients and prospects.

WHAT DOES THE 50+ POPULATION EXPECT FROM YOU?

Elders appreciate professionals who:

- Know the issues and alternatives that are important and unique to elder life.
- Respect their circumstances and confidentiality.
- Will provide guidance and assistance with the elder's best interests in mind. Accommodate their physical and health challenges such as illnesses, vision or hearing impairment, when speaking with them.

The Elder Planning Counselor Designation program is designed with you, the professional in mind.

COMMUNICATING WITH ELDERS

Knowing how to maintain effective elder relationship and market building techniques will be the key to your success! The EPC Designation program is about people communicating with people.

Simply proclaiming your elder friendliness will not gain you much ground - elders will soon detect whether your intentions are sincere. Experts believe that elders can be a skeptical bunch, and rightly so. They can be suspicious of flattery and insincere deference, and many elders can detect a con person a mile away. Our Canadian elders are not a stupid part of society!

Becoming elder friendly is a matter of conscious decisions and choices about when, how and where to communicate. Communication, knowledge and presentation skills are important if you are to deliver your message and look after elder needs and wants.

Having vast knowledge but not the skills to communicate with elders is like having a racing car with a fast engine…but without a transmission to shift gears!

The EPC Designation program will include basic skills so that you can enhance your communication with elders.

The EPC Designation will provide you with the competitive advantage over your peers in similar fields who have not undertaken the goal to establish themselves as specialists in their profession.

As with other designations, there are definite benefits and advantages to having attained your EPC Designation.

Upon successful completion, you will enjoy the following benefits:

- Professional recognition working with elders and gaining respect within the public community arenas.
- Your sole right to use with pride and accomplishment the EPC Designation and the "EPC member in good standing" mark on any advertising that you choose to use. By utilizing the EPC mark, you will be recognized by our Elder population as one who is knowledgeable with issues that pertain to them and their needs.
- Your marketing opportunities will increase after your EPC Designation is achieved as attested to by some current EPCs.
- Your business from referrals will form a significant portion of your increased business.
- Your ongoing professional education through the Elder Planning Issues Conferences (EPIC), advanced EPC advanced seminars in addition to regular electronic "PULSE" newsletters.
- Discounts from nationally recognized businesses.

FUTURE TRENDS

Thanks to advances in medical technology, better health care systems, and improvements in lifestyle habits, the twenty-first century brings unprecedented changes in life expectancy and increased numbers of older adults globally. As the elder population grows, so does the knowledge of and interest in the need for professionals with specialized knowledge and skills in the diverse field of aging. Today, the career choices for aging professionals are many and the scope of opportunities wide.

The study of aging can be very diverse, offering many different opportunities. This diversity exists, in part, because older persons are very different from each other in many ways. As we age, our experiences, needs, resources, and abilities vary according to such factors as gender, race, ethnicity, and economic status. For example, many older persons are very healthy and active. Persons who work with these older people might be providing educational opportunities, recreation and leisure programs, and volunteer activities. Some older persons are frail and less active. Some of your fellow classmates might be working in a long-term care or other health care setting, or in certain agencies that deliver services to many of our older Canadians.

MULTIDISCIPLINARY OPPORTUNITIES

The varied needs of older persons lead to exciting opportunities for studying side by side with professionals from other disciplines. As an Elder Planning Counselor, you could be coordinating information from housing agencies, lawyers, transportation providers, nurses, financial advisors and family counselors.

As a health professional, you might serve on a health care team providing hospital care, day care, or home care to older persons.

As an educator, you might teach a program on adjusting to retirement to some elder students from several walks of life.

YOU HAVE THE POTENTIAL TO MAKE A DIFFERENCE!

People working with our aging population report great satisfaction in addressing the challenges of those who are growing older, helping to maintain the quality of their lives, and enjoying the wit, wisdom, and creativity of the older persons with whom they come in contact.

Even as an EPC student you can make a difference; your community can benefit from volunteer work you do with older persons. Later, as a well-qualified individual or a professional in the field, you can continue to serve the community as a volunteer, for example, by speaking about various aspects of aging to civic and community groups or teaching in pre-retirement programs.

Studying our aging population also gives you a perspective on your own aging and insight into the aging of your friends and family members.

You have noticed by now that the Elder Planning Counselor designation plays a very important part in dealing with elders on a financial, social or health basis. The astute professional who recognizes elder trends, wants and needs, will have an ample supply of clients, prospects and referrals to increase their business keep them busy regardless of which elder occupation they are in.

The EPC will become the designation of choice, as you move forward into elder markets.

Rest assured that the education and knowledge that you receive from this designation program will benefit you, your elders, as well as your family and friends. The EPC Designation will truly enhance your personal and professional well-being.

Welcome to the Canadian Initiative for Elder Planning Studies. Good luck as you move forward with your EPC Designation.

Chapter 1

Situation Critical – Our Population is Aging

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1 - 1 KEY OBJECTIVE OF THIS CHAPTER

This chapter focuses on the dramatic aging of the world's population, with emphasis on Canada. We will look at both the causes of this demographic shift and at some of its consequences.

We will also gain some perspective on Canadian elders - on their health, their financial well-being, their concerns and their values. This information is of vital interest to anyone who wants to connect with Canadian elders in a meaningful and compelling fashion.

1 - 1.1 How Will This Objective Be Achieved?

We will review a myriad of statistical data in order to "profile" the elder population. In addition, we will look at the social, psychological and physiological factors that have helped to shape elder attitudes and thinking.

1 - 2 INTRODUCTION

During the first half of the 21st century, nothing will have as great an impact on our society as the dramatic aging of our population. The demographic shift we are about to witness will touch virtually every aspect of society. It will force us to make dramatic changes to our health care system. It will bring into question the viability of many of our cherished social programs. And it will alter both the workforce and the broader economy. And yet, we remain largely unprepared for the "silver" tsunami that is rapidly approaching shore.

1 - 2.1 Definition of an Elder

According to the Canadian Oxford Dictionary, a senior citizen is "an elderly person, especially a person over 65."

Most government benefits and programs for elders are available only to people who are 65 years of age or older.

In some cases, limited benefits may be available as early as age 60. And many businesses offer special programs, services and pricing to people as young as 50.

So, at what age does one officially become an elder?

It is largely a matter of ongoing debate, and most of the current definitions of elder can easily be contested. Some would argue that increases in life expectancy would justify reserving the term elder for individuals who are much older than 65 (just as 50 is the new 40, 75 may be the new 65). Others, meanwhile, would argue that a steady decline in the average age of retirement would justify a move in the other direction.

It is also important to remember that "elder" is a very broad term. It should go without saying that the issues, concerns and circumstances of a 65-year-old are dramatically different from those of an 85 or 90-year-old.

The Canadian Initiative for Elder Planning Studies considers anyone who is 55 years of age, or older, to be an elder.

By this definition there were 11.85 million elders in Canada in 2019, representing roughly 31.5% of the total population. According to Statistics Canada's population projections, about 10 years (2031) over a third of Canada's population will be 55 years of age or older.

1 - 3 DEMOGRAPHICS TRENDS

For most of human history, life was difficult, brutish and short. Human populations were at the mercies of famines, disease, hostilities, the vagaries of animal herds and changing weather and climatic conditions. The infant mortality rate was extremely high - likely in the area of 500 deaths per 1,000, and life expectancy at birth rarely exceeded 10 or 12 years. Even with exceptionally high birth rates (as high as 80 per 1,000) population growth was, at best, anaemic.

By 1 A.D. world population reached approximately 300 million people. More than 16 centuries later, in 1650, world population had risen to roughly 500 million. This represented a paltry annual population growth rate of less than 0.0004%.

But then something remarkable happened. Even in the face of a precipitous decline in the birth rate per 1,000, world population began to grow at an astonishing rate.

Table 1 - 1 World Population Growth

Year	Population	Births per 1,000
1 A.D.	300,000,000	80
1200	450,000,000	60
1650	500,000,000	60
1750	795,000,000	50
1850	1,265,000,000	40
1950	2,516,000,000	38
1995	5,760,000,000	31
2020	7,684,292,383	18

CIA World Factbook – 2020

In the one-hundred-year period between 1650 and 1750 world population grew by nearly 300 million people - significantly more growth than what was experienced in the previous 1600 years!

Between 1850 and 1950 world population doubled with the addition of more than a billion people. And then, in the 45 years that followed (1950-1995) world population more than doubled again.

According to Census Bureau projections, world population will increase to a level of nearly eight billion in the next 10 years and will reach 9.3 billion by the year 2050.

1 - 3.1 Life Expectancy at Birth

The fact that world population began to grow exponentially while the world birth rate was dropping precipitously is counter-intuitive. All things being equal, a drop in the birth rate should produce a reduction in population growth.

But all things are not equal. During the past 200 years there has been a startling increase in human life expectancy - particularly in the developed world. The following chart tracks Canadian life expectancy at birth since 1850.

Table 1 - 2 Canadian Life Expectancy at Birth

Year	Life Expectancy (in years) at Birth
1850	39.0
1900	56.0
1950	67.0
1996	78.6
2020	83.4

In less than 200 years, Canadian life expectancy at birth has more than doubled to 83.4 years. Canadian females - it should be noted - have a life expectancy at birth that is more than five years longer, on average, than their male counterparts (85.9 years versus 81.1 years). While the less developed world has not experienced the same absolute level of improvement in life expectancy at birth - it has made significant inroads in recent years. Between 1950 and 2020, worldwide life expectancy at birth went from 46.5 years to 70.5 years - an astonishing 24-year improvement in just over two generations.

The following chart ranks current life expectancy at birth figures for a cross section of countries.

Table 1 - 3 Life Expectancy at Birth (2020) - Country Rankings

Country	Life Expectancy (in years) at Birth	Ranking
Monaco	89.3	1
Japan	86.0	2
Canada	83.4	6
Australia	82.7	14
United States	80.3	45
India	69.7	167
Chad	58.3	221
Afghanistan	52.8	228
World Average	**70.5**	

CIA World Factbook, 2020

Further improvements in life expectancy at birth are anticipated. According to United Nations demographers worldwide life expectancy at birth should reach 76 years by the middle of the 21st century. It is important to note that life expectancy increases as we age. The following chart illustrates the life expectancies of Canadian men and women at ages 65, 75 and 85.

Table 1 – 4 Canadian Life Expectancy

Current Age	Male Life Expectancy (Age)	Female Life Expectancy (Age)
65	84.3	87.1
75	87.1	89.2
85	91.5	92.7

Statistics Canada, 2020 (data from 2018).

1 - 3.2 Factors Driving Improvements in Life Expectancy

Improvements in worldwide life expectancy are largely attributable to five things:

- **Lower rates of infant mortality** - The current (2020) worldwide infant mortality rate is at a low of 30.8 deaths per thousand. In the developed world, infant mortality rates as low as 3-4 deaths per thousand are not uncommon. Canada, for example, has an infant mortality rate of 4.3 deaths per thousand – 45th lowest in the world.
- **Better nutrition** - Starting with the wide spread introduction of the potato into human diets approximately 300 years ago, huge strides have been made with respect to diet quality. We have access to a healthier, substantially more varied diet than any previous generation. As recently as 80 years ago, it was unheard of to have access to fresh fruits and vegetables - at reasonable cost - 12 months of the year.
- **Improved sanitation** - For most of us basic sanitation is an afterthought. We forget that two short centuries ago open sewers ran through the streets of major cities and clean drinking water was far from a given.
- **A safer environmen**t - In the past 50 years alone there have been many innovations when it comes to safety. Among them: the widespread use of household fire and carbon monoxide alarms; the removal of lead from gasoline, household paints and plumbing supplies; the introduction of automobile seat belts and air bags; and the banning of such toxic substances as DDT and Asbestos.

- **Superior health care** - From antibiotics to immunization programs, there has been a steady stream of life saving healthcare breakthroughs during the past 100 years. And despite the deficiencies of the current system, the health care we receive today is still dramatically better than what was available 10, 20 or 30 years ago.

1- 3.3 Median Age

Declining birth rates and increases in life expectancy have impacted the median age (the point at which one half of the population is younger and one half is older) in most countries. In Canada, the median age rose to 41.8 in 2020 - an increase of 15.6 years (or more than 50%) since 1971.

Table 1 - 5 Median Age in Canada 1911 – 2020

Year	Median Age
1911	23.8
1931	24.7
1951	27.0
1971	26.2
1991	33.5
2001	37.6
2020	41.8

With a median age of 41.8, Canada is in the middle of the pack as compared to other developed nations. Japan (48.6), Italy (46.5), and Germany (47.8) have median ages that are significantly higher. The United States (38.5) and Australia (37.5) have median ages that are lower. And the United Kingdom (40.6) and France (41.7) are largely on par with Canada.

It should also be noted that there are substantial differences in median age between provinces. Within Canada median age tends to increase as you move from west to east. British Columbia provides the only glaring exception to this rule.

Table 1 - 6 Median Age by Province – 2019

Province	Median Age		Province	Median Age
British Columbia	42.2		Quebec	42.6
Alberta	37.1		New Brunswick	46.0
Saskatchewan	37.4		P.E.I.	43.2
Manitoba	37.4		Nova Scotia	44.9
Ontario	40.4		Newfoundland	47.1
Nunavut	26.2		NWT	35.2
Yukon	39.2			

1 - 3.4 Population Age Structure

Over the course of the next 25 years, the age structure of the world's population will continue to shift, with older age groups making up an increasingly larger share of the total. Between now and 2030, the number of people in the world who are 65 years old, or older, will grow substantially. Over the same period the world's youth population (those under age 15) will experience virtually no growth. In recent years, several developed nations have experienced a demographic change that is unprecedented in the history of mankind. These countries now have more people over the age of 65 than under the age of 15! Japan, Germany and Italy, among other nations, are boldly going where no society has ever gone before.

Table 1 – 7 Population Age Structure (World)

Country	Population under Age 15	Population Age 65 and over
Japan	12.5%	29.2%
Germany	12.9%	23.0%
Italy	13.5%	22.1%

CIA World Factbook, 2020

Canada joined the ranks of this illustrious group in 2015, and by 2036 there will be *substantially* more Canadians age 65 and older than there are under the age of 15.

Table 1 - 8 Population Age Structure - Canada 1966 – 2036

	Population under Age 15	Population age 15-64	Population Age 65 and over
1966	6,591,000	11,883,000	1,539,000
2019	6,014,289	24,982,362	6,592,611
2036	5,203,000*	22,765,000*	9,067,000*

	Percentage of Population under Age 15	Percentage of Population Age 65 and over
1966	32.9%	7.7%
2019	16.0%	17.5%
2036	14.0%*	24.5%*

**Based on Statistic Canada's Medium Growth (population projection) Scenario*

1 - 3.5 Growth of Elder Population - by Province

Among census agglomerations, Parkville, BC on Vancouver Island and Elliot Lake, ON had the highest proportion of seniors, at almost twice the national average of 17.5%. Exact Provincial breakdowns can be seen in the chart on the following page.

The elders make up somewhat smaller shares of the population of the territories.

During the next 10 years, there will be substantial differences in the growth rate of the elder population, province by province. The elder populations of Newfoundland and New Brunswick will grow significantly - reaching almost 30% of the populations of those provinces. The provinces with the fastest elder population growth are likely to have the greatest difficulty adapting.

Table 1 - 9 Percentage of Population Age 65 and over

Province or Territory	2019	2031		Province or Territory	2019	2031
Alberta	13.3 %	21.4%		Nova Scotia	20.8 %	28.1%
Manitoba	15.6 %	21.7%		New Brunswick	21.3 %	28.6%
Ontario	17.2 %	22.1%		Newfoundland / Labrador	21.5 %	29.5%
British Columbia	18.7 %	24.1%		Yukon	12.7%	19.7%
Saskatchewan	15.7 %	24.9%		Northwest Territories	8.3 %	15.1%
Quebec	19.3%	25.3%		Nunavut	4.0 %	5.7%
Prince Edward Island	19.7%	26.4%		*Source – Statistics Canada (Projections based on Medium Growth and Medium Inter-provincial Migration Scenario)*		

1 - 3.6 Dependency Ratios

Populations may be broken into three broad age groups: children (under age 15); working age (15-64); and the old (65 and older). The first and the last group are considered "dependent" since they are supported largely through the efforts of the middle group. The ratio of the working age population to the dependent population is called the dependency ratio. The ratio of the working age population to the age 65 and older population is called the old age dependency ratio.

During the next 5 years old age dependency ratios will rise in every major world region. As a result, the world community will face an elderly support burden that is nearly 50 percent larger in 2025 than it was in 1998. The impact of this will vary from region to region. Less developed countries continue to have relatively high birth rates (often over 30 births per thousand). Even with the rapid growth of the elderly population in these countries, the bulk of their dependent population will remain children during the coming quarter century.

Nearly 9 of every 10 people making up the combined dependent age groups in the less developed regions of Africa, Asia, and Latin America are under the age of 15 today. Moreover, children will still account for three-fourths of all dependants in these regions in 2025.

Only in Canada and other more developed countries will elderly dependants come to outnumber dependants under the age of 15 during the next 25 years.

In less developed countries the total dependency ratio will decline between now and 2025.

In more developed nations, it will rise substantially, which will, in turn, put enormous pressure on existing social programs.

Consider the situation in Canada. At the dawn of the 20th century there were 20 people working for every one retired person. By the early years of the 21st century this ratio had dropped to 4 people working for every retired person - and within 30 years there will only be two people working for every retiree. The number of people available to "pay the freight" is shrinking while the costs of Canada's generous social programs are poised to skyrocket.

Old Age Security (OAS) payments currently (2020) total over 55 billion dollars annually and are the largest expenditure of the federal government. OAS is a "pay as you go" program (there are no reserves - it is funded entirely through current tax revenues). By 2036 the number of Canadians eligible for Old Age Security payments will grow by close to 50% and the program will cost close to 75 billion dollars. During this same period Canada's working age population will shrink in size – and they will be on the hook for close to an additional 25 billion in expense!

In 2020, the annual cost of Canada's publicly funded Medicare system was over 160 billion dollars. Close to half of this amount is spent on Canadians who are age 65 and older. As this group grows during the next 25 years an additional burden of roughly 33 billion dollars will be placed on the shoulders of Canadian taxpayers - just to maintain Canada's current Medicare system.

1 - 3.7 Gender and Age

Historically, men have tended to outlive women. As recently as the 1950s, there have been more elder men in Canada, than there were elder women. A dramatic reduction in maternal death rates is largely responsible for turning the tables.

Today, the majority of Canada's elder population is female. In 2019, 52% of Canadians between ages 65 and 74 were women.

The percentage of women elders increases with age: 55.2% of elders age 75 to 84 are women, and almost two-thirds (64.8%) of elders age 85 and older are women. It should, however, be noted that differences in life expectancy between men and women have begun to narrow. There will as a result be proportionately more older men in the future.

There are also notable marital status differences between elder women and men: 72.1% of elder men are married, but only 43.8% of elder women are. And 46% of elder women are widowed compared to only 12.7% of elder men. By age 85, the number of elder women who are widowed reaches almost 80%. This difference is reflected in living arrangements: 78% of men, 65 years of age or older, are living either with their spouses or unmarried children. In the case of elder women this figure drops to 47%.

1 - 3.8 Report of the World Assembly on Aging

A report created by the World Assembly on Aging came to some startling conclusions:

Towards the end of the second decade of the twenty-first century, the number of persons aged 60 and over is increasing at an unprecedented pace — anticipated to rise from its current 1 billion to 2 billion by mid-century. Most older persons live in developing countries where the bulk of the increase will occur.

The analysis of the current social and economic status and participation of older persons points to a heterogeneity of situations and rapid and complex changes. A sizeable majority of older persons are female, especially those aged 80 and above; older men are more likely to be married compared to older women; an increasing number of older persons reside in urban areas, although many still live in rural areas; and there are considerable variations about their living conditions, socioeconomic circumstances and health status.

Older persons in developing countries tend to live in multigenerational households, albeit this tendency has started to decline given changes in family structures spurred by migration and other factors. Older people in developed countries, on the other hand, are more likely to live alone or with a spouse than with their children. The quality of housing in which older persons reside is often better in developed countries and worse in developing countries when compared to housing of the general population.

On average, older persons, particularly the oldest old, tend to be poorer than younger cohorts. In countries where social security and pensions cover most of the labour force, older persons tend to retire from the workforce at around age 60 or 65, with women typically retiring earlier than men. In less developed regions of the world, where social security and pension programs cover only a minority of workers, many older persons, especially older men, continue to work out of economic necessity. In the more developed countries, older persons who want to continue working often face age discrimination and mandatory retirement rules.

While countries faced with a rapid demographic aging process increasingly revise existing retirement provisions as part of reform towards greater sustainability of their pension systems, ageist stereotypes and high levels of unemployment continue to undermine older persons' access to the labour market.

The past decades have witnessed significant increases in life expectancy in most countries, particularly at older ages. It is unclear whether the increased longevity of older persons has translated into a healthier life. Among the health conditions that are of increasing concern for older persons are hearing and vision loss, cardiovascular diseases, dementia and obesity. In many countries, older persons do not have enough access to health services, and training in geriatric medicine is lagging the demand for this type of care.

In addition, there is a growing need for long-term care services worldwide, which have traditionally been provided informally by family caregivers but are increasingly being given by paying careers. A significant level of abuse and neglect of older persons has been reported, cutting across all economic and social strata.

As the number of older people increases, there is a growing awareness of the significance of active aging, although ageist stereotypes persist. Older persons are gradually being recognized for their considerable contributions to intergenerational Caregiving, as well as their ongoing involvement in community life. Older persons have become a significant and a growing political force, especially in developed countries, and organizations of older persons are helping to ensure that they have a greater voice in decision-making processes. Yet, the literacy and educational attainment of current older populations are far below the general population, which contributes to their exclusion from fuller participation in society and development.

International human rights treaties apply to older persons in the same way as to other persons. Although only two international treaties contain an explicit reference to "age" as a prohibited ground of discrimination, human rights mechanisms have applied several existing standards and provisions of various human rights treaties to the situation of older persons. Several human rights mechanisms have also identified older men and women as being a vulnerable group requiring special measures of protection as well as suffering from multiple discrimination; notably, the Committee on Economic, Social and Cultural Rights, the Committee on the Elimination of Discrimination against Women and the Independent Expert on the question of human rights and extreme poverty. Human rights mechanisms acknowledge the need for age-sensitive legislation, policies and programs such as in relation to the right to health, the right to adequate housing, accessibility and universal design, and access to justice. Furthermore, old age is one of the main contingencies of social security in international law.

In recent years, civil society and public opinion have increasingly addressed the issue of older persons through a human rights perspective. Non-governmental organizations and other stakeholders have advocated that a new comprehensive international instrument to protect the rights of older persons is required.

Advocates point to the current lack of a specific instrument, the fragmentation of issues across the existing human rights treaties, the inconsistency in focus adopted by different mechanisms, and the increasing demand for States to adopt comprehensive measures to address the demographic shift. They argue that a specialized committee would provide a focal point and authoritative basis for advocacy, could offer guidance for policymakers, legislators and courts about the rights of older persons and would increase the visibility of the issues of older persons in national law-making and policy design.

Others have advocated for the creation of a special procedure mandate under the Human Rights Council with a focus on the rights of older persons, as a clear sign of support from the international human rights machinery for visibility to the issue.

They point out that a special rapporteur could play a critical role in shedding light on the many human rights issues which are faced by older men and women around the world, drawing from multiple instruments to develop the scope and content, and could potentially provide guidance and support to States in the design, implementation and monitoring of legislation, policies and programs addressing the issues of older persons.

1 - 4 THE "OLD" OLD

Until recently, elders age 85 and over represented the fastest growing segment of the senior population. Now thanks to Baby Boomers entering their elder years, the fastest growing segment of the population is age 60-64. Centenarians are now the second fastest growing population segment.

The number of people in the oldest age groups is also expected to increase rapidly in the approaching decades. Statistics Canada has projected, for example, that there will be over 1.1 million Canadians age 85 and over in 2031.

In 2031 there will be roughly 211% more people age 65-84 in Canada than there were in 2007. The 85 plus segment of the population will grow by roughly 206% during the same period.

The greatest percentage increase in population between now and 2031, however, will be reserved for Canadian centenarians (Canadians 100 years of age or older). In 2019, there were 10,795 Canadian centenarians (and 82% of them were women). By 2031, there will be 17,000 centenarians and by 2061, close to 80,000. By that time, most cohorts of baby boomers will have reached 100.

In addition, life expectancy is likely to continue to rise in Canada over the next decades, increasing the chance for individuals to reach 100 years.

The growth in the size of the population at the very oldest age categories is of particular importance because the "old" old generally have a greater need than younger elders for such things as social support and health care. In 2011, for example, seniors age 85 and over made up over half (52.3%) of all seniors in health-related institutions, even though they represented only about 13% of the total senior population.

1 - 4.1 Canada's Centenarians

According to Statistics Canada, 35% of Canadian centenarians live in Ontario; 24% in Quebec; and 16% in British Columbia (2019). The greatest concentration of centenarians, however, is in Saskatchewan with 43 centenarians per 100,000 people. The lowest concentration of centenarians is in Alberta with 21 centenarians per 100,000 people.

Most centenarians do not live in their own homes. The availability of services and support often determine where they chose to live in their later years. Other factors also come into play. Places like New Westminster, BC, and Burnaby, BC attract a significantly larger percentage of centenarians than, for example, Winnipeg.

Experts believe that climate and lifestyle, influence decisions (i.e. whether people want to be dealing with such things as ice-storms, cold temperatures and regular snow-shovelling).

1 - 4.2 Profile of Canada's Centenarians:

- Centenarians have a positive attitude about life
- Centenarians employ successful stress reduction techniques (e.g., humour, meditation, and exercise)
- They usually maintain the same weight during their adult lives
- Most do not use alcohol or smoke
- They stay active - mentally and physically
- They usually have strong social connections

Many centenarians continue to pursue their love of music, poetry and self-expression. They visit with family and friends, participate at parties and picnics, attend church and regularly visit senior's centres and shopping malls. They keep their minds and their bodies active.

Experts believe that the key to living longer is to avoid, rather than to survive, disease. The best way to accomplish this is through a healthy lifestyle (e.g., quality diet, regular exercise, and the maintenance of strong social contacts).

Modern medicines and genetic predisposition also contribute to longevity.

The world of their birth, while only 100 years ago in real time, was seemingly another planet in comparison to the cultural and technological realities of today. The society of their childhood was Edwardian, largely English, mainly white, and mostly rural. It was class-conscious, church going, deferential, and moralistic.

In the following segment we look at some of the life experiences of Canada's centenarians, and the other elder cohorts who followed them.

1 - 4.3 Elder Life Experiences

Canada's elders have lived through what was arguably the most topsy-turvy, tragic, triumphant, disastrous, successful century ever.

Their lives began in the Age of Steam and continued through to the Age of the Atom. Many were born before the ominous 'isms'—fascism, communism, Nazism—that dominated 20th century politics and lived to see them bundled off to the trash cans of history. The world of their birth was far removed from the cultural and technological realities of today.

At the turn of the 20th century, Canada's population was slightly more than 5 million. Most births took place at home, likely on a farm or in a rural community.

The flag was the Union Jack, not the Maple Leaf. Canada was driven by horse power and steam power. For Canadians living outside of the large cities (Toronto, Ottawa, and Montreal) light was provided by kerosene lanterns, not by electricity.

Families were large by today's standards. Many had six, eight or more children and it was not uncommon for one or more of them to die in childhood. Tuberculosis, diphtheria, and polio were common killers.

Sanitation was of major concern. Indoor plumbing did not yet exist in smaller communities. Milk was not pasteurized or homogenized. Medicine was primitive, antibiotics were still unheard of and it was possible for an individual to die from an infected tooth.

The oldest of Canadian elders have memories of the "Great War," a four-year long conflict that killed approximately 60,000 young Canadians. Many more remember the 1929 stock market crash and the depression that followed.

The "Dirty Thirties" as they came to be known, were hard on Canadians. Prices collapsed, unemployment skyrocketed, and in the dust bowl prairies many farmers went broke. At the end of the decade World War II broke out and it eventually claimed 40,000 Canadian lives.

During the 1940s, Unemployment Insurance and the Family Allowance were introduced. And then, in 1947, the baby boom began - a demographic phenomenon that would impact Canadian life for decades thereafter.

New technologies were introduced. Television supplanted radio as the medium of choice. Penicillin, discovered during the war, produced a family of germ-killing compounds that defeated more and more diseases. A housing boom took hold, suburbs grew like weeds and Canada became increasingly urban.

With the 1960s came the contraceptive pill and the sexual revolution. There were also numerous technological advances. People who were born before planes and automobiles now had an opportunity to watch man walk on the moon via colour TV. They could fly across the ocean at supersonic speeds.

Canadian health care, as we know it today, was developed in the 1960s and 1970s. In the decades that followed came personal computers, automated banking machines, cell phones and the internet.

The oldest of Canadian elders have seen it all: the tragedy of war, depression, assassinations, political turmoil, and terrorism. As well as such bright moments as: the triumph of freedom and democracy, the collapse of Communism, and mind bending technological advances.

Many of these events helped to shape elder thinking.

1 - 4.4 Elder Cohorts

In Canada there are three distinct elder "cohorts." A cohort is defined as a group of people who were born around the same time who have shared a set of common experiences.

- **The World War/Depression Cohort** - This group consists of elders born prior to the 1930s. The Great War, the Depression and the Second World War were the defining moments in their lives. These events had a profound impact on their attitudes and thinking. Growing up in difficult circumstances, they tend to be hard workers who are risk adverse, financially conservative, religious and community oriented. They grew up in large traditional families and did not have the same access to formal educational opportunities that most of us now take for granted.

- **The Baby Boomers** - The front end of the baby boom is now well into its' elder years (i.e., 55 years of age or older). The life experiences of this group are dramatically different from those of the World War/Depression era Cohort. The boomers grew up in smaller, not necessarily traditional, family units. They tend to be far less conservative in their thinking and much more amenable to risk. Surrounded all their lives by affluence and opportunity, they also tend to be far more independent than earlier cohorts. Boomers also have the distinction of being the most highly educated generation in history.
- **The Swing, or Silent, Generation** - This elder cohort shares characteristics with both other elder groups. Born during the 1930s and the early 1940s, the Swing generation values family life, self-reliance, self-discipline and saving money - which makes it very much, like the World War/Depression era cohort. But this group also feels that life is to be enjoyed which makes it very much like the baby boomers. The Swing Generation is more health conscious, independent, active, and well-traveled than the generation that came before it.

1 - 5 HEALTH & ELDERS

With old age comes an inevitable decline in health and in many cases a loss of self-sufficiency and independence. Fortunately, this decline occurs gradually and most elders learn to adapt. As a result - even though many older Canadians suffer from one or more chronic conditions - this does not prevent them from leading largely normal lives.

Surprisingly, only about 20% of Canadians, age 65 and older, are heavy users (more than 12 encounters with the health care system annually) of formal health care services. In fact, in most cases elder usage of formal health care services does not differ dramatically from that of younger adults.

According to surveys, less than half of elders suffer from disabilities that limit daily activities and less than one third, with severe problems require formalised care.

Despite people's fear of being "institutionalized" in an old-age or nursing home, less than 10% of elders are living in these facilities. Over 90% of Canadians, age 65 and over, live active and independent lives within their communities.

And while many elders fear that they will lose their mental faculties, there is no conclusive evidence to suggest that there is a dramatic decline in intellectual function or memory due to age. Aging does commonly bring a loss of sight and hearing, and this can create the appearance of mental confusion.

Declines in mental capacity and increases in mental illness appear to affect only a small proportion of elders.

When asked to describe their current health, most Canadian elders respond positively. Seventy Seven percent of Canadians between the ages of 65 and 74 describe their health as good, very good or excellent. And among Canadians 75 years of age or older, almost seventy percent describe their health as good, very good or excellent.

Elder women tend to report more aliments than elder men. While it is possible that women suffer from more illnesses than men, it may just be that they are far more attuned to their bodies and much more likely to identify problems and seek care.

Both men and women gain at least part of their sense of good health from being able to continue to manage their affairs independently within their communities. The health care they require tends to be long-term support, rather than expensive, short-term medical intervention.

1 - 5.1 Chronic Conditions

Even though a stunning majority of Canadian elders describe their health as good, chronic illnesses are a sad reality of the aging process. Thirty two percent of non-institutionalized elders report that they suffered from chronic pain or discomfort and 46% have experienced some level of activity restriction due to a chronic health problem.

Most elders are taking some form of medication. In fact, 9 out of 10 non-institutionalized Canadian elders report the use of at least one type of medication - and most are taking three or more.

Women tended to take a wider variety of medications than their male counterparts. More than one-quarter (27%) of women age 65 or older took at least five different types, compared with only 16% of elder men. The drugs most commonly taken were non-narcotic pain relievers, blood pressure medication, heart medication, diuretics and stomach remedies.

The variety of medications taken was strongly related to illness. Elders with at least five chronic conditions reported having taken an average of five types of medication, while those with no chronic illnesses averaged only one.

Many elderly over the age of 75, with the majority being women, say that they have at least one of the nine following common conditions: arthritis, heart disease, diabetes, cataracts, cancer, hypertension, osteoporosis, stroke, or varicose veins.

1 - 5.2 Health Care and the "Old" Old

As noted, most elders describe their health in positive terms and few are heavy users of formal health care services. This is not the case, however, among the "old" old.

Heath care usage increases dramatically with age. Public health care expenditures on Canadians who are age 85 and older are roughly 3-4 times higher than the expenditures on Canadians who are 65-74 years old. Most of these elders are women, and while they do tend to live longer than elder men, it is a mixed blessing. The typical 65-year-old woman will outlive her male counterpart by close to 3 years … but, on average, only one year of this additional life expectancy will be disability free - and two years of this additional life expectancy will involve a severe disability.

Most of these elderly women will spend their final years disabled, institutionalized and heavily dependent on government assistance.

1 - 5.3 Health Care Expenditures

Elders are responsible for an inordinately large share of Canada's health care expenditures. A recent study looked at total health care expenditures in 2013 and determined that 45% of all public health care costs involved Canadians age 65 and over. At the time, this group only represented 15.3% of the population.

Between now and 2036 the number of Canadians age 65 and over will increase by roughly 50% and this will put tremendous financial pressure on our cherished public health care system. Tens of billions of dollars will be required just to maintain the status quo.

It will come as no surprise that elders are generally far more likely than younger Canadians to be hospitalised. Canadians age 65 and over were, for example, three times more likely to be hospitalized than Canadians aged 45-64. Hospitalization rates also rise substantially among the oldest of the old.

Elders aged 75 and over were 70% more likely to be hospitalised than the 65-74 age group.

Elders also stay in hospital for longer periods than their younger counterparts. The longest stays involve older women. Women aged 75 and over stay in the hospital an average of 23 days per visit (compared with 17 days for their male counterparts).

1 - 6 ECONOMIC PROFILE OF CANADIAN ELDERS

Many - perhaps most - of us underestimate the financial where-with-all of Canadian elders. Most of them are in significantly better shape than most of the Canadian population. Compared to the rest of us, Canadian elders:

- Have substantially less debt
- Have more discretionary income
- Spend more money on gifts
- Give more to charity
- Have substantially more household wealth

With apologies to infamous bank robber Willie Sutton - the elder market is "where the money is."

1- 6.1 Elder Income

Historically elder Canadians have been among the poorest segments of society - at least in terms of income. As a result, governments have established a variety of programs to assist them. The Canada Pension Plan, Old Age Security, the Spousal Allowance and the Guaranteed Income Supplement are federal government programs designed to boost elder incomes. Certain tax provisions (e.g., the $2,000 pension income credit, the $5,000 plus age related federal non-refundable tax credit, and new pension income splitting provisions) meanwhile, help to ensure that Canadian elders retain more of the income that they do generate. Even municipal governments have demonstrated their concern for elders through transit discounts and special admission charges at municipal facilities.

Businesses have also gone out of their way to help elders to stretch their dollars further. Many retailers, hotels, restaurants, insurers and travel companies offer elders special rates, blanket discounts or enhanced services at no additional cost.

The proliferation of this "special" treatment combined with a significant rise in elder incomes over the past 20 years has resulted in far fewer elders living on the margins.

The typical elder now has an income that exceeds that of the under 30 age group and, according to Statistics Canada, the incidence of low income has fallen faster for elders than for Canadians as a whole.

It should also be kept in mind that total income is not necessarily a good measure of poverty. "Disposable income" is likely a better indicator. Many seniors are mortgage free and most have no dependents. They have also already acquired - and paid for - large capital items.

Their need for income is, as a result, substantially less than that of most working age Canadians. It should come as no surprise, therefore, that elders tend to have a lot of disposable income.

In addition, there is some evidence to suggest that Canadian elders are taking steps to ensure that their incomes remain relatively low, in order to ensure that they continue to benefit from a wide variety of social programs. Transferring substantial capital to children - often on a *quid pro quo* basis - is one way to accomplish this.

Elders also tend to have a much better understanding of the income tax system. The basic lesson of Canadian tax law is simply this: have assets, not income. And this is precisely what many elders focus on. Owning a principal residence outright lowers an elder's need for income (since no mortgage payments are required). It is also one of the best places possible to invest money: not only have home values appreciated well over time, but there is no tax whatsoever on this growth.

Considering all this, it is safe to say that the actual level of poverty experienced by Canadian elders (based solely on gross income) is highly inflated. A better measurement for elders would be their "potential income" level, which would consider their likely life expectancy and the disposal value of their assets.

1 - 6.2 Economic Well-being

Income is known to be an important determinant of health, with those living in low-income – including seniors – at greater risk of poor health. Seniors living in low-income may be unable to access nutritious foods have difficulties paying their mortgage, rent or utilities, be unable to complete necessary repairs on their homes, and experience limitations in terms of access to and affordability of transportation and non-insured health services, all of which can impact negatively on health.

In 2016, 14.5% of Canadian seniors were living in low-income. This number represents a large decrease from 29% in 1978. Rates have dropped over this time period following the earlier introduction of retirement and financial income supplement programs in Canada. The decrease in the proportion of seniors living in low-income has been similar for men and women when measured using both before- and after-tax income.

However, the decrease for women has been slightly greater, contributing to the narrowing gap between the percentage of men and women living in low-income. Between 1978 and 2011 the gap in after-tax income between senior men and women decreased from 10% to less than 3%.

However, not all subpopulations of seniors are experiencing such low proportions of those living in low-income.

A significant proportion of Aboriginal seniors – especially unattached Aboriginal seniors - were living in low-income households. Immigrant seniors living in Canada for less than 20 years were also more likely to live in low income households. And finally, unattached elder women were also much more likely to be living in low-income households.

1 - 6.3 Low Income Cut Off

In order to measure levels of economic inequity in Canada, Statistics Canada has developed the Low Income Cut Off (LICO). It varies based on household and community size and it is calculated by taking the percentage of the average family's income spent on food, shelter and clothing and then adding a flat 20%.

The 2020 (before tax) LICO for a single person in a rural area was $17,844. This amount increases to $25,921 for individuals living in urban areas with a population of more than 500,000. In the case of a two person household the 2020 (before tax) LICO was $22,214 for rural areas and $32,270 for cities with more than 500,000 people.

As noted, the LICO is a measure of inequity, not a measure of poverty. This, unfortunately, has not stopped a whole variety of activists from referring to the LICO as "the poverty line." It is nothing of the sort. While someone with an income at the LICO may be "disadvantaged" in relative terms, they are a long way off from living in abject poverty - from being unable to afford the necessities of life.

A review of Canadians who are making do with an income that is less than the LICO produces some startling results.

Table 1 - 10 Canadian's Living below the LICO by Age, 2016

Age	Percent Living Below LICO
Under 18	17.0%
18-64	13.2%
65 and over	14.5%

As already noted, reasonable income combined with limited obligations (e.g., children, mortgages, work related expenses) are an attractive combination.

The income of elder men tends to be significantly higher than that of their female counterparts. In elder families men are responsible for roughly two thirds of the family's income.

This is primarily a reflection of women's lower rate of labour force participation and the wage gaps that have historically existed between men and women.

Income inequalities have, however, decreased during the past 25 years. And the growth in seniors' income in the 1980s was especially beneficial to those with the lowest incomes.

1 - 6.4 Widowhood – The Impact on Income

The death of a spouse can be one of life's most traumatic events, particularly for many older women who may have devoted most of their lives to their husbands and children. Suddenly, many of them are alone, often for the first time since marrying. And suddenly, they have myriad decisions to make about their future, including key financial decisions.

To complicate matters further, few women of the pre-Boomer generations worked extensively outside of the home. They do not have substantial Canada Pension Plan benefits; private pension plan amounts or Registered Retirement Savings to rely on. As a result, the income generated by senior females tends to trail that of their male counterparts. In 2016, for example, unattached senior men had average total incomes that were about 33% higher than those reported by unattached senior women.

The financial well-being of senior women (age 65 and over) tends to be very closely connected to their marital status. In 2005, for example, only 4.7% of senior women who had a spouse had a total income that was below Statistics Canada's Low Income Cut Off. This figure skyrocketed to 42.0% in the case of senior woman who were unattached.

Remarkably, the number one determinant of whether a senior woman lives with an income above or below the LICO is simply this: does she have a spouse, or not?

The fact that most seniors are faring well financially, should not obscure the fact that a significant sub-set of seniors (largely unattached and widowed females) are living on, or close to the edge.

It is also important to remember that widowed women, 65 years of age or older, are not - by any stretch of the imagination - an insignificant demographic group. Forty-five percent of all women, age 65 and older, are widows and they outnumber their male counterparts (widowers) by a margin of four to one.

1 - 6.5 Sources of income

The following are the major sources of elder income in Canada:

- OAS (including Guaranteed Income Supplements)
- CPP/QPP
- Retirement Pensions & RRSPs
- Non-RRSP investments
- Employment Income
- Other government transfers and sources.

The percentage of income received from these various sources varies substantially between elder men and elder women.

Table 1 - 11 Major Sources of Elder Income on a Percentage Basis

Males (age 65+)		**Female (age 65+)**	
Private Pension (including RRSP)	38.3%	Old Age Security (OAS)	31.9%
Canada Pension Plan (CPP)	19.3%	Private Pension (including RRSP)	27.3%
Old Age Security (OAS)	18.4%	Canada Pension Plan (CPP)	20.1%
Employment Income / Other	13.8%	Investments	11.7%
Investments	10.2%	Employment Income	9.0%
Other Government Transfers	2.6%	Other Government Transfers	3.1%

Source: Survey of Labour and Income Dynamics - Statistics Canada, 2018 (data from 2010).

The extent to which elder Canadians are relying on government transfers is troubling given the enormous pressure that will be exerted on programs like Old Age Security and the Canada Pension Plan in the coming years, as our population and old age dependency ratio both increases.

1 - 6.6 Elder Wealth

Elder households are the wealthiest households in Canada - by a significant margin! People, age 55 and older, have had years to accumulate assets - and it shows.

Table 1 - 12 Median Net Worth by Age

Age	Net Worth
Under 35	$35,200
35-44	$219,600
45-54	$432,100
55-64	$669,500
65+	$517,100

Statistics Canada,2018 (data from 2016).

The above chart looks at individuals. Senior families had significantly more net worth than non-senior families. In 2016, senior families had a median net worth of $762,900 compared to a median net worth of $407,100 for non-senior families.

Not only are elder households the wealthiest in Canada, but they have also gained the most ground this century. Between 1999 and 2018, the change in the median net worth of Canadian households (adjusted for inflation) varies substantially depending on age.

Some interesting facts:

- Canadians under the age of 35 experienced an increase in median net worth of just 8.6%.
- The median net worth of Canadians aged 35-44 increased by 46.2%
- Canadians 45-54 experienced an increase in median net worth of 55.0%
- In the case of Canadians age 55-64, median net worth increased by 50.6%
- And Canadians, 65 years of age and older, experienced a stunning increase in median net worth of 70.2% … the largest of any age group

The tremendous growth in the median net worth of older Canadians has been driven largely by real estate. Not only is a principal residence the single most important asset held by Canadians (accounting for one third of all personal wealth), but it has appreciated rapidly in recent years. Between 1999 and 2018, real estate appreciated in value by more than 100%. Older Canadians, of course, tend to be homeowners - and many are also mortgage free.

With the recovery of the stock market after 2008, private pension assets experienced significant gains, and were a major contributor to growth in household wealth in the past few years. Once again, senior families own substantially more of these assets than younger Canadians.

1- 6.7 Debt

In 2016, 76% of families where the family head was below the age of 35 carried debt. Meanwhile almost 60% of families headed by individuals aged 65 and older were entirely debt free. The debt-to-asset ratio was highest among families with a family head below the age of 35 and it decreased with age.

In 2016, only 42% of retired individuals aged 65 and over, whether single or in a couple, held mortgage or consumer debt.

The incidence of debt was much higher among those in the same age group who had not yet retired. Among pre-retirees aged 55 and over, two-thirds held mortgage or consumer debt.

Among retired people with debt, 25% owed less than $5,000, 32% owed between $5,000 and $24,999, while 26% owed between $25,000 and $99,999. At the high end of the debt scale, 17% owed $100,000 or more. Retirees who owned homes or who had higher household income, higher levels of education and better financial knowledge were most likely to hold debt.

Retirees with debt had a median annual household income of $42,000 and a median net worth of $295,000. Overall, their debt was equivalent to about 7% of their total assets. A debt of less than $5,000 among retirees may be tied to the use of credit as a convenience. In fact, 92% of those with this amount of debt reported having consumer debt only.

Older retirees were significantly less likely to have outstanding debt. Just under one-half (48%) of retirees aged 55 to 64 had some form of debt, compared with 20% of retirees aged 75 and over. Most retirees reported that their finances were what they had expected them to be prior to retirement. They also reported that their income was enough to cover expenses and that they were able to stay on top of the bills and keep up with their financial commitments.

Household debt decreases rapidly with age. Roughly eight out of 10 households headed by someone under the age of 55 have some form of debt (i.e., credit card, installment, and mortgage). This amount drops to 62% for households headed by someone age 55-64 and to a mere 27% in the case of households headed by individuals who are age 65 and over.

Residential mortgages represent the lion's share (75%) of the debt held by Canadians. Almost 90% of Canadian homeowners under the age of 35 have mortgage debt, but only 12% of Canadians age 65 and older do.

Table 1 – 13 Incidences of Home Ownership/Percent with Mortgages

Family Unit	Own Principal Residence	Percent with Mortgages
Under 35	43.6%	88.5%
35-54	70.1%	81.2%
55-64	76.3%	38.5%
65 and over	74.6%	12.0%

The Wealth of Canadians, Statistics Canada 2018 (data from 2016).

1- 6.8 Elder Spending

Senior-headed households reported the highest share of spending on food purchased from stores, at 12.5%. Households with a principal respondent under 30 years of age had the highest share of spending on food purchased from restaurants, at 4.6%.

One-person senior (aged 65 and over) households reported average spending of $26,047.

Spending shares on health care increased with age. Senior-headed households reported spending 6.8% of their goods and services budget on health care, compared with 2.6% for households with a principal respondent under 30.

Significant drops in interest rates over the course of the last 15 years have also benefited younger Canadians more than elders. Lower interest rates helped individuals with a significant debt load, while people with money to invest saw the returns on fixed interest rate vehicles (e.g., bonds, Guaranteed Investment Certificates) plummet.

And yet, the overall picture is far from grim. Elder Canadians continue to have significantly more discretionary income that the rest of the population. They spend more money on gifts, and they give substantially more to charitable organizations.

1 - 6.9 Elders and Bankruptcy – A Troubling Trend

While elder Canadians are generally on a solid financial footing, a significant subset of the population is finding itself in financial difficulty.

Weak stock market performance this century and incredibly low interest rates have compromised elders who are trying to live off their investments.

Canadians over the age of 65 now have the highest insolvency and bankruptcy rates in the country, according to the latest family finances report by the Vanier Institute for the Family.

The population of those over the age of 65 has surged to over five million during the past five years, growing 14.1 per cent since the last official count, Statistics Canada says.

And the number of near-seniors — people aged 60 to 64 — grew faster than any other group, a pattern that will persist as the Boomers move up the age ladder.

None of this is a surprise to those who have kept an eye on projections over the years, but the reconfiguration of the Canadian population will require fundamental change in many different areas, from government services to health care.

The Vanier Institute found that seniors were 17 times more likely to become insolvent in 2010 than they were just 20 years before.

During that same period, the insolvency rate for people over 65 ballooned by 1,747 per cent.

The insolvency rates of older Canadians that are starting to show up now may be indicative of the financial stress that some seniors and near-seniors are shouldering as they face the prospect of less-than-golden years.

Yes, there is an irresponsible contingent among those who are bankrupt, but plenty find themselves in desperate financial straits due to an uncertain economic climate and myriad personal challenges — such as a divorce, the death of a spouse, or a severe illness or disability. As noted above, many seniors put aside money during their earning years, but have seen their retirement plans undermined by unexpectedly low investment returns or eroded by outright losses in the markets over the past decade.

1 - 7 ELDER WISDOM

Most Canadian elders continue to have their wits about them. They are repositories of experience and wisdom. They have experienced the most incredible of times … and lived to tell the tale!

This, however, is not to say that Canadian elders have a high level of formal education - most currently do not.

As recently as 1990, only 37.3% of elder men (and even fewer elder women), age 65 and older, had completed high school. But things are moving in the right direction. In 2012 close to 2/3rds of elders had completed high school.

The level of educational attainment of seniors during their formal schooling years is reflected in their income levels throughout life. Canadians aged 65 and older whose highest level of education was a high school diploma or less are more than twice as likely as those with a university degree to live in a low-income household.

More telling still, the new crop of elders (the baby boomers) has much higher levels of education. Many of them have some post-secondary degrees.

This is, of course, very good news since innumerable studies have shown that higher levels of education are associated with a very broad range of positive behaviours, attitudes and socioeconomic outcomes. People with a higher education have better health, less chance of being in a lower income, and a lower likelihood of social isolation.

Higher levels of educational attainment also produce high levels of volunteering, charitable giving, voting and political involvement, and literacy.

Literacy, in the current knowledge intensive economy, is more important than ever. Quality of life is, in fact, heavily dependent on it.

Literacy skills allow people to seek out, understand and apply information. Literacy can help elders to make informed decisions on such important matters as health, housing and finance. Literacy is also the foundation upon which other skills (e.g., computer use) are built.

A study of literacy skills, in 2003, painted a bleak picture. Over 80% of Canadian elders had prose and document literacy skills below the desired threshold. Many were unable to perform the most basic of tasks (e.g., identifying the correct dosage of medicine from information found on the package), while others were only able to deal with very simple, clearly presented material. To make matters worse, an even greater percentage of Canadian elders (87.8%) had numeracy skills below the desired level.

