STANDARDS OF ACCESSIBILITY
AND
GUIDELINES FOR PROVISION
OF SUSTAINABLE ACUTE CARE SERVICES
BY HEALTH AUTHORITIES

FEBRUARY 2002

TABLE OF CONTENTS

APPENDICES

1. PURPOSE

Health authorities need to rationalize acute care services (in-patient and urgent/emergent out-patient) in their regions to ensure the services are the most appropriate within available resources. The Ministries of Health Services and Health Planning must establish provincial standards of accessibility so that the rationalization of health services is anchored in a credible and rational framework that ensures sustainability and quality of care for BC residents. In particular, residents of rural areas need to be assured of accessibility to acute care services.

2. PRINCIPLES

Provision of quality acute care services is based on the following principles:[1]

2.1 Accessibility

Health care services need to be provided to community residents in the right place, and at the right time. Accessibility is one of the five key principles of the *Canada Health Act*.

2.2 Safety and Effectiveness

Health care services need to be safe and effective.[2] Safety requires competent professionals, available when needed. Communities need to have the capacity to support the recruitment and retention of competent health care professionals to deliver services relevant to community needs.

2.3 Sustainability and Appropriateness

To maintain a high level of quality patient care, a health system must be sustainable, delivering affordable health services in an appropriate manner. Treatment must be provided to patients when necessary, delivered in the right manner, in the right setting, and by the right provider. The system maximizes efficiencies by using appropriate resources (staff time, tests, equipment, facilities) to achieve the desired outcome. Continuity of care occurs when there are strong linkages and service agreements between service providers in the continuum of care.

3. DETERMINING FACTORS

The following factors are important in reviewing the quality of acute care services:

3.1 Population/Demographics

Since the incidence and prevalence of disease and disability are, in general, proportional to the number of people in a community, health needs are closely linked to population size. Variations in demographics such as age and socio-economic status will also have some effect on health needs. Population and demographics lead directly to expected patient workload (i.e. the greater the population, the greater the number of patients and the higher the over-all utilization), and hence, lead to resource requirements such as beds and staffing.[3]

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[1] These principles stem from the dimensions of quality by the Canadian Council on Health Services Accreditation (CCHSA, AIM Framework, 2001).

[2] "Effective" suggests an outcome of demonstrable benefit.

[3] Population/Demographics and Distance/Geography relate to the principle of *Accessibility.* Health authorities need to consider what basic level of health services need to be maintained in each community relative to their size and distance to other service locations.

3.2 Professional Competence

Professional competence is key to ensuring effective and therefore quality health care for patients. In order to develop the necessary skill sets, health professionals need to be adequately trained in diagnosis, procedural techniques and many other aspects of health care. Skill maintenance requires regular practice (i.e. seeing particular types of disease and injury often enough to be familiar with signs and symptoms). This connection with volume is not as strong where the procedures and conditions are not highly specialized (e.g. there is little evidence of poorer outcomes with low volumes for basic general surgery). There may also be greater efficiency where services are concentrated. Accordingly, small populations would have difficulty supporting high quality specialty services.[4]

3.3 Critical Mass

Critical mass is key in enhancing the recruitment and retention of professional staff which are essential for a sustainable health care system. For 24-hour services (24/7/52) requiring continuous coverage, more than a single professional, physician or other, is desirable. Having sufficient physician numbers in a community promotes continuity of care for patients. It also allows for group practice and the sharing of on-call and vacation coverage. Based on expert consensus, it is accepted that sufficient capacity for continuous coverage prevents episodic burn out and the disruption that occurs when a solo practitioner leaves.[5] Where services are required to be available on an ongoing basis (i.e. coverage at all times) there will need to be a group of physicians to supply the services in almost all cases. The ways in which continuous coverage by physicians is ensured may include contractual obligations, maintenance of privileges through medical bylaws, etc.

The minimum number of providers will vary according to circumstances. An on-call schedule of between three and five is usually thought to be necessary, depending on the frequency of call-out. This ratio may vary for a number of reasons (see section 3.4). Where 24 hour coverage is not required, the critical mass factor is not relevant. The concept of critical mass does not mean that providers (usually physicians) must necessarily work in groups. Provided that the necessary coverage is shared, each may otherwise work independently.[6]

3.4 Distance/Geography

Small communities located a significant distance from larger centres, despite the lack of critical mass, still need to provide a basic minimum of health services. This is especially true for coastal and island communities that rely on ferry transportation. In these circumstances, quality and cost considerations need to be balanced with ease of access. A smaller centre may need to consider health service delivery by fewer or a different mix of practitioners (such as services that exist in Dease Lake or Atlin, and nursing stations in isolated First Nations communities). The geography of the province, including the reliability of road or air travel must also be considered (e.g. road closures or bad driving or flying conditions). The frequency and duration of difficult travel conditions allow an assessment of how often emergency transportation

[4] Professional Competence is based on the principle of *Safety and Effectiveness*; communities need to have the capacity to sustain the relative level of expertise required for quality service provision.

