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How Much Should We Spend on Mental Health?

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HOW MUCH SHOULD WE SPEND ON MENTAL HEALTH?

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PREFACE

Following what has been stated as years of neglect of mental health care, public and private bodies, including the Kirby and Romanow Commissions, have called for substantial increases in mental health expenditures. But the question, "How much more **should** we spend?" has not been answered. Indeed, until recently, we did not know how much we **currently** spend on mental health services and, even now, key components of the economic burden, including employment costs, private insurance payments, social services and support costs are simply not known. It was in the light of this dearth of information that the Alberta Mental Health Board requested the Institute of Health Economics to prepare a monograph to take stock of what we currently know about the economic burden and public spending on mental health, as well as of the ways we can use this data to address this elusive question.

We set out to present what we know now about public mental health spending and the economic burden, and what current techniques are being used to answer the question, "How much **should** we spend?" We do not provide a definitive answer, if indeed there is one, because values as well as more and better data form part of the solution. We have, rather, tried to present for policy makers an overview of the current state of data and of the different ways the question has been approached. We hope that this will help the reader to understand what we currently know, and where the gaps in information lie.

We very much appreciate the encouragement of the staff at the Alberta Mental Health Board who provided advice and support during our endeavor. They include Ray Block, Lisa Bergerman, Roger Bland, Steve Clelland, Hannah Pazderka–Robinson, Mel Slomp, and in particular Carol Okamoto, who painstakingly read through the manuscript and made many detailed and helpful comments. We also would like to thank Liz Dennett and Trish Chatterley for bibliographical support.

EXECUTIVE SUMMARY

The question of "How much should we spend on mental health?" has been raised in several eminent national and provincial reports on health care. It is a very far-reaching question and so, not surprisingly, has been approached in different ways. In this monograph we present an economic overview of the economic approaches to this question. We first present an explanation of the different notions of cost, in order to clarify what is being measured. We then present four different approaches that have been used in a variety of contexts to address the issue of government spending – the Benchmark Approach, the Behavioral Approach, the Budgeting Approach and the Economic Evaluation or Cost-Benefit Approach. Finally, we present examples of the use of two of these approaches in the Canadian context. We first use the Benchmark Approach, and we indicate the sensitivity of the answer to the specific value given to the benchmark. Using one specific figure, we estimate that mental health spending in Canada should increase by $4 billion over five years. Alternatively, using the Budgeting Approach, we estimate that mental health spending should increase incrementally, reaching about $11 billion in five years from its current level of about $6 billion. We caution readers that the final answer depends on the goals one sets and the assumptions made. More over, too large an increase over a short time span may simply drive up prices without bringing forward an increase in services that are needed. Despite the difficulties in addressing the spending question, policy makers are grappling with this question, and with or without guidance, they will select a budgeted amount. It is important that interested readers understand the different ways of addressing this issue, as well as their shortcomings.

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CHAPTER 1– INTRODUCTION

Mental health has been a topic of significant policy interest in Canada for several years. Based on the results of a health survey conducted at the population level in 2003, an estimated 1.9 million Canadian adults have been diagnosed with mental illness (such as depression, anxiety, and schizophrenia) and another 1.6 million have reported symptoms but are not being treated. This represents about 10% of the adult Canadian population and based on estimates such as these, mental disorders are a leading cause of disability in Canada.

The economic ramifications of mental illness are considerable, yet their magnitude is not well understood. There are several ways to measure the cost of mental illness, each with a different meaning and different implications. One meaning of cost is a measure of the money value of the impact that mental illness has on a person's *health-related quality of life* (HRQOL). Lim et al. (2008) estimated that the cost of reductions in HRQOL due to mental illness in Canada was $18.8 billion in 2003.

Several authors have also focused on the cost of lost productivity in the workplace. The measure of *absenteeism* (i.e., not reporting to work) and *presenteeism* (i.e., being at work but functioning below full capacity) was estimated for 1999 at $626 million (Dewa, 2000). *Short-term and long-term work losses* in 2003 were estimated at $5.7 billion and $8.4 billion respectively (Lim et al., 2008). These productivity losses are referred to as *indirect costs* because even though they do not involve the direct utilization of resources, they are reflective of the impact of mental illness on resources. Aggregating these indirect costs and the losses in HRQOL, the economic burden of mental disorders in Canada in 2006 was estimated at around $44 billion[1].

Finally, the most easily understood costs are the *direct costs* of mental health and support services, although data on the latter are less readily available. Even so, measures of direct government spending on mental health services, which can potentially ameliorate the economic burden, have been sorely lacking. A recent study by Jacobs et al. (2008) of provincial government spending on mental health and addiction services estimated that at the national level, the provincial governments spent $5.6 billion on mental health in Fiscal Year 2003-04 or about $6 billion in 2006 dollars. Another category of direct costs are the costs of pharmaceuticals paid by private insurers and out-of-pocket by consumers. These direct costs were estimated by the same authors at $1.7 billion in 2006. Adding the direct costs to the indirect costs and losses in HRQOL, the economic burden of mental disorders in Canada amounted to $52 billion in 2006[2].

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1 See Table 3.3 of Chapter 3 for details and other measures of economic burden of mental disorders.

2 Details in Table 3.3 of Chapter 3.

All of these costs are inter-related. A greater investment by the government in mental health services may lead to reductions in the other categories of cost. A key policy issue therefore centers round the magnitude of public spending.

How, then, do we judge the public spending of $6 billion? Is it too generous, just enough, or inadequate? According to several recent federal government reports (such as the 2002 "Romanow Report" and the 2004 "Kirby Report"), government spending on mental health services and addiction treatment has not kept pace with current needs and anticipated demands, especially the needs of specific population sub-groups (such as aboriginal peoples, homeless people and the prison population). However, most of these arguments have been more rhetorical than evidence-based, without reference either to what mental health currently costs or to a systematic approach of estimating how much we **should** spend.

There is widespread agreement that the "old" mental health service delivery method, centered on hospital inpatient care is outmoded and ineffective. A new approach that has emerged is to move clients served in inpatient hospital units into community care settings and maintaining them there. This "new" service delivery method is now widely accepted and the approach ties in with the proposal to integrate mental health and addiction services into the general health care system.

Though there has been widespread agreement that the mental health care system must be reformed and new investment is needed to effect the change, the debate has not been informed by financial considerations. Changing the system from primarily inpatient care to being more community-based will require a substantial amount of money although, in the long run, there may be some significant savings from reallocation of resources. However, there is a current lack of understanding of the direct and indirect costs that are being generated by mental illness and how they emanate from the system used to treat it.

Even if we had clear estimates of what mental health costs and what we are currently spending, we would still require a systematic approach to evaluate how much to spend on mental health care annually as a nation. Different authors have adopted different approaches, though none has provided a definitive answer. Approaches to address this issue include examining spending ratios in similar countries, recognizing factors that influence policy makers in their decision on how much to spend for advocacy purposes, budgeting for services that are needed, and assessing the costs and benefits of alternative interventions[3].

3 These different approaches are examined in Chapter 4.

This monograph does not attempt to provide a prescriptive answer to the question of "How much should we spend on mental health?" Even before initiating this debate, we need better measures of costs and an approach to address the question. Currently, there are no complete cost measures available and there are also different ways we can address the question of "How much is enough?" What we attempt to do in this monograph is present an overview of the issues related to the main question. We first present an overview of the different measures of economic cost of mental disorders, and indicate the measure that is appropriate to our question (Chapter 2). Next, we present a summary of the recent costs in Canada based on the various cost measures (Chapter 3). This is followed by an overview of the different approaches that have been used to address the question of spending on mental health (Chapter 4). And finally, we present illustrative examples of two of the approaches, within a specific context, to indicate "how much more we need to spend" on mental health (Chapter 5). It is hoped that by laying out the issues policy makers can better focus their efforts when addressing the key question of how much to spend.

CHAPTER 2 – WHAT COSTS AND EXPENDITURES ARE WE ADDRESSING?

2.1 Introduction

Mental and substance use disorders are a significant health and economic burden in Canada. The large economic burden of the disorders–"What costs do they generate?"–raises the question of what resources the government has committed to mental health–"How much do we publicly spend?"–and, additionally, the question of what resources the government ought to commit to mental health–"How much should we spend?" Each of these questions is associated with a specific economic cost measure. The various cost measures have different meanings: which measure of cost is appropriate depends on the study purpose. Given the numerous meanings of cost, we begin by clarifying the various meanings and making explicit what costs and issues we are addressing.

2.2 Expenditure and Cost Measures

The first distinction that needs to be made is between the terms "expenditure" and "cost." *Expenditure* refers to spending for a specific purpose; in our case, for persons with mental illness. This spending can be for services –*direct resource costs*–or for income supplements–*transfers*. Real (physical) resources are involved in producing mental health services. Examples of real resources are hospital beds, physician and nursing time and pharmaceuticals. On the other hand, transfers are payments that are made without a service component attached to them and so no real resources are involved. Though the income recipient can use the money to purchase services (which use resources), no resources are automatically used by simply making a payment to the recipient. Examples of transfers are disability and income support payments.

The term *cost* has several meanings. Firstly, cost refers to the value of real resources either used (direct resource costs) or foregone (indirect resource costs)[1], that is, whether or not the resources were paid for. The use of a hospital day is an example of a service that involves real resources which are both used and paid for. These are referred to as *direct resource costs*. The lost or foregone earnings from short-term and long-term work losses (productivity losses) or premature death as a result of mental illness is an example of a resource (labor) whose use is foregone. In addition, caregivers of persons with mental illness forgo earnings when they take time off from work or leave the work force in order to render care. Economists consider these foregone earnings to be a cost because even though they are not directly paid for, they do measure resources foregone. These foregone costs are referred to as *indirect resource costs*.

1 The various cost measures are discussed in greater detail in section 3.4 of Chapter 3.

Secondly, the term cost has been used in a different way to refer to all of the expenditure items such as physical resources that are paid for (direct resource costs); as well as *transfers* (disability payments made by the government or private insurers) where no real resources are involved in the transaction but are nevertheless a cost to the agency making the payments.

Thirdly, cost can also refer to the non-resource losses in health status as a result of an illness. These are reductions in the health-related quality of life or persons' wellbeing due to physical or psychological disability and/or suffering as a result of mental illness. Reductions in persons' wellbeing are not usually considered as resource costs although they are sometimes referred to as such. *Losses in health-related quality of life* (HRQOL) have a monetary value, difficult as it may be to determine what that value is. The losses in HRQOL are a component of what is referred to as human costs (Sainsbury Centre for Mental Health, 2003) which also include the component of potential years of life lost (PYLL) to premature mortality (see section 3.3 in Chapter 3).The rationale for referring to these health losses as "costs" is that people are willing to pay to reduce or avert them. One might also refer to health improvements or gains as "benefits." As the loss due to premature mortality is also measured in the work loss component discussed above, we will only consider the loss in HRQOL (well-being) here to avoid double-counting. Reductions in persons' health status are sometimes factored into the measurement of economic burden in order to obtain a more complete picture of the economic impact of mental illness and the utilization of mental health services.

An overview of the various expenditure and cost measures discussed is shown in Table 2.1. The classification in the table suggests that the concept of "economic burden" of mental disorders can be defined in terms of various measures of economic cost or in terms of various costs borne by different economic agents–government, private insurers and households and businesses. Whereas all three economic agents incur direct money expenditures for mental health services, governments also incur expenditures for related support services such as housing, education and social services. Furthermore, governments and private insurers pay out transfers to households in the form of disability payments and income support.

Table 2.1 Economic Burden of Mental Disorders

Cost measure		Bearer of cost		
		Government	Private insurers	Households/ businesses
Resource costs	**Direct** health and social care resources	- Health ministry - Other ministries - housing - education - social services - non–insured services for the handicapped	Non-insured heath services (e.g., pharmaceuticals)	Goods and services paid out of pocket (e.g. pharmaceuticals)
	Indirect resources (lost productivity)	Not relevant	Not relevant	-Presenteeism - Absenteeism - Short-term work loss - Long-term work loss - Work loss due to premature mortality - Caregiver time
Transfers	Transfers (non-resource payments)	- Assured Income for the Severely Handicapped (AISH) - Canada Pension Plan Disability (CPP(D)) benefits - Employment Insurance (EI)	Insurance disability payments	
Losses in Health-related Quality Of Life (HRQOL)	Health status	Not relevant	Not relevant	Lost Quality-Adjusted Life Years (QALYs)

2.3 Alternative Measures of Economic Burden

The cost measures in Table 2.1 are recast in Table 2.2 to facilitate the derivation of alternative measures of economic burden of mental disorders. Each of these cost measures is identified with a letter in Table 2.2.

