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# Healthcare Restructuring and Community-Based Care: A Longitudinal Study

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## **Key Implications for Decision Makers**

The issues addressed in this study are of particular importance to managers and policy makers at all levels — regionally, provincially, and federally. There is considerable concern at the current time with reforming our healthcare system in ways that are cost-effective and, at the same time, appropriate for meeting the current and future health and healthcare needs of an aging population. Regionalization has been adopted as a means for achieving these objectives. Examination of its implications can therefore serve as a guide to decision-making, suggesting future directions and needed modifications. Some of the messages that this program of research provides for decision makers include the following:

- Trends in access to and use of health services appear fairly consistent immediately before and after regionalization, suggesting declines in service, increasing intensity of care, and redirection of specific services. A shift of focus and resources toward a more social, community-based model of care remains to be achieved.
- Declines in resources and access to hospital and institutional care need to be accompanied by increases in resources and access to community-based services like home support and home nursing care.
- When allocating resources, it is important to consider more than medical needs. Doing so puts certain groups (like seniors under the age of 85) at a disadvantage, since many of their healthcare needs are non-medical and require supportive community-based care.
- Switching preventive care out of the doctor's office and into the community may increase the number of people receiving preventive care and even out differences in use between people with different socioeconomic circumstances, and people living in rural versus urban areas. For example, screening programs can be delivered through permanent facilities in urban areas, but mobile facilities may be more appropriate in rural and remote areas.
- The true impact of regionalization in Canada will not be known for several years and after study of long-term effects.

## Executive Summary

### Background

Over the past decade, provincial and territorial governments across Canada have been engaged in a process of reassessing their health policies, restructuring their healthcare systems, and reallocating their health dollars. The need for a shift of focus and resources toward a more social, community-based model of care has been a dominant theme of health reform, with regionalization adopted as way to achieve this and other aims.

However, little is known regarding the ability of regionalization to achieve these objectives. Given the importance of these issues, researchers at the University of Victoria Centre on Aging and the University of Manitoba Centre for Health Policy have collaborated with three health regions in British Columbia and three health regions in Manitoba on this research project, designed to address the impact of regionalization on community-based care. The focus was on the relationship between healthcare reform and restructuring through regionalization and changes over time (1990-1999) in the allocation of health resources, use of health services, and health outcomes. Using administrative data and other sources of information, comparisons were made between three health regions within each of the two provinces and among particular at-risk groups within the overall population. This report outlines some of its findings.

### Findings

The study revealed some of the changes that took place in the regions and the provinces during the years immediately before and after the regionalization of health services in April, 1997.

#### *British Columbia*

British Columbia researchers found numerous changes in health resources, health services, and population health during the years before regionalization (1990/91 to 1996/97). In general, the number of acute and extended care hospital beds declined during this period as did the use of inpatient hospital services. The supply of nursing care also declined somewhat. Yet there were modest increases in access to and use of alternative health services, such as naturopaths and chiropractors, physician services, and outpatient hospital care. Use of long-term residential care also increased somewhat as did community-based home nursing care, along with the intensity of care provided. In contrast, however, access to home support services declined, while the intensity of care provided to those receiving services once again increased. Finally, the overall health of the population also appeared to increase.

Many of the same trends were found during the two years that followed regionalization (1997/98 and 1998/99). However, while extended care, day surgery, outpatient hospitalization, and home nursing care service rates of use all increased somewhat during the years prior to regionalization, each declined over the two years immediately following. Use of alternative health services also decreased during this period, continuing a pattern established shortly before restructuring.

The trends varied somewhat across age groups. While increases in physician visits, outpatient separations, and home nursing care services were somewhat greater among those in the oldest

age groups, decreases in inpatient hospitalizations, home support services, and home nursing care over time tended to be somewhat smaller within these age groups. In contrast, comparisons across income quintiles found little difference in the trends for different groups, while comparisons across regions revealed both similarities and differences in trends.

### *Manitoba*

Manitoba researchers examined Manitobans' use of all major types of healthcare over time, including physician, hospital, nursing home, homecare, public health, and prescription drug use. Because of the increasing number of residents aged 75 and older in Manitoba, the study also considered the health status and use of care among this cohort.

Over the study period, there was little change in the number of available doctors and the number of physician visits. The number of physicians in Manitoba per 1,000 residents rose little (0.3 percent) from 1990 to 1997, while the number of physician visits per 1,000 residents declined by 1.5 percent from 1990 to 1998. In particular, age-sex adjusted rates for GP visits per 1,000 residents only dropped by 0.6 percent over the study period, and specialist visits decreased by 1.8 percent

Inpatient hospitalizations showed only a small increase (7.2 percent) during this period, while nursing home admissions for people 75 and older held fairly steady. Despite these findings, Manitobans actually spent less time in a hospital after admission, leading to a 20 percent drop in the average number of days spent in hospital. Contrary to popular thought, this drop did not appear to be due to a lack of hospital beds. Bed closures began in 1992, but the decline in hospital use began in the 1980s. In fact, half the decline in the number of days patients spent in hospital occurred before 1992. Similarly, even though more individuals aged 75 and older were admitted in recent years, the average length of time spent in nursing homes has fallen, suggesting that older residents are living longer at home either because they are healthier or because homecare services are more available.