[5] Sharing of on-call, suitable vacation coverage, and prevention of burn out are identified as essential for a quality worklife for physicians. *Worklife* is one of the dimensions of quality used by the Canadian Council of Health Services Accreditation (2001, CCHSA, AIM Framework).

[6] Critical Mass is based on the principle of *Sustainability and Appropriateness;* staff resources must be sufficient to operate services successfully.

Note: These linkages are not exclusive in that there is overlap (e.g. Professional Competence also stems from the principle of *Sustainability and Appropriateness*, etc.).

may be delayed or impossible. These data allow a realistic estimate of risk before a final decision is made.

4. PROVINCIAL STANDARDS OF ACCESSIBILITY

The following provincial standards set the minimum requirements of accessibility for acute care health services provided by health authorities in British Columbia. These standards are based on time of travel[7] and on populations (not individuals). Any changes considered by health authorities (HA) to the provision of acute care services in any region *must meet these provincial standards*.

These provincial standards are generally applicable outside the major urban areas in BC, covering emergency services, acute inpatient services, and specialty services.[8] Access standards also require that larger centres must accommodate inter-regional patient transfers for services that are not available locally in rural and remote areas, on the same priority basis as their local population. While not currently under the governance of the health authorities, an effective and responsive ambulance service plays an essential role in assuring accessibility.

4.1 Emergency Services

Access will be provided to emergency services on a 24/7/52 basis within a one hour travel time for 98% of residents within the region (HA). The standard for health service delivery areas (HSDA) is 95%.[9] Emergency services may take the form of a diagnosis and treatment centre, a health centre, a group practice, a group of practices, or a larger inpatient facility. In remote areas, Red Cross Outpost Hospitals and Federal Nursing Stations may provide these services.

4.2 Acute Inpatient Services

Access to basic inpatient hospital services will be available within two hours travel time for 98% of residents within the region and 95% of the population of each HSDA.

4.3 Specialty Services

Access to core specialty services will be available within four hours travel time for 98% of residents within the region and 95% of the population of each HSDA.[10] Core specialty services include general surgery, anaesthesia, psychiatry, internal medicine, obstetrics & gynaecology, and paediatrics. Depending on the catchment population and location, specialty services outside major referral centres may include other specialties such as orthopaedics, urology, ophthalmology, and otolaryngology.

[7] Time of travel is based on aerial (crow-fly) distance and is from a person's home to the site of the service required (see Appendix 1).
[8] See Guidelines, Sec 5 for operational definition of Emergency, Acute Inpatient, and Specialty Services.
[9] A smaller percentage is set for the HSDAs to give a greater leeway to account for remote areas. A larger percentage is achievable for the Health Regions due to the larger population as a whole.
[10] Implicit in this standard is the assumption that, for these specialty services, there will be lead time to plan for the 4 hour trip.

5. PROPOSED GUIDELINES FOR PROVISION OF ACUTE CARE SERVICES

The following discussion outlines guidelines for the provision of acute care services when provincial standards of accessibility are applied. These guidelines reflect a focus on client needs and health care provider needs. Health authorities should consider these guidelines when planning changes in services. Please note that these are guidelines, not standards, and are not mandatory. In situations where the provision of services according to the guidelines conflicts with the standards for accessibility, the latter take precedence. Population size, professional competence, and the need for health care providers to have a reasonable on-call schedule based on critical mass are key factors in determining the sustainability of acute care services.

It is expected that health authorities will aim to become as self-sufficient in all specialty and sub-specialty services as their population supports. For example, it is expected that 95% or more of care requirements will be accommodated within the region. Exceptions to this expectation are provincial/tertiary services and inter-regional agreements for the delivery of non–tertiary services in another region.

5.1 Emergency Services

For the purposes of this paper, emergency services constitute 24 hour call, minor treatment, triage and stabilization. This topic will be the subject of more complete guidelines and standards to come. The following notes are intended to provide guidance where decisions must be made prior to their completion.

Private practice by physicians in their offices provides the basis of most primary care in British Columbia at present. In a number of small communities that do not have an acute care hospital, some health services are provided through diagnostic and treatment centres. These government-funded facilities offer out-patient acute care services and include 24/7/52 emergency coverage. In some smaller communities, Red Cross Outpost Hospitals offer basic out-patient care and occasional overnight stays. There are also a number of Federal Nursing Stations in some of the remote First Nations communities.