Table 2.2 List of Costs and Expenditures Associated with Spending on Mental Health

Cost measure/ identifier	Description
Direct resource cost (A)	**Ag** - Direct government costs for mental health services - Direct government costs for support services **Ap** - Direct private insurance and out–of–pocket payments for mental health services
Indirect resource cost (B)	- Indirect or lost productivity costs due to work losses for persons with mental illness. Includes presenteeism, absenteeism, short-term and long-term work losses and work losses due to premature mortality. - Caregiver costs (mostly indirect)
Government transfers (C)	- Transfer payments from government
Private transfers (D)	- Disability payments from private insurers
Losses in HRQOL (E)	- Value of losses in health–related quality of life

A commonly used measure of the cost burden of mental disorders is the notion of "*economic burden*" used in a number of reports (Health Canada, 2002; Goeree et al., 1999). This measure combines a measure of the value of all of the real resources (direct resource costs) that are put into mental health and a measure of lost productivity (indirect resource costs) due to mental illness. The summary measure would be

$$\mathbf{A + B}$$

The relevance of this measure of economic burden is that resources are limited and using such a measure helps us to focus on the issue of resource scarcity. Excluded from this measure are government transfers (C), private transfers (D) and the value of HRQOL lost (E). A measure such as this would be used by an advocacy group to indicate the magnitude of the resources used and forgone in mental illness.

Another possible measure of economic burden of mental disorders is defined in terms of the expenditures incurred by the government in relation to mental illness. Such a summary measure of *government expenditure* would be

$$\mathbf{Ag + C}$$

Government transfers (C) are included in this measure but private costs in A are excluded. Policy makers may focus on this measure.

Summary measures such as the two mentioned above address the question, "What are the costs borne due to mental illness by society (the first measure) and by government (the second measure)?[2]" However, such measures do

2 We have referred to these two measures of economic burden as "total resource burden" and "government expenditure burden" respectively in Table 3.3 of Chapter 3.

not look at alternative options and though they are often used by advocacy groups as a call to action, they, in themselves, are silent on the kinds of action that should be taken. If the measures are compared to some benchmark, then some type of action could be indicated. Budgetary analysts who are interested in government spending will focus on the second measure because a budgetary analysis presupposes that some course of action is to be taken and so the measure will be tied to some indicator, such as a population count or a changed rate of inflation. These and other measures of economic burden of mental disorders are discussed further in section 3.5 of Chapter 3.

2.4 "How Much Should We Spend on Mental Health?"

Implicit in the question, "How much should we spend?" is a comparison of alternative spending options. The alternative can be simply more spending (versus less), budget cut-backs, or spending on a different set of resources. There should be some indicator to measure the change in outcomes of different spending options and only then can policy makers make a judgment call on which option to adopt.

Our interest in this monograph is on *government expenditure* (the second measure), i.e., expenditure for mental health services, other related support services and transfer payments for persons with mental illness.

There are several distinct outcomes of government expenditure. First, a strategy that involves both direct government expenditure on mental health resources as well as related support services (A) will impact both lost productivity (B) and health-related quality of life losses (E) by persons with mental disorders. To the extent that direct government expenditure increases productivity and health outcomes, the overall economic burden of mental illness may be reduced by additional government spending. Thus, the cost measure of government expenditure here takes into account its positive impact on workplace and HRQOL outcomes. This view of government expenditure looks at government spending in terms of *efficiency of resource use* because it focuses on the potential efficiency gains from additional government funding or from the reallocation of existing funding to reduce the economic burden of mental disorders in Canada.

A second outcome of government expenditure is related to transfers (C). Government transfers (such as Canada Pension Plan Disability benefits or Assured Income for the Severely Handicapped) are made to offset losses in employment income due to mental illness (B). This type of expenditure does not affect efficiency of resource use which increases welfare through a more efficient use of resources. Rather, government transfers attempt to achieve fairness (or equity in income distribution) by focusing on the minimum level of income a person requires to maintain a certain standard of mental and physical wellbeing.

In the next chapter we examine the magnitude of the economic burden of mental disorders in Canada and the resources the Canadian government has committed to fund mental health.

CHAPTER 3 – HOW MUCH DO WE SPEND ON MENTAL HEALTH?

3.1 Introduction

Mental health problems refer to diminished capacities–whether cognitive, emotional, attentional, interpersonal, motivational or behavioural–that interfere with a person's enjoyment of life or that adversely affect a person's interactions with society and the environment (Kirby Report 1, p.68). Mental disorders or illnesses, such as mood disorders, anxiety disorders, schizophrenia, personality disorders, and substance use disorders[1], are a leading source of human disability. Mental illnesses not only result in human suffering for the individuals and their families concerned but also have effects on the health care system, the social system, the workplace and society at large.

Recent reports by Health Canada (2002), the Romanow Commission (2002)[2], the Standing Senate Committee on Science and Technology (2004)[3] and the Global Business and Economic Roundtable (Wilkerson, 2006) underscore the growing burden of mental illness in Canada in terms of health care resource use, lost productivity and human suffering.

This chapter examines the overall magnitude of mental health costs (in the broadest sense) as well as how much Canada is currently spending on mental health services in total and relative to other Western developed countries. A society's allocation of resources to mental health is an indicator of its commitment to combat mental disability.

The first step toward determining the amount we spend on mental health is to have comprehensive estimates of the prevalence of mental disorders in Canada.

3.2 Prevalence of Mental Disorders, Substance Use Disorders and Suicide

Prevalence data are used to estimate the proportion of a population that is suffering from an illness or disorder. Epidemiological studies have estimated

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1 Canadian Mental Health Association, *Mental Illnesses*, pamphlet, not dated.

2 The Commission on the Future of Health Care in Canada was established by the Prime Minister in April 2001 to review Canada's Medicare system. The Commission, chaired by Commissioner Roy J. Romanow, completed its task in November 2002. The "Romanow Report" entitled *Building on Values: The Future of Health Care in Canada* is a roadmap to renew Medicare, Canada's publicly-financed health care system and to enhance the system's quality and sustainability.

3 The Standing Senate Committee on Social Affairs, Science and Technology, chaired by the Honourable Michael J. L. Kirby, received a mandate to examine the state of mental health and mental health services and addiction treatment in Canada in February 2003. The Committee's Interim Report (commonly referred to as the "Kirby Report" 1, 2, and 3) were made available in November 2004. The "Kirby Report" is the first comprehensive document that specifically addresses the major issues facing the provision of mental health services and addiction treatment in Canada. The Final Report entitled *Out of the Shadows at Last: Highlights and Recommendations* was released in May 2006.

that 21% of all Canadians will experience a mental illness or addiction in their lifetime (lifetime prevalence), while 3% will suffer a severe and persistent disability (Health Canada, 2002). According to the World Health Organization (WHO, 2001), more than 25% of individuals develop one or more mental illnesses in their lifetime, while 10% of the adult population experience mental illness and addiction at any point in time (point prevalence).

Table 3.1 shows that the most common mental illnesses among Canadian adults are anxiety disorders (12%) and mood disorders (9%). Between 6% and 9% of adults suffer from personality disorders. Schizophrenia affects less than 1% of Canadians and another 1% of adults are afflicted with organic brain disorders including Alzheimer's disease (Kirby Report 1, p.85).

Table 3.1 Estimates of One-Year Prevalence of Mental/Substance Use Disorders and Suicide among Canadians Aged 18 Years and Older, 2001

Mental/substance use disorders and suicide	Percent (%)	Number
Mood disorders		
Unipolar depression	4.1 – 4.8	944, 679 – 1,105,966
Bipolar depression	0.2 – 0.6	46,082 – 138,246
Dysthymia	0.8 – 3.7	184,328 – 852,516
Anxiety disorders		
	12.2	2,810,997
Personality disorders		
	6.0 – 9.0*	Not available
Schizophrenia		
	0.3	69,123
Substance use disorders**		
Alcohol dependence	2.6	640,000
Illicit drug dependence	0.7	170,000
Suicide		
	11.6 per 100,000***	3,700

Source: Health Canada, *A Report of Mental Illnesses in Canada*. Ottawa, Canada, 2002, p.17; Institute of Health Economics (Alberta) and Alberta Mental Health Board, *Mental Health Economics Statistics In Your Pocket*, 2007, p.10.

* Based on estimates from the United States.

** Among Canadians 15 years and older in 2002. From Statistics Canada, Canadian Community Health Survey: Mental Health and Well-Being, The Daily, 3 September 2003. Taken from *Mental Health, Mental Illness and Addiction, Report 1*, Table 5.1, p. 83.

*** Among Canadians 15 years and older in 2002. Available online at http://www.who.int/mental_health/prevention/suicide/countryreports/en/index.html, accessed December 2007.

Table 3.2 shows the estimates provided by Lim et al. (2008) of the proportion of adult Canadians diagnosed with mental disorders as well as the proportion that went undiagnosed during the past year (one-year prevalence), using data from the 2003 Canadian Community Health Survey (CCHS), Cycle 2.1. Close to 1.9 million adult Canadians or 7% were diagnosed with mental disorders (such as any mood disorder, any anxiety disorder or schizophrenia) and a further 1.6 million or 6% were undiagnosed[4].

Table 3.2 Mental Health Status in Canada in Population Aged 20 Years and Older, 2003

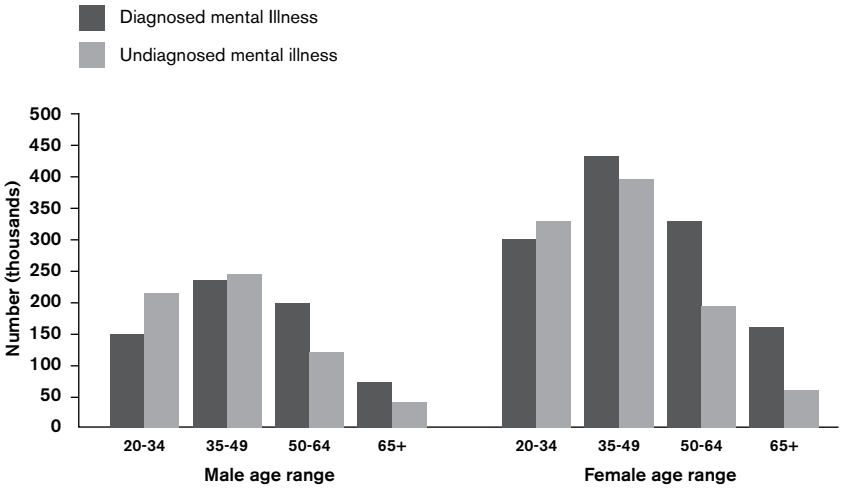
	Number	Percent (%)
No mental illness	23,261,558	87.0
Diagnosed mental illness	1,877,163	7.0
Undiagnosed mental illness	1,605,238	6.0
Total population	26,743,959	100.0

Source: K.L. Lim, P. Jacobs, A. Ohinmaa, D. Schopflocher, C.S. Dewa, A New Population-based Measure of the Economic Burden of Mental Illness in Canada, *Chronic Diseases in Canada* 28(3), 2008, Table 1, p.94.

4 Persons were classified as having an undiagnosed mental illness if they met at least one of the following criteria in the past year: self-reporting their mental health as poor, had reported two or more contacts with mental health professionals, being a clinical case of depression and had seriously considered committing suicide.

Figure 3.1 shows that the largest portion of persons with mental illness, for both males and females, falls in the 35-49 age range; with females having a higher prevalence rate (between 1.5 and 2 times higher) in all age ranges for both the diagnosed and undiagnosed populations.

Figure 3.1 Age-specific Mental Health Status in Canada in Population Aged 20 Years and Older, 2003



Source: K.L. Lim, P. Jacobs, A. Ohinmaa, D. Schopflocher, C.S. Dewa, A New Population-based Measure of the Economic Burden of Mental Illness in Canada, *Chronic Diseases in Canada* 28(3), 2008, Table 1, p.94.

It is estimated that 20% of all Canadians will suffer a substance abuse disorder in their lifetime. Close to 50% of people with severe mental illness develop alcohol or other drug abuse problems at some point in their lives (Alberta Mental Health Board, 2004, p.4; Adlaf, 2004). These estimates reflect the concurrent nature of mental illnesses and addictions (Puddicombe, 2004).

Suicidal behavior, while not in itself defined as a mental disorder, is frequently a symptom of mental disorders and highly correlated with mental illness and addiction. Every year, some 3,700 Canadians commit suicide and more than 90% of suicide victims have a diagnosable mental illness or substance use disorder (Kirby Report 3, p. 27; Langlois and Morrison, 2002). According to data from WHO, Canada's national suicide rate in 2002 at 11.6 suicide deaths per 100,000 population ranked seventh among 12 Western Organization for Economic Cooperation and Development (OECD) countries.

3.3 Disease Burden

Traditionally, the health burden of an illness has been measured only in terms of incidence/prevalence and mortality, indices which are well suited for acute diseases but not for chronic, disabling and recurring diseases such as mental and substance use disorders. One way to capture the chronicity of disorders and the disability caused by them is the Global Burden of Disease (GBD) methodology. The GBD project[5] uses the measure called the Disability-Adjusted Life Year (DALY), developed by WHO, to quantify the disease burden. The DALY expresses *years of life lost* (YLL) to premature mortality (due to suicide in the case of mental illness) and *years lived with a disability* (YLD) of specified severity and duration and one DALY is one lost year of healthy life.