Most elders are largely oblivious to their own limitations when it comes to literacy. Almost two thirds (63.9%) of Canadians, 65 years of age or older, who were at the lowest possible literacy level, "self-rated" their reading ability as “good to excellent” (Statistics Canada 1998). Failing to appreciate their own limitations makes them, of course, prime targets for the many fraud artists who prey on older Canadians.

With the wave of baby boomers entering their elder years the current situation should improve dramatically. One of the fundamental differences that distinguish the baby boomers from the current generation of elders is level of educational attainment.

The baby boomers are the most highly educated cohort in the history of mankind and as they enter their elder years, the proportion of seniors with a university degree will skyrocket.

1 - 7.1 Cognitive Impairment

A very small percentage (7-8%) of Canadian elders suffers from severe forms of cognitive impairment (e.g., Alzheimer's, Parkinson's, and Vascular Dementia). Most elders continue to live active, engaged and independent lives within their communities.

1 – 8 THE IMPLICATIONS FOR CANADIAN SOCIETY

As noted already, the social and economic impact of a rapidly aging society will be significant. In Canada, there are now almost 7 million people over 65 years of age making up 17.5% of the total population and that by 2041, seniors will represent an estimated 25% of the population, up from 12.6% in 2001.

The current middle-aged cohorts representing the baby boom generation born between 1947 and 1966 make up nearly 33% of the Canadian population. In 2012, the first boomers started to reach age 65 and we are now experiencing a marked acceleration in the number and proportion of elders.

And remember it is not just that Canadians are living longer and growing older – we are also experiencing a significant drop in the birth rate. As such, the real challenge does not relate solely to the number of older persons, but also to the proportions of older persons to younger ones.

Considering all this, several concerns have emerged. Among them: concern about the demands on a health care system that is already somewhat compromised; to declining economic capacity and growth, a shrinking workforce, and the sustainability of our public pension system.

Accepting that the elderly population will continue to grow and that the aging process itself plays a part in health deterioration, it is reasonable to expect increased demand for health care resources. Based on Canadian Institute for Health Information (CIHI) data, Canada’s 2013 total health care expenditure reached an estimated $210 billion, which amounts to almost $6,000 per person.

Having spent roughly 11.6% of our 2014 gross domestic product (GDP) on health care, Canada’s total health expenditure as a function of GDP is in the top quartile as compared to other developed countries.

Given the expected upward pressure on costs due to such factors as population growth, aging, the increased prevalence of chronic diseases as well as the accelerating costs of pharmaceuticals, home care, new technologies and human resources in the health sector, health care costs will continue to be a major concern.

With advances in best practices and learning from the experiences of other countries more advanced than Canada in the aging continuum which have meaningfully managed costs, Canada would be well served to investigate potential restructuring of health care delivery financing, health system reforms meeting the needs of seniors, policies that focus on quality of life and more responsive cost/benefit models. More on this subject will be covered in a later chapter.

The shift in age structure of the population in Canada also influences our workforce and corresponding labour supply patterns. Compounding the effects of the baby boomer cohort nearing retirement age and a limited replacement capacity is the finding that retirement before attainment of 65 years of age has become more pervasive.
In fact, current trends indicate that two-thirds of Canadians retire before the full Canada Pension Plan/Quebec Pension Plan benefit age of 65. The education and health care sectors are particularly at risk of losing a large share of their workforce due to relatively young retirement ages which are rendered more alluring by generous retirement incentives. Other sectors experiencing shortages of skilled workers include skilled construction trades-people, medical technologists and technicians, aircraft mechanics and police officers.

Considering the challenges, we face, Canada should also be exploring strategies which encourage increased reproduction rates, immigration, labour force participation within select groupings, mentoring behaviour, graduated redeployment strategies and extended work life. Advances in technology and market globalization are transforming industrialized countries from resource-based economies to knowledge-driven economies. Underscoring how human capital is becoming an increasingly important engine of growth, it has the potential also to enlarge the effective labour force and to slow the pace of anticipated erosion or shrinking of the wage-income tax base. In short, if – as a society – we can become more productive, this will go a long way toward solving future fiscal challenges.

We also need to realize that population aging is potentially divisive. It may pit one generation against another. The working-age population may be increasingly called upon to support, financially and otherwise, a growing proportion of the population having reduced individual output and requiring supplemental care and support. Importantly, though, the younger generations will benefit also from the significant wealth of those seniors in the form of commerce, taxation streams and inheritance.

1 - 9 SOME FINAL THOUGHTS

If you could apply one label - and one label only - to Canadian elders, it would be this:

Canadian Elders are healthy, wealthy and wise.

- Very few are heavy users of public health care
- Seniors with three or more reported chronic conditions accounted for 40% of reported health care use among seniors, even though they comprised only 24% of all seniors

1. Seniors with no reported chronic conditions were more likely (92%) to report their health status as "good, "very good" or "excellent" than those with one (86%), two (77%) or three or more (51%) reported chronic conditions.

- Less than 10% are suffering from serious cognitive impairment
- 93% are living active and independent lives within their communities
- They have significantly more wealth than other households
- They have little debt, but the bankruptcy rate in seniors is the highest
- They have the most discretionary income
- They spend more on gifts and charity than any other group
- They have experienced the largest "real gains" in both income and asset growth (over the past two decades)
- They have their wits about them - and a wealth of experience

Better still, there is every reason to expect that the lot of Canadian elders will improve in the immediate future. The baby boom generation is extremely well educated and likely, therefore, to have better health, more social contact and more financial where-with-all than any previous generation of elders. The fact that most women boomers were active participants in the labour force - even after marriage and children - will also significantly boost household income - and widowhood, in the future, may no longer be a precursor to life on the margins. The next generation of retirees will also likely be the first to fully capitalize on programs like the Canada Pension Plan and Registered Retirement savings. Further advances in health care and prescription drugs are likely as well. Both will improve the quality (health span) and the length (lifespan) of every Canadian's "golden years."

The fact that many Canadian elders are doing so well, however, should not blind us to the fact that a significant sub-set of elders are struggling - struggling financially, struggling with debilitating illness, and struggling with cognitive limitations.

There are two broad groups of elders in Canada: the healthy, wealthy and wise; and the unhealthy, unwealthy and cognitively challenged. Very old, widowed or unattached, women make up the majority of the second group.

- Overall, less than 20% of elders *are* heavy users of the health care system, however seniors who reported at least one chronic condition who also reported taking at least five prescription medications on a routine or ongoing basis were more likely to experience a side effect requiring health care (13%) than similar seniors taking only one or two prescription medications (6%).
- 7% of elders have been institutionalized
- 7-8% of elders suffer from serious cognitive limitations
- The final year or two of an elder's life usually involves severe disability
- Chronic conditions eventually foster social isolation
- Many elders live with an income substantially below the LICO
- Most elders have poor literacy and numeracy skills
- A significant portion of elders is entirely dependent on government transfers and assistance

To make matters worse, there are storm clouds building on the horizon. We are about to experience a dramatic shift in our population. In the future there will be far fewer working Canadians and many more retirees. This shift will have an impact on virtually every aspect of our society.

It will also place an enormous strain on many of our cherished social programs. The very viability of programs like Old Age Security, The Canada Pension Plan and Medicare will come into question. And yet, most of us remain comfortably asleep at the wheel.

Fortunately, every crisis also creates opportunity. As the number of elders in Canada swells, and as the existing order buckles under the strain, many entrepreneurs will prosper - simply by filling the gaps and addressing the needs of this changing and growing market.

The baby boomers - the "age wave" - are entering their elder years en masse. In the words of Ken Dychtwald, author of "Age Wave Impact" … "Clearly, this is a dynamic business opportunity unlike any we have seen."

But to catch the wave, you must understand the market. The material that follows will provide you with a keen insight into the lives of elder Canadians. You will gain a perspective on where they have been, the challenges they face, what they value, and how they think. The better you understand elder Canadians, the more effective you will be at connecting with them in a meaningful and compelling fashion.

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Chapter 2

Principles, Progression & Effects of Aging

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2 - 1 KEY OBJECTIVE OF THIS CHAPTER

This chapter is designed to help you become acquainted with the physical, social, and psychological aspects of aging. It will also provide some perspective on the challenges that are created by age-related changes in the human body.

2 - 1.1 How Will This Objective Be Helpful?

Elders expect the people they meet to both understand the age-related challenges they face and to make accommodations for them.

2 - 2 INTRODUCTION

Society has both positive and negative views of aging. For some, being elderly is associated with being tired, sick and inflexible ("old dogs can't learn new tricks"). Other people, however, see the elderly in a far more favourable light: to them, elders are worldly and wise, active and engaged.

Canadians are not just living longer - they are living longer with dramatic improvements in quality of life. As a result, aging is becoming less and less synonymous with dependency, misery and inactivity.

Still, most elders will experience a variety of physical changes that can greatly affect their ability to function. These changes create challenges that can limit their ability to manage their affairs independently and this, in turn, may have an impact on the support they require, their finances and their housing needs.

2 - 3 GERONTOLOGY – THE STUDY OF AGING

Gerontology is a discipline that studies aging systematically. It looks at the subject from two points of view:

- How aging affects the individual
- How an aging population affects society

Gerontology focuses on increasing our knowledge about old age and on enhancing the quality of elder life. It contributes to the advancement of knowledge, and the understanding of aging, through scholarly research and the practical application of research findings.

While most of us tend to lump the elderly into a single group, Gerontologists generally put older adults into three broad categories:

- The Young Old – 55 to 74
- The Old – 75 to 84
- The "Old" Old – 85 and older

2 - 4 WHY WE AGE?

Aging involves the normal changes in body functions that begin after sexual maturity and continue until death. There is a consensus that all animals, including human beings, age as a result of both biological and environmental factors.

- Biological and genetic mechanisms, that are specific for each species of animal, help determine the species' maximum life span and the rate of aging
- Environmental factors (such as nutrition and exercise) also play a part

2 - 4.1 Aging theories

Aging theories fall into two broad groups: programmed theories and error, or damage theories.

The ***programmed theories*** hold that the aging process follows a biological timetable - likely a continuation of the same timetable that regulates childhood growth and development.

Error, or damage, theories hold that aging is caused by environmental assaults on our biological systems that gradually cause our bodies to malfunction.

We will describe these theories in more detail.

2 - 4.2 Programmed Theories

While most scientists believe that all species have an internal "biological clock" that regulates aging, there is some debate with respect to how this regulation takes place. Some of the more popular theories in this regard include:

- Programmed Senescence – The sequential switching on and then off certain genes results in aging
- Endocrine Theory - Biological clocks act through hormones to control the aging process
- Immunological Theory - A programmed decline in the immune system's functions leads to an increased vulnerability to infectious disease, which results in aging and ultimately death

The most recent scientific studies of the aging process have focused on "metabolic rate" which is a measure of the amount of energy per gram of body weight consumed by mammals of different species. Each species, it turns out, has its own "specific metabolic rate." And there is a direct correlation between metabolic rate and the species' maximum life span (i.e., the theoretical maximum number of years that individual members of a species can live - in the case of humans, it is approximately 110-115 years).

2 - 4.3 The Hayflick Limit Theory

Some of the most important research in the area of cellular biology was conducted in the early 1960s by two cell biologists, Dr. Hayflick and Dr. Moorehead. They discovered that human fibroblast cells (i.e., lung, skin, heart and muscle cells) had a limited life span. The cells divided approximately 50 times over a period of years and then suddenly stopped.

This discovery ran counter to the accepted thinking of the time and it is considered one of the most important discoveries in the history of cellular biology - it demonstrated the senescence of cultured human cells.

Hayflick and Moorehead also discovered that, late in the process, some of the cells under observation altered and degenerated prior to reaching their normal growth limit. The most evident changes took place in the cell organelles, membranes, and genetic material. This degeneration appears to be yet another biological contributor to the aging process.

2 - 4.4 Error Theories

Error theories assume that our bodies simply wear out over time and that the rate at which they degenerate is heavily dependent on environmental factors. Even if an individual does everything right (healthy diet, limited alcohol consumption, restricted exposure to the sun, quality environment) simply *using* his or her body will eventually wear it out. Abusing it will simply accelerate the process.

When we are young, our bodies have a remarkable resilience … we have very strong maintenance and repair systems which tend to compensate for the damage that is done by both normal and excessive wear and tear. This explains why young people can push the envelope (heavy drinking, overeating, under sleeping) without apparent consequence. As we age, however, the body loses its' ability to repair the damage done by diet, environmental toxins, bacteria, viruses, radiation, etc.

Elders often die as the result of conditions that they likely could have resisted earlier.

Of course, there will always be a strong argument in favour of a healthy lifestyle. Even the work of Hayflick and Moorehead suggests as much. Among other things, they discovered that nutrition has a distinct impact on the rate of cell division. Overfed cells made up to 50 divisions in a year, while underfed cells took up to three times to divide.

Some of the major error theories include:

- Wear and Tear
- Rate of Living
- Cross linking
- Free Radicals
- Error Catastrophe
- Somatic Mutation

2 - 4.5 The "Wear and Tear" Theory

Dr. August Weismann, a German biologist, developed the wear and tear theory in 1882. He believed that our bodies (and cells) were damaged by overuse and abuse. According to Weismann, the liver, stomach, kidneys, skin, and other parts of the body are worn down by toxins in our diet and in the environment.

We do damage to ourselves through the excessive consumption of fat, sugar, caffeine, alcohol, and nicotine and by exposing ourselves to ultra-violet rays, toxic air, etc. He also felt that certain physical and emotional stresses were also responsible for much of the damage done.

While the theory makes some sense if you think of the body as a machine, it does not really work when you realize the capacity of the body to repair damage. Of course, not all damage can be repaired fully, and mistakes in repairs may accumulate over time. A more likely explanation is that the decrease of functioning that is seen as "tear" in the "wear and tear" theory is really the result, not the cause, of aging.

2 – 4.6 Rate of Living

One of the oldest theories of aging is called the rate of living theory. This theory states that people (and other creatures) have a finite number of breaths, heartbeats or other measures. In ancient times, people believed that just as a machine will begin to deteriorate after a certain number of uses, the human body deteriorates in direct proportion to its use.

The modern version of this theory recognizes that the number of heartbeats does not predict lifespan. Instead, researchers examine the speed at which an organism processes oxygen. There is some evidence, when comparing species, that creatures with faster oxygen metabolisms die younger. Tiny mammals with rapid heartbeats metabolize oxygen quickly and have short lifespans. Tortoises, on the other hand, metabolize oxygen very slowly and have long lifespans.

There is not a lot of hard evidence to support this theory. There is little evidence that oxygen metabolism, heartbeat or the number of breaths determine an individual's lifespan. The theory can only partially explain the differences in lifespan among species.

So, do not go into hibernation just yet. There really is no data that slowing the metabolism extends human life. In fact, a slower metabolism would put someone at risk for obesity and other nutritional-related illnesses.

2 – 4.7 Cross Linking

When you heat onions or toast bread, the sugar molecules bond to protein molecules. This bonding, which in cooking is called caramelization, is a result of the sugar molecules attaching to protein molecules. When this happens, a series of reactions occur (called glycation) that result in protein molecules bonding to each other.

From a chemical perspective this also happens in our bodies. The process is slow and complicated, but over time more and more protein molecules are cross-linked. These cross-linked molecules do not function properly.

When enough cross-linked molecules accumulate in a specific tissue (such as cartilage, lungs, arteries and tendons), there can be a change in function. Basically, things become stiffer. When tissues stiffen, they do not function as efficiently.

Many of the symptoms of aging have to do with the stiffening of tissues. Cataracts, for example, are a stiffening of your eyes' lenses.

You cannot stop the above process, but you can slow it down. Researchers believe that if the concentration of sugar in the blood is high, then more cross-linking occurs. Everyone could benefit from keeping their blood sugar from spiking. Foods with a high glycemic index, such as sugary sodas and juices, release sugar into the body quickly. These foods have been associated with cardiovascular disease, possibly because of protein cross-linking.

2 – 4.8 Free Radicals

Free radicals are a by-product of normal cell function. When cells create energy, they also produce unstable oxygen molecules. These molecules, called free radicals, have a free electron. This electron makes the molecule highly unstable. The free radical bonds to other molecules in the body - causing proteins and other essential molecules to not function as they should. Luckily, antioxidants can minimize free radical damage.

Antioxidants are substances found in plants that soak up free radicals like sponges. If your body has plenty of antioxidants available, it can minimize the damage caused by free radicals. You get your antioxidants from eating plants. There is some evidence that we can only get the full antioxidant benefits from eating real plants and other foods. Supplements appear not to be as effective.

This theory asserts that many of the changes that occur as our bodies age are caused by free radicals. Damage to DNA, protein cross-linking and other changes have been attributed to free radicals. Over time, this damage accumulates and causes us to experience aging.

There is some hard evidence to support this theory. Studies have shown that increasing the number of antioxidants in the diets of mice and other animals can slow the effects of aging. This theory does not fully explain all the changes that occur during aging. It is likely that free radicals are only one part in the aging equation.

2 – 4.9 Error Catastrophe

The error catastrophe theory of aging states that aging is the result of the accumulation of errors in cellular molecules that are essential for cellular function and reproduction that eventually reaches a catastrophic level that is incompatible with cellular survival. The central dogma of molecular biology refers to the unidirectional transfer of genetic information from deoxyribonucleic acid (DNA) to proteins. DNA carries all the cells genetic information and instructions for carrying out the functions of the cell. According to this theory, damage to mechanisms that synthesise proteins, results in faulty proteins, which accumulate to a level that causes catastrophic damage to cells, tissues and organs.

2 – 4.10 Somatic Mutation

This theory states that an important part of aging is determined by what happens to our genes after we inherit them. From the time of conception, our body's cells are continually reproducing. Each time a cell divides, there is a chance that some of the genes will be copied incorrectly, this is called a mutation.

Additionally, exposures to toxins, radiation or ultraviolet light can causes mutations in your body's genes. The body can correct or destroy most of the mutations, but not all of them. Eventually the mutated cells accumulate, copy themselves and cause problems in the body's functioning related to aging.

Genetic theories of aging are only concerned with the genes in sperm and egg cells. Those are the genes that can be passed down from generation to generation. Somatic mutations are changed in the genes that occur after you have inherited them but cannot be passed down to your children.

Like all the aging theories, the somatic mutation theory only explains a piece of the puzzle. Of course, there is evidence of gene mutations causing damage and even death, but it cannot be said that this is the most important factor in aging.

2 - 5 NORMAL AGING

All the following characterize the *normal* aging process. Some of these factors involve physical changes - while others are either social or psychological in nature:

- Gradual sensory loss (diminished hearing, sight, taste, touch, and smell)
- Decreased mobility
- More health problems and less resilience
- A narrowing social network - brought on variously by death, incapacity, or institutionalization
- A growing dependence on others
- Isolation and loneliness

2 - 5.1 Physical and Biological Aspects of Aging:

- Physical aging is a gradual lifelong process
- Most living things have life cycles based on patterned biological changes
- Disabilities, sensory loss, and chronic diseases increase with age but are not inevitable aging conditions
- The rate of physical aging among humans varies widely
- Lifestyle choices influence both the quality and length of our lives
- The foundation for healthy aging is developed during youth

2 - 5.2 Psychological Aspects of Aging:

- Psychological well-being is interconnected with physical and social health
- Learning can become a lifelong pursuit
- Significant memory loss is not a part of normal aging
- As we age our time perspective changes

2 - 5.3 Social Aspects of Aging:

- Most elders are socially engaged
- The roles and status assigned to elders varies from culture to culture
- The structure and dynamics of multigenerational families are changing
- Ageism is rooted in cultural beliefs that are learned

Ageism is defined as age-related prejudice involving systematic stereotyping and discrimination against people solely because of their age. It is based on the misconception that older people cannot work efficiently, are sickly, and are mentally less competent than younger people.

2 - 6 THE AGING PROCESS

The history of the world is replete with tales of individuals trying to stave off aging and death. King David wooed young virgins in search of youthfulness. Wealthy people go to private European medical centers for lamb cell injections. Many individuals take large doses of vitamin E, drink Kombucha tea, and use coenzyme Q10, all in the hope of finding the "fountain of youth."

Researchers know unequivocally that there is no fountain of youth - but it is true that some of the biological hallmarks of old age can, in fact, be postponed.

2 - 6.1 The Outward Signs of Aging

The most common external signs of aging involve the skin, hair, and nails.

Over time, the skin loses underlying fat layers and oil glands, causing wrinkles and reduced elasticity. The skin also develops age spots - which are produced by deposits of melanin pigment.

Bed sores and pressure ulcers are also an unfortunate reality for many elders. Pressure ulcers, a skin problem found in people with limited mobility, are due to impaired circulation.

Areas particularly susceptible to these ulcers are those over bony protrusions such as hips, shoulders, elbows, knees, ankles, and heels.

Not all the changes in the skin are purely cosmetic in nature. Shrinking sweat glands, for example, help make it more difficult for elders to perspire - which, in turn, can make them particularly susceptible to hyperthermia (having a body temperature that is greatly above normal).

The fact that skin becomes thinner with age tends to make elders far more sensitive to cool temperatures and drafts. It also makes it easier for the skin to tear and break, which significantly increases the risk of infection.

While many of these changes in our skin are inevitable, how rapidly our skin ages are based on a variety of factors. Poor nutrition, exposure to the sun, heredity, and hormones all play a part.

As with our skin, both our hair and our nails also change significantly as we age.

We all know about gray hair, which can start in the 30's…or for some people, not at all.

Hair colour is controlled by a pigment called melanin that is produced by the hair follicle. With aging, the hair follicles produce less melanin. Many older adults, in addition to becoming grayer, notice that their hair is thinning. Hair strands, which are made of protein, begin to lose some protein and become thinner. Most older adults experience some scalp hair loss as part of the aging process, from either male pattern baldness or female pattern baldness.

Some fingernail changes are a normal part of aging, including:

- Slower growth
- Less shine
- More brittleness
- Increased yellow colour

However other fingernail abnormalities such as pitting, increased ridges, or nails that change shape are a cause for concern and a health care provider should be contacted.

There are also changes to our body shape which are a perfectly normal part of the aging process. Among these changes:

- **Height loss.** After age 40, the average person loses 1 cm (about 0.4 inches) every 10 years. This height loss speeds up after age 70; in total, the aging process may cause a loss of 1 to 3 inches in height.
- **Bigger in the middle.** Aging increases fat deposits to the body's center, which increases hip width.

- **Narrower shoulders.** As muscles lose mass, shoulder width decreases.
- **Less muscle overall.** The aging process reduces the total amount of muscle in the body.

If this sounds bleak, it may help to know that preventative care and a healthy lifestyle can affect how much the aging process will affect your body.

2 - 7 PHYSIOLOGICAL CHANGES

As we age, we undergo several physiological changes, which affect not only how we look, but also how we function and respond to daily living. These physiological changes involve a general slowing down of all organ systems due to a gradual decline in cellular activity.

Humans reach peak physical efficiency around age 30 - at which point "the slowdown" begins. On average, by age 55:

- Pumping efficiency of the heart is reduced by approximately 20%
- Kidney function is reduced by roughly 25%
- Maximum breathing capacity declines about 40% (60% by age 75)
- Basal metabolism rate (the amount of energy expended while at rest and after roughly 12 hours of fasting) drops by about 10%

Every person is unique: some may experience a more rapid and dramatic decline in organ function; while for others, the changes may be less pronounced and take longer to develop. The slowdown in organ function leads to a wide variety of chronic conditions in the elder population. Approximately 85% of older adults suffer from at least one chronic condition. Fortunately, only about 20% experience significant impairment in their ability to function.

2 - 8 CHANGES IN THE CARDIOVASCULAR SYSTEM

Reduced blood flow is a major problem for the elderly. It tends to become a serious limitation in a person's eighth decade.

Reductions in blood flow result from several factors:

- Normal atrophy of the heart muscle, especially in the left ventricle which pumps oxygenated blood out to the body
- Calcification of the heart valves
- Loss of elasticity in artery walls (arteriosclerosis or "hardening of the arteries")
- Intra-artery deposits (atherosclerosis)

This reduction in blood flow has a variety of negative impacts. Because the blood vessels, which play an important role in the circulation of blood throughout the body, lose elasticity as we age, blood may tend to pool in the feet and legs. This can cause swelling (edema) to occur in the extremities.

Other negative impacts include:

- Weak oxygen exchange
- Reduced stamina and energy
- A reduction in kidney and liver function
- Less cellular nourishment
- Increased drug toxicity
- Slower healing
- Impaired response to stress

In extreme cases, decreased circulation can lead to:

- Hypertension
- Stroke

In addition, elders may be more susceptible to the development of Transient Ischemic Attacks (sometimes referred to as "mini-strokes" or T.I.A.s). These attacks occur when platelets in the blood clump together in the arteries and inhibit blood flow. Symptoms of such episodes include headache, weakness, vision disturbances, difficulty speaking, loss of balance, confusion, and vertigo. Although most symptoms clear up within 10-15 minutes, these mini-strokes cannot be taken lightly since they sometimes take place immediately prior to a full-blown stroke.

2 - 8.1 Strategies to Address Poor Circulation

- Prop the feet on a footstool or other appropriate stable object when sitting and avoid the crossing of the ankles or legs
- Change position at least every two hours to prevent pressure ulcers
- Develop an activity routine, which conserves energy and yet includes opportunities for movement
- When sitting rotate feet at the ankles
- When rising from a reclining position, sit on the edge of the bed for a few moments before standing

2 - 9 CHANGES IN THE RESPIRATORY SYSTEM

Reduction in lung capacity combined with a loss of rib cage muscle strength can seriously impact an elder's ability to:

- Breathe deeply
- Cough
- Expel carbon dioxide

As a result, many elders often find themselves short of breath, fatigued and anxious. Elders who smoke or who live in areas where there is significant air pollution are further compromised.

While exercise does not improve pulmonary function, it can increase the amount of oxygen absorbed - which will, in turn, reduce the workload on the heart.

2 - 10 CHANGES IN THE MUSCULATURE SYSTEM

At advantaged ages, muscles wither and some muscle tissue is replaced with fatty deposits. Not only does this produce a loss of muscle tone and strength, but it can also lead to:

- Reduced ability to breathe deeply
- Reduced gastrointestinal activity and constipation
- Bladder incontinence (particularly in women)

Although most people experience these changes, at least to some degree, regular physical exercise - while not a cure - is beneficial.

2 - 11 CHANGES IN THE SKELETAL SYSTEM

Beginning at around age 35, in both men and women, calcium is lost, and bones become less dense. This can result in osteoporosis and a reduction of weight bearing capacity - which can lead to possible spontaneous fracture. The weakening of elder bones make falls a particularly hazardous aspect of elder life.

Aging also produces changes in our vertebrae. Elders experience a reduction in height thanks to a thinning of the vertebrae, while calcification of the vertebrae results in both posture changes and increased rigidity (which makes bending difficult).

Our joints undergo changes, as well. Joints stiffen, and this, combined with a loss of elasticity in the ligaments between bones, results in hand and foot pain.

Arthritis, the degenerative inflammation of the joints, is *the most common* chronic condition in the elderly. The two most common forms of arthritis are:

- Osteoarthritis (a wearing away of the joint cartilage)
- Rheumatoid arthritis (a disease of the connective tissue)

2 - 12 CHANGES IN THE NERVOUS SYSTEM

After age 30, everyone loses nerve cells. This impacts the effectiveness of nerve transmissions, which negatively impacts response time, coordination and the speed at which information is processed. A breakdown in the nervous system's ability to modulate overall activity levels can also adversely affect sleeping patterns.

Our brains shrink as we age, losing 5% to 10% of their weight between the ages of 20 and 90. One tenth of all brain cells we have when we are in our 20s will be lost by the age of 65. While we may lose a lot of neurons, the density of synapses—the connections between nerve cells—may increase, offsetting much of the loss.

2 - 13 CHANGES IN THE GASTROINTESTINAL SYSTEM

As we age, we experience a reduction in the production of hydrochloric acid, digestive enzymes, and saliva. These changes can result in:

- Gastrointestinal distress
- Impaired swallowing
- Delayed emptying of the stomach

The breakdown and absorption of foods may also be impaired, sometimes resulting in deficiencies of B, C, and K vitamins or - in extreme cases - in malnutrition. If left untreated, vitamin deficiencies can produce:

- Capillary weakening
- Easy bruising
- Muscle cramping
- Reduced appetite
- Weakness
- Indigestion

Surprisingly, the digestive system is also very sensitive to emotions. Elders may experience an upset stomach or lack of appetite when lonely, depressed, or worried. Regular contact with friends and relatives, through visits and telephone calls, can help mitigate these problems.

It is common for older people to have less frequent bowel movements and to suffer from constipation. Problems of this nature can be addressed through regular exercise and with a well-balanced diet that includes inadequate fibre and fluid intake. Both measures help to encourage normal bowel function and minimize the need for laxatives. Laxatives are an expensive substitute for such foods as fruits, vegetables and bran cereals. Worse, the overuse of laxatives can interfere with the absorption of nutrients necessary for healthy body functioning.

Adequate fluid intake is essential to maintain a healthy body temperature and to ensure that the digestive system functions properly. And yet, it is common for many elders to mistakenly limit their fluid intake in order to avoid frequent urination. This in combination with the fact that elder bodies have a reduced capacity to conserve water can result in dehydration (a serious problem for elders).

Laxative abuse, diuretic therapies, infections, immobility and excessive use of alcohol and/or caffeine only compound the problem.

2 - 13.1 Encouraging Proper Gastrointestinal Function

Caregivers and elders should follow the guidelines below to ensure proper gastrointestinal functioning.

Establish a regular exercise regime that is attuned to the elder's level of physical ability. Maintain a well-balanced diet that includes natural sources of fibre such as whole grains, fruits, and vegetables. On a daily basis, drink eight cups of water and other fluids. Watch for signs of dehydration, such as mental confusion, decreased urine output, constipation, nausea, lack of appetite, dryness of lips, and elevated body temperature. Pay special attention to fluid intake during hot weather. Monitor the fluid balance in elders with special medical problems such as congestive heart failure or kidney disease.

2 - 14 CHANGES IN THE ENDOCRINE SYSTEM

The endocrine system is instrumental in regulating metabolism, growth and development, and tissue function. It accomplishes this by releasing chemicals (largely hormones) into the blood stream.

Metabolic rate starts to decrease - by approximately 1% per year - at age 25, and this "slowdown" has consequences: foods are not absorbed as well (which impacts stamina), and we become more susceptible to drug toxicity.

2 - 15 SENSORY CHANGES

The neurological system receives and processes information from the environment through hearing, vision, taste, smell, and touch. With aging, these senses are often diminished. Stimuli for the older person may be distorted or difficult to understand. As a result, the elder may find less pleasure in some experiences that were previously enjoyed and may give up enriching pastimes. Elders may also have difficulty communicating with others and thus lose contact with friends and family who are important sources of support.

Some of the problems that elders may experience, along with some suggestions on how they can be addressed, are described in the sections that follow.

2 - 16 TOUCH

The fact that skin becomes less sensitive as we age reduces a person's ability to sense heat and cold, and this exposes elders to potential - often serious - injury. Heating pads, hot water bottles, even pot handles, can do harm before the elder even realizes that damage is being done. Elders should, as a result:

- Take extra precautions in the kitchen and bathroom
- Turn down the temperature on the water heater
- Avoid activities that dry out the skin (e.g., daily showers)

Loss of touch can also seriously harm an elder's social and emotional well-being. Because older adults typically have less opportunity to give and receive touch, they also lose some of the medicinal benefits it provides. Touch helps:

- Relieve stress
- Provide comfort
- Maintain intimacy
- Establish connection and attachment

2 - 17 TASTE AND SMELL

Aging has an adverse impact on our sensitivity to taste and smell. However, the loss is usually minor, and it does not seem to occur in most people until well after age 70. Nevertheless, elders often complain that their meals are tasteless and that they no longer enjoy their favourite foods. Often these complaints have nothing to do with sensory loss. They are caused instead by such things as: loneliness at meals, an unwillingness or inability to cook, difficulty chewing due to poorly fitting dentures or dental problems, and a limited budget that restricts the purchase of quality foods.

2 - 17.1 To Help the Elder Enjoy Mealtime:

- Offer familiar, well-liked foods
- Invite or encourage the elder to share meals with friends and family
- Experiment with different seasonings and flavourings
- Prepare a variety of foods each day
- Make the table colourful and inviting with bright napkins, mats, and flowers
- Encourage exercise, which stimulates the appetite

2 - 18 VISION

As we age our eyes undergo several significant changes.

- Our eye muscles deteriorate (in strength and elasticity) which makes focusing on nearby objects difficult
- Our eyes lose flexibility which impacts the time it takes to adjust to different levels of light
- Clouding and yellowing of our lens impacts our ability to see colours (blue and green become particularly difficult to discern)
- Peripheral vision is reduced

Most of this deterioration and the vision problems associated with it can be effectively treated and managed. Some of the more common, age related, eye complaints and how to deal with them, and are covered below.

2 - 18.1 Presbyopia (prez-bee-OH-pee-uh)

Presbyopia is the slow loss in our ability to see close objects or small print. It is a normal process that occurs with aging - the first symptoms are usually noticed sometime between age 40 and 50.

Signs of Presbyopia include holding reading materials at arm's length or getting headaches or tired eyes when reading or doing other close work. Bright lighting and reading glasses are both beneficial.

2 - 18. 2 Floaters

Floaters are tiny spots or specks that seem to float across your eyes. They are particularly noticeable in well-lit rooms or outdoors on a bright day. While floaters tend to be a nuisance, on occasion they can be a warning sign of a more serious eye problem.

A sudden increase in the number of floaters along with light flashes is a warning sign of retinal detachment - a serious condition that should be treated immediately.

2 - 18.3 Tearing

Epiphora, or tearing, involves having too many tears. Dry or itchy eyes can cause tearing, as can an extreme sensitivity to light, wind, or temperature change. In some cases, the cause may be slightly more serious (i.e., an infection or a blocked tear duct).

As with floaters, tearing is largely a nuisance that can be addressed easily in most cases. Depending on the source of the problem treatments like eye drops (i.e., artificial tears), topical antihistamines, or antibiotics will be required. Sometimes something as simple as wearing sunglasses will address the problem. Only in a few extreme cases is surgery required.

2 - 18.4 Eyelid problems

Elders are particularly exposed to a variety of conditions and diseases of the eyelid - to such mechanical eyelid disorders as Entropion (an inward turning of the eyelid margins) and Ectropion (an outward turning of the eyelid margins).

Common elder eyelid complaints include pain, irritation, itching, tearing, and mucoid discharge. None of these problems are of a serious nature and most can be addressed via lubricating ointments, artificial tear drops and other simple methods.

2 - 18.5 Conjunctivitis

Conjunctivitis (also called Pink Eye) occurs when the tissue that lines the eyelids and covers the exposed areas of the sclera (i.e., the white of the eyes) becomes inflamed. It can cause itching, burning, swelling and redness. Conjunctivitis is usually caused by bacterial or viral infection, allergies, or environmental irritants.

It affects Canadians of all ages and is easily spread from one person to another. Fortunately, it tends to be painless and it generally clears without any need for medical attention. Only in extreme cases is professional intervention required.

2 - 18.6 Dry eye

Dry eye is usually caused by a problem in the quality of the tear film that lubricates the eyes. Dry eye can be quite uncomfortable and can cause itching, burning, or even partial vision loss.

One of the most common reasons for dryness is simply the normal aging process. As we grow older our bodies produce less oil - 60% less between ages 18 and 65.

This oil deficiency causes the tear film to evaporate much more rapidly which leaves dry areas on the cornea. Women tend to produce less lubricating oil than men, and they are, as a result, particularly susceptible to dry eye.

Using a home humidifier or special eye drops (artificial tears) can help address this problem. In addition, such simple solutions as: avoiding smoky environments; blinking frequently; and maintaining hydration (i.e., drinking lots of fluids) can help.

2 - 18.7 Night Vision Impairment

Several age-related factors contribute to poor night vision. As we age our pupils shrink and do not dilate as much; our retinas receive significantly less light; our cornea and lens become cloudy; our eyes adapt more slowly to changing light conditions; and we experience reduced contrast sensitivity. As a result, in the dark elders have difficulty: focusing, are easily blinded by bright lights, experience more glare and have difficulty seeing both stationary and moving objects.

Not surprisingly, many elders may feel uncomfortable about driving at night and, over the long run, they may shy away from evening social functions as a result. This may eventually lead to a degree of social isolation.

2 - 18.8 Driving At Night … Safely

- Wear sunglasses during long periods in bright light (this helps improve night vision)
- Allow your eyes to adjust to the darkness
- Stay on well-lit roads and use high beams whenever possible
- Stick to familiar routes
- Drive more slowly
- Do not smoke in the car
- Eyeglass wearers should: consider having an anti-reflective coating applied to their lenses to reduce glare; and avoid wearing tinted lens when driving at night
- Keep your eyeglasses, mirrors, windshields, headlights, and taillights clean

2 - 18.9 Peripheral Vision Impairment

Peripheral vision is the farthest point on either side of the corner of the eye at which a person can detect movement. Peripheral vision allows us to see things that are not directly in front of us. The size of our peripheral visual field decreases by approximately one to three degrees every decade. Most people in the 70s and 80s have lost a substantial *20-30 degrees* of peripheral vision field. This can create problems - particularly when driving.

It becomes a lot more difficult to change lanes and to park a car, and this difficulty can lead to accidents.

Elders can compensate - at least partially - for peripheral vision impairment through neck exercises (which allow them to turn their head in order to see what they are missing in their peripheral vision field).

2 - 19 EYE DISEASES AND DISORDERS

Vision loss, in the elderly population, is a major health care problem. By the age of 65 roughly one third of adults will have developed some form of vision reducing eye disease. The most common causes of vision loss among the elderly are age-related macular degeneration, glaucoma, cataracts and diabetic retinopathy.

2 - 19.1 Age-related Macular Degeneration (AMD)

Age-related Macular Degeneration is the leading cause of vision loss in people over the age of 65. AMD can start as early as age 40, but it usually only strikes individuals who are age 50 and older. By age 70, roughly 30% of elders have developed the disease.

AMD affects the part of the retina (the macula) that gives you sharp central vision. The macula is the small central portion of the retina containing millions of cells that are sensitive to light. The macula works with the retina to translate this light into impulses that the brain processes.

AMD is characterized by:

- Blurred vision
- Image distortion
- Difficulty reading

Advancing age is not the only risk factor for ADM. Cigarette smoking, family history and cardiovascular factors (e.g., hypertension) also play a part. Some studies have also indicated that women are at greater risk. It is important to note that while ADM does contribute to vision loss, it does not cause blindness. Low vision aids, such as handheld magnifiers, can help AMD sufferers perform activities that require visual acuity.

A variety of foods (specifically those rich in carotenoids) as well as (antioxidant and mineral) dietary supplements may also be helpful in reducing the impact of ADM.

2 - 19.2 Dry Macular Degeneration

This is an eye condition in which the macula, the sensitive area in the retina responsible for central and detailed vision, is damaged, often causing loss of central vision.

The condition usually goes unnoticed until both eyes become affected. This type of degeneration is the most common form of AMD and is usually less severe than "Wet" Macular Degeneration.

2 - 19.3 Wet Macular Degeneration

A few people experience the *wet* form of macular degeneration, which can cause more severe visual loss. With wet macular degeneration, abnormal blood vessels grow beneath the retina and result in bleeding and fluid leakage. Vision, as a result, may suddenly become distorted or blurred. In some cases, laser treatment can be effective at destroying the abnormal vessels, thus preventing or slowing further visual loss. Unfortunately, only a small minority of patients are candidates for this treatment.

2 - 19.4 Glaucoma

Glaucoma, a group of diseases involving the optic nerve, is the second leading cause of blindness. Excess fluid pressure inside the eye is a significant risk factor for developing the disease. Untreated, Glaucoma leads to permanent damage to the optic nerve, which produces a visual field loss, and which can result in blindness. Loss of vision does not occur until there has been a large amount of nerve damage and most people with glaucoma have no early symptoms or pain. The only way to protect yourself is through regular - dilated - eye exams. Treatment may require prescription eye drops, oral medications, or surgery.

People over age 60, certain nationalities and racial groups (e.g., blacks, Mexicans and Asians) and people with a family history of Glaucoma are at elevated risk to develop the disease.

2 - 19.5 Cataracts

Cataracts are a leading cause of visual loss among adults 55 years of age and older. By age 65 almost half of all adults have some level of cataract development.

Normally our eye lenses are clear, and they focus light quite effectively. A Cataract is a clouding of the natural lens that occurs when old cells die and become trapped in the lens capsule. This causes images to become blurred or fuzzy.

Cataracts often form slowly without any symptoms. Some cataracts remain small and do not significantly alter eyesight, while others become large or thick and severely impair vision. Cataract surgery can usually restore vision. In addition to being very successful it is one of the most common and safest surgeries performed in Canada today.

2 - 19.6 Diabetic Retinopathy

Diabetic retinopathy is caused by complications of diabetes and it usually strikes people who have had diabetes for a long period of time. It causes changes in the small blood vessels that feed the retina. In the early stages of diabetic retinopathy, blood vessels may leak fluid, causing either blurred vision or no symptoms at all. As the disease advances, floaters, blind spots, or cloudiness of vision may become apparent. In the most serious cases, this condition can lead to significant vision loss or even blindness. Treatment varies from no action whatsoever through to laser surgery. Elders with diabetes should undergo an eye exam with pupil dilation every year.

2 - 19.7 Retinal Disorders

Retinal disorders are among the leading causes of blindness in Canada. The retina is a thin lining on the back of the eye. It is made up of cells that receive visual images and pass them onward through the optic nerve to the brain. There are various retinal disorders that affect aging eyes, the most serious of which is retinal detachment.

Retinal detachment occurs when the inner and outer layers of the retina become separated. Untreated it can lead to significant vision loss and blindness. The middle-aged and elderly are four times more likely to experience a retinal detachment that younger individuals - and elders who have had cataract surgery are at least 100 times more likely to experience this disorder.

Fortunately, with surgery or laser treatment, doctors are often able to reattach the retina and restore all or a part of the patient's eyesight.

2 - 19.8 Low Vision

Many of the problems discussed above can lead to "Low vision" - a loss of vision that cannot be fixed with glasses, contact lenses, medicine, or surgery. People with low vision:

- Have trouble seeing well enough to perform everyday tasks like reading, cooking, or sewing
- Can no longer recognize the faces of friends or family
- Have trouble reading street signs
- Find that lights do not seem as bright as usual

A variety of aids are available to assist individuals with low vision, including magnifiers; large readout clocks and telephones; and talking appliances (e.g., watches, elevators, cross walk signals).

In addition, a variety of relatively simple steps can help elders with low vision function normally:

- Write using bold, black felt-tip markers
- Use paper with bold lines (to ensure that writing is straight)
- Put coloured tape on the edge all indoor and outdoor steps
- Create lots of contrast in room décor (e.g., use contrasting colours between doors/light switches/handrails and walls, dishes, and table coverings, etc.)
- Use blinds or shades to reduce glare
- Keep a night light on in the bedroom, hallway, and bathroom to maintain a consistent level of light
- Increase lighting in stairwells and on steps
- Use concentrated light for activities like sewing and reading
- Leave things where they are unless the person asks you to move something

2 - 19.9 Tips for Communicating with Visually Impaired Elders

- Provide printed materials with large print and with a high contrast between the background and lettering
- Always verbally introduce yourself
- When entering a room (with an elder who is visually impaired), describe the room layout and the other people who are in the room
- Tell the elder if you are leaving the room. Let him/her know if others will remain in the room or if he/she will be alone
- When you speak, let the elder know whom you are addressing
- Explain what you are doing as you are doing it
- Be concise with your statements and questions
- Utilize as many other methods of communication as possible to convey your message (i.e., Body language, gestures, etc.)
- Take your time - avoid rushed interaction
- Employ touch - it helps lets them know that you are listening

2 - 20 HEARING PROBLEMS

More than 50% of Canadians over the age of 65 will experience some degree of hearing loss. Hearing loss affects an elder's ability to converse easily with others and it can, as a result, play a role in cutting them off from close, loving relationships and social activities.

Although studies show using hearing aids can improve the quality of life for hard-of-hearing adults, two-thirds of seniors who could benefit from hearing help either do not seek it or refuse treatment.

As we age, we lose our ability to hear higher pitched tones. We also tend to have difficulty distinguishing between sounds when there is a lot of background noise. Both can make it difficult to follow conversations. As a result, elders may become frustrated or embarrassed. Asking people to repeat themselves, straining to hear, and continuously concentrating become tiresome. They may eventually start to hold back from conversation and avoid social activities due to the strain involved and out of a fear of making inappropriate comments. They may even become suspicious of relatives or friends who they believe intentionally mumble or do not speak up. It is a slippery slope than can eventually lead to further withdrawal and even depression.

Hearing loss affects elders in other ways as well. They may miss musical notes at a concert, have difficulty on the telephone, or leave a ringing doorbell unanswered.

Worse, the people they meet may mistakenly assume that elders with some hearing loss are confused, unresponsive and uncooperative.

Elder men are almost twice as likely to experience hearing loss than elder women. Fortunately, there are a variety of steps that can be taken to deal with hearing loss. Special training, hearing aids, certain medicines, and surgery can help.

2 - 20.1 Common Signs of Hearing Problems

- Words are hard to understand
- Another person's speech sounds slurred or mumbled
- Listening to women and children is particularly difficult
- Following conversations with multiple speakers is difficult
- Certain sounds are overly annoying or loud.
- A hissing or ringing in the background is noticed
- TV shows, concerts, and conversations are difficult to follow and substantially less enjoyable as a result

2 - 20.2 Diagnosis of Hearing Problems

Hearing loss can be caused by a wide variety of factors. Among them: exposure to very loud noises over a long period of time; viral or bacterial infections; heart conditions or stroke; head injuries; tumours; certain medicines, heredity, or changes in the ear that occur with aging.

An audiologist is a health care professional who can identify and measure hearing loss. Audiologists use a device called an audiometer to test your ability to hear sounds at different pitches and loudness. Audiologists do not prescribe drugs or perform surgery. Audiologists often work in conjunction with otolaryngologists. These doctors, often referred to as ENT physicians, diagnose, treat (through medicines and surgery) and manage disorders that affect the Ear, Nose and Throat - as well as the head and neck. Some of the more common hearing problems, that affect the elder population, are described below.

2 - 20.3 Presbycusis

Presbycusis is the most common hearing problem in older people. Presbycusis is a slow, ongoing loss of hearing linked to changes in the inner ear. People with this kind of hearing loss may have a difficult time hearing what others are saying or may be unable to tolerate loud sounds. Doctors do not know what causes Presbyusis, but it does tend to run in families which suggest a genetic link.

2 - 20.4 Tinnitus

Tinnitus is also common in the elder population. Tinnitus is a symptom associated with a variety of hearing diseases and disorders. People with tinnitus hear ringing, roaring, or other sounds inside their ears. It may be caused by excessive cerumen (ear wax), an ear infection, the use of too much aspirin, certain antibiotics, or a nerve disorder. It is often difficult to determine the exact cause.

2 - 20.5 Conductive hearing loss

Conductive hearing loss occurs in some older people when the sounds that are carried from the eardrums (tympanic membrane) to the inner ear are blocked. Cerumen in the ear canal, fluid in the middle ear, abnormal bone growth, or a middle ear infection are all possible causes.

2 - 20.6 Sensorineural Hearing Loss

Sensorineural hearing loss happens when there is damage to parts of the inner ear or auditory nerve. The degree of hearing loss can vary from person to person.

Possible causes include birth defects, head injury, tumours, illness, certain prescription drugs, poor blood circulation, high blood pressure, or stroke.

2 - 20.7 Hearing Aids

Elders who are experiencing trouble hearing are well advised to consider a hearing aid - a small device that one places in the ear to make sounds louder. Such a purchase should only be made on the recommendation of a professional and after significant testing.

There are various types of hearing aid available. An audiologist will consider the person's hearing level, ability to understand speech, comfort in using the controls, and concern for how it looks. The audiologist will then suggest a specific design, model, and brand of hearing aid that best suits the elder's needs. The elder should be aware that they are purchasing a product *and* a service. They will require fitting adjustments, directions for use, repairs and ongoing monitoring.

Be sure to buy a hearing aid that has only the features needed. The costliest product may not be the best model for the elder's needs, while one selling for much less may be perfectly suitable. Be aware that the controls for many hearing aids are tiny and can be difficult to adjust. Find a hearing aid dealer who has the patience and skill to help the elder during the month or so, it takes them to get used to the new device.

2 - 20.8 Tips for Communicating with Hearing Impaired Elders

- Face the person
- Get the elder's attention before speaking
- Stand where there is good lighting
- Speak clearly and at a reasonable speed
- Do not hide your mouth, eat, or chew gum
- Use facial expressions or gestures for emphasis
- Reword your statement when necessary
- Be patient, and stay positive and relaxed
- Eliminate background noise (e.g., radio and television)
- Build breaks into your conversation

2 - 21 PROBLEMS WITH SLEEP

The changes that aging brings tend to come upon us unnoticed at first, much like the passing of the seasons. Slowly, over a period, we may notice that our eyesight is less keen, our hearing less acute and our sleep far less satisfying.

Our need for sleep does not decline with age - research suggests that it remains constant throughout adulthood. Most of us continue to require the same seven to nine hours of sleep a night that we did when we were younger. However, a good night's rest may prove more elusive as we grow older. Lifestyle changes (e.g., less physical activity, afternoon naps, etc.) may make us less tired at bedtime. Poor sleep habits may have become entrenched (e.g., watching television, or reading, in bed). Stress, depression and bereavement may lead to early awakenings or interrupted sleep. There is even evidence to suggest that minor disturbances (e.g., a barking dog, a passing siren, etc.) become more troublesome as we age.

Medical conditions and the physical changes associated with aging also play a part in compromising sleep. Such common elder ailments as arthritis, heartburn and heart and lung conditions can interrupt, delay or abbreviate sleep. The medications used to control these conditions may also play a role in disturbing sleep. Antidepressants and blood pressure medications (both popular among elders) are a proven source of sleep disruption.

In addition, it has been determined that elders suffer from at least four sleep disorders in numbers far greater than the rest of the population. Among these disorders: sleep apnea, restless leg syndrome, periodic limb movement disorder, and advanced sleep phase syndrome.

2 - 21.1 Changes in Sleep Architecture

Normal sleep consists of two broad stages: REM, or Rapid Eye Movement, sleep and non-REM sleep. Non-REM sleep is further broken down into four stages - with each stage providing progressively deeper sleep. Sleep begins at stage one. By stages three and four, our bodies experience their deepest, and best, sleep (sometimes called "delta sleep"). Lucid dreaming occurs during REM sleep - which is the fifth stage in the process. REM sleep then gives way to non-REM stage 1 sleep and the cycle continues.