To calculate the capacity of catchment populations to support physician services and therein the provision of emergency services, the 1997 Physician Supply Plan[11] was used. In that Plan, an acceptable population to physician ratio in rural areas is identified (i.e.1 GP per 1000-1200 people). Based on this ideal ratio, a community of 5000 could support five physicians and one in five on-call coverage. This population size, whether a single community or a catchment population (an aggregation of smaller communities within a reasonable travel distance), can support a group of physicians and basic diagnostic services (e.g. lab/X-Ray, EKG). Each community has to be considered individually, particularly the probability of being able to maintain a regular and continuous service, not one that is based on a rotating series of short-term professionals. Smaller communities that are not within a reasonable travel distance of a larger centre (say greater than 2 hours) may need to consider a smaller service with fewer practitioners (e.g. Dease Lake, Atlin, or Stewart). The concept of nurse-practitioners working with physicians is an option.

Other community health services such as primary health care networks or residential care may also be sustainable with a population size of 5000. It would also be possible to provide these services from a community health centre, whether publicly funded or built and operated by family physicians or others. The important point is that the necessary services are provided in a convenient and coordinated way.

[11] See Appendix 2: Population to Physician FTE Ratios (Rural).

Primary Health Care Networks can be formed by a combination of group practices, diagnostic and treatment services, and community health services, and could include the following types of services:

- 24/7 emergency services
- day surgery
- ambulance
- chronic disease management
- home care
- health education, prevention, promotion
- basic diagnostic services
- referral to secondary centres
- rehabilitation
- telemedicine
- special services (e.g. First Nations)

Where a diagnostic and treatment centre is part of a residential care facility, some additional services requiring beds may be provided. These can only be provided where the patients can be cared for overnight by the nursing staff in the residential care unit (e.g. palliative care, respite care, recuperation/convalescence post-op care).[12]

5.2 Acute Inpatient Services

For the purposes of this paper, acute inpatient services refers to an acute care facility with GPs and a range of services including emergency services, general medicine, low risk obstetrics, observational paediatrics, convalescence, palliative, and respite care.[13] This includes diagnostic services (lab/X ray). Generally, hospitals in small communities provide minimal acute inpatient care. Judged by lengths of stay, diagnoses, level of care and utilization rates, most bed days are for patients of low acuity. In many small BC communities, hospital beds are used more for alternative level of care (ALC), respite, convalescent, and extended care than for acute care. In most such communities, utilization rates are considerably above the provincial average, and 50% or more of the patient days used by residents occur in other, larger hospitals.

Small volumes make not only for inefficient operation, but also mean that staff see low volumes of significant illnesses that require acute care. The evidence from Saskatchewan, where 52 small hospitals were converted to nursing home and ambulatory care functions in 1993, showed that the loss of the acute care component did not demonstrably affect the health of the community; in fact, standardised mortality rates dropped slightly in the three years after the acute care inpatient function was discontinued.[14]

At present, residents of smaller communities in BC (less than 20,000) receive roughly 50% of their inpatient acute care days in larger centres where more specialized care is available. Acute care inpatient facilities in these smaller communities could be redesignated to serve a larger catchment population and offer more services. The larger catchment population would then allow for greater self-sufficiency in health services (i.e. 65-70%) and therefore increase sustainability and appropriateness.

[12] Community health services in small communities will be the subject of future guidelines and policy.

[13] Although this paper discusses acute inpatient care facilities in terms of their geographic location and population proximity, it is also important to note that these facilities need to have the resources necessary to meet the needs of the catchment population at an acceptable level.

[14] Health Services Utilization and Research Commission (HSURC) (1999): Assessing the impact of the 1993 acute care funding cuts to rural Saskatchewan hospitals, Summary Report # 13, 1-6, Saskatoon.

At average provincial utilization rates (570 days/1000 population in 2000/01), for every 1000 people in a community, 570 x .50= 285 beds days would be required locally. At an average occupancy rate of 80%, this translates to about 365 bed days, or one bed/1000 population. Thus a population of 25,000, perhaps made up of a number of smaller communities within a reasonable travel distance, can support a hospital with 25 appropriately used inpatient beds. As in the case of Emergency Services (Section 5.1), this guideline figure would need to be modified for communities in more remote settings (e.g. greater than 1.5 to 2 hours from another inpatient facility).

A hospital with 25 or more beds is more efficient to run than a smaller hospital. At 25 beds, the basic fixed costs of staffing and plant are little different from those of a smaller facility. Furthermore, a population using acute care beds appropriately that could support such an inpatient unit would provide a sufficient volume of conditions to maintain staff competence. In 25 bed acute inpatient facilities, GPs may have an expanded function to some degree such as obstetric surgery. Provision of these expanded functions would thereby increase self-sufficiency for the community. Larger acute inpatient facilities need to give priority to patient transfers from rural and remote areas.