To calculate total DALYs for a given condition in a population, the YLLs and YLDs for that condition must each be estimated and summed. The DALY measure extends the concept of *potential years of life lost* (PYLL) due to premature death to include equivalent years of healthy life lost to disability (WHO, 2001). The DALY is a health status indicator that can be used to generate dollar values comparable to the human costs mentioned in Chapter 2. While the premature mortality component is the same in both measures, the disability component is measured by YLDs here but as a loss in HRQOL in the human cost measure. The HRQOL measure is discussed further below.

Data from the GBD project reveal that while neuropsychiatric conditions were responsible for slightly more than 1% of deaths in 1990, they accounted for 10.5% of disease burden *worldwide*, measured in DALYs. In 2002, the disease burden was 13% and it is estimated that the burden share will increase to 15% by 2020. Using WHO burden of disease estimates for 2002, Mathers and Loncar (2006) projected that while unipolar depression was the fourth leading cause of disease burden in 2002, it is anticipated to become the second leading cause *worldwide* by 2030, behind ischaemic heart disease. In *developed countries*, not only is unipolar depression projected to be the leading cause of disease burden, Alzheimer and other dementias, and alcohol use disorders are also projected to be among the top four causes of disease burden in 2030.

Considering the disability component alone, Global Burden of Disease 2002 estimates that neuropsychiatric conditions accounted for 31.7% of all years lived with disability (YLDs), with unipolar depression being the leading cause of disability *worldwide*, accounting for 11.8% of the total YLDs[6]. In developed market economies such as Canada, mental illness is already the second leading cause of human disability and premature death and mental illnesses account for

5 The 1990 Global Burden of Disease (GBD) project is a worldwide collaboration sponsored by WHO and the World Bank and based at the Harvard School of Public Health. The results of the project are presented in the *Global Burden of Disease and Injury Series. The Executive Summary of The Global Burden of Disease and Injury Series* presents the key findings of Volume 1 and is available online at http://www.hsph.harvard.edu/organizations/bdu/GBDseries.html.

6 Information available at the following website: http://www.who.int/healthinfo/statistics/gbdwhoregionyld2002.xls.

more than 15% of the disease burden in these countries. The chronic nature of mental illnesses also results in many people living with episodes of disabilities.

3.4 Estimates of Economic Costs

The economic impact of mental and substance use disorders is wide ranging and long lasting and the economic burden is substantial. In Chapter 2 (Table 2.1), we showed that the concept of "economic burden" can be defined in terms of three measures of economic cost (i.e., direct and indirect resource costs, government and private insurer transfers and losses in health-related quality of life) or in terms of the various costs borne by three economic agents (i.e., government, private insurers and households and businesses).

The prevalent cases of mental illness identified in section 3.2 above, translates into the three measures of economic cost. A full economic assessment considers all three measures of economic cost in analyzing spending decisions. The alternative measures of the estimated "economic burden" of mental disorders in Canada in any given year are presented as in Table 3.3 for the year 2006. We discuss the estimates of the various economic costs for Canada in turn.

3.4.1 Direct Resource Costs

A major cost component is resource cost. Persons with mental disorders use both general and mental health services but we will only consider mental health services cost here[7]. Costs of mental health and social care services provided by mental health care providers and other agencies are referred to as direct costs. As can be seen in Table 3.3, direct resource costs in mental health care are paid for by the *government* (hospital services, physician services, pharmaceuticals, etc.), by *private insurers* (pharmaceuticals) or *out-of-pocket* by the consumer (pharmaceuticals). In 2006, these costs amounted to over $7.7 billion in Canada.

In mental health, government payment for resources is often made by other ministries as well as the ministry of health, such as housing and education departments,. No such estimates of government payments are currently available for Canada. In Alberta, for example, the Disability Supports Division of the Ministry of Seniors and Community Supports delivers the Assured Income for the Severely Handicapped (AISH) program, an income and health benefits program for adult Albertans with a permanent disability that severely impairs their ability to earn a living. The health benefits include premium-free Alberta Health Care Insurance, prescription drugs, essential diabetic supplies, optical, dental, emergency ambulance services and waiver of the co-payment fee for Aids to Daily Living. In 2006, these health-benefit costs amounted to $53 million in Alberta, relative to total government expenditure on health services of $6 billion (Block, 2008).

7 Lim et al. (2008) found that persons who are diagnosed and undiagnosed with mental illness utilized more GP visits, specialist visits and hospital days, on average, compared to those without mental illness. The average medical cost per capita was $643 for those without a mental illness, $2,515 for those who were diagnosed and $1,442 for those undiagnosed.

Table 3.3 Estimated "Economic Burden" of Mental Disorders in Canada, 2006

Measures of economic cost	Total cost (C$) millions	Data source
A. Direct resource costs		
Ag – Government costs for mental health services	$6,009	(1)
– Government costs for support services	Not available	
Ap – Private insurance and out-of-pocket costs for mental health services	$1,685	(2)
B. Indirect resource (work-loss) costs		
– Presenteeism/Absenteeism	$762	(3)
– Short-term work loss	$6,197	(4)
– Long-term work loss	$9,078	(4)
– Premature mortality (incidence)	$3,717	(5)
– Caregiver costs	$3,871	(6)
C. Government transfer payments		
– Federal government (disability benefits)	Not available	(7)
– Provincial government	Not available	(7)
D. Private insurers disability payments		
– Short-term disability	$486	
– Long-term disability	$2,318	
E. Losses in health-related quality of life (HRQOL)	$20,298	(4)
Alternative estimates of economic burden		
Total resource burden (A + B)	$31,319	
Total economic burden (A+B+E)	$51,617	
Government expenditure burden (Ag + C)	*	
Net financial burden between work-loss costs and offsetting income transfers (B – [C+D])	*	

Ag = Government component: Ap = Private component

* Insufficient data for this to be estimated.

Sources:

1 Jacobs et al. (2008). Estimate for 2003-04 ($5,550.9 m) was adjusted to 2006 levels for inflation (5.0%) and population growth (3.1%).

2 Privately paid professional services (social workers and psychologists) for 1998 for depression and distress only obtained from Stephens and Joubert (2001). Estimate for 1998 ($278 m) was adjusted for population growth (8.3%) and inflation (15.0%). Private pharmaceutical expenses for 2003-04 ($1,075 m) obtained from Jacobs et al. (2008) were adjusted for inflation (5.0%) and population growth (3.1%).

Table 3.3 Estimated "Economic Burden" of Mental Disorders in Canada, 2006 (continued)

3 Presenteeism/absenteeism loss for Canada for 1999 ($626 m) obtained from Dewa (2004) and see also Dewa (2000) and adjusted for inflation (13.3%) and population growth (7.4%).

4 Lim et al. (2008). Estimates ($short-term-$5,274 m, long-term-$8,386 m for the diagnosed population) for 2003 were adjusted for population growth (3.1%) and inflation (5.0%).

5 Indirect cost (lost future earnings) estimated from Clayton and Barceló (1999) at $844,185 per person in 1996 was adjusted for price level changes to 2006 (19%) and applied to an estimated 3,700 suicides annually (see text).

6 Caregiver value of work loss was estimated from Cook (2007) and Lero (2007). They estimated that there are 500,000 caregivers for persons with mental illness. Of these, 41% were not at work and 59% were still in the labor force. Of the former, 22% were not at work because they had become caregivers. Of the latter, 10% had a significant reduction in work, 33% had some reduction, 33% had a minor reduction and 16% had none. We attributed the following percentage reductions to these four categories: 50% for "significant", 30% for "some" and 10% for "minor." For all caregivers who lost work, we used the same ratio of full-time to part-time workers as in the economy (53.4% full-time and 46.6% part-time) based on Statistics Canada estimates for 2000. The average employment income for these two groups were $18,791 for part-time and $43,298 for full time (Source: Statistics Canada, 2000 Census topic 97F0019XCB2001002). Income loss was estimated using the above ratios and applied to the income figures. This amount was adjusted for price level changes to 2006 using the Statistics Canada Consumer Price Index for Canada.

7 Mental Health Economic Statistics in Your Pocket (2007), p.17. Estimates ($short-term-$461 m, long-term-$2,200 m) for 2004 were updated for population growth (2.0%) and inflation (3.3%).

General note: All prior years' population estimates were adjusted to account for population increases using Statistics Canada general population figures. All prior years' dollar estimates were adjusted to account for price changes using the Canadian Consumer Price Index obtained from Statistics Canada.

3.4.2 Indirect Resource Costs

A second type of resource cost is the indirect cost of work loss (or *productivity loss*) in the economy resulting from partial, short- and long-term disability and premature mortality. Mental disorders usually strike mid-career (i.e., between the ages of 36 and 55 years) and the costs associated with these disorders in the work place are considerable (Dewa et al., 2004; Global Business and Economic Roundtable, 2004). The concepts of long-term and short-term disability are usually related to insurance coverage where insurance payments compensate for losses in employment income. Here we look at the value of short-term and long-term productivity losses (i.e., in terms of lost earnings) associated with mental illness, during a given year.

Long-term and Short-term Work Losses: *Long-term work losses* (for persons who did not work at all) may be estimated using unemployment data in the past year. A monetary value is imputed on lost time from work using an annual average wage (though sometimes analysts also impute costs for non-work time, such as leisure and house work, as well). *Short-term work losses* may be imputed using an average daily wage rate in order to calculate productivity losses. These

annual productivity losses in the workplace in Canada have been estimated for 2006 at $9.1 billion and $6.2 billion respectively (Lim et al., 2008).

Absenteeism and Presenteeism: Persons with mental health problems have more *absenteeism* (i.e., not reporting to work) than others. Recently, economists have focused on yet another type of lost productivity referred to as *presenteeism.* This term refers to the reduction in productivity due to mental illness by persons who are still at work but function at less than full capacity (Dewa et al., 2004; Kirby Report 1, p. 110). Studies have shown that a significant proportion of the burden of mental disorders arises from presenteeism days (Kessler and Frank, 1997; Lim at al. 2007; Dewa et al. 2007). The value of work losses due to absenteeism and presenteeism has been estimated for 2006 at $762 million.

Mental illness and addiction are important causes of absenteeism and presenteeism in the workplace worldwide and a higher proportion of the burden results from presenteeism than absenteeism. A report by the World Health Organization (WHO, 1998) stated that "more working days are lost as a result of mental disorders than physical conditions." As such, the Canadian business sector also bears the economic burden associated with mental illness and addiction in the form of lost productivity due to absenteeism and presenteeism, disability wage replacement costs, employee group health care premiums and costs of prescription drugs (Kirby Report 1, p. 111).

Premature Mortality: The human capital approach is used to estimate *premature mortality* costs in terms of the discounted present value of future production lost due to premature death from suicide. Using this approach, a 1999 study by Clayton and Barceló of New Brunswick estimated the value of lost productivity due to premature death from suicide, with the estimated mean economic cost per suicide death at almost $1 million (in 2006 dollars). Given that some 3,700 Canadians commit suicide every year, the estimated premature mortality costs for Canada was $3.7 billion in 2006[8].

Premature mortality costs are estimated on a future-looking basis, referred to as a present value. That is, when a premature mortality occurs in the present year, all future year earnings losses are also estimated, and are discounted to bring them onto a common basis. This method of estimating losses is called the "incidence approach" because it places a singular value on current events, even though some of the losses occur in future years. In this analysis, we use the incidence approach to place value on premature mortality. All other losses

8 The other approach is to use the Potential Years of Life Lost (PYLL) mentioned in section 2.3. This measure incorporates the age of death and the life expectancy (www.statcan.ca 54HTL). In the case of mental illness, the PYLL represents the total number of years not lived by an individual who died before age 75 due to suicide. A person dying at age 25, for example, has lost 50 years of life. Health Canada uses this measure as an indicator of reduced longevity. In 2001, Health Canada provided a national measure of PYLL due to suicide of 116,000 years for roughly 3,600 suicides, a loss of approximately 32 years per suicide.

due to mental health are evaluated on an alternative basis, called the prevalence approach; the losses are evaluated in the year that the employment loss occurs.

Care-giving: *Care-giving* costs form yet another category of indirect costs. Informal care is a range of unpaid services provided by relatives and friends. Lero et al. (2007) have categorized the indirect costs of caregivers for persons with mental illness into economic and non-economic costs. *Economic costs* include employment related costs, out-of-pocket expenses and unpaid labor costs. *Non-economic* costs include costs to physical health and well-being, mental health/emotional well-being costs and social well-being costs.

Research monetizing the economic costs of care-giving is in its infancy in Canada. Cook (2007) is of the opinion that lifetime-employment related costs for caregivers of persons with mental illness may be higher than for caregivers of the elderly because of the longer duration and unpredictable nature of care. Based on these findings, we estimate that in 2006 care-giving costs were $3.9 billion in Canada.

3.4.3 Government Transfer Payments

Transfer payments are a type of payments that are not related to resource use. Examples of transfer payments are income supplements or social assistance payments. Economists often do not refer to these as costs because they are not payments for physical resources. However, from the perspective of the government, they represent outlays and appear in government budgets. In addition, the value of transfers, when compared with income losses, provides an indication of the degree to which persons with mental illness are compensated for lost earnings.

