MENTAL HEALTH AND SOCIAL SERVICES

EXPENDITURES IN ALBERTA

by

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ABSTRACT

The Commission on the Future of Health Care in Canada (the "Romonow Report") reported that in 2002 "mental health has often been described as one of the 'orphan children' of medicare. On August 31, 2007 Prime Minister Harper launched the Mental Health Commission. The Commission is a nonprofit organization created to focus attention on mental health and social outcomes of people living with mental illness. It is essential that we have knowledge of costs for mental health care services in Canada if the Commission is to fully achieve its mandate. Currently, we have only a very cursory indication of how much we spend on mental health services in Canada. Further, there is no well-established methodology of measuring mental health costs, in Canada. The objectives of this thesis are to examine current spending and investment in mental health in Alberta using a bottom-up approach. The focus is on two types of spending—mental health services and social services. Data compiled in this thesis provide a new perspective of mental health economics in Alberta:

- Alberta spent roughly $573 million on mental health services in 2002, about 8.4% of Alberta Health & Wellness expenditures. The breakdown of these expenditures indicates that hospitalization makes up 43% of the total, physician services make up 22% and community mental health clinics 16%.
- Over a six year period, 1999/2000 to 2004/2005, mental health expenditures increased continually, but the ratio of mental health expenditures to total health care expenditures decreased after mental health services were handed over to the regions on April 1, 2003.
- Assured Income for the Severely Handicapped (ASIH) payments for the mentally handicapped are almost one-half of the cost of provincial mental health services, while mental health disability payments through the Canada Pension Plan amount to about 16 % of payments for provincial mental health services for the relevant age groups.

This study provides a concrete way of measuring mental health parity for Canada, a concept usually presented in a qualitative context. My results indicate that parity

between mental health and general health spending, already a concern, declined when mental health was taken over by the regions.

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Finally, I close with the most important acknowledgement of all: "I will instruct you and guide you along the best pathway for your life; I will advise you and watch your progress." Psalm 32:8 LB.

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CHAPTER 1: INTRODUCTION

Historical Background

Canada's Royal Commission on Health Services (Emmett M. Hall, Chair, 1964) reported that "[o]f all the problems presented before the Commission, that which reflects the greatest public concern, apart from the financing of health services generally, is mental illness" and proposed that "mental illness was to be given the same status as physical illness in terms of the organization and provision of services" (Canada, 1964, p.21). One of the outcomes from the 1964 Royal Commission Report was extensive deinstitutionalization of mental health patients throughout Canada. According to internal statistics from the Alberta Mental Health Board, the number of inpatients in all psychiatric institutions in Alberta reported at year-end was a high of 5,500 patients in 1965 and a low of approximately 1,000 in 1979.

Thirty-eight years later, after the Royal Commission on Health Services, the Commission on the Future of Health Care in Canada (the "Romonow Report") reported that "mental health has often been described as one of the 'orphan children' of medicare". The Commission consistently heard that it is time to deal with this issue and bring mental health into the mainstream of public health care. The Commission Report (Commission on the Future of Health Care in Canada, 2002) went on to state that:

> " recent history has shown that the trend towards treating people with mental illnesses in their own communities rather than in institutions has not been accompanied by sufficient resources. Many mental health patients were discharged with insufficient resources and networks to support their ability to live at home. Often, to be eligible for home care, a person had to have a physical disability or difficulties with activities of daily living". (p. 179)

and recommended that "home mental health case management and intervention services should immediately be included in the scope of medically necessary services covered under the Canada Health Act" (p. 176). Consultants for the report estimated the total annual costs of behavior management in home care to be $568,084,478.

The most recent restructuring of the mental health system in Alberta started in 2002 following the release of *"A Framework for Reform Report of the Premier's Advisory Council on Health"* (Alberta Premier's Advisory Council on Health, 2001). It is often referred to as the Mazakoswki Report because Mr. D. Mazankowski was the Chair. The report recommended that mental health services should be "integrate[d] into the work of the regional health authorities" and that "clear guidelines should be in place to ensure that mental health services receive a high priority in the regions and that spending on mental health services is maintained and enhanced" (p. 52).

On April 1, 2003, the nine regional health authorities (RHAs) assumed responsibility for selected mental health programs and facilities previously operated by the Alberta Mental Health Board (AMHB). One of the key principles of the transfer was that the process would not impact or disrupt patients and services in any way.

In the 2005-06 Annual Report of the Auditor General of Alberta (2006) it was reported:

> "The basis for allocating the mental health funding to the RHAs is inconsistent with the population-based methodology. Since 2003-2004, HF&E [Health Funding and Economics unit of Alberta Health] has allocated mental health funding based on the initial historical transfer amount adjusted for overall Global Funding growth rather than on population demographic profiles. The Department has indicated that they have plans to revise the basis of allocation to be more consistent with the Global Funding methodology." (153)

In May 2006, the final report of the Standing Senate Committee on Social Affairs, Science, and Technology entitled *"Out of the Shadows At Last: Transforming Mental Health, Mental Illness, and Addiction Services in Canada"* (Canada, Standing Senate Committee on Social Affairs, Science and Technology, 2006) was released. This landmark report is the most significant national report on mental health since the 1964 report of the Royal Commission on Health Services. The Senate Report highlighted the need for an investment by the federal government of $536 million dollars per year for 10 years, implying a situation of under- funding. The report concludes:

> "the Committee believes that implementing the recommendations ...together with all those made throughout this report—will allow, for the first time, national resources to be channeled into fostering the mental health of Canadians. They will also establish a solid basis for maintaining a national focus on mental health issues and pave the way for the further development of a national approach to mental health, mental illness, and addiction in Canada." ((Canada, Standing Senate Committee on Social Affairs, Science and Technology, 2006, p. 477)

The Report recommended that a Mental Health Commission be established for Canada.

Literature on the population cost of mental illness

A population cost analysis is a record of the total expenditures incurred by payers, or the total costs incurred by the providers, for all specified services provided to a population. The population can be an entire population in a jurisdiction, or all those with a specific medical condition. The important thing is that all relevant persons are covered by the analysis.

Tarricone (2006) describes two types of population cost analysis, "top down" and "bottom up" (p.54). Using the top down category, the service – related costs of all payers or providers are summed up; there is no direct link of costs to individual persons, though in more complete studies the number of persons might be measured so that a simple average cost per person might be calculated. Using the bottom up approach, all individual services that are utilized are linked to individual patients and when a cost is attached and the service costs are summed up, there is a cost record for each person. In a bottom up analysis, one can derive a cost for the entire population as well as subdivide the costs by groups of persons. The latter is important for policy purposes, as one can develop cost estimated for policy changes which impact on specific portions of the population.

Tarracone (2006) conducted a cost methods review, and stated a strong preference for costs using the bottom up methods (p.61). While Tarracone provides a strong argument,

there are times when the information that is available will not support a bottom up analysis. Whether one uses top down or bottom up will depend on data availability as well as study purpose.

The analysis in this thesis is based on data available in Alberta and Canada. The goal is to develop cost estimates for policy use. A literature review was conducted. This included a search of population based studies that addressed the cost of mental illness in Canada. The search was conducted with PUBMED for all references pertaining to the cost of mental illness in Canada. A total of 390 references were found. The titles of these references were scanned for subjects related to mental illness cost studies in Canada. Five studies were found. The abstracts revealed three that were population–based mental illness studies. These were Goeree, Farahati, Burke, et al. (2004), Goeree, O'Brian, Goering (1999), and Stephens and Joubert (2001).

PUBMED was again searched for all articles pertaining to Canada that were related to Goree, Farahati, Burke, et al. (2005) and Stephens & Joubert (2001). There were 211 articles related to Goeree, Farahati, Burke, et al. (2005) and 30 articles relating to Stephens and Joubert (2001). The titles were searched for any potential population–based cost of mental illness studies for Canada. One additional study appeared which was a national study on the cost of illness in Canada (Moore, Mao, Zhang, and Clark,1997); this study was related to a public document which provided further details.

In order to determine what methods were available for a population-based analysis of mental health, a search was conducted for *population-based* health costing studies for all diseases in Canada and, more specifically, on population-based methods. Again, PUBMED was searched for "Cost of illness in Canada," - 377 references were found. A review of the titles indicated studies in diabetes (Dawson, Gomes, Gerstein, Blanchard & Kahler, 2002) and arthritis (Coyte, Asche, Croxford, & Chan, 1998) as well as the previous mentioned Mental Health studies. An additional reference on a diabetes based study for Saskatchewan (Simpson, Corabian, Jacobs, & Johnson, 2003) was found and an updated version of the Canadian cost of illness study (Health Canada, 2002) through an internet search.

Based on these searches, four Canadian population–based cost of illness studies on mental illness were found; two on schizophrenia (Goeree et al., 2004; Goeree et al., 1999), and one on general mental illness (Stephens & Joubert, 2001). The fourth, Health Canada publication, *Economic Burden of Illness in Canada* (EBIC, 1998), was a general study of all illnesses, but did have a breakdown of illness by categories, including mental illness.

As a secondary analysis, I sought comparable population-based studies on the cost of mental illness from other countries. I chose countries for which English was a first language so that additional documentation would be readily available. Using an informal internet search, I identified documents entitled "What's it worth? The social and economic costs of mental health problems in Scotland" (Sainsbury Centre for Mental Health, 2005), "The economic and social costs of mental illness in England" (Sainsbury Centre for Mental Health, 2003b), "Counting the cost: The economic and social costs of mental illness in Northern Ireland (Sainsbury Centre for Mental Health, 2003a), "Australian expenditure on mental disorders in comparison with expenditure in other countries" (Australian Institute for Health and Welfare, 2003), and the "National Expenditures for Mental Health Services and Substance Abuse Treatment" (U.S. Department of Health and Human Services, 2005).

From the four Canadian studies, the following information was abstracted: data source, perspective, identification of which direct costs were included, and identification of which indirect costs were included. I abstracted the same information for the international studies to allow a broad comparison of Canadian studies in an international light.

The abstracting results are shown in Table 1.1. The two studies by Goeree, et al. (2005, 1999); which were similar in approach, provided a top down approach and gathered mental health services for physician and inpatient services from patient records, but the records were aggregated and were not linked to persons. The Stephens and Joubert study also included data on lost output, but it excluded social payments.

The Health Canada study titled the Economic *Burden of Illness in Canada 1998 (Health Canada, 2002)* also took a societal perspective, but for government expenditures on mental health services EBIC, 1998 aggregated hospital and physician services from patient records. However, as it did not identify individual patient costs, this can also be considered as a top down study. EBIC also included pharmaceutical and indirect costs, but it excluded outpatient and community mental health services.

Stephens and Joubert (2001) used the same direct costs as EBIC, 1998 and their contribution was to incorporate disability days, which was added to the EBIC, 1998 estimates. Stephens and Joubert used the Canadian Community Health Survey which was a population-based household survey to estimate the personal time costs for persons with mental health. Costs for other services were top down, in line with the EBIC, 1998 estimates.

In summary, with regard to Canadian studies, with the exception of the indirect costs estimated by Stephens and Joubert (2001), there was no study which developed cost estimates using a bottom up framework. In addition, all Canadian studies have focused on resource use, and have excluded transfer payments (see below for an elaboration of this point).

With regard to the international studies, the three studies from the United Kingdom (Sainsbury Centre for Mental Health, 2003a, 2003b, 2005) were conducted from a societal perspective. These studies were very broad and included administrative costs for social payments as well as mental health services, in addition to lost productivity costs. In other words, these studies took a resource use perspective. If one took a government perspective, one would include payments for social assistance to the mentally ill population, and would exclude productivity and wage losses.

The Australian and United States studies both took a health resource perspective. Both were top down, in that they did not analyze data from a person perspective, and, as well, both excluded indirect (loss of productivity) costs. Neither of these studies analyzed per person costs. In addition, they did not include transfer payments, which would be of interest to anyone conducting an analysis from a public payer perspective.

Table 1.1: Literature Search for Population-Based Mental Health Costs and Mental Health Economic Burdens for Canada, United Kingdom, United States and Australia

Reference	Source of Data	Perspective	Direct Costs Included	Indirect Cost Included	Comments
Stephens and Joubert — The Economic Burden of Mental Health Problems in Canada (2001)	1996/97 NPHS biennial survey conducted by Statistics Canada.	Societal	Direct costs comprising hospital care, other institutional care, physician care and prescription medications	Indirect costs comprising short-term sick days, long-term disability and premature death	Excluded outpatient care
Health Canada — Economic Burden of Illness in Canada (1998)	Provincial databases	Provincial governments and some work loss	Hospital Care, Drug, Physician care, other institutions, and additional direct health expenditures	Mortality costs, morbidity costs due to long-term and/or short-term disability	Excluded outpatient care
Goeree, O'Brien, Goering, Blackhouse, PharmD, Rhodes and Watson - The Economic Burden of Schizophrenia in Canada (1999)	National and provincial databases	Societal	Direct costs including outpatient care and social welfare programs	Value of production lost due to premature mortality and production lost due to morbidity	Estimates did not use person-level data
The Sainsbury Centre for Mental Health — What's it Worth? The Social and Economic Costs of Mental Health Problems in Scotland (2005)	Government of Scotland's databases	Societal perspective	Psychiatric inpatient, outpatient and day care services, community psychiatric teams, family doctors, drug prescriptions and local health authority costs for mental health services	The costs of output losses for sickness absence, worklessness, unpaid work and premature mortality	Measure may be too broad as it includes social assistance payments that are transfers, not payments for resources
The Sainsbury Centre for Mental Health — The economic and social costs of mental illness in England Policy paper 3 (2003)	Government of England's databases	Societal perspective	NHS services, local authority social services, other public sector costs, private expenditure on services and informal care	The costs of output losses for sickness absence, non-employment, unpaid work and premature mortality	Measure may be too broad as it includes social assistance payments that are transfers, not payments for resources

Table 1.1: Literature Search for Population-Based Mental Health Costs and Mental Health Economic Burdens for Canada, United Kingdom, United States and Australia (cont'd)

Type of Resource	Source of Data	Perspective	Results Direct Costs	Results Indirect Cost	Results Other
The Sainsbury Centre for Mental Health- Counting the Cost: The Economic and Social Costs of Mental Illness in Northern Ireland (2003)	Government of Northern Ireland's databases	Societal perspective	Hospital services, community health services, personal social services, GP consultations, and drug prescriptions	The costs of output losses for sickness absence, non-employment, unpaid work and premature mortality	Measure may be too broad as it includes social assistance payments that are transfers, not payments for resources
Australian Institute of Health and Welfare — Australian expenditure on mental disorders in comparison with expenditure in other countries (2003)	Government of Australia's, Netherlands, United States, Canada, Spain and Sweden's databases and reports	Health Resources perspective	Costs were taken from hospitals, nursing homes, medical services, pharmaceuticals and other health services sectors	No indirect costs reported	Methodological differences between expenditure estimates from the various countries is noted in the report
U.S. Department of Health and Human Services — National Expenditures for Mental Health Services and Substance Abuse Treatment 1991-2001 (2005)	National data sources from various government agencies and private organizations	Health Resources perspective	Costs were by provider and site of service. These included general, non-specialty hospitals, general hospital, non-specialty care, specialty hospitals, all physicians, psychiatrists, non-psychiatric physicians, and other professionals	No indirect costs reported	Includes for substance abuse treatment

Objective of the Thesis

The statements referred to at the beginning of this chapter underscore the need for a closer examination of the economics of current spending and investment in mental health in Alberta. The statements also raise questions as to the equity, fairness, and parity of

mental health funding compared to funding for physical illness, without providing any documentation to substantiate these concepts.