5.3 Specialty Services

For the purposes of this paper, core specialty services include general surgery, anaesthesia, psychiatry, internal medicine, obstetrics & gynaecology, and paediatrics. Depending on the catchment population and location, specialty services outside major referral centres may include other specialties such as orthopaedics, urology, ophthalmology, and otolaryngology. In determining the sustainability of specialty services, the critical mass factor is important. The need for 24-hour coverage in each specialty should be considered. The capacity of communities to support specialist physician services can be calculated based on the 1997 Physician Supply Plan (an acceptable population to physician ratio in rural areas has been identified as one general surgeon per 9,500 – 10,500 population; for internists, one per 7,600 – 8,400 population).

For a hospital to provide specialty services at a sustainable level, it must support a group of specialists that can maintain a reasonable on-call schedule and a degree of sub-specialization. Some modification may be needed where specialties mutually support one another, such as trauma services, and where, in smaller communities, general and specialty practices co-exist. For specialties where the requirement is for 24/7/52 coverage, this will usually mean a range of three to five physicians, depending on the frequency of call-out and other factors. For specialties where 24/7/52 coverage is not required, a smaller group size is reasonable.

For a primary specialty such as surgery, it is desirable to have a range of three to five surgeons (or GP surgeons) in the community so that emergency surgical coverage is available at all times. For some specialties like obstetrics, 1 or 2 obstetricians could be sufficient, as the primary call for maternity rests with general practitioners and midwives. Another option is to have, for example, two specialty anaesthetists and a group of GP anaesthetists to provide complete coverage with reasonable on-call. With the impending shortage of certain specialty types, a Clinical Associate Model (similar to the Hospitalist Model) and telemedical advice services should be reviewed by Health Authorities.

Solo specialty services in isolated rural areas are not desirable in most circumstances both due to the episodic nature of the service provided and the lack of peer consultation. Options to provide service in such circumstances include travelling clinics, regular consultation visits, and specialists in a group practice covering a number of sites. Nurses in these areas will need additional training and experience in these specialty services to attain and maintain required skills.

In rural areas where general practitioners have enhanced training in surgery, anaesthesia, obstetrics (caesarean sections), etc., a level of service may be available that could not be sustainable provided solely by specialists. For example, in small communities, low risk obstetrics could be provided by GP obstetricians.

A catchment population of 50,000 is the minimum recommended to support general medical, general surgical, obstetrics and psychiatric services. This population level can support, in addition to general practice, 24 hour coverage in the following specialties - internal medicine, general surgery, anaesthesia, paediatrics and two to three obstetricians. Acute inpatient facilities offering specialist services need to give the same priority to patient transfers from rural and remote areas as their local population.

Such a population may support other specialties but not on a regular 24-hour basis. In some circumstances, it may be possible to provide a specialty service to a number of communities in a number of sites. An example is where specialists in two (or more) centres cover each other (ensuring their schedule is provided to emergency departments, acute care facilities, ambulance services, and general practitioners).

Another example is where two facilities in neighbouring communities of similar size may divide the provision of specialty service between them (e.g. orthopaedics in one, urology in the other). These arrangements may work well from a quality perspective if they are indeed provided as a group with consistent standards and protocols, but they generally require greater effort to bridge the distances. While the physicians may be able to maintain competence by covering the population from 2 communities, the requirement to maintain nursing and other provider competency levels should not be forgotten. Intensive Care Unit services provided in both centres rather than at a single site will halve the volumes of cases treated by the nurses, respiratory therapists and others. The duplication of facilities is also more expensive.

APPENDIX 1

DISTANCE CALCULATION METHODOLOGY

1.1 Methodology

For the purposes of this model, *acute care facilities* refers to all acute inpatient hospitals, diagnostic and treatment centres, federal nursing stations, and Red Cross outposts. Extended care facilities are excluded. (See the list of acute inpatient hospitals and diagnostic and treatment centres in Appendix 3).

Aerial distance to the nearest acute care facility is a crude but objective indicator of geographic accessibility to acute care services. Aerial distance refers to a straight-line distance (as the crow flies). Distances are calculated in 25 km increments between the longitude and latitude of all BC enumeration area centroids for any given population and the longitude and latitude for all acute care facilities mentioned above. The result is the aerial distance to the facility from the geographic centre of the enumeration area.

1.2 Definition of Standard

Fifty km of aerial distance is, in the great majority of instances, under 1 hour surface travel time. For access to emergency services, the standard of 1 hour travel time equates 50 km aerial distance. For access to acute inpatient services, the standard of 2 hours travel time equates 100 km aerial distance. For access to specialty services, the standard of 4 hours travel time equates 250 km, surface or air. It is deemed that these travel times to access acute care services in BC are acceptable standards based on expert consensus.[1] These travel times are generally conservative estimates, allowing for indirect roads and weather delays. Specific issues in particular parts of the province (such as ferries and mountains) would need to be reviewed at a local level.