From 1991 to 1998, rates for four types of surgery (knees and hips, coronary artery bypass, and cataracts) known to improve the quality of life for older adults increased substantially (183 percent, 49 percent, 76 percent, and 66 percent respectively, after taking account of the increased numbers of older Manitobans).

The mortality rate for residents aged 75 and over dropped from 95 per 1,000 in 1990 to 92.1 per 1,000 in 1998. Thus, the overall health of older Manitobans, like the health of all Manitobans, improved over this period.

Finally, Manitoba researchers also addressed the impact of changes in the delivery of mammography services in the 1990s on coverage and inequalities in the use of preventive care. The changes implemented included shifting responsibility for provision of these services away from physicians, and providing services through permanent screening facilities in urban areas and mobile vans in rural/remote areas. Since no changes took place in childhood immunization or cervical cancer screening during this period, longitudinal information on these services was used as a control for comparison with the mammography data. The findings revealed a major impact of the breast-screening program implemented shortly prior to regionalization: coverage

rates rose dramatically while longstanding disparities in use (socioeconomic and rural-urban) disappeared. Similar changes were not found with regard to cervical cancer screening or childhood immunizations.

### ***Comparing British Columbia and Manitoba***

Finally, comparative analyses were done to assess differences in the changes that took place over the nine-year period encompassing regionalization. The preliminary findings suggest significant differences between the two provinces, both prior to and following the restructuring. In general, greater use of general practitioner and outpatient services was made by British Columbians while Manitobans made greater use of medical specialists and inpatient hospital services. Before regionalization, lengths of stay in acute hospital care also tended to be somewhat greater in British Columbia.

Rates of change also appear to differ somewhat between the two provinces. Adjusted for age and gender, the rate of change in physician visits was relatively small in each province. However, differences between the provinces seemed greater in the hospital sector. While British Columbia saw somewhat greater declines in inpatient separations and lengths of stay, Manitoba saw a greater increase in outpatient separations.

### **Summary**

Overall, our research confirms significant changes in health resources and the use of health services have taken place over the past decade. Yet findings obtained by researchers in British Columbia provide no clear indication of a shift of focus away from a predominantly medical model of care and toward a broader social and community-based model of care. Declines in acute hospital care resources appear consistent with such a move. However, recent declines in outpatient care, alternative health services, home support services, and home nursing care appear less consistent. The more dominant theme has been one of declines in service, whether in acute medical and hospital sectors or in community-based services. Declines appear to be accompanied by an increasing intensity of care and redirection of services towards those in the oldest age group.

While changes in health resources and services are evident across provinces, findings also suggest somewhat different strategies for health reform within the two provinces. In British Columbia, the focus appears to have been on implementing reductions in inpatient hospitalizations while holding the line on outpatient care. In Manitoba, reductions in inpatient hospitalizations have been offset by increases in outpatient care.

Finally, it should be noted that many of the changes observed were initiated well before regionalization was formally introduced in 1997 and continued thereafter. Research conducted in both provinces suggests that regionalization has not significantly altered the course of change, at least during the short-term. Future research will need to confirm, extend, and refine the analyses over a longer period of time.

## **Context**

Health reform is a central issue currently on the domestic policy agendas of numerous industrialized countries, including Canada (Health Canada, 1997; WHO, 1996). Over the past decade, pressured by economic concerns as well as concerns with enhancing system efficiency, effectiveness, and ability to meet population health needs, provincial governments across Canada have been reassessing health policies, restructuring healthcare systems, and reallocating health dollars. The need to shift focus and resources away from a predominantly medically-focused model of health services delivery (emphasizing treatment and cure of illness or disease, the provision of services within institutional and, especially, acute care hospital settings, and physician management) to encompass a more broadly-focused community-based population health model (emphasizing health promotion and disease prevention, community-based services such as homecare, and active citizen involvement) has been a dominant theme in health reform (Mhatre and Deber, 1992; National Forum on Health, 1997).

However, little is known regarding the effectiveness of regionalization in achieving these objectives (Lomas, Woods and Veenstra, 1997; Reamy, 1995; Vail, 1995; Vingilis and Burkell, 1996). For example, will resources shift from acute hospital and medical care sectors toward community-based services such as homecare? Will reductions in resources to acute medical and institutional care be accompanied by an expansion or redirection of homecare or other community-based services? Will such services become medicalized in the process? What impact will this have on health service use among the population as a whole and among particular 'at risk' groups within the population? Will health reform reduce inequities related to health services use, or will the burdens of health reform fall disproportionately on those least able to cope?

