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## GLOSSARY OF ACRONYMS

ALS (or ACLS)	Advanced Life Support or Advanced Cardiac Life Service
ATLS	Advanced Trauma Life Service
CIHI	Canadian Institute for Health Information
EMA	Emergency Medical Assistant
H & SS	Department of Health and Social Services (Nunavut)
ICAT	International College of Aeromedical Transport
ICD-9	International Classification of Diseases (version 9)
NALS	Neonatal Advanced Life Service
NU	Nunavut Government
NMU	Northern Medical Unit, University of Manitoba
NWT	Northwest Territories
OSHNI	Ottawa Health Services Network Incorporated
PALS	Paediatric Advanced Life Service
RCMP	Royal Canadian Mounted Police
RFP	Request for Proposal
RN	Registered Nurse
SM	Statute Mile
THIS	Territorial Health Insurance System
24/7	Twenty-four (24) hours per day, seven (7) days per week

# 1 INTRODUCTION, OBJECTIVES, STRATEGIC CONTEXT, TEAM

This Profile Document summarizes the information gathered and reviewed by the project team to date, and frames key issues related to availability of data and information, as well as key issues and opportunities identified related to the organization and delivery of medical travel services. Information is summarized in three broad topics:

- Air transport infrastructure and arrangements
- Department of Health and Social Services medical travel operations and administration
- Patterns in medical travel and the relationship to the organization of health services.

The Profile Document provides a platform for development of strategies and recommendations to improve medical travel services.

## 1.1 PROJECT OBJECTIVES

Objectives of the project established initially in the Request for Proposals (RFP) and refined in the submitted proposal and follow-up discussions between the team and Department of Health and Social Services representatives (December 12/01 meeting, Winnipeg) are as follows:

- Provide recommendations and direction to guide a Nunavut-wide medevac contracting process with a 5 to 10 year horizon, including:
  - an identification of appropriate services and service standards.
- Provide recommendations and direction to ensure emergency and non-emergency medical transport services are:
  - responsive to the needs of users of the service,
  - operationally effective and efficient, and
  - reflect the best way, or 'best practices' of doing business.

These objectives reflect a shift in emphasis from the original RFP, since some of the immediate pressures that gave rise to the RFP were addressed through action taken in autumn 2001 on the Baffin medevac contract.

## 1.2 STRATEGIC CONTEXT

This review is part of the overall Department of Health and Social Services Business Plan 2001/02, and relates specifically to the following goal:

*To deliver flexible, culturally sensitive programs and to demonstrate the effective use of public resources.*

It also follows immediately on the recently completed (November 2001) Nunavut Transport Strategy. This strategy recommends a significant re-shaping of air transportation services and of the relationship between the service providers and government. Medical travel was examined at a high level, as one component of the diverse travel picture in the Territory.

Highlights of the Nunavut Transportation Strategy relevant to this project include:

- Over 80% of air travel is by government;
- Currently there is significant over-capacity in the system in Nunavut;
- Charter passenger services are provided by 7 scheduled air carriers, supplemented by out-of-Territory air service companies;
- The medevac program "is the single largest user of passenger charter services in Nunavut on a multi-year basis" and has "significant influence on the operating strategies, efficiencies and equipment used by Nunavut's small and medium size carriers";
- Many current air routes reflect traffic patterns related to the boundaries of former Northwest Territories;
- With the creation of Nunavut, and the policy of decentralization of government services, air travel patterns are expected to change;
- Currently, routes to the capital, Iqaluit, are not direct from all communities;
- The three regional centres (Iqaluit, Rankin Inlet, Cambridge Bay) have no direct non-stop connections; and
- The Nunavut Transportation Strategy recommended, "integrating medical and social services travel into a central transportation contracting office".

The Bathurst Mandate provides an overall framework for planning. Key elements relevant to Department of Health and Social Services planning include the following directions:

- Recruit, train and retain Department of Health and Social Service staff in all communities and facilities.
- Work with communities to:
  - Create within each Department – the ability to support community capacity building; and
  - Develop and maintain Wellness Plans – to sustain and improve community resources and access for each identified community need.
- Remove, consolidate or integrate un-needed government structures:
  - Integrate administrative process... and improve efficiency and accountability in program delivery.
- Write and maintain simple and understandable policies.
- View every element of the budget as a potential training budget.
- Put into place strategies to develop Nunavummiut in every profession as a part of a resident work force.

### 1.3 THE PROJECT TEAM

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## 2 GEOGRAPHY AND DEMOGRAPHICS

Planning and delivering services in Nunavut is unlike most other jurisdictions in the world, due to the unique geography and demographics of the Territory. A brief overview is provided below.

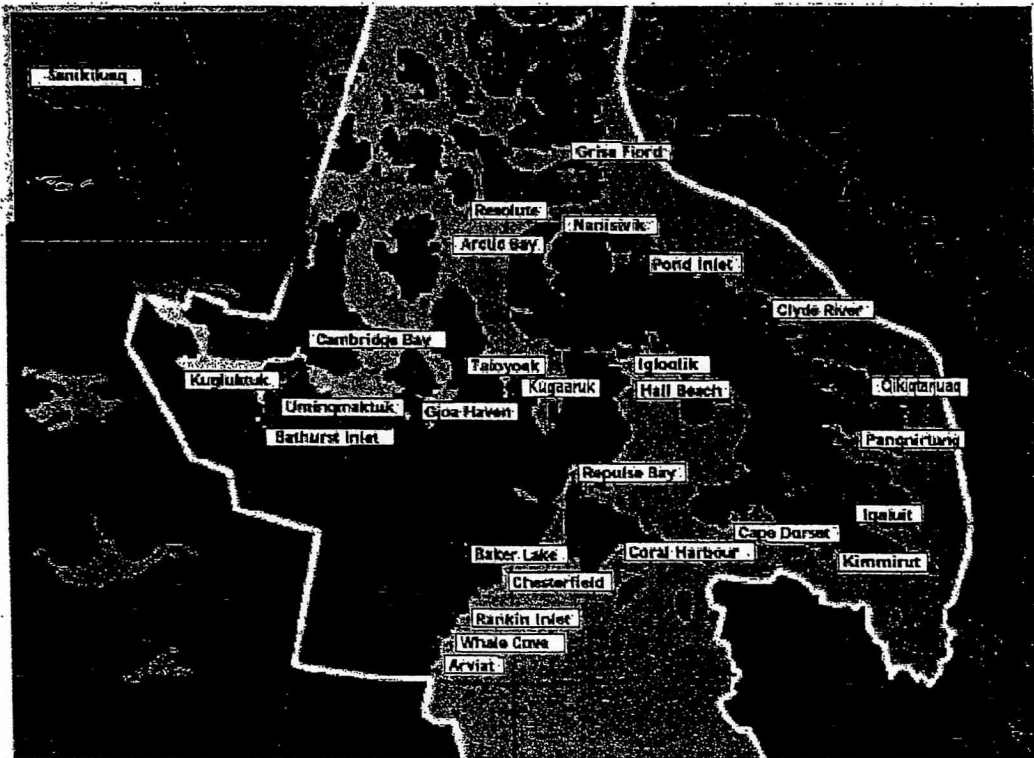
### 2.1 GEOGRAPHY

Created on April 1, 1999, Nunavut was formed from the eastern portion of the existing Northwest Territories (NWT), becoming Canada's third Territory. It is a large northern Territory comprising roughly 2.1 million square kilometres (about 21% of the total Canadian land mass, and is twice the size area of Province of Ontario). Twenty-one percent (21%) of Nunavut consists of freshwater lakes and rivers. The Territory's borders stretch from the Saskatchewan/Manitoba boundary in the southwest, to the central arctic coast from Kugluktuk (Coppermine) in the west, to the Davis Strait bordering Greenland in the east, and north over the polar cap.

It is sparsely settled, with many of its 26 communities widely separated from each other. The small number of roads, along with soft muskeg, poses significant travel barriers in the warmer months. Extremes in weather are reflected in the average winter temperature being -30 C and an average summer temperature of 15°C.

The task of responding in a large geographic area with a small population base is daunting. Medical travel and medevac services are primarily via air, and require specialized knowledge, skills and resources to accommodate the climate and environment.

Exhibit 1 Map of Nunavut





## 2.2 DEMOGRAPHICS: POPULATION, AGE AND GENDER, LANGUAGE, EDUCATION

Nunavut is home to approximately 28,000 permanent residents<sup>1</sup>, of who about 85% are Inuit (there are very few representatives of other Aboriginal groups). About 31% of the population is concentrated in the three largest communities of Iqaluit, Rankin Inlet, and Pangnirtung; 18 of the Territory's communities have fewer than 1,000 residents each, and six have fewer than 500 residents.

Three regions are defined within Nunavut, and provide the basis for management and delivery of a variety of services. The largest region is Baffin in the east, with 53% of the total Nunavut population. The central region, Kivalliq (previously Keewatin), is second largest with 28% of the population. Kitikmeot, in the western and central arctic coast, is home to 19% of Nunavut's total population.

Population in 2001 of each region is as follows:

Baffin Region:	14,600
Kivalliq Region:	8,500
Kitikmeot Region:	5,300

The stratification of Nunavut's population by age and sex is shown in Exhibit 2 below, along with the comparable numbers and percentages for Canada to highlight some of the distinctive characteristics of Nunavut's population structure.<sup>2</sup>

Nunavut's population is less than 0.1% of the Canadian total, and has a significantly different distribution, with proportionally far more young people, and far fewer senior citizens:

- Children 0 to 14 years: Nunavut has almost double the proportion of children in the total population than does Canada as a whole (37% aged 0 to 14 years in Nunavut, compared to 19% in Canada as a whole).
- Seniors aged 65 years and over: Nunavut has only one-quarter as many people aged 65 years and over as does Canada as a whole (less than 3% age 65 plus in Nunavut, compared to over 12% in Canada as a whole).

### Exhibit 2 Population Distribution by Age and Gender

	Nunavut, 2001 Population (column %)	Canada, 2001 Population (column %)
<b>Total Population</b>	<b>28,159 (100%)</b>	<b>31.1 million (100%)</b>
Male	14,632 (52.0%)	15.3 million (49.5%)
Female	13,527 (48.0%)	15.7 million (50.5%)
<b>0 – 14 years of age</b>	<b>10,350 (36.8%)</b>	<b>5.8 million (18.8%)</b>
Male	5,382 (19.1%)	3.0 million (9.6%)
Female	4,968 (17.6%)	2.9 million (9.2%)
<b>15 – 64 years of age</b>	<b>17,068 (60.6%)</b>	<b>21.3 million (68.6%)</b>
Male	8,820 (31.3%)	10.7 million (34.5%)
Female	8,248 (29.3%)	10.6 million (34.1%)
<b>65 years of age &amp; over</b>	<b>741 (2.6%)</b>	<b>3.9 million (12.6%)</b>
Male	430 (1.5%)	1.7 million (5.4%)
Female	311 (1.1%)	2.2 million (7.2%)

<sup>1</sup> Excluding temporary residents such as construction crews.

<sup>2</sup> All data referred to below come from Statistics Canada unless otherwise indicated. Some data refer to NWT where Nunavut-specific data were unavailable.

Nunavut's population is expected to grow by slightly over 50% in the next 20 years, from 28,410 in 2001 to 42,824 in 2020.

This increase is expected to be distributed reasonably evenly across its 26 communities, with the exceptions of lower than average growth in the communities of Grise Ford (19% increase), Nanisivik (17% decrease), and Resolute Bay (19% increase).<sup>3</sup>

The mother tongue of Nunavut residents differs from Canada as a whole, as shown in 1996 census data:

Inuktitut (Eskimo):	72%
English, or English plus other languages:	26%
French, or French plus other languages:	2%

### 2.3 ORGANIZATION OF HEALTH SERVICES

The Nunavut Government spends about \$126 million (2002 projected budget) million annually on health care, or about 19% of total Territorial expenditures. This is the second-highest NU budget item.<sup>4</sup> The health expenditure, on a per capita basis by Nunavut is the second highest in Canada (2001). Exhibit 3 provides an overview of the 2001 per capita health expenditure by Province/Territory in Canada.

#### Exhibit 3

#### 2001 Total Health Expenditure, by Province/Territory (per capita)

Province/Territory	Per capita expenditure
Northwest Territories	\$5,598
<b>Nunavut</b>	<b>\$5,524</b>
Yukon Territory	\$4,198
Manitoba	\$3,629
British Columbia	\$3,540
Ontario	\$3,434
Alberta	\$3,327
Saskatchewan	\$3,295
Newfoundland & Labrador	\$3,245
Nova Scotia	\$3,228
New Brunswick	\$3,065
Prince Edward Island	\$3,058
Québec	\$2,899

Source: Canadian Institute for Health Information

Health services in Nunavut are organized on a regional basis, reflecting historic administrative arrangements as well as some differences in language and cultural groups. The differences in total population and density of population among the regions have implications for health services delivery within each Region.

<sup>3</sup> Source: Nunavut Bureau of Statistics, *Nunavut Community Population Projections 2000 – 2020*.

<sup>4</sup> The highest is education at \$182 million, or 23% of NU expenditures.

Regional centres (Pangnirtung, Rankin Inlet, Cambridge Bay) manage regional service delivery, including recruitment and staffing, travel coordination and administration, and specialist services coordination including referral centre contracts and/or relationships.

Administrative and corporate services of the Department of Health and Social Services are decentralized across the Territory; some functions including Finance, Planning, and the Deputy Minister's office, remain based in the capital, Iqaluit.

Services are delivered through Health Centres in 26 communities across the Territory. At a minimum, health centres involve the following services and staff: community health nursing, basic diagnostic services, community health representative, clerk interpreter and other support staff. The only acute, in-patient multi-service hospital in the Territory is in Iqaluit, Baffin region. Due to distances and transportation patterns, it serves almost solely Baffin residents.

Regional specialists (for example, mental health, addictions, rehabilitation, dental care) make regular visits to health centres, and specialists from southern referral centres visit some communities in the Territory depending on the service infrastructure and arrangements within each region.

For health services beyond those available in local health centres, patients must travel either within the Territory or to locales outside the Territory. This "medical travel" occurs on a planned basis via scheduled airlines, or on an emergency basis by specialized medical evacuation charter services.

**Within Territory medical travel** varies across the Territory, reflecting the differences in health services infrastructure in each region. Differences in infrastructure are primarily related to the differing population totals and population densities in each region. Where populations are small and scattered, more intensive health services are not feasible or cost-effective.

- **Baffin:** Acute in-patient services and selected specialized outpatient clinics are provided in Iqaluit (Baffin Hospital), serving Baffin Region residents. A comprehensive range of specialist physician services is provided at the hospital through the Ottawa Health Services Network Inc. (OHSNI), a non-profit subsidiary of the Ottawa Heart Institute. Patients requiring more specialized care are seen on an out-patient basis in Ottawa or admitted to Ottawa hospitals under the care of physicians affiliated with OHSNI.
- **Kivalliq:** A limited range of in-patient health services, including a birthing centre, plus selected outpatient clinics, are provided in Rankin Inlet for Kivalliq residents. Family physician services are provided in Rankin Inlet and in-region visits are provided to 7 Kivalliq communities (8 or more visits per year; usually 3 to 5 day visits, depending upon community size). Specialist physician services (also to 7 communities plus Rankin Inlet), and Occupational and Physical Therapy services are provided through the University of Manitoba Northern Medical Unit (NMU).

Out-of-Region hospital care is most often provided in Churchill, Manitoba.

Patients requiring more specialized care are seen on an out-patient basis in Winnipeg or admitted to Winnipeg hospitals under the care of specialists, normally after referral from NMU physicians.

- **Kitikmeot:** A family physician, based in Cambridge Bay (on a rotational basis), provides local services, visiting services to Kitikmeot communities and consultation to health centre staff.

All in-patient care, plus specialist outpatient services, including all planned births, is provided by out-of-Territory referral centres (Stanton Hospital in Yellowknife, plus more specialized services in Edmonton, Alberta).

At the current time, there is little or no inter-regional travel for health services in Nunavut. Residents of Kivalliq and Kitikmeot do not travel to Baffin Hospital in Iqaluit for services and residents of Baffin and Kitikmeot do not travel to Rankin Inlet for services. This reflects historical patterns of service administration and delivery, ethnic and language groupings, and transportation patterns and infrastructure.

Out-of-Territory health service referral centres provide specialized and acute care for each region, supported by Nunavut specific patient liaison and lodging services in each referral centre. The same referral centres provide the visiting specialist services to the Region. Each region has its own referral centre relationships.

- Kitikmeot Region – Yellowknife and, Edmonton
- Kivalliq Region – Churchill and Winnipeg
- Baffin Region – Ottawa (plus some relationship with the Centre for Addictions & Mental Health in Toronto).

Telehealth initiatives are underway in Nunavut with the aim of supporting local service delivery. The Department of Health and Social Services has indicated that telehealth capacity has been less than anticipated due to technical issues which impact on its reliability. Additionally, the referral centres have indicated that the existing limited regional capacity for specialist clinical relationships present a barrier to optimizing telehealth opportunities.

Planning is currently underway for Extended Health Centres in Cambridge Bay and Rankin Inlet.

There are significant challenges in health professional training, recruitment, and retention that contribute to difficulty in building and maintaining local service capacity. This issue is underscored specifically in the recent emergency medical travel contracts that provide for out-of-Territory staffing of medical emergency flights, at considerable cost.

## 2.4 OVERVIEW OF HEALTH STATUS

Birth rates and death rates in Nunavut are shown in Exhibit 4 below. The Nunavut birth rate is significantly higher than the Canadian average (and as of 2000/2001, the highest of any province or territory); the death rate, significantly lower than the Canadian average (Yukon and NWT rates are lower). The lower death rate is a reflection of the substantially younger population in Nunavut, compared to Canada as a whole.

**Exhibit 4**  
**Nunavut and Canada Birth and Death Rates**

	1996/97	1997/98	1998/99	1999/2000	2000/01
<b>Birth rate per 1,000 population</b>					
Canada	12.0	11.5	11.2	11.0	10.7
Nunavut	28.5	27.6	24.9	24.9	25.4
<b>Death rate per 1,000 population</b>					
Canada	7.3	7.2	7.2	7.2	7.3
Nunavut	5.4	4.4	5.3	5.4	5.4



Infant mortality<sup>5</sup> and perinatal mortality<sup>6</sup> rates are shown in Exhibit 5. Infant mortality is over 3 times higher in Nunavut (17.9 per 1000 live births) than the Canadian average (5.9 per live births). Perinatal mortality in Nunavut is 9.8 per 1000 total births, whereas the Canadian average is 6.7 per 1000 total live births.

**Exhibit 5  
Nunavut and Canada Infant Mortality and Perinatal Mortality<sup>7</sup>**

	Infant Mortality Per 1000 Live Births	Perinatal Mortality Per 1000 total Births
Canada	5.8	6.7
Nunavut	17.9	9.8

Source: Canadian Institute for Health Information and Canadian Vital Statistics Database, Statistics Canada

Average life expectancy is 8.5 years less for Nunavut residents than the Canadian average and is the lowest among all the Canadian Provinces or Territories. The average disability-free life expectancy for Nunavut residents is 5.7 years lower than the Canadian average. Exhibit 6 presents the comparative data for males and females.

**Exhibit 6  
Life expectancy and disability-free life expectancy (1996)<sup>8</sup>**

	Life expectancy at birth <sup>9</sup>	Disability-free life expectancy at birth <sup>10</sup>
Canada	78.3 years	68.6 years
Males	75.4 years	66.9 years
Females	81.2 years	70.2 years
Nunavut	69.8 years	62.9 years
Males	68.3 years	61.7 years
Females	71.3 years	64.1 years

Source: Statistics Canada

<sup>5</sup> Infant Mortality. The number of infants who die in the first year of life, expressed as a rate per 1000 live births.

<sup>6</sup> Perinatal mortality. Annual number of still births (28 weeks or more) and early neonatal deaths (deaths in the first week of life) per 1000 total births.

<sup>7</sup> Figures created using the average of three years of data (1995, 1996, 1997).

<sup>8</sup> The estimates are based on the three years of death data, 1995 to 1997. The reference period associated with these data reflects the mid-point of the three-year period, 1996.

<sup>9</sup> Life expectancy is the number of years a person would be expected to live, starting at birth on the basis of mortality statistics for a given observation period.

<sup>10</sup> Disability-free life expectancy introduces the concept of quality of life. It is used to distinguish between years of life free of any activity limitation and years experienced with at least one activity limitation. The emphasis is not exclusively on the length of life, as is the case for life expectancy, but also on the quality of life. Disability-free life expectancy is calculated using Sullivan's method (Sullivan, Daniel F., 1971, "A single index of mortality and morbidity", Health Services and Mental Health Administration Health Reports, 86(4), 347-354).

## 2.5 HEALTH INFORMATION SYSTEMS

A number of information systems to support monitoring, management and planning of health services, including medical travel, are in place or in process of implementation. The electronic medical travel base for Kitikmeot and Kivalliq Regions is administered through offices in Rankin Inlet and was the focus of efforts to profile medical travel use for this project. The implementation of this information system has been delayed in Baffin Region due to operational pressure, and alternative equivalent sources of information are not currently available for Baffin. Highlights of patterns of health services utilization based on travel data base analysis are presented in section 5.0 (Medical Travel Activity).

A common source of health services planning in other jurisdictions in Canada is the hospital discharge abstracts for in-patient and outpatient care reported by almost all Canadian hospitals through the Canadian Institute for Health Information (CIHI). This is not available currently to the Nunavut Health and Social Services Regions or Departmental managers from referral centre jurisdictions (Ontario, Manitoba, Alberta, Northwest Territories). Baffin Hospital participates in CIHI discharge abstracting, and some summary data is available for annual discharges (in-patient and day surgery) by home community for the fiscal year 2000-2001. Specialist clinic visit totals by clinic type and home community were also provided for four years.

Summary utilization data currently sits within each service, in corporate information systems, and in annual reports provided by referral centres. Efforts of the review team to gather reliable utilization information at the Territorial and regional levels were not successful, and indicate current challenges to system monitoring, evaluation and planning.



### 3 AIR TRANSPORTATION INFRASTRUCTURE

The following section provides an overview of air transportation infrastructure in Nunavut, including highlights from the Nunavut Transportation Strategy. Further input has also been provided by a variety of informants including LPS Aviation, and information drawn from profiles of scheduled and charter air carriers, medevac contracts and cost structures. Comparison information on air carrier infrastructure and resources with other jurisdictions (Greenland, Alaska, and Newfoundland and Labrador) was also obtained and points of comparisons are noted. Comparison to national and/or international standards, and the status of these standards, is made where appropriate. See Appendix D for a list of people interviewed.

#### 3.1 NUNAVUT TRANSPORTATION STRATEGY

The Nunavut Transportation Strategy was completed in November 2001. LPS Aviation of Ottawa carried out the project. The Strategy was developed over a 2.5-year period and examined the air, sea and land transportation infrastructure and activity in Nunavut. Highlights of air transport infrastructure are summarized briefly below.

All twenty-six Nunavut communities have serviceable runways. However, not all accommodate jet engine airplanes. The largest community, Iqaluit, has a 9,000-foot runway. The Iqaluit airport is actually a designated emergency-landing site for the space shuttle. NASA provides some funding for the maintenance and upkeep of this facility.

Smaller communities typically have shorter runways and may have specific local conditions that increase the difficulties of access. For example, the community of Grise Fiord, (population of approximately 400) has a runway that is 3,000 feet long and serves as the main street. Cross streets traverse the runway and there are houses on both sides. There is a pre-notification requirement for aircraft approaching this community. Prior to departure for the community, the community must be contacted and provided with an estimated time of arrival. On approach the aircraft must do a low fly over in order ensure that the runway is clear.

Upgrading investments in Nunavut community runways are under consideration. An overall strategy for air bases is required, and that strategy will take into considerations the findings of this review of the Medical Travel Program as well as the Transportation Strategy recommendations.

Historically scheduled air travel reflected the priority of north – south linkages between the larger Nunavut communities and their respective southern service centres. There are limited east-west scheduled travel routes between the communities which now make up the Nunavut Territory. As a result, travel from many communities in Nunavut to Iqaluit requires multiple stops and even overnight stays. An objective of the Nunavut Transportation Plan is to establish transportation corridors within the Territory that better service the needs of Nunavummiut.

The Transportation Strategy project did not include an in-depth review of medical travel or medical travel data. Information available to that project was limited. For example much of the data relevant to Nunavut was not separable from NWT data, and in some cases provided on a confidential basis only, not for reporting or publication.

A medical travel project team member met with the Nunavut Transportation Strategy project team and the following points were brought to our attention for inclusion in this review:

- Some work practices and the condition of equipment (aircraft) are not optimal. The working culture reflects in many ways a "frontier" mentality.
- Medical travel is the single biggest user group of air transport. Therefore, it will be important to align medical travel strategies with overall transportation strategies to ensure coordination and best use of resources and realization of efficiencies in accessing preferred equipment and aircraft.
- Historically and currently there is limited use of formal contracting for medevac services.

### 3.2 SCHEDULED AIR CARRIERS AND MEDICAL TRAVEL

First Air & Canadian North provide scheduled travel between southern centres and Nunavut regional centres. First Air has a more extensive route schedule from regional centres to communities, particularly in Baffin Region. Canadian North has the only east-west scheduled routing (Yellowknife/Rankin Inlet/Iqaluit).

The project team was advised that Nunavut 'birthright' organizations have some ownership roles in both First Air & Canadian North, but no majority role in either organization.

First Air holds a contract (extending until mid-2002) with the Baffin Region to provide all scheduled medical travel between Baffin communities and the Baffin Hospital in Iqaluit and to referral centres, at ticket prices reflecting a 25% discount off full fare prices. As part of that contract, First Air in Iqaluit provides ticketing services, on receipt of authorization to travel from the Baffin medical travel office in Iqaluit. Tickets are typically purchased as a one-way ticket to maximize flexibility.

The Transportation Strategy estimated that medical travel represented 10% of scheduled carrier volume in Nunavut.

In comparison the jurisdictions of the Greenland and Newfoundland/Labrador, their governments are participants, directly or indirectly, in the air carrier business that provide medical travel services.

