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MENTAL HEALTH AND MENTAL ILLNESS: A SYNOPSIS

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TABLE OF CONTENTS

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INTRODUCTION

Mental health is an integral part of an individual's health and well-being. Because of the many ways in which mental health problems and mental illnesses affect individuals, no one is untouched by them. Mental illness is extremely costly: in loss of individual potential, in productivity and contribution to society, and in lives. Only a small portion of this burden on our society can be accurately assessed. The rest remains hidden, unspoken, or undetermined, due mainly to the stigma and discrimination associated with mental illness.

Despite many efforts to destigmatize mental illness and ultimately to create an environment where it is acceptable to discuss the issue and seek information, treatment and support, the field of mental health remains, in the words of Commissioner Romanow, the "orphan child" of Canadian medicare.

In recent years, mental health and mental illness have emerged on the political agenda, mostly because of the sustained efforts of various stakeholders in the field. As a result, the Standing Senate Committee on Social Affairs, Science and Technology undertook in February 2003 a study on mental health and mental illness in Canada and will release two thematic reports on this issue. In addition, the Standing House of Commons Committee on Health has considered studying the issue at least twice in the past two years. At a recent annual meeting of the Canadian Mental Health Association, a panel of Members of Parliament from all political affiliations was requested by the membership of the association to bring the issue to the attention of the Parliament.

The goal of this paper is to provide basic information on mental health and the problems, disorders or illnesses disrupting the delicate balance on which it is grounded. The document includes definitions, information on the etiology of mental illnesses, the biology and the biochemistry of the brain, and a description of most common mental illnesses.

CONCEPTS AND DEFINITIONS

The terms and concepts related to mental health are not easy to define. Within a single country, different terminology may be used to refer to the same issue.(1) Even within Canada, experts in the field may use some terms interchangeably. It is therefore useful to define the vocabulary of mental health and to make distinctions.

Health Canada's Mental Health Promotion Unit defines *mental health* as the capacity to feel, think and act in ways that enhance one's ability to enjoy life and deal with challenges.(2) In other words, it is how people look at themselves and their lives, relate to other people, handle stress, evaluate challenges and problems, explore choices and make decisions.

According to the Canadian Alliance on Mental Illness and Mental Health, *good mental health* leads to high self-esteem, happiness, interest in life, work satisfaction, mastery and a sense of coherence. It is well recognized that, for individuals to realize their full potential and contribute in meaningful ways to our society, good mental health is essential.(3)

Conversely, *mental health problems* refer to diminished capacity – either cognitive, social or emotional – that interferes with a person's enjoyment of life and handling of challenges. Long-term or recurrent low self-esteem, frustration, burnout, stress and anxiety, depression, distress and cognitive impairment are all indicators of mental health problems.(4)

According to the Canadian Psychiatric Association, *mental disorders* or *illnesses* generally refer to clinically significant patterns of behavioural or emotional functioning that are associated with some level of distress, suffering (pain, death), or impairment in one or more areas of functioning (e.g., school, work, social and family interactions).(5)

It is generally acknowledged that, in the course of a lifetime, every individual experiences feelings of isolation, loneliness, emotional distress or disconnection at times. These

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(1) Countries reviewed for that purpose include Australia, Canada, the United Kingdom and the United States.

(2) Health Canada, Mental Health Promotion Unit, *Mental Health Promotion: Promoting Mental Health Means Promoting the Best of Ourselves – Frequently Asked Questions* (http://www.hc-sc.gc.ca/hppb/mentalhealth/mhp/e_faq.html).

(3) Canadian Alliance on Mental Illness and Mental Health, *A Call for Action – Building Consensus for a National Action Plan on Mental Illness and Mental Health*, Discussion Paper, 2000, p. 7.

(4) Thomas Stephens *et al.*, "Mental Health of the Canadian Population: A Comprehensive Analysis," *Chronic Diseases in Canada*, Vol. 20, No. 3, 1999.

(5) Canadian Psychiatric Association, *Youth and Mental Illness*, http://cpa-apc.org/MIAW/pamphlets/Youth.asp.

are usually normal, short-term reactions to difficult situations (leaving school, work-related stress, divorce, bereavement, changes in living arrangements, etc.). Accordingly, when the characteristics of mental health problems are short-term, non-recurrent and do not lead to significant impairment, they do not meet the criteria for mental illness.

Mental illnesses are of different types and degrees of severity. In addition, many mental illnesses are episodic or cyclical in nature; an individual may have episodes of acute illness, but also long periods of wellness.

A 1999 report by the U.S. Surgeon General stated that mental health and mental illness are not polar opposites but may be thought of as points on a continuum.(6) As such, mental health, mental health problems and mental illnesses all interact.

These interactions are illustrated in Diagram 1. The diagram depicts four quadrants. In quadrant 1, individuals have good mental health and no mental illness. In quadrant 2, individuals may have severe stresses on their mental health but do not have a mental illness. In quadrant 3, individuals may have a mental illness but still have good mental health. With a secure income, strong support from family and friends, and a home and a job to return to after episodes of illness, a person may cope well with the challenge of having a mental illness. In quadrant 4, individuals have a mental illness and also severe stresses on their mental health. They may be unemployed, living in poverty and poor housing, with little family or social support. They may experience stigma and discrimination and have little access to education and satisfying work opportunities. Quadrant 4 represents the individuals with the greatest needs for both mental health services and community support.(7)