Two kinds of government transfer payments that are important to mental health in Alberta are the Alberta income supplements paid under *Assured Income for the Severely Handicapped* (AISH) and *Canada Pension Plan Disability* or CPP(D) benefits. The CPP(D) program is the largest single disability income program in Canada and is generally the first payor of disability benefits preceding provincial workers' compensation boards and private insurance companies (Kirby Report 1, p. 118). Individuals afflicted with mental illness may also be eligible to receive *Employment Insurance* (EI) benefits as a source of temporary income replacement. In the hearings of the Standing Senate Committee, concerns were raised with respect to the need to review CPP(D) and EI to account for the episodic and unpredictable nature of mental disorders and how the costs associated with mental illness and addiction can be shared between the government and employers.

No national–level data are currently available for transfer payments for persons with mental illness. However, for Alberta, in 2006, federal CPP(D) benefits for persons with a mental illness amounted to $64.4 million and payments from AISH for persons with a mental illness amounted to $195.7 million excluding health benefits. By comparison, total provincial mental health expenditures were $405.1 million (Block, 2008).

3.4.4 Private Insurers Disability Payments

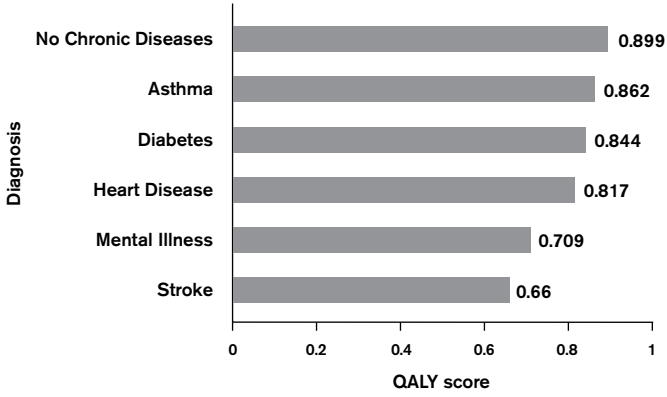
As noted above, the concepts of short- and long-term disability are related to employer-sponsored disability insurance coverage (Dewa et al., 2004). According to *Mental Health Works* (Canadian Mental Health Association, 2003), disability claims attributable to mental illness have overtaken claims associated with cardiovascular disease as the fastest growing category of disability costs in Canada. The Institute of Health Economics (2007) estimated that short- and long-term disability payments due to mental illness amounted to about $0.5 billion and $2.3 billion respectively in 2006.

3.4.5 Losses in Health-related Quality of Life

Quantification of costs of mental illness on individuals based on the human capital approach has traditionally been confined to assessing the impact of mental illness on employment and earnings. However, the less tangible costs of suffering, pain, disability and distress to individuals afflicted with mental illness are equally important and many studies now attempt to impute a monetary value on the adverse effects of mental illness on the health-related quality of life or HRQOL of a person (Sainsbury Centre for Mental Health, 2003).

A general measure of health status, the Quality-Adjusted Life Year or QALY, is used to quantify the adverse health effects of mental illness in the population as a whole each year. A QALY is a multidimensional measure of health status that attempts to combine mortality (quantity of life) and morbidity (quality of life) in a single index (Mooney, 2003). The CCHS Cycle 2.1 uses the Health Utilities Index Mark 3 (HUI3) to assess health status defined by 8 attributes– vision, hearing, speech, mobility, dexterity, emotion, cognition and pain. Each attribute has a number of different levels and utility-based scores are assigned to each level. Respondents are asked to rate themselves on each of the eight dimensions and the scores are then combined multiplicatively to derive an overall utility score measuring the HRQOL associated with the health state of the respondent. HUI3 scores range from -0.36 to 1.0, with -0.36 representing the worst possible health state (worst than death), 0.0 representing death, and 1.0 representing full health. In Figure 3.2 we present QALY values for several common diagnoses including mental illness.

Figure 3.2 QALY Scores for Some Common Diagnoses



Source: Canadian Community Health Survey, Cycle 2.1 [CD-ROM], 2003 in Institute of Health Economics (Alberta) and Alberta Mental Health Board, *Mental Health Economics Statistics In Your Pocket*, 2007, p. 13.

Analysts have placed monetary valuations on QALYs. Most of these have been conjectural but they have been assigned a central, if controversial, place in health policy analysis (Hirth et al., 2000; Birch and Gafni, 2006). Laupacis et al. (1992) were among the first to assign a value to QALYs; they used the value of $20,000 per QALY (in 1992 dollars). Although their assignment was arbitrary and attracted a good deal of controversy, similar valuations were used in other settings involving different currencies to indicate whether interventions that resulted in changes in QALYs were worth the differential costs (Ostenbrink et al. 2002; Nathoe et al. 2003). The "acceptable threshold" is a range from US$50,000 to US$100,000 per QALY but even this range has been considered too low (Ubel et al., 2003).

The QALY has been used in mental health studies (Sainsbury Centre for Mental Health, 2003) though less frequently. In a recent study, Lim et al. (2008) estimated the QALY value for mental health conditions separately for diagnosed (0.71) and undiagnosed cases (0.80) compared to those with no mental illness (0.91) in a Canadian population sample from the CCHS Cycle 2.1 (2003). The results indicated that a move from the no mental illness state to the diagnosed and undiagnosed mental illness states imposed a loss of health status equivalent to 0.20 and 0.11 of a QALY (or year of healthy life) respectively. In other words, the health-related quality of life was reduced by about 22% and 12% respectively for the diagnosed and undiagnosed populations with mental illness

in Canada. Using these numbers, alongside a valuation of $50,000 per QALY[9], the calculations showed that the loss of health utility for the population diagnosed with mental illness at $20.3 billion in 2006 was of an order of magnitude greater than the value of direct costs ($7.7 billion) and about the same as the value of indirect costs ($23.6 billion) resulting from mental illness (see Table 3.3).

3.5 Alternative Measures of Economic Burden

Using the cost estimates from Table 3.3, we analyze the magnitude of the alternative measures of economic burden of mental disorders in Canada. The four key measures are:

- the total resource burden (measured as A + B);
- the total economic burden (measured as A + B + E);
- the government expenditure burden (measured as Ag + C) and
- the net financial difference between losses in employment income and benefits from offsetting income transfers (B – [C + D]).

Given the current availability of data, we can only measure these various components partially.

Total Resource Burden (A + B): The first measure of economic burden is the total resource burden which includes not only the *direct resource costs* (A) but also the *indirect resource costs of lost productivity* (B) due to short-and long-term work loss and premature mortality. Several studies have estimated the economic burden of mental illness in Canada using this approach. Notable among them are Health Canada's Economic Burden of Illness in Canada (EBIC) reports and Stephens and Joubert (2001).

Table 3.3 shows that the total resource burden of mental illness in Canada amounted to $31.3 billion in 2006. It comprised $7.7 billion of direct government expenditures ($6 billion, excluding expenditures for support services) and private insurance and out-of-pocket costs for mental health services ($1.7 billion) and $23.6 billion of indirect productivity losses due to mental illness. The productivity losses were at least three times as large as the direct resource costs (excluding expenditures for support services). Productivity losses comprised income losses due to presenteeism/absenteeism ($762 million), short-term work loss ($6.2 billion), long-term work loss ($9.1 billion), premature mortality ($3.7 billion) and care-giving ($3.9 billion). The value of long-term work loss was about 45% higher than the value of short-term work loss and together with the losses due to presenteeism and absenteeism, they accounted for close to 70% of the indirect resource cost burden and 50% of the total (direct and indirect) resource burden.

9 The lower bound of the "acceptable threshold" range of US$50,000 was based on the incremental cost-effectiveness ratio for renal dialysis for patients with chronic renal failure and, according to Winkelmayer et al. (2002), was initially expressed in Canadian rather than US dollars.

Total Economic Burden (A + B + E): The above-mentioned estimate of the economic burden does not include the losses in HRQOL (E) due to mental illness. Adjusting for population growth and changes in the price level, the loss of health utilities as a result of mental illness, valued at $50,000 per QALY, was estimated at around $20 billion in 2006 (Lim et al., 2008). Table 3.3 shows that the estimate of the total economic burden of mental illness, including *losses in HRQOL*, amounted to $51.6 billion in 2006, with the HRQOL losses accounting for about 40% of the burden. Indirect productivity losses were by far the dominating component, accounting for more than 45% of the burden. Direct expenditure on mental health services by the government and private sector accounted for less than 15% of the burden.

Government Expenditure Burden (Ag + C): The economic burden can also be measured from the perspective of the government. The government expenditure burden includes all expenditures incurred by the government on mental health and support services (Ag) as well as government transfer payments (C). Currently, there is insufficient data to estimate this measure. This measure of the economic burden excludes private expenditures, Ap. Government costs paid for by other ministries should be included in this measure but data for these are less accessible than health care costs.

It should be noted that when governments reduce their expenditures, costs are shifted (often silently) onto the private sector, sometimes with dire consequences. On the other hand, government expenditure on mental health and support services and transfers (Ag + C) can potentially reduce the cost of losses in productivity (B) and health outcomes (E). Much of government expenditure (Ag + C) represents resource costs of mental health interventions designed to lower B and E, the indirect resource and non-resource burden of mental illness. Thus, if increasing government spending (Ag + C) results in offsetting benefits (reductions in B + E) commensurate with the additional costs, the additional government spending is justified on strictly financial grounds. In section 4.5.6 of Chapter 4, we discuss the criterion of spending on programs that offer the greatest possible health gain (or averted disease burden) per public dollar spent.

Net Financial Burden (B – [C + D]): Another impact of government expenditure is through transfer payments (C) to offset losses in employment income due to mental illness (B). Transfer payments are also made by private insurers as disability payments (D). The fourth measure of the economic burden is an estimate of the net financial burden borne by persons with mental disorders. It measures the extent to which government transfer payments and private insurers' disability payments are able to compensate for the lost earnings of persons with mental illness. There is currently insufficient data to estimate this measure for Canada.

3.6 Relative Cost and Expenditure Ratios

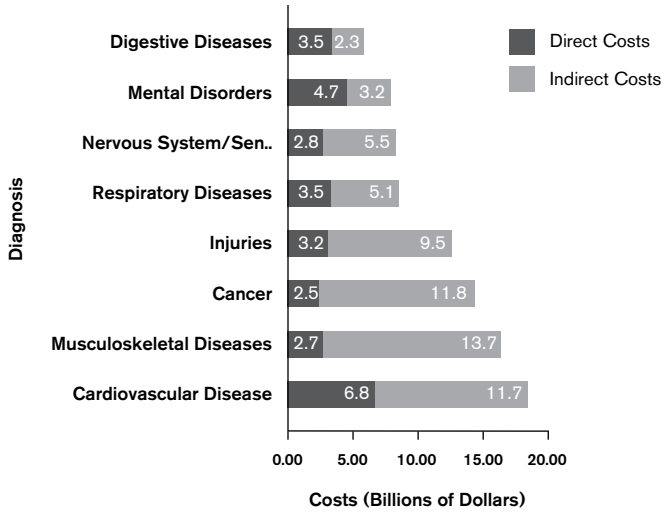
To be useful for policy purposes, cost and expenditure estimates for mental health should be compared with similar indicators across diagnostic categories within the health sector, across geographical regions within a country or across countries. Simply showing the magnitude of costs and expenditures does not lend itself to interpretation. Just as there are different measures of economic cost of mental illness, there are also different mental health cost and expenditure ratios, each illuminating a different aspect of resource use in relation to mental health. In this section we discuss some of the more important ones.

3.6.1 Direct and Indirect Cost Ratios by Diagnostic Category

The measure of economic burden of illness by diagnostic category and cost component has been widely used by policy makers. Health Canada's *Economic Burden of Illness in Canada* (EBIC) is the most widely circulated government health document in Canada and its popularity attests to the importance policy makers put on this approach. Although EBIC data do not address the question as to how much we should spend, they nevertheless provide many insights into the economic burden of illness. Perhaps the most important is the relative magnitude of direct and indirect costs (A + B in Table 3.3).

Health Canada's EBIC, 1998 (Health Canada, 2002) identified a large economic burden of mental illness from the use of direct government-funded health care services ($4.7 billion) and the indirect cost of lost productivity due to short- and long-term work loss and premature mortality ($3.2 billion). According to Figure 3.3, the overall estimate of $7.9 billion for 1998 or 4.9% of the *overall cost* (direct and indirect) of illness in Canada ranked mental disorders seventh behind cardiovascular diseases (11.6%), musculoskeletal diseases (10.3%), cancer (8.9%), injuries (8.0%), respiratory diseases (5.4%) and diseases of the nervous system (5.2%). Mental illnesses ranked second behind cardiovascular disease in terms of direct costs of illness. In terms of indirect costs, mental illness ranked fourth as the main cause of long-term disability behind musculoskeletal diseases, diseases of the nervous system and cardiovascular diseases.