Also unclear are the implications of different strategies being adopted for regionalization. Both the pace and nature of regionalization have been noted to vary across provinces (Crichton et al., 1996; Decter, 1997). Structurally, devolved authorities have been found to vary somewhat with regard to the number of tiers, accountability mechanisms, degree of authority, and method of funding, with greater variations evident in the scope for services included under the authority of the local boards (see Lomas, Woods and Veenstra, 1997). By definition, still greater variations are expected to be evident at the regional policy and service delivery levels, given regional differences in health needs and expectation of board responsiveness to local needs and input.

Given the importance of these issues and need for research in this area, researchers at the University of Victoria Centre on Aging and the University of Manitoba Centre for Health Policy collaborated with partners representing several health regions in the provinces of British Columbia and Manitoba on a research project designed to assess the impact of health reform and restructuring through regionalization on the development of community-based care. More specifically, the study sought to examine temporal changes in three areas:

1. the allocation of resources to physician, hospital, residential, homecare, and other community-based services;
2. the overall use of physician, hospital, residential, homecare, and other community-based services; and
3. population health, morbidity, and mortality outcomes.

Using administrative data as well as other sources of information, comparisons were made between two provinces (British Columbia, Manitoba), across three health regions within each of the two provinces (including the Capital, Okanagan/Similkameen, and Upper Island/Central Coast health regions in British Columbia and Eastman, Interlake, and Burntwood health regions in Manitoba), and among particular ‘at-risk’ groups within the

overall population. Funding for this project began December 1, 1998 and ended November 30, 2001.

## **Implications**

The issues addressed in this study are of particular importance to managers and policy makers at all levels — regionally, provincially, and federally. There is considerable concern at the current time with reforming our healthcare system in ways that are cost-effective and, at the same time, appropriate for meeting the current and future health and healthcare needs of an aging population. Regionalization has been adopted as a means for achieving these objectives. Examination of its implications can therefore serve as a guide to future decision-making, suggesting future directions and needed modifications.

One of the primary implications of our research concerns the need for decision makers to clarify the objectives of healthcare reform with regard to a shift of focus from acute medical and hospital care and toward a broader social, community-based, population health model. Our findings revealed that while there has been decline in population-based access to and use of medical care, this has also been accompanied, at least in British Columbia, by declines in community-based services. Furthermore, declines have been accompanied by increased concentration and intensity of services among those in groups (for example, those aged 85 and older) most likely to use medical, hospital, and institutional services, thereby suggesting a medicalization of community-based care. However, movement towards a community-based model of care involves more than the provision of medical care within the community setting. For such a shift to occur, declines in resources and access to hospital and institutional care will need to be accompanied by increases in resources and access to community-based services such as home support and home nursing care.

A closely related implication concerns the need for decision makers to consider the implications of current reform initiatives for responding to inequalities in health. An equity principle suggests that equal access to health services attend equal need and that populations with greater need should therefore have greater access to health services. Once again, however, care should be taken not to define need only in medical terms. For example, reducing and then concentrating services on those (like those aged 85 and older) with the greatest need for care defined on the basis of medical criteria only (such as use of hospital services, etc.) may disadvantage those (for example, younger elderly) with greater needs for care defined using a broader social and community-based population health model (emphasizing needs for longer-term preventive and supportive services, etc.).

Our research also suggests that decision makers consider the sources and implications of the continuity in trends observed within each province before and after regionalization. The rationale frequently provided for decisions to restructure health services delivery through regionalized health authorities includes ensuring that services are responsive to and meet local needs, thereby generating expectations of greater diversity in trends following regionalization. Findings that point to similar patterns of change across regions may signify a need for regional health authorities to enhance their responsiveness to local needs. Several other explanations are also possible. For example, they may attest to the greater diversity that exists within, rather than between, health regions. There is also the possibility that they reflect the inadequacies of the time frame used to assess the changes that have occurred. Explanation of these trends will serve as a basis for action.

Our research also has implications for the delivery of preventive health services. In particular, it suggests that improvements in preventive care may result from shifting responsibility for these services away from physicians toward organized community-based

programs. Improvements may include major increases in coverage rates and lowered socioeconomic and urban disparities in use. This is based on findings indicating improvements in the delivery of mammography services in Manitoba following the introduction of a government sponsored screening program.

Finally, our findings also attest to the importance of longitudinal and comparative analyses for monitoring and evaluating the effects of health reform and the value of administrative health data in facilitating such analyses and the decision-making that results. Longitudinal analyses will facilitate monitoring of changes in access to and use of health services that occur in conjunction with health reform, whereas comparative analyses will enable lessons to be drawn from experiences undergone elsewhere. For example, findings that reveal differences in levels and rates of change between British Columbia and Manitoba suggest two different strategies for health reform: one focusing on reductions in inpatient hospitalization rates with little change in outpatient care; and the other focusing on reductions in inpatient hospitalizations offset by increasing outpatient care.