1.2.1 Comparison of Standards with Current Accessibility in British Columbia 2000/2001

Emergency Services. 98% of the population of 4 HA regions live within 1 hour of an acute care facility (acute inpatient hospital, D&T centre, Red Cross Outpost, Federal Nursing Stations). 97.7% of the residents of the Northern Region live within 50 km, 99.1% within 75km. 95% of the populations of all HSDAs except Northeast live within 1 hour of an acute care facility. In Northeast, 5.5% of the population lives more than 50km away, 3.3% more than 75km away. See Appendix 4.

Acute Inpatient Services. All regions and HSDAs meet or exceed (less than maximum time of 2 hours) the proposed standard of 2 hours time travel to an acute inpatient facility. See Appendix 5.

Specialty Services. All regions and HSDAs meet the proposed standard of 4 hours time travel to a specialty facility.

[1] These travel time standards are consistent with current accessibility travel times in BC (see Appendix 1.2.1). They are also comparable to travel time standards in New Zealand (see Appendix 1.2.2).

1.2.2 Accessibility Standards of Other Jurisdictions

New Zealand provides the only immediately available comparison standards. In 1997, they were as follows:[2]

Emergency Services: within 1 hour for 90% of the population.

Acute Inpatient Services: within 1.5 hours for 90% of the population.

1.2.3 Accessibility Distances by Provinces Across Canada

In a study conducted in 1993, it was found that 98.9% of residents in BC lived within 50 km of the nearest acute care hospital, and as a whole, BC residents lived closer to a hospital (5.64 km) than all provinces except Ontario (5.48 km). See Appendix 6.

[2] New Zealand, Ministry of Health, Evergreen (Funding) Document, 1997.
Note: New Zealand also sets down expectations for response times to urgent, semi-urgent and non-urgent cases. In NZ, urgent = same day; semi-urgent = 7 days; non-urgent = > 7 days.

APPENDIX 2

POPULATION TO PHYSICIAN FTE RATIOS (RURAL)[1]

MSP #	SPECIALTY Name	Population/FTE Range	
00	General Practice	1,000	1,200[2]
15	Internal Medicine	7,600	8,400
03	Psychiatry	8,700	9,600
08	General Surgery	9,500	10,500[2]
18	Anaesthesia	10,900	12,100
14	Paediatrics	16,800	18,500
05	Obstetrics/Gynaecology	18,100	20,000
10	Orthopaedic Surgery	26,100	28,900
06	Ophthalmology	28,200	31,100
07	Otolaryngology	43,400	48,000
13	Urology	49,400	54,500

NOTES:

The above numbers were those agreed by the Medical Services Commission in 1996. With the development of the Primary Health Care Demonstration Project and issues of physician shortages, higher population to general practitioner ratios have been proposed e.g. 1:1500 or even 1:2000 in urban areas. These presuppose the presence of a practice team that extends the ability of the general practitioner to handle the larger roster.

The population to physician ratios may not apply in practice in communities with large outflows. For example, a rural community of 30,000 would appear, from the ratios, to support 3 general surgeons. However, if there is a 30% outflow of patients to other communities for care, then perhaps only 2 surgeons could be supported. Conversely, the communities receiving these patients could support more general surgeons than might be supposed from the local population.

[1] Source: 1997 Physician Supply Plan

[2] The population to GP and General Surgeon FTE ratios vary according to population dispersion:

GPs	Rural	1,000 - 1,200
	Semi-Urban	1,100 - 1,300
	Urban	1,200 - 1,400
General Surgeons	Rural	9,500 - 10,500
	Semi-Urban	15,200 - 16,800
	Urban	24,300 - 26,900

APPENDIX 3

ACUTE INPATIENT HOSPITALS AND DIAGNOSTIC & TREATMENT CENTRES BY HEALTH AUTHORITY

Interior Health Authority

HSDA		Hosp No	Hospital	Location
11	East Kootenay			
		409	Golden and District General	Golden
		654	Creston Valley	Creston
		752	Kimberley and District	Kimberley
		753	Fernie District	Fernie
		754	Sparwood General	Sparwood
		755	Invermere and District	Invermere
		756	Cranbrook Regional	Cranbrook
		757	Elkford HCC	Elkford
12	Kootenay Boundary			
		651	Kootenay Lake District	Nelson
		652	Slocan Community Hospital & H.C.C.	New Denver
		653	Victorian Hospital of Kaslo	Kaslo
		655	Arrow Lakes	Nakusp
		801	Trail Regional	Trail
		803	Boundary	Grand Forks
		804	Castlegar and District	Castlegar
13	Okanagan			
		301	Vernon Jubilee	Vernon
		302	Kelowna General	Kelowna
		303	Penticton Regional	Penticton
		305	Princeton General	Princeton
		306	Enderby and District Memorial	Enderby
		307	Pleasant Valley D&T	Armstrong
		308	Summerland General	Summerland
		309	South Okanagan General	Oliver
		310	Keremeos D&T	Keremeos
		402	Queen Victoria	Revelstoke
		404	Shuswap Lake General	Salmon Arm
14	Thompson Cariboo			
		401	Royal Inland	Kamloops
		403	Nicola Valley General	Merritt
		405	St. Bartholomew's	Lytton
		406	Cariboo Memorial	Williams Lake
		408	Ashcroft and District General	Ashcroft
		417	Lillooet District	Lillooet
		419	Dr. Helmcken Memorial	Clearwater
		423	Logan Lake HC	Logan Lake
		424	Barriere & Dist HC	Barriere
		426	Chase & Dist HC	Chase
		708	100 Mile District General	100 Mile House