### 3.3 DESCRIPTION OF MEDICAL TRAVEL CHARTER CARRIERS

Five carriers are the primary medevac service providers in Nunavut. Each region within Nunavut has one or two main air charter providers for medical travel that provide services from a total of four air bases (the three regional centres, plus one provider is based in Montreal). An additional back-up provider is based in Yellowknife.

All of the charter airlines are privately owned, and none have ownership positions by Nunavut birthright organizations. Baffin Region is the only region currently operating with contracted carriers. Neither Kitikmeot nor Kivalliq Regions have contracts in place for either aircraft or medical flight teams. To date, there has not been a request for proposal (RFP) process for contracted medevac services. Without contracts, rates are subject to change on notice from service provider.

### 3.3.1 OVERVIEW OF SERVICE PROVIDERS

*Section 24 of ATIPP*

A more detailed description of carriers and capacity in each region is provided in Appendix A.

### 3.3.2 MEDICAL FLIGHT CREWS

Medical flight crews fly with each medical emergency mission. However, the majority of flights fly with only one medical person (flight nurse or flight paramedic). In most other jurisdictions, including the three compared for this project (Greenland, Alaska, Newfoundland/Labrador) it is standard practice to have at least two person medical teams. This approach provides flexibility in transporting multiple patients, and back-up assistance and a second opinion for patients requiring specialized or critical care.

Information provided to the review team indicates that all medevac crews are non-residents of Nunavut. The Baffin crews are primarily residents of BC drawn from the BC Ambulance Service; the Kivalliq crews are resident in Winnipeg; and the Kitikmeot crews are residents of Yellowknife. In the past in Baffin, and as is currently the case in other jurisdictions, crews have been staffed locally drawing from in-patient hospital staffing rosters. Specific air ambulance training is desirable for anyone taking on medevac crew roles.

Further exploration of potential for training local medevac teams and/or reviewing staffing pools with the aim of increasing local capacity and lowering costs is warranted. This approach would align with the goals of the Bathurst Mandate, and could moderate costs by eliminating the on-going relocation costs of non-resident crews.

### 3.3.3 AIRCRAFT WASHROOM AND CATERING FACILITIES

Concerns were expressed by Nunavut stakeholders about lack of washroom facilities and lack of food/catering facilities on charter planes on longer flights.

With respect to food or catering services, all aircraft utilized to provide medevac services have a basic commissary. This usually includes a built-in cooler, which can store items such as muffins, sandwiches, chocolate bars, plus beverages (coffee, juice, water or soda). Medevac passengers are encouraged to at least consume fluids, which can limit dehydration. Provision of this level of food service to passengers on small planes for charter or scheduled travel may not be routine.

Washroom facilities on small planes are problematic. Washroom capacity can be addressed in smaller aircraft by using a port-a-potty in the rear of the aircraft, with privacy screens snapped into place. The port-a-potty option is fairly commonly installed and utilized. However, the close proximity to other occupants and lack of ventilation are not ideal. The port-a-potty addresses the liquid waste containment challenge; one manufacturer, the Citation jet, provides a holding tank for waste storage to increase flexibility in accommodating this issue.

Larger aircraft will have full toilet facilities. The Fairchild Dornier, a 33 seat or 4 stretcher capacity turbo prop aircraft, is an example of the type of aircraft in use for air ambulance missions that have a built in washroom.

Whether there are opportunities to shorten travel times through the organization of travel (dispatching coordination, referral centre selection) will be examined in the discussion of the travel program operations and management, and clinical services and medical travel activity.



### 3.3.4 COMPARISON OF INFRASTRUCTURE TO OTHER JURISDICTIONS AND VOLUNTARY AEROMEDICAL STANDARDS

Comparison information on medevac infrastructure was obtained from three neighbouring jurisdictions: Greenland, Alaska, and Newfoundland & Labrador. Appendix B provides a more detailed overview of each of these jurisdictions and their air ambulance carrier infrastructure. Key findings relate to extent of government participation in the air transport sector, the relative role of travel in medical care delivery, and comparison of each operation to identified standards.

#### **Government participation in air transport sector:**

Greenland and Newfoundland/Labrador each have significant government involvement in the sector. In Greenland, the government is the majority owner of the sole medical transport provider (Greenlandair). All medical teams for medevac services are from the hospital in the capital city of Nuuk. In Newfoundland/Labrador, Government Air Services provides dedicated aircraft for air ambulance services, and the Ministry of Health Emergency Health Services deliver the air ambulance service. Aircraft are located in three bases across Newfoundland/Labrador. Private sector non-dedicated carriers also perform casual air ambulance work as a back-up to Government Air Services, which remains responsible for these charter costs.

Alaska has numerous companies providing medical transport, some directly operated by acute care hospitals and all operating outside direct government funding. Costs are picked up by the variety of health insurance schemes or individual payors. Hospitals provide ambulance response for specific regions or areas within the state. A central dispatch/coordination centre coordinates ambulance support. There is substantial transport infrastructure (roads, airports, etc) in the state at least partially resulting from military investments in WWII and through the cold war period.

#### **Relative role of travel in medical care delivery:**

Greenland is closest in population density to Nunavut, and at that still has roughly twice the population in a similar geographic area. Like Nunavut, there is effectively no land transportation between communities. However, there are 16 small hospitals across the country, equipped with surgical theatres and x-ray equipment. They are staffed with salaried doctors, dentists and nurses, and supplemented by traveling teams. Patients travel to the capital, Nuuk, or to Copenhagen in Denmark only for specialized services. The result is much lower rates of both medevac and overall patient travel per capita in Greenland compared to Nunavut.

Newfoundland/Labrador and Alaska both have over a half-million residents and dramatically higher population densities than either Greenland or Nunavut. As a result, their use of medical travel is more similar to southern jurisdictions.

#### **Comparison to identified standards:**

The expert medical travel resource to the consulting team was the *International College of Aeromedical Transport (ICAT)*. ICAT works with private sector providers to evaluate their equipment and operations against standards, and on the basis of ICAT accreditation, provides assurance to third party organizations that contract for air ambulance services of high quality service. Appendix C provides an outline of the source and scope of ICAT standards.

Regulations and standards do not guarantee a perfect safety record. They are a system for managing the risks inherent in aviation. Canadian Aviation Regulations (CARs) provide for differing levels of risk

management for each type of air operator. Air operators acting under charter or contract to government agencies are often required to meet safety standards in excess of CARs requirements, since liabilities attribute to the government as well as to the air operator when transporting members of the public.

Flight safety standards can be specified in contracts between government and air operations. Ongoing quality assurance oversight is required, in a manner that is both practical and sufficient; these typically include regular flight safety audits, and other ongoing reporting.

This review did not undertake a comprehensive evaluation of each provider against ICAT standards. However, an ICAT member of the consulting team interviewed each provider. Exhibit 7 summarizes, at a high level, the status of providers in each of Nunavut's three regions on key areas in comparison to ICAT standards and the three comparison jurisdictions, based on information provided. The three jurisdictions were selected because they are all characterized by some or all of the attributes that make travel in Nunavut challenging – small communities, extreme weather and geographic remoteness. As noted in Exhibit 7, all the regions in Nunavut do not meet ICAT standards or the levels achieved in other remote northern communities in the following key areas:

- Competitive contracts with service providers, based on a request for proposals.
- Coordination centre providing 24/7 service
- Number of medical flight staff assigned per mission (note also that some of the staff assigned to Nunavut missions have BLS training only)
- Transportation Advisors who are experienced in aviation medicine available 24/7.
- In Kitikmeot, the aircraft that is most often used for medevacs does not have an approved loading device.
- Not all medevac providers have policy and procedure manuals.

**Exhibit 7**

**Comparison of Selected Standards: Nunavut medevac providers with those of other jurisdictions**

	ICAT Standard	Baffin	Kivalliq	Kitikmeot	Greenland	Alaska	Newfound & Lab.
Mission or Vision Statement	Yes	Yes	Yes	Yes	Yes	Yes	Yes
RFP/Contract	Yes	Yes	No	No	Yes	Yes	Yes
Coordination Center	Yes	Yes(i)	Yes(i)	Yes(i)	Yes	Yes	Yes
# Medical Team	1(ii)	1(ii)	1	1	2 min.	2 min.	2 min.
Twin Engine A/C	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Approved Loading Device	Yes(iii)	Yes(iii)	Yes	No	Yes	Yes	Yes
Approved Medical Interior	Yes	Yes(iii)	Yes	Yes	Yes	Yes	Yes
Written Protocols	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Infection Control	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Flight manual; Policy & Procedures (v)	Yes	No	Yes	Some (vi)	Yes	Yes	Yes
Transport Advisor	Yes	No (iv)	No (iv)	No (iv)	Yes	Yes	Yes

(i) Centre serves local region only. Kitikmeot & Baffin only M-F 8:30 - 4:30.  
 (ii) Flights from Montreal/Ottawa have complete teams of 2 or more.  
 (iii) Not on back up A/C  
 (iv) On-call physician advice provided by local or referral centre physician; varied exp w/aviation med.  
 (v) refers to Medevac providers  
 (vi) company providing flight nurses has policy and procedures. Aircraft provider does not.



### 3.4 ACTIVITY AND COSTS – SCHEDULED AND CHARTER SERVICES

The Nunavut Health and Social Services medical travel administration database provided reports on scheduled and charter medical air travel activity and costs for 1999 – 2000 and 2000 – 2001 for Kitikmeot and Kivalliq Regions. Baffin region had not implemented electronic record entry up to the time of this review; data entry has begun as of April/02. No other summary systems of travel volumes for Baffin were identified as an alternative resource for the review.

In addition to the lack of comparable data for all three regions, there are a number of challenges to interpretation of the Kitikmeot and Kivalliq data. These include:

- database trips are not defined in a standard manner currently. Some records reflect individual ‘legs’ of travel by patients and escorts, meaning each departure and landing (or plane transfer), while other records reflect episodes of care, including return travel to the home community. The mixture of travel ‘legs’, one-way travel, and return travel entry result in an inability to obtain a valid measure of patient and escort travel volumes.
- The impact of this mixed data entry is that travel database reports currently indicate a significantly higher number of trips out of communities to referral centres than return trips:
  - Kivalliq: charter data shows 5.5 charter trips to referral centres for every trip to communities; scheduled data shows 2.5 scheduled trips to referral centres for every trip to communities.
  - Kitikmeot: charter data shows 13.7 charter trips to referral centres for every trip to communities; scheduled data shows 3.5 scheduled trips to referral centres for every trip to communities.
- The validity of the travel database for escort travel on charter flights is in question, given the very low numbers reported for Kitikmeot.

#### 3.4.1 COMMENTS ON MEDICAL TRAVEL ACTIVITY

The Kivalliq and Kitikmeot travel database information reports 10,382 ‘legs’ of medical travel by patients and their escorts on scheduled carriers, and 2,511 ‘legs’ of medical travel by patients and their escorts on charter carriers for the year 2001.

Exhibit 8 to Exhibit 11 provide a summary the travel administration database picture of medevac travel for 2000- 2001 for Kivalliq (Keewatin) Region and Kitikmeot Region.

Notwithstanding the significant limitations with the travel database information, there are a number of findings that can be appropriately and usefully made based on the available data. The findings include:

- Referral destinations shown in the database are the expected clinical destinations. Only very small numbers of patients travel outside established referral routes.
- For charter travel, the ‘legs’ recorded in the database are not similarly aligned with data from other sources for each region:
  - Kivalliq: database numbers are more than three times higher than ‘mission’ or trip numbers confirmed as the volume of activity by the charter carrier. One interpretation may be that charter missions have an average of 3+ ‘legs’ in Kivalliq Region.
  - Kitikmeot: database numbers are similar to ‘mission’ or trip numbers confirmed as the volume of activity by the charter carrier, suggesting missions or medevac trips have only 1 leg in Kitikmeot Region.

- Kivalliq Region has a higher proportion of charter travel 'legs' relative to scheduled travel 'legs' than Kitikmeot. It is not clear if this reflects a more limited availability of scheduled travel in Kivalliq, or different counts based on differences in booking policy (one way vs. return) or directness ('legs') in scheduled travel routes, or different patterns of clinical and medical travel practice in the two regions.
  - Kivalliq (Keewatin): 1 charter travel 'leg' for every 3.4 scheduled 'leg'
  - Kitikmeot: 1 charter travel 'leg' for every 7.8 scheduled 'leg'.

**Exhibit 8 Charter Trips by Destination 2000-2001 – profile as per March/02 reports**

BoardDesc	Departure Location ↓	Destinations →									Sub-total – to referral centres
		Total Patient Trips Plus Escort Trips	Sub-total – to Communities	to referral centres:							
				RANKIN INLET	CHURCHILL	THOMPSON	WINNIPEG	YELLOW-KNIFE	EDMONTON	IQALUIT	
KEEWATIN REGION	Sub-total – from Communities	1260	9	26	709	9	501	0	0	6	1251
KEEWATIN REGION	RANKIN INLET	328	3	2	111	6	201	3	2		325
KEEWATIN REGION	CHURCHILL	281	91	6		11	173				190
KEEWATIN REGION	WINNIPEG	239	224	1	3				8	3	15
KEEWATIN REGION	YELLOWKNIFE	4	0						4		4
KEEWATIN REGION	Sub-total – from Referral centres						376	3	14	3	536
<b>Total for Keewatin</b>		<b>2114</b>	<b>327</b>	<b>35</b>	<b>823</b>	<b>26</b>	<b>877</b>	<b>3</b>	<b>14</b>	<b>9</b>	<b>1787</b>

Note: a small number of destinations have been dropped from the tables to simplify the data; rows and columns may not exactly add to totals shown.

**Exhibit 9 Scheduled Trips by Destination 2000-2001 – profile as per March/02 reports**

BoardDesc	Departure Location ↓	Destinations →									Subtotal: all referral centres
		Total Patient Trips Plus Escort Trips	sub-total: to communities	RANKIN INLET	CHURCHILL	THOMPSON	WINNIPEG	YELLOW-KNIFE	Other referral centres		
KEEWATIN REGION	sub-total: from Communities	3407	10	293	1301	2	1771	22	8	3405	
KEEWATIN REGION	RANKIN INLET	1490	146		312	3	994	20	15	1359	
KEEWATIN REGION	CHURCHILL	1041	820	115			106		0	221	
KEEWATIN REGION	THOMPSON	1	0		1				0	1	
KEEWATIN REGION	WINNIPEG	1324	1074	190	51	1			8	258	
KEEWATIN REGION	YELLOWKNIFE	10	3	3					4	11	
KEEWATIN REGION	Other referral centres	11	2	0	0	0	7	2	0	9	
<b>Totals for Keewatin</b>		<b>7273</b>	<b>2063</b>	<b>601</b>	<b>1665</b>	<b>6</b>	<b>2878</b>	<b>44</b>	<b>35</b>	<b>5264</b>	

Exhibit 10 Charter Trips by Destination 2000-2001 – profile as per March/02 reports

BoardDesc	Departure Location ↓	Total Patient Trips Plus Escort Trips	Destinations →				subtotal: to referral centres
			subtotal: to communities	EDMONTON	YELLOW- KNIFE	CALGARY	
KITIKMEOT REGION	subtotal: from communities		26	7	332	0	339
KITIKMEOT REGION	YELLOWKNIFE	28	1	23	2	2	27
KITIKMEOT REGION	EDMONTON	3	0		3		3
KITIKMEOT REGION	CALGARY	1	0		1		1
KITIKMEOT REGION	subtotal: from referral centres	32	1	23	6	2	31
<b>Total for Kitikmeot</b>			<b>27</b>	<b>30</b>	<b>338</b>	<b>2</b>	<b>370</b>

Note: a small number of destinations have been dropped from the tables to simplify the data; rows and columns may not exactly add to totals shown.

Exhibit 11 Scheduled Trips by Destination 2000-2001 – profile as per March/02 reports

BoardDesc	Departure Location ↓	Total Patient Trips Plus Escort Trips	Destinations →			subtotal: to referral centres	
			subtotal: to communities	EDMONTON	YELLOW- KNIFE		Other Centres
KITIKMEOT REGION	sub-total: from communities		82	130	2167	8	2305
KITIKMEOT REGION	YELLOWKNIFE	639	594	36	8	0	44
KITIKMEOT REGION	EDMONTON	60	5	2	53	0	55
KITIKMEOT REGION	sub-total: from referral centres		600	40	63	6	109
<b>Totals for Kitikmeot</b>		<b>3098</b>	<b>682</b>	<b>170</b>	<b>2230</b>	<b>14</b>	<b>2414</b>

3.4.2 FINDINGS REGARDING MEDICAL TRAVEL COSTS

Exhibit 12 summarizes total expenditures (1999/2000 and 2000/2001) based on travel database information, and the expenditures per capita for Kitikmeot and Kivalliq Regions. Data is not held centrally and electronically in the travel database for Baffin Region.

For 1999/2000 and 2000/2001, for both Kitikmeot and Kivalliq Regions, there is growth in overall travel expenditures. There is more rapid growth in the charter share of total medical travel expenditures. For the two regions combined, the increases were:

- 14% increase in scheduled travel costs from \$10.2 million to \$11.6 million.
- 25% increase in charter travel costs from \$7.3 million to \$9.1 million

This rate of these cost increases is clearly not sustainable, and puts other programs and services at risk.

**Exhibit 12**  
**Total and per capita medical travel expenditures**

Region		1999-2000			2000-2001		
		Schedule	Charter	Ratio: schedule to charter	Schedule	Charter	Ratio: schedule to charter
<b>Kivalliq</b>	<b>Total</b>	\$7.36 m	\$4.57 m	1.6 to 1	\$8.27 m	\$5.78 m	1.4 to 1
2000 Pop'n est: 8,300 2001 Pop'n est: 8,500	per capita cost	\$887	\$551		\$973	\$680	
<b>Kitikmeot</b>	<b>Total</b>	\$2.85 m	\$2.72 m	1.1 to 1	\$3.36 m	\$3.31 m	1 to 1
2000 Pop'n est: 5,200 2001 Pop'n est: 5,300	per capita cost	\$548	\$523		\$634	\$625	
<b>Baffin</b>		N/A	N/A		N/A	N/A	
2000 Pop'n est: 13,700 2001 Pop'n est: 14,600							

An additional source of estimated charter travel expenditures is provided for 2001-02. These estimates were built up by assembling the estimated charter trips and identified medical charter charges based on service provider input. This provided an estimate of costs for the three regions, and as presented in Exhibit 13.

**Exhibit 13****Calculated Charter Medical Travel Expenditures – 2001-02**

Region		2001-02 Charter Travel Estimates
<b>Kivalliq</b> 2001 Pop'n est: 8,500	Total	\$7.9 m
	\$ per capita	\$929
<b>Kitikmeot</b> 2001 Pop'n est: 5,300	Total	\$3.9 m
	\$ per capita	\$736
<b>Baffin</b> 2001 Pop'n est: 14,600	Total	\$2.5 m
	\$ per capita	\$171

**3.4.3 VARIATION IN COSTING BY MEDICAL CHARTER PROVIDER**

Initial analysis of current costs per statute mile (SM) among providers separated costing for aircraft/fuel/pilot costs from medical team costs, and separated the providers into similar service groups. Four providers have an estimated average mission length of 1600 SM or less, with 200 or more missions per year being completed. Sky Service completed 40 missions in 2001 with an estimated average mission length of over 2300 SM. Exhibit 14 summarizes the cost data for the five providers.

**Exhibit 14****Medevac Costs by Service Provider<sup>11</sup>**

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For the four providers:

- The ratio of lowest to highest aircraft charges per SM across the four is 1 to 1.36 (average: \$7.13/SM; cost range: \$5.77 to \$7.82). The lowest rate is that of the only provider whose services are contracted in response to an RFP.
- The ratio of lowest to highest medical team charges per SM across the four providers is 1 to 2.6 (average: \$0.87; cost range: \$0.53 to \$1.38). The highest rate is that of only provider whose services are contracted in response to an RFP.

The fifth provider, <sup>Sec 24</sup> [REDACTED], is based in Montreal and provides a 3 member medical crew including physician and respiratory technician.

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**3.4.4 CONCLUSIONS – MEDICAL TRAVEL COSTS**

A comparison of the current pricing structure can lead us to conclude that a contracting process can assist in managing and containing costs.

For example, the leading medevac providers based in Baffin (Iqaluit) and Kivalliq (Rankin Inlet) provide Beech 200 aircraft for the performance of medical transports. The aircraft in both these communities are the same make and model and have the same performance rating. Their functions are identical, they perform air medical transports with similar types of medical teams, and the airplanes are similarly configured with a medical interior.

The Baffin operation has been contracted, while the Kivalliq operation has not.

The cost per statute mile for the provider in Baffin has been calculated to be \$5.77. The cost per statute mile for the provider in Kivalliq, with the same service infrastructure, has been calculated to be \$7.63 per statute mile. The cost difference is \$1.86 per statute mile.

Assuming that the same rate differential (savings) could be realized on the current 440 missions completed in the previous year by the Kivalliq provider, the projected cost recovery would be:

Mission Profile	= 1583.9 sm.
RFP Difference	= x \$1.86
Cost recovery	= \$2,946.05 per mission
Number of missions	= x 440
<b>Recovery</b>	<b>= \$1,296,263.70</b>

A second service provider in Kivalliq with comparable equipment (although the aircraft is not the same make and model, it is of the same class and performance ratings) provides the same service for \$7.26 per statute mile. If this provider's services were provided at the same cost as the contracted service in Baffin region, an additional recovery of \$1.49 per statute mile could be realized. Based on the current 200 missions in the previous year, the projected cost saving for this model would be:

Mission Profile	= 1583.9 sm.
<u>RFP Difference</u>	= x \$1.49
Cost recovery	= \$2,360.01 per mission
<u>Number of missions</u>	= x 200
Recovery	= \$ 472,002.20
Recovery	= \$1,296,263.70
<i>Total Recovery</i>	= \$1,768,265.90

### 3.5 INITIAL ISSUES AND OPPORTUNITIES RELATED TO AIR TRANSPORT INFRASTRUCTURE

#### 3.5.1 MULTIPLE PROVIDERS AND DIVERSE CONTRACT/PAYMENT ARRANGEMENTS

##### Issue

As a result of historical patterns and administrative structures, as well as population characteristics and geography, there are multiple air service providers. This situation has resulted in some over-capacity in the system and a significant range in costs charged to the Department of Health and Social Services. With respect to this issue the findings of this project are aligned with the findings of the recently completed Nunavut Transportation Strategy.

##### Opportunity

There may be opportunities to review medevac needs from a Territory-wide perspective, and over time:

- Pursue a consolidation of bases to in-Territory locations
- Assess potential for efficiencies in routings
- Pursue term contracts via competitive bidding among interested service providers.

#### 3.5.2 MISSIONS, FLIGHTS, PERSONNEL AND INFORMATION MANAGEMENT UNCOORDINATED ACROSS THE TERRITORY

##### Issue

The historically autonomous regional structures for medevac dispatch remain in place today. This approach results in some duplication in infrastructure of both Department of Health and Social Services and the air carriers. Additionally this uncoordinated approach provides little or no capacity to optimize missions, flights, and personnel, as well as monitor and standardize practices on a Territory-wide basis.

##### Opportunity

There are service models in other jurisdictions that provide for centralized dispatch and coordination in diverse settings. Such models are in place in jurisdictions which are similar to the large land mass and scattered populations that exists in Nunavut. These jurisdictions use a centralized service model to deploy high standard service equitably and efficiently, supported by with good information management systems.

### 3.5.3 MEDICAL FLIGHT CREW ARRANGEMENTS

#### Issue

Medical flight crew arrangements are non-standardized across the Territory, and teams based outside the Territory resource a significant proportion of the medevac flights. On-going relocation costs for medevac teams add considerably to the cost of these operations.

#### Opportunity

Other jurisdictions have capacity for local training of qualified medical flight staff within their jurisdictions. If this could be replicated in Nunavut, there is potential for cost savings and additional positive outcomes aligned with the goals of the Bathurst Mandate.

## 4 MEDICAL TRAVEL PROGRAM OPERATIONS AND MANAGEMENT

### 4.1 INTRODUCTION

The review of the current practices concerning the program operations and management of the Medical Travel Program was carried out through a series of key informant interviews in each of the three Regions. See Appendix D for a list of people interviewed.

At the current time, each of Nunavut's three Regions has its own procedures and contracting arrangements for operating the Medical Travel Program. These program operation procedures have emerged as a result of the differing histories, relationships and the availability health resources in each Region.

The Medical Travel Program currently in place in each region works; patients are successfully transported to needed services and home again. However, numerous informants and stakeholders advise its success is highly dependent upon the commitment and dedication of the many people who are part of the "system", and the success is in spite of weaknesses in information, idiosyncrasies in procedures, and rising costs.

Although the systems and processes that are in place function, our review of the current program operations and management practices have identified opportunities where improvements can be made. These changes to the program operations and management of the Medical Travel Program would provide an improvement in the quality of service for both patients and local health care providers in each of the three Regions, and strengthen the capacity to monitor and manage expenditures on medical travel.

An overview of the current operations of the Medical Travel Program in each region is provided in the next section.

### 4.2 CURRENT STATE

Exhibit 15 presents a comparative "high level snapshot" of the current program operations for the three Regions.