The perspective of an economic study depends on the purpose of that study. For example, the economic evaluation guidelines developed by the Canadian Agency for Drugs and Technologies in Health (CADTH) call for the use of two perspectives: a societal and a government perspective (CADTH, 2006). What has become known as the societal perspective, the most widely used in economics, is used when the investigator wants to assess different ways that *economic resources* (labor, supplies, information, etc.) can be used.

There are other types of studies with different purposes, focusing on the government viewpoint. The role of *transfer payments* (payments that are unrelated to resource use, such as social assistance) enter into these studies (CADTH, 2006). Governments are interested in economic studies to assess the budgetary impact of policies and strategies, for example strategies to prevent mental illness. In these cases, the policy maker will want to know the full budgetary impact of these strategies, including their impacts on transfer payments.

In addition, some aspects of equity call for a broader view of costs than those simply arising from the use of resources. It is well known that mental illness is accompanied by a loss of income due to work loss. Government transfer payments (for example, Assured Income for the Severely Handicapped in Alberta or Canada Pension Plan disability benefits) replace some of these losses, reducing the net economic loss due to mental illness. A policymaker who is interested in the loss of work and income of persons with mental illness should also be interested in the degree to which transfer payments offset these productivity losses.

An economic study can thus include costs due to the use of physical resources as well as those resulting from transfer payments. In the area of mental health, both of these are important, as stressed by CADTH in their third edition of the economic guidelines (CADTH, 2006). As found in the literature review, virtually all mental illness cost of illness studies took an economic resources perspective. The perspective taken in this

study is different with a focus on government payments, which include payments for economic resources and transfer payments.

The purpose of this thesis is to develop a measure of *government expenditures* on mental health services in Alberta which can be used by policy makers. In this thesis, I focus on two types of spending: (1) mental health services within the Department of Alberta Health & Wellness, and (2) social services costs within the Department of Alberta Seniors and Community Supports and the federal government's Canada Pension Plan – disability payments. I also use this measure to provide an indicator of the relative spending on mental health compared to spending on other health care services—a bellwether measure of a nation's commitment to mental health.

Prior to commencing with three related studies in this thesis, a framework for the scope of mental health services needed to be determined. A costing analysis of health and social services, including, firstly, enumerating the various types of services and, secondly, valuing each type of service would be required. The first framework report developed by Johnson, Kuhlmann, and the EPCAT group (2000), *"The European Service Mapping Schedule (ESMS)"*, as a means of describing and classifying the mental health services in local catchments. Secondly, the description by the Thornicroft and Tansella (2003) was also reviewed. Lastly, the scope of mental health services as described in Alberta Mental Health Board's (2004) *"Advancing the Mental Health Agenda: A Provincial Mental Health Plan for Alberta"* was reviewed (pp. 23-25). Upon completion of the review of the three frameworks it was decided to adopt Alberta Mental Health Board's framework since this study is focused on service categories relevant to the Province of Alberta. Details of the AMHB framework are included in my costing analysis. The costing categories are reclassified in Table 1.2 and Table 1.3, in conjunction with the reporting framework that I used in Studies 1 and 2.

Table 1.2: Scope of Mental Health Services

Mental Health Services	Description	Included/Excluded	Examples of Services
Prevention, Promotion and Protection Services	Activities designed to enhance health, human services and a sense of well-being. They may be aimed at children, youth, adults, seniors, families, groups at risk, and the general population; and they may be delivered independently or as a component of other mental health services.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Initiatives targeted at positively impacting the determinants of health ▪ Routine public health screening for neurological deficits and risks ▪ Public awareness and education programs targeted on mental health ▪ Screening for at risk populations ▪ Youth resiliency programs ▪ Workplace wellness programs ▪ Suicide prevention programs ▪ Programs to build self-esteem in schools ▪ Eating disorders prevention programs ▪ Parenting programs ▪ Consumer advocacy and support groups
Early Detection & Intervention Services	Activities aimed at the identification and timely provision of appropriate services for individuals, families and groups with an identifiable but undetected mental dysfunction, disorder or disease.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Primary care physician services ▪ The Student Health Initiative ▪ School counseling programs ▪ Early psychosis detection clinics ▪ Post-natal depression screening for mothers ▪ Occupational Health and Safety ▪ Crisis and distress lines ▪ Public Health and Home Care screening for mental health problems ▪ Identification and support for families in distress ▪ Consumer advocacy and support groups
Acute Care & Treatment	Assessment and treatment services for "unstable" clients with acute mental illnesses.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Inpatient psychiatric hospital wards for children, youth, adults and geriatric clients ▪ Outpatient day hospitals\ ▪ Psychiatric observation short stay units ▪ Community mental health services

Table 1.2: Scope of Mental Health Services (cont'd)

Mental Health Services	Description	Included/Excluded	Examples of Services
Crisis Intervention	A range of services focused on providing timely, coordinated responses for people experiencing a mental health crisis where immediate intervention is required.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Emergency room mental health services ▪ Hospital-based psychiatric emergency teams ▪ Community response teams; mobile psychiatric assessment teams ▪ Crisis and distress lines ▪ Programs offered by consumer advocacy and support groups ▪ Primary care physicians ▪ On-call child welfare services ▪ Short stay beds – 24 hour observation beds ▪ Threat assessment teams ▪ Mental Health Diversion Initiative ▪ Treatment in secure environments **Excluded** ▪ Law enforcement services
Consultation, Assessment, Care Planning, Treatment & Follow-up	A range of community-based, client-centered services that include: inter-agency consultation to assess client needs and develop an appropriate integrated care plan, including service delivery responsibilities and/or appropriate referral; the delivery of the required treatment/care; and follow-up.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Client-based care plans developed by inter-agency/inter-ministerial teams ▪ Community mental health services ▪ Primary care service providers ▪ Assertive Community Treatment (ACT) ▪ Services provided by consumer advocacy and support groups ▪ Outreach programs ▪ Geriatric assessment teams ▪ Programs for children with disabilities and complex needs **Excluded** ▪ Home Care ▪ Delivery of mental health services in long-term care

Table 1.2: Scope of Mental Health Services (cont'd)

Mental Health Services	Description	Included/Excluded	Examples of Services
Specialized Treatment	Highly specialized services targeted at meeting the needs of clients with specific disorders or highly complex needs that require specialized expertise and/or infrastructure to deliver effectively.	All examples of services included as indicated in the costing to the extent that they are funded by the health authoritie.	**Included** ▪ Services for forensic clients ▪ Services for clients with severe brain injuries ▪ Eating disorders programs ▪ High needs/complex psycho-geriatric services ▪ Programs for clients with severe personality disorders ▪ Services for clients with severe, persistent, complex and serious needs ▪ Programs and services for Children in care ▪ Services for clients with Dissociation/PTSD Trauma ▪ Consumer advocacy and support groups **Excluded** ▪ Addictions centers
Rehabilitation	Services designed to optimize clients' functionality and enable them to live, function and contribute more effectively in the larger community.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Specialized rehabilitation programming at Claresholm. ▪ Alberta Hospital Edmonton and Alberta Hospital Ponoka ▪ Assertive outreach programs ▪ Independent living supports ▪ Vocational training ▪ Employment re-integration **Excluded** ▪ Addictions centers
Community Supports	A range of collaborative activities, services and relationships that provide assistance to clients and their families to live quality lives in their communities.	All examples of services excluded	**Included** ▪ Income support programs, AISH, for topic 3 **Excluded** ▪ Income support programs, AISH, for topics 1&2 ▪ Housing services coordination and supports ▪ Vocational training and employment opportunities ▪ Supported group homes, approved homes, day homes ▪ Independent living support programs ▪ Consumer advocacy and support groups ▪ Transportation services ▪ Life skills and self-help education programs ▪ Family supports – parenting programs, respite care, etc.

Table 1.2: Scope of Mental Health Services (cont'd)

Mental Health Services	Description	Included/Excluded	Examples of Services
System Supports	Other organizational infrastructure, including administration, staff and services required to support the effective planning, delivery and evaluation of mental health services.	All examples of services included as indicated in the costing to the extent that they are funded by the health authorities	**Included** ▪ Governance and administrative structures and services including policy, planning, finance, human resources, capital projects, facilities support, risk management, etc. ▪ Communications and information management structures and services ▪ Research, outcomes monitoring and improvement and evaluation services
Service Integration RHAs, Inter-ministerial and Other Government Agencies	Structures and mechanisms to effectively link and coordinate, and deliver and evaluate services within and across RHAs and other provincial ministries and agencies.	All examples of services excluded	**Excluded** ▪ Governmental policy framework that encourages and facilitates an integrated approach to service delivery ▪ High priority cross-ministerial initiatives with appropriate inter-ministerial governance structures ▪ Regional care/case management networks that cut across ministerial and RHA boundaries where appropriate ▪ Consumer advocacy

Table 1.3: List of Services Included/Excluded in Provincial Mental Health Costs

Thesis Framework	Description
1. Physician Data	A physician billing was included as a mental health case if a mental health diagnosis/problem was listed as the "most responsible" reason for the client seeking the particular physician service.
2. Psychiatric Facilities 2.1 Inpatients 2.2 Outpatients	2.1 The data source was from the common clinical system. To align with the method used to calculate results for general inpatients, it was decided to use activity data to calculate costs. Patient days generated by individuals at psychiatric facilities within a fiscal year were chosen as the measure. The number of patient days generated was divided by the budget amount for psychiatric facilities inpatients 2.2 The data source was from clinical information systems. To determine activity for outpatients, counts of new registrations at programs associated with the psychiatric facilities was the measure chosen.
3. Community Clinic Data	Client service events (direct and indirect) were chosen as the measure of activity for those clients enrolled at community mental health clinics (CMHS).
4. Telemental Health	The measure of activity chosen for telemental health was the number of completed client consults during the fiscal year.

Table 1.3: List of services included/excluded in provincial mental health costs (cont'd)

Thesis Framework	Description
5. Regional Health Authority Inpatient Data (acute hospital inpatients)	Identified all individuals with a most responsible mental health diagnosis upon discharge, including the Case Mix Grouper (CMG).
6. Regional Health Authority Outpatient Data (acute hospitals outpatients) 6.1 Emergency departments/room(ER) 6.2 Other outpatient centers	6.1 All mental health cased that visited the ER by hospital and region were identified and extracted. 6.2 Visits to other outpatient centers (including psychiatry, social work, etc. as well as typically non-mental health outpatient centers such as audiology, diagnostic imaging, etc.) were identified using the ACCS grouper attached to each record.
7. Private, for-profit and Not-for-profit Organizations	The data for other components of the mental service continuum, such as private-for-profit or not-for profit agencies, for which there is no readily available cost or service volume related information in public administrative databases was therefore excluded.
8. Drug Costs and Outpatient prescriptions	This study did not include outpatient drugs (OPD).

Note: The cost of services for categories 1 through 6 were included in provincial mental health costs. Categories 7 and 8 were excluded in provincial mental health costs.

As mentioned, this thesis consists of three separate but related studies. In the first study I develop a bottom-up measure of provincial spending on mental health in Alberta. In the second study I use the measure of mental health services spending to indicate the impact on equity of a change in organizational arrangements for mental health services in Alberta—the transference of specialized mental health services from the provincial government to the health regions. In the third study I develop a measure of spending on social services for persons with mental health issues in Alberta.

Topic I: The Direct Public Sector Costs for Mental Health in Alberta

Background

Alberta is the only province that collects electronic data on patient visits to mental health clinics and all outpatient clinics. As a result, electronic medical records are available for the following categories of services:

- Mental health clinics,
- Outpatient services,
- Physician billings, and
- Inpatient general hospitals and psychiatric hospitals.

Using these records, I obtained aggregate data which identify all mental health visits in Alberta for a specific year (2002–2003). Costs are assigned for each visit and summed for each category to obtain a province-wide estimate of expenditures on mental health services.

Data

Electronic medical records were referenced for all visits for each of the services shown in Table 1.4. I did not have direct access data on individual visits, only to aggregated estimates for the entire province.

Methods

Costs were obtained for each visit according to the category of the visit. Data sources are included in Table 1.4. Costs were summed within each category for all services provided in the province which results in a province-wide measure of the cost of mental health services for the year.