The percentage of time spent in REM sleep remains relatively stable as we age, but the amount of time spent in medicinal deep sleep decreases (particularly for elder men).

2 - 21.2 Medical Problems That Affect Sleep

Elders suffer from a variety of medical disorders that can, and do, disrupt sleep. Among them:

- Arthritis
- Heartburn
- Dementia
- Incontinence
- Gastroesophageal Reflux (GER)
- Cardiovascular disease

All these medical problems can interrupt, delay and/or shorten sleep. Elders who suffer from arthritis, for example, may have difficulty falling asleep - and may awaken frequently - as a result of their painful joints. In fact, studies have indicated that people with night-time pain have difficulty sleeping roughly 33% of the time and they lose approximately 20 hours of sleep on a monthly basis.

Sleeping difficulties are also common among elders with heart problems. In a recent study, almost half of the people who had congestive heart failure, also experienced disturbing sleep apneic (loss of breath) attacks.

Gastroesophageal Reflux (the chief symptoms of which are heartburn and regurgitation), is often accompanied by wheezing and chronic cough when it occurs at night. This condition produces repeated awakenings

Elders with incontinence (a common condition for many elders - particularly women) tend to be up repeatedly through the night.

2 - 21.3 Other Factors that affect Sleep

Interestingly, average total sleep time increases slightly after age 65 - but so do reports of difficulty falling asleep. One study found that after age 65, 13% of men and 36% of women reported requiring more than 30 minutes to fall asleep. What causes this difficulty? Research suggests that both physiological and life style factors are at fault.

The elderly generally secrete lower amounts of the chemicals that regulate the sleep/wake cycle. Both melatonin (a substance produced by the pineal gland, which promotes sleep) and growth hormone production decrease with age.

In addition, a decrease in exposure to natural light and changes in diet may exacerbate sleep difficulties. Some researchers theorize that daytime inactivity (lack of exercise) and decreased mental stimulation may also lead to sleep problems.

Falling asleep is, of course, not the only difficulty older people may face at night. Sleep also becomes more shallow, fragmented, and variable in duration with age. Many older people consider poor sleep not worth complaining about and as inevitable and constant as death and taxes. There are many things they can do about poor sleep.

It is also important to remember that many healthy elders have few or no sleep problems.

2 - 21.4 Ways to Promote Good Sleep

- Maintain a regular rising time
- Maintain a regular bedtime (but don't go to bed, unless you're sleepy)
- Decrease, or eliminate daytime naps
- Exercise daily, but not immediately before bed
- Do not use bed for reading or watching television
- Relax mentally before going to sleep (do not use bedtime as worry time)
- Avoid heavy meals or snacks prior to bedtime
- Limit, or eliminate, alcohol, caffeine and nicotine - especially before bedtime
- Wind down before bed and maintain a regular bedtime routine
- Control the nighttime environment (cool temperature, quiet, darkness)
- Employ background noise (e.g., a fan or another "white noise" machine)
- Wear comfortable bed clothing
- If unable to sleep within 30 minutes, get out of bed and partake of a soothing activity
- Get adequate exposure to bright light during the day

2 - 22 BARRIERS TO AGING WELL

Much of this segment has focused on the physical deterioration of the human body that is associated with the aging process. The picture painted is far from pretty. To make matters worse, physical well-being is closely interconnected with social, psychological and spiritual well-being. As noted earlier, a narrowing social network, increased dependence on others, isolation and loneliness are all a part of the "normal aging" process.

2 - 22.1 Physical Isolation (Among Elders) Is A Product Of:

- Geographic isolation
- Lack of transportation
- Poor physical health
- Mobility problems
- Inadequate housing

2 - 22.2 Social Isolation (Among Elders) Stems From:

- A lack of information about programs & services
- Inadequate home care and home support
- Weak support networks (family, social, and community)
- Limited participation in recreational, social & community activities

2 - 22.3 Spiritual Isolation (Among Elders) Flows From:

- A loss of meaning and purpose
- A loss of "belonging" and a lack of connection
- An inability to observe religious and spiritual events

2 - 22.4 Mental & Emotional Isolation (Among Elders) Stems From:

- Low self-esteem, Depression, Cognitive problems
- Difficulties accepting aging and Ageism
- Communication problems

2 - 23 AGING WELL

As noted above, as we age, it is easy - almost natural - to become increasingly isolated. It does not, however, must be this way!

It is possible for elders - even as they enter their 80s and 90s and beyond - to participate fully in all that life has to offer: to remain physically active; to have a rich social life; and to be engaged intellectually and spiritually. Given how closely physical health is linked to social and emotional health, it is clearly the place to start.

2 - 23.1 Healthy Aging

The most significant predictors of "healthy aging" are low blood pressure, low serum glucose levels, not being overweight, and not smoking cigarettes while young. Most of the disability and long-term medical care in elderly persons results from major chronic diseases that were already present in mid-life. Since many of the environmental factors affecting the aging process are controllable, it is important to develop healthy habits while young. People who survive to age 55 can expect to live well into their 80s. Whether these final years are satisfying, and fulfilling is largely dependent on the attention that is paid to such things as exercise, nutrition and social activities.

Exercise can retard some of the functional declines that accompany aging. These include the loss of muscle mass, capacity for physical effort, flexibility, endurance, bone strength, and efficiency of the heart and lungs. It can also help normalize blood pressure, blood sugar, and blood cholesterol levels, as well as ward off depression.

Healthy aging is all about:

- Physical, mental, emotional, social, and spiritual well being
- Empowerment (i.e., the ability to make decisions about one's life)
- Awareness of and access to information
- Easy access to medical, social, and other support services
- Aging in a place (whether in one's own home, a nursing home, or a retirement home), with respect and with dignity, for as long as possible
- A supportive social environment
- Continued community involvement and participation
- Financial security
- Suitable and affordable housing and transportation

The goal should not be just to live a long time (life span) … it should be to live a long time with "quality" of life (health span).

2 - 24 SOME FINAL THOUGHTS

Life expectancy has risen dramatically during the past century - largely thanks to improvements in health care, better hygiene and nutrition, and the conquest of certain infectious diseases through clean water, vaccinations and antibiotics. While more can be done in these areas, the balance is now fully in the corner of factors that are within our individual control - including, but not limited to, the development of a healthy lifestyle.

The aging body does change. Some systems slow down, while others become less *finely tuned*. Generally, slight, gradual changes are common, and most of these are not problematic.

There is no need for most people to fear getting older. Many of the once-disabling problems of aging can be coped with through improved lifestyle choices, health care and the use of assisting devices. Simple but effective changes in the home environment can be made to help elders maintain independence.

The person who has had good health habits while younger and who maintains these habits throughout life can expect to age with a sense of well-being and a continued enthusiasm for living.

The secret is a healthy lifestyle - which includes, getting plenty of appropriate physical activity, adequate sleep; enough fluid intake; the consumption of nutritious foods; and maintenance of a healthy body weight.

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Chapter 3

Understanding Chronic Conditions

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3 - 1 KEY OBJECTIVE OF THIS CHAPTER

The following material looks at the most serious chronic conditions that affect Canadian elders. Understanding these conditions will offer you a keen perspective on one of the most trying and difficult aspects of elder life.

Not that the news is all bad. This chapter will also provide you with a great deal of information on how chronic conditions can be managed - to ensure that Canadian elders can maintain "quality of life."

3 - 1.1 How Will This Objective Be Achieved?

We will start by looking at both the most common and the most serious chronic conditions that affect elders. We will then take a more detailed look at some specific conditions. In the process we will cover such things as:

- Symptoms
- Risk Factors
- Treatments and disease management
- Prevention

At the end of the chapter we will cover: the composition and function of a "geriatric team;" pain management techniques; and medication misuse. We will conclude with a segment that offers some "tips" on managing chronic conditions.

3 - 2 INTRODUCTION

We need to realize that, as we age, our health will begin to take a turn for the worse. Chronic conditions exact a heavy toll on Canadian elders.

Quality of life and the ability to stay independent are challenged.

An elder who has a serious illness later in life must make numerous adjustments - just to remain comfortably alive. Hobbies and other favourite activities can be jeopardized - and there can be a strain on the elder's finances as well. It becomes necessary to spend disposable income on prescriptions, procedures, hospitalization and quite possibly institutionalization.

Many of these dollars will be stripped away from the elder's savings and retirement income - all the money that was so earnestly saved for "the twilight years."

Most elders with chronic illnesses have the psychological determination, the mental capacity, and the motivation required to engage in proactive health promotion. It is also likely that most future elders will be healthier and in better physical condition because of improved health care and education throughout their lifetime. But positive coping skills, emotional maturity and life experience are no defence against a variety of debilitating illnesses.

Communities can help foster elder well-being by providing the elderly with information on how to interact with the medical system, how to describe what they are experiencing and what questions to ask their physicians.

As well, as Canada's elderly population grows, it is a given that staff in health care facilities, social services and community care programs will need to have better geriatric training - so that they can understand the unique needs of the elder population.

3 - 3 CHRONIC CONDITIONS

3 - 3.1 Prevalence and Comorbidity in Canada

In 2012, the World Health Organization (WHO) projected that chronic conditions would account for 68% of all deaths worldwide. It also projected that deaths from chronic conditions would increase by 10% and be responsible for almost three quarters of all deaths. The leading chronic diseases are cancer, diabetes, heart disease, cerebrovascular diseases and lower respiratory diseases. Three out of every five Canadians over the age of 20 have one of these chronic conditions.

Surveys and administrative data indicate that certain chronic conditions are affecting an increasing number of Canadian seniors.

According to the Canadian Institute for Health Information, in 2014, 69% of Canadian seniors had at least one chronic condition. High Blood Pressure and Arthritis and rheumatism were identified as two of the most common chronic conditions.

Osteoarthritis is the most common type of arthritis seen in older seniors. Osteoporosis, characterized by low bone mass and thinned and weakened bones over time, was estimated to affect 29% of women and 6% of men age 65 and older. The most common injuries associated with osteoporosis are fractures of the wrist, spine and hip.

It is estimated that osteoporosis is responsible for approximately 70% of hip fractures in those 45 years and older.

Many seniors live with one or more types of cardiovascular disease. Nearly one-quarter of seniors indicated they had some form of heart disease and about 5% stated they suffered from the effects of stroke. High blood pressure, a key risk factor for cardiovascular diseases, was reported by approximately half of senior Canadians.

The Canadian Community Health Survey also showed increases in the prevalence of diabetes (13.5% to more than 17%) and high blood pressure (42.8% to more than 47%) in seniors during the early years of the 21st. Century. On the other hand, the prevalence of patients having either arthritis or rheumatism decreased during the same time frame.

The increasing prevalence of chronic conditions will have a substantial impact on the population, the health care system and the workforce. For example, one study found that 16% of Canadians age 15 and older have been diagnosed with a form of arthritis, and associated costs of arthritis are more than $4 billion annually in health care expenses and lost work days. The economic cost of diabetes projected the prevalence of diabetes in Canada to increase dramatically in the coming years.

A recent study indicated that 76% of seniors reported having one or more chronic condition. Provincial results ranged from a low of 70% in Manitoba to a high of 85% in Newfoundland and Labrador.

Although seniors are often impacted by multiple physical health issues, such as chronic conditions and reduced mobility and functioning, many feel healthy and are willing to act to improve their health. According to the *Canadian Community Health Survey* (CCHS) – *Healthy Aging*, 44% of seniors perceived their health to be excellent or very good. In the same year, 37% of seniors reported they had taken some action to improve their health, such as increasing their level of physical activity (71%), losing weight (21%) or changing their eating habits (13%). Some chronic conditions are simply painful and debilitating. Others often lead to the need for hospitalization. And some are among the leading causes of death for elderly Canadians. In the following three sections we will look at: the most common chronic conditions that affect elder Canadians; the conditions most likely to lead to hospitalization; and the conditions that most often lead to death.

3 - 3.2 Most Common Chronic Conditions

Among women 65 to 74 years old, the most prevalent conditions tend to be arthritis or rheumatism, high blood pressure, and non-arthritic back problems.

Although arthritis or rheumatism and high blood pressure were also the most common conditions reported by women 75 and over, the next most prevalent conditions were cataracts and heart disease. The pattern was similar among the men: the most common conditions among those 65 to 74 were arthritis or rheumatism, high blood pressure, non-arthritic back problems, and heart disease. Among men 75 and older arthritis or rheumatism, heart disease, high blood pressure, and cataracts were most common. Among both the elderly women and men, the proportion that reported none or only one diagnosed chronic condition tended to decrease with age, whereas the proportion reporting two or more conditions tended to increase.

The following chart covers the top ten chronic conditions reported by Canadian men and women who were 65 years of age or older in 2016. The chart also indicates how often each condition was cited.

Table 3 - 1 Top 10 Chronic Conditions for Canadian's age 65 and over

Rank	Chronic Condition	Percent of elders affected
1	Arthritis/Rheumatism	48%
2	High Blood Pressure	45%
3	Diabetes	22%
4	Heart Disease	14%
5	Bronchitis, Emphysema, Chronic Obstructive Pulmonary Disease	13%
6	Cancer	12%
7	Chronic Pain	10%
8	Asthma	9%
9	Depression	8%
10	Stroke	5%

Source: Statistics Canada Health Fact Sheet, 2018.

3 - 3.3 Chronic Conditions That Most Often Lead to Hospitalization

The previous chart dealt with the most common chronic conditions - irrespective of how severe each condition might be. The following chart takes a different tack - it looks at the most common causes of hospitalization in Canada, for individuals who are under 65 years of age, and for individuals who are age 65 and older. As the chart indicates, chronic conditions are a major cause of elder hospitalization.

Table 3 - 2 The 10 Leading Causes of Hospitalization in Canada

	Canadians under age 65		Canadians age 65 and over	
Rank	**Condition**	**Number Hospitalized**	**Condition**	**Number Hospitalized**
1	**Diseases of the digestive system**	176,896	**Diseases of the circulatory system**	231,125
2	**Diseases of the circulatory system**	126,539	**Respiratory diseases**	110,923
3	**Respiratory diseases**	123,023	**Diseases of the digestive system**	102,129
4	Unintentional injuries	105,945	**Cancer**	96,952
5	**Cancer**	104,765	Unintentional injuries	95,121
6	**Genitourinary diseases**	92,038	**Musculoskeletal diseases**	74,268
7	**Mental disorders**	90,797	**Genitourinary diseases**	61,885
8	**Musculoskeletal diseases**	76,515	**Endocrine diseases, etc.**	27,812
9	Infectious Diseases	41,051	**Diseases of the nervous system**	27,799
10	**Endocrine diseases, etc.**	38,352	Infectious Diseases	26,729

Chronic Conditions are in **bold…** *Source: Public Health Agency of Canada, 2018 (data from 2010).*

The above information is striking for a couple of reasons. First, Canadians age 65 and older account for close to half of all hospitalizations (even though they only represent about 17.5% of the total population). Second, Canadians age 65 and older are dramatically more likely - than other Canadians - to be hospitalized as a result of diseases of the circulatory system. They also have high hospitalization rates for cancer and diseases of the respiratory system and are much less likely to be hospitalized as a result of mental disorders.

3 - 3.4 Chronic Conditions That Most Often Lead to Death

In the table below, we have listed the most common causes of death in Canada - for individuals under age 65 and for individuals 65 years of age 2and older.

Table 3 - 3 The 10 Leading Causes of Death in Canada

	Canadians under age 65		**Canadians age 65 and over**	
Rank	**Condition**	**Number of deaths**	**Condition**	**Number of deaths**
1	**Cancer**	18,302	**Cancer**	61,229
2	**Diseases of the circulatory system**	8,223	**Diseases of the circulatory system**	58,374
3	Unintentional injuries	5,850	**Respiratory diseases**	11,737
4	Suicide	3,220	Influenza/ Pneumonia	7,750
5	**Liver Disease**	1,739	Unintentional injuries	7,423
6	**Diabetes**	1,269	**Dementia/ Mental Disorder**	6,360
7	**Respiratory Diseases**	1,261	**Diabetes**	5,525
8	Influenza/ Pneumonia	746	**Kidney Disease**	3,355
9	Homicide	341	**Liver Disease**	1,775
10	**Kidney Disease**	259	Suicide	591

Chronic conditions are in **bold…** *Source: Statistics Canada, 2020 (data from 2018).*

Not only do more Canadians who are age 65 and older die - as compared to younger Canadians - they are far more likely to die from dementia/mental disorders, respiratory diseases, and influenza/pneumonia.

3 - 4 CARDIOVASCULAR (HEART) DISEASE

By every possible measure, cardiovascular disease is one of the most serious chronic conditions affecting elder Canadians. Diseases of the circulatory system are:

- The number one cause of elder hospitalization
- The number two cause of elder death

In a 2011 study the Heart and Stroke Foundation estimated that cardiovascular diseases cost the Canadian economy close to $21 billion a year.

Cardiovascular diseases are defined as diseases and injuries of the cardiovascular system: the heart, the blood vessels of the heart, and the system of blood vessels (veins and arteries) throughout the body as well as within the brain. Heart disease includes such diseases as coronary artery disease (CAD), coronary heart disease (CHD), angina, congestive heart failure, congenital heart disease, and valvular disease.

Stroke - the result of a blood flow problem in the brain - is also considered a form of cardiovascular disease. Over half of all cardiovascular deaths are due to coronary artery disease and 21% are due to stroke. Sixteen percent are due to other forms of heart disease such as problems with the electrical system of the heart, viral heart infections, and heart muscle disease. The remaining 9% of deaths are due to vascular problems such as high blood pressure and hardening of the arteries.

Heart failure occurs when the heart cannot pump enough blood to meet the needs of the body. The condition usually develops slowly over years, as the heart gradually loses its pumping ability and works less efficiently. Some people may not become aware of their condition until symptoms appear years after the heart begins its decline. The severity of the condition depends on how much pumping action the heart has lost. Almost everyone loses some pumping capacity as they age, but the loss is much more significant for people who have developed heart disease.

While mild heart failure may not significantly influence a person's daily life, severe heart failure can interfere with even simple activities. Fortunately, treatment combined with a healthy lifestyle can often help people with heart disease to lead full lives. There are a variety of things that people can do in order to both avoid and manage the risk of cardiovascular disease.

Among the modifiable risk factors:

- Smoking
- High blood pressure
- High cholesterol, obesity, diabetes
- Physical inactivity
- Poor nutrition
- Blood glucose
- Alcohol

3 - 4.1 Coronary Artery Disease

The beating heart needs oxygen and other nutrients to provide energy for its work. Like other muscles, the heart receives oxygen and nutrients from arteries. In the case of the heart, these arteries are called coronary arteries - the first vessels to come off the aorta.

Typically, there is one artery on the right side of the heart and one on the left, with the left one generally being the larger.

The Left Main coronary artery divides into two sizable branches, the Left Anterior Descending (supplying the front of the heart) and the Left Circumflex (wrapping around the left side and back of the heart). The Right Coronary Artery also supplies the back of the heart.

Coronary artery disease generally refers to the buildup of cholesterol in the inside layers of the arteries. This build-up slowly narrows the artery and reduces the flow of blood through the vessel. As a result, the heart muscle does not get enough blood. To make matters worse, plaque tends to form as well, and it weakens the artery walls. Blockage in these arteries can cause heart attacks, heart failure, angina, and sudden death.

Blockages in the coronary arteries begin to occur at an early age. *Fatty streaks* can be found in most teenagers - but a little bit of blockage is generally harmless. If 50% of the artery is blocked, however, there can be less blood flow than needed at periods of increased need, such as exercise. If the vessel is narrowed by 90%, there is the potential for lack of blood supply at rest. And when the vessel becomes 100% closed, a heart attack (myocardial infarction) generally results.

Coronary artery disease occurs, to some degree, as a natural result of aging. There is also a genetic component to the disease - it tends to run in some families. Having said this, there are a variety of risk factors that are within an individual's control.

Risk factors that are within an individual's control:

- Smoking
- Diabetes & High cholesterol
- High blood pressure
- Being Overweight
- Leading a sedentary lifestyle

3 - 4.2 Identifying Coronary Artery Disease

An electrocardiogram (sometimes called an EKG or ECG) done while at rest and during physical activity (while walking on a treadmill) can help physicians to determine if there is any abnormal heart activity.

Doctors may also have x-rays of the heart taken before and after exercise. These pictures can show if an area of the heart is not getting enough blood during exercise. If this is so, it may mean that the arteries supplying blood to the heart are blocked.

Another important test is cardiac catheterization. In this test, a very long and very thin tube is inserted through an artery in the arm or leg and then guided into the heart. Dye is injected into the arteries around the heart and X-rays are then taken. The x-rays will reveal whether any of the arteries that supply the heart are blocked.

3 - 4.3 Angina

Angina is chest pain that is caused coronary artery disease. The blockage in the coronary arteries creates a squeezing pain or a feeling of pressure on the chest.

Angina can be bothersome even when someone afflicted is doing the most basic of activities (e.g., walking, climbing stairs, exercising, or housecleaning). The pain and pressure associated with angina can produce sweat and make it difficult for a sufferer to catch their breath. In addition to chest pain, angina may produce pain in the arms or neck.

Mild angina will produce pain that subsides quickly after a minute or so of rest. Angina that goes away easily (and which does not worsen over time) is called stable angina.

When the pattern of angina changes significantly, it is called unstable angina. This is a sign of danger. Angina in someone who has not had it before, an increase in the episodes of angina with less exertion, and angina that comes on while resting are also danger signs. Unstable angina may be the first sign of a heart attack. Angina sufferers who have severe pain often take a medicine called nitroglycerin.

3 - 4.4 Heart Attack

If untreated coronary artery disease can lead to heart attack. The classic symptoms of a heart attack are pain in the chest, neck, jaws, back, shoulders, or arms. The pain may be severe but is most often moderate in intensity. The pain may be described as *crushing*, *heavy* or *pressure-like*. People often say, "It's like an elephant on my chest."

During a heart attack most people have a distinct sense that something is terribly wrong. Along with the pain, there is often intense sweating - and this is a key sign that a heart attack is occurring. Shortness of breath, nausea, and vomiting also commonly occur.

It is important to note that the common assumption that the pain must involve the left arm is false - and this falsehood has caused a great deal of confusion among the general public.

In fact, the right arm is very frequently involved instead of, or along with, the left arm - and in many cases there may be no pain in the arms at all.

A person experiencing a heart attack should not attempt to drive and 911 should be called immediately.

3 - 4.5 Hypertension – High Blood Pressure

Hypertension is abnormally high blood pressure (i.e., pressure of the blood in the main arteries). This is indicated by sustained blood pressure readings above 140 mm Hg. (Systolic) / 90 mm Hg. (Diastolic) measured while at rest.

The causes of high blood pressure are a bit of a mystery. About 10% of patients requiring hypertension treatment can trace their high blood pressure to a physical cause such as kidney disease, diabetes or another underlying disorder. In some people the system that regulates blood pressure goes awry: arterioles throughout the body stay constricted, driving up the pressure in the larger blood vessels.

But 90% of patients have "essential" hypertension - which means that the source of their high blood pressure is largely unknown. Diet and stress are suspected as prime contributors to hypertension. As well high cholesterol (which clogs arteries with plaque), being overweight, and drinking too much alcohol may also contribute to increasing blood pressure. But a lot of guesswork is involved. Medical experts are not exactly certain of all the mechanisms and causes involved in elevated blood pressure.

Hypertension is problematic because it forces the heart to work harder, and, as a result, the heart often becomes enlarged and less efficient. Hypertension is known as the "silent killer" because it does not produce any severe symptoms - or at least none that most people are aware of, until considerable damage has already been done.
Nonetheless there are a few telltale signs that a person has hypertension.

Among them:

- High blood pressure on repeated examinations
- Dizziness and ringing in the ears or fainting spells
- Headaches
- Eye disorders

3 - 4.6 Dealing with Hypertension

The best way to address hypertension is to restore balance to your system. Hypertension can often be brought under control by improvement in diet (reduce salt, red meat, fat, and alcohol) and lifestyle (increase aerobic exercise). Smoking and obesity are also thought to significantly increase the risk of hypertension.

Reducing high blood pressure can help reduce the risk of stroke, heart attack, and kidney failure.

3 - 4.7 High Blood Pressure in Canada

The incidence of hypertension increases significantly with age. Elder women are at particularly high risk.

Table 3 - 4 Occurrences of Hypertension in Canada

	Both Sexes	Women	Men
Ages	**Number of persons with high blood pressure**		
55–64	1,440,729	734,831	705,898
65 and over	2,871,408	1,679,292	1,192,116

Source: Public Health Agency of Canada, 2020 (data from 2006/2007).

3 - 4.8 Treatment of Heart Disease

A variety of medicines have been developed to help treat heart disease. Medicines called beta-blockers, calcium channel blockers and nitrates are all designed to help treat angina. Aspirin has also proven beneficial. Taking low doses of aspirin, every day reduces the chance of a second heart attack in people who have already had one. Sometimes these medicines produce some side effects. Aspirin may cause upset stomach. Nitrates may cause a flush (redness in the face), and headaches. Beta-blockers cause tiredness and sexual problems in some patients. Calcium channel blockers may cause constipation and leg swelling. Fortunately, only a small number of the people who take these medicines are affected.

Some surgical procedures have also been developed to treat heart disease. Angioplasty, for example, is a surgical treatment that uses a tiny balloon to push open blocked arteries around the heart. The balloon is inserted in an artery in the arm or leg.

Sometimes a stint (a small metal rod) is put into the artery at the site of the blockage in order to hold the artery open. Another surgical treatment for angina is bypass surgery. Pieces of veins or arteries are taken from the legs and sewn into the arteries of the heart to bring blood past a blockage and increase the blood flow to the heart.

Bypass surgery is usually done when angioplasty is not possible or when a doctor feels it is a better choice for the patient. Angioplasty and bypass surgery are not without risk. Both can result in heart attack, stroke, or even death. These are rare, and most patients do well. After angioplasty, most patients can return to their previous activity levels, or even an even better activity level, within a few days. It takes longer (a few weeks or months) to recover from bypass surgery. The proper treatment for heart disease varies from patient to patient. Less serious heart disease may require medicine with or without angioplasty. More serious heart disease may demand that treatment include bypass surgery. Regardless of which type of therapy is used, it is very important to try and control some of the factors, which may lead to the development of heart disease in the first place.

Patients are advised to:

- Refrain from smoking
- Monitor and control blood pressure
- Eat a prudent low fat, low salt diet
- Exercise regularly - even modest exercise is helpful
- Have cholesterol levels monitored by a physician
- If present, work to control diabetes
- Attain ideal body weight. Shed those extra pounds
- Follow up with a doctor as recommended

Heart disease does not go away. But medicines, surgeries and lifestyle changes can help patients live longer and feel better.

3 - 5 STROKE

Stroke is a sudden loss of brain function. It is caused by the interruption of the flow of blood to the brain or the rupture of blood vessels in the brain - both of which can cause neurons - brain cells - in the affected area to die. How severely the stroke impacts the individual is dependent upon where the brain was injured, and how much damage was done.

There are two basic types of stroke: ischemic and hemorrhagic.

About 80% of strokes are ischemic. An ischemic stroke is the result of the interruption of the flow of blood to the brain by a blood clot. The buildup of plaque (atherosclerosis or *hardening of the arteries*) is involved in most ischemic strokes. Doctors often refer to an ischemic stroke as being either "thrombotic" or "embolic."

A thrombotic stroke is caused by a blood clot (thrombus) that forms in an artery leading to the brain.

An embolic stroke occurs when a brain artery is blocked by a clot which forms elsewhere in the body (an embolus) - but which is eventually carried through the blood stream to the brain. A clot that forms in the heart, for example, might travel through the blood vessels to the brain.

A Transient Ischemic Attack (TIA) is a temporary "mini-stroke." A TIA is caused by a temporary interruption of blood flow to the brain. The symptoms are like an ischemic stroke except they go away in a few minutes or hours (no more than 24 hours). A TIA is an important warning sign of a full-fledged ischemic stroke in the future.

Approximately 20% of strokes are hemorrhagic. A hemorrhagic stroke is caused by uncontrolled bleeding in the brain. As well as interrupting the normal flow of blood within the brain, the uncontrolled bleeding "floods" and kills brain cells. Having high blood pressure increases the risk of hemorrhagic stroke.

In a small number of cases, stroke-like damage to the brain can be caused by the stopping of the heart (cardiac arrest) or through brain trauma or injury. Both can cause the brain to go without oxygen and nutrients. The longer the interruption of blood flow, the greater the risk of permanent brain damage.

3 - 5.1 Uncontrollable Risk Factors

Many of the risk factors for strokes and heart attacks are the same. The more risk factors that an individual has, the greater his or her risk of having a stroke. Some risk factors are uncontrollable - while others are within an individual's control.

The following five major risk factors are beyond one's control.

1. Age

The older you are, the greater your risk of stroke. Over two thirds of all strokes occur among people over the age of 65. A woman’s risk of having a stroke increases significantly after menopause.

2. Gender

Men have a higher risk than women of having a stroke. However, because women tend to live longer than men—and the risk of dying from stroke increases with age—more women than men die from stroke each year.

3. Race

Canadians of First Nation, Inuit, Hispanic, South Asian, and Black descent have higher rates of high blood pressure and diabetes— conditions that often lead to strokes.

4. Family History

An individual's risk of having a stroke is higher if he or she has a parent or sibling who had a stroke before the age of 65.

5. Prior Stroke or TIA

Up to a third of people who survive a first stroke or Transient Ischemic Attack - have another stroke within 5 years.

3 - 5.2 Controllable Risk Factors

Fortunately, there are also some risk factors for stroke that a person **can** do something about.

Among them:

1. High blood pressure (hypertension)

High blood pressure is the single most important modifiable risk factor for stroke. Evidence shows that 65% of all strokes are associated with high blood pressure.

2. Diabetes

Compared to people without diabetes, diabetics are two to four times more likely to have a stroke.

3. Smoking

Men who smoke have a 40% greater chance of having a stroke than those who do not smoke. Women who smoke have a 60% greater chance of having a stroke compared to non-smoking women. Women who smoke and who also take the birth control pills are at an even higher risk.

4. Heart disease

Coronary artery and heart disease, valve disorders, heart rhythm disorders, and other heart diseases can increase your risk of stroke.

About 6% of the population age 65 and older has atrial fibrillation (a heart rhythm disorder).

Having atrial fibrillation increases the risk that blood clots will form and then lead to a stroke.

5. High blood cholesterol

Elevated blood cholesterol contributes to the development of atherosclerotic plaque along the walls of the blood vessels (i.e., "hardening of the arteries"). The presence of this plaque increases the risk of stroke.

6. Inactivity

People who are physically inactive are at twice the risk for heart disease and stroke.

7. Excessive alcohol consumption

Heavy drinking, especially binge drinking is associated with stroke.

3 - 5.3 Warning Signs of a Stroke

For many years, the five standard warning signs of an impending stroke have been identified as: weakness; trouble speaking; vision problems; headache; and dizziness. In late 2014, the Heart and Stroke Foundation introduced a new approach under the acronym FAST:

- **Face** – is it dropping?
- **Arms** – can you raise both?
- **Speech** – is it slurred or jumbled?
- **Time** – to call 9-1-1 right away.

3 - 5.4 Stroke And Gender

The lifetime risk of having an acute stroke is higher in men, but since women live longer than men, they have more opportunity to experience a stroke. Almost 60% of the 50,000 strokes in Canada each year affect women. Women also suffer stroke at a later age on average (i.e., 70 years of age versus 65 for men). Having a stroke later in life when other diseases are present also significantly increases a person's risk of dying from a stroke. Not surprisingly, a greater percentage of women than men die from stroke.

3 - 5.5 Stroke Treatment

Stroke treatment focuses in three broad areas: prevention, therapy immediately after a stroke, and post-stroke rehabilitation.

Therapy and rehabilitation programs are tailored to the specific needs of the patient and take in to consideration any underlying risk factors present (e.g., hypertension, atrial fibrillation, diabetes, and the chances of blood clots developing).

Rehabilitation should begin as soon as possible after a stroke. Frequent turning, proper positioning, and gentle exercise of paralyzed muscles can help prevent stiffness and soreness. This will help prepare the muscles for more complicated tasks. At first, a nurse or a therapist will provide this care. Later, caregivers will be taught how to help.

Caregivers and family play an important role in rehabilitation. A good way to learn rehabilitation exercises is to practice them while the survivor is still in the hospital where a nurse or therapist can provide support. Caregivers may also find it useful to spend time with the survivor before discharge, becoming more familiar with new routines or special equipment such as braces or wheelchairs.

Once survivors have left the hospital, one or more members of the health care team may continue to monitor their progress. Some health professionals may make home visits; others may arrange for office visits.

This can provide valuable support to the caregivers and survivors. Rehabilitation services may also be available in the community through hospitals, nursing homes, and support groups.

No one can say exactly how long a rehabilitation program should last. Each program is tailored to meet the individual's needs. A program can also change as the survivor's condition improves.

The number of services that survivors will need depends on the degree of disability. Not every person who has a stroke will need rehabilitation therapy. A program usually involves the services of several professionals who are part of the stroke team.

While it is true that the risk factors for stroke, and the effects of stroke, are the same for both men and women - there are some general differences in the recovery and rehabilitation phase.

There is some evidence that women may recover better from language loss after a stroke than men. This is because women tend to use larger portions of both sides of their brain for language than men do.

However, the length of stay in hospital is usually longer for women than for men. The longer hospital stay tends to be due to social and medical factors, as well as concurrent (other) medical problems. As a rule, it is not due to differences in the severity of the strokes or neurological status.

Men usually go home or to rehabilitation. Women tend to be transferred to chronic care facilities, which may often be due to the absence of a spouse or partner to act as a caregiver. In one study, only 39% of the female stroke survivors had a spouse who was able to act as a caregiver, compared to 82% of the men.

3 - 5.6 Aspirin Therapy

People who have had an ischemic stroke or a Transient Ischemic Attack (TIA) are often prescribed aspirin (ASA) to reduce their risk of another stroke. ASA reduces the tendency of small cells in the blood (called platelets) to clump together and form blood clots.

An Aspirin a day is, however, not for everyone! Some people cannot take ASA regularly. They may need to take other "blood thinning" or anti-coagulant drugs. The decision to take ASA on a long-term basis in order to prevent a first stroke must be made with a doctor.

If an elder has any of the following conditions, taking ASA regularly could be dangerous:

- Liver or kidney disease
- Peptic ulcer
- Other gastrointestinal diseases
- Bleeding problems (gastrointestinal, or otherwise)
- Allergy to ASA
- Excessive alcohol consumption
- A history of bleeding (hemorrhagic) stroke

3 - 6 CANCER

Cancer is the 6th most common chronic condition experienced by elder Canadians. However, it tends to punch above its' weight when it comes to elder hospitalization and death. Cancer is the fourth leading cause of elder hospitalization and the leading cause of elder death.

It should also be noted that while historically cancer has often been an acute, rather than chronic, condition - this is no longer the case. People can live for decades with cancer. This is particularly true for elders. Cancer tends to progress much more slowly in people who are at an advanced age.

Cancer is a disease that starts in our cells. Our bodies are made up of millions of cells, grouped together to form tissues and organs such as the lungs, the liver, muscles, and bones. Genes inside each cell order the cell to grow, work, reproduce, and then die. Normally these orders are clear, and our cells obey, and we remain healthy. Sometimes a cell's instructions get *mixed up* and it grows abnormally. Eventually, groups of abnormal cells form lumps or tumours.

Tumours can be either benign (non-cancerous) or malignant (cancerous). Benign tumour cells stay in one place in the body and are not usually life-threatening.

Malignant tumour cells, however, can invade the tissues around them and spread to other parts of the body. Cancerous cells that spread to other parts of the body are called metastases. The first sign that a malignant tumour has spread is often swelling of nearby lymph nodes, but cancer can metastasize to almost any part of the body. Malignant tumours are dangerous. It is important to find them and treat them quickly before they spread.

Cancers are named after the part of the body where they start. For example, cancer that starts in the colon but spreads to the liver is called *colon cancer* with *liver metastases*.

There are many different types of cancers - all of which are characterized by uncontrolled growth and spread of abnormal cells in the body.

- Cancer is one of the most feared diseases in Canada - with good reason. The statistics are startling.
- An estimated 225,800 new cases of cancer and 83,300 cancer deaths occurred in Canada in 2020 (Canadian Cancer Society). On average, 4,320 Canadians are diagnosed with cancer every week, and 1,596 Canadians die of cancer every week.
- On an annual basis 110,000 Canadian women are diagnosed with cancer every year an estimated 39,300 women die (2020).
- On an annual basis over 110,000 Canadian men are diagnosed with cancer every year and an estimated 44,100 men die of cancer (2020).

Based on current incidence rates, 38% of women will develop cancer during their lifetimes. Among men, 44% will develop cancer during their lifetimes.

Cancer is the leading cause of premature death - or early death - in Canada: 990,000 potential years of life are lost each year as a result of cancer. This represents 32% of the potential years of life lost resulting from all causes of death.

Cancer is primarily a disease of older Canadians. On average, 44% of new cancer cases and 60% of all deaths from cancer occur over the age of 70.

Among men, 75% of new cancer cases and 82% of deaths due to cancer occur among those who are 60 years of age and older. Among women, 63% of new cases and 78% of cancer deaths occur among those who are 60 years of age and older.

3 - 6.1 Modifiable Risk Factors

Several highly controllable factors contribute significantly to the risk of developing cancer. ***Among them:***

1. Smoking

Tobacco use is the cause of an estimated 30% of fatal cancers in Canada and the overwhelming cause of lung cancer.

2. Poor diet

At least 20% of cancer deaths are linked to a poor diet—including consumption of alcohol. Fruit and vegetable consumption is protective for a variety of cancers, whereas a diet high in red meat, processed meat, and saturated fats has been linked to an increased risk of cancer.

3. Sunlight

Skin cancer is the most common cancer. One of the main causes of skin cancer is exposure to the sun's ultraviolet (UV) rays. Additional risk factors for cancer include exposure to workplace or environmental carcinogens.

3 - 6.2 Probability of Getting Cancer

Approximately 1 of every 2 Canadians are expected to develop cancer of some type during their lifetimes. One in 3.7 men and 1 in 4.5 women will die of cancer.

During their lifetimes, women are exposed to the following cancer risk:

- One in 9.5 women are expected to develop breast cancer - the most common cancer (excluding non-melanoma skin cancer) to afflict women, and 1 in 26 women are expected to die from it.
- One in 18 women will develop colorectal cancer, but only 1 in 39 will die from it.
- One in 19 will develop lung cancer, and 1 in 22 will die from this disease, making it the most likely cause of cancer death in Canadian women.

Over their lifetimes, men are exposed to the following cancer risk:

- One in 9 men will develop prostate cancer, but only 1 in 27.5 will die from it.
- One in 11 men will develop lung cancer, and 1 in 12 will die from this condition. Lung cancer is thus by far the leading cause of cancer deaths in Canadian men.

As frightening as these statistics are, Canadians should be aware that the risk of developing cancer at any given age is somewhat lower than these numbers suggest. The probability of developing cancer within the next 10 years provides a much more useful indication of a person's "short-term" risk of cancer.

For example, while a woman's lifetime risk of developing breast cancer is 1 in 9.5 (or 10.6%), and even though the risk increases with age - the actual chance of a 60-year-old woman developing breast cancer before age 70 is only 3% (1 in 33). This figure (i.e., 3%) may be more meaningful than the lifetime probability statistic for a 60-year-old woman contemplating her risk of breast cancer.

The biggest cancer risk of all is reserved for men who are 70 years of age. A man has very little probability of developing prostate cancer by age 50. However, a 70-year-old man has a 6.3% (1 in 16) chance of developing prostate cancer by age 80. This percentage represents the highest risk for either men or women of developing a specific cancer in any decade of life.

3 - 6.3 Common Forms of Cancer

The following looks at some of the common forms of cancer. It is important to note that elders are - with very few exceptions - dramatically more likely, than younger Canadians, to develop *all* types of cancer.

Skin – Non-Melanoma

Skin cancers arise in outermost layer of skin, which is usually the part that is exposed to the sun. This type of cancer is usually curable with an early diagnosis. In Canada, there are approximately 74,000 new cases of non-melanoma skin cancers per year.

Melanoma

Approximately 1 in 100 Canadians will develop melanoma. This cancer usually starts in pigment producing cells (melanocytes) in the skin, although it can develop in the eye and in other areas of the body as well. Melanoma is the most aggressive or dangerous of all skin cancers - in part because it can be spread by the blood stream.

The overall cure rate for all treated melanomas is approximately 80%, ranging from 95%–100% for very superficial tumours, to 40% for tumours that penetrate through the skin into the fatty tissue underneath. It is extremely important that this type of cancer be detected in its earliest stages, if any chance for survival exists.

Of concern to elders, is the fact that some drugs heighten the impact - and dangers - of ultraviolet radiation.

Among the drugs to be concerned about:

- Some antibiotics such as sulfas and tetracycline
- Some high blood pressure medications
- Some tranquilizers such as Librium
- Diuretics (water pills)
- Some oral diabetic medications

Mouth

Mouth or oral cavity includes the lips, the lining of the cheeks (the buccal mucosa), the gums (gingival), the hard palate and the floor of the mouth. Malignant tumours may arise anywhere on the mucosal lining of the mouth or in the numerous small salivary glands that help to lubricate the oral cavity.

Larynx

The larynx, or voice box, is a complex anatomic structure located below the oropharynx and above the trachea. Most of it lies just behind the Adam's apple.

The hypopharynx lies on each side of the larynx and behind it.

Nearly all cancers arise from the lining of the larynx and are squamous cell carcinomas, though they differ widely in their behaviour depending on their site of origin.

Cancers of the glottis or true vocal cords tend to be low-grade tumours, which grow slowly and spread late. Cancers of the supraglottic larynx region tend to be higher-grade tumours which are often more aggressive with more rapid growth and a tendency to spread early to the lymph nodes. Cancers of the subglottic region are rare, but they also have a tendency for early spread.

Early cancer of all sites within the larynx is highly curable. Each year about 1,500 new cases are identified.

Brain & Central Nervous System

The brain and spinal cord together constitute the central nervous system (C.N.S.). They provide the structural and functional framework for thought, memory, and emotion, allowing us to reason, analyze etc. This is also, where sensory and motor functions are processed.

The brain is a complex organ composed of different tissues including the electro-chemical connections (neurons) and supporting tissues, most of which can develop tumours. Tumours started here, rarely spread to other parts of the body. Some are slow-growing and push the normal surrounding brain tissue aside. Because of the small area, neither benign nor malignant tumours have much room to expand. The skull is a solid container filled by the normal brain, and any growth may cause compression and pressure inside the head.

- Over 2,500 Canadians develop new brain tumours annually
- 80% of brain tumours occur in adults between the ages of 50 and 60
- 1,064 Canadian women died from brain cancer in 2019
- 1,356 Canadian men died from brain cancer in Canada 2019

Ovary

The ovaries are paired glands, located on either side of the pelvic cavity. They are almond-shaped, measuring about 4 cm in length. They produce the female sex hormones, as well as egg cells (ova).

Ovarian cancers can be of several types:

- The most common is epithelial cancer, which arises from the surface cells, affecting middle-aged and older women
- Germ cell tumours are rare, affecting the young
- Stromal tumours, also rare, occur at any age

Although epithelial cancer is the most common form of ovarian cancer - it is not all that common. About 1 in 70 Canadian women will develop this disease during their lifetimes. This compares to the 1 in 9 women who will eventually develop breast cancer.

Nonetheless, it is still the fourth greatest cause of years of life lost to cancer in women (after lung, breast, and bowel cancers).

Lung

Lung cancer is now the leading cause of cancer death for both men and women in Canada. Lung cancer is accountable for 27% of all cancer mortality. Almost one-third of the cancer deaths in men, and almost one-quarter of the cancer deaths in women, is due to lung cancer. Most patients have extensive disease at the time of diagnosis. Lung cancer occurs most often in the 55–65-year age group but in recent decades incidence has increased two-fold in the 40–44-year-old group and ten-fold in the 60–64-year group.

- Each year an estimated 29,245 Canadians are diagnosed with lung cancer and 20,945 die of it (2019 figures)
- On average, 560 Canadians will be diagnosed with lung cancer every week. On average, 400 Canadians will die of lung cancer every week
- One in 12 Canadians will develop lung cancer during his/her lifetime. One in 13 will die of it
- Lung cancer is the most preventable of all human cancers

Prostate

This gland is found only in men. It is located under the bladder and surrounds the urethra (tube that carries urine from the bladder to the exterior). The prostrate is susceptible to a variety of conditions, including benign enlargement after age of 40.

Cancer of the prostate is uncommon in younger men, but overall it is the most common form of cancer among Canadian men.

- Each year an estimated 22,860 men are diagnosed with prostate cancer and 4,070 will die of it (2019 figures)
- On average, 440 Canadian men will be diagnosed with prostate cancer every week, and 78 men will die of prostate cancer every week
- One in 8 men will develop prostate cancer during his lifetime, mostly after age 70. One in 26 will die of it

Breast

Normal breasts vary in size in different individuals and at different periods of life. The chance of developing breast cancer is not related to breast size. One in nine women, who live to be at least 80, will develop breast cancer in her lifetime.

Every year approximately 17,000 Canadian women age 50+ develop breast cancer.

The frequency of breast cancer increases with age, beginning in the early 20s. Breast cancer is the second most common cause of death in women. It was the leading cause until recently when lung cancer overtook it (the increase in lung cancer being directly related to smoking). The earlier the lesion is detected the better the chance for correct treatment and cure.

- Each year an estimated 27,150 women are diagnosed with breast cancer and 5,095 die of it (2019 figures)
- Annually, an estimated 160 men are diagnosed with breast cancer and 45 die from it
- On average, 522 Canadian women are diagnosed with breast cancer every week
- On average, 98 Canadian women will die of breast cancer every week

Breast cancer is the most frequently diagnosed cancer in Canadian women. Since 1993, incidence rates for breast cancer have stabilized and death rates have declined steadily since 1990.

Colorectal – Large Intestine (Colon and Rectum)

This is the lower part of the gastrointestinal tract. It is about two and a half inches in diameter and five or six feet in length. Continuous with the ileum of the small intestine, it ascends upwards toward the liver as the ascending colon, crosses the abdomen as the transverse colon, descends into the left flank as the descending colon, and terminates with the sigmoid flexure leading to the rectum. Its function is to absorb water and eliminate waste.

Large bowel cancer is the second leading cause of cancer deaths in Canada. The incidence of occurrence increases after age 50. At present, half of these patients can expect to be cured.

- Each year an estimated 26,155 Canadians (14,125 men; 12,030 women) are diagnosed with colorectal cancer and 9,545 will die of it (2019 figures)

- On average, 500 Canadians will be diagnosed with colorectal cancer every week
- On average, 183 Canadians will die of colorectal cancer every week
- He/she has a 1 in 16 chance of developing colorectal cancer. 1 in 28 will die of it

Leukemia

Leukemia is cancer of the blood cells. To understand leukemia, it is helpful to know about normal blood cells and what happens to them when leukemia develops.

Normal blood cells are made up of fluid called plasma and three types of cells. Each type has special functions. White blood cells (a.k.a. WBCs or leukocytes) help the body fight infections and other diseases.

Red blood cells (a.k.a. RBCs or erythrocytes) carry oxygen from the lungs to the body's tissues and take carbon dioxide from the tissues back to the lungs.

The red blood cells give blood its colour.

Platelets (a.k.a. thrombocytes) help form blood clots that control bleeding. Blood cells are formed in the bone marrow—the soft, spongy center of bones. New (immature) blood cells are called blasts. Some blasts stay in the marrow to mature; some travel to other parts of the body to mature. Normally, blood cells are produced in an orderly, controlled way, as the body needs them. This process helps keep us healthy.

When leukemia develops, the body produces large numbers of abnormal blood cells. In most types of leukemia, the abnormal cells are white blood cells. The leukemia cells usually look different from normal blood cells, and they do not function properly.

There are several types of leukemia. They are grouped in two ways. One way is by how quickly the disease develops and gets worse. The other way is by the type of blood cell that is affected. Leukemia is either acute or chronic. In acute leukemia, the abnormal blood cells are blasts that remain very immature and cannot carry out their normal functions. The number of blasts increases rapidly, and the disease rapidly worsens. In chronic leukemia, some blast cells are present, but in general, these cells are more mature and can carry out some of their normal functions. In addition, the number of blasts increases less rapidly than in acute leukemia. As a result, chronic leukemia gets worse gradually.

Leukemia can arise in either of the two main types of white blood cells—lymphoid cells or myeloid cells. When leukemia affects lymphoid cells, it is called lymphocytic leukemia. When myeloid cells are affected, the disease is called myeloid or myelogenous leukemia.

The most common forms of leukemia are:

- Acute lymphocytic leukemia (ALL) is the most common type of leukemia in young children. This disease also affects adults; especially those age 65 and older

- Acute myeloid leukemia (AML) occurs in both adults and children. This type of leukemia is sometimes called acute nonlymphocytic leukemia (ANLL).
- Chronic lymphocytic leukemia (CLL) most often affects adults over the age of 55. It sometimes occurs in younger adults, but it almost never affects children
- Chronic myeloid leukemia (CML) occurs mainly in adults. A small number of children also develop this disease

Because leukemia cells often are unable to help the body fight off infections - people with leukemia often get infections and have fevers.

In addition, people with leukemia often have less than the normal amount of healthy red blood cells and platelets. As a result, there are not enough red blood cells to carry oxygen through the body.

With this condition, called anemia, patients may look pale, and feel weak and tired. When there are not enough platelets, patients bleed and bruise easily.

Like all blood cells, leukemia cells travel through the body. Depending on the number of abnormal cells, and where these cells collect, patients with leukemia may exhibit several symptoms.

In acute leukemia, symptoms appear and get worse quickly. People with this disease go to their doctor because they feel sick. In chronic leukemia, symptoms may not appear for a long time. When the symptoms do appear, they are generally mild at first and get worse gradually. Doctors often find chronic leukemia during a routine check-up—before there are any symptoms.

These are some of the common symptoms of leukemia:

- Fever, chills, and other flu-like symptoms
- Weakness and fatigue
- Frequent infections
- Loss of appetite and/or weight
- Swollen or tender lymph nodes, liver, or spleen
- Easy bleeding or bruising
- Tiny red spots (called petechiae) under the skin
- Swollen or bleeding gums
- Sweating, especially at night
- Bone or joint pain

In acute leukemia, the abnormal cells may collect in the brain or spinal cord (a.k.a. the central nervous system or CNS). The result may be headaches, vomiting, confusion, loss of muscle control, and seizures.