## **Approach**

### ***Data Sources***

Approaches used to determine the impact of regionalization on community-based care differed somewhat between British Columbia and Manitoba. Data for the B.C. component of the project were drawn from several sources. They include documentary resources and interviews conducted with key informants (provincial and regional health authority board members, CEOs, managers, etc.) as well as secondary data sources. For example, demographic characteristics of the regional populations were compared using secondary data drawn from the 1996 Census Profile Series (Statistics Canada, 1996). Information on the allocation of financial resources was drawn from annual reports and public accounts

issued by the Ministry of Health, as well as regional financial reports and figures released by the Canadian Institute for Health Information. Information on human resources, hospital and extended care bed supply was obtained from both: (1) the Medical Services Plan “Physician Counts and Full-time Equivalents” reports prepared by the Ministry of Health Information and Analysis Branch; and (2) the ‘Inventory’ and ‘Rollcall’ reports available from the Health Human Resources Unit, Centre for Health Services and Policy Research, UBC. Finally, data documenting the use of health services and health outcomes were drawn from the B.C. Linked Health Data (BCLHD — Chamberlayne et al., 1998). This data resource provides access to several linkable administrative data sets: Medical Services Plan (MSP) data on the use of physician services; Hospital Separations files; Continuing Care data for approved long-term care services; Pharmacare claims; Mental Health data; and Vital Statistics records. In addition, these data have been linked to Continuing Care use data as well as to data from the 1996 Canadian Census (with linkage to the latter conducted using enumeration area codes).

In Manitoba, the Population Health Research Data Repository is a similar resource to the one found in British Columbia. Administrative data come from the Manitoba Health insurance registry, and from health insurance claims filed by physicians and healthcare facilities. It provides access to physician, hospital, continuing care, and registry information.

### ***Sampling Methods***

Analyses conducted in British Columbia draw on data for (a) all those who lived in each of the three health regions and used a publicly-funded health service each year between April 1, 1990 and March 31, 1999; and (b) a 10 percent simple random sample of all those who lived in the entire province and used a publicly-funded health service each year between

April 1, 1990 and March 31, 1999. For the most part, the analyses employ data from the regional samples. However, comparisons across regions and the province as a whole rely on data drawn from the province-wide sample.

Analyses conducted in Manitoba draw on data for all those who lived and used a health service in the entire province each year between April 1, 1990 and March 31, 1999.

### ***Methods of Analysis***

Our analyses provide comparisons over time, using standardized rates (adjusted by age group and sex) and associated 95 percent confidence intervals, where possible. Rates were calculated using the Population Health Information Systems (POPULIS) rates macro developed by the Manitoba Centre (Burchill et al., 2000). All rates were calculated using the 1991 provincial populations as a standard. Population-based denominators for British Columbia were derived from P.E.O.P.L.E. 24 (B.C. Ministry of Health, 1999), a program that generates intercensal estimates for the population broken down by age, gender, and various geographic boundaries.

Manitoba population figures were generated from the Manitoba Health Research Registry, a computerized population registry housed and maintained at the Manitoba Centre. Temporal comparisons were conducted using fiscal year data from 1990/91 to 1998/99, where available.

In addition to the broad examination of regionalization across time presented in our reports, individual papers draw on a variety of other analytical techniques. For example, Gupta et al. (in progress) employ Cochran-Armitage tests for trend to examine changes in coverage rates for various preventive care strategies over time in Manitoba (childhood

immunizations, screening and mammography, and cervical cancer screening). They also use Fisher's exact test for differences across groups at one point in time and linear regression techniques to assess trends in income quintile ratios over time. Both Penning et al. (in progress) and Allan and Penning (in progress) draw on a generalized linear modeling approach using generalized estimating equations (GEE) and Poisson regression to assess the statistical significance of changes over time in standardized rates of events. Brackley et al. (under review) use analysis of variance with Dunnett's multiple comparison and linear trend post-tests to examine trends in cancer hospitalizations through the 1990s. Finally, Lin et al. (under review) employ geographic information system (GIS) and logistic regression analyses to assess the joint impact of geographic and socioeconomic contexts on avoidable hospitalizations.

### ***Interactions with Decision Makers***

Interactions with decision makers have been ongoing throughout this project. Various strategies were used to facilitate this collaboration. In British Columbia, research team meetings were held on a regular (bi-monthly) basis and were attended by partners from the Capital Health Region. Given the distances involved and the consequent inability of all regional partners to attend these meetings, monthly progress reports were also sent electronically to ensure that all regional partners were kept informed about the progress of the research. This was supplemented by periodic visits by research personnel to meet with partners in the regions involved. A project-specific web site was also created, maintained, and advertised. We also offered to consider requests for specific analyses of the administrative health data that would be of interest to the health regions (with approval from the Ministry of Health), where such analyses also fit within the scope of the project. Several such requests were received and responded to, thereby enhancing a two-way flow of information. A number of more formal meetings were also held. These included annual workshops on regionalization and health reform within each of the two provinces. In

Manitoba, a Rural Health Day took place each year and regional partners were invited to attend and participate in discussions concerning the research findings. In British Columbia, two such meetings took place (one in the Capital Health Region, the second in the Upper Island/Central Coast). A third was to have taken place in the Okanagan/Similkameen Health Region but was postponed due first to labour disputes within the regions and subsequently to a provincial government decision to restructure the health regions. We hope to organize a final workshop for later this spring. We were also invited and agreed to present our initial findings to open meetings organized by the Ministry of Health (March, 2000) and the CHR (March, 2000).