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ACUTE INPATIENT HOSPITALS AND DIAGNOSTIC & TREATMENT CENTRES BY HEALTH AUTHORITY

Fraser Health Authority

HSDA		Hosp No	Hospital	Location
21	Fraser Valley			
		601	Chilliwack General	Chilliwack
		602	Mission Memorial	Mission
		603	Matsqui-Sumas Abbotsford General	Abbotsford
		606	Fraser Canyon	Hope
22	Simon Fraser			
		109	Royal Columbian	New Westminster
		110	Saint Mary's	New Westminster
		130	Burnaby	Burnaby
		136	Eagle Ridge Hospital & H.C.C.	Port Moody
		604	Ridge Meadows Hospital & H.C.C.	Maple Ridge
23	South Fraser			
		115	Langley Memorial	Langley
		116	Surrey Memorial	Surrey
		131	Peace Arch District	White Rock
		134	Delta	Delta

Vancouver Coastal Health Authority

HSDA		Hosp No	Hospital	Location
31	Richmond			
		121	The Richmond Hospital	Richmond
32	Vancouver			
		101	Vancouver General	Vancouver
		102	St. Paul's	Vancouver
		103	St. Vincent's	Vancouver
		106	Mount Saint Joseph	Vancouver
		123	U.B.C. Health Sciences Centre	Vancouver
33	North Shore/Coast Garibaldi			
		111	Powell River General	Powell River
		112	Lions Gate	North Vancouver
		113	St. Mary's	Sechelt
		128	Squamish General	Squamish
		422	Pemberton D&T	Pemberton
		425	Whistler D&T	Whistler
		904	R.W. Large Memorial	Waglisla
		906	Bella Coola General	Bella Coola

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ACUTE INPATIENT HOSPITALS AND DIAGNOSTIC & TREATMENT CENTRES BY HEALTH AUTHORITY

Vancouver Island Health Authority

HSDA		Hosp No	Hospital	Location
41	South Vancouver Island			
		201	Royal Jubilee	Victoria
		202	Victoria General	Victoria
		203	Cowichan District	Duncan
		204	Queen Alexandra Centre For Children's Health	Victoria
		206	The Lady Minto Gulf Islands	Ganges
		217	Saanich Peninsula	Saanichton
42	Central Vancouver Island			
		501	Nanaimo Regional General	Nanaimo
		502	St. Joseph's General	Comox
		504	Cumberland HCF	Cumberland
		505	Chemainus HC	Chemainus
		506	Ladysmith and District General	Ladysmith
		851	West Coast General	Port Alberni
		854	Tofino General	Tofino
43	North Vancouver Island			
		508	Campbell River & District General	Campbell River
		860	Gold River HC	Gold River
		859	Port Alice	Port Alice
		510	Port Hardy	Port Hardy
		511	Port McNeill and District	Port McNeil
		507	St. George's	Alert Bay
		861	Tahsis HC	Tahsis

APPENDIX 3

ACUTE INPATIENT HOSPITALS AND DIAGNOSTIC & TREATMENT CENTRES BY HEALTH AUTHORITY

Northern Health Authority

HSDA		Hosp No	Hospital	Location
51	Northwest			
		770	Stikine Regional HC	Dease Lake
		901	Wrinch Memorial	Hazelton
		902	Prince Rupert Regional	Prince Rupert
		903	Bulkley Valley District	Smithers
		907	Queen Charlotte Islands General	Queen Charlotte City
		909	Houston HC	Houston
		910	Stewart General	Stewart
		912	Mills Memorial	Terrace
		917	Kitimat General	Kitimat
		918	Queen Charlotte Islands General-Masset Site	Masset
		919	Nisga'a Valley HC	New Aiyansh
52	Northern Interior			
		702	St. John	Vanderhoof
		703	Prince George Regional	Prince George
		705	G.R. Baker Memorial	Quesnel
		707	Lakes District Hospital and H.C.	Burns Lake
		713	McBride and District	McBride
		715	Mackenzie and District	Mackenzie
		717	Stuart Lake	Fort St. James
		718	Valemount HC	Valemount
		758	Fraser Lake D&T	Fraser Lake
53	Northeast			
		701	Fort St. John General	Fort St. John
		704	Dawson Creek and District	Dawson Creek
		714	Fort Nelson General	Fort Nelson
		716	Chetwynd General	Chetwynd
		720	Tumbler Ridge HCC	Tumbler Ridge
		759	Hudson's Hope Gething D&T	Hudson's Hope