**Exhibit 15  
Medical Travel – Current State – Program Operations**

	<i>Kivalliq Region</i>	<i>Kitikmeot Region</i>	<i>Baffin Region</i>
<b>Executive Director (location)</b>	Rankin	Cambridge Bay	Pagnirtung
<b>Travel Coordination resources/mechanism</b>	Regional staff located in Rankin 24/7 travel coordination for scheduled through travel coordinator in Rankin and through patient services staff in Churchill and Winnipeg. Emergency travel coordinated 24/7 by travel coord. in Rankin.	Regional staff located in Cambridge Bay M-F days travel coordination for emergency and scheduled. Health centre staff arrange emergency travel during off hours. Scheduled travel not arranged during off hours.	Regional staff located in Iqaluit at Baffin Hospital First Air staff provide M-F days ticketing for scheduled travel. Emergency travel coordinated through Nurse at Baffin Hospital during off hours. Scheduled travel not arranged during off hours.
<b>Referral Centre Linkages</b> <ul style="list-style-type: none"> <li>• Location &amp; referral centre</li> <li>• Affiliation</li> </ul>	Churchill or Winnipeg Patients requiring more specialized care referred to hospitals in Churchill or Winnipeg by NMU physicians. Specialists and facilities affiliated with Northern Medical Unit, University of Manitoba Contract with NMU for physicians incl. specialists visits to communities, and for hospital services.	Yellowknife or Edmonton Patients sent to Stanton Hospital (Yellowknife) or hospitals in Edmonton (Capital Health Authority). Stanton Hospital provides visiting physicians/specialists to the region. Resident physician at Cambridge Bay (Territorial contract).	Ottawa Patients requiring more specialized care admitted to Ottawa Hospitals. Specialists affiliated with Ottawa Health Services Network Inc. Services provided at Baffin Hospital (inpatient, day surgery, clinics) via physicians/specialists through OHSNI.
<b>Service Coordination</b>	Patient coordination by regional coordination staff located in Winnipeg, Rankin and Churchill. Available 24/7 for emergency and scheduled medical travel.	Critical Care of Capital Health Authority provides patient care and physician and specialist referral in Edmonton. Provided by Stanton Hospital in Yellowknife through contract with Kitikmeot region.	Contracted coordination staff (contract with OHSNI) Available M – F days
<b>Accommodation/transportation services in referral centres</b>	Winnipeg: Boarding houses and local transportation through regional contract.	Edmonton: Boarding house and local transportation – contract with Larga in Edmonton Yellowknife: Boarding houses and local transportation through regional contract.	Ottawa: Boarding house and local transportation – contract with Larga in Baffin.



The key findings of the review of the current practices concerning the program operations and management of the Medical Travel Program have been organized under four categories. These categories are:

- Travel Operations
- Patient Coordination
- Management Oversight
- Department of Health – Region Interface

#### 4.2.1 TRAVEL OPERATIONS

Each Region has slightly different operational and management structure with variation in the responsibility and authority for medical travel. Specific observations related to medical travel operations include:

- Air Service Provider arrangements for the emergency medevac carriers vary by Region.
  - Formal contracts only exist in Baffin Region (Ken Borek Air and Sky Service) and a short-term agreement for reduced cost tickets with First Air.
  - Air Tindi is contracted by Stanton Hospital (Yellowknife) to provide medevac services, but there is no contract with the Kitikmeot Region.
  - The medevac services in the Kitikmeot and Kivalliq Regions do not have formal contracts in place, and are invoiced following a variety of invoicing arrangements.
- In some regions, tickets on scheduled flights are booked through travel agents who receive a commission on the tickets purchased.
- Travel coordination is provided on a 24/7 basis only in Kivalliq Region. Baffin and Kitikmeot Regions only provide travel coordination service on a Monday to Friday (8:30 am to 4:30 pm). During evenings or weekends, local health care staff must contact air carriers directly, which introduces potential delays and complications to service access.
- There is little coordination of “patient flow” and limited use of available space on return flights (charter carriers) for returning patients at no extra cost (as opposed to ticketed seats on scheduled carriers).
- Most of the information collected or routinely and reliably available on medical travel is for the purpose of invoicing, rather than providing management information. Therefore, data that would help evaluate quality, effectiveness and outcomes (e.g. data recorded by patient, by physician, or by referring Health Centre) is not available.

#### 4.2.2 PATIENT COORDINATION WITH REFERRAL CENTRES

Referral centre visits and interviews with patient coordination staff, boarding home managers, and within-region patient coordination staff resulting in the following key findings:

- Stakeholders face challenges due to incomplete documentation on patients and escorts travel (e.g. preliminary diagnosis, incomplete patient identification, missing or incomplete health insurance data, names of escorts, mobility limitations).
- Timeliness of communication and forwarding of relevant documentation is not routinely adequate, or does not always precede the arrival of the patient at the destination, even when travel has been anticipated will in advance (for example, scheduled follow up visits).

- The transport of patients from several communities to regularly scheduled clinics is most often done on scheduled flights at full fare. There is limited chartering of flights for groups of patients from communities for transport to the regularly scheduled clinic days.
- Provision of hospital services by “southern” hospitals varies by Region.
  - Kitikmeot Region has an agreement with GNWT for hospital and specialist services through Stanton Hospital, Yellowknife. Patients requiring more specialized care are referred by Stanton physicians to Capital Health Authority, Edmonton. There is a resident physician in Cambridge Bay on an individual contract basis.
  - Kivalliq Region has a contractual arrangement with Northern Medical Unit for physicians (including specialists) and other clinical services provided in Kivalliq communities; and for hospital and other specialized services provided in Churchill and Winnipeg.
  - Baffin Region has the advantage of the Baffin Hospital in Iqaluit; these services are supported in part by a contractual arrangement with Ottawa Health Services Network Inc. (OHSNI) for specialist physician and other services provided on a clinic basis in Iqaluit, and supplemented specialist referral services for patients requiring specialized services through facilities in Ottawa.
- Patient coordination arrangements for patients travelling for health services vary by Region.
  - Kitikmeot Region has contracted patient coordination, boarding home and local transportation services in Yellowknife. Stanton Hospital travel office coordinates return travel for Kitikmeot patients. In Edmonton, a contract with “Critical Care”, a component of the Capital Health Authority, provides for patient care and physician and specialist referral in Edmonton. “Larga” is contracted to provide boarding home facilities and local transportation for patients in Edmonton.
  - Kivalliq Region is unique in that it has its own patient coordination staff, based in both Winnipeg and Churchill who are responsible for liaison with the Travel Coordinator (based in Rankin) and for patient needs while in they are in the “south”. Contracted boarding home and local transportation services are provided in Rankin, Churchill and Winnipeg.
  - Baffin Region has a contract with OHSNI for patient coordination services in Ottawa and for discharge and return arrangements. It also has a contract with “Larga Baffin” to provide boarding home facilities and local transportation for patients in Ottawa.

#### 4.2.3 MANAGEMENT OVERSIGHT

Neither the Department of H&SS at a corporate level, nor any of the individual regions appears to have strong, information driven overall management of all the key components of medical travel. Based on our effort to assemble and assess medical travel information and the information from various interviews, meetings and background documents, key observations related to medical travel program management oversight are:

- The demographic, clinical and travel data captured in the Patient Travel Authorization form and entered into an electronic database (two years in the database for Kivalliq and Kitikmeot; data entry commencing spring 2002 for Baffin) are not used in a summary format to support management review of medical travel activity (by patient, by physician, by referring Health Centre etc.) on a Regional or Territory-wide basis. As a result, reports generated for this review had a number of weaknesses which effectively eliminated this resource as a tool for travel utilization analysis. The absence of valid and reliable summary information makes it difficult to manage, plan, and evaluate the Medical Travel Program either as a one-time project or on an on-going basis.
- The transient nature of many health services staff in Nunavut creates challenges for building local knowledge and expertise. Health centre staff and regional physicians with limited local or northern

experience and/or more limited or less consistent access to consultation and continuing education with experienced northern service providers may use medical travel resources differently than do staff and physicians with more experience, and with more established networks for consultation, advice and continuing education. Anecdotally, key informants advise us that these differences can be seen. The different models of service delivery and health centre staff support across the Territory permit some 'natural experiments' in which service models are compared in relation to patterns of service utilization and patterns of clinical outcomes. Monitoring these 'natural experiments' and then generalizing 'best practice' models based on the findings requires better data than are currently generated. It is well known that data becomes meaningful information only when it is actively used and assessed. This requires a culture of management information which brings to life the necessary and routine checks on validity and reliability of data. It is not clear from the current review whether the data tools are available but not operationalized effectively, or whether there are gaps in data collected.

#### 4.2.4 DEPARTMENT OF HEALTH – REGION INTERFACE

Both the corporate arm of the Department of H&SS and the Regional Executive Directors have important areas of responsibility with respect to medical travel. While there are no obvious barriers to collaboration, there does not appear to be a well established relationship between these players to support effective monitoring and management of medical travel. Key observations from the review include:

- The Department of Health and Social Services has issued a Client Travel Policy (September 2000) that outlines the principles for medical travel and provides a guide to the administration of the medical travel for the Regions. The principles of the program effectively provide a mission statement for the program, and there are clear supporting process maps for decision making.
- The Client Travel Policy Sections (Sections D, E & F) that provide guidance for operating, management and information gathering processes have not yet been completed. Therefore, little guidance is available to the Regions in areas such as:
  - Contracting for "emergency" air carriers (charters).
  - Purchasing of scheduled flight ticketing
  - Contracting for patient coordination and patient services in southern locales
  - Maintenance of data records of relevant information for the management, planning and evaluation of medical travel program.
- The Department of Health and Social Services' Interim Director – Client Travel currently has no operational management role related to Medical Travel. This individual advised his role is to adjudicate individual appeals of regional medical travel decisions on an as required basis. The day to day responsibility for medical program operations as well as overall planning and management of medical travel currently rests with the Regions.
- A number of corporate support services provided by the Department are resources to the Regional Executive Directors in support of medical travel program management (information systems, finance, policy) but based on our contacts, these relationships seem to be underdeveloped, or at least not jointly focused on active monitoring and management of medical travel as a program.

## 5 MEDICAL TRAVEL ACTIVITY – CLINICAL DRIVERS OF UTILIZATION AND CLINICAL INFRASTRUCTURE AND MANAGEMENT

The purpose of the Medical Travel Program is to support appropriate access to diagnosis, treatment and/or follow up of health conditions. The frequency and volume of medical travel is a function of the health care needs of the population and the location of necessary services. While the air transport infrastructure and the medical travel program organization and management affect the efficiency of the service, health needs and the organization of health services are the drivers of overall medical travel demand. See Appendix D for a list of key contacts and interviewees.

The following discussion reviews our understanding of what services Nunavut residents are traveling for and where they travel to, with a view to identifying potential opportunities for service delivery improvements which could reduce the frequency, volume or distances involved in medical travel, and therefore the proportion of health system expenditure on travel as opposed to care.

### 5.1 ISSUES WITH SERVICE UTILIZATION DATA SOURCES

The primary database for review of medical travel activity for this project is the electronically held, administrative database capturing information recorded on the Patient Travel Authorization form. The same form is used across the Territory but currently data from two regions only are held electronically. Implementation of electronic data entry in Baffin region has been delayed, although continues to be a priority.

The travel database is managed from Rankin Inlet, as are other Health and Social Services administrative databases. Ted Hickey, the Database Analyst, provided a series of reports from the 1999-2000 and 2000-2001 fiscal years that form the basis of the high level analysis of Kitikmeot and Kivalliq residents' travel activity provided below. 2000-2001 activities are profiled in the discussion below, unless otherwise noted. Some questions about the validity and reliability of the database have arisen from the first round of analyses; some follow up requests were made but not all were resolved at the time of finalizing this document.

Two limitations of the travel database significantly impact our ability to profile medical travel activity and compare activity across the regions in Nunavut.

- The lack of data for Baffin residents leaves us unable to assess travel patterns for a substantial proportion of Nunavut residents, and to interpret the impact of a within-Territory hospital on travel activity. Efforts to obtain other sources of information on Baffin residents service use have had limited success (see further discussion below); recommendations reflect the assumption that Baffin residents' health service utilization patterns are substantially similar to the other regions in the Territory.
- The travel database captures travel activity by travel 'legs' or segments; for some undetermined portion of patient trips, transport may involve multiple trip segments that should be linked together to reflect a single patient trip. At this time it is not clear that 'legs' as recorded in the database can be collapsed to allow analysis by patient trips. This raises concern about meaningful comparison of medical travel rates (trips per 1,000 population for example) across the regions, since it cannot be



assumed that the impact of counting trip segments instead of patient trips is the same in both regions.<sup>12</sup>

Other sources of information on medical travel patterns, particularly of interest for Baffin residents given the gap in the travel database information, were pursued. Some have significant limitations or are not readily available currently. These are discussed briefly below.

#### **Baffin Hospital Health Records and OHSNI Annual Report of activity:**

Profiles of in-patient and out-patient utilization (including patient characteristics – age, gender, place of residence and diagnostic groupings) from the Baffin Hospital DAD (CIHI) database capture travel activity from Baffin communities to Baffin Hospital, which is expected to represent a significant portion of Baffin residents medical travel. A summary report of annual in-patient and day surgery cases by Baffin community was provided.

The Ontario Health Services Network (OHSNI) coordinates medical care, nursing care management, and interpretation services for Baffin residents referred to specialist services (in-patient or out-patient) in Ottawa or to specialist clinics at Baffin Hospital staffed by OHSNI clinicians. Specialists in the service have privileges at a variety of Ottawa area hospitals, and can admit Baffin residents on both emergency and elective basis. The OHSNI service includes discharge and follow-up care with Ottawa and Baffin providers.

Total in-patient and outpatient visits, total visits by adults and by children, and total visits by specialty are reported in the OHSNI annual report. Routine interim reports provide a profile of total number of visits in a designated time period, and can be made available at level of specialty of the physician seen.

Baffin Hospital out-patient clinic visit information was also provided, but no analyses were made related to utilization patterns.

High level review of the Baffin Hospital in-patient and day care activity and OHSNI hospitalization figures indicates overall hospital utilization rates of Baffin residents are similar to utilization rates of rural residents of southern jurisdictions.

#### **National hospital reporting:**

CIHI hospital discharge data (in-patient and day surgery procedures) is a standard reporting tool by most if not all hospitals in Canada. Data standards are set nationally, and facilities submit their data for routine monitoring and sharing of utilization information. Of particular interest in examining utilization patterns is any out-of-province care received by each jurisdiction's residents. The out of Territory care received by Nunavut residents should be routinely identifiable in the CIHI database.

Unfortunately, reciprocal exchange agreements for CIHI information are not in place between Nunavut and Ontario, and the desired information is not routinely provided. A one-time report had been arranged through the Ontario Ministry of Health but was not received to date due to current public sector job action. With respect to out of Territory care in the other referral centres (Manitoba for care in Churchill and Winnipeg; Alberta for care in Edmonton and occasionally Calgary; and NWT for care in

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<sup>12</sup> Inuvik H&SS Region addressed this problem in the mid-1990's and successfully established a trip-coding format that allowed travel segments or 'legs' to be linked for a single trip at time of data entry, but this practice was not uniformly adopted across NWT and is not reflected currently in the Nunavut travel database.



Yellowknife), we understand reciprocal arrangements are in place but there is no routine practice of data exchange.

#### **Territorial Health Insurance System (THIS) database:**

The potential of this database to provide a profile of nature and location of services remained unexplored as efforts on other fronts were pursued.

#### **Referral centre reporting for Kivalliq and Kitikmeot regions:**

The Northern Medical Unit, University of Manitoba, (NMU) provides general and specialty medical services to residents of Kivalliq Region, with a similar but more comprehensive role compared to OHSNI for Baffin Region. Its annual report is a source of summary information on services provided, and indicate a significant focus on consultation, continuing education, and service planning as well as on direct service provision.

The Stanton Hospital, Yellowknife, Northwest Territories and Capital Health Authority, Edmonton, Alberta provide diagnostic and treatment services (in-patient and out-patient) to Kitikmeot residents, in a manner similar to Baffin Hospital and OHSNI. No annual reports were made available from either of these services.

## **5.2 WHO TRAVELS?**

The following travel profile is based on a series of reports prepared from the medical travel administration database, currently holding data electronically for Kivalliq and Kitikmeot regions. Limitations and concerns have been noted previously. Given the questions about the database, the following picture should not be considered "firm". The observations assume common standards of data entry and coding of information for the two regions, and an acceptable level of completeness of data fields.

### **5.2.1 AGE AND GENDER OF TRAVELERS**

The electronic medical travel administration database for Kitikmeot and Kivalliq Regions supports reporting of a profile of patient age and gender for time periods of interest. A review of the pattern of travel (1999-2000 and 2000-2001) shows higher frequency travel by age and gender groups who typically are higher users of health services in all jurisdictions.

Groups that are generally higher users of medical services account for seventy-five percent of travel 'legs'.

#### **Exhibit 16**

<b>Kitikmeot &amp; Kivalliq regions</b>	<b>% of travel legs</b>
Infants less than 1 yr	<b>5%</b>
Children age 1 to 14 yrs (Boys are slightly more likely to travel – 58% of all children's trips in Kitikmeot; 52% in Kivalliq)	<b>28%</b>
Women 15 to 44 yrs	<b>29%</b>
Elders 60 yrs and over	<b>13%</b>

Comparable data for Baffin residents is not available. Information obtained by this project to date on use of Baffin Hospital does not provide a profile of age or gender of patients. However, the OHSNI Annual Report indicates the following distribution between age groups, for out-of-Territory travel, which indicates a similar ratio of services to children and adults across the Territory.

#### Exhibit 17

Baffin region	% Ottawa visits
Children (age range not specified)	32%
Adults	68%

### 5.2.2 TRAVEL BY ESCORTS

The Nunavut Medical Travel Program permits patients to travel with a personal escort under specific circumstances. Travel database information on escorts for 2000-2001 for Kivalliq and Kitikmeot Regions is summarized below. Overall, 4,613 'legs' of travel are attributable to escorts (35% of total travel), while 8,277 are attributable to patients. This means slightly more than half of all patients travel with escorts.

- Just over 1% of 'legs' are attributable to infant patients (under 2 years of age), and all of these traveled with an escort (99% designated non-medical escorts).
- For all escorts, only 15% are attending as 'medical escorts', but escorts are more likely to be 'medical escorts' in Keewatin (20% of all escorts) than in Kitikmeot (1% of all escorts).
- Escort travel patterns are different on charter compared to scheduled carriers travel, based on travel database reports:
  - Kivalliq: 58% of the charter 'legs' include escorts and 32% of scheduled 'legs' include escorts
  - Kitikmeot: 2% of the charter 'legs' include escorts and 33% of scheduled 'legs' include escorts.

This dramatic discrepancy in reported presence of escorts on charter trips raises questions about the accuracy of data.

- The higher overall frequency of reported escort travel in Kivalliq (38%) compared to Kitikmeot (29%) may be the reflect one or more of the following: systematic differences in the recording of escorts; proportions of young and elderly patients; proportion of non-English speakers; historical patterns of use of escorts and current alignment of practice with policy. The reported difference requires further analysis to interpret confidently.

### 5.2.3 ABORIGINAL STATUS

The travel database records ethnicity of travelers. Inuit people, traveling as either patients or escorts account for 95-97% of all travel 'legs' in 2000-2001.

Non-status patients travel with escorts at less than half the rate of other travelers. A factor that may impact on this situation is that non-status patients are more likely to have English as a working language and that non-status travel patients may more frequently be adults rather than infants, children or elders.

#### 5.2.4 OTHER TRAVELER CHARACTERISTICS OF POTENTIAL INTEREST

Information that would be of value for planning purposes, but is not currently available includes:

- Stretcher vs. ambulatory travel – this data is not available currently from the travel database.
- 3rd party reimbursement eligibility – in terms of program management and opportunities for cost recovery, it would be of interest to determine whether this data, which can be collected on the travel authorization form, is routinely collected, is accurately collected, and whether it corresponds with cost recovery activities. The initial step of requesting a report on the level of current information in the database has been taken; no report has been received to date.

### 5.3 WHY TRAVEL?

As stated in the previous section, the following travel profile is based on a series of reports prepared from the medical travel administration database, currently holding data electronically for Kivalliq and Kitikmeot regions. Limitations and concerns have been noted previously. Given the questions about the database, the following picture should not be considered “firm”. The observations assume common standards of data entry and coding of information for the two regions, and an acceptable level of completeness of data fields.

#### 5.3.1 KITIKMEOT AND KIVALLIQ REGIONS<sup>13</sup>

Reports summarizing patient diagnosis, and its related ICD-9 code, were provided from the travel database. Nursing staff, as part of the medical travel documentation process, assign the ICD-9 codes. While there may be some discrepancies, these codes are likely to be similar to the diagnosis on clinical records that are normally assigned by physicians.

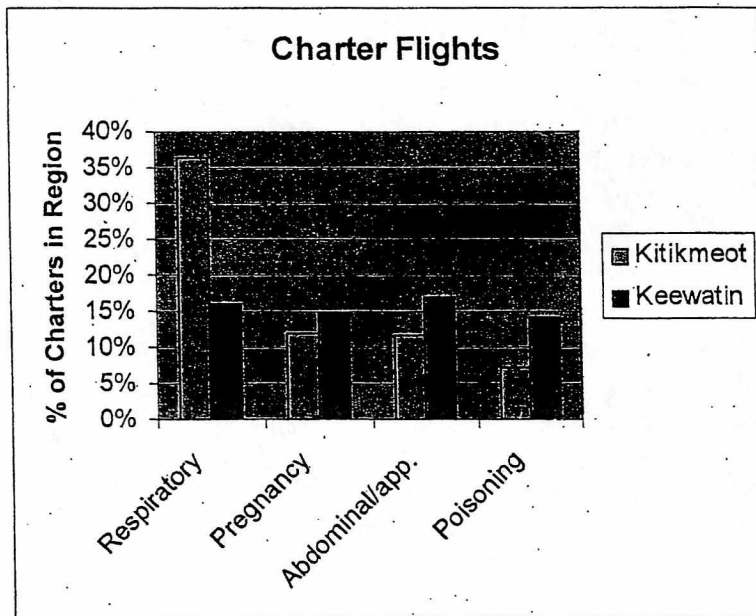
Exhibit 18 and Exhibit 19 show the travel patterns for the four “leading” ICD-9 codes for the two regions. A review of pattern of travel shows a typical pattern of diagnoses associated with medical travel and particularly, management of care in remote communities. The pattern of diagnoses is, predictably, slightly different for charter travel compared to scheduled travel.

- Charter flights: respiratory illnesses, pregnancy related causes, poisoning (drug overdoses), and abdominal pain/appendicitis.
- Scheduled flights: dental caries, pregnancy related causes, ear/nose/throat problems, medical follow-up/diagnostics.

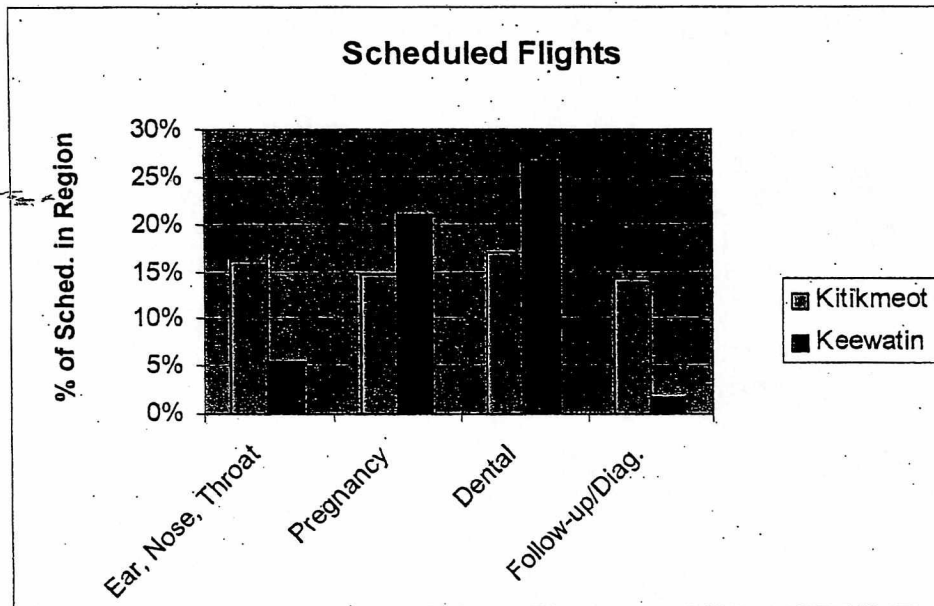
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<sup>13</sup> Data is not available for Baffin Region.

**Exhibit 18**  
**Chartered Flights by "Leading" ICD-9 Classification**



**Exhibit 19**  
**Scheduled Flights by "Leading" ICD-9 Classification**





*Section 23*

[REDACTED], consulting team member and specialist in Emergency Medicine and Emergency Medical Services, reviewed the data and highlights the following issues and opportunities:

- The most striking diagnosis-based difference in travel pattern between the two regions is for ear, nose and throat problems, which occur most frequently in young children. A higher proportion of scheduled travel is recorded in Kitikmeot for these diagnoses: 14% of all scheduled travel – 271 trips/‘legs’, compared to 1% in Kivalliq.
- This may reflect less experience of and/or on-going education, training and clinical support to local community health centre nurses in the management of paediatric health problems in Kitikmeot over the time period reflected in the database (March 2000 – April 2001), compared to Kivalliq.
- Dental care is a significant and higher than expected cause of travel (16% of all travel in Kitikmeot, 24% in Kivalliq), with 92%-96% of dental related trips taken on scheduled travel. Department of H&SS contacts advise this may reflect a ‘catch up’ period in dental care, given an earlier break or reduction in service levels. If this is the case, it bears no further analysis. However, if these rates of travel for dental care are fairly constant over a more extended time period, this volume of scheduled activity may present an opportunity for either clinical service model review (frequency and scope of dental team services in local communities) or transport strategy review (for example, group charters), with a view to improving the cost-effectiveness of dental services.
- Charter volumes for dental care represent 4%-6% of all medical charters in Kitikmeot and Kivalliq respectively. Based on expert opinion, we understand dental emergencies can usually be deferred up to twelve hours, which would allow for scheduled travel in most instances. Again, clinical support to decision-making may be a factor in charter frequency.

#### 5.4 WHERE DO PATIENTS TRAVEL FOR CARE?

As described in the introduction to this travel program profile, there are differences in health services infrastructure in each region related to the different total populations and population densities in each region. There is little or no inter-regional travel for health services currently in Nunavut. People from Kivalliq and Kitikmeot do not travel to Baffin Hospital in Iqaluit for services in any significant numbers; people in Baffin and Kitikmeot do not travel to Rankin Inlet for services.