Figure 3.3 Economic Burden of Illness in Canada by Major Diagnostic Category, 1998



Source: Health Canada. *Economic Burden of Illness in Canada*, 1998. Ottawa, Ontario: Population and Public Health Branch, Health Canada, 2002, Table 2, pp. 6-7.

Of the $4.7 billion of health resources spent on mental health in 1998, or 5.6% of the total direct cost, expenditures on hospital care accounted for more than half of direct costs. Mental disorders ranked second highest in spending on hospital care ($2.7 billion), highest in spending on physician care ($0.9 billion), third highest in spending on prescription drugs ($1.1 billion) and second highest in residential care facility costs ($0.1 billion).

3.6.2 Expenditure Ratios

The mental health expenditure ratio is the ratio of expenditure on mental health to total expenditure on health care. It is the most widely used ratio in mental health policy analysis. Here we discuss the public and total (public and private) expenditure ratios across Canadian provinces and relative to other Western developed countries.

Public and Total Expenditure Ratios across Canadian Provinces

Block et al. (2005) presented the first person-level analysis of a publicly-funded mental health expenditure ratio for Alberta for the year 2002-03. In this analysis, publicly-funded mental health care costs (excluding outpatient prescription drugs) were estimated and compared with total provincial health department expenses. The value was 8.4%. Because total provincial health

department expenditure excludes other health expenses incurred by other sources and government departments (e.g., First Nations drug expenses and non-insured expenses for the disabled), this ratio was not a ratio of total mental health to total health expenditure.

Jacobs et al. (2008) conducted a cross-province analysis of public and total (public and private) expenditures on mental health and addictions in each Canadian province (Ag in Table 3.3) for Fiscal Year 2003-04. These expenditures were compared with total public and total health expenditures, where appropriate. The dollar values are shown in Table 3.4 and the expenditure ratios are shown in Figure 3.4. The estimated total Canadian mental health expenditure in Fiscal Year 2003-04 was $6.3 billion, of which $5.6 billion (or close to 88%) was from public sources. *Total expenditure on mental health* was 4.8% of total health expenditure of $131 billion (Figure 3.4). *Public expenditure on mental health* at 6.1% of total public expenditure on health of $91.4 billion was lower than most developed countries (see Table 3.5) but marginally above the EBIC estimate of 5.6% of the total direct cost (which only included resources for which billing and clinical codes were available) and the 5% benchmark of the Mental Health Economics European Network. A value below 5% may represent an unfair allocation to mental health (Mental Health Europe, 2004).

Table 3.4 Public and Total Mental Health Expenditures by Canadian Provinces, 2003-04

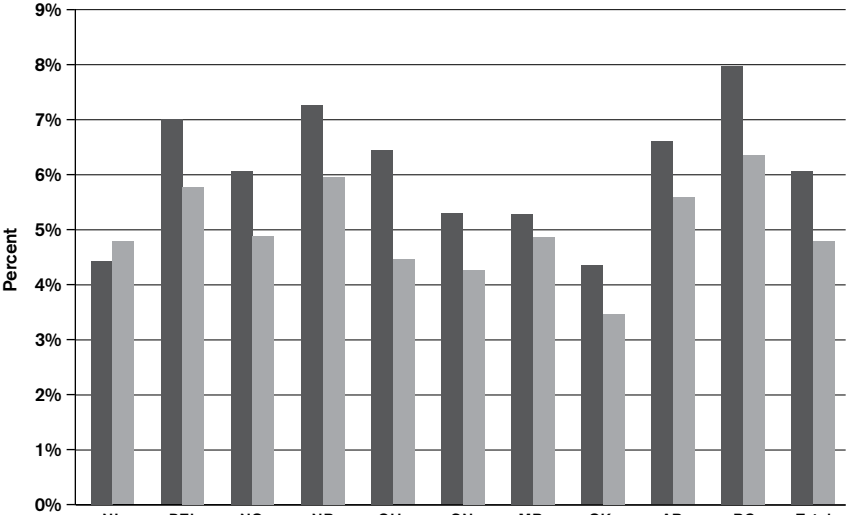
Province	Public* ($ millions)	Total** ($millions)
Newfoundland	74.0	103.5
Prince Edward Island	27.2	31.9
Nova Scotia	163.3	189.9
News Brunswick	153.6	182.2
Quebec	1,274.2	1,253.7
Ontario	1,885.7	2,291.1
Manitoba	204.1	256.3
Saskatchewan	137.1	145.0
Alberta	664.3	776.4
British Columbia	967.3	1,084.6
Total	5,555.9	6,314.6

Source: P. Jacobs, et al., Expenditures on Mental Health and Addictions for Canadian Provinces from 2003 and 2004, *The Canadian Journal of Psychiatry*, Vol. 53, No.5, May 2008, Table 1, p.36.

* Public mental health expenditure

** Total (public and private) mental health expenditure.

Figure 3.4 Mental Health Expenditures as a Percentage of Public and Total Health Expenditures by Canadian Provinces, 2003-04



	NL	PEI	NS	NB	QU	ON	MB	SK	AB	BC	Total
Public	4.50%	7.00%	6.10%	7.30%	6.50%	5.30%	5.30%	4.40%	6.60%	8.00%	6.10%
Total	4.80%	5.80%	4.90%	6.00%	4.50%	4.30%	4.90%	3.50%	5.60%	6.40%	4.80%

Province

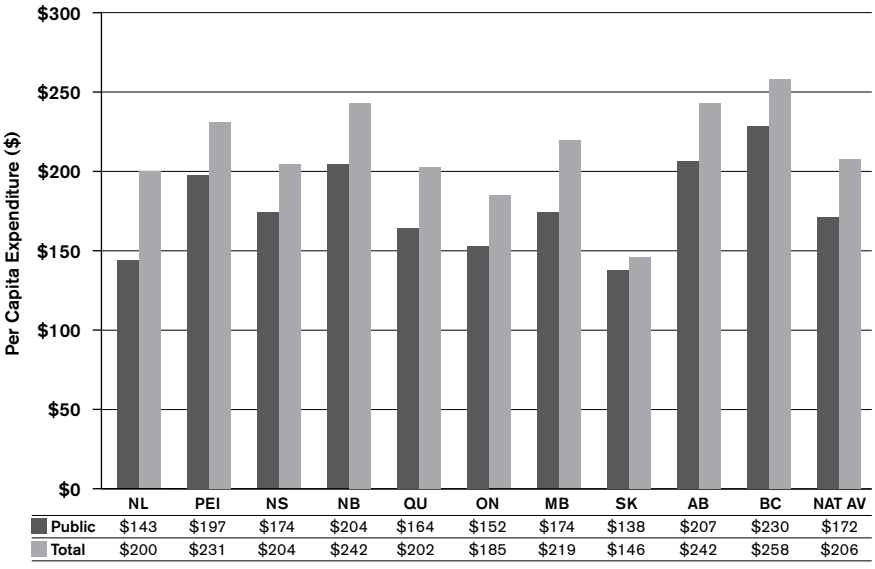
Source: P. Jacobs, et al., Expenditures on Mental Health and Addictions for Canadian Provinces from 2003 and 2004, *The Canadian Journal of Psychiatry*, Vol. 53, No.5, May 2008, Table 1, p.36.

* Public: Public mental health expenditure as a percentage of provincial total public health expenditure.

** Total: Total (public and private) mental health expenditure as a percentage of provincial total health expenditure.

By comparison, Figure 3.5 shows the estimates by Jacobs et al. (2008) of the per capita public and total mental health expenditures in each province. The national average of public per capita expenditure was $172 per person, while the national average of total (public and private) per capita expenditure was $206. Saskatchewan, followed by Quebec and Ontario, had the lowest per capita amounts; while British Columbia, followed by Alberta and New Brunswick, had the highest for both public and total per capita expenditures.

Figure 3.5 Per Capita Public and Total Mental Health Expenditures by Canadian Provinces, 2003-04



	NL	PEI	NS	NB	QU	ON	MB	SK	AB	BC	NAT AV
Public	$143	$197	$174	$204	$164	$152	$174	$138	$207	$230	$172
Total	$200	$231	$204	$242	$202	$185	$219	$146	$242	$258	$206

Source: P. Jacobs, et al., Expenditures on Mental Health and Addictions for Canadian Provinces from 2003 and 2004, *The Canadian Journal of Psychiatry*, Vol. 53, No.5, May 2008, Table 1, p.36.

International Comparison of Public Expenditure Ratios

According to WHO, 28% of countries do not have a specific mental health budget, 36% allocate less than 1% of their public health budgets to mental health and most of the rest allocate less than 5% (WHO, 2001). WHO also found that more than 54% of the countries in the European region allocated more than 5% of their total health budgets to mental health. Of the 17 Mental Health Economics European Network (MHEEN) countries, the highest estimate of expenditure on mental health was found in Luxembourg (13%) and the lowest estimates of just under 5% were reported for Portugal and some autonomous regions in Spain (Mental Health Europe, 2004). In Table 3.5, we present the mental health expenditure ratios of selected developed countries. The highest estimate is for the United Kingdom and Canada's estimate at 5.4% is only marginally above that of Italy at 5%.

Table 3.5 National Mental Health Expenditures as a Percentage of Total Health Expenditures: Selected Countries

Countries	Percent (%)
Italy*	5.0
Canada (2004)	5.4
Australia (2001)	6.7
Ireland*	6.8
United States (2001)	7.5
Denmark*	8.0
Netherlands*	8.0
Germany*	10.0
United Kingdom (2003)	12.1

Source: Institute of Health Economics (Alberta) and Alberta Mental Health Board, *Mental Health Economics Statistics In Your Pocket*, 2007, p.49.

* Year of data not known.

Expenditure on mental health care across Canadian provinces has been below that in many Western developed countries. Some contend that mental and substance use disorders have not been allocated a level of system funding commensurate with the prevalence and economic burden of the illnesses as compared to physical illnesses. But how do we determine whether this spending is not enough,
too much or just right?

In the next chapter we examine the different approaches used to determine an appropriate level of spending on mental health and addiction treatment.

CHAPTER 4 – HOW DO WE DECIDE HOW MUCH TO SPEND ON MENTAL HEALTH?

4.1 Introduction

Scarcity is a fact of life. The level of resources available to a society for its health problems will never be sufficient to meet all its needs and choices have to be made between alternative uses of scarce resources. The fundamental economic principle is that competing benefits should be compared, while acknowledging constraints, before committing resources to any task. The challenge is to ensure that mental health and addiction treatment receive an adequate share of the available funding for health care.

This chapter outlines the different approaches that are used to recommend spending on mental health. Four approaches to determine mental health spending reviewed here are the "Benchmark" Approach, the Behavioral Approach, the Budgeting Approach and the Economic Evaluation Approach.

Our objective here is to examine how much health resources to commit to mental health at the population level and not on how the mental health budget should be allocated to each region or within regions. Specifically, we will not be discussing provincial health care funding formulas currently in use or being considered for implementation, although we acknowledge that there is a need to develop a funding formula to ensure equity in funding across each province.

4.2 The "Benchmark" Approach

This approach answers the question, "How much is Canada spending relative to similar countries?" In this approach we identify key spending ratios such as total mental health expenditure as a percentage of total health expenditure or public mental health expenditure as a percentage of total public expenditure on health, calculate these ratios for Canada and make a comparison with comparable countries.

The benchmark approach is discussed in Savedoff (2007) and standards for international ratios have been identified by the Mental Health Economics European Network (Mental Health Europe, 2004). In this approach, the ratio of the peer group is considered the standard or "benchmark"; the peer group being countries with similar characteristics, such as income levels, cultures or epidemiological profiles. The downside of the approach is its predominant focus on expenditures rather than on health outcomes which ultimately is the goal of health care spending.

In Chapter 3, we noted that Canada's public expenditure on mental health at 6.1% of total public expenditure on health is lower than most Western developed countries but marginally above the 5% minimum benchmark of the Mental Health Economics European Network (MHEEN). Savedoff has

suggested that the benchmarking exercise should focus on similar countries that have achieved among the best health outcomes. However, even in countries with good mental health outcomes, the range of mental health spending may vary too widely for policy makers to decide on the optimal level.

Among the 12 MHEEN countries, Luxembourg and England had the highest values of 13% and 12% of the national health budgets respectively, while Portugal and some autonomous regions in Spain reported the lowest values of just under 5%. The MHEEN has pointed out the difficulty of identifying mental health-specific expenditures and has cautioned against drawing any firm conclusions from the estimates (Mental Health Europe, 2004).

The Kirby Report highlighted the same point, which was also made in the 2002 National Mental Health Report in Australia (Commonwealth Department, 2002), that countries measure mental health spending in very different ways–some countries include items that are excluded in other countries such as drug and alcohol services, housing and income security payments, etc. (Kirby Report 2, p. 78)–and therefore it is extremely difficult to make direct comparisons and establish guidelines based on best practices with regard to overall mental health spending. Consequently, when using the "Benchmark" Approach, only provisional conclusions can be drawn about where greater attention ought to be paid to mental health funding needs.