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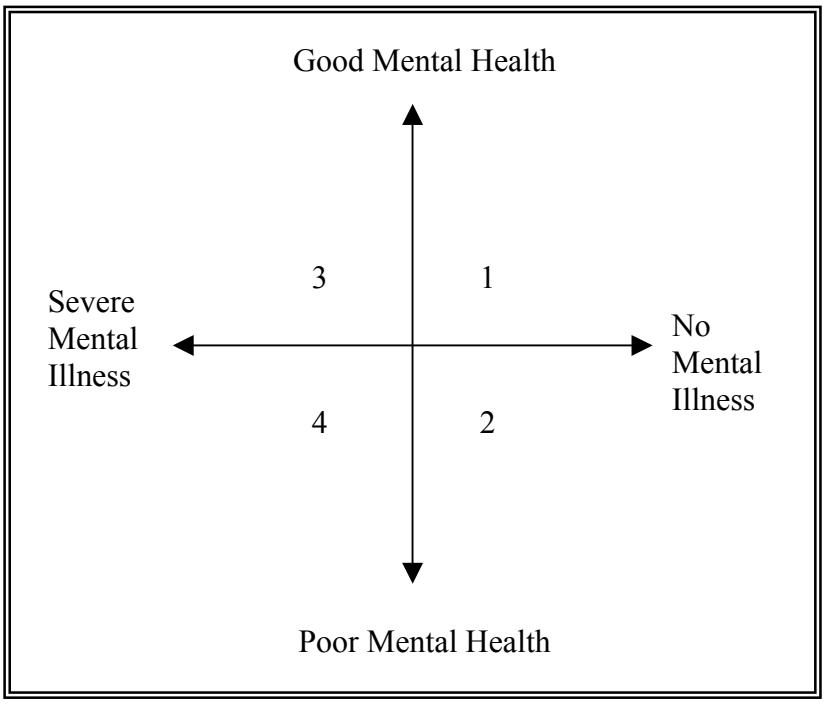
(6) U.S. Department of Health and Human Services, *Mental Health: A Report of the Surgeon General*, National Institute of Mental Health, 1999, p. 4.

(7) Department of Health and Community Services, *Valuing Mental Health – A Framework to Support the Development of a Provincial Mental Health Policy for Newfoundland and Labrador*, Government of Newfoundland and Labrador, September 2001, p. 5.

Figure 1: Mental Health Continuum



Source: Department of Health and Community Services, *Valuing Mental Health – A Framework to Support the Development of a Provincial Mental Health Policy for Newfoundland and Labrador*, Government of Newfoundland and Labrador, September 2001, p. 4.

ETIOLOGY

Etiology is the study of the origins and causes of disease. It examines fundamental biological, behavioural and socio-cultural processes. The precise causes of most mental illnesses are not known, but the broad forces that shape them are known: there are biological (including genetic), psychological and social/cultural factors. Mental illness, like physical illness, is shaped by the complex interaction of these factors. The complexity makes it very difficult to establish the causes of mental illness. Moreover, the study of causation in the field of mental illness is often clouded by confusion between consequences and correlation.

Biological and physical influences on mental health and mental illness are multiple; they include genes, infections, physical trauma, nutrition, hormones, and toxins (e.g., lead). Almost all of the common severe mental illnesses are associated with a significant genetic component of risk. However, research also shows that a genetic predisposition to develop a

particular mental illness may manifest itself only in individuals who also experience specific environmental stressors (such as exposure to psychoactive substances as a foetus, infections, disrupted family environments, neglect, isolation and trauma) that elicit the pathology.(8)

Most mental illnesses are found to be more common in close family members of a person with a mental illness. The study of the increased prevalence of mental illness in families has focused most notably on schizophrenia, bipolar disorder, early-onset depression, autism, attention-deficit/hyperactivity disorder, anorexia nervosa, panic disorder, and a number of other mental disorders. Studies of how these disorders run in families, and initial molecular analyses of the genomes of such families, indicate that heredity – specifically, the inheritance of abnormal functions of brain chemistry – plays a role in the intergenerational transmission of vulnerability to all the aforementioned disorders.(9)

Research also shows, however, that there is not one single gene or even a combination of genes that dictates whether someone will have an illness or a particular behavioural trait. Mental illness results from the interaction of multiple genes, conferring a risk that may then be amplified by environmental factors.

The environment, whether physical, psychological or social, has an influential role in the onset or recurrence of a mental illness. There is increasing evidence that long-term changes in brain function can occur in response to environmental factors such as stimulation, experiences of traumatic or chronic stress, or various kinds of deprivation. Factors such as family situation, workplace pressures, the socio-economic status of the individual, lifestyle choices (e.g., substance abuse), and learned patterns of thought and behaviour can precipitate or influence the onset, course and outcome of mental illness. For reasons that may be biological, psychosocial, or both, age and sex affect rates of mental illness.

Overall, mental illnesses are the result of a complex interaction of biological, personality and environmental factors. However, the brain is the final common pathway for the control of behaviour, cognition, mood and anxiety. For this reason, to understand mental illness and mental health, it is necessary to learn how the brain functions and how it is altered in mental illness.

(8) U.S. Surgeon General (1999), p. 52.

(9) *Ibid*., p. 53.

MENTAL HEALTH, MENTAL ILLNESS AND THE BRAIN[10]

In order to understand how the brain functions, it is essential to determine the roles that specific brain structures play in integrating information and in generating physiological or behavioural actions.

The human brain is an extremely complex organ that acts as the coordinating centre of the nervous system and regulates everything we do, think, sense and say. The brain consists of about 100 billion neurons, and many more supporting cells. *Neurons* are specialized nerve cells that receive, process and transmit information to one another through electrical signals or impulses. As such, the workings of the brain depend on the ability of nerve cells to communicate with each other.

Each neuron consists of three parts: the cell body (or soma), dendrites and the axon (see Figure 2). The *cell body* contains the nucleus and other intracellular structures needed to keep the neuron alive. *Dendrites* are cellular branches that carry the electrical impulse or signal towards the cell body. The *axon* carries the electrical impulse away from the cell body.

When electrical impulses have travelled the length of the axon, they must cross a gap – the synapse. *Synapses* are points of connection between neurons. Each neuron, on average, makes synaptic connections with more than 1,000 other neurons.

Since the electrical impulse is unable to flow through the synapse, the transfer of information across synapses is mediated through a chemical chain of events that ends with the release of *neurotransmitters*. Neurotransmitters flow across the gap to dock with specialized proteins (receptors) on the surface of the adjacent neuron. The interaction of neurotransmitter and receptor has the effect of converting the chemical impulse back into an electrical one and releasing it to the receiving neuron. In total, there are more than 100 different neurotransmitters in the brain. Neurotransmitters can be grouped into four main classes: acetylcholine, amines (e.g., dopamine, serotonin, epinephrine and norepinephrine), amino acids (e.g., γ-aminobutyric acid) and peptides (e.g., endorphins).