Several factors attest to the success of our interactions. For example, in Manitoba, fairly extensive contact with one regional health authority has led directly to incorporation of the analyses into their planning process. In British Columbia, regional partners have recently collaborated in the development of several additional projects that build on the type of research initiated by this project. Two such projects are currently underway. One, funded by the Capital Health Region, draws on administrative health data to examine the neighbourhood boundaries currently being used for decision-making purposes in the region and assesses the extent to which their populations reflect homogeneity with regard to the determinants of health and use of health services. The other, recently funded by the Canadian Institutes of Health Research (CIHR), will assess the impact of healthcare restructuring through regionalization on access to health services and health outcomes among vulnerable subgroups within the older adult population of British Columbia, including those living in poverty, women, immigrants, and residents of rural/remote areas.

### ***Dissemination Plans***

To date, several different strategies have been used to disseminate project-related information. They include:

- ongoing interaction and communication (formal and informal) with regional partners through regularly scheduled meetings, involvement of partners in development of research questions, data collection efforts (such as key informant interviews), and other research activities; and responding to RHA requests for information and data analysis;
- monthly progress reports sent via e-mail to regional partners;
- preparation and distribution of an annual report outlining the research findings;
- incorporation of articles on the project within centre and regional health authority newsletters;
- development of and distribution through project-specific web sites (providing summaries, reports, spreadsheets relevant for regional health planners) connected to the participating research centers;
- organization of annual workshops (like the Rural Health Day) in each province in order to involve decision makers in communication about the research;
- presentation of the research findings to meetings organized by the provincial Ministry of Health and regional health authorities (for example, the Capital Health Region, the Upper Island/Central Coast); and
- participation in and presentation to several academic and applied conferences/seminars (including the ‘Quality of Administrative Data and Concept Dictionary Workshops’ sponsored by the MCHP (June, 1999); the Canadian Public Health Association Conference (June, 1999); the International Working Group on Quality Indicators meeting (March, 1999); the Information Technology in Community Health (ITCH) conference (August, 2000); the 11<sup>th</sup> International Symposium on Medical Geography (July, 2000); the Canadian Association on

Gerontology meetings (October, 2000); the Interdisciplinary Seminar on ‘Reform of Canada’s Health Care System and its Impact on Public Health’ sponsored by the Regional Board of Health and Social Services of Montreal-Centre (Nov., 2000); and the International Association on Gerontology meetings (July, 2001)).

Now that funding has ended, we will continue to focus our dissemination efforts on ensuring publication of results within academic and applied research journals. In addition, however, we will continue to make results available through our centres’ web sites and within research and RHA publications, such as newsletters. Ongoing interactions with regional health authority representatives will also continue and will ensure that results are communicated to those responsible for decision-making within the specific health regions involved.

## **Results**

The focus of this study was on the relationship between regionalization and population-based changes over time in the allocation of health resources, use of health services and health status outcomes. Changes that took place over nine years, including seven years prior to regionalization and two years following regionalization, across six health regions in two provinces were examined.

### ***British Columbia***

According to our findings, the years preceding regionalization (1990/91 to 1996/97) saw numerous changes in health resources, use of health services, and population health (see Brackley et al., under review; Penning and Allan, 2002; Penning et al., in progress). In general, the resources allocated to hospital services (such as acute and extended care beds) declined during this period as did the use of inpatient hospital services. The supply of

nursing care also declined somewhat. Yet, there were modest increases in access to and use of alternative health practitioners (including massage therapists, occupational therapists, naturopaths, and chiropractors), use of physician services (both general practitioners and specialists), and outpatient hospital care. Use of long-term residential care also increased somewhat. In contrast, access to community-based care in the form of home support services declined, while the level of service (that is, hours of care) provided to those receiving services increased. Yet, community-based home nursing care increased during this same period, particularly among those less than 65 years of age or aged 85 and older. Once again, the extent of care (that is, number of visits) provided to those receiving such services increased during this time. The overall health of the population also increased somewhat.

In general, similar trends were evident during the two years that followed regionalization (1997/98 and 1998/99). For example, access to alternative health practitioners continued to increase while access to nurses (particularly licensed practical nurses) continued to decrease. Similarly, access to acute care beds continued to decline during this period while the availability of extended care hospital beds increased slightly. Use of physician services, particularly specialists, also continued to increase slightly following regionalization while, despite the increasing number of practitioners available, use of alternative health services continued a pattern of decline established shortly before restructuring. Inpatient hospital services also continued to decline, particularly for acute care admissions, as did inter-regional and avoidable hospitalizations. Community-based home support service claims continued to decrease, with less change evident in the number of hours of care provided to the population. However, once again, the trend toward increasing the intensity of service was also apparent.