Implications/Contributions

I developed a measure of how much the province spends on mental health services during one year and a breakdown of these expenditures. To my knowledge this is the first published estimate using provincial health care data for any province. In order to complete the other two topics I had to first determine if this method was feasible. The calculations were made, and a paper was prepared, indicating the feasibility of this method (see Appendix A).

Table 1.4: Sources of Mental Health Data in Alberta

Service	Database Used And Identification of Included Visits	Source of Cost Data
Inpatient hospital	Discharge Abstract Database	Health Costing in Alberta: AH&W Report
Community mental health center	Alberta Regional Mental Health Information System (ARMHIS)	RHA Human Resources (2002/03)
Outpatient hospital visits	Alberta Ambulatory Care (ACCS)	Internal Communications , AH&W – Health Funding & Economics –MIS Data
Physician billings	Physician Claims Product	Physician Claims Product – Claims Amount Billed

Topic II: Mental Health Services Integration and Equity between Mental and General Health Services: A Population-Based Analysis for Alberta

Background

The issue of equity between mental and general health services has received considerable attention in Canada where most nonpharmaceutical mental health expenditures are under the control of provincial governments (see statements at the beginning of this proposal). Despite the attention given to this subject, there has been no evidence provided to, and therefore no clear way to verify the statement or judge the impact of a system-wide policy in achieving this kind of equity. Since the early 1990s in Saskatchewan (1994 in Alberta), provincial governments have pursued the integration of community, public health, and hospital (in- and out-patient) services; in Alberta, such services for each of 17 regions were placed under the control of regional health authorities (RHAs). RHAs were given budgets scaled to their respective populations to be used to cover health services. Equity was the primary objective of this reform. Some mental health services were provided by RHAs in general hospitals, but a provincial authority was responsible for mental health care in community centers and psychiatric hospitals. In 2003 control over these latter services was transferred to RHAs and, as a result, most mental health services were integrated with general health services. At the same time, the number of health regions was reduced from 17 to 9 in Alberta.

These policy changes followed the recommendations of the provincial advisory committee on general health reform. Despite its recommendation toward integration, the provincial advisory committee expressed concern that mental health services would suffer under RHA control. The Alberta Mental Health Board was assigned an advocacy role to help promote mental health services within the regions.

Corrigan and Watson (2003) recognized that government funding for mental health will be influenced by policy-maker perceptions of key factors, such as program needs and program effectiveness. An objective measure of mental health equity is needed to put these factors into context. With the development of a population-based measure of mental health costs in Alberta (Block, Slomp, Jacobs & Ohinmaa, 2005), it is now possible to objectively measure parity between mental health services and general health services, that is, the ratio of mental health expenditures to total health expenditures.

The purpose of this chapter is to establish the impact of mental health system integration on program parity in Alberta.

Data

Data were obtained from electronic medical records over six years from 2000/2001 to 2005/2006.

Methods

The units of observation in this analysis are the Alberta Mental Health Board (prior to 2003) and the RHAs. The target measure of mental health parity is defined as the ratio of annual mental health expenditures to total health expenditures for these bodies combined. Mental health expenditures for this analysis include all expenditures in psychiatric hospitals and community mental health centers (CMHC), as well as expenditures for all mental health outpatient visits and admissions to general hospitals. The expenditure measure excludes physician billings for counseling and psychiatric care, as these are paid out of a separate provincial fund, and pharmaceutical expenditures on mental health, most of which are funded privately. Total health expenditures include mental health expenditures defined above (prior to 2003) plus all RHA expenditures.

Mental health visits to regional facilities were inpatient admissions and visits to outpatient clinics and emergency rooms in general hospitals which were coded as having a primary mental illness diagnosis (Block et al., 2005). Provincial costs for the year 2003 were assigned to those visits and were price adjusted to the year of observation using the general Consumer Price Index for Alberta (obtained from Statistics Canada). RHA general expenditures were expressed in current dollars (obtained from Alberta Health and Wellness).

Implications/Contributions

Despite the importance of issues relating to "under funding" and parity, there is no objective measure available in Canada on which to base the government statements which appear in the introduction to this thesis. McDaid and Knapp (2004), on behalf of the Mental Economics European Network, and the Australian Institute of Health and Welfare (2003) both identified the ratio of mental health to total health spending as a bellwether indicator of a nation's commitment to mental health. In Topic II, I develop such a measure and incorporate a longitudinal analysis to determine whether a major policy change—regionalization—has had an impact on this indicator. Shortcomings of this measure are also discussed.

Topic III: Social Services Costs for Mental Health in Alberta

Background

Mental health has a significant impact on employment and income. There are several programs of social assistance in Canada designed to alleviate income loss and uninsured health expenditures incurred due to mental illness.

(1) The Canada Pension Plan (CPP) provides benefits for persons under 65 who have contributed to the CPP (i.e., have worked), and who are suffering from a "severe and prolonged" mental disability (Canada Pension Plan, 2005). The monthly payment has a fixed component ($388.67 in 2006) and an additional payment based on the beneficiary's CPP contributions.

(2) Social assistance in the form of income supplements and noninsured medical benefits are available for persons with mental illness in Alberta through the Assured Income for the Severely Handicapped (AISH) program, which is operated through the Department of Alberta Seniors and Community Supports (Alberta Seniors and Community Supports, 2005). Eligibility includes income below a threshold amount and a "permanent" mental illness disability.

From data listed in Topic 1 (see Appendix A), I obtained the age and gender of persons with mental illness, according to specific criteria. It was therefore possible to estimate the number of persons with mental illness in Alberta, classified by age and gender. Using these estimates, I determined how many of these people received social assistance under these two programs in 2005/2006, and the amounts they received.

Data

Data from the CPP for Alberta were obtained from the Disability Benefits and Appeals Branch of Social Development Canada. These data were only available in aggregative form. The data indicate the number of CPP beneficiaries due to mental illness in 2005/2006 in Alberta and the amount of benefits.

I obtained an AISH database of individual medical services that indicated recipients' age, diagnosis, income support, and the amount paid for medical services, by month, for 2005/2006 (Alberta Seniors and Community Supports, 2005). Each individual was identified by an anonymous but unique identifier.

Methods

Eligibility for AISH requires a form signed by a physician indicating that the candidate has been diagnosed with a severe mental illness. Data on nonmedical benefits and income support obtained from Alberta provincial medicare is sorted by major age category (see Tables 4.1, 4.2, and 4.3).

Implications/Contributions

Published data for Alberta and other provinces in Canada do not report the amount of benefits, medical and social, received by persons with mental illness. Therefore, I estimated the cost to the province of Alberta for mental health services and support by age—a measure that can be used to plan preventive services.

Ethical Approval

Privacy was not breached as all data received were in provincial totals or anonymous records. I sought and received ethical approval from the University of Alberta Health Research Ethics Board (File Number B-250907).

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CHAPTER 2

Topic I: The Direct Public Sector Costs for Mental Health in Alberta

Mental illness is a significant and growing disease burden in Canada. A study by the Information Management Department of the Alberta Mental Health Board (AMHB), using the 2002 fiscal year data, found that 16.4% of the population sought physician services for a mental health related problem or disorder (Alberta Mental Health Board, 2004). In Alberta the rate of individuals seeking mental health services is increasing. In one study by Health Surveillance at Alberta Health & Wellness (AHW), the percentage of individuals who visited a physician at least once a year for a mental health disorder increased from below 13% in 1995 to nearly 16% in 2001 (Health Surveillance, Alberta Health & Wellness 2003, personal communication).

Using data on health care services utilization, Health Canada, in its Economic Burden of Illness in Canada [EBIC] document, identified a national cost of government provided mental health care of $4.6 billion in 1998 (Health Canada 2002); this was 5.6% of all direct health care costs. Goeree et al. (1999) conducted a similar analysis for schizophrenia and estimated the cost for that disease alone to be over $1 billion. However, neither study linked the expenditures to the number of users of the services. In a study which used individuals as its basis rather than mental health services, Stephens et al. (2001) estimated the annual national cost of non-governmental services to be $278 million. Because this is a small portion of government costs as indicated previously, it appears that government is the major funder of mental health care in Canada.

As indicated by Health Canada (2002), studies on costing are essential for policy-making purposes. However, studies that focus on services without reference to the number of affected persons cannot provide planners with the needed linkage between epidemiological information on disease burden and the resulting costs of these conditions. In order to assess the population impact of alternative interventions and policies, one must focus on policies, persons, and the use of resources.

In Canada, mental health service provision is organized at the provincial level, so for planning purposes the province is an important unit of observation. All provinces in Canada have provincial health insurance registries, hospital discharge, physician billings, and (sometimes limited) prescription drug data, which form an excellent base for analyzing population-based costs. Alberta, in addition, collects data on ambulatory care (including emergency room) and community mental health clinic services and links utilization of mental health facilities to the main registry. These practices can help us draw a more complete picture of how a population uses its mental health resources. Using these databases, the provincial cost of mental health services for the 2002 fiscal year in Alberta—globally and by type of service—was estimated.

Methods

For the period up to April 1, 2003, which includes the period of observation (fiscal year 2002) of this study, the Alberta Mental Health Board (AMHB) played a key role in providing specialized mental health services throughout the province. This consisted of psychiatric facilities, community mental health clinics, and telemental health services.

As of April 1, 2003, the aforementioned services were transferred to the nine regional health authorities. At that juncture, the AMHB mandate became focused on advocacy, planning, providing coordination of some provincial services (such as Forensic Psychiatry, Telemental Health, Aboriginal Services, Suicide Prevention), research coordination, and providing information management and data analysis. This analysis focuses on the costs just prior to the changeover. Because of the time lag between data collection and availability, these were the latest data available at the time the analysis was conducted.

There is a variety of services used for the treatment of mental illness in general health services and specialized units. These services are described in Table 1.2. Table 1.2 provides an overall list of the scope of mental health services in general while Table 1.3 provides a list of services included and excluded in my analysis of the provincial mental health costs.

Alberta Health & Wellness (AHW) maintains a registry which contains a unique personal identifier. The modes of delivery for each service included in this study are summarized in Table 2.1 that describes components of each. In any service, each mental health visit to a health facility or office is recorded, and an electronic record is generated and sent to either AHW, or to the AMHB. Using a variety of methods explained below, unit costs were assigned to each type of visit. The total cost of all services was recorded, as was the sum of the costs of all visits and the number of unique recipients of each type of service.

Psychiatric Facilities

Psychiatric facilities were costed using their total expenditures for the 2002 fiscal year. "Total expenditures" refers to direct clinical (including salaried physicians) as well as administrative/overhead costs.

Community Mental Health Clinics

Similar to the facilities method, the total expenditures for the 2002 fiscal year were used as the overall cost for that service area.

Regional Hospital—Acute Inpatient Services

"Mental health" cases from acute care hospitals were selected by reviewing the discharge diagnosis for each inpatient via the Discharge Abstract Database. A case was designated as "mental health" only if a mental health disorder/problem was specified as the cause most responsible for the patient visit. For consistency, the diagnostic codes of interest were determined using the complete set of mental health codes (Axis I, II, and IV) within the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision* (American Psychiatric Association, 2000). If the diagnostic coding in the record was completed using the International Classification of Diseases, Ninth Edition, Clinical Modification (2001), a crosswalk was utilized to ensure consistency between the two taxonomies (Calgary Health Region, 2002). This method ensured that all mental health cases were selected for costing, regardless of what type of functional center/inpatient unit the client received services in. This method allowed the capture of cases of inpatient services provided in acute care regional hospitals that did not have any psychiatric

beds/units. In addition, this method captured the number of patient days in acute care regional hospitals that contained psychiatric beds, but where some clients nonetheless received inpatient services in general/medical beds. The number of days of stay was obtained for each case.

Costs were established for inpatient days by utilizing existing financial reporting mechanisms (Management Information System Reporting [MISR]). The cost per day for inpatient stays was calculated from reported cost information (Alberta Health & Wellness, 2003). This method includes assigning a Case-Mix Group (CMG) indicator to each discharge record. The CMG indicators were those developed by the Canadian Institute for Health Information (CIHI) and used by Alberta Health & Wellness (2003). The average costs from 40 corresponding case-mix groups, encompassing over 15,000 patient stays, were calculated. The costs for the entire stay of these cases were divided by length of stay to obtain a per day cost. The cost per day was then multiplied by the total number of days comprising each case and then aggregated for a total of all cases. This cost is the full cost including all overheads, except for building depreciation. It excludes fees for services provided by physicians. Further details on case-mix costing and the cost compilation process are included in the Alberta Health & Wellness Annual Report on Health Costing (2003).

Regional Outpatient Services

Cases of mental illness were determined within the Ambulatory Care Classification System in the same manner as described in the "Regional Hospitals—Acute Inpatient Services" section. This ensured that all mental health related services were captured, including those in nonmental health specific service delivery areas such as emergency rooms. The outpatient cost information was derived from the Management Information System Reporting (MISR) submissions from the regions. MISR submissions are general ledger trial balance information grouped by hospitals' functional centers/departments. The *Health Funding and Costing Branch of Alberta Health & Wellness* extracted summary information for selected functional centers for all facilities from the MISR database. Because of significant variation of costs within each regional health authority,

costs were determined at the site level within each RHA. Average costs per visit were determined for the functional centers providing the majority of mental health services by dividing the total functional center costs by the number of visits to that center. Mental health visits were then costed at the average rate. An average cost of the functional centers providing approximately 90% of the mental health services was used to cost visits occurring at low frequency in various other outpatient centers. This summary information included direct and overhead costs of operating the selected departments. It did not include allocated overhead from other administrative departments. Where noted, an estimate of these overhead costs was based on allocation processes currently used within Alberta Health & Wellness.

Physician Billings

The process utilized was similar to that described in "Regional Outpatient Services" and "Regional Hospital—Acute Inpatient Services." A physician billing was included as a mental health case if a mental health diagnosis/problem was listed as the reason "most responsible" for the client seeking physician service. Specific costs associated with these visits were determined from the standard billings associated with the services provided (according to the Alberta Health Care Insurance Plan, Schedule of Medical Benefits).