Out-of-Territory health service referral centres provide specialized and acute care for each region, supported by Nunavut specific patient liaison and lodging services in each referral centre. The same referral centres provide the visiting specialist services to the region. Each region has its own referral centre relationship.

- Baffin residents travel within the region to Iqaluit (Baffin Hospital) for a substantial portion of their diagnostic services, acute in-patient services and selected specialized outpatient clinics supported by local family physicians or visiting specialists. More specialized in-patient and outpatient services are provided by Ottawa hospitals and medical specialists, coordinated through OHSNI on contract to Nunavut. Currently under development is a specialist relationship with the Centre for Addictions & Mental Health in Toronto.
- Kivalliq residents travel within region to Rankin Inlet for a limited range of diagnostic services, in-patient health services, and selected outpatient clinics (including birthing).

Services are provided by physicians in residence and by visiting specialists from the Northern Medical Unit (NMU), University of Manitoba in Winnipeg. An annual plan from NMU identifies the dates of specialist clinics in Rankin Inlet and to a number of Kivalliq communities. Patients requiring



more specialized care than can be provided in Rankin are referred to services in Churchill or Winnipeg Manitoba. Referral to medical specialists and specialized in-patient and outpatient services in Winnipeg hospitals are coordinated through the Northern Medical Unit, University of Manitoba, on contract to Nunavut.

- Kitikmeot residents travel to out-of-Territory referral centres (primarily Stanton Hospital in Yellowknife, with more specialized services in Edmonton, Alberta) for all services not provided in local health centres. This includes more complex diagnostic services, all in-patient acute care (including all planned births), plus specialist outpatient services.

Out-of-Territory services are managed through a single contract with Stanton Health Board in Yellowknife covering physician and hospital services, and through Capital Health Authority and Larga in Edmonton.

While the arrangements with each referral centre NMU (Manitoba), OHSNI (Ottawa), and the Stanton Hospital in Yellowknife and the Capital Health Authority (Edmonton) have similar aims, practices vary significantly with respect to:

- Mix of specialist clinics in regional referral centres and communities;
- Frequency of regional centre visits and use of travel to communities as a substitute for patient travel;
- Physician payment arrangements – per diem, fee for service, annual contract; and
- Mechanisms and extent of activity and performance reporting, review, and service planning.

Each referral centre relationship is discussed briefly below, with a focus on the extent to which specialist roles/services have been optimized in delivering cost-effective health care services across the Territory.

#### 5.4.1 OTTAWA REFERRAL CENTRE – OHSNI

The contract between Nunavut and OHSNI provides for specialist services in Ottawa and Iqaluit for Baffin residents. This extends to coordination of access to specialized diagnostic and treatment services on an in-patient and out-patient basis, nursing case management in the process of admission, treatment and discharge from Ottawa based services, interpretation services as required in Ottawa, involvement of family practice and paediatric residents in service delivery, development of telehealth services in Baffin, and regular utilization review and evaluation. (*Source: OHSNI Annual Report – April, 2000 – March 31, 2001*).

Among the key informants for this project, there was a diversity of views on whether this service relationship is currently being optimized. Comments below may not reflect views of some individuals, but are a synthesis of both interview and other input, and reflect the overall evaluation of the consulting team at this time.

##### **Physician remuneration**

Physician remuneration is on a fee for service basis. This approach reduces flexibility for physician travel to smaller communities, focuses physician time and effort on individual patient care as opposed to consultation and training activities with local service providers, and is reported to create challenges for telehealth development. OHSNI informants report that physicians would be interested in shifting to a per diem model, but current rates are low (reportedly half the rate in the Kivalliq Region's NMU contract). At the same time, respiratory technician rates in the OHSNI contracts are identified as high relative to other

payment schedules for these professionals, reflecting historically high rates in the previous Montreal-based service contract.

### Communications and coordination

Communication and coordination do not currently seem to be optimal between OHSNI and Baffin managers and service providers. While senior players report that the regular meetings (semi-annually or more) are helpful and positive, at an operational level a number of issues and potential opportunities remain unresolved or unexplored. For example:

- Both parties report that Baffin providers do not consistently use OHSNI resources when making referrals to Ottawa specialists; whether this is a function of professional relationships, perceived issues with timeliness, or other factors is unclear. The lack of consistency adds to the challenges of coordinating care and suggests a lack of commitment by Baffin managers and physicians to the service relationship. It also reduces OHSNI's ability to build commitment and Northern specialization among its team. Both parties agree this practice is not the preferred model, but it is not clear where leadership to address it sits.
- Mechanisms for reviewing service needs and optimizing the frequency, duration and location (Iqaluit or other communities) of specialist clinics appear to be weak. The aim of optimizing clinic schedules is to provide appropriate care in a timely way in the most cost-effective manner. OHSNI reports they have physicians who would be willing to adjust their schedules and location of service based on identified service needs. OHSNI reports they do not have a clearly designated Baffin contact that can give time, attention, and decision-making authority to this question on a regular basis.
- There appears to be a general opinion among key informants in Baffin that specialist visits to outlying communities in Baffin are unlikely to be cost-effective. It is not clear at this time, whether this reflects a comfort with historical practice, a desire to maximize the use of Baffin Hospital, or good management intelligence, particularly given the contrast with the pattern of specialist visits to communities in Kivalliq and Kitikmeot regions.

Notably however, a recent (April 4, 2002) cost benefit analysis<sup>Sec 23</sup> for obstetric clinic options was developed (Cost Benefit Analysis for Specialist Clinic, [REDACTED]). The document does not make clear who was the client for the analysis, but it is presumed to be Baffin Region management. It provides a thorough review of direct costs and operational issues of four models of clinics, including two options for clinics in a smaller community, and provides a useful basis for a planning discussion. Alone however, it is not sufficient basis for decision-making. Some of the modeling needs to be reviewed with key players (e.g. OHSNI), and a number of broader service and education issues it raises but cannot fully evaluate require the input of other stakeholders.

- A collaborative approach to the telehealth strategy and the appropriate next steps in its development remains underdeveloped, again due apparently to lack of clarity on roles and leadership. This may be related to a shift in current thinking about the primary function of telehealth. To date, informants report that it had been seen as a key adjunct to family practice. Its role in this area has been less successful than anticipated and some stakeholders believe its value lies more substantially in the area of specialty practice. Such a shift would bring OHSNI into a more significant role in developing and implementing the telehealth strategy.

#### 5.4.2 NORTHERN MEDICAL UNIT, WINNIPEG

The contract between Nunavut and NMU provides for family physician and specialist services in Churchill and Winnipeg for Kivalliq residents. There is a focus on patriation of family physician services

to Kivalliq from Churchill, expansion of specialty services, including audiology, development of a medical rehabilitation program, assistance with the development of a telehealth program, and other educational and research supports (source: NMU Inuit Health Program Biennial Report 1999-2000, 2000-2001).

The Service Purchase Agreement was signed in April 1999 and represents a renewal of in the University of Manitoba/Kivalliq Region relationship. Among the key informants for this project, there was a consensus that communication and consultation is effective, and the program is running effectively and meeting both parties' expectations. The Biennial Report describes a number of components of Program administration including:

- Bi-monthly teleconferences between NMU and Kivalliq Region – Health and Social Services;
- Weekly meetings between NMU and the Kivalliq Inuit Services Patient Care Coordinator;
- Quarterly management meetings of all University of Manitoba personnel involved in the Inuit Health Program; and
- One or two visits annually by senior administrative staff to Kivalliq to meet with service providers, managers, and other key stakeholders to review the program.

The report notes the dates of meetings, and although the frequency of actual meetings does not meet the identified targets, it is nevertheless evident that there is a commitment to active management and consultation.

Visiting physician remuneration is on a per diem basis. Recruitment and retention of family physicians is reported as "one of the NMU's biggest challenges, a situation common to rural and remote jurisdictions across the country". They were happy to report a consistent family physician placement in Rankin Inlet for one year (September 2000 – September 2001) and a group of regular shorter-term locums.

The scope and intensity of service is summarized below, and reflects information in the Biennial Report.

- Family physicians provide continuous service in Rankin Inlet and make regular visits to seven other Kivalliq communities (typically 8 visits per year of 2-5 days duration each, depending upon community size). Continuous on-call phone support by family physicians is also provided to Kivalliq community health centre nurses from one of three centres (Rankin Inlet, Churchill Manitoba, or Winnipeg Manitoba).
- Specialist visits have expanded significantly in the first two years of the agreement. Increases in days of service have been significant for psychiatry, paediatrics and ENT. Additions to specialty visits to the region have been for plastic surgery, colposcopy, radiology and geriatrics. Rankin Inlet has the most intensive specialty consultation schedule, with 11 different specialties visiting between 1 and 6 times a year for a total of between 2 and 24 days each. Specialist visits to communities are also regularly scheduled, and range for 3 to 7 different specialties averaging two to three visits per year.
- Specialists (medical, rehabilitation, audiology) also consult with other health care providers, social service workers, schools and community members (15 to 20 consultations documented per year), and conduct in-service teleconferences (2 per year in 2000 and 2001) and in-community in-service training (physicians: 24 in 2000; 34 in 2001; rehabilitation/audiology: 33 in 2001). Specialist consultants are provide telephone support to Kivalliq service providers and provide care to Kivalliq patients referred to Winnipeg.
- Coordination of access to specialized diagnostic and treatment services on an in-patient and out-patient basis; nursing case management in the process of admission, treatment and discharge from



Winnipeg based services; and interpretation services as required in Winnipeg are provided by Kivalliq Inuit Services. Staff are employees of Nunavut H&SS, Kivalliq region.

- Telehealth is identified as an emerging technology, and currently is not supported in the contract by funding for specific activities. NMU has engaged in telehealth planning and supported Nunavut Department of H&SS in applications for Canadian Health Infostructure Partnership Program grants to support telehealth service development.
- A number of special projects were also identified in the Biennial Report:
  - Medical rehabilitation needs assessment (1999-2000)
  - Infectious disease outbreak response: four person team to Arviat in June-July 2001 to address an E-Coli outbreak; three person team to Sanikiluaq in January-February 2000 to address an influenza A outbreak
  - Circumpolar Health Conference, June 2000: 7 presentations/posters by NMU affiliated researchers
  - Kivalliq Region Pharmacy Services review and recommendations – completion expected 2002.

#### **5.4.3 STANTON HOSPITAL, YELLOWKNIFE AND THE CAPITAL HEALTH AUTHORITY, EDMONTON**

Stanton Hospital in Yellowknife provides, under contract, physician services (specialist and family) for diagnostic and treatment services (in-patient and outpatient) for patients referred by Kitikmeot Region service providers (community health nurses directly, and as required by regional policy, in consultation with the regional physician). Stanton Hospital also provides vision and pharmacy services and selected scheduled physician visits to Kitikmeot communities.

The Capital Health Authority in Edmonton provides in-patient, out-patient and specialist clinic diagnosis and treatment services to residents of Kitikmeot Region on a referral basis from the Stanton Hospital in Yellowknife. Patient coordination services (physician and specialist referrals) are provided, under contract, provided, under contract, by "Larga", who also provide boarding home facilities and local transportation services.

### **5.5 KEY ISSUES, CHALLENGES, OPPORTUNITIES**

#### **5.5.1 WHO TRAVELS? ACTIVE CLINICAL SUPPORT TO TRAVEL PROGRAM MONITORING AND MANAGEMENT**

The review of available travel program data indicates a number of areas to engage clinical leadership in travel program utilization review and management. These areas have the potential to contribute to improving the quality of service and improving efficiency via:

- Service improvements (e.g. increase in-service training; consultation on paediatric care, specifically ear, nose and throat problems);
- Cost efficiencies (e.g. review opportunities to substitute group charter travel for individual travel for dental care, or to increase dental staff visits; review and ensure consistency of escort policy application); and
- Ensure appropriate cost recovery (e.g. actively monitor third party reimbursement status and billing).

### 5.5.2 WHERE AND WHY PATIENTS TRAVEL? OPTIMIZING CLINICAL SERVICES DELIVERY CAPACITY ACROSS THE TERRITORY

Regional management, Departmental leaders, and the referral centre service partners jointly are engaged in planning, managing and delivery health services in each region in Nunavut. The service infrastructure in each region differs, as a result of geography, population and population distribution, historical service relationships, and transportation infrastructure. Nevertheless, there are similar aims to provide appropriate, quality care in a timely and cost-effective manner.

Each region has particular strengths in its current service organization and each has some areas for improvement. Together, there are opportunities to learn from one another and potentially to increase the collaboration or even integration of services.

Notwithstanding the limitations of information and scope of this study, the review of clinical infrastructure and referral centre relationships undertaken as part of this project has identified the following issues and opportunities:

- The OHSNI contract currently provides for per diem payment to physicians that is too low to attract participation in this service model. This reduces flexibility in the deployment of physicians and limits capacity to set broader service goals and actively manage to meet them. It is not clear whether the per diem rate is a cause or an effect of limited goals and weaker management of this service relationship; it is probably related to both.
- The NMU and Stanton Health Region contracts and patterns of service activity differ from the OHSNI contract in the mix of services and the payment mechanisms. There appears to be a number of positive impacts of the NMU and Stanton service models that are not as readily identifiable in the OHSNI contract. These include:
  - Greater support to community health centres
  - ‘Closer to home’ service provision via specialist visits to health centres, which may result in better case finding and follow up and less patient travel and greater patient and community satisfaction
  - A contribution to Northern training, recruitment and retention (NMU model).

There appear to be opportunities to purposefully compare the current referral centre arrangements, with a view to building on the strengths of each. Areas of interest include:

- Contributions to within-Territory care and service planning
- On-going monitoring and reporting on appropriateness and ease of access to out-of-Territory care
- Supports to regional health staff recruitment and retention
- Effectiveness of communication and management processes
- Overall value for money in each service agreement.



## 6 HIGHLIGHTS FROM EARLIER STUDIES

### 6.1 1998-99 NWT MEDICAL TRAVEL STUDY

A 1998-99 study of medical travel for three Northwest Territories' Health and Social Services Boards (Inuvik, Kitikmeot and Stanton) provides a useful comparison to findings in this review.

#### Air transport infrastructure

- Local providers serving each region, but with a higher proportion of local flight crews, some of whom were regional staff.
- Medevac dispatch handled separately by each region.

#### Medical program operations and management

- Historically separate program operations with no common information system, in transition to common policy and practices.
- Evolving 'best practices' within regions, e.g. travel record reflecting patient trip rather than air 'legs'; travel authorization form redesign to remove diagnostic information once medical clearance for travel confirmed; community consultation/information processes.
- Mixed models of management; only one region with integrated and active clinical, administrative and financial management of the program.

#### Clinical drivers of medical travel

- In the earlier NWT study, hospital in-patient and out-patient utilization information and travel information were successfully linked, enabling a detailed and reliable profile of travel activity and associated diagnoses:
  - The pattern of higher frequency of travel by particular age and gender groups is similar in the two studies.
  - Similar patterns of high frequency diagnoses are seen in both studies, although the earlier study had a significant portion of diagnoses coded 'ill defined' which are not seen at a high frequency in the current study.
  - The diagnostic coding for the same patient and the same trip, as logged in the travel database and in the hospital database, were compared for agreement in the NWT study. At the broad diagnostic grouping, agreement between the two sources was only 36% overall over the three year period studied. Agreement was higher for charter flights (50%) than for scheduled flights (32%). The report noted that poor agreement was not unexpected and may be the result of assessment at time of travel authorization (travel database information) compared to post-treatment (hospital database information). Nevertheless, this indicates the profile of diagnoses associated with travel in the current study, reflecting travel database information only, should be used with caution.

Recommendations in the 1999 study focused on four areas:

1. Responsiveness to patient and community needs via focused attention to community consultation and input mechanisms; equity of in travel program services across regions and in escort policy application.

2. Program operations including priority attention to travel management information system; integration of the management and administration of medical, social services and H&SS staff travel; integration of clinical and financial perspectives into program management.
3. Efficiency and effectiveness gains in scheduled air service contracting and in medevac services via a single air transport coordination centre
4. Integration of medical travel services with the larger health system in the Territory and externally via improved inter-regional processes for monitoring, planning, and quality improvement leadership.

## 6.2 OTHER RELEVANT STUDIES

Two previous Northwest Territories studies (1992, 1993) were referenced in the 1999 study. Most of the recommendations of these had become part of travel programs prior to territorial division and have been maintained. Recommendations addressed the following:

- Clear statement and broad communication of medical travel program benefits/coverage
- Nearest centre policy for travel eligibility
- Standardization of documents and forms
- Patient liaison/coordination, interpretation and accommodation/transportation services in referral centres
- Mechanisms to ensure appropriate and equitable travel decision making
- Pursuing cost reductions from air carriers, including minimizing booking fees
- Establishing single dispatch and coordination centres in the Eastern and Western Arctic, and look for opportunities to book charters for group travel
- Linking medical travel with charter travel by other government departments
- Pursuit third party cost recovery where available.

## 7 SUMMARY OF KEY FINDINGS

### 7.1 AIR TRANSPORTATION INFRASTRUCTURE

**There are three independent centres for coordinating medical travel and wide variation in air transport resources and practices in the Territory.**

The current air transport system consists of multiple providers within each of three regions and at significant range of costs. Across these carriers, there are differences in the type of carriers used, the medical equipment available and there are regional differences in the medical flight crews for transport missions.

Each of the three regions runs its medical transport program separately and as a result, there is no integration of these services and no coordination across regions. The current model does not support strategic decision-making about how resources are deployed and misses potential efficiencies (e.g., return trips could be coordinated to bring back patients). The current model creates the potential for duplication of effort.

### 7.2 MEDICAL TRAVEL PROGRAM OPERATIONS AND MANAGEMENT

**There are key elements of a strong medical travel program in place and opportunities for improvement through better integration and coordination across regions.**

Each centre has developed processes that ensure that people who require medical services are transported to referral centres. A review of current processes shows particular strengths in different regions, for example in one region there is a single number that clinicians can call 24/7 to initiate the transfer process. There is also a tremendous amount of work that is done effectively due to goodwill and successful working relationships that have developed over time.

However, because each of the three regional medical travel programs has evolved separately there are not consistent processes and practices. Many opportunities exist to coordinate and ultimately improve medical travel across the Territory. There are not currently consistent and reliable processes in place for collecting and sharing information about patients and their travel arrangements. A travel administration database has been developed and implemented in two regions, but is currently not used for program management as there are questions about the validity and reliability of information. Across the three regions there is significant variability in how transport is accessed and arranged. For example, in some cases travel coordination is only available during business hours and sometimes arranging for transport requires many phone calls and multiple staff.

### 7.3 CLINICAL DRIVERS OF UTILIZATION

There is a lack of reliable information available on current use of health services. The lack of consistent, reliable information about patient travel and patient health information make it difficult to analyze the clinical drivers of medical travel.

Improved information for medical travel and health service utilization in Nunavut would allow improvements in three areas:

- Quality of Care – better information about care delivered and outcomes supports better continuity of care and practice improvements. This information could be used to add local clinics for high volume needs and ultimately reduce the need for medical travel.
- Strategic Planning and Resource Allocation – accurate information allows plans and decisions to be made based on concrete evidence and trends rather than anecdotal reports or partial data.
- Accountability – better ability to measure service levels and standards against pre-determined contract standards.

This Profile Document reflects the observations of the review team based on its work through early 2002, and it has been used to inform the development of strategies and recommendations regarding medical travel which are captured in the separate, final report of this project.

APPENDIX A

NUNAVUT MEDEVAC PROVIDERS DESCRIPTION



APPENDIX A NUNAVUT MEDEVAC PROVIDERS DESCRIPTION

BAFFIN REGION

*Section 24*

Section 24

KITIKMEOT REGION

Section 24

Section 24

KIVALLIQ REGION

*Section 24*





utilized as required but there is ambiguity regarding responsibility for service provision (due to land vs. sea jurisdiction issues) and cost assignment (RCMP, Coast Guard, the Department of Health and Social Services).

Further information supporting a comparison of medical emergency air carrier infrastructure in Nunavut with services in Greenland, Alaska, and Newfoundland/Labrador is provided in Appendix B.

Other potential air transportation resources available in Nunavut include the RCMP aircraft, currently a single engine turbo prop aircraft, the Pilatus PC12. An RCMP representative was interviewed as part of this review. The RCMP has expressed interest in replacing their current aircraft with dual engine craft (recommended for safety and security) and exploring the potential of becoming a service partner/provider in the area of medevac services.

**APPENDIX B**

**MEDEVAC INFRASTRUCTURE IN COMPARISON JURISDICTIONS**

## APPENDIX B MEDEVAC INFRASTRUCTURE IN COMPARISON JURISDICTIONS

Nunavut provides a unique and challenging environment for performing aeromedical transports. The purpose of this report is to compare those challenges, infrastructure and systems with other jurisdictions.

Finding jurisdictions with similar obstacles and environments to overcome can be as easy as looking at their neighbours. For the purpose of this report we will be examining the following jurisdictions.

1. Greenland
2. Alaska
3. Newfoundland & Labrador

Factor	Nunavut	Greenland	Alaska	Newfoundland & Labrador
Geographic Size (million sq km.)	1.9	2.1	1.5	.5
Population	25,947	56,000	626,000	551,795
Pop density	0.014	0.027	0.42	1.1
% Inuit	85%	87%	5%	< 1%

### B.1 OVERVIEW OF EACH JURISDICTION

#### Nunavut

Nunavut is a newly created Territory in the Canadian far north and arctic. It was formally an area of the North West Territories and became a self-governed Territory in 1999. It consists of a large geographic area, almost 2 million square kilometres. Approximately 26,000 persons live within this geographic mass.

#### Greenland

Greenland is a self-ruling Territory of Denmark. It is the largest island in the world and shares many similarities in culture, climate and weather extremes with Nunavut. The geographic size is approximately the same, with Greenland being slightly larger.

They share cultural and historical ties with populations of 85% and 87% being of Inuit descent in each Territory. Greenland's population is twice that of Nunavut but still considered low, especially when population density is considered.

Both Nunavut and Greenland have low populations living in a large geographic area. Both Greenland and Nunavut participate in common associations such as:

- Inuit Circum-polar conference
- Northern Science Network
- Inuit Studies Conference
- Arctic Environmental Protection Strategy

Although snowmobiles and dog sleds (in the east and north) are used for local travel and hunting, there is no land transportation between communities. Thus air and sea transport predominate for all travel within Greenland.

### Alaska

This state has a much larger population base than the other jurisdictions in this report. The geographic area is approximately half a million square kilometres less than that of Nunavut, with a population of over 626,000.

Approximately 71% of the population of Alaska lives in cities with a population of 2,500 or more. Therefore they have less area to cover for a much larger population.

### Newfoundland & Labrador

Newfoundland & Labrador is the eastern-most Canadian. Labrador is located just to the south east of Nunavut. Newfoundland & Labrador are considerably smaller in size and larger in population. They do share some cultural similarities with a large Inuit population, especially in the northern-most portions of Newfoundland and Labrador.

## B.2 OVERVIEW OF HEALTH SERVICE INFRASTRUCTURE

Factor	Nunavut	Greenland	Alaska	Newfoundland & Labrador
# Hospitals	1	16	Many	13
# Medevacs	1,200	300		1,000
# Medical Travel	12,000	900		
# of A/C Contracts	2	1	Regional	0
Government Funded	Yes	Yes	No	Yes
Own A/C	No	Yes	No	Yes

### Nunavut

There are twenty-six permanent communities in this Territory. Within these communities there are Health Care Clinics that do basic patient assessments and deliver front line health care.

Within Nunavut there are three regions. Each region coordinates its own medevac and medical transport programs. There are over twelve hundred medevac missions accomplished every year within the three regions.

There is only one hospital in the Nunavut Territory. This hospital is located in Iqaluit, the capital of Nunavut. The capital and hospital are located in the eastern-most region of Nunavut, Baffin region. Patients requiring medevacs in this region are transported to the hospital in Iqaluit. If they require specialized treatment that cannot be obtained in Iqaluit they are transported to Ottawa.

Approximately 365 medevac patients are transported into Iqaluit per year. The other two regions have approximately the same volume of medevacs. However, patients in Keewatin and Qikqtaaluk Regions are transported directly to higher care facilities outside the Territory of Nunavut. Destinations from these two regions are Yellowknife, Edmonton, Churchill and Winnipeg.

Over twelve thousand patients are transported annually from the Territory of Nunavut to higher care facilities in the south. Utilizing local commercial carriers on scheduled flights accomplishes this.

Facilities with Inuit speaking staff are located in the southern cities to give support to patients and family members. They provide accommodation, traditional foods and cultural support.

### **Greenland**

In Greenland 16 smaller hospitals are placed all over the country. Doctors, dentists and nurses who are employed on a fixed salary basis staff these hospitals. These medical personnel conduct birth deliveries, perform anaesthetics and surgical activities.

Only patients who require specialized treatment are referred to the central hospital in Nuuk or the advanced specialized treatment in Copenhagen.

Greenland provides a traveling medical team. Each hospital is equipped with a surgical theatre and x-ray equipment. They have scheduled days in each community and a team from the Central Hospital performs procedures as close to the citizen's home as possible. This limits the impact on the patient and patient's family.

Approximately 300 medevac transports are performed in Greenland per year. These transports are from the various communities to Nuuk, which is the home-rule capital of Greenland.

Greenland transports approximately 900 patients a year to the University Hospital in Copenhagen. The majority of these transports are for children. There are no paediatric or neonatal wards in Greenland so sick kids must be transported to Copenhagen.

There is a patient hotel in Copenhagen called "The Greenlandic Home." This patient hotel has a 50-bed capacity and is used as a buffer-home for patients and in some cases relatives. This home has mostly Greenlandic speaking staff.

One third of the patients admitted into the University Hospital are admitted to ophthalmology or audiology for treatment, which could include laser or microsurgery.

The remaining patients are transported for cardiac treatment and/or surgery, orthopaedic surgery on knees or hips and neurosurgical surgery.

A small group of patients with severe psychiatric disease are warded in a Danish mental hospital.

The Greenlandic Home Rule Government is responsible for the total health care system. Their philosophy is that any treatment, investigation, hospital stay, medication and travel to the doctor is free of charge to the single patient and in severe cases also to a relative companion. This system can be accessed only when ordered by a physician.