There were only a few areas where differences were found in trends before and after regionalization. While extended care and day surgery hospital admission rates increased prior to regionalization, both declined over the two years immediately following regionalization. Also, in contrast to the trends evident prior to restructuring, outpatient hospitalization rates declined during this period. Home nursing care service use began to decline as well.

We were also interested in the impact of healthcare reform and restructuring through regionalization on health service use among vulnerable or ‘at risk’ groups within the overall population. To address this issue, we compared trends across age groups, income quintiles, and health regions (rural/remote versus urban). With regard to age, our findings revealed that not only did use generally increase with age but that increases in physician visits, outpatient separations, and home nursing care services (pre-regionalization) tended to be somewhat greater among those within the oldest age groups. Similarly, decreases in inpatient separations and lengths of stay (pre-regionalization only), home support, and home nursing care (post-regionalization) service use over time tended to be somewhat smaller within these age groups. In terms of economic differences, however, comparisons of those in different income quintiles found little difference in trends. For example, although an income gradient was evident with regard to the use of physicians and hospital services (the lower the income quintile, the higher the rate of use), this gradient appeared to change little during the periods prior to or following regionalization. Finally, with regard to trends relevant to residence in rural/remote or urban areas, Allan and Penning (in progress) report finding gradual declines over time in rural-urban regional differences with regard to older adults’ visits to general practitioners, outpatient hospital separations, and home nursing care, with less change evident with regard to visits to specialists, inpatient hospital separations, and home support services use. Finally, in studying the impact of geographic and socioeconomic context indicators on hospitalization, Lin et al. (under

review) report findings indicating that those with low socioeconomic status and those living in urban areas have a greater chance than others of being hospitalized for avoidable conditions. Geographic barriers were found to have an impact on accessibility and alternatives to hospital care.

Overall, the trends observed in British Columbia have shown significant changes in health resources and the use of health services over the past decade. Some of these changes (such as reductions of resources to acute hospital care, reductions in inpatient and avoidable hospitalizations, improved access to alternative healthcare providers) appear consistent with a shift of focus and resources away from a predominantly biomedical model of care and toward development of a broader social and community-based model of care.

However, others (such as increased visits to medical specialists, reductions in home support services, declines in the proportion of nurses working in non-acute settings) appear less consistent with such a move. In general, however, the prevailing trend has been one of reduction of health services, whether provided in hospital or community settings, during this period.

It was also found that many of the changes observed took place well before regionalization was formally introduced in April, 1997. Comparison of the changes introduced before and after regionalization revealed considerable continuity with respect to trends for most services, with the dominant trend being one of decline. Where differences in the trends before and after regional restructuring did emerge, they included reductions in outpatient hospital care and home nursing services implemented after regionalization, together with a focusing of services toward those in particular sub-populations (for example, those aged 85 and older). These data suggest that during the period studied, regionalization has not

altered prevailing trends, but rather allowed for their continuation. As noted by Chappell (in progress) and Penning et al. (in progress), reallocation of services together with increases in intensity of care provided also suggests a medicalization of community-based care.

### ***Manitoba***

Similar to the analyses conducted in British Columbia, Manitoba researchers examined Manitobans' use of all major types of healthcare over time, including physician, hospital, nursing home, homecare, public health services, and prescription drug use. Because of the increasing number of residents aged 75 years and older in Manitoba, the study also considered the health status and use of care among this cohort.

Over the study period, there was little change evident in the number of available doctors and the number of physician visits. The number of physicians in Manitoba per 1,000 residents rose little (0.3 percent) from 1990 to 1997, while the number of physician visits per 1,000 residents declined by 1.5 percent from 1990 to 1998. In particular, age-sex adjusted rates for GP visits per 1,000 residents only dropped by 0.6 percent over the study period, and specialist visits decreased by 1.8 percent.

Hospital and nursing home admissions for people 75 years of age and older held fairly steady (didn't rise or fall by more than 10 percent). Overall hospital use as measured by inpatient hospitalizations also revealed a small increase of 7.2 percent. Despite these findings, however, Manitobans actually spent less time in a hospital after admission, leading to a 20 percent drop in the average number of days spent in hospital. Contrary to popular thought, this drop did not appear to reflect a lack of hospital beds. Bed closures

began in 1992, but the decline in hospital use began in the 1980s. In fact, half the decline in the number of days patients spent in hospital occurred before 1992.

From 1991 to 1998, surgery rates for four types of surgery (knees, hips, coronary artery bypass, and cataracts) known to improve the quality of life for older adults increased substantially (183 percent, 49 percent, 76 percent, and 66 percent respectively, after taking account of the increased numbers of older Manitobans).