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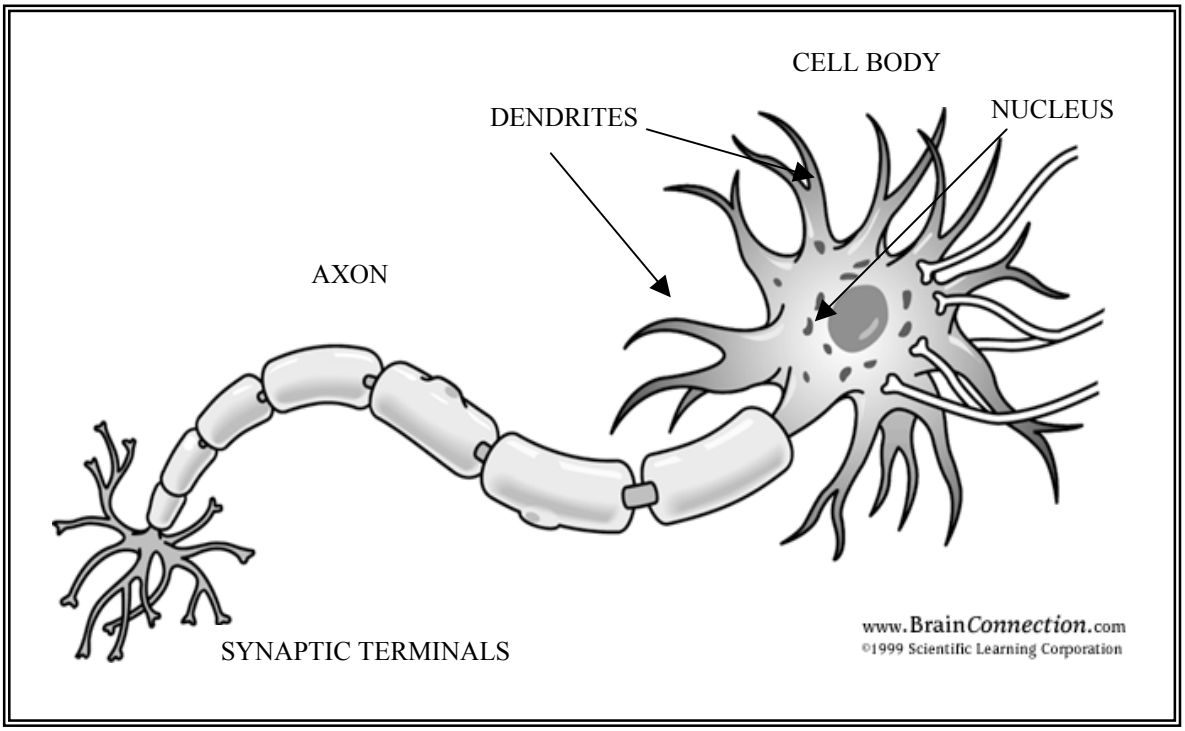
(10) The information contained in this section is based on the following documents: World Health Organization, *Mental Health: New Understanding, New Hope*, Ch. 1, "A Public Health Approach to Mental Health," 2001, pp. 1-18; Society for Neuroscience, *Brain Facts – A Primer on the Brain and Nervous System*, 2000; U.S. Department of Health and Human Services, *Mental Health: A Report of the Surgeon General*, Ch. 2, "The Fundamentals of Mental Health and Mental Illness," National Institute of Mental Health, 1999, pp. 31-116; Early Years Study Reference Group (co-chaired by the Hon. Margaret McCain and Fraser Mustard), *Reversing the Real Brain Drain – Early Years Study*, Final Report, Ch. 1, "Neuroscience and Early Child Development," April 1999.

Figure 2: Illustration of a Neuron



Neurons and synapses form circuits for processing information. The complexity of the brain resides in part in the fact that a single neuron may be part of more than one circuit. The organization of these circuits results in the specialization of different geographic regions of the brain. Each of these specific areas gives rise to particular complex mental and behavioural processes. For example:

- The cortex (external grey matter) is a complex area subdivided into:
  - the frontal lobe, which is responsible for consciousness, control of emotion and language, and word meaning and associations;
  - the parietal lobe, which is responsible for visual attention, tactile perception, and integration of the senses;
  - the occipital lobe, which is responsible for vision;
  - the temporal lobe, which is responsible for hearing, acquisition of memory, and categorization of objects.

- The amygdala (towards the centre of the brain) is responsible for aspects of emotional learning, including feelings of fear and aggressive behaviour.

- The hippocampus (also at the centre of the brain) functions in learning, memory and emotion.

- The brain stem is the lower extension of the brain where it connects to the spinal cord. It is responsible for regulating core functions such as respiration, circulation, body temperature, heart rate and blood pressure.

Mental illnesses have been shown to be associated with disruptions of neural communication within specific circuits. In schizophrenia, abnormalities in the maturation of neural circuits may produce detectable changes in physiology at the cellular and gross tissue level that result in inappropriate or maladaptive information processing. In depression, risk of illness may be due to variations in the responsiveness of neural circuits. The neurotransmitter serotonin plays an important role in the pathogenesis as well as the treatment of depression.

Modern research has shown that the brain is not static. In fact, the brain structure alters throughout the lifespan. More precisely, structural and biochemical changes occur in the brain in association with early neural development throughout childhood, with normal brain functions in adulthood, and, to varying extents, with aging:

> During fetal development, genes drive brain formation. The outcome is a specific and highly organized structure. This early development can also be influenced by environmental factors such as the pregnant woman's nutrition and substance use (alcohol, tobacco, and other psychoactive substances) or exposure to radiation. After birth and throughout life, all types of experience have the power not only to produce immediate communication between and among neurons, but also to initiate molecular processes that remodel synaptic connections. This process is described as synaptic plasticity, and it literally changes the physical structure of the brain. New synapses can be created, old ones removed, existing ones strengthened or weakened.(11)

This process of synaptic plasticity means that treatment of mental illnesses must take place on two levels: the use of both medication and psychological therapy, to actually change the brain.

COMMON DISORDERS

In Canada, the classification of mental illnesses for research, statistical or diagnostic purposes is done using either the Diagnostic and Statistical Manual of Mental Disorders (DSM) published by the American Psychiatric Association, or the International

(11) World Health Organization (2001), pp. 5-6.

Classification of Diseases (ICD), Mental Disorder Section, published by the World Health Organization:

- The DSM contains a list of mental illnesses and their corresponding diagnostic codes. The fourth edition of the DSM (DSM-IV) was published in 1994 and revised in 2000 (DSM-IV-TR); it is the standard manual used for diagnosis of mental illnesses in the United States, but is also widely used and accepted elsewhere.

- The tenth revision of the international code (ICD-10) was published in 1993 and, in May 2002, a draft of a coding system for Clinical Modification (ICD-10-CM) was proposed for implementation in the United States. Until its approval, the ICD-9-CM is still the official coding system of the United States. The ICD-9-CM provides a way to classify morbidity data for indexing medical records, medical case reviews, and ambulatory and other medical care programs, as well as for basic health statistics. It is based on the WHO ICD-9.