### **Alaska**

Alaska's population base is in the southern part of this state. Over 71% of the population lives in cities of 2,500 persons or more. Their system of operation is the same as other states in the lower 48 – a hospital-based system where the hospital provides transport via ambulance or air ambulance into their facility.



### Newfoundland & Labrador

In Newfoundland and Labrador community hospitals and clinics are spread throughout the province. In addition to the acute care facilities there are also numerous extended care and intermediate care facilities.

Patients who require specialized treatment are referred to the University Hospital in St. Johns. For more advanced treatments patients may be transported to Halifax, Moncton or Montreal.

Approximately 1,000 medevac transports are performed in Newfoundland and Labrador per year. These medevacs originate in the smaller communities and are transported to the University Hospital.

Paediatric and neonatal teams respond from the Health Sciences Complex. These teams are known as the Janeway Team. The teams consist of a RN, RT and a neonatal or paediatric physician if required.

Residents pay a user fee of \$125.00 for each response.

### B.3 AIR AMBULANCE CARRIER INFRASTRUCTURE

Factor	Nunavut	Greenland	Alaska	Newfoundland & Labrador
Fixed Wing Aircraft	Yes	Yes	Yes	Yes
Rotary Aircraft	Some	Yes	Yes	Yes
# Pilots Per Mission	Two	Two	Two	Two
Airports Year Round Access	100%	78%	30%	100%
Medical Interior	Most	All A/C	All A/C	All A/C
Loading Device	Some	All A/C	All A/C	All A/C
# Medical Team	1	2	2/3	2
Med. Team Composition	RN, Paramedic	RN, Physician	Paramedic, RN/RT	RN, Paramedic

#### Nunavut

Within Nunavut the three different regions are responsible for medevac services.

The Qikqtaaluk or Baffin Region is the only region currently operating with contracted carriers. Kitikmeot and Kivalliq Regions have no contracts in place for either aircraft or medical flight teams.

#### Baffin/Qikqtaaluk

The Baffin/Qikqtaaluk Region has two contracted carriers that perform medevac services and provide medical flight teams.

The aircraft utilized for transports within the Qikqtaaluk Region is a Beech King Air 200. This is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical crew is comprised of Paramedic flight attendants. Some of these paramedics have Advanced Life Support skills and practice in Nunavut with permission of the Medical Advisor in the Iqaluit hospital.

The back up aircraft in Iqaluit is a Beech 90 aircraft. This is a twin-engine non-pressurized turbo-prop aircraft. The Beech 90 can be configured for a single stretcher patient. It is used in isolated communities on casual charter bases as an air ambulance transport. In the Qikqtaaluk Region this aircraft is utilized on regular bases and is not equipped with a medical interior kit or the Aero-Sled loading device.

The aircraft utilized for transports from the capital Iqaluit to southern destinations is a Lear 35 jet. This is a twin-engine pressurized turboprop aircraft. This model, designed primarily as a corporate jet aircraft, can be utilized for long distance transports giving improved response times. This type of aircraft is commonly utilized as an air ambulance transport. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft is equipped for full ACLS, neonatal and paediatric response capabilities. There is also an Aero-Sled loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. There are three types of medical crews that are utilized on this aircraft.

- ✓ Adult
- ✓ Neonatal/Paediatric
- ✓ High risk maternity

Adult teams originate from McGill University in Montreal. There are usually three crew members that respond to adult transports. The composition of the medical team is a physician, nurse and a RT.

For infant, paediatric or high-risk maternity transports the Children's Hospital in Ottawa provides an appropriate team. Sky Services also provides a RN for the neonatal or paediatric teams. This person provides in-flight expertise regarding equipment utilization and location of stored medical supplies.

Use of rotary aircraft in this region is limited. Helicopters are positioned and repositioned throughout this area. Rotary aircraft may be utilized on a casual charter basis depending on availability. Events that incorporate a rotary wing response are rare. Responsibility and payment for these aircraft usually falls to the Regional Medical Board, but there are disputes as to responsibility:

- ✓ RCMP
- ✓ Search & Rescue
- ✓ Coast Guard

#### **Kitikmeot**

There is no contracted service provider in this region. That being said a local company in Cambridge Bay performs the bulk of medevac services in the Kitikmeot Region. The local company, Adlair Air, has three aircraft they make available for medevac transports.

Lear 25B jet aircraft is a twin-engine pressurized jet aircraft. This model, designed primarily as a corporate jet aircraft, can be utilized for long distance transports giving improved response times. This type of aircraft is utilized in a number of areas as an air ambulance transport vehicle. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft is equipped for full ACLS response capabilities. There is no loading device to assist loading and unloading stretcher patients into and out of this aircraft.

Beech 100 turbo prop aircraft utilized for transports is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with single patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport system with stretcher mounts and oxygen storage. This aircraft is

equipped for full ACLS response capabilities. There is also an Aero-Sled loading device, which is utilized to load and unload stretcher patients into and out of this aircraft.

Twin otter aircraft was primarily designed as a commuter short field capable aircraft, utilized extensively in isolated areas where airstrip landings may be difficult. These aircraft can land in fields and sometimes on beaches. The aircraft in the Kitikmeot region is utilized for responses in isolated areas with no airstrip. This aircraft is not equipped with a medical kit or a loading device. Use of this aircraft is limited and does not occur regularly.

The local Charter Aircraft Company provides one medical team for all medevac responses regardless of the aircraft utilized. The team consists of one RN flight nurse.

Use of rotary aircraft in this region is limited. Helicopters are positioned and repositioned throughout this area. Rotary aircraft may be utilized on a casual charter basis depending on availability. Events incorporating a rotary wing response are rare. Responsibility and payment for these aircraft usually falls to the Regional Medical Board, but there are disputes as to responsibility:

- ✓ RCMP
- ✓ Search & Rescue
- ✓ Coast Guard

#### **Kivalliq**

There is no contracted carrier in this region. However, two companies provide medevac services – Keewatin Air and Skyward Air Services. They both provide turbo prop aircraft for the purpose of doing medevacs. The Health Authority attempts to utilize both companies on a rotational basis.

Keewatin Air provides a Beech King Air 200 aircraft for transports within the Kivalliq Region. This is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft consist of one RN Flight Nurse.

Skyward Air provides a Cessna Conquest C-441 aircraft for transports within the Kivalliq Region. This is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is utilized for air ambulance work in some areas. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft consist of one RN Flight Nurse.

Use of rotary aircraft in this region is limited. Helicopters are positioned and repositioned throughout this area. Rotary aircraft may be utilized on a casual charter basis depending on availability. Events incorporating a rotary wing response are rare. Responsibility and payment for these aircraft usually falls to the Regional Medical Board, but there are disputes as to responsibility:

- ✓ RCMP
- ✓ Search & Rescue

✓ Coast Guard

### **Greenland**

Air medical travel within Greenland, like most other travel in this Home Rule Territory, is accomplished by air transport. Greenlandair is the only carrier in Greenland that performs medical transports. The government of Greenland highly regulates the transportation system and is the majority owner of Greenlandair.

Greenland Airport Services is a wholly owned enterprise of the Ministry of Tourism, Traffic, Trade and Communications. This agency is responsible for the 13 airports, 11 heliports and 40 helipads throughout the Island.

The transportation system relies heavily on helicopter transport. This is accomplished by utilizing a large Sikorsky S-61 passenger helicopter.

Aircraft that are utilized for medevac and medical travel are varied. They utilize both fixed and rotary wing aircraft.

### **Fixed Wing**

Beech 200 is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are from the Dronning Ingrid's Hospital in the capital city of Nuuk. There are usually three crewmembers that respond to adult transports. The composition of the medical team is a physician, nurse and a RT. This can vary depending on patient requirements.

Twin otter aircraft was primarily designed as a commuter short field capable aircraft, utilized extensively in isolated areas where airstrip landings may be difficult. These aircraft can be fitted with skis if required. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are from the Dronning Ingrid's Hospital in the capital city of Nuuk. There are usually three crewmembers that respond to adult transports. The composition of the medical team is a physician, nurse and a RT. This can vary depending on patient requirements.

Greenlandair also utilizes a De Havilland Dash 7 and a Boeing 757 for medical transports in conjunction with regular scheduled passenger flights.

### **Rotary Wing**

Greenlandair utilizes the Bell B-212 aircraft to perform medevacs. This is a mid-sized twin-engine helicopter. This helicopter can be utilized as a charter, commuter or for corporate reasons. This type of helicopter has been utilized extensively as an air ambulance, but it is an older model and other aircraft are more commonly utilized. The interior can be configured for single or dual patients. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage.



This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are from the Dronning Ingrid's Hospital in the capital city of Nuuk. There are usually three crewmembers that respond to adult transports. The composition of the medical team is a physician, nurse and a RT. This can vary depending on patient requirements and aircraft requirements.

A smaller helicopter, Aero-Specale AS-350, is also employed to do medevacs. This helicopter is a single engine rotary wing aircraft. The interior is configured to transport one patient only with two medical escorts. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are from the Dronning Ingrid's Hospital in the capital city of Nuuk. There are usually two crewmembers that respond to adult transports. The composition of the medical team is a physician, nurse and RT. This can vary depending on patient requirements and aircraft requirements.

Greenlandair also utilizes a Sikorsky S-61 for medical transports in conjunction with regular scheduled passenger flights.

### **Alaska**

Alaska has been the beneficiary of billions of dollars of spending during World War II and during the cold war period. This has provided them with valuable infrastructure such as roads, airports and ferry systems. The free market philosophy is the system employed in the Alaskan experience.

There are numerous companies in this state that provide private medical transport for those who want or require transport out of state.

There are also a number of medevac companies that fall within the directorship of an Acute Care facility. This is known as a hospital-based system, where the aircraft are utilized to transport patients from a scene to a particular hospital or group of hospitals. Out of state transport occurs as well to parent or affiliated facilities in the lower 48. However, they are not restricted to this and are willing to transport patients for anyone who will pay.

These hospital-based systems are employed over a region or area of the state. There is a Central Dispatch or Coordination Center that can be accessed for air ambulance support. Many groups may access this center:

- ✓ Local law enforcement officials
- ✓ Firefighters
- ✓ First responders
- ✓ Emergency medical providers
- ✓ Healthcare professionals

Each major city or region has a hospital-based system. For this report we will look at the Anchorage area of Alaska. Providence Alaska Medical Center is the provider of medical care in this region. The air ambulance component is known as LifeGuard.

Era Aviation and North Western Arctic Air provide the aviation services for this program, both based in Anchorage, Alaska.



**Fixed Wing**

Beech 200 is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are part of the Providence Alaska Medical Center program. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, nurse practitioner, RT and/or flight Paramedic. This can vary depending on patient requirements.

A Lear 35 jet aircraft is also a resource. This is a twin-engine pressurized turbofan jet aircraft. This model, designed primarily as a corporate jet aircraft, can be utilized for long distance transports giving improved response times. This type of aircraft is commonly utilized as an air ambulance transport. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are part of the Providence Alaska Medical Center program. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, nurse practitioner, RT and/or flight Paramedic. This can vary depending on patient requirements.

**Rotary Wing**

LifeGuard utilizes the Bell B-412 aircraft to perform medevacs. This is a mid-sized twin-engine helicopter. This helicopter can be utilized as a charter, commuter or for corporate reasons. This type of helicopter is commonly used as an air ambulance. The interior can be configured for single or dual patients. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are part of the Providence Alaska Medical Center program. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, nurse practitioner, RT and/or flight Paramedic. This can vary depending on patient requirements.

**Newfoundland & Labrador**

Emergency Health Services (EHS) is a section of the Newfoundland and Labrador Ministry of Health. EHS is responsible for the delivery of Air Ambulance service to this province. Government Air Services (GAS) provides dedicated aircraft for the system delivery.

Newfoundland may be the first province in Canada to officially fund and provide air ambulance service to its citizens. GAS has been transporting patients for over 30 years and is a part of the Department of Works Services and Transport for the Government of Newfoundland and Labrador. Providing aircraft for the Air Ambulance program is only one component of their area of responsibility.

Private non-dedicated carriers can also perform casual chartered air ambulance work when required. GAS is responsible for their charter cost and these private carriers are tasked when GAS is unavailable or cannot complete the mission.

GAS responds to medevac missions from their base located in St. Johns, Happy Valley-Goose Bay and St. Anthony, Newfoundland.

#### Fixed Wing

Beech 350 is a twin-engine three blade propeller turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are part of the Health Sciences team from Memorial University. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, RT and/or flight Paramedic. This can vary depending on patient requirements.

Beech 200 is a twin-engine turbo-prop pressurized aircraft. It is used throughout the world as a commuter and corporate transport aircraft. It is commonly utilized for air ambulance work. It can be configured in a number of different ways, usually with dual patient capabilities. All missions in this aircraft are completed with two pilots. This aircraft has a medical kit in the interior, consisting of a Lifeport type system with stretcher mounts and oxygen storage. This aircraft is equipped for full ACLS response capabilities. There is also an Aero-Sled type of loading device, which is utilized to load and unload stretcher patients into and out of this aircraft. The medical teams that respond with this aircraft are part of the Health Sciences team from Memorial University. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, RT and/or flight Paramedic. This can vary depending on patient requirements.

Twin otter aircraft was primarily designed as a commuter short field capable aircraft, utilized extensively in isolated areas where airstrip landings may be difficult. These aircraft can land in fields and sometimes on beaches. The aircraft can also be fitted with skis, and can be utilized for responses in isolated areas with no airstrip. This aircraft is not equipped with a medical kit or a loading device. The medical teams that respond on this aircraft are from the local hospitals in Happy Valley-Goose Bay or in St. Anthony. At least two crewmembers respond to adult transports. The composition of the medical team can be a physician, nurse, RT and/or flight Paramedic. This can vary depending on patient requirements.

#### B.4 SUMMARY COMPARISON TABLE

Factor	Nunavut	Greenland	Alaska	Newfoundland & Labrador
Geographic size (million sq.km.)	1.9	2.1	1.5	.5
Population	25,947	56,000	626,000	551,795
Population density	0.014	0.027	0.42	1.1
% Inuit	85%	87%	-5%	.75%
# Hospitals	1	16	Many	13
# Medevacs	1,200	300		1,000
# Medical Travel	12,000	900		
# of A/C Contracts	2	1	0	0
Government Funded	Yes	Yes	No	Yes
Own A/C	No	Yes	No	Yes

Factor	Nunavut	Greenland	Alaska	Newfoundland & Labrador
Fixed Wing Aircraft	Yes	Yes	Yes	Yes
Rotary Aircraft	Some	Yes	Yes	Yes
# Pilots per Mission	Two	Two	Two	Two
Airports Year Round Access	100%	78%	30%	100%
Medical Interior	Most	All A/C	All A/C	All A/C
Loading Device	Some	All A/C	All A/C	All A/C
# Medical Team	1	2	2/3	2
Medical Team Composition	RN, Paramedic	RN, Physician	Paramedic, RN/RT	RN, Paramedic

APPENDIX C

AIR AMBULANCE STANDARDS – SOURCE AND SCOPE

## APPENDIX C AIR AMBULANCE STANDARDS – SOURCE AND SCOPE

### STANDARDS DOCUMENT FOR NUNAVUT

ICAT has developed a set of global standards that can be customized to suit a particular program or company.

#### Development

The air medical transportation industry is a relatively new industry. It began with the siege of Paris in 1870, where wounded French soldiers were airlifted by balloons over the heads of a Prussian siege, and has developed to where we are today with up-to-date aircraft and advanced medical teams and equipment. There are many excellent air ambulance programs and companies throughout the world. There are also individuals whose practices do not meet industry standards.

There are many professional bodies that have developed standards that cover their particular functions. These include:

AMES	Association of Air Medical Services
HAI	Helicopter Association International
NFNA	National Flight Nurses Association
NFPA	National Flight Paramedics Association
ALEA	Airborne Law Enforcement Association
NEMSPA	National EMS Pilots Association
NAACS	National Association of Air Medical Coordination Specialist
PATA	Professional Aeromedical Transportation Association
Transport Canada	
FAA	Federal Aviation Administration
NTSP	National Transport Safety Board
AMPA	Air Medical Physicians Association
CAMTS	Commission on Accreditation's of Medical Transportation Systems

*The International College of Aeromedical Transport (ICAT)* has gathered a diverse team of experts who together have hundreds of years of experience. We have examined the best the industry has to offer, and established a comprehensive set of standards, based on best practice, for doing the Air Ambulance business. The ICAT Medical Advisory Committee reviews and approves ICAT Standards.

The goals of the standards assembled by ICAT, building on those of relevant professional organizations, are to:

- ✓ Promote patient care
- ✓ Encourage research
- ✓ Advance industry safety
- ✓ Provide clear, decisive leadership
- ✓ Advocate standards



ICAT works with private sector providers to evaluate their equipment and operations against standards, and on the basis of ICAT accreditation, provides assurance to third party organizations that contract for air ambulance services of high quality service.

The following is a list of areas of air ambulance operation covered by ICAT Standards.

**Organization Purpose**

- Mission Statement
- Goals and Objectives
- Client Care Philosophy

**General Information**

- Quality Assurance
- Certifications & Affiliation
- Position Description
- Qualifications
- Training/In-Service
- Dress Code
- Advanced Acts
- List of Advanced Acts And Medications
- Travel Documents
- Infection Control
- Care of Equipment
- Care of Medications and Narcotics
- Medication Errors

**Patient Assessment**

- Charting Guidelines
- Initial Patient Assessment
- Pre-Flight Assessment
- In-flight Assessment
- Arrival Assessment

**Patient Movements**

- Pre-flight preparation
- Movement Minimization
- Loading into Aircraft
- Securing into Aircraft
- Unloading from Aircraft

**Protocols**

- Advanced Cardiac Life Service (ACLS)
- Paediatric Advanced Life Service (PALS)
- Advanced Trauma Life Service (ATLS)
- Neonatal Advanced Life Service (NALS)
- Critical Care Transport Protocols

**Drips & Dosages**

Dopamine/Dobutamine, Nipride/Isuprel/EPI/Levophed  
Nitroglycerin/Heparin, Adalat, Adenosine, Amiodarone, Aminophylline, Anexate, Ativan, Calcium  
Gluconate, Cardizem, Dobutamine, Fentanyl, Haldol, Heparin, Hepalean, Insulin, Labetalol, Levophed,  
Mannitol, Magnesium Sulfate, Maxeran, Nitro Dur, Nitro IV, Ranitidine, Rocuronium, Solu Cortef,  
Stemetil.

**Patient Safety**

- Trapped Gases
- Safety Considerations
- Sedation of Intubated Patient
- Notes
- Coordination
- Geography
- Medical Terminology
- Call Assessment
- Resource Management
- Data Management
- Ground Transport Services
- Aviation Weather
- Navigation & Map Usage
- Customer Service

**Aircraft**

- Cockpit Management
- Basic Aerodynamics
- Helicopters (Rotary Wing)
- Airplanes (Fixed Wing)
- Weight and Balance
- Pressurization

**Air Regulations**

- Flight Crew
- Flight Operations
- Certification & Maintenance
- Heliports
- Airports
- Aeromedical Operations

**Aircraft Maintenance**

- Scheduled Maintenance
- Unscheduled Maintenance
- Airworthiness Directives/Service Bulletins
- Records and Parts
- AME Training Standards

**Flight Operations**

- Dispatch & Flight Following
- VFR/IFR Operations
- Aircraft Performance
- Typical Flight Profile
- Hazards (Icing, Turbulence, etc.)
- Pilot Standards

**Helipads/Scene Landing Zones**

- Selecting and Preparing a Landing Zone
- Securing the Landing Zone
- Landing Zone Communication

**Safety**

- Outside The Aircraft
- Inside The Aircraft
- Helicopter-Specific Hazards
- Hot Loading/Unloading
- Protective Clothing

**Emergency Procedures**

- In-flight Emergencies
- Unscheduled Landing
- Ditching
- Evacuation
- ELTs
- Personal Floatation Devices
- Survival Techniques
- Search and Rescue

APPENDIX D  
LIST OF INTERVIEWEES/RESOURCE PEOPLE

## APPENDIX D LIST OF INTERVIEWEES/RESOURCE PEOPLE

[REDACTED]  
System Coordinator, Department of Health and Social Services,  
Government of Nunavut

[REDACTED]  
Department of Health and Social Services, Government of  
Nunavut

[REDACTED]  
Department of Health and Social Services, Health Costs and  
Invoicing (+ Health Insurance), Government of Nunavut

[REDACTED]  
Database Analyst, Department of Health and Social Services,  
Government of Nunavut, Rankin Inlet

[REDACTED]  
Acting Travel Manager, Department of Health and Social  
Services, Government of Nunavut

[REDACTED]  
Director of Medical Affairs, Department of Health and Social  
Services, Government of Nunavut

[REDACTED]  
Director of Finance, Richard O'Brien, Assistant Deputy Minister,  
Corporate Services, Department of Health and Social Services,  
Government of Nunavut

[REDACTED]  
Manager, Transportation Planning, Department of Community  
Government & Transportation, Government of Nunavut

[REDACTED]  
Transport Coordinator, Kitikmeot Region  
Acting Director-Nursing, Kitikmeot Region  
Executive Director, Kitikmeot Region  
Larga, Edmonton  
Manager, Medical Travel, Stanton Hospital, Yellowknife

[REDACTED]  
Patient Travel, Coordinator Kivalliq Region  
Patient Coordinator, Kivalliq Region, Winnipeg  
Patient Coordination, Kivalliq Region, Winnipeg  
Northern Medical Unit, University of Manitoba, Winnipeg  
Patient Coordinator, Kivalliq Region, Churchill

[REDACTED]  
Manager, Interagency Case Management, Baffin Region  
Manager, Health Records, Baffin Hospital  
Nurse in Charge, Baffin Hospital, Iqaluit  
Director of Hospital Services, Baffin Region  
Executive Director, Baffin Region  
Business Analyst, Baffin Region  
Program Manager, Ottawa Health Services Network (OHSNI)  
President, OHSNI





# Medical Travel Review Strategies and Recommendations

**Prepared for:**  
Government of Nunavut

Consulting Team: [REDACTED]

Submitted by:  
[REDACTED], project manager

Expert physician resource: [REDACTED]  
With report preparation support from: [REDACTED]

Vancouver  
June 12, 2002  
36752

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Nunavut Legislative Library

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### APPENDICES

- A Alignment of Recommended Strategies with Clinical Travel Policy Principles
- B Contracts and Request for Proposal Overview
- C Air Ambulance Standards
- D Coordinated Call Centre/Dispatch Development Requirements
- E Medical Flight Teams
- F Paramedical and Aeromedical Training

## GLOSSARY OF ACRONYMS

24/7	24 hours per day, 7 days per week
ALS (or ACLS)	Advanced Life Support or Advanced Cardiac Life Service
ATLS	Advanced Trauma Life Service
BLS	Basic Life Support
CARS	Canadian Aviation Regulation Standards
CCC/D	Coordinated Call Centre/Dispatch
CIHI	Canadian Institute for Health Information
EMA	Emergency Medical Assistant
EMS	Emergency Medical Services
EMT	Emergency Medical Technician
ENT	Ear, Nose and Throat (also medical term: Otolaryngology)
H & SS	Department of Health and Social Services (Nunavut)
ICAT	International College of Aeromedical Transport
ICD-9	International Classification of Diseases (version 9)
IV	Intravenous
MIS	Management Information System
NALS	Neonatal Advanced Life Service
NU	Nunavut Government
NMU	Northern Medical Unit, University of Manitoba
NWT	Northwest Territories
OSHNI	Ottawa Health Services Network Incorporated (Subsidiary of Ottawa Heart Institute)
PALS	Paediatric Advanced Life Service
RCMP	Royal Canadian Mounted Police
RFP	Request for Proposal
RN	Registered Nurse
SM	Statute Mile
THIS	Territorial Health Insurance System
24/7	Twenty-four (24) hours per day, seven (7) days per week

## EXECUTIVE SUMMARY

In December 2001, Nunavut Department of Health & Social Services (H & SS) commissioned a study of medical travel with the following objectives:

- Provide recommendations and direction to guide a Nunavut-wide Medevac contracting process looking out 5 to 10 years:
  - Including the identification of appropriate services and service standards
- Provide recommendations and direction to ensure that emergency and non-emergency medical transport services are:
  - Responsive to the needs of users of the service,
  - Operationally effective and efficient, and
  - Reflect the best way, or “best practices” of doing business.

The study produced two reports:

**Profile Document:** A summary of information gathered and reviewed by the project team. The Profile provided the context for the review, and presented findings from three key areas: Air Transportation Infrastructure; Medical Travel Program Operations and Management; Medical Travel Activity.

**Final Report:** An overview of findings during the review of medical travel, with recommended strategies to address identified gaps and opportunities for improvement.

### SUMMARY OF FINDINGS FROM REVIEW

- Baffin, Kitikmeot and Kivalliq each have separate structures and systems for coordinating emergency and scheduled medical travel. The current structure makes managing medical travel quality and resources challenging, and results in fragmentation and duplication.
- There are no consistently applied standards for aircraft, medical flight crews, relationships with referral centres and patient coordination agencies or contract terms and conditions. Developing and implementing standards consistently would result in improved quality, reduced cost and potentially increased service levels.
- Information about the medical travel program and the patients served is difficult to locate, unreliable and inconsistent. This absence of management information presents significant challenges to program planning and evaluation

### GOALS OF THE PROPOSED STRATEGIES

Strategies were developed to create an integrated program of medical travel in Nunavut that is:

#### High Quality & Responsive

- A medical transportation system based in high quality, consistent standards across the Territory.
- A medical transportation system that is responsive to the needs of users – patients, health centres, referral centres and staff.



- Provides equitable access to required medical transportation services for residents of all communities.

#### Efficient and Effective

- Well-managed medical transport services that provide value within available resources.
- A medical travel program that provides the right response, with the right resource, to the right location at the right time.

#### Consistent with Industry Best Practices

- Medical transportation service standards that are consistent with Canadian guidelines and best practices found in other jurisdictions.
- Consistently high standards present in all Regions of the Territory.