Leukemia cells also can collect in the testicles and cause swelling. In addition, some patients develop sores in the eyes or on the skin. Leukemia also can affect the digestive tract, kidneys, lungs, or other parts of the body.

In chronic leukemia, the abnormal blood cells may gradually collect in various parts of the body. Chronic leukemia may affect the skin, central nervous system, digestive tract, kidneys, and testicles.

Lymphomas

The lymphatic system is a network of small vessels called *lymphatics,* which resemble blood vessels. Lymphatics return fluid from the tissues of the body to the bloodstream. This is part of the body's defence against infection. Most of the cells that circulate in the lymphatic system are white blood cells called lymphocytes. When a lymphoma develops, the malignant cell is a lymphocyte.

Lymphatic tissue is found as well in many organs of the body, particularly the spleen, liver, bone, skin, marrow, and intestine.

This is the seventh most common cause of cancer death, and the fifth most common cancer diagnosed in men or women.

With lymphomas abnormal cells appear as congregations, which enlarge the lymph nodes, and form solid tumours in the body. In some rare cases, as in leukemia, these abnormal cells circulate in the blood. Lymphomas may be fast growing or very slow growing depending on the type.

Hodgkin's disease and Non-Hodgkin's Lymphomas

Hodgkin's disease is usually sub-classified into one of four subtypes. However, the treatment approach is the same for each.

Non-Hodgkin's lymphomas are divided into two main groups; low-grade lymphomas, which tend to grow slowly and aggressive histology lymphomas, which tend to grow rapidly.

Pathologists may disagree about the exact type of lymphoma being observed and an expert in the area of lymphoma pathology must be consulted to determine a final diagnosis.

If there is any doubt as to the diagnosis, patients should ask that their tissue samples be reviewed by several experienced pathologists. Sometimes a second biopsy is necessary for proper diagnosis.

3 - 6.4 Cancer Treatments

Surgery, cancer drugs, and radiation therapy are all proven to cure cancer, extend life, or improve quality of life. In the medical community, these are called conventional cancer treatments. The type of treatment or the sequence of treatments for individual patients will vary depending on the location of the tumour, the stage of the disease at diagnosis, and what the treatment guidelines indicate.

For example, surgery is not always the first treatment—sometimes radiation therapy or cancer drugs are used to shrink the tumour prior to surgery.

Patients and families may hear the term "investigational treatment." This means that the treatment is being studied in a clinical trial to determine whether it is a safe and effective way to treat cancer. "Support programs" and "alternative" are other terms patients may encounter.

It is important to understand there are critical differences between conventional treatments, support (coping with cancer) programs, and alternative therapies. Conventional therapies have been proven to cure cancers.

Support (complementary or coping) programs are used to help patients who are using conventional treatments.

Alternative therapies have not undergone any scientific testing.

Surgery

Surgery is often the first step in cancer treatment, because it is used to both diagnose and to treat cancer. Surgery alone sometimes cures cancer. Sometimes it is used in conjunction with other treatments such as chemotherapy (cancer drugs), or radiation therapy.

More than half of the people diagnosed with cancer will have some type of surgery or operation at some stage of their experience with the disease. Surgical oncologists are specialized in using surgery to treat cancer. Surgery is typically used to remove tumours confined to a small space and is also used to reduce the size of large tumours so that follow-up treatment by radiation therapy or chemotherapy will be even more effective.

Sometimes when a solid tumour is removed by surgery, the surgeon will remove the neighbouring lymph glands at the same time, even if cancer does not appear to be present in those glands. The surgeon does this as a precaution, as it is important to know whether the cancer has spread to regional nodes for staging purposes.

A stage-two cancer (spread to regional nodes) may be treated more aggressively compared with a stage-one cancer (confined to the original tumour location).

In addition to curing cancer, surgery is also used as a preventive measure by removing precancerous conditions. Surgery may also be recommended as a palliative measure to help reduce pain and other symptoms. If curative surgical procedures cause any disfigurement or deformity, reconstructive surgery may help minimize these effects.

Radiation Therapy

Radiation therapy (a.k.a. radiotherapy) uses radiation (high-energy rays) to kill or shrink tumour cells. It is used to treat some, but not all cancers.

Radiation therapy destroys cells either directly or by interfering with cell reproduction. Normal cells can recover from radiation damage better than cancer cells.

Used alone, radiation therapy can be curative in many cases. It is also used in combination with other treatments/therapies such as surgery. It might be used to both reduce the size of tumours before surgery and to destroy any remaining cancer cells after surgery. Radiation therapy is also used with many other conventional cancer treatments, such as chemotherapy and hormone therapy.

When a cure is not possible, radiation therapy can also help alleviate symptoms such as pain and improve quality of life for patients.

Radiation therapy is the principal treatment for various skin cancers, cancers of the mouth, nasal cavity, pharynx and larynx, brain tumours, and many gynecological cancers, as well as lung, and prostate cancer.

Radiation therapy is also used in combination with other treatments and therapies for breast, bowel, testicular, childhood, and bladder cancers, as well as Hodgkin's disease, leukemia, lymphomas, and many other cancers.

3 - 7 ENDOCRINE DISEASES

Endocrine diseases include both diabetes and thyroid conditions. Diabetes is the third most common chronic condition experienced by elders. Endocrine diseases are the eighth leading cause of elder hospitalization and Diabetes alone is the seventh leading cause of elder death.

A person's endocrine system includes eight major glands that are responsible for hormone production. Hormones are chemical messengers that regulate a variety of bodily functions including growth and development; metabolism (digestion, elimination, breathing, and blood circulation), sexual function, reproduction and mood.

Problems develop if hormone levels are too high or too low, or if the body does not react to the hormones the way it is supposed to. In addition, stress, infection and changes in the blood's fluid and electrolyte balance cab also create problems. In Canada, the most common endocrine disease is diabetes.

3 - 7.1 Diabetes

In 2020 approximately four million Canadians had diabetes.

Ten percent of Canadian women and men over age 65 have diabetes. Diabetes is directly responsible for over 6,800 deaths per year (2018) and it is a contributing factor in another 28,000 deaths.

Health experts blame the rapid growth in the incidence of diabetes on the parallel rise in obesity and unhealthy lifestyles. Canadians are eating too much fatty food and getting insufficient exercise. The fact that the North American population is aging rapidly is also a contributing factor.

Diabetes mellitus, to use its full clinical name, is a chronic disorder in which the body fails to keep blood sugar, or glucose, at normal levels due either to a lack of the hormone *insulin*, or the body's inability to use it correctly. The buildup of glucose in the blood produces diabetes.

Insulin helps ensure that the sugar in foods is delivered to the cells of the body. If this delivery fails, blood sugar levels rise too high and the cells themselves die. Over the long haul, consistently high blood sugar can harm many organs, leading to growth failure in children and adolescents. In the adult population it can lead to hypertension, blood-vessel disorders (especially in the feet), cardiovascular disease, and kidney failure. There are ***two principal types*** of diabetes.

Type 1 Diabetes (also called Insulin Dependent Diabetes)

This type of diabetes occurs when the pancreas no longer produces (or produces very little) insulin. People with Type 1 Diabetes need insulin shots to survive. Most cases of Type 1 Diabetes develop in people who are under 30 years of age. Approximately 10% of people with diabetes have Type 1 Diabetes.

Type 2 Diabetes (also called Non-Insulin Dependent Diabetes)

Most people have Type 2 Diabetes. This type of diabetes occurs when the pancreas does not produce enough insulin or when the body does not effectively use the insulin that is produced. Often Type 2 Diabetes can be managed by eating a healthy diet, staying active through exercise, and maintaining a proper weight. Medications are also available that help the body to make use of the insulin it has.

Type 2 Diabetes is a progressive condition. Over time, it may be harder to keep blood glucose levels in a target range. Approximately 90% of people with diabetes have Type 2 diabetes.

The risk factors for developing Type 2 diabetes include all the following:

- Being age 45 or over
- Being overweight (especially if you carry most of your weight around your mid-section)
- Being a member of a high-risk group (Aboriginal peoples, and people of Hispanic, Asian, or African descent)
- Having a parent or sibling with diabetes
- Having given birth to a baby that weighed over 4 kg (9 lbs.) at birth, or having had gestational diabetes (diabetes during pregnancy)
- Having high cholesterol
- Having higher-than-normal blood glucose levels
- Having high blood pressure or heart disease

"Borderline diabetes"

There is no such thing as borderline diabetes - and use of this term is often a way to minimize the importance of taking constructive action - on diet, on exercise, on high blood pressure, on high cholesterol.

Diabetes *is* diabetes—no matter how high - or low - a person's blood glucose level. Diabetes is not just about high blood glucose - it is closely related to a variety of other dangerous conditions.

3 - 7.2 Symptoms of Diabetes

- Constant thirst and frequent urination
- Weight loss even when eating enough food
- Excessive tiredness and drowsiness
- Cuts and bruises that do not heal
- Poor eyesight that keeps changing
- Burning, tingling, and numbness in feet, legs, or fingers
- Aching feet and legs
- Extra dry and itchy skin
- Vaginal infections that do not go away
- Problems with gums and teeth

3 - 7.3 Diabetes Treatment

Today, more than ever before, people with diabetes can expect to live active, independent, and vital lives—if they make a lifelong commitment to careful management of the disease. *Diabetes is managed in the following ways:*

- **Education**

  Diabetes education is an important first step. All people with diabetes need to learn about their condition in order to make healthy lifestyle choices and manage the disease.

- **Meal Planning**

  What, when, and how much you eat all play an important role in regulating how well your body manages blood sugar levels.

- **Exercise**

  Regular exercise helps your body lower blood sugar levels. It also promotes weight loss, reduces stress, and enhances overall fitness.

- **Healthy Weight**

  Maintaining a healthy weight is especially important in attempting to control of Type 2 Diabetes.

- **Lifestyle Management**

  Learning to reduce stress levels in day-to-day life can help people with diabetes better manage their disease.

- **Medication**

  Type 1 Diabetes requires daily injections of insulin. Type 2 diabetes is controlled through exercise and meal planning and may require medications and/or insulin to assist the body in making or using insulin more effectively.

- When insulin was first discovered and made available to people with diabetes, there was only one type—short-acting insulin. This required several injections each day. As time went on, new forms of insulin were developed which lasted longer, requiring fewer injections. Modern insulin offers more flexibility still in the number and timing of injections, making it easier to maintain target blood glucose levels.

- Insulin works differently for different people. How effective it is, is dependent on a variety of factors (e.g., the injection site, the amount of insulin, etc.).

3 - 7.4 The Cost of Diabetes

A person with diabetes has numerous medical and personal costs related to the care and management of the disease. Improving and maintaining glucose levels is critical to prevent or delay long-term complications. Medical costs associated with controlling glucose levels - things like insulin, oral medications, lancets, glucose meters, and glucose meter strips, as well as dietary changes - can be substantial.

A person with diabetes incurs medical costs that are two to three times higher than that of a person without diabetes - the cost of medications alone can range from $1,000 to $15,000 a year. Other costs for medical treatment can include transportation to health facilities, lodging, and childcare.

Indirect costs include decreases in productivity due to absence from work, decreased earning potential because of possible complications and disabilities, lost earnings due to premature death or retirement, and increased insurance costs.

There are also significant "public" costs associated with diabetes. Diabetes and its complications cost the Canadian healthcare system an estimated $16 billion in 2012. In 2020, it is estimated that Diabetes will cost our health care system $20 billion. And there are additional costs. It has been estimated that another $9 billion - of public funds - is spent annually on disability, work loss, and premature death costs that are related to diabetes. An American study concluded that 14% of the entire U.S. health care budget (or one out of every seven dollars spent) is spent on diabetes.

With the anticipated increase in the number of people developing diabetes, Canada is expected to have an increasingly heavy economic burden related to the treatment of diabetes and its complications.

3 - 7.5 Long-Term Complications of Diabetes

Heart Disease

Cardiovascular problems are two to six times more likely to occur in people with diabetes than in people without the disease. Twenty one percent of people with diabetes - but only 4% without diabetes - will develop heart disease or have a stroke.

High blood glucose is associated with narrowing of arteries, high blood pressure, increased blood levels of fats, and decreased levels of good cholesterol—all risk factors for cardiovascular disease.

Eye Disease

Retinopathy (damage to the retina of the eye) is a major cause of adult blindness in North America. High blood glucose, especially coupled with high blood pressure, damages the small blood vessels in the retina of the eye.

Fifty percent of all blindness occurs among people with diabetes - and a person with diabetes is four times more likely to become blind than a person without diabetes. People with diabetes are also at increased risk of developing cataracts and glaucoma.

Nerve Disease

Neuropathy (damage to the vessels supplying blood to the nervous system) affects sensation, especially in the hands and feet. Approximately 60% of people with diabetes are affected by this condition.

They may experience numbness or tingling sensation, pain, increased sensitivity, weakness, muscle wasting, gastrointestinal problems, and impotence.

People with diabetes have an increased risk for foot ulcers and amputation of toes, feet, and legs.

Lower limb amputations generally result from a foot infection that has not healed and has developed gangrene. The initial wound often results from a lack of protective sensory function in the foot, while an inability of the wound to heal properly is associated with the decrease in blood and nutrient flow to the lower limbs. Approximately 50% of all amputations occur in people with diabetes.

Kidney Disease

Nephropathy (kidney disease) is a major cause of illness and early death for people with diabetes. This disease results from chronic high blood glucose levels that damage small vessels in the kidney, which filters waste from the blood. Diabetes often results in a need for dialysis and kidney transplants.

Studies indicate that 26-28% of kidney dialysis is performed on people with diabetes. A person with diabetes is 20 times more likely to develop kidney failure than a person without diabetes.

Dental Disease

Dental disease occurs with greater frequency and severity among people with diabetes.

Sexual Problems

Impotence occurs in 50–60% of men with diabetes (some of which is the result of medications prescribed to control diabetes).

Illness and infection

Illnesses and infections are also common among people with diabetes. They are susceptible to infections of the mouth and gums, urinary tract, lower extremities, and in any incisions following surgery.

People with diabetes are more likely to die of pneumonia or influenza than people who do not have the disease.

3 - 7.6 Thyroid Conditions

The thyroid is a butterfly-shaped gland in the neck, just above the collarbone, that helps to manage the body's metabolism. Hundreds of thousands of Canadians - mostly women - have thyroid disease

There are ***two basic types*** of thyroid disease:

1. Hypothyroidism

Hypothyroidism is the most common type of thyroid disease. With hypothyroidism the thyroid gland is not active enough and this can cause the sufferer to gain weight, feel fatigued and have difficulty dealing with cold temperatures.

2. Hyperthyroidism

With hyperthyroidism the thyroid is too active - and it is producing more hormones that the body needs. This can lead to weight loss, a rapid heart rate and extreme sensitivity to heat.

Thyroid problems are usually treated with medicines that either supplement - or control - hormone production. On occasion hyperthyroidism is treated surgically (with the removal of the thyroid gland).

3 - 8 DISEASES OF THE DIGESTIVE SYSTEM

Diseases of the digestive system cover the digestive system from one end to the other - from the esophagus, to the stomach, to the intestine, to the colon.

The digestive system is one of the main life systems of the body that contributes to either overall wellbeing or overall inability to function. When the digestive system fails, the rest of the body suffers dramatically.

Nearly everyone has had a digestive problem at one time or another. Some conditions such as indigestion or mild diarrhea create some discomfort and either become better on their own or are treated quite easily. Other conditions (e.g., inflammatory bowel disease) can last a very long time and be quite troublesome.

Digestive diseases range from temporary to permanent and mild to life threatening. Though it is rare, diarrhea can not only dehydrate, but there is a deadly form of the disease that forces the patient to excrete all fluids.

Some digestive diseases, like Crohn's diseases and Lupus, are autoimmune in nature.

These diseases are caused by the body's inability to recognize what is good and bad for itself. Other digestive diseases (e.g., Irritable Bowel Syndrome) have no known cause.

Digestive diseases often bring on complications. Many lead to anemia and malnutrition since the nutrients in food are not properly absorbed. Treating some digestive problems requires the use of steroids - which can lead to weight gain, a compromised immune system and other problems. The effective treatment of nearly all digestive diseases requires dietary changes. Medications are also used with regularity. Among them: corticosteroids, anti-inflammatory medications, immune system suppressants and antibiotics. Surgical procedures are a last resort.

Digestive disorders can be quite embarrassing, and they make public outings quite difficult. Often counseling is required.

A few of the most common digestive diseases impacting elders are described below.

Urinary Incontinence

Urinary Incontinence is simply loss of bladder control. Symptoms can range from mild leaking to uncontrollable wetting. It can happen to anyone, but it becomes quite common among the elderly.

Most bladder control problems happen when the muscles are too weak or too active. If the muscles are too weak, a person can have an accident when he or she sneezes. People with overactive bladder (the muscles are too active) may feel that they must go the bathroom continually - even though there is very little urine in the bladder.

Treatment of urinary incontinence depends on the condition a patient has. It may include simple exercises, medicines, or special devices. In extreme cases surgery may be recommended.

Stomach or Intestinal Ulcers

Also known as peptic ulcers, stomach ulcers were once thought to be caused by stress and spicy food. New research has identified a specific bacterium (helicobacter pylon) as the cause of almost all stomach ulcers. Stress and diet are aggravating factors, but not causes.

The second leading cause of stomach ulcers is the chronic use of NSAID pain relievers.

Pain is the most common symptom for people with stomach ulcers. The pain can last for hours, is at its' worst when the stomach is empty, and it often flares up at night. Eating specific foods often brings temporary relief.

Some additional, more serious symptoms include vomiting of blood, dark and bloody stool, chest pain and unexplained weight loss.

In most cases, stomach ulcers can be easily identified and cured.

Colitis

Colitis is a chronic digestive disease that is characterized by inflammation of the colon. It is classified as an Inflammatory Bowel Disease (not to be confused with "Irritable Bowel Syndrome").

General signs and symptoms of colitis include pain, tenderness in the abdomen, depression, rapid weight loss, aches and pains within the joints, fatigue, fever, swelling of the colon tissue, and changes in bowel habits.

Diarrhea may also be present, but some forms of colitis can make the patient constipated.

Other symptoms may include gas, bloating, indigestion, heartburn, cramps, and reflux.

Treatment of colitis usually involves the administration of antibiotics and general non-steroidal anti-inflammatory medications. Surgery is only employed in extreme cases.

Crohn's Disease

Crohn's disease is an inflammatory disease of the digestive tract. It is like ulcerative colitis - but unlike ulcerative colitis, Crohn's disease can inflame tissue anywhere on the digestive tract.

This inflammation can cause severe pain and in extreme cases even death. Symptoms of the disease include diarrhea, bloody stool, abdominal pain, abdominal cramps, loss of appetite, loss of weight, fever, fatigue, and ulcers.

Risk factors for Crohn's disease include race and ethnicity (Jews and people of European decent are up 5 times more likely to develop the disease), family history and environment (people living in industrialized cites are particularly susceptible).

3 - 9 RESPIRATORY DISEASES

Many Canadian elders suffer from respiratory diseases. Asthma is the 8th most common chronic illness among elders - and bronchitis, emphysema and chronic obstructive pulmonary disease - collectively - are the 5th most common.

Respiratory diseases are also the second leading cause of elder hospitalization and the third leading cause of elder death. Respiratory disease is an umbrella term that covers all the diseases of the respiratory system. These include diseases of the lung, bronchial tubes, trachea and pharynx.

Respiratory disease ranges from the mild and self-limiting (e.g., the common cold) to life threatening (e.g., bacterial pneumonia and pulmonary embolism).

Respiratory diseases are commonly characterized by shortness of breath, cough, pleuritic

chest pain (i.e., chest pain that worsens with breathing), noisy breathing, fatigue, somnolence, anorexia and altered voice.

A variety of factors are responsible for respiratory disease - among them:

- Infection
- Smoking or inhalation of smoke and other irritants
- Autoimmune, genetic, and congenital disorders
- Trauma or burns (to head, neck, or airway)
- Cancer
- Obesity
- Adverse reactions to medications

Respiratory diseases are often classified as either obstructive or restrictive. Obstructive conditions impede the flow of air into and out of the lungs (e.g., asthma), while restrictive conditions cause a reduction in the lungs functional capacity (e.g., pulmonary fibrosis).

Some common respiratory diseases follow.

Chronic Obstructive Pulmonary Disease

Chronic obstructive pulmonary disease is a group of diseases that are characterized by airflow limitation - the two most common of which are emphysema and chronic bronchitis. The condition is closely associated with heavy cigarette smoking.

Other common obstructive lung diseases include asthma and acute bronchitis.

Treatment of chronic obstructive pulmonary disease usually involves the use of inhaled bronchodilators and inhaled corticosteroids. Many patients also need oxygen supplementation. The disease is generally irreversible - although some function can be restored if the patient stops smoking. Smoking cessation is, in fact, a major aspect of treatment.

Asthma

Asthma is a chronic condition in which the airway occasionally restricts, becomes inflamed, and is lined with excessive amounts of mucus. Episodes of this nature may be triggered by environmental stimulants or allergens, exercise or exertion, or emotional stress.

The narrowing of the airway causes such symptoms as: wheezing, shortness of breath, chest tightness, and coughing. These symptoms can range from mild to life threatening.

Asthma is caused by a complex interaction of genetic and environmental factors that are not fully understood. Treatment of asthma involves both medicines and the avoidance of any environmental triggers.

Infectious and bacterial respiratory disease

Viral pneumonia is commonly caused by the influenza virus. Influenza and pneumococcal vaccination are cost-saving medical interventions for elders. Unfortunately, often fewer than 10% of Canadian elders receive pneumococcal vaccination. There are a variety of reasons for this:

- Fear of adverse reactions
- Local swelling and tenderness within 24-48 hours occurs in 10-20% of cases
- Fever, myalgias, and severe local reactions occur in less than 2% of cases, but elders most fear the adverse effects of systemic reactions
- Coincidental infection with other circulating viral illnesses may be confused with an adverse reaction to the vaccines
- Physicians often do not promote vaccination

Bacterial pneumonia is far more common than viral pneumonia - and it is the leading cause of pneumonia in all age groups.

It can produce fevers, chills, fatigue - and, of course, impaired oxygen transportation. If the bacterium in the lungs makes its way into the blood stream it can produce septic shock and damage to such organs as the kidney, brain and heart. Antibiotics are the treatment of choice for bacterial pneumonia.

3 - 10 ARTHRITIS

Musculoskeletal diseases are among the most common of all human afflictions. The prevalence of these diseases increases with age - with most of the people age 75 and over having some form of musculoskeletal disease, especially arthritis. Arthritis is, in fact, the most common chronic conditions among Canadian elders. It along with other musculoskeletal diseases is the sixth most common cause of elder hospitalization.

There are over 100 different forms of arthritis and many different symptoms and treatments. Medical experts do not know what causes the various types of arthritis though some types are better understood than others.

Arthritis causes pain and loss of movement. It can affect joints in any part of the body. Arthritis is usually chronic, meaning it can occur over a long period. The more serious forms can cause swelling, warmth, redness, and pain.

The three most common kinds of arthritis in older people are osteoarthritis, rheumatoid arthritis, and gout.

Osteoarthritis

Once called degenerative joint disease, this is the most common type of arthritis in older people. Symptoms can range from stiffness and mild pain that *comes* and *goes* to severe joint pain, and even disability.

Osteoarthritis usually affects the hands and the large weight-bearing joints of the body (i.e., the knees and hips). Early in the disease, pain occurs after activity, and rest brings relief. Later, pain occurs with very little movement, even during periods of rest.

Rheumatoid arthritis

This is one of the more disabling forms of arthritis. Signs of Rheumatoid arthritis often include morning stiffness, swelling in three or more joints, swelling of the hands and wrists, swelling of the same joints on both sides of the body (e.g., both hands), and bumps (or nodules) under the skin, most commonly found near the elbow.

Rheumatoid arthritis can occur at any age and it affects women about three times more often than men. Scientists do not know what causes Rheumatoid arthritis, but think it has something to do with a breakdown in the immune system—the body's defence against disease. It is also likely that people who get it have certain inherited traits (genes) that cause a disturbance in the immune system.

Gout

Gout occurs most often in older men. It affects the toes, ankles, elbows, wrists, and hands. An acute attack of gout is very painful. Swelling may cause the skin to pull tightly around the joint and make the area red or purple, and very tender. Medicines can stop gout attacks, as well as prevent future attacks and damage to the joints.

3 - 10.1 Common Warning Signs of Arthritis

- Swelling in one or more joint(s)
- Morning stiffness lasting 30 minutes or longer
- Joint pain or tenderness that is constant or that *comes* and *goes*
- Not being able to move a joint in the normal way
- Redness or warmth in a joint
- Weight loss, fever, or weakness, and joint pain that cannot be explained

3 - 10.2 Treatments

Treatments for arthritis work to reduce pain and swelling, keep joints moving safely, and avoid further damage to joints.

Treatments include medicines, special exercises, use of heat or cold, weight control, and surgery.

Medicines help relieve pain and reduce swelling. Acetaminophen or ACT should be the first drug used to control pain in patients with osteoarthritis. Patients who do not respond to ACT and patients with Rheumatoid arthritis and gout are most commonly treated with nonsteroidal anti-inflammatory drugs such as Ibuprofen.

People taking medicine for any form of arthritis should limit the amount of alcohol they drink.

Exercise, such as a daily walk or swim, helps keep joints moving, reduces pain, and strengthens muscles around the joints. Rest is also important for the joints affected by arthritis. Physical therapists can develop personal programs that balance exercise and rest.

Many people find that soaking in a warm bath, swimming in a heated pool, or applying heat or cold to the area around the joint helps reduce pain. Controlling or losing weight can reduce the stress on joints and can help avoid further damage.

When damage to the joints becomes disabling or when other treatments fail to reduce pain, a doctor may suggest surgery. Surgeons can repair or replace damaged joints with artificial ones.

The most common operations are hip and knee replacements.

3 - 10.3 Unproven Remedies

Arthritis symptoms may go away by themselves, but then return weeks, months, or years later. This may be the reason why many people with arthritis try "quack" cures or remedies. Some of these remedies, such as snake venom, are harmful - while others, such as copper bracelets, are both harmless and useless.

3 - 11 THE "GERIATRIC" TEAM

Chronic conditions experienced by elders often demand the expertise of a Geriatric Team. Geriatric assessment programs pool the expertise of those on multidisciplinary teams, in order to fully address the multidimensional health problems that Elders often experience.

To perform on a multidisciplinary team, the individual professional must excel in his or her discipline and possess the special skills that are needed for the team to function effectively. These skills include learning to set common goals and objectives, agreeing on priorities, managing conflict, and, above all, communicating. Throughout this process, the team must assure that interventions remain patient-centered.

The primary team is usually comprised of a physician, nurse, physiotherapist, occupational therapist, social worker, dietician, and pharmacist. There are also other professionals who act in a consultative manner.

The primary team members (other than that of physician) are covered in detail below. Each role is specific and must be integrated with the activities of the available team members. Their expertise may improve the safety of hospitalized elders (or nursing home residents) by reducing hospital-acquired complications such as falls, delirium, functional decline, and 'preventable' deaths.

3 - 11.1 Geriatrician

A Geriatrician is usually a medical doctor (MD) or Osteopath who has completed the required fellowship-training program in geriatrics. They have developed an expanded knowledge of the total aging process and everything surrounding this field. They will work hand in hand with the family physician or specialist who is looking after the elder.

The most appropriate term for a physician who specializes in the care of older adults is geriatrician, not gerontologist. A gerontologist is a non-physician, though physicians who focus on aging research can also be considered gerontologists.

Geriatricians are experts in dealing with multiple medical problems and chronic illness. Geriatricians focus on optimizing quality of life and functional ability for their patients, rather than seeking definitive cures.

Geriatricians use a holistic approach to address the physical, psychological, and social problems surrounding the patient and family. A geriatrician works closely with other health care professionals and organizations, including other physicians, therapists, home care agencies, pain clinics, and support groups, to meet the specific needs of each patient. A geriatrician considers the patient and family as key members of the health care team and expects them to contribute to all decisions that are to be made.

Ailments that a geriatrician will address include Alzheimer Disease (and other dementias), arthritis, chronic heart and lung disease, general decline, impaired overall function, incontinence, osteoporosis, Parkinson's disease, sensory problems (especially vision and hearing), and stroke.

The geriatrician will also scrutinize the often large number of medications older adults take to ensure that the medications are appropriate and are not causing serious adverse side effects. Many times, medications can be adjusted with significant improvement in the well-being of the patient.

Pain and mood disorders such as depression are common in older adults. The geriatrician checks for these as well.

If the elder needs the kind of care just described, whether they are 65 or 95, a geriatrician might be the best person for them to consult.

3 - 11.2 Nurse

The scope of nursing practice includes promotion of health, maintenance, and restoration of health, prevention of illness and disability, alleviation of suffering, and ensuring a peaceful death when life can no longer be sustained. As a specialty, gerontological nursing is concerned with the inter-relatedness of health and the environment in relation to older people.

Nursing knowledge of health promotion, disease prevention, care of the ill, family dynamics, community resources, and the principles of rehabilitation and palliation is combined with knowledge of normal aging and the multiple pathologies often associated with the older person. This is to assist older people in maintaining a positive state of health.

An essential skill of gerontological nurses is the ability to develop sustaining interpersonal relationships with older persons that assists them to cope with physical, psychosocial, sensory, cognitive, and spiritual losses.

This practice is carried out in a variety of settings using a conceptual framework that facilitates a multidimensional approach to the health concerns of the older adult.

Activities in which the nurse may engage include encouraging independence, advocating, empowering, facilitating, and health teaching of the elder and his/her family or of community groups. Assessment through interviewing and listening, physical assessment is carried out using knowledge required to distinguish between the effects of normal aging and significant pathological changes.

Judgment is then required to determine whether nursing intervention or medical intervention is indicated.

The nurse possesses the skills required to do multidimensional assessments and interventions that overlap with the skill areas of many of the other professionals of the team. As example, mobility is basic to daily functioning. While the physical therapist has expertise in this area, the nurse requires adequate knowledge and assessment skills to assure safe mobilization of an elder. Similarly, the occupational therapist has some well-developed assessment and treatment techniques that address issues of impaired functioning in ADL. Although the pharmacist has an in-depth knowledge of drugs, their effects and interactions, a nurse has a basic understanding of the drug that he or she administers to clients in assessment and treatment. The nurse is aware of which medications the elder takes and understands their effect.

The nurse is often the individual who spends the greatest amount of time with the elder. This permits opportunities for establishing a therapeutic relationship and increases opportunities to identify information important to understanding the multidimensional aspects of the patient's health and illness. This puts the nurse in an ideal position to triage with others and to facilitate communications and to coordinate services. The nurse often therefore plays a role of coordinating aspects of the geriatric care plan.

3 - 11.3 Physiotherapist

Physiotherapy has been defined as "the use of physical means to reduce pain and to maintain or improve physical function" (Ernst & Glaxer-Waldman, 1983) or as "the prevention or alleviation of movement dysfunction" (Canadian Physiotherapy Association 1988). Depending on the setting and the patient situation, the physiotherapist may be involved in the prevention of functional decline or disability, or the maintenance or restoration of function and mobility.

Assessment is carried out by the physiotherapist in order to classify clients into diagnostic or problem groups, so that treatment goals and interventions can be identified.

This enables the therapist to determine the appropriateness of physiotherapy intervention, predict outcome, and determine the amount of qualitative and quantitative change during and following treatment.

When assessing movement dysfunction and pain in an elderly client, the physiotherapist must apply comprehensive knowledge of normal age-related changes.

The goals of management and treatment as carried out by the physiotherapist include remediation (to cure the disorder or impairment, to relieve the current symptoms, and to retrain function); prevention (to prevent a recurrence of disorder or impairment, complications including structural deterioration and/or a deterioration in function); and compensation (to optimize function and minimize handicap).

The techniques employed by the physiotherapist include:

- Electrotherapeutic modalities such as ultrasound, helium, neon, and infrared laser
- Interferential current and electromagnetic fields
- Exercise options, both passive and active
- Simple and advanced joint mobilization techniques
- Neurofacilitation and motor control methods of muscle re-education
- Massage and relaxation techniques
- Hydrotherapy
- Movement facilitation in areas such as gait re-education, provision of ambulation aids, or training as to how to assist a patient to move or transfer.

In the assessment and treatment of the elderly patient, the physiotherapists modify their approach to consider such considerations as environmental factors, fatigue, attention span, and longer response time.

General management issues such as transfer or lifting techniques best suited to the client, or no-restraint issues can benefit from the physiotherapist's perspective and suggestions for alternative management strategies.

3 - 11.4 Occupational Therapist

The role of the occupational therapist is centered on the provision of evaluation and intervention strategies for the elderly patient related to functional capacity in self-care, work, and leisure.

The patient's daily living, personal and social performance expectations, and actual performance capacity are evaluated. Goal-directed activity is the vehicle by which the patient's capacity to cope and to maintain his/her independence in familiar and safe environments is enhanced.

The elderly patient is offered the opportunity to practice self-care, work, and leisure activities under supervised conditions designed to promote skill development, restore function, and/or maintain independence.

The evaluation of the needs of the individual area is based on four integrated factors: physical, socio-cultural, mental-emotional, and spiritual self (Health and Welfare 2000). Areas of dysfunction and strength are identified in the areas of self-care, work, and leisure using the context of the patient's environment, developmental stage, lifestyles, habits, role, and motivation.

The focus is on the physical, cultural, and social environment, including architectural barriers and home safety, with the goal of optimizing quality of life.

This may involve consideration of architectural barriers, home safety, environmental needs, physical comfort (positioning and seating), the patient's interests, and measures of emotional, physical, and cognitive status.

Priorities for treatment goals are established in collaboration with the individual and are based on the patient's goals and feasibility of her/his objectives. The interventions are encompassed by the following broad goals: to develop, restore, and/or maintain function, and to prevent dysfunction using purposeful and meaningful activity (Health and Welfare Canada and the Canadian Association of Occupational Therapists 1983).

Intervention may focus upon the gradual development of new skills for a task in order to restore function. Sustaining residual capacities preserves functional performance. There is an element of prevention in most of the intervention strategies with the elderly.

These priorities may be met through activities such as meal preparation, social pursuits, reminiscences, crafts, self-care activities, carpentry, baking, or making items for loved ones. Prevention of dysfunction includes application of energy conservation, work simplification, and joint protection techniques such as arrangement of work material, body positioning, and splinting, in conjunction with activity.

Discharge plans incorporate the appropriate adaptive equipment, proper positioning, family and patient education and applicable community resources. Recommendations may be made for aids and adaptations in order to adapt the home environment and improve home safety.

3 - 11.5 Social Worker

The focus of social work is on the psychosocial aspect of analysis and treatment. They view elders as individuals interacting with their social environments.

Social environments can include such areas as: the family network, social support system (neighbours, friends, ethnic associations, religious groups, and organized services), socio-economic status, vulnerability to abuse, as well as the nature, quality and security of the physical environment available to the individual.

In assessing the psychological, social and emotional functioning of elders and their families, the social worker reviews with them life events and experiences in order to determine coping skills and social network resources that can be applied to the current situation. This exploration with the elder and family may touch on a wide range of issues such as their strengths and coping mechanisms in dealing with previous problems, the dynamics of solving dependency issues in the past, the support systems they have developed, their usual patterns of decision making, the internal family conflicts merging from differing expectations about reciprocal rights and responsibilities of family members, the past-life experiences of the elder, and the feelings of loss and fears of further losses brought to the forefront by anticipated changes.

Other aspects of the social worker's role include:

- Linking elders and their families to facility and community resources that are needed to support different options for care
- Counselling of the elder and family members in order to assist with feelings of loss, grief, and guilt as they deal with change
- Advocacy on the part of the elder and mediating between elders and key players to facilitate clarification and relieve tensions
- The social worker provides the social context for assessing the elder's own resources and those of the family

3 - 11.6 Pharmacist

The pharmacist contributes knowledge and skills in the careful examination of past, current, and planned drug therapy for elderly people. It is his or her role to identify, prevent, and resolve drug-related problems with the goal of optimum drug therapy, which in turn improves or maintains an elderly patient's quality of life.

The pharmacist is qualified to develop drug-related therapeutic goals, select and individualize medication treatment, monitor and evaluate that treatment, and provide drug information and counselling.

An in-depth medication history is taken which includes details about past and present prescribed drug therapy, compliance, non-prescription drug use, adverse reactions, and allergies.

Information about the patient's current medical condition is considered which includes possible adverse drug reactions and drug-induced disease; possible or potential drug-drug, drug-food, or drug-laboratory test interactions; drug dependency; drug resistance; failure of therapy due to non-compliance and potential reasons for the non-compliance; understanding of the drug therapy by the patient or caregiver; and habits or practices that may lead to drug-related problems. The most appropriate drug regime is then recommended. Monitoring of the patient pharmacotherapy is carried out and follow-up is initiated with a patient, caregiver, or health professional where appropriate.

3 - 11.7 Dietician

The primary role of the dietician in geriatric assessment is to determine the nutritional status and develop a nutrition care plan that meets the defined needs of the individual. In addition, the dietician offers education and counseling for both the prevention and treatment of the nutritional concerns common to the elderly.

An initial nutritional screening is often done by someone other than a dietician, such as a physician during a routine physical exam or by a pre-admission assessor or primary care nurse.

This may include consideration of such factors as recent loss of weight, anorexia, problems with dentition, chewing, swallowing, dementia, depression and/or grieving, gastrointestinal problems, ADD deficits, medications, or underlying disease that may have adverse effects on nutrition.

Once the individual is identified as being at nutritional risk, the dietician carries out a more comprehensive nutritional assessment. This is done by the collection of dietary, clinical, anthropometric, and laboratory data. These data are assessed in view of other information on functional, social, and environmental factors that may affect nutrition.

Awareness of clinical variables such as medical and surgical treatments, the presence of dehydration or edema, cardiac and gastrointestinal function, liver and renal function, and medications is important. These influence criteria used in the nutritional assessment. Diagnosis, prognosis, and treatment also influence the rationale for the dietician's intervention decisions. Based on the assessment, a nutrition care plan is developed that takes into consideration the relevant psychosocial and biophysical features with the goal of designing a therapeutic plan that is acceptable to the individual.

There may be a case where vitamin or mineral supplementation or the use of nutritional supplements may be appropriate. Regular monitoring and re-evaluating is necessary to ensure the ongoing relevance of the nutrition care plan.

3 - 11.8 Different Types of Dieticians

Clinical dieticians provide nutritional services for patients in institutions such as hospitals and nursing care facilities.

They assess patients' nutritional needs, develop and implement nutrition programs, and evaluate and report the results. They also confer with doctors and other healthcare professionals in order to coordinate medical and nutritional needs. Some clinical dieticians specialize in the management of overweight patients or the care of critically ill or renal (kidney) and diabetic patients. In addition, clinical dieticians in nursing care facilities, small hospitals, or correctional facilities may manage the food service department.

Community dieticians counsel individuals and groups on nutritional practices designed to prevent disease and promote health.

Working in places such as public health clinics, home health agencies, and health maintenance organizations, community dieticians evaluate individual needs, develop nutritional care plans, and instruct individuals and their families. Dieticians working in home health agencies provide instruction on grocery shopping and food preparation to the elderly, individuals with special needs, and children.

Increased public interest in nutrition has led to job opportunities in food manufacturing, advertising, and even marketing. In these areas, dieticians analyze foods, prepare literature for distribution, or report on issues such as the nutritional content of recipes, dietary fibre, or vitamin supplements.

Management dieticians oversee large-scale meal planning and preparation in healthcare facilities, company cafeterias, prisons, and schools. They hire, train, and direct other dieticians and food service workers; budget for and purchase food, equipment, and supplies; enforce sanitary and safety regulations; and prepare records and reports.

Consultant dieticians work under contract with healthcare facilities or in their own private practice. They perform nutrition screenings for their clients and offer advice on diet-related concerns such as weight loss or cholesterol reduction.

Some work for wellness programs, sports teams, supermarkets, and other nutrition-related businesses. They may consult with food service managers, providing expertise in sanitation, safety procedures, menu development, budgeting, and planning.

3 - 12 PAIN MANAGEMENT

Pain and the control of pain are very important issues - particularly when it comes to elders. Chronic diseases produce chronic pain and there is evidence that much of this pain is not being adequately controlled. For example, pain is a major symptom for 70% of cancer patients, but 50–80% of cancer patients receive inadequate pain control. Advances in pharmacology have made many new drugs and technologies available that makes more than 90% of cancer pain controllable - so why aren't they being used?

The problem is *under-treatment*. Under-treatment of pain can lead to depression, non-compliance, anger, fear, loss of control, and eventually suicide.
Several groups are at great risk for under-treatment.
Among them:

- Minorities (they are three times more likely to be under-treated)
- Patients receiving a poor pain assessment from an inexperienced health care provider
- People with non-cancer pain
- People with "good" performance status, such as someone who appears to be coping well and performing activities adequately
- Females and people over the age of 70

Elders are, in fact, among the largest group that suffers from inadequate pain control. The elderly tend to minimize the expression of pain. They may also have underlying depression or dementia, which may affect their ability to communicate pain effectively. They may have impaired kidney or liver function that affects the absorption and metabolism of pain medications.

Because of physical limitations such as poor eyesight, the elderly may have difficulty managing high-tech pumps and infusion devises. One study found lower pain medication use among non-communicative patients in nursing homes than for patients who were able to communicate their needs.

Did they really have less pain or were they just less able to communicate the pain?

There is inadequate education for medical professionals on pain assessment and pain management for several reasons:

- Health care providers fear regulatory scrutiny, and legal consequences
- Patients and family fear addiction to pain medications

- ❖ Government regulations can be confusing and cumbersome

Pain evokes numerous physical and emotional responses such as a racing pulse, a rise in blood pressure, rapid respiration, sweating, and dilation of the pupils. A person may become frightened, anxious, or annoyed. Chronic pain can take over the life of the affected person and dominate every thought.

Pain will interfere with sleep, work, and relationships. Pain is controlled when the pulse and blood pressure are in normal ranges for the person affected and breathing becomes calm and eyes normal. It is controlled when functioning and sleep patterns become more normal and pain does not dominate thought.

3 - 12.1 Current Pain Treatments

Non-Steroidal Anti-inflammatory Medicines

These drugs, which include ibuprofen and aspirin, have been very effective in treating pain that is caused by inflammation such as rheumatoid arthritis. The main side effects are stomach irritation and interference with the clotting mechanisms of the blood. The risk of problems with these medications increases with age.

Acetaminophen (Tylenol®)

This drug is gentle on the stomach but does little or nothing for inflammation. It is recommended for osteoarthritis. It can cause liver and kidney damage with high doses or long-term use.

Narcotics

These are the most effective pain relievers and work by blocking the pain signals that travel to the brain. Side effects can include drowsiness, constipation, slowed breathing, and mood changes. While used cautiously, due to fears about addiction and abuse, research has found little cause for concern.

Antidepressant and Anti-Anxiety Drugs

These drugs can be used along with analgesics and often enhance the effects of those drugs. They are used cautiously as they can be addictive.

Disease Specific Drugs

Several new drugs have been introduced in the last few years that were designed to treat specific disorders.

Non-Drug Treatments

Numerous other treatments have all proven effective for some people. These include acupuncture, massage, meditation, and relaxation therapy.

3 - 12.2 Steps for Ensuring Adequate Pain Treatment

An elder should establish open and honest communication with his or her physician. He or she should simply describe the pain and ask for treatment. If a physician brushes the elder off or dismisses the pain - it may be time to find a new physician. Any medications prescribed should be discussed with both a physician and a pharmacist. Elders should also understand the side effects and signs of problems.

Elders also need to put aside their fears of addiction or dependence. Most people once they have achieved pain control will be able to cut back on their medications.

3 - 12.3 Canadian Law and Pain Management

Many of the Provincial Colleges of Physicians and Surgeons recognize that inadequate pain control may result from physicians' lack of knowledge about pain management or an inadequate understanding of addiction.

Fears of investigation or sanction by federal, provincial, and professional regulatory agencies may also result in inappropriate or inadequate treatment of patients with chronic pain.

Physicians should not fear disciplinary action from the College for prescribing, dispensing, or administering controlled substances, including opioid analgesics, for a legitimate medical purpose and within the boundaries of professional practice.

The College considers prescribing, ordering, administering, or dispensing controlled substances for pain to be for a legitimate medical purpose if based on accepted scientific knowledge of the treatment of pain or if based on sound clinical grounds.

The College has adopted the following administrative guidelines when evaluating the use of controlled substances for chronic pain control.

Evaluation of the Patient

The medical record should reflect a detailed knowledge of the patient’s medical history and physical status.

The medical record should document the nature and intensity of the pain, current and past treatments for pain, underlying or coexisting diseases or conditions, the effect of the pain on physical and psychological function, and history of substance abuse.

The medical record also should document the presence of one or more recognized medical indications for the use of a controlled substance.

Treatment Plan

The written treatment plan should state objectives that will be used to determine treatment success, such as pain relief and improved physical and psychosocial function. Further, it should indicate if any further diagnostic evaluations or other treatments are planned. After treatment begins, the physician should adjust drug therapy to the individual medical needs of each patient. Other treatment modalities or a rehabilitation program may be necessary depending on the etiology of the pain and the extent to which the pain is associated with physical and psychosocial impairment.

Informed Consent and Agreement for Treatment

The physician should discuss the risks and benefits of the use of controlled substances with the patient, persons designated by the patient, or, if the patient is incompetent, with the patient's surrogate or guardian. The patient should receive prescriptions from one physician and one pharmacy where possible - particularly if the physician determines the patient is at high risk for medication abuse or has a history of substance abuse.

Periodic Review

At reasonable intervals based on the individual circumstances of the patient, the physician should review the course of treatment and any new information about the etiology of the pain. The physician should recognize the entity of so-called pseudo addiction.

Modification of therapy should depend on the physician's evaluation of progress toward stated treatment objectives such as improvement in patients' physical and/or psychosocial function, i.e. their ability to work, need of health care resources, activities of daily living, and quality of social life. If treatment goals are not being achieved, despite medication adjustments, the physician should re-evaluate the appropriateness of continued treatment.

Consultation

The physician should refer the patient as necessary for additional evaluation and treatment in order to achieve treatment objectives. Special attention should be given to those pain patients who are at risk for misusing their medications and those whose living arrangement pose a risk for medication misuse or diversion. The management of pain in patients with a history of substance abuse or with a psychiatric disorder may require extra care, monitoring, documentation, and consultation with or referral to an expert in the management of such patients.

Medical Records

The physician should keep accurate and complete records to include:

- The medical history and physical examination
- Diagnostic, therapeutic, and laboratory results
- Evaluations and consultations

- Treatment objectives
- Discussion of risks and benefits
- Treatments
- Medications (including date, type, dosage, and quantity prescribed)
- Instructions and agreements
- Periodic reviews

Records should remain current and be maintained in an accessible manner and should be readily available for review.

3 - 13 MEDICATION MISUSE

Polypharmacy is the taking of many drugs at the same time. Elders may receive a variety of different prescriptions from the same or different doctors - or they may take the same medication in multiple doses. The interactions of different medications can reduce, cancel, intensify, or even totally alter what the medication was intended to do.

Although elders represent about 14.5% of the Canadian population, they account for 28 to 40% of all prescriptions. Elders spend more for drugs than any other age groups and are more likely than younger people to use multiple prescription drugs at the same time.

The report *Health Care in Canada: A Focus on Seniors and Aging* includes a section on drug use by seniors (CIHI 2011a). It found that as Canadians age, the number of drugs prescribed, and consequently the total cost per patient, increases. In this study, on average, seniors on public drug programs claimed $1,790 of prescription drugs per year. Costs rise with increasing age. In the 65- to 74-year age group, the cost per patient was $1,526. This rose to $2,005 for seniors aged 75–84 years and to $2,249 for those 85 years or older. The increase in cost is likely associated with the increasing number of drugs prescribed in older age groups.

3 - 13.1 What Causes Medication Misuse?

Studies show that medication misuse can occur for a number of reasons including the number of drugs needed, lack of accurate information, a lack of communication with health care professionals, and poor medication practices.

Moreover, as people age, some physiological changes occur that may alter the effects of various medications. Among them:

- The digestive system slows down, and drugs are broken down more slowly
- Drugs are absorbed at a slower rate

- The body's ability to rid itself of medication is slowed up to 50% due to decreased functioning of the liver and kidneys. This increases the risk of side effects and toxicity
- The percentage of water and muscle in the body decreases, while fat tissue increases. This affects the length of time a drug stays in the body and the amount absorbed by body tissues
- The heart pumps more slowly and delays the removal of drugs
- There are fewer filters in the aging body. This may allow drugs to remain in the bloodstream longer
- Improper use of medications can cause such problems as disorientation, dizziness, and poisoning, all of which put elders at risk of injury and illness. This can also lead to permanent disability, loss of independence, hospitalization, and long-term institutionalization

3 - 13.2 Preventing Medication Misuse

In order to address the issue of medication misuse effectively a variety of things need to be done. However, a good place to begin involves empowering elders with the knowledge and skills to make healthy decisions.

Here are some things to remember:

- Medical history is important to both the elder, and the physician or pharmacist. To avoid problems, both parties need to know about current drugs being taken, any allergies, drug side effects, or other problems with medication.

- Medications can help control pain or treat illnesses, but some health problems and their symptoms can be reduced or prevented by eating healthfully, exercising, getting rest, reducing alcohol intake and avoiding tobacco.

- The elder and physician or pharmacist should discuss over- and behind-the-counter drugs. Some of these medications can have side effects, and when mixed with prescription drugs or alcohol, and can be harmful.

- Both elders and physicians or pharmacists can keep up to date on the medications they take and prescribe by researching the latest and most accurate information available

- Everyone should also be alerted to the dangers of addiction. Some of the most widely-prescribed medications for seniors are known to be highly addictive and may cause numerous side-effects. For example, benzodiazepine medications—Ativan, Valium, Serax and Xanax, among others—are commonly prescribed for treating acute anxiety and insomnia. If used for more than a few weeks or months, benzodiazepines can be addictive and may cause side-effects ranging from confusion, poor muscle coordination, drowsiness, impaired performance and decreased ability to learn new things.

One review of seniors' benzodiazepine use noted that about 23% are taking the drug on a long-term basis. Use is more prevalent among women than men, and the rate increases with age.

- Though medications are often helpful, elderly people may also benefit from information about alternative methods of dealing with emotional and stress-related illnesses.

3 - 14 TIPS ON MANAGING CHRONIC CONDITIONS

A chronic illness - unlike an acute illness that tends to start suddenly, and which is short lived - is defined as any disease that develops slowly and lasts a long time.