The DSM-IV employs the ICD-9-CM codes to assist clinicians in medical record keeping. However, it contains a number of subtypes and specifiers that are not codable to the ICD-9-CM. Canadian psychiatric residents are expected to become competent in using the diagnostic criteria of both the DSM and the ICD. Table 1 compares the main categories of the two classification systems and gives examples of disorders classified under both systems.

Table 1:
The DSM and ICD Systems Compared

ICD-10-CM (draft)[a]	DSM-IV-TR[b]	COMMON DISORDERS
Mental disorders due to known physiological conditions	Mental disorders due to a general medical condition Delirium, dementia, and amnestic and other cognitive disorders	Vascular dementia; AIDS dementia; Alzheimer's; senility
Mental and behavioural disorders due to psychoactive substance use	Substance-related disorders	Alcohol dependence; opioid dependence
Schizophrenia, schizotypal and delusional, and other non-mood psychotic disorders	Schizophrenia and other psychotic disorders	Schizophrenia; schizoaffective disorder
Mood [affective] disorders	Mood disorders	Major depressive disorder; bipolar disorder
Anxiety, dissociative, stress-related, somatoform and other nonpsychotic mental disorders	Anxiety disorders Dissociative disorders Adjustment disorders Somatoform disorders	Obsessive-compulsive disorder; post-traumatic stress disorder; somatization

ICD-10-CM (draft)[a]	DSM-IV-TR[b]	COMMON DISORDERS
Behavioural syndromes associated with physiological disturbances and physical factors	Eating disorders Sleep disorders Sexual and gender identity disorders	Anorexia; bulimia; insomnia; sexual aversion disorder
Disorders of adult personality and behaviour	Personality disorders Impulse-control disorders Factitious disorders	Paranoid personality disorder; antisocial personality disorder; pathological gambling disorder
Mental retardation		
Pervasive and specific developmental disorders		Speech and language disorder; autism
Behavioural and emotional disorders with onset usually occurring in childhood and adolescence	Disorders usually first diagnosed in infancy, childhood, or adolescence	Attention Deficit Hyperactivity Disorder; separation anxiety disorder; selective mutism; Tourette's disorder
Unspecified mental disorder		

(a) International Classification of Diseases, Tenth Revision, Clinical Modification (ICD-10-CM), Pre-release Draft, May 2002, http://www.cdc.gov/nchs/about/otheract/icd9/icd10cm.htm.
(b) U.S. Surgeon General (1999), p. 44.

The major mental illnesses include: schizophrenia, mood disorders (depression and bipolar disorders), anxiety disorders (phobias, panic disorder, obsessive-compulsive disorder and post-traumatic stress disorder), eating disorders (anorexia nervosa and bulimia), personality disorders, organic brain disorders (Alzheimer's disease, AIDS dementia complex and damage from strokes or accidents).[12] Most are chronic disorders that require long-term treatment. Suicidal behaviour and addictions are often correlated with these conditions. The following sections provide a descriptive overview of the major mental illnesses.

A. Schizophrenia

Schizophrenia is one of the most serious mental illnesses in Canada and elsewhere. It affects an estimated 1% of Canadians, and some 24 million people worldwide. It

(12) Canadian Mental Health Association, *Mental Illnesses*, available on-line at: http://www.cmha.ca/english/info_centre/mh_pamphlets/mh_pamphlet_02.htm.

is more than twice as prevalent as Alzheimer's disease, five to six times as prevalent as multiple sclerosis and diabetes, and 60 times more prevalent than muscular dystrophy.(13)

Schizophrenia usually begins in adolescence or early adulthood; it seriously affects a person's thinking, causing hallucinations, delusions, a loss of contact with reality and disrupted work and social interactions. The disease often begins slowly; once it has taken hold, it usually manifests itself in cycles of remission and relapse.(14)

Table 2: Symptoms Related to Schizophrenia

- Delusions and/or hallucinations
- Lack of motivation
- Social withdrawal
- Thought disorders

Source: Paula Stewart, *A Report on Mental Illnesses in Canada*, Health Canada, October 2002, p. 50.

Science suggests that a functional abnormality in neurotransmitters (namely dopamine, serotonin and norepinephrine) produces the symptoms of the illness. In addition, individuals with schizophrenia appear to have difficulty coordinating activity between different areas of the brain. For example, when thinking or speaking, most people show increased activity in their frontal lobes, and a lessening of activity in the area of the brain used for listening. Individuals with schizophrenia show the same increase in frontal lobe activity, but there is no decrease of activity in the other area. Research also indicates that individuals with schizophrenia have an irregular pattern of certain brain cells. Since these cells are formed long before a baby is born, there is speculation that this irregular pattern may point towards a possible cause of schizophrenia in the prenatal period; or the pattern indicates a predisposition to acquire the disease at a later date.(15)

(13) British Columbia Schizophrenia Society, *Basic Facts About Schizophrenia*, April 2002 (available on-line at: http://www.bcss.org/schizophrenia).

(14) *Ibid*.

(15) Paula Stewart, *A Report on Mental Illnesses in Canada*, Health Canada, October 2002, p. 54.

A combination of genetic and environmental factors is considered to be responsible for the development of this abnormality. These factors appear to affect the development of the brain at critical stages during gestation and after birth.(16)

- *Genetic Influence*: Immediate family members of individuals with schizophrenia are 10 times more likely than the general population to develop schizophrenia, and children of two parents with schizophrenia have a 40% chance of developing the illness.

- *Environmental Factors:* Potential environmental contributions to the development of schizophrenia include prenatal or perinatal trauma, season and place of birth, and viral infections.(17)

There are no laboratory tests to diagnose schizophrenia. Diagnosis is based solely on clinical observation. The Canadian Psychiatric Association has developed guidelines for the assessment and diagnosis of schizophrenia. Increasingly, the disease is diagnosed through structural imaging using computerized tomography (CT), along with magnetic resonance imaging (MRI) to help study brain functioning. Imaging technology shows that many individuals with schizophrenia have enlargement of the lateral and third ventricles; they also tend to have temporal lobe abnormalities, particularly on the left side.(18)

Schizophrenia has been associated with increased illness and morbidity. The disease often occurs with other mental disorders or substance abuse. Depression and suicide often result from the frustration of trying to cope, and some who have the disease may be dangerous to others, particularly family members.(19)

There is no cure for schizophrenia, but treatment exists. Currently, there are three major components to the treatment of schizophrenia: anti-psychotic medication to relieve symptoms and prevent relapse; education and psychosocial counselling for patients and their families; and rehabilitation to aid patients in their reintegration into the community. With recent advances in drug therapies and care, close to half of schizophrenics can anticipate a full recovery.(20)

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(16) *Ibid*.