### KEY PROGRAM COMPONENTS

The proposed strategies are designed to bring medical travel together as a single program that can be effectively managed and monitored. At the core of the strategies are four key program components:

**Integrated Management Structure:** An integrated management structure for medical travel pulls together what is currently a fragmented regional approach. This is a critical success factor for the other recommendations that target improvements in service delivery, accessibility and accountability. This integrated management structure is designed to work within existing resource levels, to manage the multi-million dollar medical travel program more efficiently and effectively. This recommendation moves is consistent with the recommendation of (a) the Nunavut Travel Strategy, which suggests integration of government travel, and (b) the Client Travel Policy, which designates the establishment of a single Director of Medical Travel position. (note: This position now exists, but does not currently include operational responsibility.)

*See strategies 5.2.1; 5.2.2*

**Multi-year contracts awarded through RFP Process:** Key improvements to the air transportation infrastructure include multi-year contracts for air carriers and flight crews, awarded through a request for proposal (RFP) process. The request for proposal process would outline expectations, service levels and required outcomes for service providers, thereby supporting consistency and equity. Establishing contracts will create a more stable business environment for providers, which is expected to result in lower overall costs. Contract management expertise in the medical travel portfolio is a resource that can also be applied to service arrangements between regions and their respective referral centres.

*See strategies 5.1.1; 5.1.3 and 5.3.2*

**Integrated Dispatch Centre:** An integrated dispatch centre is a "best practice" used throughout the medical travel/emergency medical travel industry. Based on what works in other jurisdictions, a CCC/D is proposed as a means of providing 24 hour, 7 days/week service in all communities. Integrated dispatch will also facilitate the collecting and reporting of information in a consistent manner and will allow the centre to pursue efficiencies through coordination of flights.

*See strategy 5.1.2*

**Management information:** Improved management information is strongly recommended as a tool required to manage medical travel. Timely, reliable information results from an active partnership

between information systems staff and senior operational managers in the production and use of system reports and analyses on an on-going basis. This will occur when there is organizational capacity and clear accountability for active monitoring, planning and management of medical travel activity.

*See strategies 5.2.2 and 5.3.1*

## PROPOSED STRATEGIES

Eight strategies are proposed to create a Territory-wide program for medical travel that delivers high quality service, effectively and efficiently. These strategies are:

### **Air Transportation Infrastructure**

- 1) Develop a standard process for contracting Medevac and scheduled medical travel aircraft and medical flight crew providers.
- 2) Develop an integrated Coordinated Call Centre/Dispatch that serves the entire Nunavut Territory.
- 3) Based on best practices in the industry, national guidelines, and the needs of residents of Nunavut, develop common standards for medical flight crews and air carriers.
- 4) As a medium term strategy, train and hire local residents as medical flight crew personnel.

### **Medical Travel Program Operations and Management**

- 5) Reorganize Medical Travel as a single program across the Territory.
- 6) Strengthen travel database to create management information for medical travel.

### **Medical Activity: Clinical Drivers of Utilization**

- 7) Strengthen use of clinical management information.
- 8) Review and revise contracts with referral centres.

The final report provides next steps for implementation, elapsed time requirements and human resourcing options.

## 1 INTRODUCTION

In December 2001, Nunavut Department of Health & Social Services (H&SS) commissioned a study of medical travel with the following objectives:

- Provide recommendations and direction to guide a Nunavut-wide Medevac contracting process looking out 5 to 10 years:
  - Including the identification of appropriate services and service standards
- Provide recommendations and direction to ensure that emergency and non-emergency medical transport services are:
  - responsive to the needs of users of the service,
  - operationally effective and efficient, and
  - reflect the best way, or 'best practices' of doing business.

Each region (Baffin, Kivalliq, Kitikmeot) has historically organized and managed medical travel services independently. Air carriers, air ambulance medical teams, specifics of local travel management, and medical care referral centre destinations and arrangements have differed among the regions. There is a common travel policy and protocol, a common medical travel authorization form, and as of March 2002 a common electronic travel administration database system for all regions.

Between January and April 2002, the KPMG Consulting team gathered and assessed a wide variety of information. This included data provided by air ambulance carriers, data available from the travel administration database, the main report and technical document from the recent Nunavut Transportation Strategy (November 2001), selected other reports and background information, and input from a large number of interviews and meetings with individuals from the Department of H&SS in Iqaluit and in the regional centres, representatives of the clinical referral centres, air carrier representatives, and other stakeholders and informants. A summary of this background information is provided in the Profile Document.

This report presents the consulting team's proposed strategies for strengthening the medical travel program, and specific recommendations for action. Initial drafts of these strategies were reviewed by the project's Steering Committee (representing senior representatives of the Nunavut Department of H&SS), to assess their feasibility in the unique environment in Nunavut. Specific recommendations nevertheless remain the responsibility of the consulting team.

The proposed strategies have been suggested to build a medical travel system that concurrently optimizes safety, patient care, cost effectiveness and equity across the Territory. The recommendations in this report take into consideration:

- Successful practices from each of the regions in Nunavut that can be applied to other regions.
- Best practices from other parts of the world, based on a review of medical transport systems and consultation with industry experts.
- Special consideration for the unique circumstances in Nunavut with respect to human resources, and workforce mobility.

## 2 OVERVIEW TO STRATEGY DEVELOPMENT

As described in our proposal, strategy development is informed by four perspectives, which are adapted from the 'balanced scorecard' approach developed by Kaplan and Norton<sup>1</sup>, as reframed for the Canadian health system environment and integrated health service delivery systems by Leggat and Leatt<sup>2</sup>.

A number of elements of this approach are attractive. The underlying premise of the 'balanced scorecard' is that financial measures need to be complemented with information on customer satisfaction, effectiveness of internal processes, and the organization's capacity for innovation and improvement. A 'balanced scorecard' approach assists in ensuring that potential or actual gains in one area of organizational performance are compared to gains or losses in other areas, increasing the accountability of the system overall.

Perspectives of interest in our assessment of the current medical travel program and the development of strategies for improvement are:

- **Service Users** – is the program/service responsive, accountable and acceptable to those individuals who need it? Does the program/service address the needs and priorities identified by the communities and/or region using it?
- **Health Providers** – is the program/service meeting the needs of health providers (both within the regions and outside the regions) in a timely and responsive manner? Are providers appropriately trained to utilize services?
- **Internal Business** – does the program/service operate efficiently and effectively to achieve stated goals? Are policies and procedures clear and easy to use from a staff/ service-provider/ transport service partner perspective? What are the contractual arrangements and requirements for the services?
- **Financial** – what are the current expenditures and operational issues? Is the program/service operating within budget?
- **Innovation and Learning** – are there mechanisms for continual improvement? Do they contribute to strengthening service delivery and health outcomes?

Our Profile Document (June 10, 2002) summarized our findings on the current system in three broad areas:

- Medical Travel Transportation Infrastructure
- Medical Travel Program Operations & Management
- Medical Travel Activity – Clinical Drivers of Utilization and Clinical Infrastructure and Management.

The information in the Profile document shows that when necessary, patients are successfully transported from their home community to hospitals. The success of this transfer is the result of significant government investments in Health & Social Services programs, the availability of private sector air transport resources, the interest and commitment of out-of-Territory referral centres and service providers in serving Northern residents, as well as the strength of personal relationships and individual commitment

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<sup>1</sup> Insert footnotes 10-12 from Leggat and Leatt.

<sup>2</sup> SG Leggat and P Leatt. 'A Framework for Assessing the Performance of Integrated Health Delivery Systems' in *Healthcare Management Forum*, spring 1997, 10(1), 11-18.



to ensure timely and appropriate transportation and patient coordination in a complex and challenging environment.

Complicating the effectiveness of medical travel services is the regionalized structure for travel program management. Medical travel is a complex and high cost component of the Nunavut health system. Effectively, there are now three separate medical travel programs operate in the Territory, linked at the policy level only. Regional Executive Directors necessarily have as a high priority the day to day operational issues and planning for service delivery in their local communities. The on-going administration and evaluation of medical travel competes for time and attention, and as a result the program is currently unevenly and minimally managed.

This review has as an overarching strategy the strengthening of medical program management by shifting it from three separate regional programs to an integrated Territorial program. This strategy builds on the existing Territorial Travel Policy, and identifies mechanisms to address standards, monitoring and resource management in an integrated manner.

## 2.1 STRATEGY ALIGNMENT WITH NUNAVUT TRANSPORTATION STRATEGY AND CLIENT TRAVEL POLICY

The Nunavut Transportation Strategy (Government of Nunavut, 2001) and the Client Travel Policy (Nunavut Department of Health and Social Services, 2000) were viewed as cornerstones for this review. Recommendations in this report are intended to align with these existing plans, while adding the detail and specificity required to begin planning for implementation. The strategies in this document should be reviewed and revised as appropriate as subsequent studies are completed.

The Nunavut Transportation Strategy recommended significant re-shaping of air transportation services and the relationship between the service providers and government. The strategy document recommended:

- Integrating medical and social services travel into a central transportation contracting office.
- Integrating administrative processes.
- Viewing every element of the budget as a potential training budget.
- Enhancing telemedicine to make health care more accessible to residents of Nunavut and using transportation cost-effectively.

The Nunavut H & SS Client Travel Policy defines travel benefits and eligibility for travel associated with health and social services programs. The policy states that it is based on the principles contained in the Bathurst mandate. Travel policy guiding principles<sup>3</sup> provide a foundation for both mission and vision of the travel program:

- Equity across Nunavut
- Responsiveness to people's needs and culture
- Accountability and responsibility
- Building a stronger Territorial system
- Cost effective use of resources

---

<sup>3</sup> p. 3 H&SS Client Travel Policy & Procedure Manual, Sept. 2000



In Appendix A, a table summarizes the linkage of these principles to the recommendations in this report.

### 3 SUMMARY OF CURRENT STATUS

This section highlights information included in the *Nunavut Medical Travel Review Profile Document* (May 2002) produced as a separate document for this review. The Profile summarizes information gathered and reviewed by the project team, and frames key issues and opportunities. The Profile provides a more detailed description of the issues described in this section. Key findings that present opportunities for action include:

- There are regional differences between Baffin, Kivalliq and Kitikmeot with respect to within-Nunavut travel for health services and out-of-Territory health service referrals. In all three regions, there are significant challenges in health professional training, recruitment and retention that contribute to difficulty in building and maintaining local service capacity.
- Medical travel is managed within each region as part of its health services delivery. There is little capacity for overall planning, management and evaluation of medical travel as a significant and complex component of health service delivery. In particular, there is little or no expertise at the regional level to set and/or monitor air transport and air ambulance safety and quality standards.
- Competitive contracting for medical emergency services is not in place throughout the Territory, nor have service arrangements for patient travel with scheduled carriers been systematically addressed across the Territory.
- Although the H & SS Client travel policy recommends a Director of Client Travel with responsibility for operationalizing the Client Travel Policy, the current position is a resource for patient travel decision appeals only, and has no operational, planning or evaluation authority or responsibility.
- Corporate health information that currently exists in Nunavut has limitations that make it difficult to summarize and report on management-level information, or support planning and evaluation.

Nunavut's Client Travel Policy provides a strong foundation for a Territory-wide medical travel program. The guiding principles in the policy underscore the importance of addressing the opportunities for action identified through this review, while effectively providing a mission and vision statement for the Medical Travel Program.

The issues identified in the development of the current status profile have been summarized under three sections: **Air Transportation Infrastructure; Medical Travel Programs Operation and Management; and Clinical Drivers of Utilization/Information Management.** The recommendations in this report are aligned with these three areas and recommendations of this review address the issues highlighted below.

#### 3.1 AIR TRANSPORTATION INFRASTRUCTURE

In the current system, there are multiple providers in each of the three regions in Nunavut, and each provider has different arrangements regarding payment, service arrangements and costs.

#### SCHEDULED AIR CARRIERS AND MEDICAL TRAVEL

Scheduled medical travel is provided by First Air and Canadian North. First Air holds a contract until mid 2002 with the Baffin Region to provide all scheduled medical travel within Baffin to Baffin Hospital

or referral centres. Full fare ticket prices are discounted by an average of 25% and First Air in Iqaluit provides ticketing services.

## MEDICAL TRAVEL CHARTER CARRIERS

*Baffin* – Air transport between Baffin communities provided by Ken Borek Air and Sky Service provides transport between Iqaluit and Ottawa.

*Kivalliq* – Keewatin Air and Skyward Aviation provide transportation between Kivalliq communities and to Southern referral centres.

*Kitikmeot* – Adlair Aviation provides transportation between Kitikmeot communities and to referral centres. Backup services are provided by Air Tindi.

In the current structure, there is limited capacity to ensure that air carriers used for medical travel are within Canadian Aviation Regulation Standards (CARS). There is also no systematic approach in place for quality assurance, which would ensure consistent high-quality standards across the Territory while mitigating risk for the government.

Independent operations of the three regions in the Territory result in fragmented operations and potential missed opportunities for efficiency and effectiveness. By reducing operational duplication, capacity could be redeployed to actively manage resources and monitor standards, quality and costs. Coordination of missions and personnel may also result in service efficiencies and create a pool of aircraft and medical crew staff to provide emergency backup.

## MEDICAL FLIGHT CREWS

There are many different types of terminology used to describe emergency medical personnel. Examples include EMS (Emergency Medical Services) levels I, II, III; ALS (Advanced Life Support); EMT (Emergency Medical Technician), etc. Appendix E contains examples of training for different levels of emergency personnel training as well as some of the specialty training available for medical air transport.

To avoid confusion, for the purposes of this report **the terms that will be used to describe paramedical staff are: Basic Life Support (BLS) and Advanced Life Support (ALS)**. Typically ALS training is required for any protocols that require invasive treatment such as starting an IV (intravenous), giving medications or giving cardiac medication. Note that the ALS designation **does not imply personnel have aeromedical training**. Additional training on air transport protocols requires additional specialized training.

During the review of Medical Flight Crews in Nunavut, the project team found that the majority of medical flights fly with one medical person (flight nurse or flight paramedic with either ALS or BLS). Three comparison jurisdictions (Greenland, Alaska, Newfoundland/Labrador) have at least two person medical teams trained for ALS, as standard practice.

## PRELIMINARY COMPARISON OF SELECTED STANDARDS

Exhibit 1 summarizes, at a high level, the status of providers in each of Nunavut's three regions on key areas in comparison to International College of Aeromedical Transport (ICAT) standards and three comparison jurisdictions.

### Exhibit 1

#### Comparison of Selected Standards: Nunavut Medevac providers with those of other jurisdictions

	Baffin	Kivalliq	Kitikmeot	Greenland	Alaska	Newfound & Lab.
Mission or Vision Statement	Yes	Yes	Yes	Yes	Yes	Yes
RFP/Contract	Yes	No	No	Yes	Yes	Yes
Coordination Center	Yes(i)	Yes(i)	Yes(i)	Yes	Yes	Yes
# Medical Team	1(ii)	1	1	2 min.	2 min.	2 min.
Twin Engine A/C	Yes	Yes	Yes	Yes	Yes	Yes
Approved Loading Device	Yes(iii)	Yes	No	Yes	Yes	Yes
Approved Medical Interior	Yes(iii)	Yes	Yes	Yes	Yes	Yes
Written Protocols	Yes	Yes	Yes	Yes	Yes	Yes
Infection Control	Yes	Yes	Yes	Yes	Yes	Yes
Flight manual; Policy & Procedures (v)	No	Yes	Some (vi)	Yes	Yes	Yes
Transport Advisor	No (iv)	No (iv)	No (iv)	Yes	Yes	Yes

(i) Centre serves local region only. Kitikmeot & Baffin only M-F 8:30 - 4:30.  
(ii) Flights from Montreal/Ottawa have complete teams of 2 or more.  
(iii) Not on back up A/C  
(iv) On-call physician advice provided by local or referral centre physician; varied exp w/aviation med.  
(v) refers to Medevac providers  
(vi) company providing flight nurses has policy and procedures. Aircraft provider does not.

The three jurisdictions were selected because they are all characterized by some or all of the attributes that make travel in Nunavut challenging – small communities, extreme weather and geographic remoteness. This summary shows that all the regions in Nunavut do not meet ICAT standards or the levels achieved in other remote northern communities in the following key areas:

- Competitive contracts with service providers, based on a request for proposals
- Coordination centre providing 24/7 service
- Number of medical flight staff assigned per mission (note also that some of the staff assigned to Nunavut missions have BLS training only)
- Transportation Advisors who are experienced in aviation medicine available 24/7
- In Kitikmeot, the aircraft that is most often used for medevacs is does not have an approved loading device
- Not all medevac providers have policy and procedure manuals.

### GROWTH IN MEDICAL TRAVEL COSTS

Analysis of the travel database information for Kivalliq and Kitikmeot show there were substantial increases in overall travel expenditures between 1999/2000 and 2000/01. For these 2 regions, there was a

14% increase in scheduled travel and 25% increase charter travel costs. Increases of this magnitude are not sustainable, and further increases in the travel budget may result in fewer resources being available for provision of direct service delivery in health and social services.

Comparable data for the Baffin Region was not available at the time of this review.

#### VARIATION IN COSTING BY MEDICAL CHARTER PROVIDER

An analysis of the cost for Medevac transportation in each region showed that there was great variation in costs across the Territory for both aircraft and medical flight crew costs. The Department of Health and Social Services would realize savings in excess of \$1 million by bringing all carriers to the average cost per statute mile (SM) for providers in the Territory. Further savings are possible if SM costs are brought in line with industry standards.

Costs by each of the five charter air providers were analysed by statute mile (SM) to ensure that the information was comparable across providers. Exhibit 2 compares the aircraft (plane, fuel, pilot) and medical crew\* cost for medical charters for each of the providers in Nunavut.

Sec. 24 Aircraft costs for Medevac carriers in Nunavut range from \$7.99 ( ) to \$4.40 ( ) per SM. Medical flight crew costs range from \$0.53 ( ) to \$1.37 ( ) per SM. The average total cost per statute mile is \$7.12. ( )

Exhibit 2

Section 24



Sec 24  
Lowest total cost/SM: Ken Borek Air, which flies intra-regional flights in Baffin, is the only chartered air carrier with a contractual arrangement with the Department of Health and Social Services<sup>4</sup>. [REDACTED]

Highest total cost/SM: [REDACTED]

Sec 24

- [REDACTED]
- [REDACTED]
- [REDACTED]
- [REDACTED]

Differences in cost between chartered air carriers suggests that there may be significant savings to be achieved by standardizing agreements between carriers and the Government of Nunavut. For example, if all charter flights were provided at the average cost per statute mile for the Territory (\$7.12) the result would be a savings of approximately \$1.2 million with no change in the levels of service.

Experience in other jurisdictions indicates that lower SM charges are achieved by establishing multi-year contracts with providers. In fact, experts in the industry indicate that Medevac costs typically are in the range of \$4.00 - \$6.00 per statute mile, suggesting a cost below \$7.12/SM may be realistic, even with the addition of a Nunavut cost allowance.

Savings could be redirected into improving medical transportation, increasing direct health service delivery, or other Territory priorities.

### 3.2 MEDICAL TRAVEL PROGRAM OPERATIONS AND MANAGEMENT

Exhibit 3 below presents a high level overview of medical travel operations in each of the three regions in Nunavut. In each region, the Executive Director responsible for health services oversees medical travel as part of their responsibility for the overall medical services program. Regional variations exist in travel coordination services and availability. All three regions have multiple providers for scheduled and Medevac transportation, and different arrangements for physician support and advice about travel decisions. Patient services coordination is provided separately in each region, with different staff and contractual arrangements for each referral centre. Interviews with key informants in this system identify inconsistencies and gaps in patient documentation and information as challenges in the system.

<sup>4</sup> Air Tindi is contracted by Stanton Hospital.

<sup>5</sup> Sky Service transports only between Iqaluit and Ottawa and flew only 40 trips in 2001/02 (approximately 2.5% of the medical charters that year).

**Exhibit 3**  
**Medical Travel – Current State – Program Operations**

	<i>Kivalliq Region</i>	<i>Kitikmeot Region</i>	<i>Baffin Region</i>
<b>Executive Director (location)</b>	Rankin	Cambridge Bay	Pagnirtung
<b>Travel Coordination resources/mechanism</b>	Regional staff located in Rankin 24/7 travel coordination for scheduled through travel coordinator in Rankin and through patient services staff in Churchill and Winnipeg. Emergency travel coordinated 24/7 by travel coord. in Rankin.	Regional staff located in Cambridge Bay M-F days travel coordination for emergency and scheduled. Health centre staff arrange emergency travel during off hours. Scheduled travel not arranged during off hours.	Regional staff located in Iqaluit at Baffin Hospital First Air staff provide M-F days ticketing for scheduled travel. Emergency travel coordinated through Nurse at Baffin Hospital during off hours. Scheduled travel not arranged during off hours.
<b>Referral Centre Linkages</b> <ul style="list-style-type: none"> <li>• Location &amp; referral centre</li> <li>• Affiliation</li> </ul>	Churchill or Winnipeg Patients requiring more specialized care referred to hospitals in Churchill or Winnipeg by NMU physicians. Specialists and facilities affiliated with Northern Medical Unit, University of Manitoba Contract with NMU for physicians incl. specialists visits to communities, and for hospital services.	Yellowknife or Edmonton Patients sent to Stanton Hospital (Yellowknife) or hospitals in Edmonton (Capital Health Authority). Stanton Hospital provides visiting physicians/specialists to the region. Resident physician at Cambridge Bay (Territorial contract).	Ottawa Patients requiring more specialized care admitted to Ottawa Hospitals. Specialists affiliated with Ottawa Health Services Network Inc. Services provided at Baffin Hospital (inpatient, day surgery, clinics) via physicians/specialists through OHSNI.
<b>Service Coordination</b>	Patient coordination by regional coordination staff located in Winnipeg, Rankin and Churchill. Available 24/7 for emergency and scheduled medical travel.	Critical Care of Capital Health Authority provides patient care and physician and specialist referral in Edmonton. Provided by Stanton Hospital in Yellowknife through contract with Kitikmeot region.	Contracted coordination staff (contract with OHSNI) Available M – F days
<b>Accommodation/transportation services in referral centres</b>	Winnipeg: Boarding houses and local transportation through regional contract.	Edmonton: Boarding house and local transportation – contract with Larga in Edmonton Yellowknife: Boarding houses and local transportation through regional contract.	Ottawa: Boarding house and local transportation – contract with Larga in Baffin.

Separate travel programs operate in each region. The organization of travel services reflect both what is feasible given the relative size of the region's population and budget, and the historical arrangements. Currently, procedures across regions for Medevac calls are non-standardized and sometimes complex, and may vary depending on time of day. Three separately operating travel coordination systems results in duplication and increased cost with no system wide overview. Issues in medical travel operations and management include:

- Only one region has a standard travel coordination resource available 24 hours per day, 7 days per week. In other regions, procedures for Medevac call out may vary by time of day and day of the week.
- Patient coordination services are not available for all regions 24 hours per day, 7 days per week.
- Front line health care staff in communities may be required to make multiple calls to arrange medical travel. Medical decision support to health centre staff is resourced in a variety of ways, with variable expertise in medical air transport and varying accountabilities to Nunavut Health Services.
- In two regions, patient and travel coordination services are not-available on evenings and weekends. As a result patients may spend additional days in hospital or utilizing boarding house beds awaiting a return flight.
- There is currently a limited focus or capacity to manage medical travel as a program. There is limited active assessment and management of direct costs or service standards for patient transport and limited systematic monitoring. Therefore, there is little ability to identify and address systematic service issues and opportunities at the regional and territorial level

### 3.3 CLINICAL DRIVERS OF UTILIZATION

The Patient Travel Authorization form was the primary database used for this review, as it is common across the three regions and at the time of this review was entered and stored electronically for Kitikmeot and Kivalliq regions and there was a possibility a sample of Baffin data would be available electronically in time for use by this review. This database includes information on patient diagnosis, as well as age, gender, home community and other descriptors of interest. No data on individuals was released to the review; all analyses were of grouped data to protect confidentiality.

Our ability to review the nature of patient travel was severely limited due to two major weaknesses in current data:

- The absence of Baffin information in the electronic database or in any other summary format, and
- An inability to examine patient trips based on episodes of care, given the inconsistencies in capturing "trips" or "legs" of trips in the database.

The key finding from this portion of the medical travel review was that program level information is largely unavailable or not interpretable, and appears not to be used by senior managers for system monitoring, evaluation or planning.

It is generally the case that data quality improves only when it is used routinely, and there is an ongoing dialogue between data users and data systems staff about data purposes and quality. Until this information culture is established, the current data gaps makes it difficult to plan travel effectively, identify priority areas for service improvements or enhancements, and evaluate outcomes against targets or standards.



The data available from Kitikmeot and Kivalliq in the travel administration database does provide a profile of the most common diagnoses for patients being transported for charter and scheduled travel. The most frequent diagnoses associated with travel are as follows:

**Charter Flights:** Respiratory illness, pregnancy related causes, poisoning (drug overdoses), and abdominal pain/appendicitis.

**Scheduled Flights:** Dental caries, pregnancy related causes, ear/nose/throat problems, medical follow up/diagnostics.

These highest frequency diagnoses are consistent with expected patterns.

Further examination of patterns of travel, including differences in the patterns between communities, can assist in identifying opportunities for efficiencies in modes of travel and for areas of focus for health promotion and education and building local health capacity. For example, the high number of patients travelling from Kitikmeot for ear/nose/throat (ENT) problems compared to Kivalliq suggests Kivalliq's clinical infrastructure and particularly the level of education and support to local health care providers regarding common ENT ailments may be a model Kitikmeot could consider adopting or adapting.

Referral centre relationships of each Nunavut region both reflect and shape medical travel patterns. The travel administration database reports a high degree of alignment of actual travel with established referral centre relationships. Each region has a different service relationship with its referral centre. There are varying levels of "in-reach" by referral centre providers to local health centres and staff, significant differences in pay and payment models for physicians and other professionals which impact the role they play in service delivery, and variation in referral centre partnerships in overall service evaluation and planning. The limitations of existing data systems prevented comparison of regional rates of patient travel overall or by populations of interest, lengths of stay, readmission rates, or other indicators. These regional comparisons could assist in identifying strengths of the different referral centre relationships, which could serve as "best practice" models to inform the evolution of referral centre relations across the regions.