Another point to note from the Standing Senate Committee's public hearings on the debate over the adequacy of mental health funding in Canada is that it is not sufficient to look only at the absolute increases in funding for mental health but also at whether the additional mental health funding is keeping pace with and not lagging behind growth in overall health care spending (Kirby Report 2). This would require annual ratios to be computed for comparison.

4.3 The Behavioral Approach

The Behavioral Approach answers the question, "What determines how much policy makers allocate to mental health?" The premise of this approach is that the level of mental health spending is ultimately a political decision and mental health advocates can influence the funding decisions of policy makers to secure more funding for the mental health sector if they understand the psychological forces that influence the funding decisions of policy makers.

The factors, as identified by behavioral research, that influence government funding allocation decisions include the policy makers' perceptions of resource availability, program effectiveness, needs of those with problems served by the programs and the extent of personal responsibility for the problems (Corrigan and Watson, 2003).

The mental health budget is just one among the myriad of competing budgets vying for government funding. When the demand for government support

exceeds the availability of funds, as is usually the case, policy makers are likely to give priority and respond to budgets where advocates are skillful in presenting convincing information on the above-mentioned factors.

To successfully draw funds to mental health, advocates must stress priority areas based on needs, for example of specific groups (such as children and adolescents) and needs in turn must be defined in tangible terms (such as being unable to live alone or work). Besides children and adolescents, other population sub-groups identified in the Kirby Report with specific needs are seniors, individuals with concurrent disorders, Aboriginal Canadians, immigrants and individuals in the work place.

Second, mental health advocates will be more effective if they can inform policy makers about evidence-based practices that support the effectiveness of various psychiatric treatments and find ways to translate the effectiveness of a particular treatment into tangible parameters, such as a decrease in hospitalization by two months, etc. The Kirby Report notes that the emphasis is now toward the adoption of the "best practice" framework and the evidence-based approach. However, there appears to be a lag between the discoveries of effective treatments (medications, therapies, new ways of delivering care, etc.) and their routine incorporation into patient care. Perhaps, policy and decision makers need to be convinced of the cost-effectiveness of the new interventions.

Third, mental health advocates will be more effective in influencing expenditures on mental health if they can change policy makers' perceptions of the personal responsibility for mental illness and the ineffectiveness of mental health care interventions (Kirby Report 1, pp. 39-40) with factual information that mental illness is caused by a "personally uncontrollable brain disorder" (Corrigan and Watson, 2003, p. 504) and is treatable like other chronic physical illnesses. According to Corrigan and Watson, research has shown "perceptions of personal responsibility to be the single greatest correlate of the values driving decisions about resource allocation." (Corrigan and Watson, 2003, p. 504).

Last but not least, we need to bear in mind that policy makers (elected representatives and the government) do not passively respond to what the public wants. The voting and logrolling activities of political representatives determine the broad outlines of government policy. According to public choice theory, political survival requires policy makers to take the public's interests into account by offering a policy package that attracts enough votes to stay in office at the next election. Policy makers may, therefore, have incentives to support policies where the benefits are visible to those who benefit and the costs are difficult to perceive by those who are harmed. Thus, the political process is biased and a "needy" policy with visible costs may be not passed compared to one that is less needy but with hidden costs.

4.4 The Budgeting Approach

The Budgeting Approach answers the question, "What are the desired levels of service increases and what are the estimated costs?" It thus provides a direct answer to the question of "How much should we spend?" The World Bank (1993) and the Commission on Macroeconomics and Health (WHO, 2001) used this approach to design packages of cost-effective health interventions and estimated how much it would cost to introduce the package to a given population. This approach has also been employed by the Standing Senate Committee (2004) using data from the Toronto-Peel Mental Health Implementation Task Force (2002) which followed the approach developed by the Ontario Centre for Addiction and Mental Health's Health Systems Research and Consulting Unit.

In the Budgeting Approach, the key question is, "What are the criteria for selecting the additional services or inputs to be funded?" In general, the choice of mental health services and inputs can be determined by the distribution of the mental health needs of the population, i.e., the provision of health care services is based on the principle of the need for health care.

4.4.1 Needs Assessment

Mental health service provision and funding may not always be distributed according to the mental health needs of the population. An assessment of mental health needs in the population is therefore fundamental to any service planning and budgeting (funding allocation) decision. Moreover, where accountability for service delivery and health outcomes are increasingly devolved to regional health authorities, an assessment of area-specific inequalities in health care needs and utilization becomes necessary (Holley, 1998).

Definition

It is widely acknowledged that it is difficult to define "need". Bradshaw (1972) identifies four main categories of need: normative need (objective need identified according to standards set by experts regarding psychiatric morbidity and the required level of mental health service), comparative need (need according to psychiatric morbidity relative to the availability of mental health services), expressed need (need expressed in terms of utilization of mental health services) and felt need (subjective need as stated by individuals).

Burgess et al. (2002) define "need" as the ability to benefit from health care for a health problem for which there is treatment. The ability to benefit from care is an important distinction because individuals who use (receive) or demand mental health services may or may not benefit from the services provided. This definition of need encompasses "unmet" need (i.e., people who will benefit from but do not seek care because of non-affordability, non-availability or inaccessibility of services).

Measurement

Needs assessment attempts to determine the portion of the general population that is in need of mental health services of various kinds and the differential service needs across different geographical areas. In the literature, needs have been *directly* estimated using population-based, individual-level data from epidemiological surveys or *indirectly*, using individual demographic or area "social-indicator" data, assuming that the social indicators are proxy measures for need in deriving estimates (Ciarlo et al., 1992).

Large-scale epidemiological surveys provide information on mental health status (psychiatric morbidity profiles) and mental health service use (utilization profiles) but they are extremely costly to conduct especially when many geographical areas are involved. Consequently, indirect methods are often resorted to instead. Indirect needs-assessment at the *area level* uses social-indicator data such as percentage in poverty, percentage unemployed, etc., to profile the level of need of the population in the area. Need is typically related to utilization (e.g., psychiatric admission rates), or prevalence (e.g., psychiatric morbidity levels). The other less common approach is to use *individual-level* demographic data from a previous epidemiological survey and apply to similar sub-populations in the area where the need is to be estimated (Burgess et al., 2002; Ciarlo et al., 1992).

Additional needs-assessment tasks that should follow include deriving estimates of how much of each kind of service is necessary to meet each type of need. Estimated service needs are then costed to determine the level of mental health funding. Unfortunately, as Ciarlo et al. point out, research knowledge to accomplish the task of linking service to need is still quite limited and hence estimating projected treatment costs becomes largely guesswork. In the next section we discuss two planning models that were developed to identify needs and service levels.

4.4.2 Linking Level of Care to Needs

The Ontario Needs-based Planning Model

The Ontario Health Systems Research and Consulting Unit (HSRCU) at the Centre for Addiction and Mental Health developed an approach to link the level of care to the level of need (Durbin et al., 2001). The Unit developed a bottom-up planning model to define levels of care (representing increasingly intensive and restrictive supports) based on longer-term service needs deemed appropriate to achieve desired outcomes for patients assessed with different levels of need for mental health care. Decision rules (an algorithm to identify the intensity of mental health services needed) were developed in consultation with practitioners to link the intensity of care (resource use) to the patient's level of need. The Ontario project was commissioned by the Ministry of

Health and Long-term Care and local area district health councils to identify systems needs for existing hospital patients prior to the closure of a provincial psychiatric hospital and reintroduction of patients into the community. Since then, the approach has become a planning tool for reorganizing community and institutional services in regions across the province.

The resulting model recommended that only 10% of existing inpatients in the province should remain in the hospital, 30% should be placed in a supervised treatment residence and the remaining 60% could live independently in the community with appropriate community-based mental health services and social supports. In addition, outpatients who were currently under-treated were identified as requiring more intensive mental health services and supports.

These results are consistent with the Standing Senate Committee's mental health care reform policy objective of reallocating existing resources to achieve greater system efficiencies and cost savings. The strategy emphasizes the delivery of care in the community with services such as intensive case management and high-support residential treatment as alternatives to inpatient hospital care. In line with the objective of achieving an integrated and coordinated seamless provision of the full continuum of mental health services and social supports, the findings of needs-based planning studies can guide local service planning by identifying the additional community capacity and resources that are required as inpatients are moved from institutional care to the community.

Although it is difficult to say whether the recommended overall level of care is the most appropriate for meeting patient need, the model, nevertheless, serves as a tool for planners to assess and monitor whether the current level of care received by persons with mental illness is appropriate in meeting their needs –are they over-treated, under-treated or appropriately treated or supported? The model's decision rules can be adjusted for needs of specific population sub-groups such as geriatric, forensic and children. The approach can enable best practices to be adopted and implemented across each province and can promote greater equity in funding.

The Mental Health Action Plan for Toronto and Peel region, an implementation plan used in the Ontario government's mental health reform policy document *Making It Happen* follows the HSRCU's approach to estimate the mental health budget requirements for Toronto and Peel. The implementation task force translated the needs into budgetary changes by (1) putting a unit cost on each level of service intensity and (2) assessing the change in costs resulting from the shift towards community-based services and supports. The transition costs were factored into the recommended funding increases over a 5-year period.

The Risk Adjustment Model

Another approach to link the level of care to the level of need at the population level is the risk adjustment model. Risk adjustment by diagnosis is one among a series of techniques that account for the health status of patients when predicting costs of health care of a defined population and evaluating the performance of their care providers (Blumenthal et al., 2005). Risk adjustment groupers (RAGs) are techniques for placing health care recipients into groups with different levels of health risks and different expected levels of health care utilization.

The model then estimates the amount and type of health care resources that the individual (based on his or her most severe/dominant diagnosis) is expected to consume the next period based on the previous period's population case-mix of diagnoses. It then attaches an estimated cost for the next period based on the average cost/utilization for each mental health diagnosis. The funding needed for each population during the next period can then be estimated by summing the dollar values of the expected utilizations plus some basic funding for the healthy population during the previous period.

One limitation of the RAG funding model is that it is unable to model unmet needs including those of specific population sub-groups (Aboriginals, immigrants, homeless, etc.). It is also unable to adjust for cost differences in services provided in different areas or in different types of facilities (Ohinmaa, 2006).

The Standing Senate Committee concluded from its public hearings that a carefully documented national mental health strategy, clearly setting out the costed needs in the mental health sector, can constitute a powerful advocacy tool in negotiations with the government for the resources that are required. In addition, clear benchmarks and targets also make it possible to monitor the implementation of a national strategy and ensure funding commitments are sustained (Kirby Report 2, p.79). Needs-based planning can facilitate this process.

However, it should be emphasized that need is never absolute and not all needs can be met and, in some settings, although there is a need, there may not be a demand for services. Given that resources are scarce, the choice of what needs to meet is a function of both benefits and costs of meeting those needs. Needs have to be ranked and here is where priority setting beyond needs assessment comes into play and central to priority setting is an economic evaluation of costs and benefits.

4.5 The Economic Evaluation Approach

This approach answers the questions, "Should the proposed health care program be funded?" and "What is the optimal scale of the health care program?" Economic evaluation involves an analysis of costs and benefits of alternative programs which are competing to be implemented. It addresses the issue of allocative efficiency by equipping policy makers with a tool to decide whether one should contract/expand/implement a health care program, i.e., to answer the question of whether something ought to be done. One method to do this is cost-effectiveness analysis

(CEA)[1]. With mental health increasingly recognized as a significant public health issue, there is a growing need for evidence showing that mental health care programs are cost-effective (WHO, 2006).

4.5.1 Cost-Utility Analysis in Priority Setting

Cost-Utility Analysis (CUA), a special form of Cost-Effectiveness Analysis (CEA), provides a clear and simple framework to promote value for money in mental health care[2]. Costs are usually defined in terms of direct health care costs. The unit of benefit or effectiveness (health outcome) is the quality-adjusted life year (QALY), a preference-based non-monetary unit which combines both the quantity and quality of life in a single index. Some CUAs use DALYs (disability-adjusted life years) as the unit of health loss or gain instead of QALYS and others use YLDs (years lived with disability) averted to measure the health gain[3].

At the heart of cost-utility analysis are two related questions that must be answered in considering whether to recommend a particular intervention or treatment for a mental health problem. Firstly, when comparing two or more treatment options, which one of them has the better health outcomes? And secondly, is the more effective (better) treatment option cost-effective? i.e., are the improved outcomes achieved at an additional cost that is worthwhile? To do this, a cost-utility (CU) or cost per QALY ratio (the cost-effectiveness ratio in CEA) is calculated for the proposed intervention. The ratio is an efficiency measure of the intervention's worth. The CU ratio can then be compared with the CU ratios of other interventions currently being used in the health care system (as long as the health outcomes are measured in similar units, and the procedure for calculating the CU ratios is identical). Comparisons of ratios are essential to determine whether changes in a certain program is good value for money when compared with the benefits derived from resources expended on changes in other programs.