(17) *Ibid*.

(18) Schizophrenia Society of Canada, *Recognizing Schizophrenia For What It Is: A Call To Action*, Discussion Paper, 1998, Appendix A, p. 22.

(19) *Ibid*.

(20) World Health Organization Fact Sheets, No. 265, December 2001 (www.who.int/inf-fs/en/fact265.html).

B. Mood Disorders

There are two major types of mood disorders: major depressive disorder and bipolar disorder. Major depressive disorder (also referred to as unipolar depression) is characterized by one or more depressive episodes lasting at least two weeks that are accompanied by at least four additional symptoms of depression. Bipolar disorder, which is classically known as manic depressive illness, is characterized by at least one manic or mixed episode (mania and depression) with or without a history of major depression.(21) Symptoms of depression and mania are summarized in Table 3.

Table 3: Mood Disorder-related Symptoms

Depression	Mania
▪ Feeling worthless, helpless or hopeless ▪ Loss of interest or pleasure (including hobbies or sexual desire) ▪ Change in appetite ▪ Sleep disturbances ▪ Decreased energy or fatigue (without significant physical exertion) ▪ Sense of worthlessness or guilt ▪ Poor concentration or difficulty making decisions	▪ Excessively high or elated mood ▪ Unreasonable optimism or poor judgement ▪ Hyperactivity or racing thoughts ▪ Decreased sleep ▪ Extremely short attention span ▪ Rapid shifts to rage or sadness ▪ Irritability

Source: Stewart (2002), p. 33.

As a group, mood disorders are one of the most common mental illnesses in the general population. Approximately 8% of adults will experience major depression at some time in their lives. Approximately 1% will experience bipolar disorder.(22)

Mood disorders affect individuals of all ages, but usually appear in adolescence or young adulthood. However, late diagnosis is common. Studies show higher rates of depression

(21) Stewart (2002), p. 32.

(22) *Ibid*. (2002), p. 31.

among women than men. For bipolar disorder, the ratio between men and women is about the same.(23)

As mentioned above, research indicates that mood disorders (depression in particular) may be caused by low levels of serotonin and other neurotransmitters (dopamine, norepinephrine and epinephrine) in certain areas of the brain.(24) Several other factors may be implicated, such as psychological factors, genetic influences, stress and socio-economic conditions.(25)

Mood disorders frequently accompany other mental illnesses, such as anxiety disorders, personality disorders, and substance abuse. The presence of another mental illness increases the severity of the illness and results in a poorer prognosis. Individuals with mood disorders are at high risk of suicide.(26)

Mood disorders are treatable. Many individuals with a mood disorder fail to seek treatment, however, and suffer needlessly. There is evidence that effective early treatment of mood disorders can improve outcomes and decrease the risk of suicide. Antidepressant medications and education in combination with various forms of psychotherapy, such as cognitive-behavioural therapy, have demonstrated effectiveness in treating depression. Individuals with mood disorders may require hospitalization to adjust medication, to stabilize the disorder or to ensure protection against self-destructive behaviour.(27)

C. Anxiety Disorders

Anxiety disorders currently affect some 12% of the Canadian population, causing mild to severe impairment. They are more prevalent among women than men, but can affect both children and adults. Individuals with anxiety disorders experience excessive or unrealistic anxiety, fear or worry, causing them either to avoid situations that might precipitate the anxiety or to develop compulsive rituals that lessen the anxiety.(28)

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(23) *Ibid*., p. 34.

(24) U.S. Surgeon General (1999), pp. 251-252.

(25) Stewart (2002), p. 38.

(26) *Ibid*., p. 36.

(27) *Ibid*., p. 39.

(28) *Ibid*., p. 60.

Table 4: Symptoms Associated With Anxiety Disorders

- Intense and prolonged feelings of fear and distress that occur out of proportion to the actual threat or danger
- Feelings of fear and distress that interfere with normal daily functioning

Source: Stewart (2002), p. 60.

Anxiety disorders may take many forms and include: general anxiety disorder, phobias, panic disorder, obsessive-compulsive disorder and post-traumatic stress disorder. General anxiety disorder is defined by a protracted (i.e., over six months) period of anxiety and worry that is accompanied by multiple symptoms such as muscle tension, proneness to fatigue, poor concentration, insomnia and irritability. Phobias correspond to marked fear of certain objects (such as animals, insects, heights, elevators, etc.) or situations (social phobia); exposure to the object of the phobia, either in real life or via imagination or video, invariably elicits intense anxiety, which may include a panic attack. Panic disorder is diagnosed when an individual has experienced a number of unexpected panic attacks – periods of intense fear or discomfort – and worries about having further attacks. Obsessive-compulsive disorder involves both obsession and compulsion. Obsessions consist of persistent thoughts, ideas, impulses or images that are intrusive and inappropriate and that cause marked anxiety or distress. Compulsions refer to repetitive behaviours (such as hand washing) or mental acts (such as counting) that occur in response to an obsession or in a ritualistic way. Post-traumatic stress disorder involves flashbacks, persistent frightening thoughts and memories, anger or irritability in response to a terrifying experience in which physical harm occurred or was threatened (such as rape, child abuse, war or natural disaster).[29]

The development of anxiety disorders appears to result from a complex interplay of genetic, biological, developmental and other factors such as socio-economic and workplace stress. Recent research suggests that anxiety disorders have a strong biological basis. More

(29) *Ibid*., pp. 60-61; U.S. Surgeon General (1999), pp. 233-237.

precisely, they appear to relate to certain parts of the brain – the hippocampus and the amygdala – that govern memory storage and emotions. For example, neuroimaging shows a reduction in the size of the hippocampus in individuals with post-traumatic stress disorder. Similarly, the amygdala signals the presence of a threat and has been shown to trigger a fear response or anxiety.