Telemental Health

Telemental health costs include physician/psychiatrist reimbursements for clinical services. Each consultation type received a specific reimbursement amount based on the Alberta Mental Health Board's sessional rate. As this technology is used for a variety of clinical education, consultation, and administrative functions across the province, clinical/administrative support and other costs for telemental health are included in the *Other Provincial Costs* section.

Patient Counts

For each type of service I calculated an unduplicated count of the number of persons who used these services. This allowed me to calculate an aggregate measure of the cost per

user. The data for all databases could not be aggregated so a global cost per user was not obtained.

Results

Table 2.1 (Public Health Care Sector Mental Health Service Costs in Alberta in the 2002 Fiscal Year) shows the total provincial costs for all identified mental health services - $573 million. Inpatient costs, physician services, and psychiatric facilities formed the largest proportions, amounting to 22%, 22%, and 21% respectively. Thus, inpatient care, general and psychiatric (excluding related doctor care), amounted to 43% of total mental health care costs. Emergency room visits amounted to $6.8 million, about 1% of the total.

Table 2.1: Public Health Care Sector Mental Health Service Costs in Alberta in the 2002 Fiscal Year

	# Treated (persons)	Total Cost (in 000's)	Cost per Treated Person	% of Mental Health Total Cost
Emergency Room [1]	36,373	$6,819	$187	1
Regional Outpatients [2]	33,194	$47,495	$1,431	8
Community Mental Health Clinics [3]	33,146	$89,503	$2,700	16
Regional Inpatients [4]	12,985	$123,774	$9,532	22
Psychiatric Facilities Inpatients [5]	3,199	$121,491	$37,978	21
Psychiatric Facilities Outpatients [6]	10,588	$11,011	$1,040	2
Physicians [7]	503,904	$127,778	$254	22
Telemental Health [8]	593	$232	$391	0.04
Other Provincial Costs [9]	N/A	$44,981	N/A	8
Total Costs		**$573,084**		
Population of Alberta (2002/03)		3,124,487		
AH&W Actual Expenditure (2002/03) in 000's		**$6,790,360**		

Notes to Table 2.1

[1]Emergency room visits: The total costs were calculated using the 2001 fiscal year (April 1, 2001 to March 31, 2002) average costs adjusted for inflation (3%)and includes administrative and overhead costs.

[2]Costs for regional outpatient services (excluding emergency room visits) were calculated using 2001/2002 average costs adjusted for inflation (3%). Excludes administration and overhead costs.

[3]Community mental health clinics: The total costs were calculated by the 2002 fiscal year total budget.

[4]Regional inpatient: The total costs were calculated by the average length of stay multiplied by the average per diem cost according to psychiatric case-mix categories for the 2002 fiscal year.

[5]Psychiatric facilities inpatients: The total costs for the inpatient services were calculated based on the 2002 fiscal year total budget.

[6]Psychiatric facilities outpatients: The total costs for outpatient services were based on the 2002 fiscal year total budget.

[7]Physicians visits: The total costs were calculated according to the Alberta Health Care Insurance Plan, Medical Price List for all visits which were primarily for a mental health related problem or disorder.

[8]Telemental Health: The total costs include the physician/psychiatrist reimbursement costs for clinical services. The clinical/administrative support and other costs for telemental health are included in the other provincial costs section.

[9]Other provincial costs include the costs for the Alberta Mental Health Board administration, Provincial Services, Children's Mental Health administration, Community Mental Health administration, Clubhouses, and clinical/ administrative support for Telemental Health. Although a relatively small number of clients receive services through these funds, the number of treated persons is unavailable.

Private physicians saw 504,000 patients in total. Although I do not have a direct unduplicated measure of patients, this would serve as a very rough, and perhaps low (since some clinic patients may not see a physician), approximation of total persons receiving mental health services. In total, mental health services costs were about 8.4 % of total provincial health care costs.

Inpatient care in psychiatric facilities is the most expensive, averaging $38 thousand per treated person. Inpatients in acute care facilities incurred per person costs of $9,532.

Discussion

I used provincial data on each person's use of mental health services to estimate the total provincial cost of these publicly funded services in Alberta. According to this estimate, $573 million was spent on mental health services in Alberta in 2002/2003, which is about 8.4 % of all health care resources. Costs were widely distributed across services, with inpatient care in regional hospitals and psychiatric facilities engendering the largest portion of cost while serving a relatively small proportion of patients.

I developed direct estimates of provincial mental health costs using person-level data. Health Canada developed mental health cost estimates for 1998 in Canada (excluding drugs) to be $3.6 billion, or 4.2 % of all direct public nondrug health care expenditures.

My estimate is about twice that figure. Some of the difference is explained by the fact that this estimate included community mental health center visits, which account for over 15% of all mental health costs. These expenditures are considered to be public health expenditures in the EBIC document. Additionally, much of what was considered to be "other" mental health costs are not related to any disease categories in the EBIC document. These categories explain one-half of the difference between my statistics and EBIC. The rest will be due to valuation differences and perhaps to unique practice patterns in Alberta.

One of the major thrusts in mental health policy in recent years has been the attempt to reduce utilization of inpatient care, with consequent shifts toward outpatient care. Currently there is no information available on total provincial expenditures nor is there a breakdown of these services. The present estimates can be used to help policy makers understand where the province currently is and what the situation would be if they shifted expenditures. For example, this analysis indicates that 43% of all mental health services in Alberta are inpatient. In conjunction with clinical cost effectiveness studies, I could estimate how expenditure patterns might shift in response to a policy change. Without such information, policy makers would not know the economic situation before or after the shift; they would only know the net impact. Policy makers need to know both.

A second use of this information lies in the comparison of utilization patterns across provinces and over time. There is no information at present on total provincial expenditures for mental health services, or on expenditures versus type of care. With such information, the effect of changes over time can be estimated. Differences in expenditure patterns between provinces can also be estimated. Such information is valuable to policy makers and is vital to the development of provincial and national mental health policy.

I used an integrated data system to generate the cost estimates. This allowed the identification of resources used (total cost) and numbers of persons served. This "bottom-up" approach is more amenable to planning, since it allows costs to be linked to

key drivers like the number of people using services and the characteristics of these recipients.

Limitations of the Study

Table 1.2 presented a comprehensive listing of mental health services. This listing included prevention, promotion and protection services; early detection and intervention services; crisis intervention; acute care and treatment; consultation, assessment, care planning, treatment and follow-up; specialized treatment; rehabilitation; community supports; service integration RHAs, inter-ministerial and other government agencies and system supports. Therefore, to the extent that those items presented on Table 1.2 that are provided by government but were excluded from the costing would accordingly be a limitation to the study. I also did not include outpatient prescription drugs. In Alberta, data for these are only available for individuals over 65 years of age. According to Health Canada (2002), drugs represent about 20 % of all mental health costs.

Another limitation of the data is that there are other components of the mental health service continuum, such as private-for-profit or not-for-profit agencies, for which there is no readily available cost or service volume related information in public administrative databases. I note that these are not government-provided services but would be included in an anlysis with a wider perspective.

I focused directly on mental health services, rather than all health care services used by persons who are categorized as having a mental illness diagnosis. I did not include cases or costs for individuals whose mental health diagnosis was secondary or co-morbid to a physical disorder. Inclusion of these broader considerations would result in considerably higher costs. All these types of information warrant attention as mental health may influence the general use of health services.

This analysis shows that the costs of mental health services to publicly funded health care systems comprise a significant proportion of total health care expenditure. These estimates seriously underestimate the health care burden of mental health services as they do not include drug costs or privately funded services and services provided in other

ministries. This study is the first step to offer policy makers information about mental health costs.

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CHAPTER 3

TOPIC II: THE IMPACT OF INTEGRATING MENTAL AND GENERAL HEALTH SERVICES ON MENTAL HEALTH BUDGETARY PARITY IN ALBERTA

Introduction

Mental health parity is a phrase used in the United States to depict restrictiveness of insurance benefits for mental health services in comparison with those for medical/surgical services. It is a topic of interest in international circles (Hanson, 1998; Mental Health Economics European Network, 2004) and has been raised in Canada in several prominent government reports (Commission on the Future of Health Care in Canada, November, 2002; Standing Senate Committee on Social Affairs, October, 2002).

Prompted by fiscal deficits, equality of funding across geographic populations has been addressed for *general* health care in most Canadian provinces since the mid-1990s when the provinces began integrating all health care services (except medical doctor services and outpatient drugs) under single organizational structures, called regional health authorities (RHAs) (Hurley, Lomas & Bhatia, 1994, p. 490). Transfer of services was accompanied by the development of regional funding envelopes based on population characteristics. RHAs were formed in 1996 in Alberta and population funding was instituted several years later; however, mental health services were not integrated with general health services until April 1, 2003. A government report issued in 2001 (Premier's Advisory Council on Health, December, 2001) indicated a desire for the enhancement of mental health services once the transfer of mental health services to the RHAs was achieved.

The RHA is a bureaucratic organization and Corrigan and Watson (2003) have shown that a variety of factors—availability of resources, perception of need, program effectiveness, and personal responsibility—will impact the budgets that administrators allocate to mental health. In a United Kingdom study, Schneider et al. (2002) showed

that health care costs in a model with targeted mental health services were greater than with an integrated model; however, they did not address the parity question.

Until April 2003, a provincially designated Alberta Mental Health Board (AMHB) was responsible for providing substantially all community mental health and psychiatric hospital services in the province. RHAs were responsible for emergency room and general hospital acute care, some of which was for mental health care. After the transfer, all of these services were the responsibility of RHAs. During the entire period (before and after the transfer) physician services were funded separately by the province.

Recent research shows that it is feasible to directly measure total mental health service costs provided by the AMHB (before the transfer) and RHAs (Block et al. 2005) and to compare these to total health expenditures. This ratio has been used to measure equity in a number of other constituencies (Mental Health Economics European Workshop, 2004). Using this approach, I develop measures of mental health parity over several years, and thus determine the impact of integrating mental health and general health services in Alberta. The purpose of this chapter is to determine whether the integration of mental health services in Alberta has led to erosion or enhancement of the budgetary position of mental health.

Methods

The research question is whether the integration of mental health and general health services has reduced the parity of mental health services. The economic "actors" in this analysis are the Alberta RHAs and the Alberta Mental Health Board (AMHB) (before integration). The measure of parity is the *combined* cost of providing mental health services by the two organizations, expressed as a percentage of total RHA and AMHB spending on all health care services, including mental health. I measured this ratio annually for 4 years before and 2 years after the integration date of April 1, 2003.

Services included in the mental health cost measure are: psychiatric hospital services, community mental health services, general acute care hospital services, emergency, and other ambulatory/outpatient services for mental health provided by the regions. These

were defined in Chapter 1. All health services provided by the regions and the AMHB were included in the total health care cost measure.

The measurement of mental health costs for the year 2002/2003 was reported in Block et al. (2005). This study was based on methods identified in that study.

Inpatient data for general acute care hospitals was based on average costs for Case-Mix Groups (CMG) s using the categories developed by the Canadian Institute for Health Information. These case costs were developed for relatively homogenous clinical conditions such as "bipolar mood disorders" and "depressive mood disorders with ECT" with differing levels of resource intensity. Details regarding this methodology are available through Alberta Health & Wellness's Health Costing in Alberta (2006) report. Individuals discharged from acute care hospitals with a most responsible diagnosis of mental illness—that is, mental health issues were considered to be the most responsible for the individual seeking help—were included.

For outpatient services provided within acute care hospitals, all mental health cases were identified based on the diagnosis attributed to their visit. These cases are grouped according to the Alberta Ambulatory Care Classification System (AACCS) Grouper developed by Alberta Health & Wellness. This grouper combines conditions that have similar resource intensities, such as "psychology group 1, 2, 3, etc." Visits to all outpatient centers were included where the main reason for the visit was for mental health services. This method extracted cases from mental health outpatient centers, as well as cases from areas that are not dedicated solely to mental health such as emergency rooms. Each relevant case was multiplied by the corresponding unit cost using the AACCS costing data (Alberta Health & Wellness, 2006). These costs were developed by AHW based on Management Information System (MIS) reporting by the health regions.

Inpatient services within psychiatric facilities were assigned costs based on per diem amounts. The per diem was determined by the 2002/2003 budget and adjusted for inflation by 3% annually. The per diem cost was then multiplied by the number of patient days generated.

For the outpatient services in psychiatric facilities, an average cost per new enrolment was calculated using the 2002/2003 budget amount and adjusted 3% annually. This cost was then multiplied by the number of new enrolments.

Costs were assigned to community mental health clinics based on the average cost per service event. The service event volumes were multiplied by average costs based on the 2002/2003 budget amount and adjusted by 3% annually.

Telemental Health services were costed using a similar cost based on the 2002/2003 budget amount and adjusted 3% annually. The activity measure identified each year was the number of clinical consultations. Other costs included provincial initiatives such as the AMHB and administrative and overhead costs prior to 2002/2003.

Total RHA expenditures were obtained from annual government reports (Alberta Health & Wellness, Funding and Costing, from the years 2000 to 2006). I note that prior to 2003/2004, mental health expenditures in psychiatric facilities and community mental health centers were not part of RHA budgets, so they had to be added in to obtain a consistent measure of the cost of all health services over the entire six years.

I report the results using four statistics. The first is total current dollar—expenditures by type of service, over the six year period. The next two statistics are per capita constant—dollar spending on (1) mental health and (2) general health plus mental health spending. These statistics indicate the "real" (inflation-adjusted) services delivered on a per capita basis over time. The final statistic is the annual ratio of mental health to total (including mental health) health spending. This is expressed in current dollars because it measures the proportion of the total annual budget that was allocated to mental health in each year. Doctors' services and outpatient drugs were excluded because they are derived from a different (province-wide) budget and are not under the control of the regions or the AMHB.