4.5.2 QALY League Tables

To facilitate the comparison, the health interventions can be ranked according to their CU ratios in a "League Table". *League Tables* are lists of health care programs or interventions ranked according to the CU ratios (from the lowest to the highest) of implementing these programs. Strictly

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1 The other methods are cost-benefit analysis (CBA) and cost-utility analysis (CUA). CBA is rarely used in health care because of the difficulty of having to place a dollar value on life/health, a defining characteristic of CBA. CEA and CUA sidestep this difficulty. For further information about CEA, see footnote 2.

2 In CEA, costs are often defined purely in terms of direct intervention costs. As such, CEA only allows the comparison of specific interventions where there is a single and common non-preference-based non-monetary measure of benefit; natural units such as lives saved, mortality rates and days symptom-free. This is rather restrictive because it is often necessary to compare different health outcomes and interventions which affect both the quantity and quality of life. Consequently, Cost-Utility Analysis (CUA) is used instead.

3 CEAs that use QALYs or DALYs as the unit of health loss or gain are, strictly speaking, CUAs.

speaking, QALY League Tables refer to incremental health service cost per extra QALY gained and answer the question, "Given the current funding in a particular program, what are the costs involved in purchasing additional QALYs by implementing more of the same intervention procedures or by implementing some new procedures?" The funding (resource allocation) decision rule is that changes in programs should be implemented on the rank order basis of ascending cost per QALY until the resources are exhausted. Generally, if the CU ratio is relatively low, this health intervention is a good candidate for implementation and if the ratio is relatively high, this intervention is a poor candidate for implementation[4].

Table 4.1 An Example of a QALY League Table

Condition	Intervention	Comparator	Incremental Cost/ utility ratio (C$)
Type 2 diabetes	Metformin	Conventional therapy	Intervention dominates
End stage renal disease	Home dialysis	Hospital dialysis	Intervention dominates
Alzheimer's disease	Donepezil	Placebo	Intervention dominates
Pneumococcal pneumonia	Vaccination	No vaccination	$532
Depression and anxiety	Cognitive behavioral therapy	Treatment as usual	$4,116
Dementia	Screening patient with haematomas	No screening	$36,291
Schizophrenia	Resperidone	Olanzapine	$62,874
Schizophrenia	Quetapine	Olanzapine	$914,203

Source: QALY League Table: UK-based Economic Evaluations Published 1997-2003. Available online at http://www.herc.ox.ac.uk/research/decisionmaking/QALYleaguetable

An example of a QALY League Table, with selected interventions from a variety of clinical areas, is shown in Table 4.1. Data in this table are obtained from a list from the United Kingdom with British pounds converted into Canadian dollars at the rate of C$1.95 per pound sterling. The conditions and interventions chosen are merely for illustrative purposes. As seen in Table 4.1, each line item lists a condition (e.g., depression and anxiety) and two interventions, a study intervention (cognitive behavioral therapy) and a comparator (treatment as usual). The top of the table shows three examples of interventions where costs are lower and

4 On the other hand, Birch and Gafni (2006) have argued that to produce maximum health gains from available resources, it may be necessary in some settings to adopt interventions with higher incremental CU ratios than the intervention with the lowest incremental CU ratio.

health outcomes (change in health utility) are better, i.e., the study intervention "dominates." In such cases, the study intervention is better on both cost and health outcome grounds and is automatically deemed to be better. For the remaining interventions, the CU ratio is positive: costs are higher but health outcomes are better. Therefore, a judgment call has to be made as to whether the additional QALYs gained are worth the extra costs. For example, vaccinating someone for pneumococcal pneumonia costs $532 for each additional QALY gained. This is relatively inexpensive by any yardstick. At the other extreme, the use of quetapine instead of olanzapine for schizophrenia patients results in an additional cost of $914,203 per added QALY which is relatively high by any standard.

4.5.3 The "Threshold Value"

But it is evident that we need a standard. In the early 1990s, Laupacis et al. (1992) posited a "threshold value" of $20,000 per QALY and if a CU ratio was below or equal to this, it was deemed to represent an acceptable investment. Over the years, the threshold value has been raised (Hirth et al., 2000; Birch and Gafni, 2006). While the use of a threshold value has provided a convenient benchmark with which to rank interventions on an "accept it" or "reject it" basis, there is no consensus regarding the appropriate dollar value per QALY gained. Hirth et al. (2000) determined the value per QALY gained from value-of-life estimates found in the literature. In fact, the threshold value is a short-hand way of measuring the "opportunity cost" of marginal resources used in an intervention. The opportunity cost is a measure of the value of resources in the next best use, the one that is not chosen before resources are exhausted.

As there are numerous ways of using resources, it is arbitrary in practice to determine what that highest valued alternative is. Resources that are not used in mental health can be released to the private sector, thus, lowering tax liabilities. Or they can be used in another health care initiative such as treating diabetes or expanding capacity in emergency care. They can also be used to build highways or to increase the quality of education. This being the case, a cost-utility analysis can be used to rank those interventions that are selected for inclusion in the analysis itself. Moving beyond the analysis and actually recommending those chosen interventions takes a step that, at our current state of knowledge, is arbitrary.

4.5.4 QALY League Tables in Policy Making

QALY League Tables can in principle enable a planner to judge relative priorities across different programs in health care (mental health services and general health services). But while the QALY League Table is a very attractive concept, its use for policy purposes has been limited and indeed, the league table has been criticized on a number of grounds.

First, the QALY itself is not widely used in economic evaluations of mental health where cost–effectiveness studies (CEAs where the measure of benefit

is not a QALY) and cost–comparison studies are more common. The reason being that, apart from measurement, data and valuation problems (see section 3.4.5 of Chapter 3), there remains the question of the extent to which QALYs gained are an adequate measure of mental health gains.

Second, the individual cost-utility analysis compares two (or more) distinct interventions. It is not always clear that one of these comparators is a clear representation of current practice. If one cannot readily relate one of the comparators to current practice, it will be difficult to predict the cost increments from moving from current practice to a more desirable practice.

Third, cost-utility analyses are often based on data from studies conducted on very specific populations or geographical areas. Hence, it is not appropriate to apply the results of cost-utility analyses conducted on one specific population or geographical area to other populations and areas unless the study conditions are reasonably similar and which is usually not the case.

Fourth, policy makers do not always think in terms of specific interventions when expanding services. Therefore, the CU estimates may not provide precise guidance when services are expanded. Moreover, Birch and Gafni (2006) have argued that although individual interventions may lead to unambiguous health gains for recipients, they could conceivably lead to a reduction in aggregate health effects from available resources (see footnote 4).

In sum, the QALY League Table, while conceptually very attractive, has not proven to be of aid to policy makers in practice.

4.5.5 Evaluation of costs and benefits of interventions

Determining the level of government spending on mental health, from an economic perspective, involves more than a comparison of CU ratios of alternative intervention options. As we have highlighted in the discussion of the government expenditure burden in section 3.5 of Chapter 3, much of government spending on mental health is on interventions designed to lower the economic (and disease) burden of mental illness. The relevant question is, "If government expenditure is raised, will there be offsetting benefits (reductions in costs of losses in productivity and health outcomes) commensurate with the additional costs?" If the answer is "yes", the additional government spending is justified.

Evaluation of costs and benefits of interventions provides an attractive framework with which to address the question of "How much should we spend?" To answer this question, we require not only cost estimates of interventions but also estimates of health gain or disease burden averted from these interventions. In recent years, some exploratory research has been conducted using this economic framework.

In the next section, we discuss an economic model that was developed to identify and link needs and service levels but, unlike the needs-based planning model

discussed earlier, this model goes further in specifying and costing the resources required and in estimating the aggregate health gain (or disease burden averted) from intervention or treatment. Essentially, it is a CUA with the CU ratio measured in terms of the cost per year lived with disability (YLD) averted.

4.5.6 Estimating the Health Gain from Intervention

Both the cost and the effectiveness of an intervention are also affected by the incidence and prevalence of the illness (and the probability of dying from it) and priority should go to health problems with large disease burden and for which cost-effective interventions are available. However, the most efficient distribution of health resources does not necessarily mean spending the most resources where the burden of disease is greatest but rather spending on interventions that offer the greatest possible gain in health (or averted disease burden) per additional public dollar spent (World Bank, 1993). The recent trend is to move toward a proactive bottom-up approach of deciding how best to reduce the disease burden by estimating the health gain (or averted burden) and cost-effectiveness that result from effective care (Andrews et al., 2007).

Tolkien II – The Australian Needs-based, Costed, Stepped-care Model

The method to estimate the likely health gain attributable to an intervention (for mental disorders) was developed by Andrews et al. (2000) and Sanderson et al. (2004) for Australia. The disease burden in the absence of treatment and the burden averted with *current, optimal (evidence-based) and ideal (stepped-care)* mix of treatments were estimated in terms of the years lived with disability (YLDs). The YLDs were calculated as the prevalence of the principal disorder weighted by the disability weighting associated with the disorder which changes (improves) with treatment[5].

For each mental disorder, the services used and treatments received by people with the disorder were listed, comorbidity was controlled for and the optimal level of coverage decided. The total costs of *current* and *optimal* treatment were calculated for each disorder. Expert opinion was then sought on the steps in *ideal or stepped-care treatment*. The steps specified the clinical treatment at each level of severity and the resources (clinical sessions, hospital inpatient time or community accommodation) required and finally the total cost of ideal treatment was calculated for each disorder. In ideal or stepped-care treatment, intensity of treatment was matched to condition severity based on evidence and expert opinion.

Dividing the total cost of current, minus optimal or ideal treatment of each disorder by the corresponding number of YLDs averted gave a cost-effectiveness or efficiency ratio in dollars per YLD averted (or gained) for each

5 Levels of severity are set one standard deviation apart and improvements due to treatment measured in standard deviation units (effect sizes) for each disorder are then linearly transformed into improvements in disability weighting units.

disorder. The results of an earlier analysis of 10 mental disorders (Andrews et al., 2004) showed that optimal (or evidence-based) treatment at optimal coverage (with 67% of those ill receiving treatment) could avert 28% of the burden at an average cost-effectiveness of AUS$16,000 per YLD averted. This is more than double the YLDs averted for current treatment at current coverage (with 40% of those ill receiving treatment) of 13% at an average cost-effectiveness of AUS$30,000. In the case of ideal stepped-care treatment, it is estimated that "a 30% increase in budget would treat 60% more people and produce a 90% increase in health gain." (Andrews et al., 2007, p. 7.)

The strength of this analysis is its ability to compare the cost-effectiveness of current and optimal/ideal treatment across various mental disorders. This can be an extremely powerful advocacy tool to promote value for money in mental health if the method can be replicated to enable comparison with the cost-effectiveness of optimal treatment for physical disorders.

4.5.7 The Equity Criterion in Priority Setting

Cost-effectiveness analysis enables us to identify the efficient allocation of health resources (the greatest gain for the available resources) but it is insufficient for overall priority setting in the health system. For the broader process of priority setting in health, the cost-effectiveness (benefits) of certain health interventions (including mental health interventions) needs to be weighed against other objectives or goals of the health system such as equity in the distribution of the benefits (Musgrove, 1999; WHO, 2006).

Although equity considerations are not our main concern here, we will briefly mention its importance in priority setting. *Equity* (or fairness) refers to both *horizontal equity* (equal level of funding for equal level of need) and *vertical equity* (higher level of funding for higher level of need). It is not only with respect to the relative severity of the different disorders (physical and mental) that the concept of equity is applicable. We are also concerned about equity in geographical and financial access to all health services including mental health.

The framework set out for the provinces and territories in the Canada Health Act provides for every Canadian resident equal access to medically necessary mental health services provided in general hospitals and by physicians regardless of the person's demographic and socioeconomic background or place of residence. It should be noted that the Act stresses the equality of (or same) access to mental health care services for persons with the same level of needs. This is horizontal equity which is to be complemented by vertical equity considerations to account for the inequality in health care needs and utilization of different population sub-groups and across different geographical areas.

Chapter 5 – How much we should spend on mental health

5.1 Introduction

In the previous chapter, we presented four different approaches used to address the issue of allocating resources to mental health. One of these approaches, the Behavioral Approach, focused on the factors which enable advocates of mental health spending to increase their budgets. The other three focused on the question, "How much should we to spend?" Currently, no one approach is sufficiently developed to provide a definitive answer. All four approaches require much more information than is currently available.

In this chapter we use two of the approaches to provide alternative rough estimates of how much we should spend. The first approach is the "Benchmark" Approach which identifies a desired spending ratio and compares its value with a standard or "benchmark" value for this ratio in similar countries. For the second approach, the Budgeting Approach, we adopted the method used by the Toronto-Peel Mental Health Implementation Task Force (2002) to estimate the additional resources required to shift the system from primarily inpatient care to more community-based care and to provide services to the currently untreated. The estimate was based on a specific set of assumptions and methods and it should be noted that given the current degree of uncertainty other assumptions and methods may be equally valid and will change the estimate.

5.2 The "Benchmark" Approach

As mentioned earlier, the "Benchmark" approach identifies a spending ratio and "suggests" a benchmark value for comparison across similar countries.