A recent review of anxiety disorders suggests that effective treatments include drug therapy (with anti-depressants or anti-anxiety drugs) and cognitive-behavioural therapy, which helps people turn their anxious thoughts into more rational and less anxiety-producing ideas. Support groups for individuals and families can also help develop the tools for minimizing and coping with the symptoms.(30)

D. Eating Disorders

Approximately 3% of women will be affected by an eating disorder during their lifetime. Eating disorders involve a serious disturbance in eating behaviour – eating either too much or too little – in addition to great concern over body size and shape. Eating disorders tend to be chronic conditions that can sometimes be life-threatening. The most common eating disorders include anorexia nervosa, bulimia nervosa and binge eating disorder.

Binge eating disorder is a newly recognized condition featuring episodic uncontrolled consumption, without compensatory activities to avert weight gain, such as vomiting or laxative abuse. Bulimia, in contrast, is marked by both binge eating and compensatory activities. Anorexia nervosa is characterized by low body weight (under 85% of expected weight), intense fear of weight gain, and an inaccurate perception of body weight or shape. Its mean age of onset is 17 years.(31)

(30) Stewart (2002), p. 64.

(31) U.S. Surgeon General (1999), p. 167.

Table 5: Symptoms Associated With Eating Disorders

Generally, distorted perception of the shape or size of one's own body		
Anorexia	**Bulimia**	**Binge Eating Disorder**
▪ Resistance to maintaining body weight at or above a minimally normal weight for age and height. ▪ Intense fear of gaining weight or becoming fat, even though underweight.	▪ Recurrent episodes of binge eating. ▪ Inappropriate compensatory behaviour in order to prevent weight gain, such as self-induced vomiting, use of laxatives, or excessive exercise.	▪ Binge eating without compensatory behaviours, such as vomiting, excessive exercise or laxative abuse. ▪ Individuals are often obese.

Source: Stewart (2002), p. 80.

Eating disorders are complex syndromes that result from a combination of biological, psychological and social factors. Recent research has focussed on genes and brain chemicals. For example, one large family study found that a mother or sister of a person with anorexia is about eight times more likely to get anorexia than the general population. In addition, variations of eating disorders occur far more often in relatives of individuals with anorexia or bulimia than in relatives of healthy individuals. Furthermore, some evidence indicates that eating disorders are linked to the neurotransmitter serotonin. Some researchers think that an imbalance in serotonin levels could lead to abnormal brain cell message transmission, which might contribute to the development of eating disorders.(32)

Individuals with anorexia and bulimia may recover after a single episode of the disorder. Others may have a fluctuating pattern of weight gain and relapse. Still others will continue to have issues with food and weight throughout their lives. Individuals with anorexia and bulimia may develop serious physical problems such as heart conditions, electrolyte imbalance and kidney failure that can lead to death. Eating disorders may cause long-term psychological, social and health problems even after the acute episode has been resolved.(33)

Treatment of eating disorders is comprehensive and includes: monitoring of physical symptoms, nutritional stabilization, psychotherapy (behavioural, analytical, cognitive),

(32) Society of Neuroscience, "Eating Disorders," in *Brain Briefings*, March 2000 (http://web.sfn.org/content/Publications/BrainBriefings/eating_disorders.html).

(33) Stewart (2002), p. 82.

nutritional counselling, education and medication, if necessary. Numerous studies have shown that anti-depressants are useful in the treatment of bulimia nervosa. Some medications are also useful in treating binge eating disorders. Unfortunately, studies have not identified any effective drugs in treating anorexia nervosa.(34)

E. Personality Disorders

Based on American data, about 6 to 9% of the population has a personality disorder. Personality disorders cause enduring patterns of inner experience and behaviour that deviate from the expectations of society, are pervasive, inflexible and stable over time, and lead to distress or impairment.(35) Table 6 provides a lists of symptoms associated with personality disorders, while Table 7 describes the various forms of the disease.

Table 6: Symptoms of Personality Disorders

- Difficulty getting along with other people. May be irritable, demanding, hostile, fearful or manipulative.
- Patterns of behaviour deviate markedly from society's expectations and remain consistent over time.
- Disorder affects thought, emotion, interpersonal relationships and impulse control.
- The pattern is inflexible and occurs across a broad range of situations.
- Pattern is stable or of long duration, beginning in childhood or adolescence.

Source: Stewart (2002), p. 70.

(34) *Ibid*., p. 84.

(35) *Ibid*., p. 70.

Table 7: Types of Personality Disorders

TYPE	PATTERNS
Borderline Personality Disorder	Instability in interpersonal relationships, self-image and affects, and marked impulsivity.
Antisocial Personality Disorder	Disregard for, and violation of, the rights of others.
Histrionic Personality Disorder	Excessive emotionality and attention seeking.
Narcissistic Personality Disorder	Grandiosity, need for admiration, and lack of empathy.
Avoidant Personality Disorder	Social inhibition, feelings of inadequacy, and hypersensitivity to negative evaluation.
Dependent Personality Disorder	Submissive and clinging behaviour related to an excessive need to be taken care of.
Schizoid Personality Disorder	Detachment from social relationships and a restricted range of emotional expression.
Paranoid Personality Disorder	Distrust and suspiciousness in which others' motives are interpreted as malevolent.
Obsessive-Compulsive Personality Disorder	Preoccupation with orderliness, perfectionism and control.
Schizotypal Personality Disorder	Acute discomfort in close relationships, cognitive or perceptual distortions, and eccentricities of behaviour.

Source: Stewart (2002), p. 71.

The onset of personality disorders usually occurs in adolescence or early adulthood; they can also become apparent in mid-adulthood. Many individuals with personality disorders are never diagnosed or treated.(36)

Personality disorders likely result from the complex interplay of early life experience, genetic and environmental factors. In principle, genetic factors contribute to the biological basis of brain function and to basic personality structure. This structure then influences how individuals respond to and interact with life experiences and the social environment. Over time, each person develops distinctive patterns or ways of perceiving the world and of feeling, thinking, coping and behaving. Although little is known to date about possible biological correlates of personality disorder, individuals with personality disorders may have impaired regulation of the brain circuits that control emotion. This difficulty, combined

(36) Stewart (2002), pp. 72-73.

with psychological and social factors such as abuse, neglect or separation, puts an individual at higher risk of developing a personality disorder.(37)

Individuals affected by personality disorders are difficult to treat, partly because they deny the presence of the problem. Treatment, which usually combines intensive individual and group psychotherapy with anti-depressants and mood stabilizers, is partially effective for some individuals.(38)

F. Organic Brain Disorders and Degenerative Diseases of the Nervous System

Organic brain disorders are the result of physical disease or injury to the brain. They often result in dementia, delirium and psychosis. *Dementia* consists in a deterioration of the intellectual, emotional and cognitive abilities to the extent that daily functions are significantly impaired. *Delirium* corresponds to a disturbance of consciousness, a change in cognition or a perceptual disturbance. *Psychosis* involves some loss of contact with reality; symptoms can include hallucinations, delusions or disorganized thinking.