Results

The evolution of RHA and AMHB mental health expenditures, by category and in total, is shown in Figure 1 (data in Table 3.1). Over the period 1999/2000 and 2004/2005, total

Of the total increase, $70 million was due to regional inpatient expenditures and $38 million was due to community mental health expenditures. When viewed as a percentage of total mental health expenditures (Table 3.1), inpatient costs in community hospitals increased the most after the transfer. The categories with the largest decreases as proportions of total costs were those for dedicated psychiatric services, psychiatric hospitals, and community mental health centers.

Per capita, constant dollar expenditures are shown in Figures 2a and 2b. Mental health expenditures (Figure 2a) increased consistently until 2003/2004, the year of transition, after which they leveled off. Total health (RHA and mental health) expenditures (Figure 2b) have been increasing since 1999/2000, but at varying rates. There was a particularly large increase between 2000/2001 and 2001/2002.

The ratio of mental health to RHA plus mental health spending (in current dollars) has been fluctuating since 1999/2000, as seen in Figure 3. Since the transfer there has been a decline in the ratio; the decline was 0.4 % in 2003/2004 and less than 0.1 % in 2004/05.

Table 3.1: Expenditures on mental health services in Alberta by sector in current dollars and by percentage of total

Sector	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Emergency Department	$7,381,405	$7,949,648	$9,191,926	$11,449,680	$12,153,079	$15,348,343
Regional Outpatients	17,376,729	21,364,748	33,719,228	42,020,003	47,545,288	47,664,318
Regional Inpatients	100,473,293	105,405,753	114,949,359	140,608,107	154,740,221	170,480,530
Psychiatric Facilities IP	91,863,053	98,188,523	109,868,370	121,491,396	124,675,409	128,789,619
Psychiatric Facilities OP	9,890,559	8,025,264	9,634,557	11,011,348	10,722,238	10,590,046
Community MH	54,752,767	76,323,563	87,654,086	89,502,714	92,289,588	92,709,321
Total	**$281,737,807**	**$317,257,499**	**$365,017,527**	**$416,083,248**	**$442,125,823**	**$465,582,176**
% of total						
Emergency Department	2.6%	2.5%	2.5%	2.8%	2.7%	3.3%

Table 3.1: Expenditures on mental health services in Alberta by sector in current dollars and by percentage of total (cont'd)

Sector	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Regional Outpatients	6.2%	6.7%	9.2%	10.1%	10.8%	10.2%
Regional Inpatients	35.7%	33.2%	31.5%	33.8%	35.0%	36.6%
Psychiatric Facilities IP	32.6%	30.9%	30.1%	29.2%	28.2%	27.7%
Psychiatric Facilities OP	3.5%	2.5%	2.6%	2.6%	2.4%	2.3%
Community MH	19.4%	24.1%	24.0%	21.5%	20.9%	19.9%
Total	100%	100%	100%	100%	100%	100%

Discussion

In April of 2003, the beginning of the 03/04 fiscal year, mental health community clinics and psychiatric facilities were transferred to the health regions in Alberta. I estimated per capita costs for mental health and general health services, and developed a measure of mental health parity—mental health over total health spending by the regions and the mental health board. In the two years after transfer, the parity ratio fell.

The study provides a concrete way of measuring mental health parity for Canada, a concept usually presented in a qualitative context. This measure fits well into the analysis, because it can be linked to RHA economic behavior regarding support for mental health. RHAs have discretion to influence costs between mental and general health.

However, the RHAs do not have complete control over service volumes, especially in the short-run. Some services can be demand generated, and the RHAs can only react to this demand. This is true of emergency visits and nonelective hospital admissions. Some mental health services fall into these categories. However, for other services, especially community health services, budgets can be reduced more readily. It is here the largest reductions occurred.

The results indicate that parity between mental health and general health spending, already a concern, declined when mental health was taken over by the regions. These results are consistent with the concern over lack of support for mental health expressed by Canadian government reports (Standing Senate Committee 2006; Premier's Advisory Council on Health, 2001; Commission on the Future of Health Care in Canada, 2002; Royal Commission on Health Services, 1964).

These estimates are based on unit costs and utilization statistics. Utilization data, especially for physician and hospital services, are based on established data collection instruments, and are of very high quality. Data for community visits are less well established, but are the only ones available. Inpatient cost estimates are based on methods developed using Alberta Health & Wellness Management Information System, which has not been fully assessed.

There were no major changes in how cost and utilization variables were calculated during this period, which would otherwise account for the reduction in mental health services observed. In addition, there were no major changes, such as bed closings after the transfer, which would have reduced mental health costs.

As this study spanned 6 years, inflation had to be taken into account. I used a 3% adjustment factor which is very close to the Alberta Consumer Price Index for those years (2.9% based on Statistics Canada estimates)[1]. A "true" adjustment factor for mental or general health services was not available.

An issue should also be raised about the interpretation of the findings in terms of service units. If the productivity of mental health services after transfer had increased considerably relative to that of general health services, then a relative reduction in budgets might be in order to maintain parity (in terms of actual services provided). The activity level data on Table 3.2 does not support this interpretation. The ratio of mental health to total admissions (Source: CIHI) increased from 5.5% to 6.0% between 1999/2000 and 2002/2003. It increased to 6.2% in 2003/2004 and then fell to 5.9% in

[1] This information is available at: http://secure.cihi.ca/cihiweb/dispPage.jsp?cw_page=statistics_results_topic_hospital_e&cw_topic=Health%20Services&cw_subtopic=Hospital%20Discharges

2004/2005. I could not obtain data on persons served, a better indicator of public support for mental health. But, the relative reduction in community services and the relative reduction in mental health hospital admissions in 2004/2005 do not support the notion that persons with mental illness received greater support through means such as shorter and more productive stays.

Table 3.2: Activity Level Data

Sector	1999/00	2000/01	2001/02	2002/03	2003/04	2004/05
Practitioner Claims Data-Individuals and visits:						
Individuals	453,528	471,744	492,329	503,904	501,563	506,019
Visits	1,955,712	2,049,061	2,161,392	2,228,885	2,311,235	2,390,473
Inpatients – Psychiatric Facilities:						
Individuals	3,191	3,186	3,147	3,199	3,234	3,436
Patient Days	322,376	331,009	329,409	322,297	316,652	320,130
Inpatients – Acute Care:						
Individuals	12,228	12,037	12,528	13,226	13,658	14,539
Patient Days	240,753	243,239	244,657	253,269	266,849	282,630
Mental health admissions as a proportion of total admissions	.055	.056	.060	.060	.062	.596

Note: 1. Inpatients - Psychiatric Facilities excludes individuals and days generated by inpatients at Southern Alberta Forensic Services.

Note: 2. Inpatients – Acute Care includes individuals and days generated by inpatients at Southern Alberta Forensic Services.

Note 3: Total admissions were obtained from CIHI, Inpatient Hospitalizations for Canada 1999/2000 to 2004/2005; Ottawa: CIHI.

Figure 1: Mental Health Cost by Sector – Current Dollar

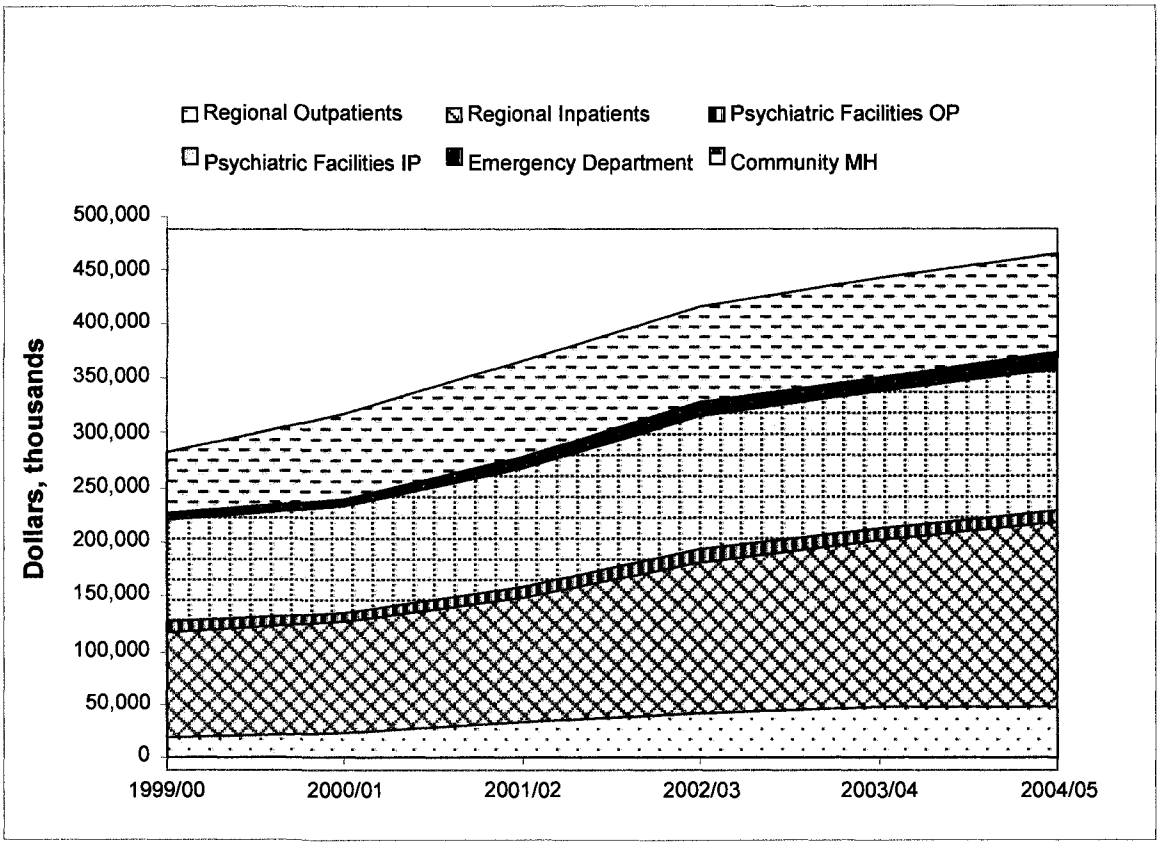


Figure 2a: Alberta Total Mental Health Expenses Per Capita (Constant $) 1999/00 to 2004/05

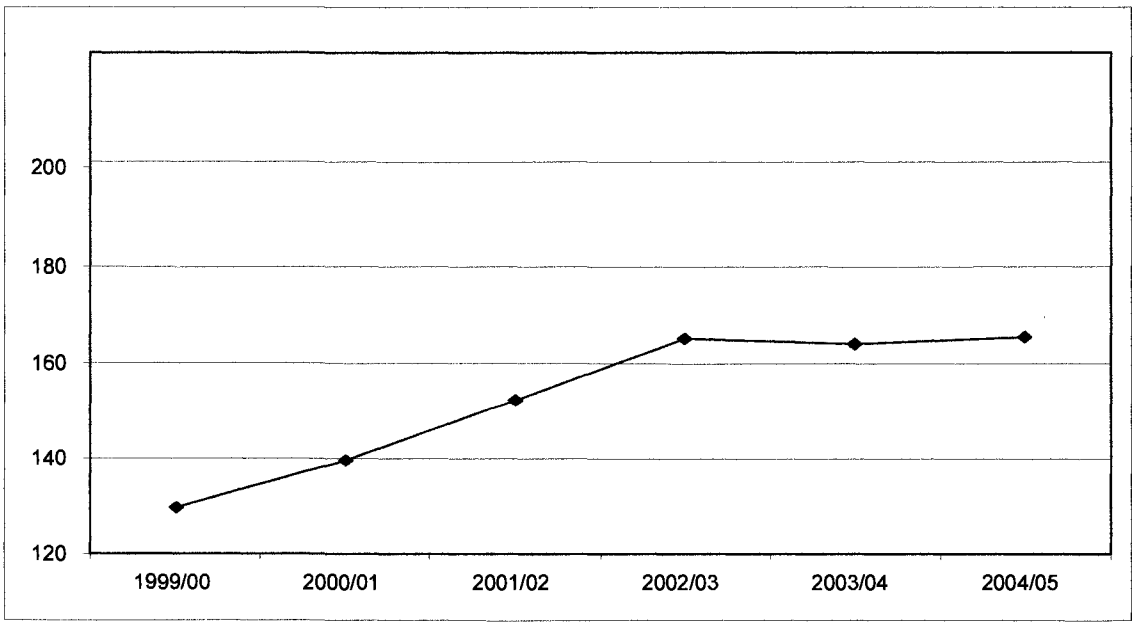


Figure 2b: Alberta Adjusted RHAs Global Funding Per Capita (Constant $) 1999/00 to 2004/05