Provincial Health Services Authority

Hosp No	Hospital	Location
104	B.C. Women's Hospital and H.C.	Vancouver
105	British Columbia's Children's	Vancouver
107	B.C.C.A. Vancouver Clinic	Vancouver

APPENDIX 4

PERCENTAGE OF POPULATION BY DISTANCE[1] TO NEAREST ACUTE CARE FACILITY BY HEALTH AUTHORITY/HEALTH SERVICE DELIVERY AREA
INCLUDES D&TS, FEDERAL NURSING STATIONS AND RED CROSS OUTPOSTS

		Percentage of Population								
Interior	**Population**	**0 to 24 km**	**25 to 49 km**	**< 50 km**	**50 to 74 km**	**75 to 99 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
East Kootenay	83,497	93.9	6.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Kootenay Boundary	82,644	90.1	9.9	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Okanagan	354,859	97.8	2.1	99.9	0.1	0.0	0.0	0.0	0.0	0.0
Thompson Cariboo	183,192	90.3	8.1	98.3	1.6	0.1	0.0	0.0	0.0	0.0
	704,192	94.4	5.1	99.5	0.5	0.0	0.0	0.0	0.0	0.0
Fraser	**Population**	**0 to 24 km**	**25 to 49 km**	**< 50 km**	**50 to 74 km**	**75 to 99 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Fraser Valley	242,200	99.5	0.5	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Simon Fraser	514,032	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
South Fraser	573,405	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
	1,329,637	99.9	0.1	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Vancouver Coastal	**Population**	**0 to 24 km**	**25 to 49 km**	**< 50 km**	**50 to 74 km**	**75 to 99 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Richmond	165,133	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Vancouver	578,668	100.0	0.0	100.0	0.0	0.0	0.0	0.0	0.0	0.0
North Shore/Coast Garibaldi	264,974	98.7	1.2	99.9	0.0	0.1	0.0	0.0	0.0	0.0
	1,008,775	99.7	0.3	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Vancouver Island	**Population**	**0 to 24 km**	**25 to 49 km**	**< 50 km**	**50 to 74 km**	**75 to 99 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
South Vancouver Island	396,488	98.3	1.7	100.0	0.0	0.0	0.0	0.0	0.0	0.0
Central Vancouver Island	243,796	86.8	13.2	100.0	0.0	0.0	0.0	0.0	0.0	0.0
North Vancouver Island	60,729	96.2	1.6	97.8	2.1	0.0	0.0	0.0	0.0	0.0
	701,013	94.2	5.6	99.8	0.2	0.0	0.0	0.0	0.0	0.0
Northern	**Population**	**0 to 24 km**	**25 to 49 km**	**< 50 km**	**50 to 74 km**	**75 to 99 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Northwest	91,955	94.4	5.1	99.4	0.4	0.1	0.0	0.0	0.0	0.0
Northern Interior	161,643	92.2	5.9	98.1	1.5	0.1	0.0	0.0	0.3	0.0
Northeast	66,545	86.6	7.9	94.5	2.2	2.8	0.1	0.2	0.2	0.0
	320,143	91.7	6.1	97.7	1.3	0.7	0.0	0.0	0.2	0.0

[1] Distance means aerial distance, i.e. straight-line (as the crow flies)

APPENDIX 5

PERCENTAGE OF POPULATION BY DISTANCE[1] TO NEAREST ACUTE INPATIENT FACILITY BY HEALTH AUTHORITY/HEALTH SERVICE DELIVERY AREA
EXCLUDES D&TS, FEDERAL NURSING STATIONS AND RED CROSS OUTPOSTS