Organic brain disorders include, for example, AIDS dementia complex (caused by damage to brain cells by the HIV virus) and vascular dementia (caused by damage from strokes).

AIDS dementia complex (ADC), also referred to as HIV dementia and HIV encephalopathy, is the most common neurological complication of HIV infection. Not all neurological or psychological problems that occur are the result of AIDS dementia complex. Likewise, dementia-like symptoms may arise as a result of changes to the metabolism. These changes can be the result of other disease processes or reactions to medication. AIDS dementia complex, which may in fact represent more than one type of disease process, is characterized by: decreased concentration and rapidity of thought; loss of memory; loss of interest; apathy; and slowness of motor movements.(39)

Alzheimer's disease is classified under the ICD-10 code as a degenerative disease of the central nervous system, along with numerous other illnesses including, for example, Parkinson's disease and Huntington's disease. Alzheimer's disease is the leading cause of dementia. There is no known cause or cure for it. Several changes occur in the brains of

(37) *Ibid*., p. 74.

(38) *Ibid*.

(39) AIDS Committee of Toronto, *Section 14: AIDS Dementia Complex* (www.actoronto.org).

individuals with this progressive and degenerative disease. These changes result from a progressive loss of neurons from the cerebral cortex and other brain areas. Consequently, a person with Alzheimer's disease has less brain tissue than a person who does not have the disease. The shrinkage continues over time, affecting how the brain functions.(40) Memory loss is the most prominent early symptom of Alzheimer's disease, followed by a slow disintegration of personality and physical control. In some cases, hallucinations, delusions, seizures and violence are associated with the disease.(41)

G. Mental Illnesses in Children

Mental disorders are common among children as well as adults; worldwide, between 10 and 20% of children have one or more mental or behavioural disorders. While a number of mental illnesses found in adults can emerge during childhood or adolescence, e.g., depression, anxiety disorders and schizophrenia, there are also several disorders specific to this age group. There are two general types: disorders of psychological development, such as autism or dyslexia; and behavioural and emotional disorders, which include attention deficit/hyperactivity disorders or conduct disorders.(42)

Autism is a neurological dysfunction and a severely incapacitating and lifelong disability. Recent estimates suggest that the prevalence of autism may be as high as 20 per 10,000 live births. Autism tends to be three to four times more common in boys than girls. Currently, there is no definitive medical test, such as a blood test, to identify autism; instead, physicians, psychiatrists and psychologists rely on the behavioural criteria outlined in the DSM-IV when diagnosing autism. Generally, autistic individuals display the following symptoms: impaired ability to engage in social interaction; impaired communication skills; and specific behavioural patterns (e.g., preoccupation, resistance to change, adherence to non-functional routines and stereotyped and repetitive behaviours). Autism may be accompanied by other dysfunctional conditions, such as seizures or significant cognitive (intellectual) delays. Most autistic individuals have no physical disabilities. There is no known cure for autism. Research

(40) Canadian Alzheimer's Disease Centre, http://www.alzheimercentre.ca/english/default.htm.

(41) Sonya Norris, *Alzheimer's Disease*, PRB 02-39E, Parliamentary Research Branch, Library of Parliament, Ottawa, 2 October 2002.

(42) World Health Organization (2001), p. 36.

indicates that the most successful method for treating and educating autistic individuals involves structured and intensive behavioural interventions.(43)

Attention Deficit Disorder (ADD) and Attention Deficit Hyperactivity Disorder (ADHD) are terms used to describe patterns of behaviour that appear most often in school-aged children. ADD and ADHD are found in approximately 5 to 10% of children, and are diagnosed 10 times more often in boys than in girls. They interfere with the learning process because they reduce the child's ability to pay attention. Children with these disorders are inattentive, overly compulsive and, in the case of ADHD, hyperactive. They have difficulty sitting still and attending to one thing for a long period of time. Treatment can include behaviour therapy, often combined with drug therapy.(44)

CO-MORBIDITY OF MENTAL AND PHYSICAL ILLNESS

Mental illness and physical illness are closely intertwined. There is evidence that mental illness can contribute to, result from, or share common causal pathways with physical illness such as cancer, heart disease and chronic obstructive pulmonary disease. The interaction of physical and mental illness is, however, very complex.(45)

The concept of *co-morbidity* usually refers to the occurrence of a mental illness along with a physical illness. Epidemiological data show that 25% of arthritic patients have co-morbid depression or anxiety. In addition, there is a high level of co-morbidity between some mental disorders and cancer, diabetes, respiratory problems, hypertension or migraine. Co-morbidity can greatly influence the onset and persistence of disease. It can affect the healing process and the efficacy of treatment.

MENTAL ILLNESS AND ADDICTION

Addiction and mental health problems/illnesses are often linked. The term "concurrent disorder" is used in this context. According to the Ontario Division of the Canadian Mental Health Association, *concurrent disorders* refer to individuals having both mental health

(43) Autism Treatment Services of Canada, *What is Autism?* (www.autismca).

(44) Canadian Mental Health Association, *Children and Attention Deficit Disorders*, Pamphlet Series.

(45) Stewart (2002), p. 22.

and substance abuse problems.(46) Although the links between substance use and abuse and mental health problems/illnesses have long been recognized, causal directions are difficult to determine and the precise relationship or interaction between the two remains complex. Each state affects the other: mental health factors influence substance abuse, and substance abuse can exacerbate mental illness. In addition, substance use and abuse can be either a predisposing or a precipitating factor for mental illness.(47)

A discussion paper published by Health Canada suggests that the inability to understand or treat problematic substance use and mental health problems/illnesses effectively at the beginning of the century probably contributed to treatment in the two fields evolving differently. Until recently, mental health problems/illnesses have been defined by psychiatry and treated in hospital or clinical-based settings. Addiction problems, especially alcohol abuse, have been treated in specialized non-psychiatric settings with a combination of medical, behavioural and psycho-social models.(48)

Recent research has found that the prevalence of concurrent disorders is higher than previously thought. Such high prevalence has wide-ranging implications for research, policy and treatment in both the addiction and mental health fields.