The referral centre arrangements for each Region are as follows:

**Baffin:** Baffin Hospital in Iqaluit provides a substantial amount of the acute care required by residents of this community via resident physicians and visiting specialists associated with Ottawa Health Services Network Inc. (OHSNI), a subsidiary of the Ottawa Heart Institute. More specialized needs are referred to Ottawa via referral to OHSNI specialists.

**Kivalliq:** Diagnostic and inpatient services are provided in Rankin Inlet by Northern Medical University (NMU) physicians located in Rankin and visiting specialists. More specialized needs are referred to NMU physicians in facilities in Churchill or Winnipeg.

**Kitikmeot:** Residents receive out-of-Territory services at Stanton Hospital (Yellowknife) or, for more specialized services, specialists in Edmonton.

The Profile document provides more detailed descriptions on the nature of each of these referral centre relationships. In summary, there are reported variations in the extent to which these relationships are being optimised. One issue noted is the large discrepancy in per diem rates for physicians between the Baffin and Kivalliq regions; this appears to impact the roles of specialist physicians in each region. Based

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on the interviews and available reports, the Kivalliq region relationship with Northern Medical Unit, University of Manitoba appears to have the most effective service relationship of the three regions. In addition to direct service delivery and a focus on recruiting and retaining physicians in Kivalliq communities, the annual report reflects numerous clearly articulated and routine partnership efforts to identify and manage services issues and develop opportunities to build local capacity, proactively address health issues, and explore opportunities to partner and find efficiencies between communities.

## 4 OVERVIEW OF PROPOSED MEDICAL TRAVEL PROGRAM

### 4.1 GOALS OF THE STRATEGIES

The goals of the proposed Medical Travel Program strategies are to create an integrated program of medical travel in Nunavut that has the following characteristics:

#### HIGH QUALITY & RESPONSIVE

- A medical transportation system based on high quality, consistent standards across the Territory
- A medical transportation system that is responsive to the needs of users – patients, health centres, referral centres
- Provides equitable access to required medical transportation services for residents for all communities

#### EFFICIENT AND EFFECTIVE

- Well-managed medical transport services with value within available resources
- A medical travel program that provides the right response, with the right resource, to the right location at the right time

#### CONSISTENT WITH INDUSTRY BEST PRACTICES

- Medical transportation service standards that are consistent with Canadian guidelines and best practices found in other jurisdictions.
- Consistently high standards present in all Regions of the Territory.

### 4.2 KEY SYSTEM COMPONENTS

This section presents a high level summary of the recommendations that are detailed in the focus areas for this review.

#### INTEGRATED MANAGEMENT STRUCTURE

At the core of the recommended strategies is an integrated management structure for medical travel across the Territory. This structure will increase the profile of the program and pull together what is currently a fragmented approach. This is a critical success factor for other recommendations that target improvements in service delivery, accessibility and accountability. This integrated management structure is designed to work within existing resource levels, to manage the multi-million dollar medical travel program more efficiently and effectively. This recommendation is consistent with the recommendation of: a) the Nunavut Travel Strategy, which suggests integration of government travel, and b) the Client Travel Policy, which designates the establishment of a single Director of Medical Travel position. (note: This position now exists, but does not currently include operational responsibility.)

*See strategies 5.2.1; 5.2.2*

## MULTI-YEAR CONTRACTS AWARDED THROUGH RFP PROCESS

Key improvements to the air transportation infrastructure include multi-year contracts for air carriers and flight crews, awarded through a request for proposal (RFP) process. The request for proposal process would outline expectations, service levels and required outcomes for service providers, thereby supporting consistency and equity. Establishing contracts will create a more stable business environment for providers, which is expected to result in lower overall costs. Contract management expertise in medical travel portfolio is a resource that should also be applied to developing contracts between regions and their respective referral centres.

*See strategies 5.1.1; 5.1.3 and 5.3.2*

## INTEGRATED DISPATCH CENTRE

An integrated dispatch centre is a "best practice" used throughout the medical travel/emergency medical travel industry. Based on what works in other jurisdictions, a CCC/D is proposed as a means of providing 24 hour, 7 days/week service in all communities. Integrated dispatch will also facilitate the collecting and reporting of information in a consistent manner and will allow the centre to pursue efficiencies through coordination of flights.

*See strategy 5.1.2*

## MANAGEMENT INFORMATION

Improved management information is strongly recommended as a tool required to manage medical travel. Timely, reliable information results from an active partnership between information systems staff and senior operational managers in the production and use of system reports and analyses on an on-going basis. This will occur when there is organizational capacity and clear accountability for active monitoring, planning and management of medical travel activity.

*See strategies 5.2.2 and 5.3.1*

## 5 PROPOSED STRATEGIES FOR NUNAVUT MEDICAL TRAVEL

The strategies presented in this review are based on interviews with key stakeholders and information collected (see Profile document), and are consistent with the previously completed planning and policy work in Nunavut (e.g., Nunavut Transportation Strategy; H & SS Client Travel Policy).

The following recommendations propose a territory-wide model and structure for medical travel, and include specific recommendations to address gaps and opportunities identified in this review. The recommendations are organized around the three focus areas of this review:

### Air Transportation Infrastructure (5.1)

### Medical Travel Program Operations and Management (5.2)

### Clinical Drivers of Utilization (5.3)

For each of the focus areas, strategies are presented supported by the rationale for this recommendation and, if appropriate, reference to key opportunities and needs identified in the review. The potential challenges to implementation identified during this review are also presented.

Next steps for implementation are identified with estimated timelines to completion, where appropriate. Timelines are presented as number of months from start date, assuming appropriate resources and support are available. For example, if implementation of these strategies is initiated September 1, 2002 "*months 0-3*" is September 1, 2002 – November 30, 2002.

Together, the recommended structure and its component parts bring together Medical Travel operations into an overall strategy that will bring focus to each area, and the program as a whole. Implementation of these recommendations will better address each of the above areas of competency and will support effective planning, monitoring and evaluation of the program.

### 5.1 AIR TRANSPORTATION INFRASTRUCTURE

Three strategies have been identified to strengthen and develop air transportation infrastructure. These strategies are:

1. Standard Contracting
2. Integrated Dispatch/Coordinated Call Centre
3. Common Standards for Medical Flight Crews and Carriers

### Successful implementation of these strategies will:

- Ensure equity in air transportation and air transportation standards across Kivalliq, Kitikmeot and Baffin
- Facilitate the development of a Nunavut medical air transportation quality assurance strategy that ensures compliance with Canadian Aviation Regulation Standards
- Build in standards, processes and outcomes that are already working well in Nunavut or in other jurisdictions ("best practices")
- Maintain or reduce overall cost of medical transportation while improving service levels and quality

#### 5.1.1 STANDARD CONTRACTING

##### Develop a standard process for contracting Medevac and scheduled medical travel aircraft, and medical flight crew providers

The contracting process should include a Request For Proposal (RFP) process that builds in key outcomes such as equitable service levels in each community and the same standards for aircraft / medical flight crews in each region. It is recommended that separate RFPs be developed for aircraft and medical flight crews, to ensure that outcomes and deliverables for each are clearly defined and understood by both the government and potential providers. The separation of these two functions does not prevent the same company from responding to both RFPs. The proposed time frame for these contracts is 5 years, which has been a successful timeframe in other jurisdictions.

The recommendations in this section align with the Nunavut Transportation Strategy recommendations to identify a "preferred air carrier", and to negotiate a contract with providers. The Transportation Strategy had a number of other suggestions including additional contract incentives and linking multiple components of government and scheduled air travel. The rationale and benefits of this arrangement are described in detail in the Nunavut Transportation Strategy. Note that this review's recommendation for an RFP process for medical travel services can be implemented independently, or as part of any broader action government may take in response to the Transportation Strategy recommendations.

##### Involve stakeholders; reflect community priorities

An RFP process will provide an opportunity to involve stakeholders in setting criteria and standards that *both* set high territory-wide standards and reflect regional differences. Providers who choose to respond to the RFP can be given an opportunity to propose their own approach to the operational requirements. This flexibility allows providers to explore options through partnering with other providers, using technology, or introducing new ideas which the selection committee did not anticipate.

##### Separate contracts for Medevac, scheduled travel and medical crews

Separate contracts for Medevac, scheduled travel and medical flight crews are recommended initially. The separation of these three functions allows clear definition of expectations and deliverables, and will facilitate monitoring performance of successful contractor(s).



### Benefits of standard contracts across the territory and an open RFP process

- Service providers and the government agree on service levels, standards and outcomes as a condition of the contract. These objective criteria serve as **accountability measures** by forming the basis for periodic evaluation of performance.
- A standard contract **does not mean a single carrier** across the Territory. The RFP document may be designed to solicit proposals to provide transportation to one, two or three regions.
- The RFP process may **encourage partnerships between existing carriers**, ultimately improving service and decreasing costs for Nunavut. For example, two carriers may partner to provide different types of carriers for different types of missions, or to provide backup coverage when more than one carrier is needed at any given time.
- Establishing multi-year contracts with service providers will provide a **more stable business environment** for aircraft and medical transport providers, and has the potential to control cost increases or even reduce the cost of medical transportation. If savings are achieved through this initiative, funds could be redirected to enhance local health services or lower overall H & SS costs.
- A company may bid on **both the aircraft and medical flight crew RFPs**, and in doing so may be able to offer better service or a better price if successful on both fronts.
- A company that successfully bids on the contract for medical flight crews across the territory for 5 years may be able to cost-effectively hire **specialized staff**, for example, a designated respiratory therapist and/or registered nurse for flights. This individual may provide training and support to local health centres when their expertise is not required on flights.
- If the RFP process is done well and evaluated, it protects contract awards from political pressures by following a predetermined, rational selection and decision-making process. **Transparency and accountability in this process** can be enhanced by soliciting stakeholder input into the proposed process before any decisions are made, and involving independent experts in the process of drafting the RFP and/or in the evaluation of proposals.
- **Reduced costs of services are an expected outcome**, given the variation of current payment arrangements and an "industry standard" cost that is lower than the Nunavut average. Savings could be redirected to training health services providers, enhancing health services available locally, or to other government priorities.
- Developing contracts with service providers is closely aligned with **Nunavut Transportation Strategy** and could potentially be expanded to include other government travel.

### Implementation – Next Steps

In consultation with representatives from the 3 regions, the Department of H & SS and others, as appropriate, establish a process to follow to develop the Terms of Reference and the accompanying Request for Proposal and select contractor(s).

Develop separate RFPs for contracting with:

- a. Medevac transportation providers<sup>6</sup>
- b. Scheduled medical transportation providers
- c. Medical flight crews

For each, build in agreed upon standards, expectations and outcomes. Involve key stakeholders in developing criteria.

*(2 months)*

Establish expectations and service standards as part of the Terms of Reference for RFP, which include industry best practices from other jurisdictions and Territory-wide standards for safety, patient care and air medical transport operations.

Provide opportunity for potential providers to respond to set criteria and propose solutions that best accommodate operational requirements.

*(1 month for contractors to respond)*

*(1 month for selection process)*

Appendix B provides an overview on air transport contract management and effective RFP processes.

*Timeline: 4 months*

### Potential Challenges

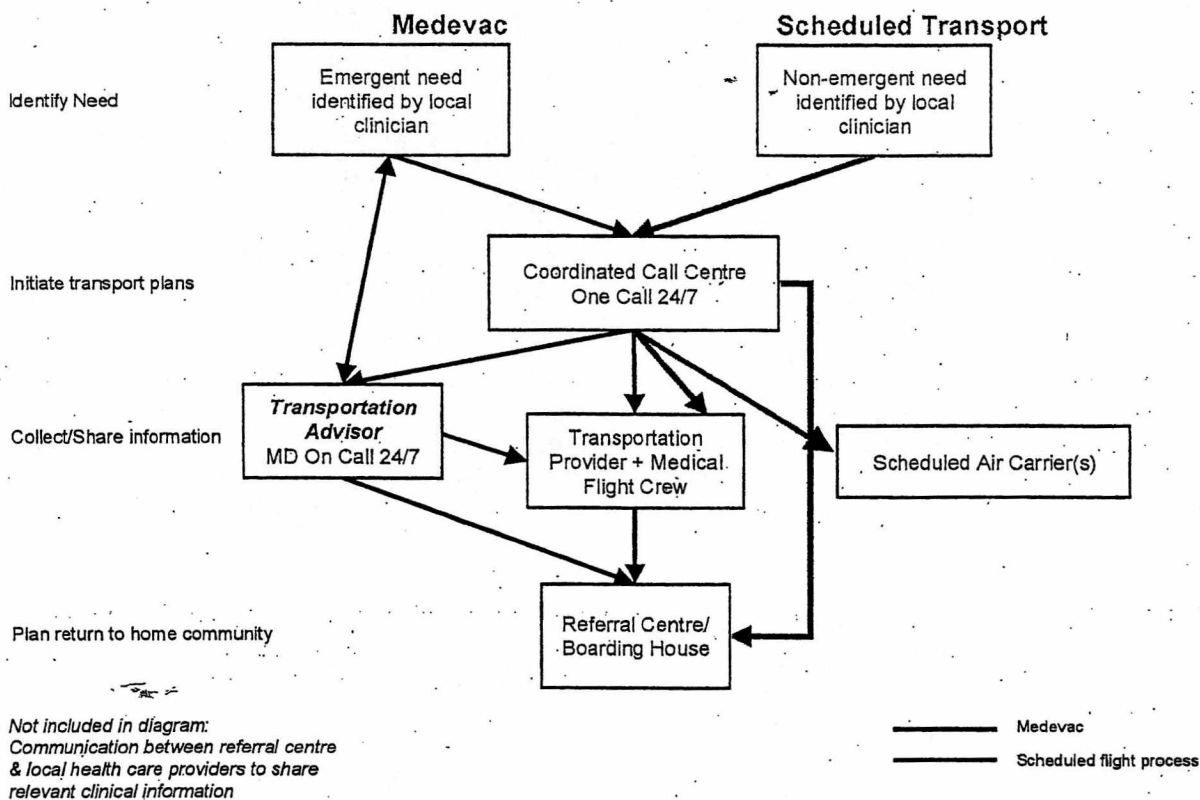
- Redefining relationships between air carriers and Regions may be challenging due to historical practices and the relationships that already exist in these communities.
- Establishing agreement among stakeholders on standards, outcomes and an objective process for awarding contracts.
- Identifying clear and measurable indicators for service quality.
- Timing the initiation of new contracts where agreements are already in place (e.g., Ken Borek in Baffin).

Given the challenges of putting contracts in place for the first time, it may be worthwhile for the Department of Health and Social Services to work with an individual or organization with expertise in developing RFPs, contracts and selection processes.

<sup>6</sup> In Baffin, where there is already a contract in place, the RFP process must accommodate the terms of existing arrangements for the remainder of the contract.

- A medical travel advisor, knowledgeable in aviation medicine, will be available to provide advice on all Medevacs. This professional support will complement the physician-patient relationship in the patient's home community and the referral centre, while providing expertise that may not be available through local physicians who are often new and/or locum physicians.
- Knowledge is consolidated and retained. Experts in medical transportation are developed as the small team gains experience, develops relationships with clinicians, providers and referral centres.
- Single dispatch provides opportunities to improve efficiency by combining trips for multiple patients, and using return Medevac flights to bring patients home.

**Exhibit 6  
Coordinated Call Centre/Dispatch**



**CCC/D implementation resource requirements**

Appendix D outlines the steps involved in establishing the structures and protocols required to operate a CCC/D. It also identifies options for staffing a call centre/dispatch and outlines the major capital and facility requirements for the centre. It is expected that staff resources from the 3 existing coordination centres can be redeployed to staff the CCC/D for the territory.



## Options for implementation

Implementation of a call centre involves many stages and may be approached in a number of ways, whether carried out as a program development initiative by the Department of H & SS itself, or by a contractor. Appendix D provides options for implementation and a detailed plan for implementing a CCC/D by April 2003 assuming project initiation in Summer 2002.

### Implementation - Next Steps

- Determine whether to develop CCC/Dispatch using internal resources or to contract out to call centre service provider  
*Month 1*
- Identify facility location  
*Months 0 - 3*
- Work with three Regions to identify local needs and build these into CCC/Dispatch policies and procedures  
*Months 0 - 6*
- Identify and purchase required office and telecommunications equipment for CCC/Dispatch  
*Months 3 - 7*
- Equipment delivered and installed at site location  
*Months 7 - 10*
- Coordinators hired and trained  
*Months 3 - 10 - 2 months backup support*

### Potential Challenges Identified

This strategy was presented in draft to local representatives who alerted the project team to potential obstacles to this approach. It was noted that the profile of the human resources capacity in the Territory supported small, manageable departments and that local relationships were often required to support formal processes. Other important considerations include existing professional relationships between on-call physicians and physicians at the receiving centre. These concerns are also shared by communities in every jurisdiction when integrated service is introduced, and they have been addressed effectively in all well organized air ambulance systems. It is clear that local relationships and unique needs must be built into any plan for developing an integrated call centre.

A successful model for a CCC/Dispatch centre in Nunavut will maintain decision making at the local health centre, based on consultation between the local health care provider(s) and the medical transport advisor. Local involvement in decision making allows relationships between professionals to be utilized to make the best possible arrangements for the patient. Links between the CCC/Dispatch and the three regions must be strong in order to support communication about patient needs and status, and information related to satisfaction or dissatisfaction.

### 5.1.3 COMMON STANDARDS FOR MEDICAL FLIGHT CREWS AND CARRIERS

**Based on best practices in the industry, national guidelines, and the needs of residents of Nunavut, develop common standards for medical flight crews and air carriers**

Required levels for equipment (aircraft and medical equipment) and medical flight crew training will be build into the requirements of RFPs. These standards should be met or exceeded in all regions in the Territory, except where regional differences dictate different standards (e.g., different runway lengths in communities allow different minimum landing guidelines). Standards/guidelines should include:

***Aircraft specifications:*** For example, aircraft type required for different locations and different types of missions; backup aircraft and/or arrangements with other carriers; number of stretcher bays per plane; ability to land within specified runway length.

***Medical Flight Crew training:*** For example, advanced life support training; partnership with pediatric ALS team; minimum number of personnel in specified scenarios; training in aviation medicine.

***Equipment:*** For example, medical equipment that must always be in primary air carrier; medical equipment that must be accessible for emergency or backup situations

Appendix C identifies the scope of available and recommended standards based on practices and standards in other jurisdictions. These are guidelines and must be validated and adapted prior to a final RFP being issued.

Ongoing compliance with standards will be monitored and improved through a quality assurance function within the Medical Travel Program.

Standards must balance quality of care with cost-effectiveness.

#### **Benefits of common standards built into RFPs across Territory**

- **Consistent, equitable access and service across the Territory.**
- **Puts what is working well in parts of the Territory or other jurisdictions into practice in all regions.**
- **Complies with national standards and mitigates risk of Government.**
- **Focuses attention on quality assurance.**



### Implementation – Next Steps

- Validate and finalize standards with input from representatives from across the territory  
*Months 1-2*
- Include standards for aircraft and equipment in Medevac and scheduled air carrier Request for Proposals
- Include standards for medical flight crews in medical flight crew Request for Proposals  
*Months 2-3*
- Link standards to ongoing quality assurance program  
*Ongoing*

It is also recommended that a medium term strategy be implemented to train and hire local residents as medical flight crew personnel.

Consistent with the Bathurst Mandate and the Nunavut Travel Strategy, local human resources capacity should be developed and deployed to provide medical flight crews.

Similar initiatives in other communities have linked with local colleges to develop and deliver curricula, or have upgraded the qualifications of personnel already trained as ambulance attendants or paramedics.

Appendix C contains alternative approaches to training local staff to become medical flight crews.

Appendix D contains examples of different types of paramedical and aeromedical training programs.

### Benefits of pursuing within Territory training for medical flight crew personnel

- Sets measurable targets for building local capacity for training and hiring Nunavut residents.
- Creates **employment opportunities** at the same time as **reducing relocation and accommodation costs** that are incurred when non-residents are hired.
- Provides a **greater ability to manage quality and safety** through explicit and public standards.
- Large local staff pool increases the ability to staff missions with **two member flight teams** and provide additional or backup coverage when required, in a cost-effective manner.
- Initial analysis of cost of training local residents as medical flight crews shows **little or no incremental cost**. Appendix D provides a more detailed description of this analysis.

### Implementation – Next Steps

- Further develop plan to recruit and train local residents as medical flight crew personnel. Include:
  - Commitment to redirect existing resources to training and/or secure initial investment in training.
  - Detailed description of partnership with college or training institute.
  - Identify core competencies for flight personnel.
  - Phase in new local staff by pairing new trainees with experienced staff.
  - Develop evaluation criteria to measure success and effectiveness of training.

### Potential Challenges

Identifying local residents interested in becoming medical flight crew staff and remaining in Nunavut once training is complete.

Developing a medical flight crew training program that meets local needs and is feasible to deliver to a small number of students in a remote locale.

Establishing a quality assurance program that regularly monitors providers' aircraft and equipment standards.

## 5.2 MEDICAL TRAVEL PROGRAM OPERATIONS AND MANAGEMENT

Two strategies have been identified to strengthen medical travel operations and management. The strategies are:

- a. Strengthen the Leadership of the Medical Travel Program
- b. Strengthen a Medical Travel Database

### Successful implementation of these strategies will:

- Improve equity in medical travel access and quality between the three regions within Nunavut.
- Increase focus on medical travel by managing it as a single integrated program across the Territory.
- Enhance accountability for expenditures and outcomes for medical travel.
- Enable strategies to develop contracts with providers, establish CCC/D, improve quality assurance and build local capacity.

### 5.2.1 STRENGTHEN LEADERSHIP OF MEDICAL TRAVEL

#### Reorganize Medical Travel as a single program across the Territory

Information collected during this review – key informant interviews, data analysis, comparison with other regions and consideration in the context of other Territory Plans – all suggested that, for a number of reasons, the current structure or management model is not effective. Medical transportation to move patients to and from referral centres is unevenly managed, often complex and time-consuming, sometimes not well coordinated, and is very difficult to evaluate.

#### Bringing together “Medical Travel” as a single program

To address these concerns, a new model of medical transportation is being proposed. The new model proposes a Territory-wide integrated management and regional service delivery approach. This approach will help address the currently fragmented program that is managed by three Executive Directors who also have responsibility for the delivery and management of health services. Medical travel is an enabler – a support required for the effective delivery of a continuum of healthcare to the residents of Nunavut. Managing a medical travel program requires a distinct set of skills and expertise as the program is both complex and costly. These factors provide a strong rationale for managing medical travel as a separate program.

#### Exhibit 7 Key responsibilities of senior manager responsible for Medical Travel

- Medevac and scheduled medical travel service program
- Overseeing management of contracts with air transport providers/ medical flight crew
- Call Centre/Dispatch operations
- Accountability for program outcomes, evaluation and planning
- Standards and practices for protection of patient information
- Liaison with regions and referral centres regarding satisfaction with transportation services
- Management of budget

The proposed approach to managing medical travel will bring together all of the key functions required to make this program effective and successful under one senior manager. This individual will have the authority, responsibility and accountability required to manage service provider contracts, ensure responsiveness to local communities and evaluate performance indicators. Integration of these roles will support and improve the quality, safety and cost effectiveness of the program.

The recommended structure requires reallocating existing resources to create positions with the following responsibilities and either a direct or matrix reporting relationship to the senior manager for Medical Travel:

- **Contract Manager** - to oversee contracted services quality and outcomes (potentially a designated individual within existing corporate support services, reporting in a matrix relationship to the Travel Program manager).
- **Transport Advisor** – providing medical consultation with referring facility; liaison with flight crew and receiving facility (matrix reporting to the Territory Medical Director)
- **Coordinated Call Centre/Dispatch** – provide 24/7 response to requests for scheduled and Medevac medical travel

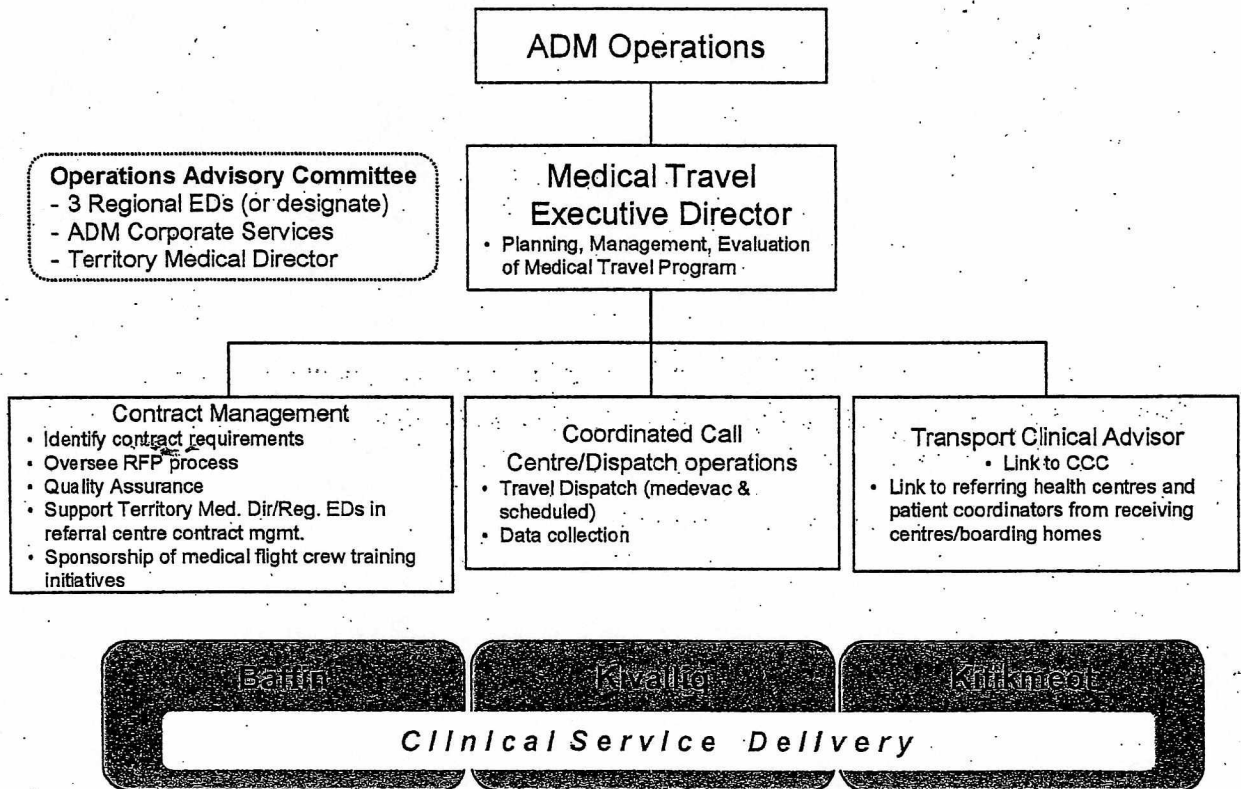


- **Air Transport Quality Assurance Coordinator** – Monitoring quality of service providers in accordance with predetermined standards. Working with providers to address issues and continually improve quality.
- Designated support staff in **Information Systems, Human Resources** and potentially **other corporate support** areas to ensure quality, responsiveness and effectiveness. This function is not necessarily a direct reporting relationship, rather, a matrix relationship with staff currently reporting in to the Corporate Support structure.