The mortality rate for residents aged 75 years and older dropped from 95 per 1,000 in 1990 to 92.1 per 1,000 in 1998. Thus, the overall health of older Manitobans, like the health of all Manitobans, improved over this period. Nursing home admissions and homecare expenditure data reveal a similar picture. Even though more individuals aged 75 and older were admitted in recent years, the average length of time spent in nursing homes has fallen. Older residents are living longer at home, either because they are healthier or because homecare services are more available.

Manitoba researchers (see Gupta et al., in progress) also addressed the impact of changes in the delivery of mammography services in the 1990s on coverage and inequalities in the use of preventive care. The changes implemented included shifting responsibility for provision of these services away from physicians, and providing services through permanent screening facilities (in urban areas) and mobile vans (in rural/remote areas). Since no changes took place with regard to childhood immunization or cervical cancer screening during this period, longitudinal information on these services was used as a control for comparison with the mammography data. Their findings revealed major impact of the breast-screening program implemented shortly prior to regionalization: coverage rates rose dramatically while longstanding disparities in use (socioeconomic, rural-urban) disappeared. Similar changes were not found with regard to cervical cancer screening or childhood immunizations.

Overall, the trends observed in Manitoba with regard to health services provided to older adults suggest a mixed pattern of stability and change. Access to care (that is, physicians, hospital admissions, nursing home admissions) has changed little, with greater change evident for specific types of care (for example, surgical procedures) and lengths of stay. Regionalization of healthcare in Manitoba occurred in 1997 (rural) and 1998 (urban), near the end of the study period. Generally, the patterns observed prior to regionalization continued afterwards; no significant effects on either health status or healthcare use were found.

### ***Comparing British Columbia and Manitoba***

Comparative analyses were also conducted to assess differences in the organization of health services in the two provinces and the changes that took place over the nine-year period encompassing regionalization (see McCarthy et al., in progress). The comparison focused on physician visits (GPs, specialists), inpatient and outpatient hospital separations, and lengths of hospital stays. Findings from these (as yet preliminary) analyses have revealed significant differences between the two provinces, both prior to and following the restructuring. Greater use of general practitioner and outpatient services was made by British Columbia, while Manitoba made greater use of medical specialists and inpatient hospital services. Prior to regionalization, lengths of acute inpatient stays also tended to be somewhat greater in British Columbia.

Rates of change also appear to vary somewhat between the two provinces. Adjusted for age and gender, the rate of change in physician visits was relatively small in each province. British Columbia showed a slight increase over the nine years while Manitoba remained comparatively stable. However, differences between the provinces were greater in the

hospital sector. British Columbia had fewer inpatient separations per thousand population, but both provinces showed decline in inpatient hospital services use. Yet, despite considerable change, the differences in hospital separations between the two provinces and which were observed in 1990/91 remained evident in 1998/99. Greater decline was evident in British Columbia with regard to the number of days spent in hospital. Finally, while Manitoba had fewer outpatient separations than British Columbia, these increased substantially over the years studied.

Overall, findings from these comparative analyses seem to suggest somewhat different strategies for health reform within the two provinces — one (British Columbia) focusing on implementing reductions in inpatient hospitalizations while holding the line on outpatient care, and the other (Manitoba) securing more modest reductions in inpatient hospitalizations and offsetting them with increasing outpatient care. Once again, however, these strategies were evident well before regionalization was introduced but nevertheless continued afterwards, at least over the short term.

### **Additional Resources**

Project information available to date (excluding conference papers and presentations, newsletter articles, etc.) includes the following reports, papers (in press, submitted for review, and in progress), web site, and other information. Copies of reports and papers are provided in Appendix A.

### ***Reports***

- McCarthy, S.P., Allan, D.E., and Penning, M.J. (2002). *Regionalization and utilization of healthcare services in British Columbia and Manitoba: A Comparison, 1990-1999.*

- Penning, M.J. and Allan, D.E. (2000). *Health Care Restructuring and Community-Based Care: A First Look at Three Regions in British Columbia.*
- Penning, M.J. and Allan, D.E. (2002). *Health Care Restructuring and Community-Based Care: Three Regions in British Columbia.*
- Soodeen, R.A., Martens, P.J., Roos, L.L., Roberts, J., Ransoo, R., and Black, C. (2001). *Providing Information to Regional Health Care Planners: A Manitoba Case Study.*

***Papers (in press, submitted for review, in progress)***

- Allan, D.E., and Penning, M.J. “An Early Look at Regionalization in British Columbia: Regional Equity or Equality?” (in progress)
- Brackley, M.E., Allan, D.E., and Penning, M.J. “Health system reorganisation and patterns of hospital cancer separations in British Columbia, Canada, 1991-98.” (under review)
- Chappell, N.L. “Rush to regress: Reforming Canada’s health care system.” (in progress)
- Gupta, S., Roos, L.L., Wald, R., Traverse, D. and Dahl, M. “Delivering equitable care: Comparing preventive services in Manitoba Canada.” (in progress)
- Lin, G., Penning, M.J., and Allan, D.E. “Examining distance effects on hospitalizations using GIS: A case study of three health regions”. (under review – revise and resubmit)
- Penning, M.J., Allan, D.E., and Brackley, M.E. “Home care and health reform: Changes in home care utilization in one Canadian province, 1990-98.” (in progress)
- Roberts, J., Fransoo, R., Black, C., Roos, L., and Martens, P. “Research meets reality: Administrative data to guide planning for Canadian Regional Health Authorities.” Healthcare Management Forum, (in press).