SUICIDAL BEHAVIOUR

Suicidal behaviour includes suicide gestures, attempted suicide, and completed suicide. Suicide plans and actions that appear unlikely to succeed are often termed suicide gestures; they are predominantly communicative. Attempted suicide is a suicidal act that is not fatal, possibly because the self-destructive intention was slight, vague, or ambiguous or the action taken had a low lethal potential. Completed suicide results in death. The distinction between completed and attempted suicides is not absolute, because attempted suicides also include acts by persons whose determination to die is thwarted only because they are discovered

(46) Canadian Mental Health Association (Ontario Division), *Concurrent Disorders – Policy Consultation Document*, February 1997, p. 2.

(47) *Ibid.*, pp. 6-7.

(48) Colleen Hood *et al*., *Exploring the Links Between Substance Use and Mental Health*, Discussion Paper, Health Canada, 1996, pp. 12-13.

early and resuscitated effectively and because a suicide attempt may be unintentionally fatal by miscalculation.(49)

While not in itself a mental illness, suicidal behaviour is highly correlated with mental illness and raises many similar issues. It usually marks the end of a long road of hopelessness, helplessness and despair.(50)

Suicidal acts usually result from multiple and complex motivations. The principal causative factors include mental disorders, social factors, personality abnormalities, and physical disorders. Depression is involved in over half of all attempted suicides. Alcohol predisposes to suicidal acts by intensifying a depressive mood swing and by reducing self-control. Some patients with chronic schizophrenia may commit suicide as a consequence of the episodes of depression to which these patients are prone. Persons with personality disorders are prone to attempted suicide.(51)

MENTAL ILLNESSES THROUGHOUT THE LIFESPAN

Mental illnesses can strike at all periods of life. Typically, however, they begin early in life and last or occur throughout adulthood. While the average ages of onset of arthritis and hypertension are respectively 48 and 52, the average age of onset of mental illness is 15. Because of this early onset age, mental disorders influence how people function in their adult roles, and ultimately determine the nature of these roles. Autism, behavioural problems and attention deficit disorder most commonly affect children. Adolescence is typical for the onset of eating disorders and schizophrenia. Adulthood is a time when depressions may manifest themselves more obviously. Alzheimer's disease and other types of dementia mar senior years, although depression is also being identified more often in the elderly. Table 8 gives examples of mental illnesses in relation to the lifespan, together with a brief description of the developmental changes occurring in the brain at each period.

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(49) "Suicidal Behaviour," *The Merck Manual of Medical Information – Home Edition*, Online Version, Section 7, Chapter 85 (www.merck.com).

(50) Stewart (2002), p. 92.

(51) *Merck Manual,* "Suicidal Behaviour," Section 7, Chapter 85.

Table 8: Mental Illnesses Throughout the Lifespan

Conception to birth (prenatal)	Infancy (0-5 years)	Late childhood (5-10 years)	Puberty (10-13 years)
The brain and nervous system develop and form an intricate network. But genetic errors and environmental factors such as fetal exposure to alcohol or drugs can make this process go awry. Some common examples:	*Excess neurons and synapses are pruned in the first 18 months, but the brain keeps growing, reaching 90% of adult size. Brain cells become more adept at communicating; babies learn to talk.*	*Dramatic growth spurts in the temporal and parietal lobes, brain regions crucial to language and understanding of spatial relations, make this a prime time for learning new languages and music*.	*Just before puberty, the brain's gray matter thickens, especially in the frontal lobe, the seat of planning, impulse control and reasoning. This growth may be triggered by surges of sex hormones*.
▪ Cerebral palsy ▪ Fetal Alcohol Syndrome/ Fetal Alcohol Effects ▪ Down syndrome	▪ Autism disorders ▪ Epilepsy ▪ ADD/ADHD ▪ Anxiety disorders	▪ Antisocial behaviour ▪ Dyslexia ▪ Depression ▪ Conduct disorder	▪ Eating disorder ▪ Obsessive-compulsive disorder
Adolescence (13-20 years)	**Early adulthood (20-30 years)**	**Middle age (30-60 years)**	**Old age (60-100 years)**
The brain begins to shrink, losing about 2% of its weight and volume in each successive decade. Abnormally high loss of gray matter during this period may be a cause of teenage schizophrenia.	*By the late 20s, information processing begins to slow down. Memory centres in the hippocampus and frontal lobes seem most affected*.	*Learning, memory, planning and other complex mental processes become more difficult, and reacting to stimuli takes longer. Plaques and tangles may form in certain brain regions*.	*Aging, depression, anxiety disorders and Alzheimer's may alter sleep patterns. The decline in cognitive abilities becomes more pronounced. Coordination and dexterity are also affected.*
▪ Social phobias ▪ Bipolar disorder ▪ Peak suicide years ▪ Agoraphobia ▪ Panic disorder	▪ Postpartum depression ▪ Seasonal affective disorder ▪ Schizophrenia	▪ Parkinson's disease ▪ Huntington's disease ▪ Early-onset Alzheimer's	▪ Vascular dementia ▪ Dementia from Alzheimer's disease ▪ Peak suicide years

Source: Adapted from *Time Magazine*, Canadian Edition, Special Issue, "How your mind can heal your body," 20 January 2003, p. 52.

CONCLUSION

Mental health and mental illness have emerged as important political issues in recent years on both the national and international scenes. Central to this interest is a growing awareness of how mental health directly affects physical health, the risk and the severity of illness, and recovery. There is also increasing awareness of the burden of mental health problems and illnesses, and the gaps in our current response in terms of promotion, prevention, early detection, surveillance, research and treatment.

The federal government noted the issue of mental health in the Speech from the Throne in 2001, and is working on a possible national approach to some aspects of mental health promotion and mental illness prevention:

> The Government will also champion community-based health promotion and disease prevention measures. It will strengthen its efforts to encourage physical fitness and participation in sport, and take further steps to combat substance abuse, reduce tobacco consumption, prevent injuries and promote mental health.

The present document does not pretend to give an exhaustive profile of mental health and mental illness in Canada. For example, it does not assess the prevalence and costs of mental disorders in the country, or discuss the important issues of stigma and discrimination associated with mental illness. It does, however, provide basic information that helps to convey the complexity of the subject, particularly in the context of a society where, too often, mind and body are viewed separately.