Taking an active role in managing a chronic illness can help an elder to maintain a good quality of life, despite the illness.

The following are a few tips that may help in this exercise.

3 - 14.1 Practice Secondary Prevention

Secondary prevention often involves the same strategies that are useful in primary prevention—increasing physical activity, eating more healthfully, and smoking cessation (for smokers). These actions can slow the progress of a disease after it has occurred. Secondary prevention also strengthens your entire body, so you are fit and better able to fight off other illnesses. Managing two chronic diseases at the same time is much more difficult than managing one.

3 - 14.2 Learn to Pace Yourself

Some chronic illnesses result in low energy and lack of stamina. Learn to work at a slow to moderate pace and rest when needed. Find easier ways to do things. When your energy level is highest, use this time to complete difficult tasks.

A flexible attitude also is important. Determine whether it is necessary to clean every day, or to even make the bed every day. You might have to reach a compromise that takes into consideration your standards for both cleanliness and your energy level.

3 - 14.3 Stay Involved with Family and Friends

When you do not feel well, or your energy level is low, it may be more comfortable just to stay at home. Rather than admit to a friend that you are going to need special food or a private place to take medication, it is just easier to turn down the invitation. However, people who cut themselves off from others are more likely to become depressed and are less able to manage an illness.

If you are a friend of an individual with a chronic illness, remember that it takes two to maintain a relationship. You might need to make the first move. Invite your friend to social gatherings and invite them again if they refuse. This relationship is important to both of you. Do not give up easily and communicate regularly.

3 - 14.4 Identify and Use Existing Resources

Many associations have good information that can help you manage an illness. For example, the Canadian Heart Association and the Canadian Cancer Society provide lots of good advice about how to manage illnesses and how to compensate for the limitations that may be caused by them. Some associations also provide financial assistance or other kinds of resource assistance that can improve quality of life.

3 - 14.5 Become a Wise Health Care Consumer

Understand the illness. Understand what the symptoms may be and the kinds of limitations it will cause. Determine what you can do to lessen its impact. Find a health care provider that is good at treating the problem and then stick with him or her. Find out about new research and alternative or complementary treatments that might work. Make sure to discuss these with a health care provider. Finally, work with providers to find a treatment plan that can be successfully implemented.

3 - 15 CONCLUSION

Chronic illness is a fact of life for Canadian elders. Millions of elder Canadians suffer with at least one - and often multiple - chronic conditions.

As our population ages dramatically in the coming years the problem will become more serious still. Not only will many more people be impacted, but the sheer number of those afflicted will tax our health care system, long term care facilities, and social programs.

Fortunately, there is much that can be done to help manage chronic conditions in an appropriate and cost-effective fashion.

Elders can take control and:

- Adopt a healthy lifestyle
- Practice secondary prevention
- Manage their drug intake wisely
- Maintain a strong social network
- Educate themselves on the issues

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Chapter 4

Dementia & Our Aging Society

4-1 KEY OBJECTIVE OF THIS CHAPTER

According to a new study commissioned by the Alzheimer Society of Canada, the number of Canadians living with cognitive impairment, including dementia, now stands at 747,000. These figures comprise not only Canadians diagnosed with dementias, including Alzheimer's disease, but also those with cognitive impairment, which frequently leads to the more degenerative forms.

Clearly, anyone interested in working with older Canadians needs to have a solid understanding of elder dementia. This chapter is designed to provide you with a basic grounding in the various types of dementia and the impact they have on elders and their families.

4-1.1 How Will This Objective Be Achieved?

We will look, in detail, at the various forms of elder dementia, their causes, their symptoms and how they are most effectively managed. We will also touch on a variety of related subjects - among them, care giving issues, coping strategies, and the need - once a diagnosis has been made - for early and effective planning.

4-2 INTRODUCTION

Although many people use the term dementia and Alzheimer's interchangeably, dementia is the medical term used to describe several conditions characterized by the gradual loss of intellectual functions. Alzheimer's disease is one of those conditions and is the most common.

Alzheimer's has a combination of risk factors. One risk factor is age itself given that, as a person ages, the brain's ability to repair itself decreases. Canadian seniors are also at greater risk of other factors associated with Alzheimer's disease such as high blood pressure, elevated cholesterol and being overweight. Type 2 diabetes, stroke and chronic inflammatory conditions such as some forms of arthritis are also known to be risk factors for Alzheimer's disease and associated dementias.

Genetics can also contribute to the risk of developing both inherited Familial Alzheimer's disease and the more common sporadic forms of the disease. Those with an immediate family member with the disease are two to three times more likely to develop it themselves than those who do not have a direct relative with the disease. Women are at greater risk for Alzheimer's disease and associated dementias than men, in part since they generally live longer. Hormonal changes at menopause are also thought to contribute to women's increased risk. Other identified risk factors are a history of prior head injury, Down syndrome, a history of episodes of clinical depression, chronic stress, lack of physical exercise, inadequate intellectual stimulation, unhealthy eating habits, low levels of formal education and lower socioeconomic status.

Memory problems are one of the earliest symptoms of Alzheimer's disease. The disease is progressive and, depending on the stage, can range in severity from mild to severe. Mild forms can cause problems such as getting lost, difficulty handling money or paying bills, taking longer to complete routine tasks, repeating of sentences, poor judgment and small changes in mood or personality. Moderate Alzheimer's disease causes damage to parts of the brain controlling language, reasoning, sensory perception and conscious thought resulting in increased memory loss and confusion. Persons with moderate Alzheimer's disease also have trouble recognizing friends and family, difficulty or an inability to learn new things, difficulty performing tasks with multiple steps, difficulty coping with new situations, hallucinations, delusions, paranoia and impulsive behaviour. In those diagnosed with severe Alzheimer's disease, significant shrinkage of the brain tissue results in an inability to communicate, as well as complete dependence on others for care.

The rate of dementia tends to increase dramatically with advanced age. The risk for dementia doubles every 5 years after age 65. Currently about 8% or 1 out of 13 of the people over age 65 have some form of dementia, and one in three over the age of 85 has symptoms.

In the case of Canadians 100 years of age and older, an astonishing 85% have dementia. Because dementia rates increase exponentially with age, it should come as no surprise that women are twice as likely (versus men) to have dementia.

By the year 2031, it is estimated that more than 1.4 million Canadians will be suffering from some form of dementia. With the rapid aging of our population, mental disorders of all types will become a major medical and social problem.

4-3 DEMENTIA - AN OVERVIEW

Dementia describes a group of symptoms relating to progressive mental deterioration. In non-professional terms, it is an acquired loss of intellectual ability that occurs over a long period and affects many areas of cognitive functioning. It results from changes in the normal activity of certain sensitive cells in the brain. In many people, memory loss is the most common, but not the only change associated with dementia.

A decline in memory often goes hand in hand with other changes that inhibit the individual's ability to carry out the normal activities of daily living. *Among these changes:*

- A decline in problem solving skills
- A loss of verbal ability
- Impaired judgment
- Compromised Learning

Loss of intellectual ability may also lead to:

- Confusion and disorientation
- Suspicion of others
- Strange behaviour
- An inability to complete simple, routine tasks

4 - 3.1 Changes in Cognition

When it comes to memory loss, dementia sufferers tend to lose recent memory first. But as the disease progresses, remote memories and over-learned tasks are also lost. As cognition declines, abnormalities in language and visual-spatial functions arise. The ability to calculate, to perform skilled tasks, and to comprehend stimuli also deteriorates.

Language skills, including both expression and comprehension, become increasingly impaired. Speech tends to become increasingly non-fluent, eventually resulting in near mutism.

Problems arise in handling money, comprehending written material, and recognizing people. Driving, operating appliances, and dressing all become difficult. Overall, the capacity to reason, to learn new information, and to solve problems that arise is progressively lost.

4 - 3.2 Changes in Personality and Behaviour

Personality and behavioural changes are among the most disturbing consequences of dementia - and they often appear quite early on.

Common personality changes include marked indifference, regression, impulsiveness, and withdrawal.

Problem behaviours include agitation, aggression, a lack of inhibition, restlessness, wandering, delusions, paranoia, hallucinations, and sleep cycle disturbances.

4 - 3.3 Functional loss

Recent work suggests that functional losses in dementia may occur in stages that appear to reverse normal early human development. Functional deterioration tends to follow a sequential pattern, starting with loss of speech and language skills, followed by ambulatory skills. In the later stages of dementia, impaired hygiene and incontinence manifest themselves - and in the final stages, the ability to sit upright and the ability to feed oneself become compromised.

4 - 3.4 The Most Common Forms of Dementia

Identifying a specific type of dementia is far from easy, given that there tends to be a lot of crossover when it comes to symptoms.

Nevertheless, it is safe to say that Alzheimer Disease, Vascular Dementia, Lewy Body Disease and Parkinson's Disease account for somewhere in the area of 80 - 90% of all dementia.

Alzheimer Disease alone accounts for 50% of all elder dementia. Unfortunately, arriving at a more precise figure is extremely difficult. Pick's Disease, Lewy Body Disease - and even Vascular Dementia - are often misdiagnosed as Alzheimer Disease - and to further complicate matters, many elders often experience several forms of dementia at the same time. During autopsies, almost half of all dementia sufferers have signs of both Alzheimer Disease and Vascular Dementia - and close to 40% of all elders with Alzheimer Disease, also have Lewy Bodies in the neo-cortex area of their brains.

The following table provides a very rough estimate of the number of Canadians suffering from a variety of common forms of dementia.

Table 4 - 1 Dementia by the Numbers (2018)

Form of Dementia	Elder Canadians Affected
Alzheimer Disease	275,000
Vascular Dementia	135,000
Lewy Body Disease	100,000
Parkinson's Disease	25,000*
Pick's Disease	18,000

* Roughly one quarter of the estimated 100,000 Canadian elders with Parkinson's disease have developed dementia.

While there are more than 100 different forms of dementia, most are extremely rare. Creutzfeldt - Jakob disease, for example, affects roughly one person out of a million annually (or fewer than 40 Canadians). Similarly, Huntington's disease, which tends to strike people of Western European descent, who are between the ages of 30 and 50, accounts for less than 1% of all cases of dementia.

4 - 3.5 Root Causes

Dementia has a variety of causes: degenerative disorders, vascular problems, infections, hormone or vitamin imbalances … even tumors, trauma and substance abuse can lead to dementia. The following table looks at the root causes of some of the more common forms of dementia.

Table 4 – 2 Dementia - Root Causes

Cause	Type of Dementia
Degenerative Disorders	Alzheimer Disease, Lewy Body Disease, Pick's disease and other frontal temporal lobe dementia, Parkinson's Disease, Huntington's Disease
Vascular Diseases	Vascular (Multi-infarct) dementia, Binswanger's Disease
Toxic or Metabolic Diseases	Alcoholism, B12 deficiency, Folate deficiency
Immunologic Diseases or Infection	Creutzfeldt-Jakob Disease, Multiple Sclerosis, Chronic Fatigue Syndrome
Systemic Diseases	Liver Disease, Kidney Disease, Lung Disease, Diabetes, Wilson's Disease
Trauma	Subdural Hematoma, Dementia Pugilistica (boxer's syndrome)
Cancer	Brain Tumours, Metastatic Tumours
Ventricular Disorders	Hydrocephalus
Convulsive Disorders	Epilepsy
White matter diseases	Leukodystrohies

4 - 3.6 Risk Factors

The risk factors for dementia are as individual as the various forms of dementia themselves. In some cases, the connections are reasonably clear.

- Head trauma can lead to Subdural Hematoma and Dementia Pugilistica (boxer's syndrome).
- Substance abuse can create hormone and vitamin deficiencies that lead to dementia
- A defective protein - which can be inherited, transmitted, or appear spontaneously - produces Creutzfeldt-Jakob Disease
- Leukodystrophies are the direct result of genetic defects
- Hypertension, smoking, diabetes, high cholesterol and cardiovascular disease are closely linked to Vascular Dementia

Unfortunately, in many cases, the connections are far from clear.

- There are no known causes of Pick's Disease
- The only identifiable risk factor for Lewy Body Disease is advanced age
- Genetics, toxins and head trauma may be linked to Parkinson's Disease, but nothing is conclusive

The risk factors for Alzheimer Disease are a diffuse laundry list of possibilities (genetics, diabetes, downs syndrome. head injury, menopause, low levels of formal education, etc.).

Amid the entire confusion one thing does stand out. When it comes to the most popular forms of dementia … advanced age is almost always a major - or the major - risk factor.

4 - 4 ALZHEIMER DISEASE (AD) - OVERVIEW

What does former President Ronald Regan, Rita Hayward, Charlton Heston, Henry Ford, Sir Winston Churchill and Sugar Ray Robinson all have in common? All of them suffered the effects of Alzheimer Disease.

It does not matter who you are. Alzheimer Disease does not distinguish … it is equally devastating to both rich and poor. Even with all their resources - both financial and social - the rich, the famous and the powerful, have been unable to beat this dreadful disease.

Alzheimer Disease was first identified, in 1906, by German neurologist Alois Alzheimer. He described the two hallmarks of the disease: the presence of "plaques" and "tangles" in the brain.

Neuritic plaques are chemical deposits consisting of degenerating nerve cells combined with a form of protein referred to as beta amyloid. These plaques tend to be scattered throughout the brain. When present - at excessive levels - they are toxic to brain cells.

Neurofibrillary tangles are malformations of the nerve cells that are found mainly in the cerebral cortex of those with Alzheimer Disease. These tangles interfere with the vital processing functions of the brain.

The disease affects a person's ability to understand, think, remember, and communicate. Eventually, Alzheimer Disease sufferers are unable to learn new things or make decisions. They will forget how to do simple tasks, have trouble remembering names, and struggle to find the right word to express a thought. They may become worried, suspicious and emotional.

In some cases, they may simply become withdrawn. The disease usually progresses from the first symptoms, to complete dependence, over a 10-year span. It ends with death … often caused by pneumonia.

There is no known cause or cure for this devastating disease. Doctors do not know how to stop or repair the damage being done, but researchers around the world are working to find the answers. In the meantime, medications can help treat some of the symptoms - and support services and education can help enhance quality of life for both Alzheimer sufferers and their families.

4 - 4.1 Distinguishing Features

The factors that distinguish Alzheimer Disease from many other forms of dementia include:

- The types of changes that occur in the brain
- The characteristic patterns of progressive degeneration
- The fact that it is irreversible

Alzheimer Disease is not a normal part of aging, despite the once common belief that senility naturally accompanies old age.

4 - 4.2 Alzheimer Disease Stages

Alzheimer Disease is a progressive and degenerative disease - it begins slowly. Initially the only symptom may be mild forgetfulness. People with Alzheimer Disease may have trouble remembering recent events, activities, or the names of familiar people or things and simple math problems may become more difficult to solve. And while these difficulties may be bothersome, they are usually not serious enough to cause alarm.

However, as the disease advances the symptoms become more noticeable and serious. People in the middle stages of Alzheimer Disease may forget how to do simple tasks, like brushing their teeth or combing their hair. They may have difficulty thinking clearly, and begin to have problems speaking, understanding, reading and writing. They may also become anxious or aggressive and start to wander.

Eventually, Alzheimer patients require total care.

The actual progression of Alzheimer Disease varies from person to person and can span anywhere from three to 20 years (although the average length of the disease is between eight and 12 years).

The following material describes what happens to an Alzheimer Disease sufferer during the three major stages of the disease.

4 - 4.3 Stage One (Mild AD)

- Loses "zest for life"
- Loses recent memory (without a change in appearance or casual conversation)
- Loses judgment about money
- Has difficulty with new learning and in making new memories
- Has trouble finding words (may substitute or make up words that sound like or mean something like the forgotten word)
- May stop talking to avoid making mistakes
- Has shorter attention span and less motivation to stay with an activity
- Loses way going to familiar places
- Resists change or new things
- Has trouble organizing and thinking logically
- Asks repetitive questions
- Withdraws and loses interest in things
- Is irritable and uncharacteristically angry when frustrated or tired
- Loses sensitivity to the feelings of others
- Refuses to make decisions (e.g., when asked "What would you like for dinner?" responds with "I'll have what she is having.")
- Takes longer to do routine chores and becomes upset if rushed or if something unexpected happens
- Forgets how to conduct financial transactions (e.g., may hand a checkout clerk a wallet instead of the correct amount of money)
- Forgets to eat, eats only one kind of food, or eats constantly

- Loses or misplaces things by hiding them in odd places
- Forgets where things go (e.g., puts clothes in the dishwasher)
- Constantly checks, searches, or hoards things of no value

4 - 4.4 Stage Two (Moderate AD)

- Lack of concern for appearance, hygiene, and sleep become more noticeable
- Mixes up identity of people (e.g., may think a son is a brother or that a spouse is a stranger)
- Poor judgment creates safety issues when left alone
- Has trouble recognizing familiar people and own possessions - may take things that belong to others
- Continuously repeats stories, favourite words, statements
- Has restless, repetitive movements in late afternoon or evening (e.g., pacing, trying doorknobs, fingering draperies)
- Cannot organize thoughts or follow logical explanations
- Has trouble following written notes and completing tasks
- Makes up stories to fill in gaps in memory
- May be able to read but cannot formulate the correct response to a written request
- May accuse, threaten, curse, fidget or behave inappropriately (e.g., kicking, hitting, biting, screaming, or grabbing)
- May become sloppy and forget manners
- May see, hear, smell, or taste things that are not there
- May accuse spouse of an affair or family members of stealing
- Naps frequently and may awaken at night believing it is time to go to work
- Has more difficulty positioning the body (e.g., to use the toilet or sit in a chair)?
- May think mirror image is real - or that a television story is happening
- Needs help finding the toilet, using the shower, remembering to drink, and dressing properly for the weather or an occasion

4 - 4.5 Stage Three (Severe AD)

- Does not recognize self or close family
- Speaks in gibberish, is mute, or is difficult to understand
- May refuse to eat, chokes, or forgets to swallow
- May repetitively cry out, pat or touch everything

- ❖ Loses control of bowel and bladder
- ❖ Loses weight and skin becomes thin and tears easily
- ❖ May look uncomfortable or cry out when transferred or touched
- ❖ Forgets how to walk or is too unsteady or weak to stand-alone
- ❖ May have seizures, frequent infections, falls
- ❖ May groan, scream, or mumble loudly
- ❖ Sleeps more
- ❖ Needs total assistance for all activities of daily living

Table 4 - 3 The Stages of Alzheimer Disease at a Glance

	Mental Abilities	**Moods & Emotions**	**Behaviours**	**Physical Behaviours**
Stage 1	- Mild forgetfulness - Difficulty processing new information - Problems with orientation - Communication difficulties	- Mood shifts - Depression	- Passiveness - Withdrawal from usual activities - Restlessness - Anxiety	- Mild coordination problems
Stage 2	- Continued memory lapse - Forgetfulness about personal history - Inability to recognize family and friends - Disorientation about time and place	- Personality changes - Confusion - Suspicious - Mood shifts - Sadness / depression - Hostility / Anger - Anxiety / apprehension	- Declining concentration abilities - Restlessness (pacing, wandering) - Repetition - Delusions - Aggression - Uninhibited behaviour - Passiveness	- Assistance required for daily tasks - Disrupted sleep patterns - Appetite fluctuations - Language difficulties - Visual spatial problems

Stage 3	- Loss of ability to remember, communicate or function - Inability to process information - Severe reading, writing and speaking difficulties - Severe disorientation about time, place, people	- Range of emotions and feelings remain - Possible withdrawal	- Nonverbal methods of communicating (eye contact, crying, groaning) - Responds to music and/or touch	- Sleeps long & more often - Becomes immobile - Loses ability to speak - Loses control of bowel & bladder - Difficulty eating and/or swallowing - Unable to dress or bathe - May lose weight

4 - 4.6 Early Warning Signs

The following list describes some of the early warning signs of Alzheimer Disease. Having several - or even all - of these symptoms *does not* mean the person in question has the disease.

It does mean, however, that a thorough examination should be initiated. It should be conducted by a medical specialist trained in evaluating memory disorders, such as a neurologist or a psychiatrist, or by a comprehensive memory disorder clinic, with an entire team of experts.

The 10 early warning signs of Alzheimer Disease are:

1. Memory loss affecting day-to-day function
2. Difficulty performing familiar tasks
3. Problems with language
4. Disorientation to time and place
5. Poor or decreased judgment
6. Problems with abstract thinking
7. Misplacing things
8. Changes in mood or behaviour
9. Changes in personality
10. Loss of initiative

4 - 4.7 Diagnosis

The only way to confirm a diagnosis of Alzheimer Disease is through an autopsy. If a post-mortem examination of the brain reveals protein deposits (plaques), and knotted tangles inside the cerebral cortex (the part of the brain associated with memory and learning), then the patient had Alzheimer Disease.

During the past 20 years, however, a lot of progress has been made in identifying "possible" or "probable" Alzheimer Disease *in living patients*. There is no single test that can readily identify Alzheimer Disease. Instead, the diagnosis is made through a systematic assessment that eliminates other possible causes.

The process can involve all the following:

- **Medical History** - focusing on past illnesses and family medical and psychiatric history.
- **Mental Status Exam** - a series of simple questions that test a patient's sense of time and place, as well as their ability: to remember; to express themselves; and to do simple calculations.
- **Physical Exam** - to rule out other possible causes (e.g., nervous system disorders as well as heart, lung, liver, and kidney problems).
- **Blood Work** - to help detect such problems as: anemia, diabetes, thyroid issues or infections). Urine and Spinal Fluid tests may also be done.
- **Other Tests and Scans** - including: X-ray, Electroencephalogram (EEG), Computerized Tomography (CT scans), Magnetic Resonance Imaging (MRI), Electrocardiogram (ECG or EKG), Single Proton Emission Computed Tomography (SPECT), Positive Electron Tomography (PET).
- **Neuro-psychological testing** - designed to rule out other possible causes (e.g., depression).

With the proper battery of tests, doctors can correctly diagnose Alzheimer Disease - in living patients - roughly 90% of the time.

Elaborate testing may also reveal that the symptoms experienced are the product of other conditions. It is estimated that 5-10% of all people with memory loss, confusion and other signs of dementia have treatable - possibly reversible - illnesses. Strokes, tumours, drug intoxication, vitamin deficiencies, thyroid problems - even depression - can produce dementia-like symptoms.

That is why an early diagnosis is so important. Not only can it rule out Alzheimer Disease, but it may allow for the successful treatment of other conditions.

4-5 ALZHEIMER DISEASE - RISK FACTORS

For many diseases, particularly infectious ones, it is easy to identify the cause. Measles, for example, are the product of a virus. When it comes to chronic disorders (long-lasting conditions), however, there is still much that is entirely unknown.

Scientists believe that a variety of factors are at play. In attempting to find the root causes, scientists start by looking for factors that are more common in people who develop a chronic disease. The presence of these "risk factors" is associated with an increased chance that the disease will develop.

Two types of studies are used to determine risk factors. One approach is to monitor a group of healthy people over a long period and compare those who develop a disease with those who do not.

Lifestyle factors (such as diet, smoking, etc.) as well as family and work histories are examined and analyzed in both the diseased and non-diseased groups.

In the second approach, people who already have the condition or disease are compared with people who do not have the disease but are otherwise similar. Researchers then look for differences between the two groups (in such areas as personal and family characteristics, lifestyle, occupation, etc.).

It is important to remember that risk factors are not causes. No single study can verify a link between a disease and a specific factor - repeated investigations are necessary before any direct links can be established.

The following are some of the major "risk factors" associated with Alzheimer Disease.

4 - 5.1 Age

Age is the most significant risk factor for Alzheimer Disease. According to work done by the Canadian Study of Health and Aging, your chances of developing Alzheimer Disease - at various ages - are as follows:

- Between age 65 and 74 - 1 in 100
- Between age 75 and 84 - 1 in 14
- Age 85 and over - 1 in 4

The risk of Alzheimer Disease roughly doubles every five years after the age of 65. As we age, it appears that our body's ability to self-repair becomes dramatically less efficient.

4 - 5.2 Genetics

The most important genetic risk factor for Alzheimer Disease is the presence of the ApoE4 gene. The ApoE4 gene can be passed on from one or both parents.

If an individual has one ApoE4 gene, they are three times more likely to develop Alzheimer Disease than someone without the gene. If an individual has two ApoE4 genes, they are 10 times more likely to develop Alzheimer Disease.

While there is a genetic component to the disease, inherited factors alone do not explain why some people develop it while others do not. Some people with the ApoE4 gene will develop Alzheimer Disease - many more will not.

4 - 5.3 Diabetes

It has been known for some time that type two - or adult - diabetes is a significant risk factor for Alzheimer Disease. It was initially assumed that this was because the blood vessel and heart disorders associated with diabetes were also risk factors for Alzheimer Disease. New research, however, has demonstrated that the utilization of glucose is impaired in the brains of people with Alzheimer Disease - even though they may not have diabetes, their brains appear to be in a "diabetic state."

4 - 5.4 Down Syndrome

Almost every person with Down syndrome, who is over age 40, experiences changes to their brain cells which are typical of Alzheimer Disease. The actual disease usually develops when they are in their 50s and 60s.

4 - 5.5 Mild Cognitive Impairment (MIC)

Mild Cognitive Impairment involves a level of cognitive and memory impairment beyond what is expected during normal aging.

This impairment is not, however, enough to be deemed dementia - the results of formal cognitive evaluations, such as the Mini Mental Status Examination, remain within the normal range. Patients with Mild Cognitive Impairment only demonstrate impairment on specific memory components of cognitive tests.

Some individuals with Mild Cognitive Impairment will remain stable - and free of dementia - for many years. The majority (85% by some estimates), however, will develop Alzheimer Disease within 10 years.

4 - 5.6 Low Levels of Formal Education

Several studies have demonstrated that people who have less than six years of formal education are at higher risk of developing Alzheimer Disease. However, additional study is required to determine whether education makes the difference - or whether other related factors (such as low income, poor nutrition, substandard housing) are responsible.

4 - 5.7 Other Risk Factors

A variety of other factors have been linked to Alzheimer Disease. Among them: head injury, menopause, arthritis, clinical depression, strokes and "mini" strokes, high cholesterol, high blood pressure, stress, obesity and inadequate "exercising" of the brain.

Less firmly established risk factors include smoking, drug abuse and excessive alcohol consumption. Aluminum, it should be noted, is no longer considered to be a risk factor.

4-6 ALZHEIMER DISEASE - TREATMENT

In this section, you will learn how Alzheimer Disease is treated. Because there is no cure, managing the disease usually involves medications to control symptoms.

There has been much interest in using drugs to treat Alzheimer Disease since the 1970s, when it was discovered that people with Alzheimer Disease have less of the chemical acetylcholine in their brains. Acetylcholine relays messages between nerve cells in the brain. Its' role is closely tied to memory, learning, and reasoning, and it is found in the parts of the brain most often affected by Alzheimer Disease. Scientists are also studying the lack of acetylcholine in the brains of people with conditions such as Lewy Body Disease, Vascular Dementia, and Parkinson's disease.

A series of drugs, called "cholinesterase inhibitors," help to reduce the breakdown of acetylcholine - and this increases the amount of this chemical remaining in the brain. Aricept™, Exelon™, and Reminyl™ are all cholinesterace inhibitors that can be used to treat mild to moderate Alzheimer Disease.

All three drugs help to improve cognition, which includes memory, language, and orientation (e.g., knowing things like the date, the time, and where one is). Not only do they slow down overall cognitive loss, but they can also make people less apathetic and indifferent.

Unfortunately, the benefits provided by these drugs are temporary - the improvements peak after about three months of usage. Thereafter the patient slowly regresses - returning to where he started within nine to twelve months. After that time, however, a slower decline is observed (as compared to people who have not received the drug).

Cholinesterace inhibitors are not without side effects. Among them: problems with digestion, nausea, vomiting, and loss of appetite. Fortunately, these side effects tend to be short lived - often only occurring initially and when there is an increase in the amount of medication. In a few people, these drugs can slow the heart rate, causing dizziness and sometimes fainting. Muscle cramps in the legs are also an infrequent side effect.

Another important drug, Ebixa™ has been conditionally approved by Health Canada. It is used to treat moderate to severe Alzheimer Disease. Unlike the cholinesterace inhibitors described above, it works to help normalize the transmission of nerve signals.

None of the above drugs should be considered cures for Alzheimer Disease, as they do not affect the underlying degenerative process of the disease.

4-7 VASCULAR DEMENTIA

The second most common cause of dementia in older people is Vascular Dementia, which occurs when cells in the brain are deprived of oxygen. This can happen if there is blockage in the vascular system - or if it is damaged or diseased. Oxygen deprivation causes brain cells to die, which produces the symptoms of dementia.

Stroke is a common cause of Vascular Dementia. A stroke occurs when a blood clot or fatty deposits (called plaques) block the vessels that supply blood to the brain, or when a blood vessel in the brain bursts.

Vascular Dementia can also occur as a result of a series of very small strokes (often referred to as "infarcts" or "Transient Ischemic Attacks"). Individually these small strokes do not cause any major symptoms, but over time, they become problematic. This form of Vascular Dementia used to be called "multi-infarct dementia."

The symptoms associated with Vascular Dementia include confusion, difficulty concentrating, communicating and following instructions, and a reduced ability to perform basic daily activities. Memory problems may, or may not, be present. And personality is usually unaffected.

Vascular Dementia and Alzheimer Disease often co-exist. When a patient has both, the condition is referred to as "mixed dementia."

4 - 7.1 Distinguishing Features

The symptoms of Vascular Dementia can vary significantly - since they are dependent on the specific area of the brain that was deprived of blood (and oxygen). As a result, the level of cognitive decline, when it comes to such areas as language skills and memory, can vary significantly. Many Vascular Dementia sufferers do not, for example, experience any significant memory loss.

As well, unlike Alzheimer Disease which is characterized by a slow, steady decline, Vascular Dementia often progresses in "steps" marked by sudden, noticeable changes in function.

Functional ability can deteriorate, stabilize for a time, and then deteriorate again.

The possible symptoms of Vascular Dementia include all the following:

- Memory Problems
- Slurred speech
- Language Difficulties
- Lack of concentration
- Difficulty following instructions
- Loss of money management skills
- Abnormal behaviour (e.g., laughing or crying inappropriately)
- Wandering

4 - 7.2 Risk factors

It should come as no surprise that the risk factors for Vascular Dementia are almost identical to the risk factors for stroke … among them:

- High blood pressure (hypertension)
- High blood cholesterol
- Narrowing of the arteries
- A family history of heart problems
- Smoking
- Being overweight
- Diabetes
- Heart Disease

High blood pressure is of concern. In fact, it is rare for a person without high blood pressure to develop Vascular Dementia.

Most of the risk factors associated with Vascular Dementia are highly controllable. Adopting a healthy lifestyle that includes regular exercise, eating well, not smoking, and eliminating stress dramatically reduces the risk of both stroke and Vascular Dementia.

Even if some of the above risk factors do develop, most can be treated. Medications are available to control high blood pressure, diabetes, and heart disease. Blood thinners are also beneficial as are certain surgical procedures designed to unblock arteries to the brain.

4 - 7.3 Treatment

There are currently no approved drugs specifically designed to treat Vascular Dementia. Many of the drugs used to treat Alzheimer patients have, however, have proven effective. But a word of caution: in a 2006 clinical trial in which Aricept was used to treat Vascular Dementia, the drug was linked to a significant increase in mortality.

There is also evidence to suggest that the active management of the risk factors associated with Vascular Dementia, in patients with the disease, helps to prevent any further decline in cognitive function.

4-8 LEWY BODY DISEASE

Lewy Body Disease, the third leading cause of dementia, is a form of progressive dementia characterized by abnormal structures in the brain - called "Lewy Bodies". These structures - largely microscopic protein deposits - appear in both the mid-brain and the cortex, and their presence disrupts the brain's normal functioning.

Lewy Body Disease can occur by itself, or together with Alzheimer or Parkinson's disease.

Lewy Body Disease is remarkably like Alzheimer Disease in a variety of ways: there is progressive loss of memory, language, reasoning, and other higher mental functions, such as calculation. People with Lewy Body Disease also struggle to find the right word; have difficulty sustaining a train of thought; and tend to experience depression and anxiety.

When it comes to physical symptoms, Lewy Body Disease is very similar to Parkinson's disease. The physical symptoms of Lewy Body Disease include:

- Rigidity (stiffness of muscles)
- Tremors (shaking)
- Stooped posture
- Slow shuffling movements

4 - 8.1 Distinguishing Features

As noted, the dementia associated with Lewy Body Disease is like that of Alzheimer Disease, while many of its' physical symptoms tend to mimic Parkinson's disease.

Lewy Body Disease does, however, have several distinguishing features, including:

- Strong psychotic symptoms (i.e., hallucinations)
- Extreme sensitivity to anti-psychotic medications
- A high degree of variability in day-to-day symptoms
- Low blood pressure (hypotension)
- Lewy Body Disease also tends to progress more rapidly than Alzheimer Disease - and unlike Alzheimer Disease and Parkinson's disease - it is twice as common in men as in women.

4 - 8.2 Risk Factors

At present, there is no known cause of Lewy Body Disease. The only risk factor is advancing age.

As with Alzheimer Disease, the only sure way to confirm a Lewy Body Diagnosis is through an autopsy.

4 - 8.3 Treatment

There is no cure for Lewy Body Disease. All that can be done is to manage the symptoms of the disease. Symptoms like Low blood pressure (which can lead to falls) can be managed through improvements in diet and exercise. Other symptoms may require medication.

Unfortunately, many of the medications used to address Lewy Body Disease have unpleasant side effects. Medications used to address hallucinations, for example, tend to worsen the Parkinson's-like symptoms. And the medications used to address the Parkinson's-like symptoms worsen the hallucinations.

The sleep disorders and depression associated with Lewy Body Disease can, fortunately, be treated with medications that do not produce significant side effects.

4-9 PARKINSON'S DISEASE

Parkinson’s disease is a progressive neuro-degenerative disease that involves the loss of cells in a part of the brain called the substantia nigra. These cells are responsible for producing a chemical called dopamine, which acts as a messenger between the brain cells that control movement. It is estimated that by the time the diagnosis is made, approximately 80% of dopamine producing cells have already stopped functioning.

The resulting significant decrease in dopamine produces the symptoms of Parkinson’s disease.

Approximately 85% of an estimated 100,000 Canadians with Parkinson's disease are age 65 or older. And roughly one quarter of this group has developed dementia.

The number of cases of Parkinson's disease increases with age. One percent of elders age 65 and over has the disease … and this percentage doubles (to 2%) in the case of elders age 70 and over.

Parkinson's disease progresses from diagnosis to major disability over a 10 to 20-year period. Younger sufferers (i.e., under age 40) experience more dystonia (involuntary muscle contraction), while their older counterparts are far more likely to experience both trembling and serious cognitive disorders (e.g., memory impairment, concentration difficulties).

4 - 9.1 Distinguishing Features

The following are the hallmarks of Parkinson's disease:

- Tremor (or trembling) at rest
- Bradykinesia (a slowing of physical movement)
- Akinesia (a loss of physical movement)
- Rigidity
- Postural instability

4 - 9.2 Risk Factors

Parkinson's disease is primarily a disease of the elderly, with the first symptoms usually appearing at around age 60. Other risk factors (in addition to age) include ancestry and sex. The disease is more common in people of European decent and men are slightly more likely to develop Parkinson's disease than women (55% versus 45%).

While most forms of Parkinson's disease are *idiopathic* (i.e., there is no known cause), some connections have been established in isolated cases.

In the case of some forms of Parkinson's disease there appears to be a genetic link. Individuals who have one parent with Parkinson's are at higher risk of having the disease, and this link is particularly significant for people who develop Parkinson's disease at an early age.

In other isolated cases, symptoms have been linked to toxicity, drugs, genetic mutation and head trauma. Some recent research also suggests that there is a link between Parkinson's disease and well water, pesticides and rural living.

4 - 9.3 Treatment

As with Alzheimer Disease and Lewy Body Disease, there is no cure for Parkinson's disease.

Most of the medications that are used to treat Parkinson's disease are designed to address the shortage of dopamine in the brain. Levodopa is a popular and effective drug that is converted into dopamine when it enters the body. Unfortunately, it also produces some unpleasant side effects - motor complications that are very difficult to manage.

4-10 CREUTZFELDT - JAKOB DISEASE

Creutzfeldt - Jakob disease is but one of several fatal neuro-degenerative diseases that are caused by prions. The Creutzfeldt-Jakob prion is dangerous because it promotes the rapid refolding of native proteins and this disrupts cell function and ultimately leads to death. The Sporadic, or "classic," version of the disease accounts for roughly 85% of all cases. The disease usually occurs between 45 and 75 years of age and peaks at ages 60-65.

Early symptoms include lapses in memory, mood swings like depression, lack of interest, and social withdrawal. The person may become unsteady on his or her feet. Later symptoms may include blurred vision, sudden jerking movements, and rigidity in the limbs. The person may experience slurred speech and have difficulty swallowing. Eventually, movement and speech are lost completely.

Death can occur within weeks and one half of all Creutzfeldt - Jakob disease sufferers are dead within 4 months. Fewer than 15% survive for more than one year.

4 - 10.1 Treatment

There is no known cure for Creutzfeldt - Jakob disease and science has yet to discover a way to slow its' progression. Some medications are available to help relieve some symptoms (e.g., jerking movements and unsteadiness).

4 - 11 PICK'S DISEASE

Unlike Alzheimer Disease, which generally affects most areas of the brain, Pick’s Disease is a progressive dementia that affects the frontal and temporal lobes. In some cases, brain cells in these areas can shrink or die, while in other cases, they become larger and contain round, silver "Pick’s bodies."

Early symptoms include changes in behaviour (e.g., withdrawal or, at the other extreme, a lack of inhibition), a deterioration of linguistic ability and, on occasion, incontinence. The Pick's Disease sufferer may lose interest in personal hygiene, become easily distracted, or repeat the same action repeatedly. Overeating or compulsively putting objects in the mouth may also occur.

Problems with speech (i.e. linguistic abilities) can range from reduction of speech to total loss (i.e., becoming mute). Echoing what others have said and stuttering are common symptoms, as well. The person may have difficulty sustaining a train of thought or maintaining a conversation for any length of time. Writing and reading is also affected. Unlike Alzheimer Disease, a person with Pick's Disease often remains oriented to time and does not lose memory during the early stages of the disease. It is not until later in the process that confusion and forgetfulness take hold. Eventually motor skills are lost, and swallowing difficulties occur.

Pick's Disease tends to strike individuals who are between 50 and 60 years of age. People with the disease typically die within 7-8 years.

4 - 11.1 Treatment

Little is known about the cause of Pick's Disease and risk factors have yet to be identified. At present, there is no known cure for Pick's Disease and the progression cannot be slowed down.

4 - 12 FAMILIAL ALZHEIMER DISEASE

Familial or early onset, Alzheimer Disease is a rare form of this disease affecting less than 10% of all Alzheimer patients. It is passed directly from one generation to another through a dominant inheritance pattern … if a parent has Familial Alzheimer Disease then each child has a 50% chance of inheriting it. Familial Alzheimer Disease strikes at relatively young ages (usually between ages 30 and 60) and it tends to progress more rapidly than the more common form of the disease.

4 - 13 REVERSIBLE DEMENTIA

It is estimated that 20% of people who exhibit the symptoms of dementia have a reversible, or treatable, condition. For this reason, it is essential to obtain an early and clear diagnosis. Psychiatrists, psychologists, and neurologists may be involved in this process.

4 - 13.1 Alcohol Associated Dementia

Excessive drinking over a period of years may lead to problems that affect memory, learning, and other cognitive functions. Alcohol can have a direct impact on brain cells, particularly those at the front of the brain - and this can lead to poor judgment, difficulty making decisions, and a lack of insight.

Nutrition problems, which accompany chronic, heavy use of alcohol, are thought to be responsible for some of the problems with respect to cognition. Key parts of the brain may suffer damage through vitamin deficiencies - which can lead to both personality changes and intellectual impairment.

The cognitive problems associated with heavy alcohol use may be reversed if the person involved abstains from alcohol, improves diet and finds other sources of the vitamins lost.

4 - 13.2 Normal Pressure Hydrocephalus

Normal Pressure Hydrocephalus involves a buildup of cerebrospinal fluid in the brain's ventricles, which leads to such symptoms as dementia, gait disturbance, and urinary incontinence. This build up in fluid can be caused by subarachnoid hemorrhage, head trauma, infection, tumour, or surgical complications.

Because Normal Pressure Hydrocephalus is most common in people over the age of 60, its' symptoms may be confused with Alzheimer or Parkinson's disease. Although Normal Pressure Hydrocephalus causes deficiencies in short term memory and the gradual diminishing of the thought process, it is not as encompassing as the memory loss that is associated with Alzheimer Disease.

Treatment of Normal Pressure Hydrocephalus involves surgically implanting a shunt in the brain to drain excess fluid. The success of this procedure varies from person to person, but many people recover almost completely.

It is important to diagnose this disease early since this improves the chances of a full recovery.

4 - 13.3 Depression - "Pseudo-dementia"

In some cases, simple depression may produce cognitive problems. Depressed people often withdraw, become agitated, show a lack of attention, and have difficulty concentrating. In some severe cases, depression can also slow down, or retard, the thinking process and adversely impact memory.

As a result, it is often difficult to distinguish between depression and dementia. The former is often misdiagnosed as the latter and this has spawned the term "pseudo-dementia" - a condition that is highly treatable. In most cases, treating the depression also addresses the cognitive problems.

It is also important to remember that dementia and depression often go hand in hand. People with dementia often become depressed and this can significantly worsen their symptoms. Here too, identifying and treating the depression can be quite beneficial.

4 - 14 DEMENTIA MANAGEMENT PRINCIPLES

4 - 14.1 Dementia Is Not Global - Until Late in The Disease

While dementia does involve a progressive deterioration of memory, intellect, and personality, this does not mean that all aspects of mental functioning are impaired to the same degree. In the early and middle stages of dementia, there may be very little deterioration in some areas. As a result, it is very important to try and maximize the affected person's assets. If auditory memory is extremely limited, then an emphasis should be placed on visual memory (e.g., signs, written directions, pictures, etc.).

If memory and language skills are affected, but the ability to enjoy (or even to play) music, or complete simple repetitive tasks are preserved, then these activities should be encouraged.

4 - 14.2 Enjoyment Does Not Require Memory

Collectively we tend to think that only activities that can be remembered are worthwhile. So, if we go on an outing, watch a movie, or share a good joke, this is only regarded as worthwhile if it can be remembered. This kind of thinking can lead us to conclude that there is no point in organizing activities and events for dementia sufferers.

But most activities are enjoyable whether they are remembered or not … and even if they are not remembered, often the good feelings generated by the event will linger after the memory has faded. We should, as a result, try to keep dementia sufferers active and engaged … it will improve the quality of their lives.

4 - 14.3 First In, Last out - Last In, First Out

Dementia sufferers tend to retain long term memory - even though they often forget recent events quite rapidly. Words that were said minutes ago, events that happened yesterday are soon forgotten, but things that took place 20 or 40 years ago are often recalled with great clarity.

Hence, when it comes to memory, it is a matter of "first in, last out - last in, first out."

This can be frustrating for the person affected, but there are simple ways to capitalize on the situation. Dementia sufferers should be stimulated with activities or conversations that rely on old - rather than new - memories.

This approach can even be applied to reading - an activity that is extremely difficult for dementia sufferers. Most are unable to read new material because they are unable to remember what has happened from page to page. However, many can derive considerable pleasure from re-reading the books that they enjoyed in their youth.

In addition, certain types of memory—music, dancing, playing games—are more resistant to decay. Considerable focus should be placed here as well.

4 - 14.4 Reminiscing Is Beneficial

Reminiscing is one of the most popular and enjoyable activities for people with dementia. It draws on long-term memory, one of the few things that remain intact even during the middle stages of dementia. Many sufferers can recall events from the distant past with surprising clarity, even though they struggle to remember their last meal.

Reminiscing on a one-to-one basis is most appropriate, since group activities tend to be too taxing for most dementia sufferers. The following material outlines some of the guidelines to employ.

Always use a focus for the conversation. People with dementia have difficulty remembering information for more than a few seconds. A relevant memory prop such as a photo or a souvenir will help them to stay connected with the activity. Use clear language. "What did you do during the thirties?" may be too general. Say instead, “What work did you do during the thirties?" Give one or two relevant clues when the person is having difficulty answering.

Focus on skills and past achievements. “It sounds like you were a really good artist in high school” or, “did you find it exciting to be working with such a high-profile company?”

Pick up on non-verbal cues. If the person’s eyes show a memory is too painful, drop it and move on to another subject.

Provide stimuli to promote silent reminiscing. Many people with dementia who find it difficult to communicate with others will engage in private reflection. The availability of items such as wall posters, photos, and old music can facilitate private reminiscing.

Offer activities at a level within the person’s grasp. It is easy to over-stimulate or place excessive demands on the person’s abilities. Something as simple as asking too many questions at one time or demanding a response that the person cannot give can bring about an angry response.

Going slowly gives the person time to absorb the questions or the stimulus provided by other materials. Make sure the person with dementia has time to respond in whatever way he is able.

Do not expect dramatic responses or improvements. Encourage all responses. Never stop trying - what works today may not work tomorrow, but it may work once again the next day.

4 - 14.5 Stimulate but Do Not Overwhelm

The aim is to get the most enjoyment out of each day. It is important for those affected to take one day at a time, do one activity at a time, and to stimulate them without being overwhelming. For some, 10 minutes may be enough for an activity, and for others, an hour or two is appreciated.

The aim of the activity is to try and stimulate parts of the brain not affected by the illness and to derive enjoyment from the activity. Board games, such as Trivial Pursuit (using the questions on old knowledge and simplifying the rules), dominos, and checkers are quite easy to play and very useful for stimulation.

Other possible activities include physical exercise, going for a walk, listening to music, dancing, and constructing a "This is Your Life" book. (i.e., a scrap book converted into a biography of the affected person's life using photographs, mementos, etc.).

4 - 14.6 Treatment Varies as Dementia Progresses

As a person with dementia deteriorates, different problems may arise while others may vanish. Early on, a dementia sufferer may become aggressive, suspicious, and paranoid. At this stage anti-psychotic medications, such as haloperidol in low doses for a short period of time (1-3 days) could assist crisis management.

However, it is common for these symptoms to vanish later, and the medications prescribed will no longer be required. Some delusions or hallucinations may be present for a time, but they too often vanish - or lose their intensity and their ability to distress the affected person.

Problems need to be continually reassessed. Treatment that is appropriate at one stage may be inappropriate at a later stage. A day centre for example may be rejected early in the illness by staff as the person may require too much attention and may not benefit from attendance. However, there may be a middle phase where attendance may be stimulating for the patient and helpful for the caregiver.

4 - 14.7 Sequential Regression Occurs with Dementia

Many of the skills that people acquire are lost sequentially with dementia. Think of an infant developing the skills to feed, walk, talk, use the toilet, and dress. In the later stages of the illness, there is regression - and the person with dementia tends to lose these skills in reverse order (starting with dressing).

Even though the dementia sufferer is becoming more and more dependent, it is important never to treat him like a child - or to patronize him. He may be more dependent, but he is still an adult and should be treated as such.

4 - 14.8 Many Factors Affect How Dementia Manifests Itself

Manifestations of dementia are dependent not just on the illness but also on the environment and the family and the person (i.e., what were they like before dementia). Dementia often leads to a caricaturing or an exaggeration of the personality traits that were present before the onset of the disease. Somebody who was dominating becomes obnoxiously so. Someone who was suspicious may become paranoid. Someone who was tidy becomes a perfectionist and obsesses to a fault. Others who were gentle and amiable become even more so.

Frequently there is a flattening of personality and a "loss of self." In some cases, entirely new character traits may become apparent. One of these is disinhibition. Out-of-character behaviour may become quite distressing to family and friends.

Families also influence how dementia manifests itself. In one clinical case, the presence of a spouse was the triggering factor. The wife, in this case, kept insisting that her husband was anxious and uncomfortable in his new environment (a nursing home). Curiously, when he was on his own, he was quiet, gentle, and a pleasure to be with. It was only when he was with his wife that he became anxious and irritable.

It soon became clear that the wife's anxiety was being transferred to her husband. Her presence was influencing how the illness manifested itself.

The environment affects how dementia manifests itself too. If a dementia sufferer tends to wander and he lives in a nursing home at the intersection of two busy highways, with a steep ravine out back, clearly extreme measures will have to be taken to ensure he remains inside.

4 - 14.9 Dementia Affects More Than One Person

Dementia is not just one person's illness—it is the whole family's illness. The burden of care rests squarely on the shoulders of the family in most cases. Many studies now confirm high rates of depression, anxiety, social isolation, and even physical illness in the families of dementia sufferers.

For caregivers to be able to provide high-quality care, they must ensure that they remain healthy. They need to attend to their own physical and psychological health, and make sure they have some social outlets.

All too often caregivers become totally preoccupied with their role as caregivers and put aside their other roles in life—those of friend, parent, and individual. Caregivers need to look after themselves as well as their charges.

Friends and relatives of caregivers should provide as much support as possible. For some this might mean regular and frequent telephone calls, for others it might mean looking after the affected person while the caregiver does the shopping or goes to the hairdresser or has a game of cards with friends. Sometimes professional help is required to give the caregiver a break. This may mean the use of a day centre or residential care for a weekend or a week while the caregiver has some respite.

4 - 14.10 Solve Problems Creatively

If a problem occurs, find out why. Analyze the activity by breaking it down into steps. Is the activity appropriate or relevant for the person? Is the person unable to do the activity because of physical constraints, or because of sensory problems or loss?

Is the block a result of cognitive or intellectual impairment such as inability to comprehend spoken words? Is the person motivated? How safe is the activity? These and other questions are necessary to identify problems and arrive at the best possible solutions.

4 - 14.11 Adapt the Environment, Not the Person

Once the problem has been isolated, consider whether the environment can be adapted (e.g., different bathing fixtures or a double lock on the door), or whether the activity can be changed or simplified. Change the rules of the game. At meals, for example, present only one utensil. Or if an activity is too complex, consider doing one part of the activity, so that the affected person can then complete it.

Often very small changes can have a significant impact. For example, if the dementia sufferer becomes confused looking for appropriate clothes to wear, narrowing the range of options available can work wonders. This can be accomplished in a variety of ways (e.g., removing out-of-season clothing, labeling drawers).

4 - 14.12 Create a Sense of Importance

We all need to feel we have something useful to contribute. Activities should be structured so that the affected person feels useful. Optimize their assets. Avoid using childish motivators, such as sweets. Compliments are more effective when given immediately. Avoid communicating failure; instead of saying "that's wrong", say "try another way" and, if appropriate, demonstrate.