One of the key spending ratios used in mental health is the ratio of public spending on mental health to total public spending on health. As mentioned in Chapter 4, it has been suggested that 5% is considered the minimum acceptable value (Mental Health Europe, 2004). In Canada, government spending on mental health in Fiscal Year 2003-04 was 6.1% of total government spending on health of $91.4 billion or about $5.6 billion (Jacobs et al., 2008). If we set a target of 7%, which is still on the low side, the amount of government spending required would be $6.4 billion, an increase of $0.8 billion. If we set a target of 8%, the amount of government spending required would be $7.3 billion, an increase of $1.7 billion. And if the target is set at 12% as in the United Kingdom (see Table 3.5 of Chapter 3), government spending would increase by $5.4 billion to about $11 billion.

As can be surmised from our discussion in section 4.2 of Chapter 4, there is no clear justification for a value of 7%, 8% or even 12%, though these values seem more in line with the level of public spending on mental health in most European countries. Thus, the "Benchmark" Approach does provide an answer to the question, "How much should we to spend?" but it is by no means conclusive.

5.3 The Budgeting Approach

The Budgeting Approach estimates the costs of introducing desired levels of service increases to a community or population.

A key recommendation of the Romanow, Kirby and Mazankowski Reports for mental health system reform is the integration of the mental health and addiction treatment service delivery system into the general health care system[1]. A blueprint of this approach to mental health reform is outlined in the 2002 Mental Health Action Plan for Toronto and Peel[2] and the Budgeting Approach was used to estimate the additional mental health dollars required to effect the change in the Toronto-Peel region.

5.3.1 Estimate by the Mental Health Action Plan for Toronto and Peel

The *Ontario needs-based planning model*, developed by the Health Systems Research and Consulting Unit (Durbin et al., 2001), was adopted by the Implementation Task Force for the Mental Health Action Plan for Toronto and Peel (*The Time Has Come: Make It Happen*) to estimate the additional community capacity and resources required to shift from an inpatient-based to a community-based system of care in the Toronto-Peel region. As mentioned in Chapter 3, the Ontario model had recommended that only 10% of existing inpatients should remain in the hospital. This is consistent with the target funding ratio of community-based services and supports to inpatient services of 60:40 for Toronto and Peel (*The Time Has Come: Make It Happen*, p.86). These resource needs were translated into budgetary changes and factored into the recommended funding increases over a 5-year period.

The Mental Health Action Plan for Toronto-Peel identified two sets of costs: the *costs of the new community-based system* of care and the *costs of the old inpatient-based system* of care; the difference between the two being the additional mental health dollars required to shift from the old to the new system. The authors of the report assumed that per person service costs of the old and new systems are the same. The recommended $245 million in new investment (excluding capital funding) over the 5-year period represented an increase of 73% of the budget in 2002. The new funding amount was netted of identified opportunities to redirect existing capacity to best practice approaches. In addition, it was estimated that another $110 million in capital funding was required over the 5-year period to fund housing and residential treatment facilities. Based on the new funding amount required for Toronto and Peel, the Standing Senate Committee extrapolated the total new investment required for Canada to be $2.148 billion (Kirby Final Report, p. 77).

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1 The "Romanow Report" (*Building on Values*) and the "Kirby Report" (*Mental Health, Mental Illness and Addiction*) were released in 2002. In May 2006, the Final Kirby Report (*Out of the Shadows at Last: Highlights and Recommendations*) was released. At the provincial level, Alberta's "Mazankowski Report" (*A Framework for Reform*) was also released in 2002 and the 2004 Provincial Mental Health Plan for Alberta (*Advancing the Mental Health Agenda*) was an outcome of this Report.

2 The Action Plan, entitled *The Time Has Come: Make It Happen*, was guided by the Ontario Government's 1999 landmark policy document, *Making It Happen*.

5.4 Why Do We Need More Mental Health Dollars?

Arising from the various reform proposals, work is now underway in several provinces including Alberta to pave the way to deliver mental health and addiction services in community settings. A key reform issue is that much of existing mental health resources which are being used for in-patient institutional care could be re-oriented to community-based mental health services (*Advancing the Mental Health Agenda*, 2004, p. 5). However, a shift from inpatient to community care will require a substantial investment in community-based services.

Secondly, the persistent stigma associated with mental illness has created significant access barriers for many persons with mental illness who could benefit from effective treatment. The 2004 Provincial Mental Health Plan for Alberta (*Advancing the Mental Health Agenda*) reported that nearly half of the people with mental illness do not seek treatment. This estimate of the proportion of persons who are un-served is consistent with the estimate of around 1.6 million Canadians un-treated (out of a total of 3.5 million Canadians with mental illness) by Lim et al. (2008).

Under-treatment may have significant ripple effects across the broader health care system as well as other publicly-funded services such as education, social services and the criminal justice system. Studies have indicated that investments in community-based services and supports (such as safe and supportive housing) can reduce other costs such as those for health care (for example, through reduced Emergency Room use and hospital stays) as well as impacting levels of crime, unemployment, poverty and homelessness (*The Time Has Come: Make It Happen*, 2002, p. vi; *Advancing the Mental Health Agenda*, 2004, p. 32). Additional mental health dollars will therefore be required to fund future capacity requirements to treat the currently un-served.

In the next section, we follow the approach used by the Toronto-Peel Mental Health Implementation Task Force to estimate the additional resources required to shift to more community-based care. In addition, we will also estimate the additional resources required to provide services to the currently untreated. The estimates from both will provide us with a rough estimate of how much more mental health dollars are required in Canada.

5.5 Assumptions for Estimating How Much More We Need to Spend Using the Budgeting Approach

Resources allocated to mental health should reflect client needs and the burden of illness. Two groups of clients are considered: those currently served in hospital inpatient units and those currently not receiving services. The two modes of care are the community mode (the "new" service delivery mode) and the hospital inpatient mode (the "old" service delivery mode). The strategy is to shift those who can be cared for in the new mode out of the old mode of care. Thus, the additional resources required in the new system are to enable (1) services to be

shifted from a hospital in-patient base to a community base for clients currently treated in hospital inpatient units and (2) investment in new capacity to serve the currently untreated. We discuss the assumptions for each group in turn.

Clients Currently Served in Hospital Inpatient Units

- Clients who can receive care in the community will be shifted from the hospital inpatient mode to the community mode. Following the Mental Health Action Plan for Toronto and Peel, the shift is reflected in a movement from the current funding ratio of community-based services to hospital inpatient-based services of 40:60 to a desired ratio of 60:40.
- Care patterns across the provinces are assumed to be the same as that in the Toronto-Peel region.
- Prices and the population are assumed to be constant.
- Resources required to achieve the shift to community-based services are *new resources* and resources currently used for hospital inpatient services are *old resources*.
  - The service cost per person in the old and new modes of care is assumed to be the same. This service cost amounting to an average of $1,806 per person is computed from the base funding amount of $5,550.9 million estimated in Jacobs et al. (2008) for all Canadian provinces in Fiscal Year 2003-04 and an estimate of the population treated for mental illness in 2003 of 3,074,278 persons. The treated population comprises 1,877,163 persons aged 20 years and above estimated in Lim et al. (2008) and 1,197,115 children and youth (0-19 years) with mental disorders estimated in Kirby Report 1 (pp. 86-87) and adjusted for population growth.
  - New resources (mental health services and supports) for community care will require facilities and trained personnel (mental health professionals and workers). For the purposes of our calculations here, it is assumed that resources for hospital care and community care are sector-specific and all additional resources for community care are new resources, i.e., the old resources for hospital care cannot automatically be used in community care settings. In addition, training of new community-based personnel will require additional costs, and the difference in wages between hospital and community staff may need to be adjusted to attract people into the new positions, all of which are not factored into the new resources here. Thus, our estimate of the *new costs* is likely to be understated.
  - The transition (and increased funding) is assumed to take effect over a five-year period. The transition time frame is dependent on the "elasticity" of supply of services. If the supply of community mental health personnel is relatively "inelastic", the time frame will have to be extended to ensure that the increased funding will lead to an increase in community services instead of simply driving up wages and prices of services. Thus, the new resources are assumed to increase at the rate of 10% per year of the base funding amount of $5,550.9 million over the five-year period.

- Old resources include beds and nursing personnel. As stated above, these cannot be shifted automatically to the new service delivery mode although we acknowledge that some inpatient resources can be converted into settings where community care can be provided. We assume that they will be put to other uses ultimately but we do not specify what these other services are because there are many alternative uses within health care for these resources. Moreover, we do not treat old resources to be released in the future as "savings" in the transition period because these resources are still being employed while new resources are being developed. However, old resources can be reallocated to other uses after the transition and only then can these released resources be considered as "savings" although the benefits may accrue elsewhere.

Currently Untreated Population

- Resources required to provide services to persons who are the currently untreated are also new resources.
  - The currently untreated population of 1,605,000 persons in 2003 is based on the estimate in Lim et al. (2008).
  - We assume that the illness severity of the untreated is 20% lower than that of the treated and the expected service cost per untreated person is four-fifths that of a treated person or $1,445 per person. This assumption is based on the reasoning that the untreated may be cases of lower security.
  - The elasticity of supply of new community resources is assumed to be low and so the introduction of new services must be staggered over a number of years. Thus, we assume that the coverage of the untreated increases at the rate of 10% per year, with the result that 50% of the untreated will be served by the end of the 5-year period.

5.6 A Rough Estimate of How Much More We Need to Spend

Table 5.1 New Funding Required Per Year

	Year 1	Year 2	Year 3	Year 4	Year 5
Base funding (1)	5,550.9	6,338.0	7,357.0	8,608.0	10,090.9
Incremental capacity increases for currently treated @ 10% per year (2)	555.1	555.1	555.1	555.1	555.1
Incremental capacity increases for currently untreated; coverage increasing @ 10% per year (3)	232.0	463.9	695.9	927.8	1,159.8
New funding required per year (4=2+3)	787.1	1,019.0	1,251.0	1,482.9	1,714.9
Total mental health funding per year (5=1+4)	6,338.0	7,357.0	8,608.0	10,090.9	11,805.8

The estimates of the new funding required each year are shown in Table 5.1. A total of $6.3 billion of new mental health dollars is required (excluding capital funding) over 5 years; $2.8 billion to fund the shift to community care and another $3.5 billion to provide services for 50% of the currently untreated. Our estimate for the cost of funding the transition to community care of $2.8 billion is consistent with the "estimate" of the Standing Senate Committee of about $2.2 billion for Canada (Kirby Final Report, p. 77) which was extrapolated from the estimate for Toronto and Peel. The Mental Health Action Plan for Toronto and Peel did not provide for the treatment of the currently untreated population with mental illness. If the current system remains the same, with no increases in capacity for community care and to provide services to those who are untreated, the base funding would remain at $5.6 billion and not $11.8 billion at the end of the 5-year period.

Our estimates depend on the value of the per person service cost. We have used $1,806 for the treated population and $1,445 for the untreated population. If these per person service costs were 10% higher or lower, the additional funding required would be $7 billion and $5.7 billion respectively. The estimates would also be higher if we increased the coverage of those who are currently untreated. However, increasing funding by a greater amount may simply drive up wages and prices of services instead of increasing the supply of services.

We should also reiterate that we have assumed that the old resources would not appear as "savings". This is because we wanted to estimate the "up-front" investment in mental health. Over time, as the old resources are retired from their current employment, they should be redeployed to other uses in or out of the health care system. Only then will "savings" be realized but this will take some years to happen.

5.7 Conclusion

As we have indicated in this monograph, there are several approaches to determine how much we should spend on mental health. We have used two – the Benchmark Approach and the Budgeting Approach, along with a set of assumptions, to provide an illustrative answer.

Using the Benchmark Approach, we estimate that, starting with a base of $5.6 billion, we should spend $6.4 billion annually to bring the ratio to 7% of total health spending. If we had a target of 8%, mental health spending should increase to $7.3 billion annually. Over 5 years, an increased ratio of 7% would result in an increase in government spending from $28 billion to $32 billion.

Using the Budgeting Approach, we estimated that about $6.3 billion in additional resources are required to shift services to a community base for those currently treated as hospital inpatients and to provide services to 50% of the currently untreated. This implies that the amount we should spend on mental health services will rise from $5.6 billion to $11.8 billion annually at the

end of 5 years, more than doubling what we are currently spending. Moreover, the proposed mental health spending budget of $11.8 billion will increase the spending ratio (under the "Benchmark" Approach) from 6.1% of total government spending on health to 12.9%, a value on the high end and which is just slightly behind that of Luxembourg at 13%.

Our analysis is based on the Toronto-Peel Report (for delivering care in community settings) and on specific assumptions (for providing services to the un-served). If circumstances in the other provinces are significantly different, our estimate will be different. Nevertheless, we conclude that the additional costs are substantial.

As we have indicated, each approach has its virtues and drawbacks. And as we have shown there is no single answer to the question, "How much should we spend on mental health?" There are several, depending on the approach taken. But laying out the data, methods and assumptions allows one to approach the answers more objectively.

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Notes

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How much should we spend on mental health? provides an overview of the various approaches that have been used to answer the question of health spending, applied to the mental health context. Estimates using several of the approaches are provided.

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