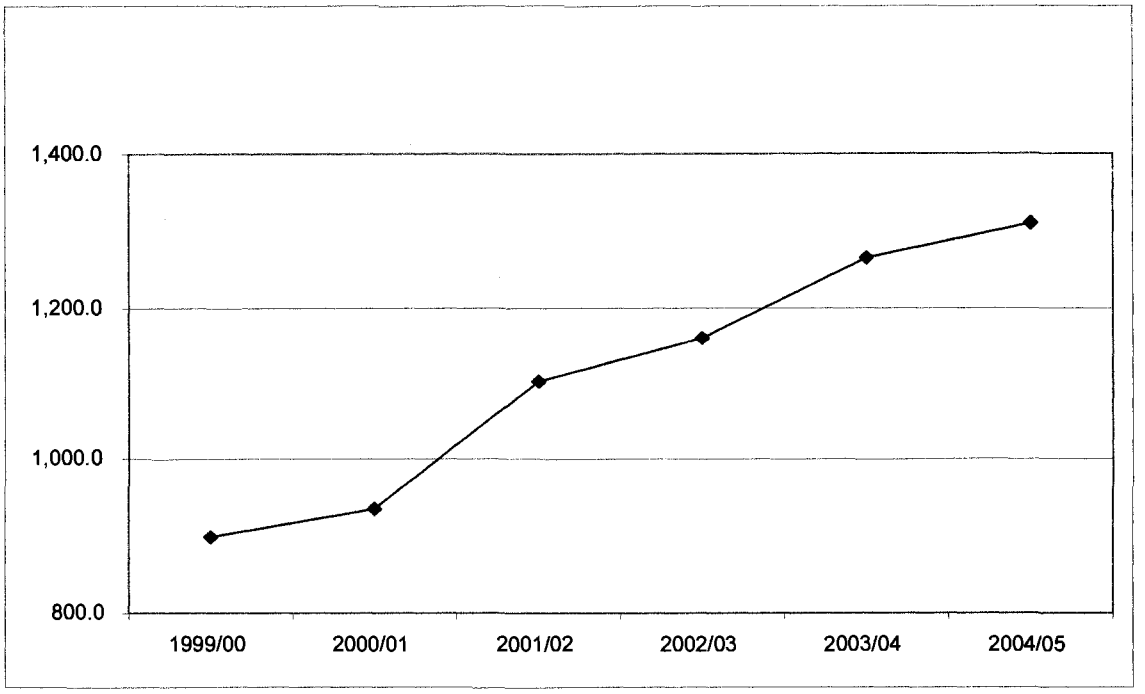
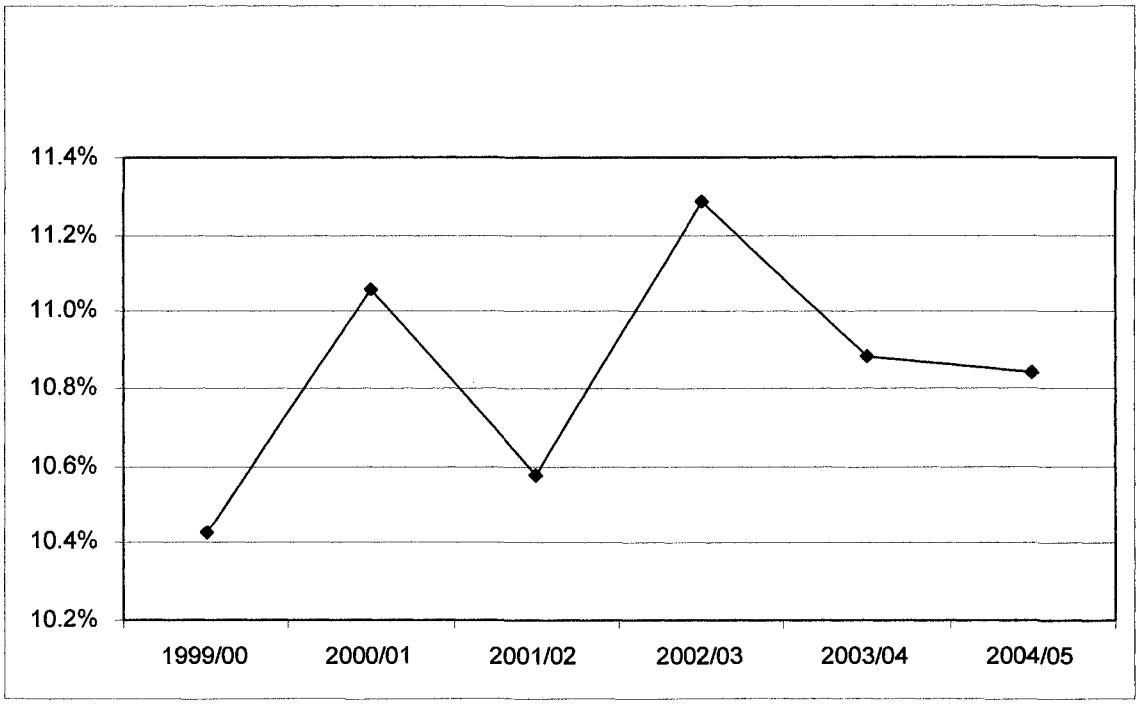


Figure 3: Mental Health/Adjusted RHA Global Funding (Current $), 1999/00 to 2004/05



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CHAPTER 4

TOPIC III: DISABILITY PAYMENTS FOR THE SEVERELY MENTALLY ILL IN ALBERTA

Introduction

Social services and social assistance play a large role in the public care of persons with mental illness. In the United Kingdom, where mental health services are well integrated with social services, local authorities spent £1.4 billion in 2002/2003 on social services and social assistance compared with £6.5 billion for mental health services, a ratio of 1:4.5 (Sainsbury Centre, 2004). In Canada, social services and social assistance also play a role in the public support of persons with mental illness; public and community agencies pay for housing, medical services not covered under Medicare (i.e., for "noninsured services"), and other living expenses either directly or in the form of grants. Currently, there is no information on the magnitude of the expenditures in Canada. Given the recommended expansion of mental health services by various commissions in Canada (Senate Standing Committee on Social Affairs, Science, and Technology, 2004) and Alberta (Alberta Premier's Advisory Council, 2001), budgeting and planning will require information on the magnitude of social expenditures as well.

Two major public sources of social assistance for the severely mentally ill in Alberta are the federal government's Canada Pension Plan—Disability Benefits (CPP-DB) and the Alberta Services' Assured Income for the Severely Handicapped (AISH) program (both described in the next section). The CPP-DB program is a federal income support program, while the provincial AISH program provides income support and reimbursement for "noninsured" health services (that is, those not covered by public health plans). The impact of these programs (neither of which are specific to persons with mental illness) on public expenditures for mental illness in Alberta is not known. In this chapter I report on a project designed to determine expenditures generated by these two programs in support of persons with mental illness in the community in Alberta.

Methods

Description of programs

Most Canadian mental health services (inpatient, physician, community mental health services) are provided through public sources. For persons over the age of 65, outpatient prescription drugs for most conditions are provided by provincial governments; there is limited coverage (mostly for low income people) for other persons. Social services and social assistance are not covered under health plans. In Alberta, there are two major sources of social assistance for persons with severe mental handicaps—the CPP-DB program and AISH.

The CPP-DB program is designed for persons who have worked and contributed to the CPP and who have a minimum level of earnings (Canada Pension Plan, 2005). A person who qualifies for CPP-DB benefits by reason of mental illness must have a prolonged and severe mental disability, as determined by a medical doctor. Recipients receive a fixed amount per month ($388 in 2005) plus an amount based on the recipient's prior employment-based contributions. The maximum payment in 2005 was $1,010 per month. The CPP is operated from within the federal government department, Social Development Canada, which maintains a database of all recipients. Upon request, the CPP Disability Policy Branch of Social Development Canada searched its beneficiary data base for all CPP-DB beneficiaries who were Alberta residents in 2005/2006, and who were certified as having severe and prolonged mental disabilities. Because of confidentiality restrictions, a further breakdown of data was not available. Data were obtained on the number of beneficiaries and average monthly benefit. The CPP-DB covers persons of working age (<65 years).

The Alberta AISH program is designed for persons who cannot work because of severe and permanent disabilities (Alberta Seniors and Community Supports, 2007). AISH is open to all residents of Alberta, and there are no prior work restrictions. AISH thus covers a gap left in CPP-DB coverage in that it includes those who do not work or contribute to the CPP. An AISH applicant must apply for benefits and meet income restrictions. A medical doctor must certify that the person has a permanent and severe

disability. Recipients receive a monthly living allowance up to a maximum ($950 monthly in 2006) and health benefits for noninsured items such as prescription drugs, dental services, and eye care. AISH deducts current income, including CPP-DB payments, from the income support payment; Alberta Seniors and Community Supports maintains a database of all beneficiaries. At the author's request, the ministry queried its database and provided data on the number of AISH beneficiaries certified as being mentally ill, and the amount paid for income support and medical expenses. Data were provided by age group.

Calculations

I estimated the number of recipients in each program. I also estimated the potential number of recipients in the province as follows. First, the Alberta adult population (>18 years) was estimated by age group. An estimate was obtained of the total proportion of household resident adults with mental illness in Alberta using the Canadian Community Health Survey (CCHS) version 1.2, incorporating Statistics Canada sampling weights (Statistics Canada, 2002). Mental illness was defined broadly as a person having one or more of the following conditions: a lifetime history of major depression, mania, panic disorder, agoraphobia, social phobia; a 12 month history of drug or alcohol dependence; an eating attitudes scale score >19; problem gambling; a self-reported psychosis or learning disability. The CCHS version 1.2 uses a variety of instruments to measure these conditions: these are the composite international diagnostic interview (CIDI) (Robins, Wing, Wittchen, Heltzer, Babor & Burke, 1988; Wittchen, 1994), CIDI—short form, the problem gambling index, and the eating attitudes index. I then calculated the ratio of persons in Alberta who were mentally ill to all persons in the relevant ages in the province for age groups 25–44, and 45–64 (18–24 was unavailable) the excess labor nonparticipation ratio (percent with mental illness who were not working minus percent without mental illness who were working) was estimated. I applied this excess ratio to the number of persons who had a mental illness to estimate the number with a mental illness who were not working.

Social assistance was compared with total public mental health expenditures in the province. These costs were estimated for the following services: regional health authority inpatient and outpatient services in general hospitals; physician billings; inpatient and outpatient services in psychiatric facilities; services in community mental health centers and telemental health. Unit costs were estimated for each of these services based on methods reported in Block et al. (2005). Costs were assigned to persons based on age group.

This study received ethics approval from the University of Alberta Health Research Ethics Board.

Results

The total working-age population of Alberta in 2005/2006 was 1.89 million. The breakdown by age group is shown in Table 4.1 (AHCIP, 2006). There were 269,600 mentally ill individuals in the 25–44 age group and 181,000 in the 45–64 age group. Of those who had mental illness, estimated excess unemployment in the 25–44 and 45–64 age groups was 15,000 and 17,000 respectively (Table 4.1). I do not know how many of these would be deemed "severe and permanent."

In total, 7,456 persons with severe and permanent mental illness (as indicated by the programs) received CPP-DB payments. I could not obtain an age breakdown for this group. A total of 17,138 had severe mental illness and received AISH payments. The age breakdown is shown in Table 4.1.

Annual CPP-DB and AISH benefits per person and in total are shown in Table 4.2. Over all groups, the CPP benefit for severe mental illness was $8,640 per beneficiary. AISH medical benefits averaged $3,109 per person, income support amounted to $8,532, totaling $11,461 per beneficiary.

Total costs for mental health and social services in Alberta are summarized in Table 4.3. Total CPP-DB benefits amounted to $64.4 million. AISH benefits from all programs were $196 million. AISH plus CPP-DB support for the severe mentally ill was $260.4 million. This amount can be compared with the cost of mental health services. In

2005/2006, the total cost for persons in all adult groups up to the age of 65 was $405 million. The ratio of social service and support to mental health service spending was thus 1:1.55.

Table 4.1: Alberta Adult Population and its Distribution to Mental Health and Social Benefit Programs

Age Group	Population	Number With Mental Illness	Excess Number With Mental Illness Who Are Not Working	Receivers Of Canada Pension Plan Disability Benefits With Mental Illness	Receivers Of Assured Income For The Severely Handicapped
18–24	270,137	Not available	Not available	N/A	1,438
25–44	963.191	269,600	15,000	N/A	6,531
45–64	663,134	181,000	17,000	N/A	8,921
65+				N/A	248
Total	**1,896,462**			**7,456**	**17,138**

Table 4.2: Annual Government Costs for Mental Illness in Alberta, 2006

Age Group	Canada Pension Plan-Disability	Assured Income For The Severely Handicapped (AISH)		
Cost per person		**Health care services**	**Income support**	**Total AISH payments**
18–24	Not available	$1,648	$8,729	$10,378
25–44	Not available	$3,053	$8.672	$11,725
45–64	Not available	$3,381	$8,100	$11,482
65+	Not available	$1,957	$5,406	$7363
All groups	$8,640	$3,109	$8,532	$11,461
Total provincial costs	**$64.4 million**			**$196 million**

Table 4.3: Total Costs for Mental Health and Social Services in Alberta, 2006

Thousands of Dollars

Age Group	AISH Payments	CPP Payments	Provincial Mental Health Expenditures
18–24	$14,923	N/A	$54,624
25–44	$76,575	N/A	$187,276
45–64	$102.430	N/A	$163,588
65+	$1,826	N/A	N/A
Total, all adults	**$195,764**	**$64,400**	**$405,128**

Discussion

In this chapter I developed a measure of the benefit (assistance) payments and benefits from "noninsured" services in Alberta for working-age persons with severe and permanent mental health disabilities. While there are about 450,000 mentally ill persons between the ages of 25 and 64, the amount of excess unemployment due to mental illness in this group was estimated at 32,000 persons. Of the 7,456 persons who received CPP-DB and the 17,130 persons who received AISH benefits, many receive both benefits. CPP-DB benefits for persons with mental illness were $64 million, AISH payments for medical services and income supplements were $196 million; combined, the expenditure was $260 million.

The total of social assistance and social services expenditures for Albertans amounts to about 40% of all mental health care services for adults between 18 and 65 ($405 million) paid by the federal and provincial governments in Alberta; the ratio of social support and social services to mental health services is about 1:1.5. This ratio is different from that observed in the United Kingdom where the ratio of social service payments to mental health services is about 1:4.5 (Sainsbury Centre, 2003). It would appear that the governments spend a greater share of the public mental health dollars on social than mental health services in Alberta than in the United Kingdom.

To my knowledge, this is the first study of the magnitude of transfer payments and "noninsured" health benefits for the severely mentally ill in Canada. Previous studies (Goeree et al., 1999; Health Canada, 2002; Stephens & Joubert, 2001) focused on costs of

resources. For studies which focus only on the use of physical resources, this "societal" perspective is appropriate (CADTH, 2006). However, public policy is also about public payments and, from the public perspective as well as the private perspective, transfer payments to the needy are of substantial importance. This viewpoint is underscored by the magnitude of these payments. Prevention could provide substantial savings in transfer payments and in physical resources.