4 - 15 CREATING A SAFE ENVIRONMENT

Providing a safe, secure home environment is a challenge for caregivers who are responsible for dementia sufferers. The bathroom and the kitchen are the two major "danger zones" and require special attention, as most accidents happen in these rooms.

The kitchen is the physical and emotional heart of many homes and an especially attractive place for people with dementia. They may want to continue to prepare meals, make a cup of tea, and even clean up afterward. However, the individual may no longer can perform these tasks safely or properly.

Fortunately, a variety of "safety related" modifications are possible. This will cut down on the amount of “policing" that needs to be done.

Early on, it may be wise to buy an electric kettle for tea or install a circuit breaker on the stove, so the individual can still cook—but only when someone is there to watch.

Latches may have to be put on cabinets and drawers to keep confused loved ones away from dangerous utensils. If there is a concern about breakage, consider buying plastic plates and cups.

If the dementia sufferer deteriorates further and still insists on helping, install a gate or door to make the kitchen off limits - unless another adult is present. As the person becomes more confused, limits will have to be placed on their role in helping prepare food and cleaning up. Use of the kitchen will become more and more restrictive over time. The affected individual may continue doing kitchen tasks safely and independently at first, with supervision later, and eventually not at all.

4 - 15.1 Tips to Reduce Home Hazards

In the later stages of dementia several seemingly drastic steps may be warranted - the following material covers some of them.

Making the stove safe:

- Remove the burner knobs and tape the stem with masking tape
- Install stove knob covers
- Place an aluminum cover over the top of the stove completely hiding both the burners and the burner knobs
- Replace a gas stove with an electric one
- Turn off the stove's circuit breaker or remove the fuse
- Replace the pilot on a gas stove with an electric starter
- Lock the oven door
- Use a microwave, instead

Making the refrigerator safe:

- Put a lock on the refrigerator door
- Prop up the front of the refrigerator so that the door closes automatically
- Remove the door handle of the freezer, use a string pull to open the door and place the string on the top of the refrigerator, out of sight.

Making sinks and showers safe:

- Reduce the temperature in the water heater to below the scalding point (approximately 120 degrees.)
- Install automatic temperature mixers to regulate temperature safely
- Install automatic shut-off mechanisms that turn off the hot water when it reaches a predetermined temperature
- If flooding is a danger when the patient is unsupervised, turn off the water supply values
- Remove and hide stoppers to prevent flooding

Miscellaneous safety tips:

- Unplug or remove knobs from other appliances such as the coffee maker, toaster, or can opener
- Cover sharp counter edges with plastic padding
- Install childproof latches for cabinets and drawers
- Remove poisonous cleaning agents, insecticides, etc., from accessible cabinets
- Disconnect or camouflage the garbage disposal
- Clear out the refrigerator of old food and things that might be harmful if consumed in large quantities

4 - 15.2 Wandering

Much dementia sufferers - especially those with Alzheimer Disease - wander. Many feel compelled to keep on the move. This behaviour may appear to be aimless and confused, or it may be highly focused (e.g., getting to a destination or pursuing a goal). Wandering may occur at any time of the day or night and may result in the affected person leaving the safety of their home. This can expose them to several serious hazards (traffic, weather, water, etc.).

4 - 15.3 Reasons for Wandering

A person may wander for a variety of reasons. They may be too hot or cold, hungry, or in pain. They may just be trying to recreate a situation from the past (e.g., going to work or catching a bus).

Pinpointing the reason for wandering can be a challenging task, especially when verbal communication has become difficult. Fortunately, some non-verbal clues may help establish the wanderer's motivation. The pattern of wandering can also help identify its' source.

Once the reasons for the wandering are established, strategies can be put in place to manage the behaviour.

4 - 15.4 Types of Wandering

- Aimless wandering; non-focused walking with little or no direction and no apparent destination
- Wandering to relieve boredom
- Wandering to relieve feelings of stress or physical discomfort
- Purposeful or Goal-oriented wandering
- Wandering in search of something or in order to return to familiar surroundings from the past
- Wandering in search of security and reassurance
- Wandering to address a physical need, such as hunger or the need to use the washroom
- Wandering due to broken sleep patterns, restlessness, and disorientation at night
- Wandering that results from confusion about time
- Industrious wandering or repetitive behaviour wandering (i.e., the need to keep on the move)

4 - 15.5 Managing Wandering

The following strategies may help caregivers reduce wandering, and ensure that their loved ones are not at risk when wandering.

Reduce the triggers

If a caregiver notices that wandering happens consistently in reaction to the person’s immediate environment, then changing those surrounding conditions (e.g., heat or cold, noise, fear of the dark, etc.) may help to reduce the wandering.

It may also be helpful to remove items that trigger a desire to go outside. Hiding car keys or items of clothing associated with outdoors, such as jackets, may help in discouraging outdoor wandering. Consider disguising doors to the outside by covering them or decorating them so that they do not appear to be doors.

Develop meaningful activities

A person with dementia may be able to participate in day-to-day activities, such as doing simple chores or helping with household duties. Consider past skills and interests when considering activities. Switch to another activity if they show signs of becoming bored.

Exercise

Try to get the person with dementia into a regular exercise program. If possible, go for walks outside together, or go to the shopping mall. Regular exercise can use up extra energy and may help the person to sleep more soundly.

Provide visual cues

Even in familiar places, a person with dementia can become confused or lost. Familiar objects, furniture, and pictures can give the person a sense of comfort and belonging. Consider placing labels on doors and in rooms so that he or she can easily find their way through the house. For example, a picture of a bed may help to locate the bedroom. Leaving a light on in the hallway or providing an illuminated clock by the bed may reduce disorientation at night.

Promote safe wandering

Wandering is not to be entirely discouraged, since for much dementia sufferers it is a useful coping mechanism. A safe and secure environment in which the individual may wander freely can often provide a healthy outlet for feelings and reduce anxiety. If there are doors to the outside that you do not want opened, place locks where they cannot be seen or reached. If they are still able to get past the locks, a bell or alarm which signals when the door is opened is a good safety precaution. A safety gate across doors or stairs may help keep the wandering person in a limited area where exploring can be done freely and without risk. A sound-sensitive monitor placed where the individual is, can be used to keep track of his or her location and movements. With very little effort the outdoors can also become a safe place for people who suffer from dementia. A fenced backyard, for example, can offer them a safe environment in which to enjoy everything that nature has to offer.

Keep records

A diary or log may be helpful in trying to understand the nature of the wandering behaviour. It will help identify such things as: wandering times, patterns and wandering cues. Notes should be made on why the incident occurred, how long it lasted, and what seemed to help address it. It is also a good idea to record any peculiarities that are noticed.

4 - 15.6 Wandering From Home

It is not easy to remain calm and think clearly when a loved one has wandered from home, but the following strategies may prove helpful.

Check common areas

Try to establish a sense of how long the person has been gone. Look inside the house, including the basement, before expanding your search to the outdoors. Check to see if any items such as luggage, car keys, or credit cards are missing. These may provide clues to the individual's whereabouts. If you live in a rural area, do not search on your own. You may endanger yourself and complicate the search for the police.

Contact the police

When contacting the police, share any records you have which may assist in their search. Let the police know about any medical conditions or medications the person is taking. Provide them with a recent photograph and if you know of any areas that the person may have wandered, share this information with them.

Mobilize support

If the family will be involved in the search for the person, ensure that someone stays at home in case the individual returns. As well, alert friends and neighbours that the person has wandered away.

4 - 15.7 Tips for Reuniting

A person with dementia who has been found wandering will often be anxious and confused. Using the following communication strategies may prove beneficial.

Approach calmly

Approach the person in a casual manner, making sure that they see you coming. If the person does not wish to return home immediately, walk a short distance with them while speaking in a calm, normal tone of voice.

Provide reassurance

Reassure the person about where they are and why. Let them know that the family has been worried about them and will be happy to see them return home. Talk to them about familiar things that may trigger a desire to return home. An invitation to have a cup of tea or feed the dog may be enough to prompt the person to return home with you.

Keeping perspective

The whole experience of wandering can be extremely stressful. Remember that the behaviour is a part of dementia - especially among Alzheimer Disease sufferers. Neither the family, nor the person is to blame.

After any incident, steps should be taken to prevent a recurrence. Keep in mind that restraints should be discouraged since they can have serious effects on the emotional and physical well-being of the person affected.

4 - 15.8 MedicAlert

The Alzheimer Society of Canada has partnered with Canadian MedicAlert Foundation, a non-profit organization with more than 50 years of experience in providing a voice to Canadians in an emergency, to enhance the safety of people with dementia.

The MedicAlert ID and service was originally created to help emergency responders treat people quickly and effectively who could not speak for themselves. Today, the service can also help people living with dementia who go missing.

People with dementia can become lost even in familiar places. If you care for someone with Alzheimer's disease or other dementia, the scenario you likely fear most involves that person getting lost and coming to harm. Now, with MedicAlert protection, there is an effective way to identify the person who is lost and bring the family back together.

The program offers:

24/7 Emergency Hotline Medically trained specialists are available to answer within 5 seconds and immediately supply police and emergency responders with the member's physical description, emergency contacts and critical health information.

MedicAlert Identification Critical medical information and the Hotline Number are engraved on the ID bearing the MedicAlert symbol recognized by emergency responders.

Family Notification When called, the 24-hour Emergency Hotline specialists immediately notify caregivers or family to let them know the situation and location of the member, reducing anxiety for everyone.

The protection of a MedicAlert Safely Home membership includes:

- An exclusive MedicAlert ID
- A comprehensive electronic medical profile with unlimited updates
- A 24-hour Emergency Hotline staffed with trained specialists available in 140+ languages – ready to speak for the member
- Family/emergency contact notification immediately after the hotline is called
- Follow-up with the caregiver after the Emergency Hotline is contacted
- A wallet card with health information and emergency contacts
- Access to an online electronic medical profile anytime, anywhere

The MedicAlert Safely Home enrollment price of $60 includes the cost of MedicAlert membership for 1 year, a complimentary stainless steel MedicAlert ID bracelet exclusive to people living with dementia, applicable taxes and shipping & handling.

4 - 15.9 When Home Is No Longer an Option

- Eventually many elders with dementia will be unable to remain in their homes - especially in situations where they are at severe risk of falling, wandering, or if they have serious behavioral issues. The decision to place an individual with dementia in long-term care is dependent on a variety of factors. Patients, who are unmarried, or who have increased functional impairments (as measured by "Activities of Daily Living," - or ADL - scales), or who have lower cognitive status at baseline, all have an increased risk for subsequent long-term placement.
- According to one community-based prospective study, one-half of patients with dementia are institutionalized within 2.5 years of diagnosis - and the median time from estimated onset of disease to nursing home placement was 5.6 years.
- Interestingly, the death of a spouse or hospitalization preceded institutionalization in one-third of cases.

4 - 16 DEMENTIA AND DRIVING

In looking out for the safety of elders with dementia, "driving" also must be put on the table for discussion.

Think back to when you first received the right to drive a car. Think of the independence, convenience and satisfaction that driving provided. Now, imagine how devastating it would be to learn that your driving privileges are being removed. Think of the loss of dignity and self-esteem.

For many elders, especially those suffering with dementia, the decision to stop driving is often made for them.

Taking the keys away can evoke high levels of emotion for both the caregiver and the person suffering with dementia. Often the entire family grapples with the decision. As unpleasant as it can be, we cannot forget that most forms of dementia involve a progressive degeneration of the brain. As dementia advances, memory, judgment, response time and physical agility are all compromised.

Driving a motor vehicle is a complex activity that requires quick reactions, good judgment, an understanding and recall of the rules of the road, an ability to find a destination, and good eyesight and hearing.

A diagnosis of dementia does not automatically mean that the person is incapable of driving. In fact, individuals with dementia are often able to drive for several years after diagnosis.

However, eventually the loss of orientation, judgment and the visual-spatial difficulties associated with dementia may place the affected person—and the public—at risk. Unfortunately, there is, at present, no test to determine the precise moment at which a person with dementia should stop driving a motor vehicle. And when the decision is made it may be strongly resisted. Attempting to remove driving privileges is a veritable minefield for family caregivers and physicians.

4 - 16.1 Warning Signs

When driving is recognized as dangerous, automobile access must be removed immediately. Signs that a person's driving abilities are declining include traffic violations, accidents, slow response time, taking too much time to reach a destination, or not reaching the destination at all.

The driving ability of a person with dementia needs to be monitored in conjunction with family members and health care professionals. It is vital that all involved in this process keep informed.

How and when to insist that driving stops is far from an easy decision. But a shared concern for the well-being of the individual and the public - along with open dialogue - should facilitate the decision-making process.

Caregivers can often achieve the best results by seeking support from professionals outside the family. Some of the key warning signs to look for are covered in the chart below, which has been prepared by The Hartford Insurance Company.

Table 4 - 4 Driving and Dementia - Warning Signs

Warnings	Date(s)	Notes
Incorrect signaling		
Trouble navigating turns		
Moving into a wrong lane		
Confusion at exits		
Parking inappropriately		
Hitting curbs		
Driving at inappropriate speeds		
Delayed responses to unexpected situations		
Not anticipating potentially dangerous situations		
Increased agitation or irritation when driving		
Scrapes or dents on the car, garage, or mailbox		
Getting lost in familiar places		
Near misses		
Ticketed moving violations or warnings		
Car accident		
Confusing the brake and gas pedals		
Stopping in traffic for no apparent reason		
Other signs		

4 - 16.2 Help from Health Care Professionals

Health care professionals will be more likely to discuss driving issues with a dementia sufferer if a caregiver has already consulted with them (and shared their observations about driving behaviour) privately. This input can help because physicians do not have tests to determine definitively when a person in the early stages of dementia should not drive. In addition, some doctors may hesitate to bring up a topic that is this emotionally charged for fear of jeopardizing their relationship with the patient.

4 - 16.3 Other Sources of Support

Lawyers, financial planners and care managers may be able to raise questions about driving safety. Caregivers can enlist their assistance by asking them to mention the subject as part of the planning process. Alzheimer support groups also offer caregivers and persons with dementia opportunities to share their concerns and explore options.

4 - 16.4 Easing the Transition

The following tips can help people with dementia manage the transition from driver to passenger. The person with dementia should:

- Be encouraged to talk to a friend or family member about what driving means to them. Work with their family to create a transportation plan that meets their needs. Consider this agreement about driving to balance independence with safety.
- Volunteer to be a passenger, allowing others to do the driving.

4 - 16.5 Tips to Help with the Decision

The following tips can help caregivers who are struggling to decide when to limit or cease the driving privileges of a person with dementia.

- Observe the person with mild dementia when driving.
- Keep a written record of observable driving behaviour over time.
- Share observations of unsafe driving with the person with dementia, other family members and healthcare providers. Allow the person with dementia to express how he or she feels about not driving.
- Create opportunities for you or others to drive the person with dementia.
- Ask professionals outside the family to raise questions about driving safety.
- Initiate conversations about driving and transportation needs early and often.

The following agreement (from The Hartford Insurance Company) may prove useful:

Agreement with My Family about Driving

To my family:

The time may come when I can no longer make the best decisions for the safety of others and myself. Therefore, in order to help my family, make necessary decisions, this statement is an expression of my wishes and directions while I am still able to make these decisions.

I have discussed with my family my desire to drive if it is safe for me to do so. When it is not reasonable for me to drive, I desire _____ (person's name) to tell me I can no longer drive.

I trust my family will take the necessary steps to prohibit my driving in order to ensure my safety and the safety of others while protecting my dignity.

Signed: _____Date _____

4 - 17 RESPONSIVE BEHAVIOURS

Anyone who deals with elders with dementia must learn to distinguish and cope with a variety of changes in mood and behaviour. People with dementia suffer from depression, anxiety, and may sometimes demonstrate very aggressive behaviour as a result. Much of this stems from their inability to remember, reason, and communicate.

Some of the major problem behaviors' exhibited include wandering (covered earlier), paranoia, suspicion, being aggressive and not looking after personal hygiene in some cases. All can be overwhelming for caregivers and others.

A variety of measures can be taken to help reduce the incidence and impact of problematic behaviors'. Among them:

- Modifying the person's environment in order to reduce confusion caused by over stimulation, such as reducing noise and glare from windows.
- Explaining a task before you do it, such as saying, "I am going to help you put on your shirt."
- Providing a predictable routine at home with structured times for meals, bathing, exercise, and bedtime.
- Providing reassurance to the confused patient without challenging their misperceptions

If these strategies are not helpful in managing the affected person's behaviour, it may be necessary to have a physician prescribe medications to manage the symptoms (e.g., depression, restlessness, hallucinations, hostility, and agitation).

Before resorting to medication, the physician will want information regarding the problem. (i.e., its' triggers, frequency, the time of day it occurs, and the strategies already tried).

4 - 17.1 Depression

There is a complex relationship between depression and dementia. The symptoms of dementia and depression are often similar (e.g., withdrawal from social activities and general apathy). So similar that it is not uncommon for an elder with severe depression to be misdiagnosed as having dementia.

The situation is further complicated by the fact that the person with dementia may also be depressed. Dealing with the consequences of a diagnosis of dementia, a major life event, may trigger the onset of depression. There may be a sense of loss and a period of coming to terms with the diagnosis.

Depression is four times more likely to strike people over age 65 than under. Sadly, most people never get the help they need.

Symptoms of depression

The presence of at least four of the following symptoms over a two-week period may indicate depression:

- Depressed or irritable mood
- Feelings of worthlessness, self-reproach, or excessive guilt
- Suicidal thinking or attempts
- Motor retardation or agitation
- Disturbed sleep
- Fatigue and loss of energy
- Loss of interest or pleasure in usual activities
- Difficulty thinking or concentrating
- Changes in appetite and weight

Medicines

Antidepressant medicines can be very helpful for people who have both dementia and depression. These medicines can address such symptoms as sadness and apathy, and they may improve appetite and sleep problems as well. None of the medicines prescribed are habit-forming. Other medicines are available if the symptoms of depression include such problems as hallucinations and anxiety.

What else can help?

Try to maintain a daily routine for the person who has dementia. Avoid loud noises and over stimulation. A pleasant environment with familiar faces and mementos helps soothe fear and anxiety.

Have a realistic expectation of what you can accomplish. Expecting too much can make everyone feel frustrated and upset. Let the dementia sufferer help with simple, enjoyable tasks, such as preparing meals, gardening, doing crafts, and sorting photos. Be positive and offer frequent praise.

4 - 17.2 Mood Swings

Everyone has a bad day occasionally or may become sad or moody from time to time. But someone with dementia can exhibit rapid mood swings for no apparent reason, (e.g., from calm to tears to anger to calm in a few minutes) - and the changes can be drastic. Dementia sufferers often become extremely irritable, suspicious, or fearful.

At the other extreme, the dementia sufferer may demonstrate a complete lack of initiative. They may become very passive and require cues and prompting to get them involved in the most basic of activities.

Remember that the behaviour is not deliberate - and it is likely out of the control of the dementia sufferer. What they often need is reassurance, even though it may not appear to be the case. For them, trying to make sense of the environment around them becomes a difficult task.

Simple tasks such as bathing, dressing, and eating are all major hurdles to overcome. People with dementia are frequently confronted by failure, so maintaining their dignity is very difficult.

Three common worries which caregivers express:

- Is the person for whom I am caring brooding about past tensions and misunderstandings, which have occurred between us?
- Does he (or she) hate me now?
- Have I done something unintentionally to upset him (or her)?

These are all normal reactions—it is important to realize that most of the anger and aggression is directed against the caregiver, because they are available. However, it is not a calculated personal attack.

4 - 17.3 Violence and Aggression

Aggressive behaviour may come on without warning and make the caregiver feel very apprehensive. However, if it is possible to determine what situations trigger catastrophic behaviour (perhaps by keeping a diary), it may be possible to manage it effectively

Sometimes the person with dementia may become very violent for a short time. They may become verbally abusive, cause damage to property or become aggressive physically (this often occurs when someone else initiates physical contact). This could, for example, be caused by someone walking into the person's bedroom, awakening them and beginning to get them ready for bath time. Try to stay calm and do not show fear or alarm. Try to understand that even if the aggression is directed at you, it is not a personal attack. It could be from the person not recognizing you. It could be an act of protection as well.

Violence could be caused by:

- **Defensive behaviour** - people with dementia may feel humiliated and frustrated when they are placed in a situation where they must accept assistance, especially with intimate tasks such as bathing and toileting. When their independence and privacy are disrupted, they may react angrily.
- **Failure of competence** - the person is not able to cope with certain tasks and may feel a failure.

- **Misunderstanding and bewilderment about what is going on** - as the illness progresses, the person may be bewildered by events. For example, accusations of stealing may be an attempt to make sense of their inability to locate something and an unwillingness to accept that they have forgotten where they put it.
- **Fear** - if the person is unable to recognize people or places, this may be very frightening. The person may be convinced they should be somewhere else (e.g., childhood home) or may believe the person with them is a stranger. Sudden noise or people approaching from behind may cause a hostile reaction. Changes in routine such as the presence of a lot of people, a special event, distracting noise or activity may cause the person to feel unable to cope.

Coping with aggressive behaviour in the elder:

- Institute preventive measures
- Attempt tasks, which cause outbursts at the time of day when the person is at his best
- Try not to rush the person—reduce stress by minimizing distractions such as loud noise or excessive activity
- Be aware of the person's limitations and do not expect too much
- Encourage independence by allowing the person to do as much for himself as possible even if it takes longer and is not as efficient
- Avoid confrontation wherever possible—try distraction or suggesting alternatives
- Praise things that are done well and try not to criticize
- Think about how to offer help tactfully without taking over
- A simple suggestion such as having a cup of tea may defuse the situation—or you may need to withdraw until things have calmed down
- It may be helpful to explain the situation to other people
- Be aware of warning signs such as anxiety or agitation (flushing or restlessness, or refusal to comply with requests)
- Exercise may be a helpful preventive measure
- If you suspect the person is ill or in pain, particularly if the aggression is uncharacteristic, it would be wise to consult a physician. The outburst may have been caused by an infection or discomfort, which can be remedied
- Remember that preventive measures may not always work do not blame yourself if aggression does occur, but concentrate on handling it as calmly as possible

Coping Strategies:

- Do not attempt to restrain the person, lead them away, corner them, approach them from behind or initiate any form of physical contact; it may be better to leave them alone until they have recovered, or you may wish to call in a friend or neighbour for support
- Try not to take it personally
- Try not to raise your voice
- Do not provoke by teasing or laughing
- Avoid punishment—the person will probably not remember the event and is therefore not able to learn from it
- Try not to show fear or alarm
- Try to provide alternatives to the behaviour
- Speak in a calm, reassuring voice and attempt to distract
- Try to remain detached and do not allow yourself to be provoked or drawn into an argument; try taking a deep breath and counting to ten
- Try to tell yourself that you are dealing with the illness rather than the person
- If you do lose your temper, do not feel guilty—but do try to talk it over with a friend or professional worker who can offer you support
- If aggressive incidents are very frequent, consult a physician and, if necessary, a geriatrician or psychiatrist—it may be necessary to consider using some form of medication and this will need to be done with careful monitoring since some tranquilizing medications can increase confusion

4 - 18 OTHER BEHAVIOURS

4 - 18.1 "Sundowning" or Sundown Syndrome

People with diseases such as Alzheimer Disease often have behavioural problems in the late afternoon and evening. They may become demanding, suspicious, upset or disoriented, see or hear things that are not actually present, and believe things that are not true. Alternatively, they may pace or wander around the house when others are sleeping. This late afternoon/evening behaviour is called "Sundowning."

While experts are unsure how or why this behaviour occurs, they suspect that the problem may be a result of a combination of the following:

- The person with dementia cannot see well in dim light and becomes confused.
- The impaired person may have a hormone imbalance or a disturbance in his/her biological clock

- The person with dementia gets tired at the end of the day and is less able to cope with stress
- The person is involved in activities all day long and grows restless if there is nothing to do in the late afternoon or evening
- The caregiver communicates fatigue and stress to the person with dementia and the person becomes anxious

4 - 18.2 Addressing Sundowning

- Make afternoon and evening hours less hectic. Schedule appointments, trips, and activities such as baths or showers early in the day.
- Help the person to use up extra energy through exercise. For the person who tends to pace or wander in the evening, you may want to arrange at least one or two brisk walks during the day.
- Control the person's diet. Reduce foods and beverages with caffeine (chocolate, coffee, tea, and soda) or restrict them to the morning hours to reduce agitation and sleeplessness. An early dinner or late afternoon snack may also help.

It is important to provide regular activities and you may want to discourage napping during the day if nighttime sleeplessness is a problem. You may want to reduce the level of noise from radios, televisions, or stereos, control the number of people who visit in the evening hours, or confine noisier family activities to another area of the house.

Consult with your physician. Your physician may be able to prescribe medication to encourage sleep. At the same time, your physician can check for signs of depression, or physical problems, such as prostate difficulties that might lead to frequent urination. This condition can cause pain and make sleep uncomfortable. Make it easy for the person to use the bathroom.

Consider a bedside urinal or commode. Alternatively, encourage the person to use the bathroom before going to bed. Keep rooms adequately lit. Good lighting may reduce the person's confusion. A night light may prevent the person from becoming agitated in unfamiliar surroundings.

4 - 18.3 Shadowing

Sundowning is often accompanied by "shadowing," where the person with dementia either follows or mimics the caregiver, often talking, interrupting, and asking questions repeatedly. At times, the person may become upset if the caregiver wants to be alone. While shadowing and other forms of agitation vary from person to person, the caregiver may be able to manage the behaviour by asking the following questions:

- How long does the behaviour last?
- At what time of day does it occur?

- Do certain people or surroundings trigger the behaviour?
- What seems to calm the impaired person?

Once you establish answers to these questions, you may be able to avoid the situations that bring about shadowing and instead introduce activities that help calm the affected person. Some medications may also be helpful.

4 - 19 CAREGIVING CHALLENGES

The caregiver is the most important person in the life of an individual with dementia. Taking care of someone with dementia can be a demanding task - even for someone who is young and in good health. It requires time and energy, and the work can be challenging. Not surprisingly, many caregivers suffer health problems that result from the intense demands of looking after a dementia sufferer.

It is essential, therefore, that caregivers take the time to look after themselves.

Depression is twice as common in someone who cares for a dementia patient than in someone who cares for a person without dementia. The caregiver is often referred to as the hidden, or second, victim of dementia. They often develop stomach problems, headaches and have trouble sleeping. The emotional stress of care giving can cause depression, tension, anger, guilt, loss of self-esteem and feelings of being overwhelmed. The caregiver may even engage in uncharacteristic and frequent abnormal behaviour (e.g., screaming episodes).

To make matters worse, many caregivers think that others cannot understand how they feel and that their feelings are unacceptable. Most caregivers do not even recognize the connection between the stress they are feeling and the physical and emotional symptoms they have developed.

The demands of looking after a dementia sufferer increase as the disease progresses. Eventually if the individual lives long enough, they will be unable to perform any of the basic activities of daily living and this means that total care will have to be provided. This places further demands on the caregiver. To compound the problem, as the dementia progresses, so do the financial difficulties associated with it.

Research is finding that nursing home placement seldom offers relief for the caregiver. There are no significant differences in the stress symptoms of caregivers who provide 24-hour care and those whose loved ones are in a long-term care facility. The reason, scientists believe, is that the caregiver's commitment to the patient is still strong.

4 - 19.1 Caregiver Feelings

Initially caregivers tend to be in denial. Accepting reality is not easy, because with reality comes fear. They fear for themselves, their future and their ability to cope.

As the disease progresses, caregivers tend to feel helpless, trapped, or tied-down by the care their loved one requires. They may resent other family members for not helping or they may resent the illness for cheating them of the time they thought would be theirs.

Likewise, they may feel angry, embarrassed or frustrated by their loved one's behaviour and the situation they are in.

As family and friends drift away, the caregiver may feel lonely and isolated. They also may feel grief, even while their loved one is still alive. As the mental deterioration takes its' toll, the caregiver comes to realize that the person they loved is already gone.

Any or all these feelings can result in feelings of guilt.

4 - 19.2 Coping techniques

The following list covers a variety of coping techniques that can be employed by the caregivers of dementia sufferers.

- Take one day at a time but prepare for the future.
- Recognize which problems you can do something about, and which are beyond your control. Focus on changing the things that you can change.
- Be realistic about your ability and how much you can do. Do not try to do it all - to accomplish as much as you did before you became a caregiver.
- Be realistic about your loved one's changing ability. Enjoy the past and its memories, but realize that your loved one has different needs, abilities, and interests now. Your relationship has changed, but it can still be meaningful and rewarding for both of you.
- Forgive yourself if things do not go right. When you lose patience, shout, or get angry, do not be too hard on yourself. A soft word or gentle touch will make amends. Be grateful that your loved one may quickly forget an oversight or mishap.
- Find out what resources are available and use them. Let family and friends know when you need help and accept their help when offered. Avoid giving relatives false reassurance about your ability to provide care. If you think other family members are not helping as much as they could, talk to them, frankly.
- Be good to yourself. Remember that you are entitled to some pleasure and an occasional self-indulgence, such as a good book or a special dinner.
- Keep your sense of humour and use it often.
- Allow time for your feelings. Find a friend you can talk to or attend a support group meeting where you can express your feelings.

In the words of Edna L. Ballard of Duke University, “Our care giving tasks become easier when we are able to let go of old expectations."

4 - 19.3 Getting Help

If the caregiver is depressed, angry, frequently crying, unable to eat, losing weight, lacking sleep, feeling overwhelmed, experiencing frequent headaches or stomach pain and disturbance, or abusing alcohol or drugs, they may have been overlooking their own needs. It is time to re-evaluate priorities and look at what responsibilities can be reassigned. Caregivers should also think about getting help from a professional counselor, their clergy, or family physician.

4 - 19.4 Respite Services

The more rested the caregiver is, the better care they can provide for their loved one, and the better they will be able to cope. The use of respite services such as adult day care programs, home health aides, or short-stay nursing home programs can give caregivers the chance to take a break from care giving. They can run errands, go to a doctor's appointment, or even get a weekend away. In addition, the experience with a respite service will help their loved one cope better if something should happen to the caregiver and he or she must be cared for by others.

4 - 20 DEMENTIA AND COMMUNICATION

Communication involves getting across what you mean and having another person really understand it. This is not always easy, even under the best circumstances, when you are dealing with someone with dementia. Communication can be quite difficult. The disease impairs the person's ability to understand words, to find words to use, and to put ideas together and hold them in place. Loss of the ability to communicate with others may frustrate the dementia sufferer. The person may feel cut off from others. He or she may feel a loss of control over things. This, in turn, may make the person feel less secure and more anxious. Problems in communication may pose special problems for the caregiver. A caregiver is concerned with providing companionship, ensuring the patient's safety, and managing the daily routine. Communicating as well as possible with the impaired person is very important in meeting these care giving goals.

It may well be necessary to set up new ways of communicating with the person. The caregiver will have to be mindful of safety as well. A person who cannot understand or remember safety warnings runs an increased risk of self-injury and even of injuring others. The caregiver must be alert to any problems such as vision or hearing loss, which might further impede communication. Finally, as the person becomes less able to use good judgment, a caregiver will need to make all decisions for him or her.

4 - 20.1 Improving Communication

Good communication involves the following:

- Active listening
- Watching and listening. These activities play a big part in good communication. The goal of active listening is to understand not just the words a person says but the meaning the person is trying to get across
- The timing and the setting of communication
- Some settings make communicating easier while certain times seem to be better than others. Be sensitive to potential problems and eliminate distractions
- Effective self-expression

Think ahead about what you will say as you speak with an affected loved one. Know what information you want to tell or find out and break this information down into individual parts. You will want to simplify everything as much as possible. For example, give just one direction or piece of information at a time. Just ask one question at a time. Try to think of brief, easy-to-understand words and sentences to explain what you mean but speak as you would to an adult. Do not talk down or use 'baby talk.'

- Be sensitive to your own style of communicating. Take note of how you say things. Are you saying what you really intend? Are you saying it clearly and simply? Do you give other messages through your tone of voice, facial expression, or your body language? Listen to yourself. Is your voice louder than usual? If so, you may be perceived as angry or upset. Even if the impaired person has a hearing problem, try to speak in a clear, pleasant voice. Speaking slowly and clearly will help. (Remember to always speak in an adult-to-adult manner.)
- Watch your "body language." Are you smiling or frowning as you speak? Are you at ease or tense? If your words and the way you say them do not agree with how you feel and what you really mean, you may very well give a mixed message. Impaired people do not necessarily lose the ability to "read" such non-verbal cues. This processing is completed at a subconscious level.

4 - 20.2 Improving Listening Skills

Stop talking. You cannot listen if you are doing all the talking. Be patient. If a thought is difficult or complex, it may take longer for an impaired person to understand or respond. Two or three minutes may be needed before the person can even begin to answer your question.

Keep in mind that you can repeat the question or idea after waiting a few minutes for a response. Keep things simple. Use short sentences and plain words. Avoid complicated questions or directions.

Anticipate problems. Be prepared, for example, to repeat yourself many times without losing your temper. Do not interrupt. The impaired person may need extra time to express what he or she wishes to say.

Show interest. Let the person know that you care what he or she is trying to say. Maintain eye contact and stay near the person. Try to sit if the impaired person is sitting or lying down, so you are both at the same level. Sometimes a gentle touch on the hand can be a way of making sure you have the person's attention before you begin speaking. Be gentle and make allowances for poor behaviour. Outbursts are not unusual with this disease, but these are not deliberate. Try to be calm and to use tact, even if the impaired person is loud or abusive. Try to respond to any negative statements with understanding comments until the angry outburst ends.

Sometimes the person will say things that hurt you very much, will use language that offends you, or will speak in a way you do not like. At these times, it is important to remember that while these things do hurt, they are not meant personally.

4 - 20.3 Improve the Setting and Timing

Make sure the impaired person can see you well. Sit or stand directly in front of the person and look at him or her when you speak. Avoid glaringly bright or too dark settings.

Avoid distractions. Communication will be hard, if not impossible, under several circumstances:

- When the impaired person is involved in some other activity that requires concentration.
- When the background is noisy (loud street noise, or the sound of the television or stereo).
- When other things or people can attract the impaired person's attention (at shopping centres or restaurants, for example).
- Set aside a quiet place. You may even want to set aside a certain area in your home just for communicating. Try to find a quiet, simple place where you can go when you want to get something across to the impaired person. This could be a separate room or perhaps just a corner.
- Plan, and take extra time. Try to observe the impaired person's daily patterns.
- Does he or she seem better able to communicate at certain times of day? If so, you can take advantage of good times for important activities and communications. You will also be able to anticipate problems during the bad times and be prepared to allow extra time for explanations.

4 - 21 PLANNING AFTER THE DIAGNOSIS

A diagnosis of dementia can be devastating to the person affected and to family and friends. Eventually people with dementia become totally unable to care for themselves. This raises a variety of issues with respect to financial matters, legal guardianship, and will and estate planning.

The following provides a brief overview of what to expect in the days, weeks, months, and years after a diagnosis of dementia.

4 - 21.1 Basic Tips for Caregivers

In the early stages, when there are relatively few symptoms, caregiver responsibilities include being attentive to the dementia sufferers needs, mitigating memory or communication problems, and staying alert to changes in the person's condition. Regular visits with the person's physician should also be scheduled.

This is also the time to commence financial planning, which includes the execution of a living will or trust, and assignment of durable power of attorney. Any benefits that the caregiver or dementia sufferer may be entitled to (among them certain tax deductions) should also be applied for.

In the middle stages of the disease, depending on the degree of impairment, there may be a need make some home adaptations to accommodate the dementia sufferer and ensure their safety. There will also be a need to carefully manage and monitor a medication schedule.

At this time, it may also be necessary to commence nursing and custodial care (personal hygiene, use of the commode, etc.). As well, caregivers will likely be actively participating in legal and financial decision-making at this point.

During the final stages of the disease, caregiver responsibilities may include being as attentive as possible to needs that can no longer be expressed; maintaining the medication schedule; arranging for an alternative living situation and preparing for the eventual death of the sufferer.

4 - 21.2 Money Matters

If the bank account is in joint names, the partner of the person with dementia can continue to operate it without any change in arrangements. However, problems can occur if the person with dementia uses the account inappropriately or has accounts in their name only.

Measures must be taken to ensure that the responsibility for managing financial matters is removed from the person with dementia.

Early planning allows the person affected both to participate in the process and make sure that their wishes are carried out. It also ensures that any documents (e.g., trusts, living wills, powers of attorney) that may be necessary are processed while they are still legally competent.

4 - 21.3 Family Meeting

Many experts suggest that a family meeting should be held as soon as possible after a diagnosis of dementia. All key family members (including the person with dementia) should be in attendance.

Among the topics that should be covered:

- Drafting of a will, if not already done
- Estate property and asset distribution
- Power of attorneys
- Funding for Long Term Care
- Life Insurance policies
- Location of wills
- Funeral plans and burial plots
- Location of bankbooks, account numbers and investments
- Location of tax records
- Location of names for Lawyers, Accountant, Financial planners, and Brokers
- Location and information of any pension plans, RRSPs, Securities, etc.
- List of any bills due and due dates

A contingency plan should also be put into place - especially in situations where the primary caregiver is also elderly.

4 - 22 CONCLUSION

Although there is no known cure for most forms of dementia, there is much that can be done to improve the lives of individuals who suffer.

To begin with we must continue to focus money and resources on research. The Canadian Institutes of Health Research (CIHR), the Government of Canada's premier agency for health research, currently invests tens of millions of dollars in dementia research. As a society we need to provide ongoing support to efforts of this nature.

We also need to work on strengthening Canada's Health Care System … particularly as the number of elders - and elders with dementia - increases dramatically during the coming years.

In addition, we need to focus on removing many of the barriers that limit access to the services available to dementia sufferers. The experts who work with communities and care providers have identified eight barriers, including: the stigma of dementia, lack of privacy and anonymity, lack of awareness and lack of access to services because of distance. Several proposals directed at overcoming these barriers, include making caregivers more aware of available services and how they can help, and better public education designed to break down the stigma that is associated with dementia.

Dementia is all about communication: communicating with the affected individual, medical staff, family, support staff, and caregivers. After the initial diagnosis, a lot of coordination is necessary to ensure the best possible quality of life for the dementia sufferer.

As a society, we must listen with our ears, our eyes, and our hearts. We must focus on the individual we are helping. We must focus on their needs. They are the most important person right now!

Danny Thomas said it best years ago, “Success is not built on what we accomplish for ourselves. Its' foundation lies in what we do for others.”

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Chapter 5

Nutrition and Fitness

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5 - 1 KEY OBJECTIVES OF THIS CHAPTER

This chapter looks, in detail, at the benefits associated with good nutrition and a healthy active lifestyle. No one can escape old age, but the quality of our "elder years" is heavily dependent on the decisions we make early in life. The material that follows is designed to help you and the people you care about, to choose wisely.

5 - 1.1 How Will This Objective Be Achieved?

We will examine a variety of "keys" to longevity - with attention paid to diet, nutrition, digestive health, and exercise. We will also look at such elder specific topics as:

- Causes of poor elder nutrition
- Healthy elder food choices
- Unique elder nutritional requirements
- The role of supplements in elder diets
- The connection between diet and disease
- The importance of exercise - at any age

A healthy lifestyle - combining quality food with exercise - can both prevent and improve the impact of many age-related conditions. Understanding the role nutrition and fitness play in preventing such conditions as Alzheimer disease, osteoporosis, diabetes, heart disease, and other chronic and debilitating conditions is the first step towards a long, productive and satisfying old age.

5 - 2 INTRODUCTION

Aging - of course - cannot be avoided. It is an ongoing, progressive and predictable process that affects the growth, development and ultimate decline of all living organisms. It is not an illness … it is a natural process that unfolds over time.

And yet, while it is expected that bodily functions will decline over time, much of what we have come to view as a normal part of aging - such as disease and disability - is largely preventable. How we live can have a dramatic impact on how we age.

An increasing number of studies, in fact, have demonstrated that our health is in our own hands—determined by the many choices we make each day in relation to nutrition, fitness, and lifestyle.

Many of the debilitating conditions that we associate with aging can be effectively managed and even prevented. Cancer statistics are a case in point. The number of cancer cases directly related to genetic factors is, in fact, quite small. Most cases of cancer are directly linked to environmental factors (e.g., lifestyle) and up to 80% of these cases are entirely preventable.

However, taking the necessary health-promoting steps, designed to reduce the risk of disease, requires both awareness and action - education and commitment.

All of this is not to say that aging itself does not present us with some unique problems and issues. Clearly it does. But the way to properly address these challenges is not through surgery, cosmetics and elixirs. The best way to try and retain our youth is via a healthy lifestyle. Proper nutrition, regular exercise, and a satisfying and fulfilling life are the best ways to "turn back time."

5 - 3 KEYS TO A LONG LIFE

According to many health experts, the human body was designed to last for roughly 120 years. Surprisingly, even the Bible lends some support. Genesis 6:3 reads: “And God said: My spirit shall not always dwell in a man since he is of the flesh; yet the number of his days shall be 120 years.”

Most of us, however, will not live nearly this long. A variety of factors prevent us from reaching our life and health span potential. Which raises an interesting question: "what are we doing wrong?"

Fortunately, there is much that we can learn from the individuals and cultural groups that have pushed the envelope and come within reach of their full potential. We will start with the "remarkable" Jeanne Louise Calment!

5 - 3.1 Jeanne Louise Calment

Jeanne Louise Calment of Arles, France was a ground breaker … she died on August 5, 1997 at the age of 122. She had managed to live longer than any other human being on record. As remarkable as this feat was, many experts believe it represents a milestone that is within the reach of millions.

Calment's life offers us several important insights into the secrets of longevity. She was active and engaged throughout her life. She attended the opera, played tennis, roller-skated, swam, and enjoyed hunting. She rode a bike up until age 100. She always maintained a zest for life … saucy, provocative and unconventional right to the end.

Surprisingly, she also broke the rules. She regularly ate foie gras, duck thighs, and cheese. On a weekly basis she consumed two full pounds of chocolate. And as for smoking - she finally quit - at 117. C'est la vie!

Like most individuals that are blessed with a long life, Calment was financially comfortable, well educated, and physically active. High levels of education and financial stability are, in fact, two of the most common factors associated with longevity.

Health and lifestyle habits are also important. People who are both physically and socially active fare significantly better than individuals who are not. And good nutrition and exercise also play a role in extending lifespan.

5 - 3.2 The Okinawans

Since time immemorial man has been searching for the fountain of youth. Even modern science - through such initiatives as genetic manipulation and stem cell research - is preoccupied with attempting to extend life span.

And yet, believe it or not, the only proven - natural - way to extend life is through "calorie restriction." Numerous studies have shown that reducing calorie intake by 15–30% (without decreasing nutrient intake) can add 40 years to an individual's life.

Residents of the Okinawan Prefecture (a series of Japanese Islands) live longer than any other group on the planet - and they have dramatically more centenarians. Among the Okinawans there are 122 centenarians per 100,000 people. This compares with 3.63 centenarians per 100,000 in China and 22.31 per 100,000 in Canada (2012 U.N. estimate). Even among their long living countrymen, the Okinawans are exceptional … Japan has only 34.85 centenarians per 100,000. Experts speculate the reason for this outstanding longevity has to do with the fact that Okinawans consume a full 30% fewer calories than the rest of Japan - and an even greater percentage less when compared with "western" nations like Canada.

5 - 3.3 The Hunzukuts

The Hunzukuts live in the ancient Himalayan kingdom of Hunza - currently a part of Pakistan that is known for its spectacular scenery. The Hunzukuts normally live well beyond 100 years and do so in perfect mental and physical health.

The experience of this group suggests that longevity is multi-factorial. They eat a combination of whole foods and most of it is eaten raw.

They also maintain an active lifestyle that focuses on simplicity, unity, and balance (between mind, body and spirit). They are highly educated by virtually any standard - with a literacy rate of between 90 and 100 percent. They are also remarkably optimistic - believing, for example, that if all the diseases of the heart and blood vessels could be prevented, then there would be no need to die at all. Most feel in complete control of their lives - even to the point of believing that they actually "choose" when they will die. As ridiculous as this may sound, studies have indicated that centenarians have an uncanny ability to predict the week - and often even the day - of their demise. They appear, in short, to "die by decision."

The Hunzukuts also have a way of keeping pace with time without letting it *age* them. They see their elder years as the richest ones and, in fact, the young tend to envy the old because of their life experience and wisdom.

The experience of the Hunzukuts suggests that attitude, education, balance, simplicity, spirituality, a sense of control, and diet and exercise all play a part in promoting longevity.

5 - 3.4 The Abkhasians

Another population that has been studied for its' longevity is the Abkhasians who live in the Georgia Republic area of the former U.S.S.R. As a culture they tend to stick with a traditional diet that is low-calorie in nature. They also are careful to avoid working to exhaustion. Once again, the key factors contributing to longevity appear to be diet and lifestyle.

5 - 3.5 Psycho-Neuro-Immunology

A new field, psycho-neuro-immunology, has discovered that there are links between the mind and the body when it comes to health. *You are what you think.* We have all known young people who lack "zip" and "zest" - and elders who have remained eternally youthful. Attitude can have an enormous impact on life span.

People who are optimistic and who live a life that is true to their heart’s desire tend to be happier and more at peace - which, in turn, helps make them less susceptible to various ailments and diseases.

The connection between mind and body should not surprise us. With some 70,000 thoughts running through our heads each day, it is natural that how we think will eventually translate into our physically functioning and well-being.

5 - 3.6 Some tips for increased longevity

- Eat lightly
- Eat whole foods
- Exercise
- Enjoy healthy, close relationships
- Don't smoke
- Get plenty of fresh air
- Obtain enough sleep and rest
- Choose work you enjoy (and do not work to exhaustion)
- Be optimistic
- Pursue education
- Take control
- Live simply and without unnecessary stress
- Have regular bowel movements.

5 - 4 ROADBLOCKS TO A LONG LIFE

As indicated in an earlier chapter, environmental factors like stress, injury, pollution, radiation, chemicals, pesticides, over-exposure to the sun, and food - much of it in the form of damaged fats from frying, hydrogenating, and processing - all help to accelerate the aging process.

Many of these environmental factors contribute to the breakdown of nucleic acids, proteins, and cell structures - a breakdown that helps to facilitate the production of "free radicals" - highly reactive, unpaired oxygen molecules that cause havoc within our systems.

Hundreds of studies have implicated the breakdown of nucleic acids, proteins and cell structures - and the presence of free radicals - as major players in both the development of diseases (including heart disease and cancer) and in the aging process.

There is also a great deal of evidence to suggest that nutritional deficiencies also have an impact on the aging process. With age, our biological systems become slower and less efficient - and we also lose much of our supply of enzymes. These developments severely hamper our body's ability to assimilate nutrients. To the extent that our bodies rely on these nutrients for the support, repair, and regeneration of the body's cells - this slowdown in assimilation is highly problematic.

Eating too much cooked food and the "compromised chewing" that often accompanies old age may also lead to enzyme depletion. This can compromise digestion and hundreds of other metabolic functions (that depend on enzymes as catalysts).

Poverty also exacts a toll. It can lead to loneliness, low self-confidence and esteem, limited community involvement, and isolation. As well, elders on a limited budget may find it difficult to afford proper shelter, recreation, health care - and the nutritious foods they need to stay fit.
And, of course, attitude plays a part. Depression, despair and cynicism are antithetical to long life.

5 - 5 YOU ARE WHAT YOU EAT

There is abundant evidence to show that an optimal level of nutrition can extend life span and improve quality of life. We also know that eating fewer calories is beneficial - and that obesity is a major cause of disease.

The food we eat is what fuels us and sustains us. The nutrients in food are used by the body to promote normal growth, maintenance, and repair.

We literally are what we eat. And yet many of us make very bad choices when it comes to the food we consume.

There are seven essential nutrients: carbohydrates, proteins, lipids, water, vitamins, minerals, and enzymes. We need all these substances to maintain a healthy, properly functioning body. When some of these nutrients are missing, or their intake is unbalanced - then disease will tend to develop.

The lion's share of our nutrient intake should be in the form of "macro-nutrients." These include carbohydrates, lipids, proteins, and water - the four basic compounds that the body is literally composed of. They are termed *macro* because we need them in fairly large quantities, and their daily requirements are measured in grams.

Micro-nutrients include vitamins, minerals, and enzymes. These nutrients are the catalysts that prompt the macro-nutrients to interact. While micro-nutrients are needed in smaller amounts, with daily requirements being measured in milligrams or micrograms, they are equally important in terms of overall health and proper bodily function.

5 - 5.1 Carbohydrates

Carbohydrates are the body’s main source of fuel. Contrary to what fad low-carb diet proponents say, we need carbohydrates to be truly healthy. Over time, avoiding carbohydrates will result in nutritional deficiencies and disease. Nonetheless, it is important to focus on consuming the right kinds of carbohydrates.

The simple carbohydrates we require include such sugars as glucose, fructose, galactose, sucrose, lactose, and maltose. These sugars are what the body uses for energy, and what the brain requires in order to function.

Healthy simple carbohydrates can be found in most types of fruits. Unhealthy carbohydrates are widely available in the hundreds of processed food products on the market - among them, baked goods, white flour, white rice, boxed cereals, chips and candy. This wide availability has helped lead to widespread obesity, hypoglycemia, and diabetes. Over consumption of these foods creates havoc with the body's blood sugar levels leading to adrenal exhaustion and insulin intolerance. Consuming many of these processed foods also leads to cravings for more food because "processing" leaves these products devoid of essential nutrients.

Sources of healthy complex carbohydrates include whole grains, legumes, vegetables - and fruits. Complex carbohydrates are also eventually broken down in the body to single glucose molecules, however, because they are digested much more slowly than simple carbohydrates, they provide sugar and nutrients on a more balanced and sustained basis. They also provide our bodies with much needed fibre.

Enough intake of fibre has been shown to enhance both elimination and detoxification. It also helps to lower blood fats, balance sugar levels, boost energy, improve immunity, and minimize the risk of digestive and bowel disorders.

5 - 5.2 Fat

Fat has received a bum rap - a balanced diet should include fats, or lipids. Fat is necessary for energy storage, insulation, healthy cell membranes, and to protect the nervous system. Nonetheless, not all fats are created equal.

The trans fats developed in processing and deep-frying are actually man-made toxins that are clearly not part of a healthy diet. They are toxic because their altered molecular structure makes it hard for the body to recognize what they are.

Saturated fats are also potentially damaging. They are found in animals and animal by-products - things like meat, eggs, and dairy products. Products with saturated fats are best eaten in moderation. These fats are not necessarily needed by the body - and if consumed to excess, they can lead to a variety of problems (e.g., inflammation, blood clotting, and increased blood pressure, etc.).