### ***Web Site and Other Information***

Additional information on the project can be accessed through both British Columbia and Manitoba web sites. The British Columbia site ([www.coag.uvic.ca/chsrf/index.htm](http://www.coag.uvic.ca/chsrf/index.htm)) provides an overview of the project, along with online copies of reports, papers, and conference presentations. In addition, a concept dictionary developed for the project provides information on technical aspects of the project. The Manitoba site ([www.umanitoba.ca/centres/mchp](http://www.umanitoba.ca/centres/mchp)) houses information relevant to projects conducted by the Manitoba Centre for Health Policy (MCHP) and is a particularly useful resource for regional health planners, researchers, and others interested in health and healthcare use, both generally and specifically as it relates to Manitoba. As well, this site provides a link to their concept dictionary. The idea for a concept dictionary originated with the MCHP. The site includes numerous terms and also information regarding SAS macros and relevant contact information where applicable. Finally, lecture materials for a number of online courses, including super courses found on the University of Pittsburgh web site, can be accessed through this link. Two of these courses address regionalization in Manitoba.

Further project-related information and documents can be received by contacting:

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### **Further Research**

Conclusive findings that can be used to inform decision-making regarding the effectiveness of regionalization as a means of health reform will require ongoing investigation. Regional restructuring of health services is a relatively recent phenomenon, and as a result, only a few years of post-regionalization data could be included in this study. This may well be insufficient however. The major changes potentially associated with regionalization may take some time to be fully implemented. As a result, their implications may not become apparent until several years after restructuring.

A need for further comparative research is also readily apparent. Conclusions regarding a lack of change in trends associated with regional restructuring would be strengthened through comparison to trends evident in areas that have not undergone similar changes (for example, Ontario). For example, similarity of trends would suggest that factors other than regional restructuring are instrumental. The generalizability of our findings to other regions and provinces that have undergone similar changes also remains unclear. By design, regionalization will be expected to respond to local needs and conditions, thereby enhancing diversity in health services delivery across geographic/regional/provincial/territorial boundaries while ultimately reducing diversity (inequity) in population health outcomes. Yet, the results of our research suggest that despite the differences that tend to be evident (in health status, health resources, and health

service use levels) across such boundaries, trends tend to be in a similar direction (that is, declines in one region and province tend to be mirrored in others as well) and, to some extent at least, accompanied by reduced diversity in health service delivery.

One strength of this study was its focus on trends across different types of health services. In the past, research on the impact of health reforms and restructuring has tended to focus on specific types of care, most often inpatient hospital care (e.g., see Anderson, 1997; Carriere et al., 2000; Hamilton et al., 1997: 2001; Saunders et al., 1999). Their findings, like ours, generally reveal declines in inpatient separation rates and average lengths of stay, shifts in surgical and other treatments to outpatient settings, and increases in the intensity of care over time. While evidence of this nature can be cited as supporting a shift away from a medical model of healthcare, it should not be concluded that as such, it also signifies a shift toward a broader population health model and community-based care. It is only by looking at corresponding changes in community-based care that the similarity of trends across these sectors becomes evident. Findings from this study therefore attest to the need for additional research to consider the simultaneous changes taking place across different care sectors.

It is also important to continue to examine the impact of regionalization and associated health reforms on vulnerable subgroups within the overall population. This study compared trends across rural-urban, socioeconomic, and age groups. Also needed is research that examines trends among other subpopulations (such as Aboriginal Canadians, recent immigrants, single-parent families, and those who are homeless). Regional, socioeconomic, and age-related disparities also require further investigation. For example, this study has presented findings indicating a similarity of trends across income categories: declines occurred at a similar pace at all income levels. However, this does not mean that vulnerable groups have been equally affected by changes in the availability of health

services in recent years. Research is needed to determine whether similar changes nevertheless have differential implications for those in different groups. Similarly, with regard to age, our findings indicated that over time, the oldest age group received greater medical care and experienced less decrease in community-based services than did other age groups. Yet, it is possible that the declines that were experienced had a greater impact on this age group or on those in other elderly age groups (for example, those aged 65-74 and 75-84). In general, these are groups with the greatest needs for long-term supportive services to be provided within the community setting. Research is needed to assess the differential implications of changes within and across healthcare sectors on those in different age, income, and other groups.

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