		Percentage of Population								
Interior	**Population**	**0 to 24 km**	**25 to 49 km**	**50 to 74 km**	**75 to 99 km**	**< 100 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
East Kootenay	83,497	90.3	9.7	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Kootenay Boundary	82,644	89.6	10.4	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Okanagan	354,859	97.5	2.4	0.1	0.0	100.0	0.0	0.0	0.0	0.0
Thompson Cariboo	183,192	82.5	13.8	2.8	0.2	99.4	0.2	0.2	0.2	0.0
	704,192	91.8	7.2	0.8	0.1	99.8	0.0	0.1	0.1	0.0
Fraser	**Population**	**0 to 24 km**	**25 to 49 km**	**50 to 74 km**	**75 to 99 km**	**< 100 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Fraser Valley	242,200	99.5	0.5	0.1	0.0	100.0	0.0	0.0	0.0	0.0
South Fraser	573,405	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Simon Fraser	514,032	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
	1,329,637	99.9	0.1	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Vancouver Coastal	**Population**	**0 to 24 km**	**25 to 49 km**	**50 to 74 km**	**75 to 99 km**	**< 100 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Richmond	165,133	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Vancouver	578,668	100.0	0.0	0.0	0.0	100.0	0.0	0.0	0.0	0.0
North Shore/Coast Garibaldi	264,974	94.4	3.3	1.9	0.1	99.8	0.2	0.0	0.0	0.0
	1,008,775	98.5	0.9	0.5	0.0	100.0	0.0	0.0	0.0	0.0
Vancouver Island	**Population**	**0 to 24 km**	**25 to 49 km**	**50 to 74 km**	**75 to 99 km**	**< 100 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
South Vancouver Island	396,488	98.3	1.7	0.0	0.0	100.0	0.0	0.0	0.0	0.0
Central Vancouver Island	243,796	86.6	13.2	0.2	0.0	100.0	0.0	0.0	0.0	0.0
North Vancouver Island	60,729	92.0	5.9	2.1	0.0	100.0	0.0	0.0	0.0	0.0
	701,013	93.7	6.0	0.3	0.0	100.0	0.0	0.0	0.0	0.0
Northern	**Population**	**0 to 24 km**	**25 to 49 km**	**50 to 74 km**	**75 to 99 km**	**< 100 km**	**100 to 124 km**	**125 to 149 km**	**150 to 249 km**	**> 250 km**
Northwest	91,955	83.7	5.6	6.1	2.5	97.8	0.0	0.0	0.7	1.5
Northern Interior	161,643	88.7	6.5	4.2	0.1	99.5	0.2	0.0	0.3	0.0
Northeast	66,545	78.7	9.1	8.1	3.0	98.8	0.8	0.2	0.0	0.2
	320,143	85.2	6.8	5.5	1.4	98.9	0.3	0.0	0.3	0.5

[1] Distance means aerial distance, i.e. straight-line (as the crow flies)

APPENDIX 6

PERCENTAGE OF POPULATION BY DISTANCE TO NEAREST HOSPITAL, BY PROVINCE 1993

PROVINCE	Distance (km)		Percentage of Population From Nearest Hospital by Aerial Distance (km)						
	Median	Mean	<5	5-24	25-49	0-49	50-99	100-149	150+
Canada	**2.79**	**6.47**	**67.5%**	**27.4%**	**4.3%**	**99.2%**	**0.6%**	**0.1%**	**0%**
Newfoundland	7.24	14.54	44.6%	32.5%	19.4%	96.5%	3.3%	0.1%	0.1%
PEI	6.07	8.58	46.4%	49.8%	3.9%	100%	0%	0%	0%
Nova Scotia	5.03	9.13	49.8%	42.1%	8.1%	100%	0.1%	0%	0%
New Brunswick	6.82	10.75	42.9%	44.5%	12%	99.4%	0.6%	0%	0%
Quebec	2.17	6.21	68.8%	26.7%	4%	99.5%	0.3%	0.1%	0.1%
Ontario	2.74	5.48	71.2%	25.9%	2.4%	99.5%	0.5%	0%	0%
Manitoba	2.53	5.94	74.7%	21.4%	2.9%	99.0%	0.8%	0.2%	0%
Saskatchewan	3.07	9.05	64.6%	23%	11.7%	99.3%	0.7%	0%	0%
Alberta	3.2	6.72	63.4%	30.7%	5.2%	99.3%	0.5%	0%	0%
British Columbia	**2.85**	**5.64**	**71.3%**	**25%**	**2.6%**	**98.9%**	**1.1%**	**0%**	**0%**

Source: Ng, Edward; Wilkins, Russell; Perras, Alain. (1993). *Health Reports.* Vol. 5 (2).

Note: The definition of *hospital* in this report included federal nursing stations and a few free-standing extended care homes. It excluded diagnosis and treatment centres. Distances were calculated between the geographic centroid of every enumeration area and the hospital location as determined by postal code. The method ignored water, mountains, and road conditions; in most settings, the road from community to community, especially one large enough to have a hospital, was deemed to be relatively straight.

Comment: As seen in the above table, the population of BC, as a whole, lived closer to a hospital (5.64 km) than all provinces except Ontario (5.48 km). However, BC also had a higher proportion of its population (1.1%) living more than 50 km from a hospital than any other province except Newfoundland (3.5%). The likely reason for this observation is the long coastlines of both provinces.