The best fats are unsaturated fats. Not only are these fats healthy - in some cases they are essential. In fact, there are two types of polyunsaturated fats, known as omega-6 and omega-3, that are needed by the body, but which the body is unable to produce on its own. The only way to get these fats is through diet.

Good sources of essential - quality - fats include flax seed, almonds, avocados, pumpkin seeds, green leafy vegetables, wakame, tofu, soy beans, eggs, and cold water fish.

Telltale signs that an individual is not getting enough in the way of essential fats include:

- Skin problems
- Dry, brittle hair
- Eczema
- Psoriasis
- Poor memory
- Irregular menstrual periods
- Poor wound healing
- Fatigue
- Allergies
- Susceptibility to infections

Not only will a diet that provides enough essential fats help address these problems - it can also provide a variety of additional and important health benefits. This type of diet can help address circulatory problems and prevent arthritis and cardiovascular disease. It can also help:

- Lower blood pressure
- Restore hormone balance
- Improved skin and hair health
- Lower cholesterol and triglyceride levels
- Reduce the risk of blood clotting
- Heal eczema and psoriasis

5 - 5.3 Protein

Protein is the primary cellular build block and the largest substance in our bodies after water. It is essential to produce hormones, enzymes, and the antibodies that protect us from disease.

All proteins are long chains of smaller units called amino acids. Of the 20 different types of amino acid, eight are “essential” - which means we need them but cannot produce them on our own. These essential amino acids must be supplied through our diet.

While meat is the best-known source of protein, there are a variety of other foods that supply protein without also supplying saturated fat and the many diseases linked to it. Most Canadians consume too much protein - and most of it comes from eating meat. Excess protein taxes the kidneys and leads to obesity. High-protein diets have also been linked to liver disease, cancer, atherosclerosis, osteoporosis, and gout. Only 10–12 % of our daily intake of food should be protein.

There are other reasons why we should consider reducing our intake of meat. Much of the meat we consume is mass produced and it contains - among other things - antibiotics, and hormones.

Alternative sources of protein include whole food legumes, nuts, seeds, and even vegetables. Almonds, sunflower seeds, lentils, soy beans, black beans, green beans, and mushrooms are all excellent sources of protein.

5 - 5.4 Water

Legend has it that the fountain of youth, for which Ponce de León earnestly searched, is a spring of water located on a Bahamian island. In a remarkable twist, it turns out that water can, in fact, help to keep us young. And there is no need to travel to the Bahamas to benefit from it. Drinking lots of pure water each day from a spring, a filtered water source, or even a tap can help to keep our cells hydrated. Our bodies are 70% water and need constant hydration. Dr. Alexis Carrel, a French-born American surgeon and biologist who won the 1912 Nobel Prize, once said, "The cell is immortal. It is merely the fluid in which it floats that degenerates."

If a person is continually dehydrated over several years, it tends to manifest itself as pain. Dehydration is often the primary cause of backaches, joint pain, headaches, confusion, irritability, dry skin, and even constipation. Dehydration also tends to worsen the symptoms associated with other unrelated problems.

Water has other benefits as well. It helps eliminate toxins from the body; it expands blood circulation and increases the effectiveness of the immune system; and it may even help prevent disease. Women who drink enough amounts of water reduce their risk of developing breast cancer by 79% - and men reduce their risk of developing prostate and testicle cancers by 32% (from a study completed by The University of Sheffield, England in 1996)

Enough water intact also has some elder specific benefits. According to Steve Meyerowitz, author of *Water, The Ultimate Cure,* the stooping of older people, their dry wrinkled skin and brittle bones are all largely a function of dehydration.

Drinking water regularly is clearly one of the simplest ways to improve health and prevent some of the effects of aging.

Most experts agree that if you feel thirsty, you are already dehydrated. The only time we should not drink water is with meals, as it dilutes our digestive enzymes making them less effective. The best glass of water to drink is room temperature or warmer - since cold water - or ice water - is a shock to our systems.

5 - 5.5 Vitamins and Minerals

Naturally packaged in perfect amounts in the whole food we eat, vitamins and minerals are vital for life. A well-balanced diet made up of whole food and proper cooking techniques will provide more than the recommended daily allowances for vitamins and minerals.

Whole foods include whole grains, vegetables, fruits, nuts and seeds, as well as high-quality animal products (which can be safely consumed in moderation). Meals designed to provide enough vitamins and minerals should offer a variety of colours, flavours and textures. The more variety the better. A diet that includes some sea vegetables will further ensure you are getting nutrients rich in vitamins and minerals. A combination of raw and cooked vegetables is also beneficial.

As an added benefit vitamin and minerals have been studied and discovered to be effective in preventing disease.

5 - 5.6 Enzymes

Enzymes are powerful catalysts that are capable of kick-starting millions of biological reactions each minute. Every chemical reaction that goes on within our bodies requires an enzyme - and there are literally hundreds of them, each one designed to carry out very specific activities. Many of these enzymes help with digestion.

While the body manufactures a supply of enzymes, they can also be obtained from food - and different types of food require different enzymes for digestion. Whole foods, for example, come with their own natural supply of the enzymes needed to help facilitate digestion. Processed foods, however, are usually devoid of any enzymes - and this forces the body to rely on its own supply of enzymes to break down (digest) and assimilate foods of this nature. This is of serious concern, since one of the theories of aging postulates that the depletion of enzymes in the body, adversely affects all metabolic functioning, and causes, in the process, aging and disease.

Heating food also contributes to enzyme depletion. The more a food is heated, through cooking or micro-waving, the more the damage done. Cooking food at temperatures above 118 degrees Fahrenheit (48 degrees Celsius) kills enzymes.

Broccoli that is over cooked is dead and entirely devoid of enzymes. The solution is to eat foods raw or foods that have only been lightly cooked. Lightly steamed broccoli, for example, is easier to digest than raw broccoli and it still retains much of its enzyme content. When a food still has some enzymes, it is said to be “alive.”

As we age, we use up our enzymes and this can result in slower - and poorer - digestive functioning. When digestion is not optimal, we do not obtain the macro- and micro-nutrients needed to maintain good health.

One solution to this problem is to eat more vegetables and fruits - both of which are *teeming* with enzymes. Raw food is also a potent source of enzymes. It is, as a result, good practice to eat some raw food with every meal. Eating a variety of foods is also helpful, since eating the same foods repeatedly fails to provide us with a variety of different enzymes.

There are four different categories of food enzymes:

- Lipase – that break down fat
- Protease – that break down protein
- Cellulase – that assist in breaking down cellulose
- Amylase – that break down starch and complex carbohydrates

Canadians - particularly elder Canadians - should try to avoid foods that are devoid of enzymes (e.g., processed foods) and a diet that does not supply a variety of enzymes (e.g., eating the same foods repeatedly). They should also be aware of the things that are out-and-out enzyme killers. Among them:

- Fluoridated water
- Cooking foods above 118 degrees Fahrenheit
- Exposure to air and light
- Long-term storage at room temperature or above

5 - 6 MODERN DAY FOOD CHOICES

Food is not what it used to be. Along with the industrial revolution came so-called modern convenience. The family meal - once sacred - now often involves taking out, eating out, heating up, or eating on the run.

We are coming to learn that what is convenient is not always healthy. We know that fast foods are not necessarily good for us.

But what about all the boxed cereals and "brown" breads that many of us believe are wholesome? A good number of these products are devoid of nutrition and packed with additives and processed ingredients.

Refined sugar, disguised under its many names, is a top ingredient in boxed and canned foods. Salt, cheap refined oils and preservatives are also in abundance in these products.

"Enriched bread" provides a great case study on the numerous problems associated with processed foods. In order to prolong shelf life, the wheat bran and germ of the grains are removed - leaving behind nothing but the simple carbohydrates - or starch.

This process removes all the nutrition, fibre, and enzymes contained in the whole grain and to make matters worse, what remains is broken down into sugar almost immediately after it enters our systems.

The many vitamins and minerals that were stripped from the grain during the above process leave the bread so devoid of nutrients that, by law, a minimum number of vitamins and minerals must be added back in. This process is called "enrichment." If this bread were not enriched - the people eating it would be at risk of developing the "deficiency diseases" of days gone by (e.g., pellagra, which results from a vitaminB3 or niacin deficiency).

The same issues are a concern with any white flour product - or white rice. Even some apparently healthy "brown" products (e.g., bread and rice) are affected. Often processed grains are "coloured" to make them appear wholesome.

In the early part of the 20th century, Dr. Weston Price, a dentist, became interested in the relationship between nutrition and tooth decay. His ground breaking studies showed that modern food was not only linked to decaying teeth, but also to deformities in the facial bones, crowding of teeth, lower IQ, personality disturbances, degenerative diseases (e.g., tuberculosis) and birth defects.

Only through self-education and the exercise of consumer clout can we change the current marketplace. Choosing whole foods and well-made products is a way to vote "with our pocketbooks" for a healthier society.

Shopping around the perimeters of most grocery stores is a good place to start. This is where you will find fresh fruits and vegetables, whole grain breads, fresh meat and dairy products. These products are real, whole foods that are not dependent on multi-billion dollar advertising budgets. Shopping at local farmers' markets is also an excellent way to get reacquainted with wholesome foods.

In contrast, the central interior aisles of most grocery stores are loaded with processed and packaged products. If you venture there … make sure you read the labels carefully.

5 - 6.1 Label Reading

Health Canada is responsible, under the Food and Drugs Act (FDA), for the establishment of policies and standards relating to the health, safety, and the nutritional quality of food sold in Canada. The Canadian Food Inspection Agency (CFIA), meanwhile, is responsible for the administration of food labelling policies.

A label serves three primary functions:

1. It provides basic product information (including common name, list of ingredients, net quantity, durable life date, grade/quality, country of origin, and name and address of manufacturer, dealer, or importer).

2. It provides health, safety, and nutrition information. This includes instructions for safe storage and handling, the quantity of fats, proteins, carbohydrates, vitamins, and minerals present per serving.

3. It acts as a vehicle for food marketing, promotion, and advertising - via label vignettes, promotional information and label claims (such as "low fat," "cholesterol-free fibre, high source of fibre," "product of Canada," "natural," "organic," "no preservatives added," and so on). As of January 1, 2003, Health Canada's new regulations for labelling require most pre-packaged food labels to carry a mandatory "Nutrition Facts" table listing calories and 13 key nutrients. Product labels must declare the amount of saturated fats, trans fats, cholesterol, sodium carbohydrate, fibre, sugars, protein, vitamin A & C, calcium and iron that is contained in (a specified amount of) the product.

While these regulations are clearly good news from a consumer perspective - food claims, advertising, and ingredient lists are still often a source of confusion.

What is advertised as a "light" food or beverage, for example, may simply indicate that it has a light colour or taste.

A product can be labelled "fat free" if it contains less than 0.5 g of fat per reference amount and per serving of stated size. But the fat contained in any milk, butter, or other ingredients that are required to finish preparing the product are not factored into the calculation.

The amounts on the label can also be a lot more relevant - under certain circumstances - that what might be implied. Many products claim to be "free, low, or reduced" when it comes to certain substances. Three grams of fat may be insignificant from a food company's perspective, but terribly relevant to a frail elder with serious chronic problems who has been told to avoid trans and/or saturated fats.

In attempting to determine what such terms as "light" and "reduced" really mean - the following table should prove helpful.

Table 5 - 1 Nutritional Labelling Definitions

Free	An amount so small, it is considered nutritionally insignificant
Sodium free	Less than 5 mg sodium*
Cholesterol free	Less than 2 mg cholesterol, and low in saturated fat (includes a restriction on trans fat) *– not necessarily low in total fat
Low	Always associated with a very small amount
Low fat	3 g or less fat*
Low in saturated fat	2 g or less of saturated and trans fat combined*
Reduced	At least 25% less of a nutrient compared with a similar product
Reduced in Calories	At least 25% less energy than the food to which it is compared
Source	Always associated with a 'significant' amount
Source of fibre	4 grams or more fibre*
Good source of calcium	165 mg or more of calcium*
Light	When referring to the nutritional characteristics of a product, it is allowed only on foods that are either "reduced in fat" or "reduced in energy" (Calories). A product may be described as "light" in other circumstances if the label provides an explanation of what it is that makes the food light (e.g., light in colour**).
*Per reference amount and per serving of stated size (specific amount of food listed on Nutrition Facts) ** Three exceptions that do not require an explanation are "light maple syrup," "light rum," and "lightly salted" with respect to fish. Note that a separate provision is made for the claim "lightly salted" which may be used when a food contains at least 50% less added sodium compared with a similar product.	

Source - Health Canada, 2006

The best policy is to by-pass the manufacturer's claims and simply have a closer look at all the ingredients that are contained in a product. As a rule of thumb - the fewer the ingredients the better. And as for the ingredients that are present, you should only consume products that contain ingredients that you recognize and are comfortable consuming. This can sometimes be difficult since manufacturers have dozens of different ingredient names for what are basic things.

Consider the following examples of what we have labelled "tricky ingredients."

Table 5 - 2 Examples of Tricky Ingredients

Sugar may be listed as any or many of these…	White sugar, refined sugar, fructose, glucose, glucose-fructose, dextrose, evaporated cane juice, organic sugar, brown sugar, golden sugar, raw sugar, turbinado, Demerara, corn syrup, high-fructose corn syrup, maltose, Nutrasweet, cyclamates, aspartame, saccharine, sucanat etc. etc.
Monosodium Glutamate (MSG) may be listed as any or many of these…	hydrolyzed vegetable protein, plant protein extract, natural flavouring, seasonings, aspartate, sodium caseinate, calcium, yeast extract, textured protein (including TVP), autolyzed yeast, hydrolyzed oat flour, corn oil etc. etc.

5 - 6.2 Evaluating Health Claims

The new regulations announced by Health Canada, in 2003, also paved the way for diet-related health claims on foods. Certain foods and associated health outcomes can now be connected and promoted. Among the connections up for promotion:

- Reduced sodium and potassium - and reduced risk of hypertension
- Increased calcium and vitamin D - and reduced risk of osteoporosis
- Reduced saturated fat and trans-fat - and reduced risk of heart disease

For the health claims to be credible, they must be based on what Health Canada considers "good scientific methods."

Bill Jeffery, National Co-ordinator of the Centre for Science in the Public Interest (CSPI) has suggested that the claims may be based on too low a standard of evidence.

Also, of concern, the fact that most health claims on food products are coming from such major players as PepsiCo, General Mills, Kellogg, Kraft, and Coca-Cola—all famous for their processed, boxed, and canned foods. Many of these companies are notorious for "cherry picking" when it comes to health-related claims. Kellogg's All-Bran cereal, for example, features the following health claim on the front of the box: "A healthy diet low in saturated and trans fats may reduce the risk of heart disease. All-Bran cereal is free of saturated and trans fats."

If an educated consumer happens to peak at the box's side panel, however, they will discover that the cereal's third ingredient (which means it is the third largest overall ingredient) is sugar, and the fourth is salt - both of which are harmful, not helpful, with respect to heart disease.

5 - 6.3 Genetically Modified Foods

In terms of modern food choices, there is substantial debate when it comes to genetically modified organisms (or GMOs). Currently, up to 80% of the foods on Canadian supermarket shelves contain genetically modified organisms. Canola, corn, soy, potatoes, flax, and tomatoes are among the most commonly genetically engineered products. Popular processed foods such as cereals, crackers, soups and candy are all potential sources of genetically modified organisms.

Certain groups have labelled genetically modified foods as "frankenfood" and they are dead set against them. Among their concerns:

- They are not "natural" products - they side step millions of years of evolutionary context
- They represent a revolutionary technology that has not been sufficiently tested for safety
- They are not properly "labeled"
- They may adversely affect our ecosystem

Proponents of genetically modified foods see the issue in dramatically different terms. To them GMOs are a significant scientific breakthrough that offers the planet tremendous benefits. Among their arguments:

- Every scientific study that has been conducted (and there have been close to 200) has concluded that genetically modified foods are safe
- The World Trade Organization has deemed European restrictions on the import of genetically modified foods to be self-serving and illegal (given that there is absolutely no scientific evidence to suggest GMOs are harmful)
- Genetically modified foods have already been seamlessly integrated into our food chain (90% of North American soybeans and 60% of North American corn, for example, are already genetically modified) without any detectable adverse effect
- Many genetically modified crops have been designed to resist pests - which both increases the yield and reduces pesticide use
- Newer varieties of genetically modified foods have been designed to increase nutritional content (which could have an enormous impact on improving diets - particularly in the third world)
- Genetic modification is merely a better, less evasive, and more precise version of "mutagen" breeding - something that has been going on, without complaint or issue, for many decades. Mutagen breeding involves subjecting plants to X-rays, gamma rays, fast neutrons, or toxic chemicals in order to attempt to alter their genes

There is, in short, an abundance of scientific evidence, from countless studies, that provides a rousing endorsement for GMOs. On the other side of the argument, there is - unfortunately - more heat than light (i.e., lots of emotion, lots of hysteria and lots of scare mongering). It is up to every individual to investigate the matter thoroughly and decide for themselves what is best.

5 - 6.4 Organic Foods

Many grocers today are supporting organic farmers and providing their customers with the option to purchase organic produce. Canada is considered an ideal country for organic growing because of its huge land base and cool climate, which discourages pests and disease. In 2015, there were 4,045 certified organic farmers in Canada farming more than 750,000 hectares of land.

Organic produce is catching on with Canadian consumers as we learn the health and environmental benefits associated with sustainable farming as well as the benefits of pesticide-free food. By purchasing certified organic foods, we are:

- Supporting the work of farmers who are practicing a sustainable form of farming
- Helping to prevent further chemical pollution of our soil, air, and water
- Increasing the demand for organic foods and helping to lower prices
- Supporting our health and preventing disease, by keeping chemicals off our plates and out of our bodies

In purchasing organic foods, we are also avoiding all the "negatives" associated with non-organic farming techniques. Among these negatives, exposure to:

- Synthetic pesticides - including fungicides, insecticides, rodenticides, and wood preservatives
- Synthetic fertilizers
- Sewage sludge
- Synthetic growth regulators (hormones)
- Synthetic veterinary drugs, including antibiotics and parasiticides

Organic means clean and healthy. It also offers us the benefits associated with buying locally grown products. Purchasing on this basis helps support your local economy while offering you the freshest vegetables and ripest fruits available.

In situations where non-organic fruits and vegetables are purchased (whether by choice or necessity), certain precautions need to be taken. Fruits and vegetables should always be washed in a natural, mild soap - and then washed a second time with a dash of vinegar (to help dissolve pesticides that would otherwise be insoluble). A final rinse in cool water and these products are ready for consumption. Any fruits that have been waxed, however, should be peeled.

The top dozen "organic" foods to shop for are:

- apples
- apricots
- bell peppers
- cantaloupe (from Mexico)
- celery
- cherries
- cucumbers
- grapes (from outside Canada/US)
- green beans
- peaches
- spinach
- strawberries

In order to determine if a item is indeed organic, consumers should keep an eye out for the "certified organic" label - which guarantees that the product:

- Was grown in a field that has been free of commercial fertilizers and herbicides for at least three years
- Is not genetically modified or from genetically modified seed
- Is separated by a buffer zone from non-organic crops

5 - 7 YOU ARE WHAT YOU DIGEST

Quality food choices - and proper preparation - are keys to physical health. But even the healthiest food choices will not be beneficial if digestion is compromised

The digestive system consists of several organs, and a host of enzymes, acids, and processes. It all begins at the mouth and ends - at the ending (the anus). The gastrointestinal (GI) tract is a hollow, muscular tube that winds through the body with openings at both ends - and what happens in between these openings is nothing short of amazing.

According to many health experts, digestive issues are the source of most, if not all, ailments and chronic conditions. A better understanding of the digestive system can go a long way toward improving overall health.

5 - 7.1 The Mouth

Good digestion begins before food even enters the mouth. Anticipation, aroma and visual appeal are important factors in preparing the body to digest and assimilate food. The sight, smell and mental anticipation of food helps to stimulate a part of the nervous system which increases the secretion of gastric juice.

Given the crucial role played by the nervous system, it is very important that food only be consumed when you are relaxed. Stress shuts down digestion - and if this happens food is left to sit in the digestive system where it can ferment and putrefy.

Once food enters the mouth, the enzymes and moisture of our saliva help begin the digestive process. Chewing also plays a part. The more food is chewed, the easier it will be to digest. Swallowing food in a hurry puts significant additional stress on the rest of the digestive organs. Chewing food thoroughly is, in fact one of the easiest and most effective ways to improve digestion.

5 - 7.2 The Stomach

When food enters the stomach, gastric juices help to convert food into a liquid form. Very little is absorbed into the system at this point - in fact, the only things that are directly absorbed through the stomach walls into the blood stream are alcohol and aspirin. One of the principal elements in gastric juice is hydrochloric acid (HCl) which is required to make the stomach environment acidic enough to be sterile. Hydrochloric acid is also crucial insofar as it activates a variety of digestive enzymes, which in turn, help to breakdown the food that is consumed.

5 - 7.3 The Small and Large Intestines

The small intestine is the body's major digestive organ and the site of nutrient absorption. This is where chemical digestion begins - with a little help from the pancreas (which secretes pancreatic enzymes to help digest carbohydrates, proteins and fats). Bile made by the liver and stored and secreted by the gallbladder also plays a part in helping to emulsify fats.

Once the food is broken down into its smallest forms, the nutrients are absorbed through intestinal walls and carried, via the blood, to the liver for detoxifying, sorting, and storing.

The blood then transports the nutrients to every cell in our bodies. Understanding this process makes it clear that every single piece of food we put in our mouths plays a crucial role in determining the health of our cells.

Food spends approximately three to six hours travelling through the coils and twists of more than 20 feet of small intestine. At the end of this process all that is left are indigestible materials (e.g., plant fibre), water and bacteria.

The large intestine, which is only five feet in length, but much larger in diameter than the small intestine, will work on the remaining food materials for 12–24 hours. The job of this digestive organ is to dry out indigestible food material by absorbing water through its walls and into the blood stream. The resident bacteria (both good and bad) feed on any remaining nutrients in the food material. The good bacteria live symbiotically with the human host - which is to say that we provide them with some benefits, and they provide us with some benefits. In terms of the benefits to us, the "good" bacteria:

- Produces anti-microbial substances
- Stimulate immune antibodies
- Breakdown toxins (aiding in detoxification)
- Manufacture vitamins K, B_3, B_6, B_{12}, biotin, and folic acid
- Help prevent cancer by inhibiting the bacteria that convert certain food substances into carcinogenic elements

The "bad" bacteria, on the other hand, can produce a whole host of physical problems and symptoms - especially in situations where they outnumber the "good" bacteria. Imbalances of this nature have been linked to processed foods, antibiotics and chlorine (which kill both good and bad bacteria), lack of nutrition, poor digestion, and body pollutants such as alcohol and tobacco.

The entire digestive process ends with "elimination." Efficient elimination is extremely important to our overall health. The waste products in our bodies contain toxins and bacteria that, if left in the colon too long, will be absorbed into the bloodstream. These substances can produce a variety of physical conditions and problems.

5 - 7.4 Vegetarianism

One of the best ways to improve digestion is through the adoption of a vegetarian diet. Vegetarians typically consume a diet that is lower in calories, saturated fat, and protein, and higher in complex carbohydrates, fibre, and phytochemicals than non-vegetarians.

A large body of research examining the health of vegetarians shows that they suffer from less heart disease, obesity, high blood pressure, diabetes, and some forms of cancer. Vegetarian diets tend to be "cleansing" which may explain how they help to prevent these diseases - and increase life expectancy.

The simple act of avoiding meat is beneficial. The fat derived from eating meat - especially red meat - is metabolized differently than the fats through natural, whole foods. These "meat-based" fats have been implicated as a contributor to a long list of conditions including cancer, heart disease, and obesity. Compounding the problem, it is common for modern meats to contain both antibiotics and growth hormones.

It is a myth that we require meat for protein and dairy products for calcium. As discussed earlier, there is ample protein in whole, natural foods and essential nutrients like calcium and vitamin B are available in many non-dairy foods (e.g., whole grains and beans). The following charts demonstrate the wide variety of foods that can be used, instead of meat and dairy products, to provide our bodies with needed protein and calcium.

Table 5 – 3 Sources of Protein

Food	Protein (grams)		Food	Protein (grams
Apricots	1.20		Barley	9.62
Bananas	8.7		Sunflower seeds	23.10
Almonds	24.90		Lentils	19.26
Pine nuts	16.70		Soybean	40.50
Black beans	40.25		Parsley	2.00
Green peas	23.60		Spinach	2.30
Green beans	22.10		Brown rice	7.29
Bean sprouts	3.20		Tofu	6.55
Mushrooms	14.19		Soy milk	.50

Table 5 - 4 Sources of Calcium

Food	Calcium		Food	Calcium
Tofu, extra firm (1/4 cup)	50 mg		Scallops, steamed (7)	105 mg
White beans (1/2 cup)	80 mg		Oysters (1/2 cup)	120 mg
Whole sesame seeds (2 Tbsp)	180 mg		Sardines (8)	370 mg
Tahini butter (2 Tbsp)	125 mg		Orange (1)	55 mg
Kale, cooked (1 cup)	90 mg		Dried figs (5)	135 mg
Beet greens, cooked (1 cup)	170 mg		Soy milk (1 cup)	300 mg
Carrots, cooked, (1 cup)	50 mg		Organic black strap molasses (1 Tbsp)	170 mg
Cabbage, cooked (1 cup)	50 mg		Dried seaweed (Kawa-nori) (100g)	540 mg
Broccoli, cooked (1 cup)	70 mg		Bok Choy, cooked (1 cup)	155 mg

Instead of giving up meat completely, some people choose to eat less meat or organically raised meat. A safe rule of thumb is to eat foods such as meat in moderation and in balance with other nutrients.

Still, eliminating meat from the diet is no guarantee of health. If vegetarians do not eat healthy, balanced food choices, they will not be healthy, regardless of their effort to avoid meat.

There are numerous different vegetarian diets - among them:

- Vegan vegetarians rule out both animal meat and animal products (milk, eggs, honey), and tend to refrain from wearing or using animal by-products
- Lacto vegetarians combine a vegetarian diet with dairy products, but do not eat eggs
- Ovo vegetarians eat eggs, but pass on dairy products
- Ovo-lacto vegetarians do not eat meat, but will eat eggs and dairy products
- Pesco-vegetarians eat dairy foods, eggs, and fish, but no other meat
- Semi-vegetarians eat all the above plus chicken

5 - 8 DIGESTIVE DISTURBANCES

Now that we know that "we are what we digest," we are in a better position to look at the many digestive disturbances that plague Canadians - especially elder Canadians. Many of these disturbances are either preventable or manageable. A little knowledge can go a long way.

5 - 8.1 Heartburn

Many elders suffer from heartburn - and they tend to blame stomach acid for the uncomfortable symptoms they feel after eating a meal. However, it is quite rare for people - especially elders - to have excess stomach acid. The uncomfortable feeling they have after meals is, in fact, likely due to low stomach acid. Low stomach - or hydrochloric (HCI) - acid is a common problem with many elders because the production of HCI decreases with age. To make matters worse, diets high in meat, dairy products, and processed foods also help to decrease HCI levels. Inadequate chewing and drinking cold water with meals can also contribute to low HCI.

As discussed earlier, HCI is necessary for proper digestion, activation of digestive enzymes, and to keep the stomach and its contents sterile. A stomach low in HCI is referred to as an "under active" stomach. Under active stomach can lead to poor absorption of vitamins and minerals - calcium, iron, zinc, and protein require enough HCI to metabolize. It can also lead to poor colon function and this can produce constipation.

The symptoms of an under active stomach are like those of an overactive (acidic) stomach. Elders, as a result, are likely to assume they have too much acid - and it is quite common for them to take antacids with regularity. Unfortunately, this merely compounds the problem since it further decreases the acid in the stomach.

To further complicate matters, many elders have a malfunctioning valve between the esophagus and stomach - and this produces acid reflux. Several conditions can contribute to the malfunctioning of this valve (e.g., obesity, pregnancy and overeating can create pressure on the diaphragm, which may open or weaken the valve). Elders with this condition are further encouraged to misuse antacids.

Under active stomach can also lead to a lack of stomach sterility and this promotes the growth of microbes - which produce acids and gases of their own. Often the substance refluxing is not HCI, but the volatile fatty acids that are produced by these microbes.

Still another possible cause of heartburn (that is not at all related to excess stomach acid) is a structural abnormality - common in elders - called hiatal hernia.

There are many common symptoms that are associated with an under active stomach. Among them:

- Bloating, belching, or a burning sensation immediately after meals
- Feeling of fullness after only small amounts of food
- A feeling that food is just sitting in the stomach
- Papery thin fingernails, due to protein deficiency
- Nausea after taking supplements

There are several things that elders can do to avoid the pain and discomfort associated with under active stomach. First, they need to realize that taking antacids is likely a mistake - and it may even make matters worse. Instead, they should focus on things like:

- Chewing foods thoroughly
- Eating only when relaxed
- Consuming lemon juice or apple cider vinegar prior to eating
- Avoiding nicotine and caffeine
- Reducing intake of heavy animal protein and dairy products until functioning improves

An elder may also consider temporarily taking digestive enzymes and HCI capsules to help improve digestion and absorption.

5 - 8.2 Gas

Excessive gas is usually the product of either poor food combinations or inefficient digestion.

Some foods should not be eaten together. Proteins and fats take longer to break down and spend more time in the stomach than sugars do. If sugars are consumed immediately after proteins and fats, they will be held up - and they will ferment and putrefy. As a result, it is best to eat sweets, including fruit, at least one hour on either side of our regular meals.

In other cases - particularly if gas develops long after a meal - it is likely that undigested food in the large intestine is the problem. Unmetabolized food that makes its way to the large intestine is consumed by microbes, which give off gas.

Making good food choices, chewing well, eating while relaxed, and avoiding overeating should help to improve digestion and minimize gas.

5 - 8.3 Ulcers

An ulcer is a crater like erosion in the lining of any part of the gastrointestinal tract that is exposed to the secretions of the stomach. Until recently, ulcers were very poorly understood. It is now known that the primary cause (in approximately 90% of cases) is a bacterium called helicobacter pylori. While the link between helicobacter pylori and ulcers was first established in 1982 - many people still mistakenly think that ulcers are caused primarily by other factors (e.g., diet). This is unfortunate since ulcers can now be easily and effectively cured through simple antibiotic treatments.

Having said this, certain things can aggravate ulcers. Among them: stress, smoking, caffeine, alcohol, excessive HCI, and NSAIDS (e.g., aspirin).

Ulcers usually develop in people between the ages of 50 and 70. Symptoms include a gnawing, burning pain between one and three hours after a meal.

Good digestive health can help prevent ulcers from developing - things like chewing well, eating while relaxed, and making good food choices are all beneficial.

Finally, a word of warning - despite the established link between ulcers and bacterium, many fringe groups are still likely to recommend treating ulcers with cabbage juice, grapefruit seed extract and ginger. It would be funny … if this misguided advice were not so damaging.

5 - 8.4 Constipation

A healthy colon is rare these days. According to many health experts, many the ailments prevalent in our society can be linked to a lazy, under active colon. Toxic waste is absorbed into our system when we do not move our bowels as often as we should. These circulating toxins cause headaches, bacteria overgrowth, inflammations and other signs of autointoxication.

And autointoxication leads to disease. Studies have indicated that a woman who moves her bowels two or less times a week increases her risk of developing breast cancer by 400%.

The optimum food "transit time" is 12-24 hours. Considering that we eat, on average, three to six times each day, we should be excreting waste at least 1-3 times a day according to some Doctors. Just because it has become common for Canadians to go, at best, once a day, does not mean it is healthy or unhealthy. Everyone is different.

A long transit time puts us at greater risk for colon cancer, diverticulosis and a variety of other diseases.

Some causes of constipation are low fibre intake, eating processed food, microbial imbalance, low fluid intake, low calcium and magnesium intake, lack of exercise, irritable bowel syndrome, hypothyroid condition, and laxative abuse. Hidden food allergies and sensitivities may also be a factor. And finally, some people are just too busy, anxious or stressed to take the time to go!

If you would like to know what your transit time is, simply eat a cup of beets. Watch for beet coloured stool, which ideally will appear 12 to 18 hours later.

Some suggestions to avoid constipation include:

- Eat fibre-rich foods, such as fresh fruit, green leafy vegetables, raw and cooked vegetables, brown rice, beans, and whole grains. Food high in pectin, such as apples, carrots, beets, and bananas, is especially good
- Drink 8–10 glasses of pure water daily. The colon works best when there is more than enough water to work with
- Eat nutrient rich foods and consider taking a multi-vitamin and mineral supplement
- One tablespoon of flaxseed oil daily will help lubricate the hard stool
- Probiotic supplements will help address microbial imbalances that contributes to constipation and autointoxication
- Aloe Vera softens the stool, and heals and cleanses the colon lining
- Prunes, figs, and vitamin C have a natural laxative effect

5 - 8.5 Digestive Disorder Summary

The following table provides a quick reference summary of the various digestive disorders - along with some suggested approaches that may be helpful in avoiding these problems.

Table 5 – 5 Common Digestive Disorders and Solutions

Problem	Solution
Heartburn	Avoid taking antacids - chew food properly - eat only when relaxed - take lemon juice or apple cider vinegar just before eating - eliminate caffeine, nicotine, heavy animal protein and dairy products - consider temporarily taking digestive enzymes with HCl
Gas	Choose whole foods - eat sweets and fruit away from meals - chew well - eat only when relaxed - avoiding overeating
Ulcers	Choose whole foods - chew well - eating only while relaxed - drink cabbage juice - use grapefruit seed extract - use natural anti-inflammatories (essential fatty acids, curcumin, and ginger) - eat Manuka honey - avoid using milk to soothe stomach *Note: if an ulcer does develop - seek medical attention immediately)*
Constipation	Eat fibre-rich foods - drink eight to 10 glasses of water daily - eat nutrient-rich foods - consider taking a multi-vitamin and mineral supplement - take antioxidants - take one tablespoon of flax-seed oil daily - supplement with probiotics - drink aloe Vera juice - eat prunes, figs and vitamin C - exercise - eliminate processed and fried foods

5 - 9 CAUSES OF POOR NUTRITION IN ELDERS

Elders often suffer the effects of poor nutrition. Limited mobility, heavy use of medications, compromised chewing, a weak social network and a slew of other factors help to put elders at particular risk.

The following provides a summary of some of the key issues affecting elder nutrition - along with some "tips" that can be employed to address them.

5 - 9.1 Disease

Any disease, illness or chronic condition that causes a change in eating habits puts an elder's nutritional health at risk - and four out of five adults have chronic diseases that impact their diets. Poor eating habits can be due to digestive disorders, nausea, or the loss of appetite associated with certain diseases.

Alcohol abuse (one out of every four adults drinks too much) and progressive memory loss (forgetting what one has eaten and when) can also lead to poor nutrition.

Depending on an elder's condition, he or she may be tempted to either eat too little or eat too much. Both can be problematic when it comes to nutritional health. The elders also tend to eat the same foods day after day - and they often fail to eat enough fruit, vegetables, and milk products.

Some of the suggestions to improve nutritional health include:

- Eating more whole foods
- Enjoying a variety of foods (e.g., a "balance" diet)

5 - 9.2 Multiple Medicines

A substantial number of elders take multiple medicines daily. The more drugs an individual takes, the greater the chance of experiencing side effects - among them: increased or decreased appetite, change in taste (which can impact appetite), constipation, weakness, drowsiness, weight gain, weight loss, dehydration, depression, diarrhoea and nausea.

Many elders - as they age - already experience a diminishing sense of taste and smell (which can reduce their interest in food) - and these adverse reactions can further aggravate matters - in some instances causing elders to avoid certain foods altogether.

Vitamins or minerals, when taken in large doses, may also cause certain imbalances in the body which can also produce side effects. It is important for elders to inform their health care provider of all the drugs and supplements they are taking. Some of the ways that elders, who are on multiple medications, can help to improve their nutrition include:

- Being aware of the side effects caused by the drugs they are taking and compensating by eating a diet that promotes good health
- Consuming fennel seed or ginger tea in order to stimulate poor appetite.
- Eating smaller meals, more often
- Focusing on healthy snacks
- Giving up smoking (smoking decreases appetite)
- Getting physical (physical activity can stimulate a poor appetite)

5 - 9.3 Compromised Chewing

Some older people may avoid foods important to good health because of chewing difficulties. Missing teeth or poorly fitting dentures, for example, may cause elders to forego fresh fruits and vegetables, which are important sources of vitamins, fibrerals, and fibre.

Alternatively, elders who have difficulty chewing may eat too many cooked foods, which may lead to enzyme-deficiency and lack of nutrient absorption. A loss of nutrients and required calories may, in turn, lead to fatigue, malnutrition, and disease.

Eating too many soft, processed foods may also lead to fatigue and malnutrition - with the added problem of weight gain.

Some tips that may be of value for elders whose chewing is compromised include:

- If teeth are causing eating difficulties or dentures are poorly fitted, consult a professional
- Chew slowly. Count to at least 30 chewing motions
- Cut foods into small pieces
- Some foods, such as fruit and vegetables, are easier to chew if they've been steamed or lightly cooked

5 - 9.4 Mobility Issues

Elders who are unable to move freely, due to disability, disease or declining health, may not be able to get out to buy fresh food choices. As a result, they are often tempted to rely heavily on boxed and canned food - and other "processed" alternatives. This can result in a decline in their health status … that can further aggravate existing problems.

Food delivery programs, such as Meals-on-Wheels, are available for people who are housebound, or have difficulty getting around or preparing meals. Congregate meal programs are also available in some areas, where older people can meet in a central location to enjoy a meal in the company of others, and transportation is frequently provided to the meal site.

In situations of this nature it is advisable to:

- Try a grocery store delivery service
- Ask to join a friend, neighbor, or family member on regular trips to the grocery store

5 - 9.5 Poor Digestion

As noted earlier, low HCl is a common problem with elders, mostly because the production of HCl decreases with age. As well, diets high in meat, dairy products, and processed foods decrease this stomach acid. Inadequate chewing, drinking cold water with meals, and regular use of antacids also contributes to low HCl.

Digestive enzymes are also crucial for proper digestion. Elders may be lacking in enzymes due to age or as a result of eating the same foods, repeatedly, for many years.

Lower intakes of raw food and a heavier reliance on cooked and processed foods may also result in a shortage of digestive enzymes. When there are not enough bodily enzymes to complete digestion, white blood cells are called in to finish the job.

This, however, results in a weakening of the immune system (where white blood cells play a crucial role).

Drinking during meals is also problematic. The fluids dilute both stomach acid and digestive enzymes. As a result, water should be consumed away from meals and at room temperature, so as not to shock the system.

Other poor eating habits (e.g., eating in front of the television, eating when rushed, eating while upset or stressed, or eating late at night) may also contribute to poor digestion and poor nutrition.

If an elder is suffering with poor digestion, he or she should consider:

- Asking a nutritionist or qualified health store manager to recommend a good quality digestive enzyme/HCl supplement to take with each meal
- Supplementing the diet with probiotics (healthy bacteria) to promote healthy digestion and overall health through boosted immunity
- Eating rawer, or lightly steamed or cooked fruits and vegetables, which are rich in enzymes.
- Eating only while relaxed
- Anticipate healthy meals and prepare food that smells, looks, and tastes good

5 - 9.6 Economic hardship

With a little planning even the economically disadvantaged can afford to eat a healthy, well balanced diet. It is a misconception that healthier foods are more expensive than unhealthy alternatives. Homemade stews, soups, casseroles, salads, and even deserts are healthier and cheaper that packaged and processed options. Cooking meals from scratch, in short, saves money and improves nutrition.

Other tips to help the financially disadvantaged eat well are:

- Reach out for financial and dietary assistance from all possible sources
- Buy whole foods such as bulk grains, fruits and vegetables, beans, and nuts. They are less expensive, and they last longer than packaged foods
- Pass on meat, ready-made meals, and junk food - all of it is expensive and not necessarily healthy
- Share a dish at a potluck supper, or with friends, in order to multiply nutrition and variety on a cost-effective basis

5 - 9.7 Reduced Social Contact

Daily social contact has a positive effect on morale, well-being and, yes, nutritional status. One third of all elders live alone and social isolation of this nature is a common cause of poor nutrition.

Meals were meant to be shared. Traditionally meals were social affairs - a time for sharing not only food, but also news, ideas, feelings, fun, and conversation. Elders who find themselves single after many years of living with another person will find it difficult to be alone, especially at mealtimes. They may become depressed and lose interest in preparing or eating regular meals, or they may eat only sparingly.

In a study published in the Journals of Gerontology, researchers found that newly widowed people, most of whom were women, were less likely to say they enjoyed mealtimes, less likely to report good appetites, and less likely to report good eating behaviours than their married counterparts. Nearly 85 % of widowed subjects reported a weight change during the two years following their spouse's death, with an average weight loss of 7.6 kilograms (17 pounds). According to the study, most of the women said they had enjoyed cooking and eating when they were married, but, as widows, they found those activities "a chore," especially since there was no one to appreciate their cooking efforts.

For many widowed men who may have left the cooking to their wives, the problem may extend even further. Often, they have no idea how to cook and prepare foods. As a result, they may snack or eat out often and both activities can result in the consumption of too much fat and not enough nutrition.

To address these issues isolated elders should:

- Eat with friends, family, and neighbours whenever possible
- Find good quality and friendly restaurants in which to eat once a week
- Reach out to people at community centres, churches, and social groups
- Seek guidance from a nutritional consultant or physician
- Write down a list of healthy and attractive food choices to choose from daily
- Access health books and recipes at the library

5 - 9.8 Depression

Approximately one in eight elders experience feelings of sadness or depression. Feelings of this nature can cause significant changes in appetite, digestion, energy level, weight, and well-being.

A variety of factors come into play: being widowed, missing family who have moved away, unfulfilled expectations, disease, and the side effects of drugs can all play a part. The result can be serious dietary changes, obesity, weight loss, and malnutrition.

To deal with depression, elders should:

- Eat plenty of fruits, vegetables, and whole grains. A diet too low in complex carbohydrates can cause serotonin (the "feel good" hormone) depletion and increase depression
- Avoid artificial sweeteners, which have been shown to block the formation of serotonin. All forms of sugar, in excess, will result in an energy crash that contributes to depression
- Avoid food high in animal (saturated) fats, as they interfere with blood flow resulting in poor circulation, especially to the brain
- Take a walk in the sunshine, which helps to regulate the hormones that control our moods

5 - 10 ELDER NUTRITIONAL REQUIREMENTS

As we age, we slow down, and so does our metabolism. As a result, we lose lean body mass (i.e. Muscle), and it becomes easier to gain weight. With a slower metabolism and less energy output, we generally tend to eat less. Taking in fewer calories is normal and healthy to a point; however, elders still require all the macro and micro nutrients discussed earlier to maintain health. Therefore, dietary choices become even more important. In fact, due to illness and age many elders require even more vitamins and minerals, than the rest of us, to maintain health. Unfortunately, up to 40% of Canadian elders do not get enough calories and protein daily!

The food eaten by elders needs to be energy dense. Each bite should provide the body with nutrients.

The classic "elder diet" of toast and tea is not enough and it can contribute to malnutrition.

So just what should elders be eating? A balanced diet of whole foods is ideal. Research has demonstrated that a natural diet of 10–12% protein, 20–25% fat, and 70–75% carbohydrates (mostly complex) provides the body with the nutrients, vitamins, and minerals it needs to maintain health.

Eating an unbalanced diet can lead to cravings. A diet of processed foods not only robs the body of valuable enzymes for its digestion, but also leaves the cells hungry for the nutrients they need to function. Processed foods contain what are called "empty calories." They do not satisfy the body and they lead to cravings for more food. Have you ever noticed how easy it can be to eat a whole box of donuts, or a whole bag of large potato chips? It is near impossible, on the other hand, to eat a loaf of whole grain bread, a box of muffins, or a bag of potatoes or other vegetable.

Eating food with wholesome calories provides our body with the fuel we require to build repair and maintain bodily functions. If we eat these nutrients in balance, we will be doing ourselves a great service.

When we look at our plates, we should see a ratio of approximately one-part protein, two parts fat, and seven parts complex carbohydrates. We should also have a good variety of colours, flavours, and textures, to contribute to good balance. Examples of balanced meals include fish with broccoli, rice and a salad; beans, rice and tofu; eggs on toast with steamed spinach; and vegetable soup with avocado on whole grain bread. Snacks should also be balanced. For example, bread with cheese; nuts and fruit; yogurt and fruit; and muffins with butter.

5 - 10.1 Diet and Deficiencies

Nutritional deficiencies are cause for concern and they can lead to disease. Vitamin C deficiencies, for example, are directly related to a disease called scurvy. Various lifestyle choices can have a significant impact. Someone who smokes, for instance, will - as they age - have a worsening deficiency in vitamin C. A vegetarian who does not eat a healthy diet, may become deficient in either protein or vitamin B12.

The risks of nutrient deficiencies become more of an issue over time. If an elder has never enjoyed eating vegetables and has thus avoided them for most of his or her life, for example, mineral deficiencies can occur - with a vengeance - in later years.

Research shows that elders are often deficient in the following nutrients: vitamins B2, B3, B12, vitamin D, calcium, iron, zinc, and the carotenoids (a class of compounds related to vitamin A). These deficiencies may be the result of decreased calorie intake, poor nutrient absorption, drug interactions, or any number of these and other factors. Even limited exposure to the sun can, for example, produce a vitamin D deficiency.

Researchers at the University of Illinois College of Medicine reported that B12 deficiency may occur in as many as 10% of the elder population - a claim that has also been supported by German research. Since B12 is one of the vitamins manufactured by probiotics in the large intestine, this deficiency may point toward poor intestinal health.

To address these issues, elders can either take supplements or increase the consumption of foods that are rich in the nutrients identified above.

Table 5 - 6 Nutritious Sample Meal Plan

Breakfast	- 1 piece of fruit, or a glass or fruit or vegetable juice (the whole fruit provides fibre, too) - Cooked oatmeal with1/4 cup chopped raisins and dates - 6 oz. Milk
Snack	- 1 piece of fruit - 1 slice whole grain toast
Lunch	- Fresh mixed green salad -chili or bean soup - Whole grain crackers
Snack	- Nut/bran/raisin muffin with butter - 6 oz. Herbal tea
Dinner	- Romaine lettuce salad with grated beets and carrots and garlic/olive oil dressing - Whole grain pasta with tomato/vegetable sauce
Snack	- Fruit and oatmeal cookies

Table 5 - 7 Addressing Deficiencies in the Eder Diet

Deficiency	Natural Source of deficient nutrient
Vitamin B	Eggs, fish, legumes, poultry, spinach, whole grains, yogurt, asparagus, avocados, broccoli, Brussels sprouts, currants, dandelion greens, dulse, kelp, leafy green vegetables, mushrooms, nuts, watercress, alfalfa, cayenne, chamomile, parsley, peppermint, sage.
Vitamin B	Broccoli, carrots, cheese, dandelion greens, dates, eggs, fish, potatoes, tomatoes, wheat germ, whole wheat, cayenne, chamomile, fennel seed, parsley, peppermint.
Vitamin B	Clams, eggs, herring, mackerel, dairy products, seafood, sea vegetables, soybeans, alfalfa.
Vitamin D	Fish liver oils, fatty saltwater fish, dairy products, eggs, butter, dandelion greens, halibut, oatmeal, salmon, sardines, sweet potatoes, tuna, vegetable oils, alfalfa, parsley.
Calcium	Seafood, dark green leafy vegetables, almonds, asparagus, broccoli, cabbage, collards, dandelion greens, dulse, figs, filberts, kale, kelp, oats, prunes, sesame seeds, soy beans, tofu, turnip greens, watercress, yogurt, alfalfa, cayenne, chamomile, chicory, dandelion, fennel seed, fenugreek, flax-seed, kelp, paprika, parsley, peppermint.
Iron	Eggs, fish, poultry, green leafy vegetables, whole grains, almonds, avocados, beets, dates, dulse, kelp, kidney beans, lima beans, lentils, millet, peaches, pears, dried prunes, raisins, rice, wheat bran, sesame seeds, soybeans, watercress, alfalfa, cayenne, chamomile, dandelion, kelp, lemongrass, paprika, parsley, peppermint.
Zinc	Eggs, fish, kelp, legumes, lima beans, mushrooms, oysters, pecans, poultry, pumpkin seeds, seafood, soybeans, sunflower seeds, whole grains, alfalfa, cayenne, chamomile, fennel seeds, sage.
Carotenoids	Fish liver oils, green and yellow fruits and vegetables, apricots, asparagus, beet greens, broccoli, cantaloupe, carrots, collards, dandelion greens, dulse, garlic, kale, mustard greens, papayas, peaches, pumpkin, red peppers, spinach, spirulina, sweet potatoes, Swiss chard, turnip greens, watercress, yellow squash, cayenne, fennel seed, kelp, lemongrass, paprika, parsley, peppermint, sage.

5 - 10.2 Nutrition Quiz

The warning signs of poor nutritional health are often overlooked. The following checklist can be used in order to assess the degree to which an elder is at "nutritional risk."

Table 5 - 8 Nutrition Quiz

Read the statements below. Make note of the points for each "YES" answer you give. Then add up the points and total your nutritional score	
I have an illness or condition that made me change the type and/or amount of food I eat.	2 points
I eat fewer than two meals per day.	3 points
I eat few fruits, vegetables, or whole grains.	2 points
I have three or more drinks of beer, liquor, or wine almost every day.	2 points
I have tooth or mouth problems that make it difficult for me to eat.	2 points
I do not always have enough money to buy the food I need.	4 points
I eat alone most of the time.	1 point
I take three or more prescribed or over-the-counter drugs each day.	1 point
Without trying to, I have lost **or** gained 10 pounds in the last six months.	2 points
I am not always physically able to shop, cook, and/or feed myself.	2 points
(Source – American Association of Retired Persons - USA)	

Table 5 - 9 Nutritional Score

Now Total Your Nutritional Score	
0-2 Points	Good! Recheck your nutritional score in six months
3-5 Points	Begin Improving! You are at moderate nutritional risk. See what can be done to improve your eating habits and lifestyle. Your office on aging, elder nutrition program, elder citizens' centre, or health department can help. Recheck your nutritional score in three months.

6 or More Points	Warning! You are at high nutritional risk. Bring this checklist the next time you see your doctor, dietician or other qualified health or social service professional. Talk with them about any problems you may have. Ask for help in improving your nutritional health.
Remember that warning signs suggest risk, but do not represent a diagnosis of any condition. Read on to learn more about the warning signs of poor nutritional health.	