Many persons with mental illness have very low incomes due to an inability to or disincentives to sustain employment; these individuals receive government transfer payments. Public concern for these people goes beyond simply providing them with physical resources. This study informs policy makers about this aspect of resource use—provision of an adequate living to low-income persons.

The data obtained is highly aggregated, and in some cases I could not obtain sufficient data to obtain a full picture of the role of transfer payments and nonmedical benefits. Given the magnitude of the issue, the role of government benefits should be studied in more detail and, whenever a government-payer perspective is taken, these costs should be factored into the analysis.

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CHAPTER 5: CONCLUSION

In 1964 the Royal Commission on Health Services stated that mental health was under-funded and mental illness should be given the same status as physical illness in terms of the organization and provision of services (Canada, 1964). Almost 40 years later the Commission on the Future of Health Care in Canada (also known as the Romanow Report) stated that these disadvantages persisted, referring to mental health as one of the "orphan children" of Medicare (Commission on the Future of Health Care in Canada, 2002, p. 179). This report prompted a national study on mental health.

In May 2006, the Standing Senate Committee on Social Affairs, Science, and Technology in its report on mental health, "Out of the Shadows At Last: Transforming Mental Health, Mental Illness, and Addiction Services in Canada," (Standing Senate Committee, 2006) was released. This report underlined the need for an investment by the federal government of $536 million dollars per year for 10 years, implying a situation of significant under-funding. The conclusion of the report stated that:

> *The Committee believes that implementing the recommendations [that were made]...will allow, for the first time, national resources to be channeled into fostering the mental health of Canadians. It will also establish a solid basis for maintaining a national focus on mental health issues and pave the way for the further development of a national approach to mental health, mental illness, and addiction in Canada (p. 477).*

On August 31, 2007 Prime Minister Harper publicly launched the Mental Health Commission. The commission is a nonprofit organization created to focus attention on mental health and social outcomes of people living with mental illness. The first tasks of the commission will be to facilitate the development of a national mental health strategy, conduct a 10 year antistigma campaign, and build a knowledge exchange center. In addition, the commission will be responsible for continuing to foster an open dialogue on mental illness issues with stakeholders from across Canada. The formation of the

commission underscores the importance of the topic of this thesis: how to measure the economic importance of government mental health services in Alberta.

At the start of this project a literature search was conducted to obtain data on population-based mental health costs and an estimate of the mental health economic burden for Canada. Relevant studies were identified. There were a few Canadian studies (Stephens & Joubert, 2001, Goeree, et.al. 1999), but none linked to personal level data—an important starting point in producing economic studies which answer policy questions. As well, all studies took an economic resources approach.

In a cost-of-illness review, Tarricone (2006) indicates that in cost-of-illness (COI) studies the two prime methods used to estimate economic costs are "top-down" versus "bottom-up". The "top-down" approach is calculated by allocating total national health care expenditures by category of care (i.e., hospital care). The "bottom-up" approach takes three distinct steps. In step 1 the quantity of health used services by each person is determined and in step 2 the unit costs of the services are calculated. Finally, the total costs are determined by multiplying unit costs by the quantities used. Using this latter design, costs can be linked back to persons and their clinical characteristics.

Tarricone (2006) stated that a COI study is a descriptive study which attempts to assess the economic burden of illness on society, identify the main cost components and their incidence over total costs, identify the actual clinical management of illness at a national level, and explain the variability of costs. To attain these goals, "COIs need, however, to be bottom-up and the top-down approach has to be definitely abandoned" (p.61).

The two major studies observed in Canada were the "Economic Burden of Illness in Canada, 1998" (Health Canada, 2002) and "The Economic Burden of Mental Health Problems in Canada" (Stephens & Joubert, 2001). In the EBIC report, Health Canada used provincial databases, including hospital care, drug, and physician care expenditures. The EBIC used a "top-down" approach to estimate the direct costs of illness. The Stephens and Joubert (2001) study augmented the EBIC (1998) study by estimating "the costs of consultations with psychologists and social workers not covered by public health insurance ... [and] the value of reduced productivity associated with depression and

distress over the short term" (Stephens & Joubert, 2001, p. 1). A "bottom-up" approach was used for the calculation of the number of psychologists and social worker visits but, for the most part, the analysis was "top-down". In addition, these studies only looked at resources, not transfer payment.

The objectives of this thesis were to examine current government spending and investment in mental health in Alberta using a "bottom-up" approach. The focus was on two types of spending—mental health services and social services. The proposed measure provided an indicator of the relative spending of mental health compared to spending for other health care services, a bellwether measure of a jurisdictions commitment to mental health.

This thesis consists of three separate but related studies. In the first study, a measure of provincial spending on mental health in Alberta was developed using a "bottom-up" approach. Although the results from the dataset reported are in aggregate, the data used were obtained directly from records of persons who received mental health services, and a powerful analytical tool has been developed for further exploration. In the second study, this tool was used to measure mental health services spending to indicate the impact on equity of a change in the organizational arrangements for mental health services in Alberta—the transference of selected mental health services from the provincial government to the health regions. In the third study, the spending on social services for persons with mental health issues in Alberta was measured. Though the records of the three involved agencies have not been linked, the methods to do this are now clear. As well, we now know the order of magnitude of these services.

Data compiled in this thesis provides new information on mental health economics in Alberta. Firstly, Alberta spent roughly $573 million on mental health services in 2002, about 8.4% of Alberta Health & Wellness expenditures. The breakdown of these expenditures indicates that hospitalization makes up 43% of the total, physician services make up 22% and community mental health clinics 16%.

Secondly, over a six year period, 1999/2000 to 2004/2005, mental health expenditures increased continually, but the ratio of mental health expenditures to total health care

expenditures decreased after mental health services were handed over to the regions on April 1, 2003.

Thirdly, AISH payments for the mentally handicapped are almost one-half of the cost of provincial mental health services, while mental health disability payments through the Canada Pension Plan amount to about 16 % of payments for provincial mental health services for the relevant age groups.

Parity was defined as the ratio of mental health to total health spending.

This study thus provides a concrete way of measuring mental health "parity" for Canada, a concept usually presented in a qualitative context. This measure fits well into my analysis because it can be linked to RHA economic behavior regarding support for mental health. RHAs have a measure of freedom to assign costs as they wish between mental and general health. However, the RHAs do not have complete control over service volumes, especially in the short-run. Some services can be totally demand generated and the RHAs can only react to this demand. This is true of emergency visits, and nonelective hospital admissions. Mental health services fall into these categories. However, for other services, especially community health services, budgets can be reduced more readily. It is here the largest reductions occurred.

My results indicate that parity between mental health and general health spending, already a concern, declined when mental health was taken over by the regions. These results are consistent with the concern expressed by Canadian government reports (cited earlier) on the lack of support for mental health; they provide evidence that support for mental health is declining. The federal government reports both appeared in 2002, yet decline continues.

Further, social disability payments amount to a substantial portion of government expenditures for mental illness. This indicates that these categories of expenditures should be explicitly factored into any policy relating to overall spending on mental health.

These estimates provide a tool to model the impact of changes in mental health policies. As the report by the Standing Senate Committee (2006) indicates, such tools have not been publicly available up until now for any single province. However, there is more that we need to know, and there are also limitations to this analysis.

Considering the limitations in Topic I, Table 1.2 presented a comprehensive listing of mental health services. This listing included prevention, promotion and protection services; early detection and intervention services; crisis intervention; acute care and treatment; consultation, assessment, care planning, treatment and follow-up; specialized treatment; rehabilitation; community supports; service integration RHAs, inter-ministerial and other government agencies and system supports. To the extent that those items presented on Table 1.2 were excluded from the costing would accordingly be a limitation to the study. One significant exclusion were outpatient prescription drugs (OPDs). In Alberta, OPDs are only funded by Alberta Health & Wellness for individuals over 65 years of age. According to Health Canada (2002), drugs comprise about 20% of all mental health costs. There is a need to incorporate drugs into an analysis of public costs.

The perspective of this chapter has been on public expenditures. However, there is no readily available cost or service volume related information on for private-for-profit providers or not-for-profit agencies. Organizations such Canadian Mental Health Association, Boyle Street Co-op, Children and Adolescents Society of Alberta, and Shepherds Care are some examples of these organizations. Further, there is no information on those employment-related losses which are channelled through private insurance. Information about these costs is only available through the private insurance companies as it is not available in the public domain.

The first topic focused directly on mental health services, rather than on all health care services used by persons with mental illness diagnoses. Costs for individuals whose mental illness diagnosis was secondary or co morbid to a physical disorder were not included. Mental illness may be a contributor to higher costs for care of physical illness. Including these broader considerations would considerably increase the resulting costs. For the second topic (Chapter 3) which deals with trends in healthcare costs, many of the

limitations listed in topic one are relevant for Topic II as well. In this study I omitted expenditures not in the regional budget (e.g. physician fees). Some of the expenditures that were included in the regional budgets may not have been under the control of the regions in the short run. Some mental health services may not have been controlled by the regions—for instance, emergency room visits would not always be controllable although some interventions may eventually reduce these. However, I do not have any information on the degree of controllability of these expenditures.

Costs for long term care facilities such as nursing homes and private services were excluded—another limitation of this study. Some of the former costs would be under the control of the regions, but very little information is currently available on these expenditures. For example the Children's and Adolescent Society of Alberta receives a nominal annual support from Capital Health and this amount is excluded. New registrations for psychiatric facility outpatients were limited to those associated with psychiatric facilities and therefore registrations to forensic outpatient programs are not included. Results may reflect data collection capacity issues. For community mental health services, events were limited to client related events and therefore exclude activities occurring in clinics (i.e., promotion and prevention, school activities) which were the new responsibilities of the regions. For telemental health services only completed client consultations were included: other activities such as educational sessions were excluded.

Since no specific inflation measure is available for mental health, an inflationary adjustment of 3% per annum was used. This is an approximation; the inflation rate for health regions may have been greater in some years and less in others.

No estimates for productivity were made and therefore the results may skew interpretation of the "real" services.

The following limitations pertain to Topic III (Chapter 4). First, the social assistance data was not directly linked to Alberta Health & Wellness by the Department of Alberta Seniors and Community Supports (ASCS). This limits the costing tool as a policy making device because the distribution of social services and disability costs cannot be

allocated by type of patient ASCS recipients of funding and services are not identified by the unique health identifier used by Alberta Health & Wellness. In the future it may be possible to do probabilistic linkages. Additionally, no details on ASCS for non-insured medical services were available. It would be helpful to know the types of medical services that were received.

For the Canada Pension Plan data there were no data on personal characteristics of recipients. It may not be feasible to link data in the near future, but the absence of individual data reduces the value of the data for policy purposes.

Data inclusions and exclusions may have occurred due to errors in definitions related to concurrent disorders. Both for CPP and ASCS data, persons may have had more than one type of disability, making the attribution of costs by disability arbitrary. Our analyses included persons with mental disabilities, regardless of whether or not they had a physical disability, which would also qualify them for assistance payments.

As a tool of analysis, disability data have serious limitations. We now know the magnitude of assistance, but we need much better data to pinpoint where expenditures are being made.

Suggestions for future research

Many suggestions for future research could be made. I present three areas that I believe would be important to policy makers. Appendix 5 of the Alberta Mental Health Board's (2004) "Advancing the Mental Health Agenda: A Provincial Mental Health Plan for Alberta" included nine mental health related service roles of other ministries (pp. 1-6) that were consulted in the preparation of the provincial plan. These included Health Canada – First Nations and Inuit Branch, Alberta Aboriginal Affairs and Northern Development, Alberta Seniors, Alberta Children's Services, Alberta Human Resources and Employment, Alberta Community Development, Alberta Justice and Alberta Solicitor General, Alberta Learning and Alberta Alcohol and Drug Abuse Commission. Since the release of the Alberta's Provincial Mental Health Plan government reorganizations have occurred but the related programs still are imbedded within new or

continuing government departments. Determining the costs of mental illness and related programs in these other provincial ministries is needed to enhance coordination and to determine overall effectiveness.

Secondly, the service delivery and planning for the mental health system has historically operated as three distinct sectors within Alberta. Wasylenki, Goering, and MacNaughton (1992) state that "Provincial psychiatric hospitals, psychiatric units in general hospitals and community mental health programs operated in isolation from one another resulting in a situation best described as three solitudes" (p. 199). On April 1, 2003 the systemic problems of these three solitudes in Alberta, was mitigated by the nine RHAs assuming responsibility for all three. Thornicroft and Tansella (2003) argue that a balanced mental health care system is one where each type of service, if in the right proportion would support optimal efficiency of the system. Some community mental health services such as supervised residential services are not directly discussed in this thesis. Determining provincial housing costs expended on individuals suffering from a mental illness would further supplement research and would greatly assist decision makers in the implementation of a balanced care model.

Finally, in *Methods for Economic Evaluation of Health Care Programmes* the authors state that "the basic tasks of any economic evaluation are to identify, measure, value and compare the costs and consequences of the alternatives being considered" (Drummond, Sculpher, Torrance, O'Brien, & Stoddart, 2005, p. 9). To that end, further research needs to be conducted so as to provide a more detailed breakdown of costs by population groups and by diagnosis so as "to inform policy makers and to inform 'value for money' judgements about an intervention or program" (CADTH, 2006, P.1).

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APPENDIX A: THE DIRECT PUBLIC-SECTOR COSTS FOR MENTAL HEALTH IN ALBERTA (ORIGINAL PUBLISHED ARTICLE)

ORIGINAL ARTICLE

The Direct Public-Sector Costs for Mental Health in Alberta

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Abstract

The purpose of the study was to estimate the direct 2002 fiscal year costs for mental health services in Alberta. Data were collected on mental health publicly funded services and costs. Mental health services cost $573 million annually, amounting to about 8.4% of all provincial health services. The greatest share of costs was for regional inpatient services and physician services (both at 22%). The more direct method used in this study shows higher estimates of mental health costs than previous studies.

Introduction

Mental health has been identified as having a significant and growing disease burden in Canada. A study by Information Management using 2002 fiscal year data found that 16.4% of the population sought physician services for a mental health related-problem or disorder.[1] Available information identifies that in Alberta, the rate of individuals seeking mental health services has been increasing. In one study by Health Surveillance staff at Alberta Health and Wellness, the percentage of individuals who visited a physician at least once in a year for a mental health disorder increased from below 13% in 1995 to nearly 16% in 2001 (Health Surveillance, 2003, personal communication).

Using data on healthcare services utilization, Health Canada in its *Economic Burden of Illness in Canada* (EBIC) document identified a national cost of government-provided mental health care of $4.6 billion in 1998[1]; this was 5.6% of all direct healthcare costs. Goeree et al.[2] conducted a similar type of analysis for schizophrenia, and estimated the cost for that specific disease alone at over $1 billion. However, neither study linked the expenditures to the number of users of the services. In a study that used persons, rather than mental health services, as its basis, Stephens et al.[3] estimated the national cost of *non-government* services to be $278 million; because this is a small portion of government costs as just indicated, it appears that government is the major funder of mental health care in Canada.

As indicated by Health Canada,[2] studies on costing are essential for policy-making purposes. However, studies that focus on services alone, without referencing the number of affected persons, cannot provide planners with

the needed linkage between epidemiological information on disease burden, and the resulting costs of these conditions. In order to assess the population impact of alternative interventions and policies, one must focus on policies, persons, and resource use.

In Canada, mental health service provision is organized at the provincial level, and so for planning purposes the province is an important unit of observation. All Canadian provinces have provincial health insurance registries, hospital discharge, physician billings, and (sometimes limited) prescription drug data, which form an excellent base for analyzing population-based costs from an evidence basis. Alberta, in addition, collects data on ambulatory care (including emergency room), as well as community mental health clinic service data, and links utilization in mental health facilities to the main registry, both of which can be used to draw a more complete picture of how a population uses its mental health resources. Using these databases, we estimated the provincial cost of mental health services in Alberta globally, and by type of service, in the 2002 fiscal year. Currently, no methodology exists in any province to provide this information, which is essential for any planning exercise.

Method

For the period up to April 1, 2003, which includes the period of observation (fiscal year 2002) of this study, the Alberta Mental Health Board (AMHB) played a key role in providing specialized mental health services throughout the province; these services consisted of the psychiatric facilities, community mental health clinics, and telemental health services.

As of April 1, 2003, the aforementioned services were transferred to the nine regional health authorities. The AMHB mandate at that juncture became focused on advocacy, planning, providing coordination of some provincial services (such as Forensic Psychiatry, Telemental Health, Aboriginal Services, Suicide Prevention), research coordination, as well as providing information management and data analysis. Our analysis focuses on the costs just prior to the changeover; because of the time lag between data collection and availability, these were the latest data available at the time the analysis was conducted.

Alberta Health and Wellness (AHW) maintains a registry of all residents that contains a unique personal identifier. The modes of delivery for each service included in our study are summarized in Table 1. In any service, each mental health visit to a health facility or office is recorded, and an electronic record is generated and sent to either AHW, or to the AMHB. Using a variety of methods explained below, unit costs were assigned to each type of visit. The total cost of all services was recorded, as was the sum of the costs of all visits, and the number of unique recipients of each type of service.

Psychiatric Facilities

Psychiatric facilities were costed using their total expenditures for the 2002 fiscal year. "Total expenditures" refers to direct (clinical, including salaried physicians) as well as administrative/overhead costs.

Community Mental Health Clinics

Similar to the facilities method, the total expenditures for the 2002 fiscal year were used as the overall cost for this service area.

Regional Hospital – Acute Inpatient Services

The first step for this service area was to determine which cases from acute care hospitals were appropriate to consider as mental health. To accomplish this selection, the discharge diagnosis for each inpatient was reviewed via the Discharge Abstract Database. A case was selected as "mental health" only if the most responsible diagnosis was specified as a mental health disorder/problem. For consistency purposes, the diagnostic codes of interest were determined by using the complete set of mental health codes (Axis I, II, and IV) within the *Diagnostic and Statistical Manual of Mental Disorders, Fourth Edition, Text Revision*.[7] If the diagnostic coding in the record was completed using the *International Classification of Diseases, Ninth Edition, Clinical Modification*,[8] a crosswalk was utilized to ensure consistency between the two taxonomies.[7] This method ensured that all mental health cases were selected for costing, regardless of what type of functional centre/inpatient unit the client received services in. This method allowed us to capture cases of inpatient services provided in acute regional hospitals that did not have any psychiatric beds/units. In addition, this method captured the patient days in those acute regional hospitals that contained psychiatric beds, but where some clients nonetheless received inpatient services in general/medical beds. The number of days of stay was obtained for each case.

Costs were then established for these inpatient days by utilizing existing financial reporting mechanisms (Management Information System Reporting; MISR). The cost per day for inpatient stays was calculated from reported cost information, *Annual Report on Health Costing in Alberta*. This method includes assigning a Case Mix Group indicator to each discharge record. The average costs from 40 corresponding Case Mix Groups, encompassing over 15,000 patient stays, were calculated. The costs for the entire stay of these cases were divided by length of stay to obtain a per day cost. This per day cost was then multiplied by the total number of days comprising each case, and then aggregated for a total of all cases. This cost is the full cost including all overheads except for building depreciation. It excludes fee-for-services provided by physicians. Further details on case mix costing and the cost compilation process are included in the *Annual Report on Health Costing* (2003).[9]

Regional Outpatient Services

The mental health cases were determined by the most responsible diagnoses within the Ambulatory Care Classification System in the same manner as described in the "Regional Hospitals – Acute Inpatient Services"

section. This ensured that all mental health-related services were captured, including those in non-mental health specific service delivery areas such as emergency rooms. The outpatient cost information was derived from MISR submissions from the regions. These MISR submissions are general ledger trial balance information grouped by hospitals' functional centres/departments. The Health Funding and Costing Branch of Alberta Health and Wellness extracted summary information for selected functional centres for all facilities from the MISR database. Because of significant variation of costs within each regional health authority, costs were determined at the site level within each RHA. Average costs per visit were determined for the functional centres providing the majority of mental health services by dividing the total functional centre costs by the number of visits to that centre. The mental health visits were then costed at the average rate. An average cost of the functional centres providing approximately 90% of the mental health services was used to cost visits occurring at a low frequency in various other outpatient centres. This summary information included the direct and indirect costs of operating the selected departments. It did not include allocated overhead from other administrative departments. Where noted, an estimate of these overhead costs was based on allocation processes currently used within Alberta Health and Wellness.

TABLE 1.
Public Healthcare Sector Mental Health Service Costs in Alberta in the 2002 Fiscal Year

	# Treated (persons)	Total Cost (in 000s)	Cost per Treated Person	% of Mental Health Total Cost
Emergency Room*	36,373	$6,819	$187	1%
Regional Outpatients †	33,194	$47,495	$1,431	8%
Community Mental Health Clinics ‡	33,146	$89,503	$2,700	16%
Regional Inpatients §	12,985	$123,774	$9,532	22%
Psychiatric Facilities Inpatients ¶	3,199	$121,491	$37,978	21%
Psychiatric Facilities Outpatients **	10,588	$11,011	$1,040	2%
Physicians ††	503,904	$127,778	$254	22%
Telemental Health ‡‡	593	$232	$391	0.04%
Other Provincial Costs §§	N/A	$44,981	N/A	8%
Total Costs		$573,084		
Population of Alberta (2002/03)		3,124,487		
AH&W Actual Expenditure (2002/03) in 000s		$6,790,360		

Note. *Emergency Room Visit Total Costs were calculated using the 2001 fiscal year (April 1, 2001 to March 31, 2002), average costs adjusted for inflation (3%). Includes administrative and overhead costs.
†Costs for Regional outpatient services (excluding emergency room visits) were calculated using 2001/2 average costs adjusted for inflation (3%). Excludes administration and overhead costs.
‡Community Mental Health Clinics total costs were calculated by the 2002 fiscal year total budget.
§Regional inpatient total costs were calculated by the average length of stay multiplied by the average per diem cost according to psychiatric Case Mix categories for the 2002 fiscal year.
¶ Psychiatric Facilities Inpatients: The total costs for the inpatient services were calculated based on the 2002 fiscal year total budget.
**Psychiatric Facilities Outpatients: The total costs for outpatient services were based on the 2002 fiscal year total budget.
††Physician visits costs were calculated according to the Alberta Health Care Insurance Plan, Medical Price List for all visits that were primarily for a mental health related problem or disorder.
‡‡Telemental Health costs include the physician/psychiatrist reimbursement costs for clinical services. The clinical/administrative support and other costs for Telemental Health are included in the Other Provincial Costs section.
§§Other Provincial Costs include the costs for the Alberta Mental Health Board administration, Provincial Services, Children's Mental Health administration, Community Mental Health administration, and Clubhouses, and clinical/administrative support for Telemental Health. Although a relatively small number of clients receive services through these funds, the number of treated persons is unavailable.

Physician Billings

A process similar to that described in "Regional Outpatient Services" and "Regional Hospital – Acute Inpatient Services" was utilized. A physician billing was included as a mental health case if a mental health diagnosis/problem was listed as the "most responsible" reason for the client seeking the particular physician service. The specific costs associated with these visits were determined from the standard billings associated with the services provided (according to the Alberta Health Care Insurance Plan, Medical Price List).

Telemental Health

Telemental Health costs include the physician/psychiatrist reimbursements for clinical services. Each consultation type received a specific reimbursement amount based on the Alberta Mental Health Board sessional rate. As this technology is used for a variety of clinical education, consultation, and administration functions across the province, the clinical/administrative support and other costs for Telemental Health are included in "Other Provincial Costs" in Table 1.

Patient Counts

For each type of service, we calculated an unduplicated count of the number of persons who used these services. This allowed us to calculate a "top down" measure of the cost per user. We could not aggregate all databases, so we could not obtain a global cost per user.

Results

Total provincial costs for all mental health services, as shown in Table 1, amounted to $573 million. Inpatient costs, physician services, and psychiatric facilities formed the largest proportions, amounting to 22%, 22%, and 21%, respectively. Thus inpatient care (excluding related doctor care) amounted to 43% of total mental health care costs. Emergency room visits amounted to $6.8 million, about 1% of the total.

Private physicians saw 504,000 patients in total. Although we do not have a direct unduplicated measure of

patients, this would serve as a very rough, and perhaps low, approximation of total persons receiving mental health services (since some clinic patients may not see a physician). In total, mental health services formed about 8.4% of total provincial healthcare costs.

The most expensive mode of care is inpatient care in psychiatric facilities, averaging $38,000 per treated person, while those treated on an inpatient basis in acute care facilities incurred per person costs of $9,532.

Discussion

We used provincial data on each person's use of mental health services to estimate the total provincial cost of these publicly funded services in Alberta. According to our estimate, in 2002/03, $573 million was spent on mental health services in Alberta, which is about 8.4% of all healthcare resources. Costs were widely distributed across services, with inpatient care in Regional Hospitals and Psychiatric Facilities having the largest portion of cost, although they served a relatively small proportion of patients.

These are the first direct estimates of provincial mental health costs using person-level data. Health Canada developed mental health cost estimates for 1998 in Canada (excluding drugs) to be $3.6 billion, which is 4.2% of all direct public non-drug healthcare expenditures. Our estimate is about twice that figure. Some of the difference is explained by the fact that our estimate included community mental health centre visits, which account for over 15% of all mental health costs. These expenditures are considered to be public health expenditures in the EBIC document. Additionally, much of what we consider to be "Other" mental health costs are not related to any disease categories in the EBIC document. These categories explain one-half of the difference between our statistics and EBIC. The rest will be due to valuation differences and, perhaps, unique practice patterns in Alberta.

One of the major thrusts in mental health policy in recent years has been the attempt to reduce utilization in inpatient care, with consequent shifts towards outpatient care. Currently, there is no information available on the total expenditures provincially nor on the breakdown of these services. The present estimates can be used to help policy-makers understand where the province currently is, and what the situation would be if they shifted expenditures. For example, our analysis indicates that 43% of all mental health services is inpatient in Alberta. In conjunction with clinical cost effectiveness studies, we could estimate how the expenditure patterns might shift in response to a policy change. Without such information, we would not know the economic situation before or after the shift; we would only know the net impact. Policy-makers need to know both.

A second use of this information lies in the comparison of utilization patterns across provinces and over time. There is no information at present on total provincial expenditures for mental health services, nor on the breakdown by types of care. With such information, we can estimate the effect of changes over time. We can also estimate the differences in expenditure patterns between provinces. Such information will be valuable to policy-makers who wish to know how patterns are changing in response to provincial or national mental health policy.

The fact that we used an integrated data system to generate our cost estimates allowed us to identify both the resources used (total cost) and the numbers of persons served. This "bottom-up" approach is more amenable to planning, since it allows costs to be linked to key drivers – one of which is the number of people using services and the population and its characteristics.

There are limitations to our analysis. First, we did not include outpatient prescription drugs. In Alberta, these are only available for individuals over 65 years of age. According to Health Canada,[2] drugs represent about 20% of all mental health costs.

Second, we focused directly on mental health services, rather than on all health-care services used by persons who are categorized as having a mental illness diagnosis. Relatedly, we did not include cases or costs for those individuals whose mental health diagnosis was one of the secondary, or comorbid, conditions in addition to a physical disorder. If an analysis would include these broader considerations, the resulting costs would be considerably higher. Certainly all these types of information are important and warrant attention as mental health may influence the general use of health services.

A third limitation of the data is that there are other components of the mental health service continuum, such as private-for-profit or not-for-profit agencies, for which there is no readily available cost or service volume related information in public administrative databases.

Our analysis shows that the costs of mental health services to the publicly funded healthcare system comprise a significant proportion of total healthcare expenditure. Knowing that these estimates do not include drug costs or privately funded services, this result underestimates the figures of the healthcare burden of mental health services. This study is the first step to offer policy-makers information about the mental health costs.

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