5 - 10.3 Nutritional Symptomatology

Even if an elder does not wish to speak about their dietary habits, food choices, or challenges, much can be learned from physical observations. While the following is not written in stone, they provide some general guidelines to help assess an elder's nutritional status. Most skin problems, for example, stem from the poor functioning of the digestive tract.

Table 5 – 10 Nutritional Symptomatology

Body Part	Symptom	Possible deficiency (or cause)
Skin	Dryness, bruises	Vitamin A; essential fatty acids, vitamins C and K
Scalp	Dryness, hair loss	Vitamin A; essential fatty acids, protein, vitamin B6; zinc
Eyes	Dry, red, light sensitive puffy, dark circles	Vitamins A, B2, B6 (Allergies; kidneys; liver)
Gums	Bleeding, tender	Vitamin C; coenzyme Q10
Nails	Thin, splitting White spots Spoon shaped	Essential fatty acids, zinc, Magnesium zinc, iron

5 - 11 SUPPLEMENTING THE ELDER DIET

With growing interest in natural health and complementary medicine, supplements are becoming popular for all age groups, but especially seniors with long standing symptoms and conditions.

Supplements are a valid option but should not be taken without some qualified recommendations and guidance.

Many supplement manufacturers have jumped on the bandwagon of a growing industry. Some are concerned with quality and some are not. Other manufacturers have been producing quality supplements for years - long before they became trendy and popular. As with anything you buy, be sure the manufacturer is reputable. Take to the health store manager, research the company on the Internet, and ask your friends how they have found the company's supplements.

Using logic is the best advice for supplement users. No pill is going to help you lose weight overnight or regain lost memory or vigor. Supplements are meant to supplement the diet. If there is a deficiency, specific need, injury or damage a supplement may help. In any case, supplements are not meant to replace a wholesome diet.

Just because a vitamin or other supplement is natural, does not mean it is safe or good for you. Just like with any medicine, taking too much, or taking the wrong dosage may be cause for concern. Obtain help in making decisions before purchase.

A supplement that works for one person may not work for another—we all have unique constitutions and requirements. Filler ingredients, for example, may cause an allergic reaction in one person, but not another. Try different brands to see what works best for you. Ask questions before you put any Natural Health Product (or drug, for that matter) into your body - questions like:

- What is this vitamin/mineral/herb/supplement used for?
- What are the expected effects?
- Are there any known side effects?
- When should it be used, and not be used?
- Do I really need it?
- What dosage is right for me?

New Natural Health Product regulations, which came into effect January 2004, will soon make it easier to choose the right product. Canadian health food manufacturers have, for years, been unable to make health claims on Natural Health Products (NHPs) as they have been considered "foods" by law. Glucosamine sulfate, for example, which has been clinically proven in double-blind studies to reduce the symptoms of osteoarthritis, could only be labeled as a dietary supplement. Now, however, NHPs will be regulated as a sub-set of drugs. Anne Wilke, Director of Regulatory Affairs for the Canadian Health Food Association, says, "This is good news. It allows Natural Health Products to have health claims, which is a positive step for the health food industry."

Discussed below are some supplements that may help elders improve their health.

5 - 11.1 Digestive Enzymes

As mentioned earlier, digestive enzymes are crucial for proper digestion. Elders may be lacking in enzymes due, in part, to age and from eating the same foods for many years. As well, without the ability to eat raw food, the lack of enzymes in cooked and processed foods leaves the body to make up for what is missing. When there are not enough bodily enzymes to complete digestion, white blood cells are called in to finish the job. This, however, leaves the immune system (the white blood cell's real job) weaker than normal.

5 - 11.2 Hydrochloric acid (HCl)

As we age, we produce less stomach acid, which affects our overall digestive process. As well, eating processed foods uses up a lot of this valuable acid. To aid in digestion, elders may want to supplement with HCl. It is often available in combination with digestive enzymes.

5 - 11.3 Multivitamins and Minerals

Ideally, we would obtain all our required nutrients through the food we eat. However, thanks to modern farming practices (which can deplete the soil of minerals) and food manufacturing processes, it is difficult to ensure we are receiving all the nutrients we need. To lessen the risk of vitamin and mineral deficiencies, elders may want to invest in a quality multi-vitamin and mineral supplement.

It is best to take vitamins and minerals in a balanced formula. Taking them in individual dosages may lead to imbalances within the body causing additional deficiencies, hunger, or other symptoms.

5 - 11.4 Glucosamine Sulfate

Glucosamine sulfate, or GLS for short, are found naturally (in high concentrations) in joint structures. As we age, we lose the ability to manufacture enough levels of GLS. Fortunately, it has now been made into a supplement - double-blind study tested - and proven to lessen the pain and symptoms of osteoarthritis. It accomplishes this by re-building cartilage and synovial fluid … which, in turn, lessens pain and improves mobility.

GLS offers several advantages as compared to the non-steroid anti-inflammatory drugs prescribed by doctors - that, over time, can damage both joints the stomach lining. If an elder wants to supplement with GLS, it is advisable to invest in a quality brand and take it for more than three months.

5 - 12 THE VALUE OF ANTIOXIDANTS

Elders should also consider eating foods that contains and abundance of antioxidants. To the extent to which they protect the body from "free radicals" these natural compounds can help to prevent, delay, and even treat some of the problems associated with the aging process.

5 - 12.1 Alpha-Lipoic Acid

This powerful antioxidant is found naturally in the body and in some food sources (e.g., spinach and broccoli). For significant protection, supplementation is usually recommended.

Alpha-lipoic acid offers a wide variety of benefits. Not only does it neutralize free radicals, but it also:

- Recycles vitamins E and C in the body
- Helps the liver detoxify the body of metal pollutants
- Reduces blood cholesterol levels

5 - 12.2 Bilberry

Bilberry is an herb that contains anthocyanidins - a phytochemicals that help lower blood pressure, inhibit clot formation and enhance blood supply to the nervous system. It is also known to protect the eyes and may even enhance vision. Studies have indicated that it is of help in addressing macular degeneration.

5 - 12.3 Coenzyme Q10

This antioxidant plays a crucial role in the generation of cellular energy. It significantly improves immunity and helps maintain flexible cell membranes. It appears to provide protection for both the body and the brain - and it has proven particularly effective in managing migraine headaches.

5 - 12.4 Turmeric

Curcumin is an antioxidant that is found in the spice turmeric. It has been shown to protect against the formation of plaque in the arteries by stopping the oxidation of cholesterol. It is also being studied with respect to the prevention of cataracts.

5 - 12.5 Flavonoids

Flavonoids are especially potent antioxidants - they are the chemical compounds that plants use to protect themselves from parasites, bacteria, and cell injury. In humans flavonoids appear to stimulate the production of uric acid - a compound that helps eliminate mutagens and carcinogens in the body and which ultimately may help prevent cancer.

There are more than 4,000 of these chemical flavonoids found naturally in fruits, vegetables, seeds, nuts, flowers, and bark. Some of the best sources include apples, blueberries, onions, and tea.

5 - 12.6 Garlic

It may seem too simple to be true, but garlic's potent compounds are valuable antioxidants. Studies on aged garlic extract have shown that garlic keeps blood vessels healthy, reduces blood cholesterol levels, and helps lower high blood pressure.

5 - 12.7 Glutathione

Produced naturally in the liver, this protein inhibits the formation of free radicals and protects against cellular damage from free radicals. In fact, glutathione protects individual cells as well as the tissues of the arteries, brain, heart, immune cells, kidneys, lenses of the eyes, liver, lungs, and skin against oxidative damage.

5 - 12.8 Green tea

This classic tea contains compounds known as polyphenols, including phytochemicals that have antioxidant, antibacterial, and antiviral properties. Green tea does not just protect health - it has been shown to improve health.

5 - 12.9 Melatonin

An efficient free radical scavenger, this hormone is one of the few antioxidants that can permeate any cell in any part of the body. In laboratory experiments, melatonin has been shown to extend the lifespan of mice. It has also been shown to inhibit cancer growth, help modulate the immune system, and protect against degenerative diseases.

5 - 12.10 Vitamin C

Besides being a powerful antioxidant, vitamin C also recharges other antioxidants to keep them potent.

This popular vitamin is also recommended for preventing damage to artery walls - which makes it a powerful tool in preventing atherosclerosis.

5 - 13 DIET AND DISEASE

Many chronic diseases that develop late in life, such as osteoporosis and atherosclerosis, are influenced by earlier poor habits. Insufficient exercise and calcium intake, especially during adolescence and early adulthood, can significantly increase the risk of osteoporosis, a disease that causes bones to become porous. Likewise, heart disease does not happen overnight. Years of poor food choices, stress, and lack of exercise contribute to its development.

Nevertheless- despite earlier poor habits - good nutrition in the later years can improve health and help to prevent and lessen the effects of diseases. For instance, osteoporosis, obesity, high blood pressure, heart disease, diabetes, cancer, gastrointestinal problems, and arthritis—almost any disease imaginable—can be helped through good nutrition.

Studies show that a good diet in later years helps both in reducing the risk of disease, as well as in managing the diseases' signs and symptoms. This contributes to a higher quality of life, enabling older people to maintain their independence by continuing to perform basic daily activities, such as bathing, dressing, and eating.

Poor nutrition, on the other hand, can prolong recovery from illnesses, increase the costs and incidence of institutionalization, and lead to a poorer quality of life.

Elders often require special dietary considerations, not only because they are elders, but also because of the diseases they are trying to prevent, manage or treat. Our modern society gets so wrapped up in high tech medical advances that we often overlook diet as both a major cause, and potential cure for disease.

5 - 14 HEART DISEASE

Also known as cardiovascular disease, heart disease is a general term encompassing disorders of the heart and blood vessel system. Diseases of the heart are greatly influenced by diet and lifestyle - and while we often associate heart disease with men, more women die from heart disease than from breast and uterine cancers combined.

Heart disease is not an inevitable product of aging. There are many controllable factors that contribute to heart disease including: smoking, high blood pressure, excessive alcohol consumption, stress, obesity, a sedentary lifestyle, and diabetes.

The heart is the most important muscle in the body and deserves to be well nourished.

Some of the foods that promote good heart health include:

- Fish
- Garlic
- Onions
- Fruit and vegetables
- Pineapple
- Ginger
- Avocado
- Beans and peas
- Oats

Foods, on the other hand, that should be avoided in order to help ensure good heart health include:

- Sugar
- Meat
- Alcohol
- Saturated fats

5 - 14.1 Hypertension (High Blood Pressure)

A blood pressure reading has two numbers. The systolic pressure (the higher and first number) measures the force that blood exerts on the artery walls as the heart contracts to pump out the blood. The diastolic pressure (the lower and second number) is the measurement of force as the heart relaxes to allow the blood to flow into the heart.

Blood pressure is considered high, if the higher number exceeds 140 or the lower number exceeds 90. A reading of 120 over 80 has "traditionally" been considered normal. However, as a rule, the lower the blood pressure reading, the better. Low readings are usually found in youngsters and elders who are in excellent physical condition.

Table 5 - 11 Blood Pressure Readings and Ratings

Rating	Systolic	Diastolic
Optimal	<120	<80
Normal	<130	<85
High Normal	130-139	85-89
Hypertension Stage 1	140-159	90-99
Hypertension Stage 2	160-179	100-109
Hypertension Stage 3	>179	>109

High blood pressure (or hypertension) is often a precursor to heart problems. The typical image of a person with hypertension (high blood pressure) is an overweight, overworked male executive with a very short fuse. The truth is high blood pressure affects people of all ages, races, social classes, sizes, and shapes, women as well as men, and even children.

In general, everyone's blood pressure varies in the same way throughout a given day. It is usually highest at work and then drops slightly at home. Blood pressure falls to its lowest level during sleep but suddenly increases at waking—the highest risk period for heart attack and stroke in those with severe high blood pressure.

The most popular way of reading blood pressure involves a device with a digital readout attached to a cuff that can be electronically inflated and deflated.

Certain unalterable conditions put you at greater risk for developing hypertension. If you fall into one of the following categories, you can avoid compounding your risk by making lifestyle changes.

Table 5 - 12 Hypertension Risk Factors

Heredity	Those with a family history of hypertension are twice as likely to develop it as others. Many children of hypertensive parents have slightly elevated blood pressure even as infants. What is often overlooked, however, is that the dietary, lifestyle, and emotional habits handed down in a family can have even more of an impact on blood pressure than heredity. Eating too much red meat and processed food, working late, and mishandling anger are all learned traits that can be changed.
Race	Hypertension is more common and generally more severe among blacks than among whites. For reasons not completely understood, blacks—especially males—tend to develop high blood pressure earlier in life, and much more often with fatal results.
Pregnancy	Hypertension is not related to a person's sex. However, during pregnancy, some women develop high blood pressure.

And while some risk factors for hypertension are well beyond an individual's control … others are clearly not. Diet, for example, can make a huge difference. A poor diet can contribute to plaque build-up in the walls of the arteries, which leads to arteriosclerosis (hardening of the arteries). If this happens it becomes difficult for blood to travel, and this results in higher pressure within the system.

Some dietary recommendations that can help minimize the risk of developing hypertension include the following:

- Eat a high-fibre, unprocessed, nutrient-dense, whole foods diet.
- Avoid over consumption of sugar, which leads to insulin dominance (unstable blood sugar levels will lead to hypoglycemic episodes, which result in the release of adrenaline, which raises blood pressure)
- Foods that help lower blood pressure include celery, garlic, onions, pumpkin seeds, sesame seeds, almonds, milled flax seeds, green leafy vegetables, broccoli, and citrus fruits
- Natural remedies for lowering blood pressure include the herb hawthorn, and essential fatty acids

Exercise is also beneficial. The following looks at exercise, diet and other controllable risk factors (for hypertension) in more detail.

Table 5 – 13 Hypertension Risk Factors You Can Change

Exercise	Exercise strengthens the cardiovascular system and reduces the risk of heart disease. Most experts recommend aerobic exercise for twenty to thirty minutes at least three times a week.
Calcium	Some studies suggest that eating too little calcium may result in high blood pressure readings. Food sources of calcium include dark green leafy vegetables, almonds, asparagus, broccoli, cabbage, dandelion greens, oats, sesame seeds, soybeans, and yogurt.
Magnesium	A magnesium deficiency may be linked to hypertension. Food sources of magnesium include apples, apricots, avocados, bananas, brown rice, cantaloupe, fish, garlic, grapefruit, green leafy vegetables, lima beans, nuts, pesoybeanssame seeds, soy beans, and whole grains.
Potassium	An adequate potassium intake may help prevent or lower high blood pressure. A diet that contains grains, fruits, and vegetables will supply plenty of potassium since it is abundant in these foods.
Polyunsaturated fats	Replacing saturated fats in the diet with polyunsaturated fats may cause a reduction in blood pressure. Enjoy nuts, vegetables, and high-quality vegetable oils such as extra virgin olive oil.
Relaxation techniques	Biofeedback, hypnosis, meditation, and other relaxation techniques may produce a modest, temporary reduction in blood pressure in some people.

Maintaining a healthy blood pressure level is a personal responsibility. It is up to every individual to control their weight, exercise, salt intake, and medications. A doctor is merely a trusted advisor. No matter how much the doctor would like to take care of this for you, he or she cannot.

And while it is true that you can have high blood pressure even though you are slim and exercising regularly … it is also virtually guaranteed that being overweight and out of shape will dramatically increase the risk of high blood pressure.

And it is never too late to make improvements. Recent studies have confirmed that people with high blood pressure who are overweight and not exercising can lower their blood pressure simply by losing weight and exercising regularly.

Even more encouraging - through diet and exercise - it is possible to manage blood pressure without resorting to drugs. And this translates into less expense and fewer risks and side effects.

5 - 14.2 Cholesterol

Statistics Canada estimates that 45% of men and 43% of women have elevated cholesterol levels. Understanding the facts about cholesterol can help elders to take better care of their hearts and live healthier lives - reducing the risk of heart attack and stroke. Tips to help control cholesterol include eating foods low in saturated fat and cholesterol, maintaining a healthy weight, exercising regularly and follow all the recommendations offered by healthcare professionals.

Cholesterol is a waxy, fat-like substance found in every cell of the body. It is used to help digest fats, strengthen cell membranes and make hormones. Although cholesterol serves many important functions in the body, too much cholesterol in the blood can be dangerous. When blood cholesterol reaches high levels, it can build up on artery walls, increasing the risk of blood clots, heart attack, and stroke.

The bloodstream transports cholesterol throughout the body by special carriers called lipoproteins. The two major lipoproteins are low-density lipoproteins (LDL) and high-density lipoproteins (HDL). LDL is most often referred to as the "bad" cholesterol because it carries cholesterol to the cells; whereas HDL is known as the "good" cholesterol because it carries cholesterol away from the cells. In fact, there is no such thing as good and bad cholesterol, but thinking of LDL as “L for lousy,” can help in remembering where levels should be.

LDL is the most numerous cholesterol carrier found in the blood. It is also the material that contributes most to the build-up of plaque on artery walls. Plaque forms when LDL combines with other substances and sticks to the walls of arteries. Decreasing the amount of LDL cholesterol in the blood is an important part of decreasing risk of heart disease.

HDL cholesterol makes up a smaller portion of the cholesterol carriers. However, HDLs are probably just as, if not more, important than LDLs in preventing heart disease. HDL removes cholesterol from the blood by carrying it to the liver where it is metabolized. Therefore, it is beneficial to have high levels of HDL in the blood.

Cholesterol readings the elder receives from their medical provider generally include total cholesterol, LDL cholesterol, and HDL cholesterol levels. It is important to look at all three readings, not just the total cholesterol.

Table 5 – 14 Recommended Goals for Cholesterol Readings

TOTAL CHOLESTEROL (mg/dl)	***LDL CHOLESTEROL (mg/dl)***
Desirable: Below 200 Borderline: 200-239 Undesirable: 240 and above	Desirable: Below 130 Borderline: 130-159 Undesirable: 160 and above
HDL CHOLESTEROL (mg/dl)	***TRIGLYCERIDES***
Desirable: Above 45 Borderline: 40-45 Undesirable: Below 40	Desirable: Below 150 Borderline: 150-199 Undesirable: Above 200

When cholesterol is high, risk for heart disease is high as well. Because high cholesterol produces deposits in the arteries, it is a contributing factor to atherosclerosis and heart disease.

Many factors, such as genetics, obesity, inactivity, and poor diet contribute to high cholesterol. Understanding how these factors affect your cholesterol is important in the prevention and treatment of high cholesterol.

Having elevated triglycerides may also increase the risk of heart disease. Exercise, a low-fat diet, and weight loss can all decrease triglycerides. As indicated above, a desirable triglyceride reading is below 150 mg/dl.

Several different factors may contribute to an increased risk of developing high cholesterol. Among these risk factors: genetics, excess weight, lack of exercise, and poor diet.

Just as some people inherit physical characteristics from their parents, others inherit an increased likelihood of developing high cholesterol. If you have a family history of heart disease or high cholesterol, it is important to focus on those aspects, which you can control, rather than feeling genetically doomed. By maintaining a healthy weight, exercising regularly and eating a low-fat, well-balanced diet you will decrease your chances of developing heart disease.

Accumulating excess weight is generally associated with increased total and LDL cholesterol. Every individual responds differently to weight loss - however as a rule, blood cholesterol drops as weight decreases. The best way to lose weight and lower cholesterol is through increased activity coupled with low-fat eating.

Exercise is very important in controlling cholesterol levels. Not only does total and LDL cholesterol tend to decrease with activity, but also HDL cholesterol increases. In order to get this effect "aerobic" activity is best. Aerobic exercise is any exercise that is continuous, rhythmical and involves large muscle groups. Most aerobic exercise ends with the letters “ing" (walking, running, rowing, cycling, swimming, rope skipping, dancing, hiking, and skating). The cholesterol lowering effect of exercise is greatest when individuals exercise at least 3 times per week for 30 minutes or more.

Diet is also a major component of decreasing blood cholesterol. Dietary modifications are essential for weight loss but can affect cholesterol levels even if weight remains unchanged.

In addition, a proper diet is essential to provide energy for those engaging in daily aerobic exercise. Fat is often targeted as the main dietary factor, which affects blood cholesterol. Fat serves many functions in the body; therefore, a fat free diet is not a healthy diet. However, the amount and type of fat in the diet is important in controlling cholesterol.

Saturated fat is the main dietary component associated with raising cholesterol. Saturated fats are found mainly in animal products and tropical oils. Replacing saturated fats with healthy essential fats can help decrease total cholesterol. Some recommendations - with respect to lowering cholesterol:

- Eat garlic and onions, which increase HDL and decrease triglyceride levels
- Eat ginger, which increases the conversion of cholesterol to bile salts
- Vitamin C decreases LDLs and increases strength and compliance of vessels
- Cayenne, Goldenseal, and hawthorn lower cholesterol
- Lose weight, if necessary
- Stop smoking. Do not drink to excess
- Exercise

5 - 14.3 Atherosclerosis and Arteriosclerosis

This condition, leading to heart disease, can be defined as a buildup of plaque on the artery walls. This build up, consisting of cholesterol, fat, blood cells, fibrin, smooth muscle, and calcium, restricts optimal blood flow.

Symptoms such as angina or a heart attack are not apparent until there is a 70% blockage of the coronaries.

Arteriosclerosis is a group of diseases characterized by thickening and loss of elasticity of the arterial walls. It is preceded by atherosclerosis. The rigid artery walls increase blood pressure. Arteriosclerosis does occur with increasing age but may factors can help to prevent and treat this disease as well as atherosclerosis.

Some suggestions - to help treat and prevent both atherosclerosis and arteriosclerosis:

- Eat a high-fibre, whole food, unprocessed diet
- Eliminate smoking and caffeine
- Maintain ideal weight, exercise
- Reduce stress & reduce exposure to free radicals

5 - 15 BLOOD SUGAR PROBLEMS

Glucose is the smallest molecular structure of sugar - and the main source of energy for our bodies. The body forms glucose when it breaks down (i.e., digests) foods into a useable form of energy. Proper production and circulation of blood glucose, also called blood sugar, is vital to our bodies. It is especially important for our brains which cannot store glucose, but which need it in order to function.

Glucose levels are normally kept in check by various bodily processes. The pancreas, for example, secretes insulin to help ensure glucose gets to the cells within our bodies. Unbalanced blood sugar levels can lead to a variety of problems. Both increased levels and decreased levels of glucose can be unhealthy.

High levels of blood glucose, known as hyperglycemia, are caused by several diseases and conditions. Low levels of blood glucose (i.e., hypoglycemia) are more common, however - and they are often the direct result of dietary issues.

5 - 15.1 Hyperglycemia

With hyperglycemia, blood sugar levels rise abruptly when food is ingested and then drop as abruptly as they rose thereafter. This condition is aggravated by consumption of simple carbohydrates (e.g., white rice, white pasta, baked goods, crackers made with white flour, candy, chocolate etc.) that breaks down very quickly to glucose in the digestive system.

Hyperglycemia can produce several adverse effects, including fatigue, weight loss, poor wound healing, frequent hunger and thirst. It can also cause the pancreas to become overactive - and adversely impact its ability to regulate insulin levels. This in turn can lead to excess adrenaline (the body's emergency stress hormone) levels.

Hyperglycemia is closely associated diabetes.

5 - 15.2 Hypoglycemia

Hypoglycemia results when the blood sugar level drops below the normal homeostatic range of about 80 to 90 mg/100 ml. This breakdown in the normal glucose balance influences all our bodily functions. It can be particularly damaging to the brain - causing impaired brain function ranging from simple headache through to coma. If left unchecked, it can lead to severe brain damage and even death.

The symptoms of hypoglycemia include:

- Intense hunger
- Strong, sudden cravings for sweets, starches, coffee, or alcohol
- Sweating
- Tremors and rapid heartbeat
- Nervous and anxious feelings (that are relieved by eating)
- Irritability when a meal is late or skipped
- Excess weight
- Weakness
- Frequent headaches
- Fainting spells
- Depression

In order to help manage hypoglycemia, sufferers should consider:

- Eating small, frequent meals
- Avoiding processed and sugary foods
- Eating foods that support and cleanse the liver, pancreas, and adrenal glands, such as fruits and vegetables—especially beets, garlic, flax seeds, ginger root, dark green leafy vegetables, and citrus fruits

5 - 15.3 Type II Diabetes

Non-insulin dependent diabetes, or type II diabetes, is often referred to as "adult-onset" diabetes because it is usually diagnosed in those middle-aged and older. However, more and more younger people—including children—are developing this diet-related condition.

Unlike type I diabetes (where the pancreas is unable to secrete insulin), with type II diabetes the pancreas is not the problem. In fact, the pancreas is usually secreting excess insulin in answer to the cell's need for glucose facilitation. The problem is that the cells have become resistant to insulin. This, in turn, hampers the body's ability to get glucose to the cells that need it.

Years of eating simple sugars, putting on weight, and not getting enough exercise, causes a corresponding decrease in insulin sensitivity. Studies show that many people with poor diet and lifestyle either have this type of diabetes already (and do not even know it) or are currently developing it. The cardinal signs of diabetes include excessive thirst, excessive hunger, and excessive urination. The condition itself is not as harmful as the complications that may arise from the inability to move blood glucose into the cells of the body where it is required.

Some of the recommendations to help prevent and treat type II diabetes include:

- Eating a high-fibre diet consisting of whole foods
- Eating complex carbohydrates, such as fruits, vegetables, and whole grains - not simple carbohydrates, such as processed white flour products, white rice, white pastas, baked goods, crackers, and sweets
- Avoiding processed foods
- Reducing the intact of caffeine and alcohol, which cause rapid fluctuations in blood sugar
- Exercising
- Investigating the emotional issues (that impact food and lifestyle choices)
- Supplementing the diet with extra vitamins and minerals

5 - 16 OSTEOPOROSIS

The risk of an elder developing an osteoporosis fracture is actually greater than the risk of heart disease, stroke, or breast cancer. An estimated 1.8 million Canadian women are currently affected by osteoporosis and approximately 40% of all women over 50 will experience a bone fracture that is related to osteoporosis.

The first sign of osteoporosis may be a broken bone or fracture, but this condition takes decades to develop. Bones strengthen through to about the age of 35, and then start to deteriorate. When we reach our elder years, we start to pay for the poor dietary and lifestyle habits we developed much earlier. Nonetheless, there is much we can do to address the ill effects of osteoporosis at any age.

Osteoporosis is what is known as a deficiency disease. It is associated with poor nutrition and lack of exercise throughout life. Osteoporosis develops, in part, because of insufficient calcium intake and/or absorption. Due to missing minerals and protein, our bones become porous

Topping up on milk is, unfortunately, not the answer. In fact, today's modern milk manufacturing methods make milk difficult to digest and therefore difficult to absorb and utilize.

The following, however, can all be helpful in preventing and treating osteoporosis:

- Avoiding a diet high in phosphorus (meat, soda, milk), which encourages calcium excretion via the kidneys.
- Eating foods that are high in easily assimilated calcium and vitamin D - foods like broccoli, chestnuts, clams, dark green leafy vegetables, hazelnuts, kale, kelp, oats, oysters, sea vegetables, sesame seeds, soy beans, tofu, and turnip greens
- Eating garlic and onions, which contain the sulphur that is necessary for healthy bones
- Eating soy products (especially for menopausal women)
- Eliminating caffeine and sugar from the diet. They are known to drain calcium from the body
- Losing weight if necessary, to avoid stressing bones and joints
- Obtaining a enough sunshine, which is the best source of vitamin D (needed to absorb calcium)
- Exercising, since it triggers continual bone remodeling and the deposition of crystals in the bone matrix. Just as a muscle gets stronger and bigger the more you use it, a bone becomes stronger and denser when you place demands on it. Walking, running, jogging, dancing, and stair climbing are all appropriate weight-bearing exercises

An individual's bone health can be assessed easily, quickly and painlessly through a bone density test. Getting a bone density tested is an important step towards understanding an individual's risk. Early detection and prevention are the best ways to protect against the debilitating effects of this disease.

The bone density test measures bone mass, which helps determine bone strength and predict the risk of future fracture. If your bone mineral density is low, then the bones are brittle and at risk of breaking.

5 - 17 CANCER

All the recommendations for a healthy heart, balance blood sugar and osteoporosis are also ways to prevent cancer. According to epidemiological research, at least 80% of cancers can be prevented through diet and lifestyle modification.

It is vitally important for people not to wait until they are sick in order to get well. Among the steps that all of us can take to prevent cancer:

- Eat cancer-fighting foods, such as: soy beans, green tea, broccoli, cabbage, tomatoes, sea vegetables, dark green and brightly coloured fruits and vegetables, flax seeds, beans, garlic, spinach, sprouts, blueberries, cherries, grapes, plums, almonds, and onions.
- Limit meat, sugar, and dairy product consumption.

- Avoid processed foods.
- Drink lots of pure water in between meals.
- Maintain ideal weight and get plenty of exercise.
- Investigate emotional issues that may be affecting your outlook on life.

5 - 18 SARCOPENIA

The word *frailty* is used to describe the loss of muscle and strength often seen in elders. The problem is that *frailty* has more than one meaning. A better word to use, but one that most people have not heard of, is "sarcopenia" (pronounced sar-ko-PEEN-ya). It is a word you are likely to hear more about in the future since sarcopenia is a very active area of research.

Sarcopenia describes age-related muscle loss and a subsequent reduction in strength and function. After about age 25, humans start to slowly lose lean body mass (muscle) while gaining body-fat. This process accelerates in the 40's and again after age 75.

As people age, the less muscle they have, the weaker they get. And the weaker the muscles and bones, the harder the activities of daily living become. But it is possible to do something about this! Current research indicates that sarcopenia is most prevalent in physically inactive people. The human body was made to move - and when the muscles are deprived of continuous stimulus (i.e. hard physical work, strength training, and aerobic exercise) they start to break down or "atrophy." This is true not only of the skeletal muscles like the biceps, but the heart as well.

There are a variety of things that can be done to prevent or delay sarcopenia. Aerobic exercise for the heart and strength training for the body's skeletal muscles is the key. Exercise and a healthy diet are the two most important factors in addressing sarcopenia.

Exercise physiologists advise getting aerobic exercise (such as walking and jogging) at least 3-5 times per week for periods of around 30–60 minutes. Strength training should be performed 2-3 times per week (1-2 sets of 10-15 repetitions for all major muscle groups).

There is an old saying: "use 'em or lose 'em."

As we age, we should not just take it easy - even though that is exactly what many of us do. Statistics indicate that only 30% of Canadians aged 45-64 exercise regularly and only 35% of adults 65 and older do.

Research has shown that skeletal muscles can be strengthened at any age. A study conducted recently found that elders who initiated a strength-training program and held to it three times a week not only improved their strength but improved their cardiovascular fitness and bone density as well. Therefore, you can see that exercise is truly a gift that "keeps on giving."

A balanced exercise program has six components: warm-up, stretching, aerobic exercise, cool-down, strength training, and stretching. There are a variety of exercise types that the elder can use.

5 - 19 FITNESS AND ELDERS

More than 60% of adults do not achieve the recommended amount of regular physical activity. In fact, 25% of all adults are not active at all. Inactivity increases with age and is more common among women than men. Inactivity is also more common among individuals with lower income and less education.

Decades of research have demonstrated that:

- People who are usually inactive can improve their health and well-being by becoming even moderately active on a regular basis
- Physical activity need not be strenuous to achieve health benefits
- Greater health benefits can be achieved by increasing the amount (duration, frequency, or intensity) of physical activity

Being active can provide some protection against chronic illnesses such as osteoporosis, diabetes, joint problems, and heart disease. Even the very old can benefit. In one study (dealing with frail elders who were, on average, 90 years old) muscle strength was improved by 160% with eight weeks of weight training.

5 - 19.1 Aerobic Exercise

The term aerobic means "with oxygen." During an aerobic workout, the cardiovascular system, which includes the heart, lungs, and blood vessels, responds to increased levels of physical activity by increasing the oxygen that is available to the body.

Aerobic activity involves an exercise routine that uses large muscle groups, is maintained for a sustained period, and is rhythmic in nature. Regular aerobic exercise improves your level of fitness, as your heart becomes stronger and begins to work more efficiently. The result is that the heart can pump more blood (thus increasing oxygen delivery to the tissues) with each heartbeat.

As aerobic fitness increases, it is possible to work out longer with greater intensity - and recovery - at the end of a work out - will occur more quickly.

Numerous activities can provide an aerobic workout. Some examples include biking, jogging, running, swimming, cross-country skiing, playing basketball, jumping rope, roller-skating, brisk walking, and dancing.

In addition to these activities, an aerobic workout can be achieved in a specially designed aerobic dance class or by using exercise machines (e.g., stationary bikes, treadmills, stair-steppers, rowing machines) that can be found at a local gym or health club. Most of these machines can also be purchased and set up for home use.

Because each type of aerobic exercise can be modified to varying intensity levels, people with different fitness goals, levels of physical conditioning, and injury/illness history can participate.

People who are just beginning an exercise program, are older than 40, or have a known history of heart disease, high blood pressure, or other cardiovascular disorder, should consult with a physician before beginning any exercise program.

Aerobic exercise has proven beneficial for people with a variety of medical disorders such as heart disease, diabetes, obesity, arthritis, anxiety, and premenstrual syndrome.

Studies have shown repeatedly that there are numerous health benefits of aerobic exercise. In addition to the benefits to the cardiovascular system, aerobic exercise can:

- Increase resistance to fatigue and give you more energy. Aerobic exercise can add life to your years, along with years to your life
- Improve mood, reduce depression and anxiety. Positive mood changes have been noted after as little as two to three weeks of aerobic exercise
- Improve the quality of sleep. Studies show that people who exercise regularly get to sleep quicker and report more restful sleep patterns. It is best to complete an aerobic exercise routine one to two hours before regular bedtime because it takes a little time for the general emotional and physical relaxation to set in after a workout
- Increase the good (HDL) cholesterol. This type of cholesterol is known to reduce the risk of heart disease
- Help to control and reduce body fat. Aerobic exercise in conjunction with proper diet can decrease body fat
- Reduce the risk of certain types of cancer. Aerobic exercise has been associated with a reduction in the incidence of colon cancer in both males and females, and the incidence of breast and reproductive organ cancer in women

5 - 19.2 Functional Fitness

Functional fitness is the term used to describe the practical applications of physical exercise. It focuses on the ability to more easily perform the activities of daily living, enhanced quality of life, and greater independence.

Improved functional fitness is associated with decreased blood pressure, body fat, and cholesterol, plus increased bone density and joint range of motion.

It also helps to address health issues like heart disease, diabetes, and osteoporosis, and such chronic conditions as arthritis, hypertension, back injuries, and asthma.

Quality supervision is the key to implementing a good functional fitness program. A variety of simple household chores - that can easily be performed by elders - can be used to help improve functional fitness.

Laundry Toss

The laundry toss involves turning the mundane task of laundry into exercise for an elder's abdominal, low back and hip muscles. The elder should simply stand about 10 to 15 feet away from the washing machine - with the dirty laundry basket at about waist height on his or her left side and the washing machine on the right. The pieces of dirty, dry laundry picked up, the body is turned at the hips, and the laundry is then pitched into the open washer.

Once this has been mastered, the elder can start pitching wet laundry from the washer into the dryer.

Unload and Lift

Doing the daily dishes provides a great opportunity to stretch side and back muscles. As an elder takes dishes out of the dishwasher, he or she should turn from side to side, allowing the hips to turn so that the torso twists while reaching to put the clean dishes away on high and low shelves. To make the most of this stretching exercise, the elder should put the dishes and silverware away one piece at a time. The further the distance between the dishwasher and cupboards and drawers, the better 0 since this increases the amount of exercise involved.

Rake and Twist

This exercise can be applied to either raking leaves or sweeping the floor. The key is to have the elder take long, steady strokes, turning at his or her hips and raking or sweeping toward the body. Doing it this way means that the arms do not have to do all the work. To avoid strain, this exercise should involve both sweeping both from left to right and from right to left.

Standing Side Stretch

If an elder wants to make the most of stretching exercises, he or she should add a little weight. Every household contains common objects—a carton of milk, a bag of garbage or a briefcase—that can serve as weights.

The elder should hold a weighted object in either hand while standing up straight with his or her feet slightly more than a shoulder's width apart. The elder should then slowly bend at the waist (straight to the side), lowering the hand and weight down as far as they will go - holding both to a count of 15 or 20 - and slowly returning to a straight up position. Then put the object in the opposite hand and repeat the stretch in the other direction.

Once the elder becomes more comfortable, he or she can, increase the weight of the object and stand with feet closer together (which will increase the stretch).

5 - 20 ASSESSING AN ELDER'S HEALTH STATUS

A health status assessment provides the missing ingredient necessary to determine the health of an elderly person. The benchmarks used in assessments of this nature are:

- Lean body mass (muscle mass)
- Strength
- Basal metabolic rate (BMR)
- Body fat percentages

5 - 20.1 Lean Body Mass

Lean body mass is commonly used to describe the muscles in an individual's arms, legs, back, neck, and abdomen. It also includes the heart muscle, the tissues of other internal organs, water, and bone. It is the sum of everything in a human body - except for fat. Preserving lean body mass is extremely important to overall health - it is a measure of a body's level of fitness, health status, and susceptibility to disease. It is also a good measure of the risk of premature mortality.

There are many benefits associated with high lean body mass. Several studies have shown that a high ratio of muscle to body fat is associated with:

- An increase in metabolism (which helps the body burn fat)
- Increased aerobic capacity (more working muscles)
- An increase in the insulin used by muscles (which reduces the risk of diabetes)
- Higher levels of beneficial HDL cholesterol in the blood

With exercise, bones, particularly the joints and bones of the spinal column, rebuild themselves as they should. Without physical activity, they become thin and brittle - a condition known as osteoporosis.

When people do not exercise, muscles become smaller and weaker, which is known as atrophy.

Not exercising may also increase weight and this can stress the heart, lungs, joints, knees, hips, ankles, and feet. It becomes very difficult to climb stairs, get out of a chair, or to even walk and maintain balance.

Frail bones and weak muscles make it very difficult for elders to care for themselves and their homes - and to enjoy life.

Exercise, in short, is of tremendous benefit to elders at any age.

5 - 20.2 Strength

Studies have shown that strength training employed properly by people who are in their 60s to 80s or even older, can not only improve longevity but perhaps more importantly improve their quality of life. As people age their bones and joints weaken. Strength training not only helps support the bones and joints, and lessen the impact of their weakening, but also improves coordination, muscle control, and mobility.

Strength training is effective for improving glucose metabolism, increasing bone mineral density, and speeding up gastrointestinal transit. Strength exercise also adds lean tissue, increases resting metabolism, and reduces arthritic discomfort.

Other studies have shown that strength training increases low back strength and alleviates low back pain. While all these health and performance factors are important, perhaps the most compelling concerns for most elders are the benefits that strength training can have when it comes to bodyweight, body composition, and blood pressure. Studies have shown that:

- Elders can safely participate in well-designed and carefully supervised programs of strength training (contingent upon their physician's approval). In the process they can reduce their body weight and improve their body composition
- Strength training can decrease elder fat weight and increase lean (muscle) weight
- Strength training can help elders to reduce their resting blood pressure
- Elders can develop physically active lifestyles, even after decades of sedentary behaviour
- Elders have much to gain from strength exercise, including increased physical capacity, enhanced personal appearance, improved athletic performance, and reduced injury risk

Some elders tend to shy away from strength training worried that it may result in injury and that it may require too large a commitment. Both concerns are unfounded. A properly designed program is safe, and it does not require a significant commitment of time.

Every elder - particularly those age 60 and over - should consider an exercise regime that incorporates both strength training and aerobic exercise.

5 - 20.3 Basal Metabolic Rate (BMR)

Basal Metabolic Rate (BMR) refers to the measurement of energy required to keep the body functioning at rest. Measured in calories, metabolic rates increase with exertion, stress, fear, and illness.

A person's "resting" metabolic level, referred to as the basal metabolic rate (BMR), measures the rate of calories the body burns normally without physical activity. The metabolic rate increases with exercise.

Exercising regularly can even increase a person's resting metabolic rate. This means that more calories will be burned - even while at rest!

Unfortunately, if a person cuts back on exercising for a while, the reverse will be true. The metabolic rate will slow down, and fewer calories will be burned (even at rest).

Since skipping meals (lower calorie intake) also slows metabolic rate - regular exercise is clearly the key ingredient in creating a slimmer, trimmer, and healthier life.

Not only does exercise get the blood flowing, the muscles moving, and the endorphins activated, it also gives people energy—much needed energy. It helps people sleep better at night and to think more clearly when awake.

That should be enough to motivate any elder to begin or continue, with an exercise program. But there is more. Exercise helps the heart muscle and blood flow, which in turn can help to prevent blood and heart disease.

5 - 20.4 Body fat

Dieting is not the answer to excess body fat. Frequent dieting not only slows down the metabolic furnace, it can reduce your lean, muscular tissue, and leave you with more body fat. The best way to address excess body fat is through exercise.

While it may seem that the medical community has only recently become concerned about the health consequences of body fat distribution, the research goes back almost 100 years. Just after the turn of the century, insurance companies pooled data on the risk of body fat. They found increased weight and increased girth led to higher mortality.

Additional research connects body weight, particularly being overweight to many of the deadliest diseases. Researchers have found that, for example, obese patients have higher rates of sudden, unexpected cardiac death. The risk of cardiovascular disease is increased 7.7 times for people who are obese (obesity is defined as those with body mass index of more than 30 kg/m2 or higher).

Another study found that women who intentionally lose weight are much less likely to die prematurely.

And still another study found that obesity is associated not just with breast cancer, but also with a higher mortality in women with breast cancer.

There are two components to body fat control: exercise and eating. Exercise is important, but do not forget to eat right. Experts believe that the best way is to follow the five a-day routine—five servings of fruits and vegetables each day. It also helps to control an elder's cholesterol, as well as their craving for high-fat foods.

5 - 21 EXERCISE TIPS FOR ELDERS

1. Pick the right activities

The biggest challenge everyone faces is simply "sticking to" an exercise program once it has been established. In order to do this, the elder should pick activities that are enjoyable. Ideally there should be a mix between aerobic (cardiovascular exercise that has the heart rate accelerating into a target range for 20 minutes or more) and anaerobic exercise (such as weight training or yoga).

2. Establish some variety

Elders should pick more than one activity and alternate between them. At least one thing that can be done when the weather is poor should be selected. As well there should be suitable activities selected for both summer and winter. Experimentation is advisable. It is always good to try new things - but caution is also advised (to avoid beginner injuries).

3. Stretch first

Elders should learn how to do stretching exercises properly, and then make sure to do them before each and after each exercise session. This can help reduce the likelihood of exercise-related pain or injury.

4. Exercise with a friend

Elders, where possible, should consider exercising with others. This will increase their motivation and the enjoyment of the activities. Numerous elder focused exercise groups are available.

5. Frequency is more important than duration

Regular short periods of exercise (three to four times a week) are better than irregular, but longer exercise sessions.

6. Focus on enjoyment

Some research shows that people who exercise for enjoyment and challenge seem to show stronger mood improvements than people who exercise mainly to look better.

7. Go slow

Use goal setting when developing a fitness program and be sure to pick something achievable. For example, aim to swim once for five minutes rather than starting by committing yourself to 70 laps a day.

5 - 22 DON'T OVER DO IT

Like most things in life, if you overdo it, it can come back to haunt you. This is especially true as people age. Moderate, reasonable exercise or activity is the best. Overdoing things leads to depletion of energy and the internal resources you need to be healthy. Elders should exercise in a consistent and moderate manner.

To avoid soreness and injury, anyone contemplating an increase in physical activity should start out slowly and gradually build up to the desired amount of activity. The body needs time to adjust.

People with chronic health problems, such as heart disease, diabetes, or obesity, or who are at high risk for these problems, should first consult a physician before beginning a new program of physical activity. Also, men over age 40 and women over age 50 who plan to begin a new vigorous physical activity program should consult a physician first to be sure they do not have heart disease or other health problems. Some examples of activities that require a moderate amount of exertion are:

- Washing and waxing a car for 45-60 minutes
- Washing windows or floors for 45-60 minutes
- Playing volleyball for 45 minutes
- Playing touch football for 30-45 minutes
- Gardening for 30-45 minutes
- Wheeling self in wheelchair for 30-40 minutes
- Walking 1 3/4 miles in 35 minutes (20 min/mile)
- Basketball (shooting baskets) for 30 minutes
- Bicycling 5 miles in 30 minutes
- Dancing fast (social) for 30 minutes
- Pushing a stroller 1 1/2 miles in 30 minutes
- Raking leaves for 30 minutes
- Walking 2 miles in 30 minutes (15 min/mile)

- Water aerobics for 30 minutes; Swimming laps for 20 minutes
- Basketball (playing a game) for 15-20 minutes
- Bicycling 4 miles in 15 minutes; Jumping rope for 15 minutes
- Running 1 1/2 miles in 15 minutes (10 min/mile)
- Shoveling snow for 15 minutes; Stair walking for 15 minutes

Remember - it is never too late to become active

Regular physical activity is related to improved mental and physical well-being. Recent research indicates that:

- Active, physically fit individuals do not react to difficult situations with as much stress as inactive people
- Regular exercise programs have been found to prevent, and reduce, symptoms of disease. These include reduced risk of heart disease, low back pain, depression, and osteoporosis, to mention only a few.
- An active lifestyle improves sleep, mood, sexual activity, and self-esteem by increasing energy, facilitating weight loss, and providing for greater social contact
- Aerobic exercise improves endurance and cardiovascular health, while non-aerobic activities enhance flexibility and strength

Physical activity need not be strenuous to be of benefit. Indeed, most people have many opportunities to become more active in their daily routine. Climb the stairs instead of taking the elevator. Walk to the store instead of driving. Use a push lawn mower instead of a power lawn mower (or hiring a neighbour's child). It is never too late to become active.

5 - 22.1 The Benefits of Regular Physical Activity

Physical activity that is performed most days of the week reduces the risk of developing or dying from some of the leading causes of illness and death in Canada. Regular physical activity:

- Reduces the risk of dying prematurely
- Reduces the risk of dying from heart disease
- Reduces the risk of developing diabetes
- Reduces the risk of developing high blood pressure
- Helps reduce blood pressure in people who already have high blood pressure
- Reduces the risk of developing colon cancer
- Reduces feelings of depression and anxiety
- Helps control weight

- Helps build and maintain healthy bones, muscles, and joints
- Helps older adults become stronger and better able to move about without falling
- Promotes psychological well being

An effective exercise program for elders should emphasize:

- Endurance exercises, which increase stamina and may help delay or prevent diabetes, colon cancer, heart disease, and stroke
- Strength exercises, which increase metabolism helping to control weight and regulate blood sugar. Studies show, they also may help prevent osteoporosis
- Flexibility exercises, which may help prevent and aid recovery from injuries
- Balance exercises, which help prevent falls—a major cause of broken hips and other injuries that lead to disability and loss of independence

According to the medical profession, physical activity should be made an integral part of every elder's daily routine. They should be doing exercise that is enjoyable - daily walks, riding a bicycle, and dancing all qualify. Not only are these activities enjoyable, but they will help enhance the elder's health as well. Some care, however, should be taken when it comes to activities that test the elder's balance, agility, or strength. Elders, for example, should take extra care when climbing ladders or even changing the porch light bulb, since activities of this nature could cause falls that might result in life changing - or threatening - injuries.

5 - 22.2 Exercise Motivation

Below are some strategies to help us all - but especially elders - to get motivated when it comes to exercise:

- Pick activities that are fun and appeal to you. There are plenty of activities out there — try swing dancing, bowling, yoga, ice skating or hiking. Combine exercise with other activities you enjoy. For instance, if you like the beach, what better way to enjoy its sights and sounds than to take a long walk? Having a partner can help motivate you to exercise. Develop a buddy system either face-to-face, by phone, or e-mail contact.
- Keep an activity journal where you write down your fitness goals for the week. Then at the end of the week, see how close you came to meeting your goals. If you faltered at any time, figure out why you did. If, for instance, you said you were going to walk when you got home from work, maybe you found that preparing dinner or your daily commute got in the way.

- Once you know what prevented you from exercising, you can refine your goals to better suit your lifestyle. In addition to recording what you did, chart how your body felt after you exercised: What thoughts helped spur you, when you wanted to cut your session short? How did it feel to accomplish your goals? Your journal can be a powerful tool in helping you to get and stay motivated. Use it!
- Make a no-excuses pact with yourself. Each one of us could probably come up with a whole list of excuses as to why we can't exercise. Try to nip this excuse reflex in the bud by confronting it in the beginning. Have a firm conversation with that little voice inside you that has prevented you from keeping promises to yourself in the past. Tell the voice that you're going to exercise for your health and because you enjoy it. When it tries to speak up, sing a song, change your thoughts or, better yet, start exercising to shut it up. The most common reasons given for not continuing an exercise program are lack of time and boredom.
- Think of ways to try to combat these excuses before you begin your program. For instance, to fit in exercise, try scheduling exercise in a daily appointment book. Seeing your exercise plan in black and white may help you to stay motivated.
- Get into a positive mindset or as Nike says, "just do it!" Think good thoughts about the prospect of exercise, such as how refreshing it will feel to move about freely. Once you start exercising, focus on increased feelings of self-esteem, a sense of accomplishment and the increased energy levels that exercise brings. If you slack off for a few days or several weeks, wipe the slate clean and start again. Don't use messing up as an excuse for giving up.

Set realistic goals. Trying to exercise at an overly vigorous pace can set the stage for dropping out. If you have not exercised in a while, keep your initial goals modest.

For instance:

- I will walk three times a week for 20 minutes.
- I will stretch for five minutes three times a week.
- I will exercise with 2 ½ pound-weights for 15 minutes twice a week.

In a few weeks, after you achieve these goals, you can set new goals. For example, you can increase the length of time you spend exercising. Eventually, you should exercise at least 30 minutes most days of the week.

And finally:

- Eat a high-fibre, whole foods diet
- Avoid processed foods
- Maintain weight
- Enjoy life and exercise

5 - 23 CONCLUSION

In the last decade, hundreds of studies have shown that a healthy diet and a little exercise go a long way toward healthy aging.

Whether a person is 50, 60, or 80, a half hour a day of moderate walking, swimming or raking leaves can reduce the risk of diabetes and heart disease, lower blood pressure and increase longevity. People who do develop a disease but remain physically and mentally active have better outcomes.

Elders could be training to run a marathon. Or maybe they would just like to wake up without aches and pains. They may need energy for keeping up their grandchildren...or for taking care of aging relatives. They could be looking forward to retirement or looking for traveling companions and social opportunities. Whatever the goal, regular exercise and good nutrition are the keys.

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