**Program interface with three regions**

The success of this structure will be measured by the Medical Travel Program’s interface with and responsiveness to regional and patient needs. Three key areas – Contract Management, CCC/D and Transport Clinical Advisor will need to interface with clinical service delivery in the regions. To further support linkages, an Operations Advisory Committee is recommended with representatives from each of the three regions, with individuals who are able to bring an operational perspective as well as a consumer perspective (Exhibit 8).

**Exhibit 8**



Successful implementation will require creating an executive director level role with responsibility for medical travel in order to give this individual the required profile and connections to other parts of the health services structure. A new Executive Director of Medical Travel may be recruited or, if a phased-in approach is preferred, an existing Executive Director could be identified to lead this initiative as a special

project. Exhibit 9 illustrates how this new role would fit into the current organizational structure. If an existing Executive Director is assigned to lead changes in the Medical Travel program, it is recommended that this model be in place as an interim or transitional model only. Ultimately, effective management of this multi-million dollar program requires a manager who is singularly responsible for its ongoing effectiveness in the context of the overall Nunavut transportation strategy.

### Exhibit 9

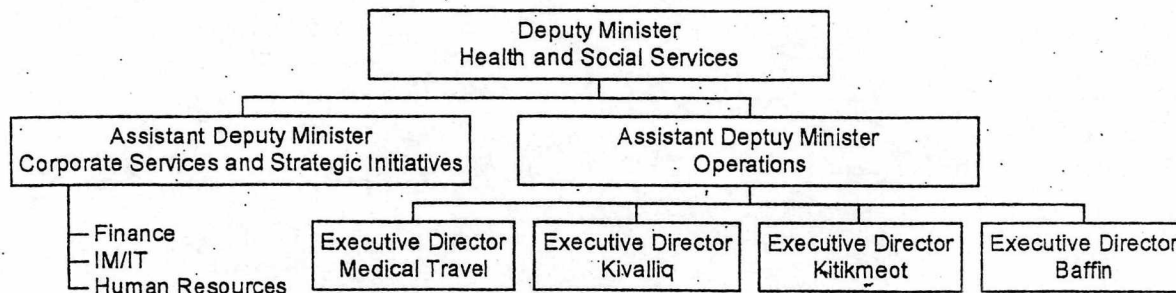


Exhibit 10 below provides an overview of the current distribution of the medical travel program responsibility showing the distributed responsibilities for aspects of Medical Travel among various areas of the Department and the Regions.

Exhibit 11 following provides a high level picture of the proposed shift in medical travel program management leadership, showing the responsibility for Territory-wide standard setting and program management sitting at the Department level, with continued roles for the Regions in clinical services liaison, as well as program planning, monitoring and evaluation.



## Exhibit 10 Current Distribution of Medical Travel Program Responsibility

### Department of H&SS

#### Current Roles Within H&SS Corporate Services:

##### Medical Travel Operations:

- Travel policy and authorization protocols
- Overall budgeting, financial reporting
- IT - travel admin database management

##### Transportation:

- Selected contracts - Baffin Medevac carriers, Baffin scheduled carrier contract

#### Current Roles Within H&SS Operations:

##### Clinical Services:

- Referral centre contracts/relations - input by Territorial Med. Dir. as requested by regions

### Regions

#### Current Role of Regional Executive Directors, regional staff/contracts, H&SS Operations:

##### Medical Travel Operations:

- Patient travel coordination/documentation
- Local community, patient, service provider liaison and consultation re travel

##### Transportation:

- Medevac and scheduled carrier relations
- Medevac staffing and dispatch
- Transport medical advisor services

##### Clinical services:

- Referral centre contracts/liason
- Referral centre service evaluation, planning

## Exhibit 11 Proposed Distribution of Medical Travel Program Responsibility

### Department of H&SS

#### Overall Coordination and Management by Senior Manager for Medical Travel Program reporting to ADM Operations

##### Medical Travel Operations

- Travel policy and authorization protocols
- In collaboration with corporate services
- Overall budgeting, financial reporting
- IT - travel admin database management

##### Transportation

- All contracts - Medevac carriers, scheduled carriers, medical crew contracts
- Medevac dispatch, scheduled medical travel coordination via central coordination centre

##### Clinical Services

- Medevac crew standards, sponsorship of Nunavut based medevac staff training
- Lead role, with collaboration from Territorial Medical Director and regions
- Transport medical advisor support to transport decision making
- Medical travel clinical profile monitoring
- All Referral centre contracts - goals, alignment of incentives, monitoring

### Regions

#### Collaboration in travel program operations and management via:

##### Medical Travel Operations:

- Local community, patient, service provider liaison and consultation
- Budget review and planning

##### Transportation:

- Participation in performance monitoring, evaluation, feedback

##### Clinical services:

- Participation in medical travel clinical profile monitoring, evaluation
- Direct service provider / Referral centre liaison on clinical aspects of case management
- Referral centre contract - goals, alignment of incentives, monitoring

#### Benefits of integrated leadership of medical travel

- Increased focus on medical travel as a single program. Supports ability of program to have clear, measurable goals and targets against which performance can be evaluated, and to plan for service improvements
- Single senior manager responsible and accountable for outcomes is able to focus exclusively on the efficiency, effectiveness and quality of the service.
- Development of internal expertise in medical transportation, able to negotiate and monitor performance of service providers and develop relationships with regional health services and referral centres.
- Supports improved ability to collect, manage and report information on medical travel.

### Implementation – Next Steps

- Identify a senior manager or Executive Director responsible for medical travel.
- Complete detailed review of staff and processes in each region as a basis for restructuring in line with new roles and responsibilities.
- Develop detailed organizational structure for the medical travel program addressing proposed responsibilities. Include staff roles and responsibilities, communication channels, decision making processes.
- Identify supports required for new structure e.g. information systems, telecommunications, policy/procedure, information.

### Potential Challenges Identified

During meetings with representatives from health services in Nunavut, the possibility of initially bringing together two of the three regions was explored. This approach is possible as an interim step and has the advantages of incremental change, leaving the current most functional system elements in place while weaker elements are upgraded. However it would essentially double the cost and effort required to implement the overall transition. For example, consolidating functions and implementing new information systems would need to be completed in both phases of the integration where there would be efficiencies if done at the same time. From the perspective of organizational culture, a two step transition process may have additional implementation risks compared to a one step process.

#### 5.2.2 STRENGTHEN TRAVEL DATABASE

##### Strengthen travel database to create a management information system for medical travel

One of the challenges of managing the Medical Travel program, and a challenge of the present review, is accessing the information required to make management-level decisions, plan for future requirements and evaluate recent performance.

##### Providing information for decision-making

A travel administration database has recently been developed and is beginning to be implemented in the three regions. However, for this information to be truly effective for decision-making, it must be timely, reliable and consistent across all three communities. The existing database may provide a foundation that can be developed to provide more effective information on medical travel.

It is recommended that the travel database be strengthened to create a management information system that can answer the following questions quickly and reliably for all communities and regions. For example:

- How many patients were transported (number of unique patients and number of trips)?
- How many patients were transported from each community? From each region?
- What was the nature of these transfers? (e.g., scheduled, emergency, reason)
- What was the nature of the patients? (e.g., age, gender, diagnosis)
- How many missions did each aircraft provider provide? What kind of aircraft were used?



- How many missions did each medical flight crew provider provide? What kinds of staff were used?

### Benefits of clearly linking the medical travel management information system to medical travel program management

- Increased focus on medical travel as a set of resources requiring active management. Supports ability of program to have clear, measurable goals and outcomes.
- Single senior manager responsible and accountable for outcomes is able to focus exclusively on the efficiency, effectiveness and quality of the service.
- Development of internal expertise in medical transportation, able to negotiate and monitor performance of service providers and develop relationships with regional health services and referral centres.
- Supports improved ability to collect, manage and report information on medical travel, thus improving accountability.

#### Implementation - Next Steps

Because of the relationships between improving management information systems (MIS), the next steps for implementing this strategy (travel program MIS) are presented with the implementation of strategy 5.3.1 (clinical MIS).

### 5.3 MEDICAL ACTIVITY: CLINICAL DRIVERS OF UTILIZATION

Two strategies have been identified to make improvements related to the clinical drivers of medical travel utilization. These strategies are:

- Strengthen use of Clinical Management Information
- Review and Revise Contracts with Referral Centres

#### These strategies will:

- Provide better management information on health service delivery
- Improve access to information needed to deliver higher quality health services
- Support planning, monitoring and evaluation of health services
- Allow all health system managers to explore opportunities to re-allocate resources to improve health services and health service delivery

#### 5.3.1 STRENGTHEN USE OF CLINICAL MANAGEMENT INFORMATION

Understanding who uses health services and why they use health services requires reliable clinical information that can be summarized and reported to produce useful management information while protecting patient client privacy and confidentiality. This information supports delivering effective

medical transportation as well as effective health services. Access to clinical information allows managers and clinicians to answer questions such as:

- Who are the patients being seen locally? (Age, gender, diagnosis, community of residence)
- Who is being sent outside of the region for care? (Age, gender, diagnosis, community of residence)
- How have the patterns of utilization changed over time?
- What are the clinical priorities in this region for children? Adults? Seniors?
- What kinds of health promotion / disease prevention activities might be most valuable in this region?
- Is there sufficient critical mass to develop a new service locally?
- What specialist consultations or support might have greatest impact on local health centre capacity?

Improved access to information can also improve quality of clinical care, by providing consistent and valid information that can be exchanged between care providers as a patient moves between their local community and referral centre(s).

#### Benefits of an improved clinical management information system

- Better information available to plan, manage and evaluate health services.
- Opportunity to improve quality of care by providing consistent, reliable information as a patient moves between providers.

#### Implementation of information management Strategies: (5.2.2 & 5.3.1)

5.2.2 Strengthen travel database to create management information for medical travel

5.3.1 Strengthen use of clinical management information

Development and use of management information systems is critical for quality, accountability and effectiveness of the medical travel program and overall health services delivery. Management information is required to manage three areas:

#### Exhibit 12

Program Area	Information Needs	Information Use	System Current Status <i>Desired Status</i>
Transport Management System	<ul style="list-style-type: none"> <li>■ Flight following</li> <li>■ Aircraft mileage tracking</li> <li>■ Cost committal</li> <li>■ Invoicing control</li> <li>■ Statistical information</li> </ul>	<p>Measure standards, quality and resource use.</p> <p>Financial management</p> <p>Determine carrier availability &amp; routing</p>	<p>Currently no system in place</p> <p><i>Developed as part of CCC/D implementation. Information available for all regions. Reports readily available.</i></p>



Program Area	Information Needs	Information Use	System Current Status <i>Desired Status</i>
Patient Tracking System	<ul style="list-style-type: none"> <li>All services and transportation booked and utilized (by patient)</li> <li>Accommodations (hospital; boarding home; hotel)</li> <li>Daily patient status updates (location, condition, return date)</li> </ul>	<p>Service and transportation utilization rates and patterns by region</p> <p>Planning/managing patient movement.</p>	<p>Currently have some patient travel information. Review found data collection is inconsistent and reports not readily available.</p> <p><i>Consistent and timely information collected &amp; reported for all regions.</i></p>
Clinical Information System	<ul style="list-style-type: none"> <li>Patient identification and demographics</li> <li>Diagnosis</li> <li>Type of treatment(s) received: inpatient and outpatient</li> </ul>	<p>Planning and evaluating health services.</p> <p>Reporting health service utilization rates and morbidity, mortality patterns for each region.</p>	<p>Some information available through CIHI (Baffin Hospital health records), and referral centre reports. Not consistently collected and reports not readily available.</p> <p><i>Consistent information collected and reported for all regions.</i></p>

Implementation of management information systems requires a review of the adequacy and capacity of existing systems and identification of opportunities to integrate systems.

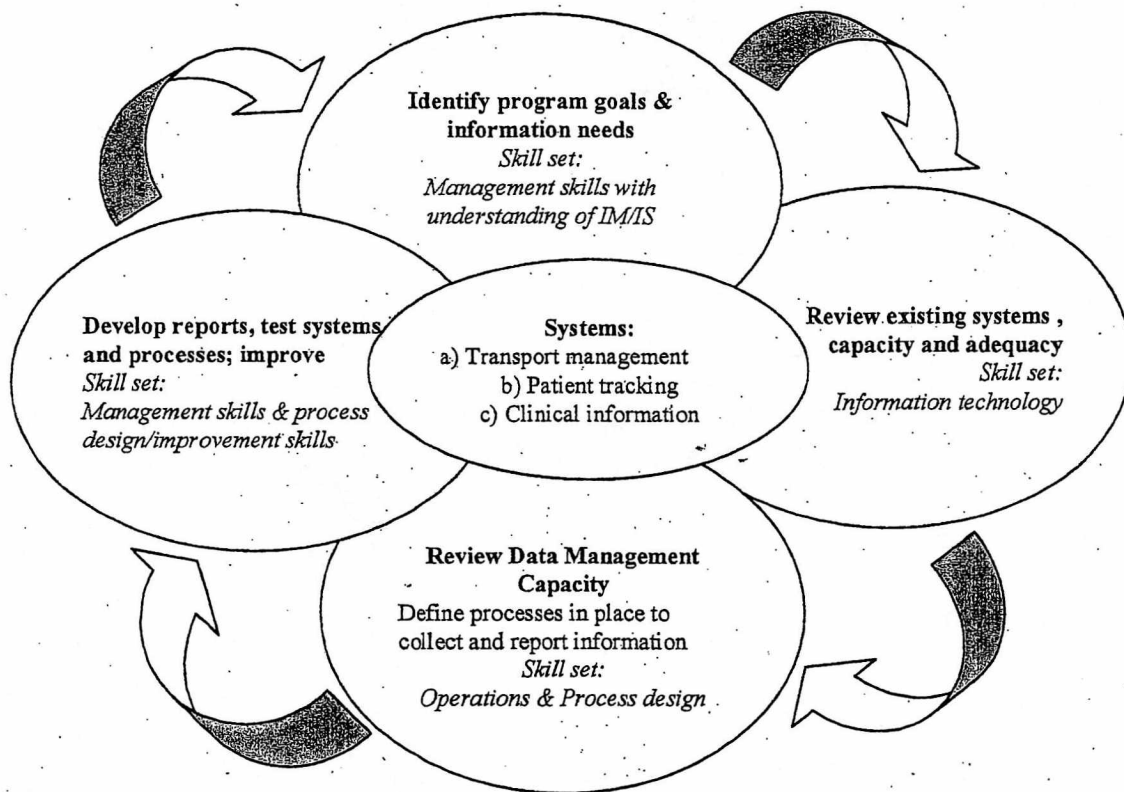
These program areas overlap; the same patients are common to each system. Opportunities to link information across systems with effective and appropriate protocols to protect confidential patient information, will enable cost-effective and time-efficient solutions to management information needs.

**Implementation Next Steps**

- Define program goals and corresponding information needs. Align plans for data collection and reporting with goals. *2-4 months*
- Evaluate capacity and adequacy of current information systems and information management policy and procedures to manage data effectively.
- As required, implement new software, policies and procedures (e.g. common data definitions, data security and confidentiality). *6 months*
- Begin developing management reports to test adequacy and make improvements to newly implemented systems and processes. *2-4 months*

Exhibit 13 shows the overlaps between these steps and the different skill sets required for each.

## Exhibit 13

**Potential challenges**

Information management literature and experience in other organizations identify some of the common challenges and pitfalls of developing management information:

- Data collection practices (completeness, reliability, validity, timeliness) *only* improve when the data is used to evaluate programs and make decisions.
- Managers see the value of information management resources when they are able to see how the information is valuable to them in the context of their operational roles. For example, through regular reports that help inform their decision making and fast access to ad-hoc reports as needs arise. Managers also need to be involved in defining the content and format of reports.
- The agreed upon purpose and goals of a program must drive data collection and analysis. Once the goals are clear, it is possible to identify the information needed to measure whether or not goals are being met.
- Lack of clarity about program goals and objectives leads to collecting “interesting” or “nice to know” data that is not used for evaluation and decision making. If staff are unable to see how information is used, they are unlikely to see the value of collecting and reporting data.
- Creating information that is useful for managing programs and resources requires more than just software. Staff training, policy and procedures, common data definitions and alignment with program goals are essential.

### 5.3.2 REVIEW AND REVISE CONTRACTS WITH REFERRAL CENTRES

The contracts and relationships between referral centres and the regions in Nunavut are closely tied to medical travel, the effectiveness of the Medical Travel Program and the capacity of local health care providers. During the course of the review, it became evident that the differences in contracts and relationships between regions and referral centres are a likely driver of medical travel patterns, resulting costs, and overall quality of care and outcomes. For example in Kivalliq, physicians from NMU visit Rankin and surrounding communities. The impact of this level of service accessibility is not well understood. Some travel may be avoided by providing services locally. There may also be an increase in demand for travel as physicians identify conditions requiring treatment in Churchill or Winnipeg, that may have otherwise gone untreated. Key informants have opinions about impact, but data to support analysis of trends over time or comparative intensity of services and travel in Kivalliq relative to other jurisdictions is not currently available.

It is recommended that the contract management expertise in the Medical Travel portfolio be brought together with the clinical expertise of the health service Executive Directors and clinical leaders in each region to review and strengthen the service contracts with referral centres. The result would be the development of more standardized goals for referral centre relationships across the Territory, while still customized to suit each region's needs. The review found that the existing contract between the Northern Medical Unit of the University of Manitoba and Kivalliq was more explicit and comprehensive in its goals and achievements, and provides a good basis for goal setting for referral centre relationships in each of the regions.

#### Benefits of establishing contracts with referral centres

- Ensures physician remuneration provide **incentives that optimize access to health care** for residents of the three regions. For example, physicians may be paid a per-diem rate to visit a community and either see individual patients, provide group education or work to develop skills with local providers. This approach improves upon fee for service arrangements that only provide incentives to see a significant volume of individual patients, creating the need to bring many patients to be seen in one location.
- **Strengthen** the expectations for **consistency** in access to referral centre consultation and referral with both clinical service providers and managers. Specific expectations from each side (local community and referral centre), articulated as part of the service contract, will clarify roles and responsibilities for building designated service relationships over time.
- Clarify process for monitoring and evaluating referral centre service utilization, and set specific goals and targets for referral centre activity aimed at strengthening regional health services in Nunavut.

#### Implementation – Next Steps

- Review existing contracts with referral centres in each region  
*Months 1 - 2*
- Work with each region to define outcomes, supports and remuneration  
*Months 2 - 6*
- Enter into time-specific contracts with referral centres, with periodic reviews and evaluation of outcomes  
*Ongoing*



## 6 INDICATORS

Identifying and using performance indicators helps evaluate system performance and may identify areas for improvement. When system-wide changes are made, performance indicators can objectively answer the question, "Was the change an improvement?"

Across health care systems, there is an increasing focus on indicators as a means of improving accountability for outcomes and performance. This section presents examples of potential indicators that may be useful to monitor and evaluate medical transportation in Nunavut. They are provided to initiate discussion only.

### "INDICATOR" DEFINED

An indicator is "a measurement tool, screen, or flag which is used as a guide to monitor, assess, and improve the quality of client care, support services, and organizational functions that affect client outcomes" (Canadian Council for Health Services Accreditation, 1995).

Effective health indicators are (adapted from Canadian Institute for Health Information, December 2000):

- Relevant to established (health) goals
- Based on standard (comparable) definitions and methods
- Broadly available – e.g., routinely and reliably collected

### DEVELOPING EFFECTIVE INDICATORS

When developing a set of indicators, the following issues should be considered:

Link measures to objectives – clearly understand the objectives of the program/system being measured and link measures to these objectives.

Collect only information that will be used – focus on collecting consistent, reliable information on the most important issues or outcomes. The 80/20 rule suggests that about 80% of expenditures arise from 20% of activities – identify and focus on the 20%.

Link performance measures to better performance – think about how information will be used to make system improvements. Groups can get mired in collecting information that is "interesting", but measures processes and outcomes for which there is no desire or ability to make changes.

### LIMITATION OF INDICATORS

Although indicators are a useful tool for monitoring system performance and identifying opportunities for improvement, they must be interpreted in context. Making decisions without understanding the context of indicators can actually be detrimental to a system. For example<sup>7</sup>:

- People "game" the numbers – finding ways to improve numbers without truly improving outcomes.

<sup>7</sup> Adapted from Keynote Address by Donald Schurman, CEO Alberta Mental Health Board, April 23, 1999.

- Focus is on looking better rather than becoming better.
- Indicators lead to finger-pointing and blaming people, rather than making improvements.
- Focus on indicators prevent innovation and ambition – for example, people are unwilling to try new ways of working or work across departments because in negatively impacts indicators.

## INDICATORS FOR CONSIDERATION

Indicators provide an indirect means of evaluating the performance of a system. In order to understand a complex system such as medical transportation, indicators must be developed to reflect a balanced view of how well the system is performing.

Section 2 of this report describes four perspectives of interest when assessing a program. Evaluation of whether the medical travel program is resulting in improvement should consider all of these perspectives, with concrete measurable indicators for each. Examples of potential indicators are listed below; these are provided to initiate discussion only.

Service Perspective	Potential indicators
<i>Service Users</i>	<ul style="list-style-type: none"> <li>■ Patient satisfaction with transportation</li> <li>■ Patient/family satisfaction with information received before, during and after patient transport</li> <li>■ Staff satisfaction with transportation</li> </ul>
<i>Health Providers</i>	<ul style="list-style-type: none"> <li>■ Adequacy of clinical information received during patient transfer</li> <li>■ Response time for Medevac request</li> <li>■ Percentage of medical transport missions staffed at standard/guideline levels</li> <li>■ Percentage of medical flight crew staff trained to standard/guideline levels (unless 100% is a contract requirement)</li> <li>■ Percentage of medical flight crew staff trained in aviation medicine.</li> </ul>
<i>Internal Business</i>	<ul style="list-style-type: none"> <li>■ Number of phone calls required to make travel arrangement (exclusive of calls regarding clinical advice between medical centre staff and physician on call)</li> <li>■ Percentage of patients who arrive at medical facility/boarding house without required information</li> <li>■ Number/percentage of days patients spend awaiting return in hospital or in boarding house once determined medically able to leave.</li> <li>■ Number of medical transport missions by population groups and trends over time               <ul style="list-style-type: none"> <li>– scheduled</li> <li>– Medevac</li> </ul> </li> <li>■ Number of return Medevac flights carrying patients</li> <li>■ Percent completeness of medical travel authorization form data fields</li> </ul>



Service Perspective	Potential indicators
<i>Financial</i>	<ul style="list-style-type: none"><li>■ Medical travel budget – overall and for each region<ul style="list-style-type: none"><li>– % increase from previous year</li><li>– medevac cost per statute mile</li><li>– scheduled cost per statute mile</li></ul></li></ul>
<i>Innovation and Learning</i>	<ul style="list-style-type: none"><li>■ Number of quality improvements made during fiscal year</li><li>■ Improvements made to medical transport services based on issues identified by staff/patients.</li></ul>

## 7 SUMMARY OF RECOMMENDATIONS AND WORKPLAN

The final section of this report summarizes the recommendations made as a result of the Medical Travel Review and provides estimated timelines for implementation.

Human resource capacity issues have been flagged as an implementation challenge for many of these strategies. Therefore, resource suggestions have been included in this work plan. Wherever possible, the use of internal resources has been maximized, and it is recommended that all strategies be led and championed by H & SS staff. Where a specialized skill set is required, or where implementation is resource-intensive for a short period of time, it is recommended that external support be sought.

**Timelines** have been estimated for each strategy independently and reflect elapsed time from the date of initiation. For example, implementation of strategy 5.1.1 is expected to take approximately months and implementation of strategy 5.1.2 is estimated to take >12 months. However, beginning to implement these strategies *does not* need to take place concurrently.

	0-3 months	3-6 months	6-12 months	12+ months	Resource and support requirements
<p><b>5.1 AIR TRANSPORTATION INFRASTRUCTURE -</b></p> <p><b>5.1.1 Standard Contracts &amp; RFP Process</b></p> <ul style="list-style-type: none"> <li>Develop an RFP that outlines contract terms, expectations and outcomes.</li> <li>Put out RFPs for Medevac carrier(s); scheduled carrier(s) and medical flight crews.</li> <li>Complete selection process including review and rating proposals; vendor presentations; interviews and reference checks.</li> </ul>					<p>Led by internal resources, supported by external experts in RFP development and selection processes for these sectors.</p> <p>May require industry experts to identify outcomes for carriers and medical flight crews.</p>
<p><b>5.1.2 Integrated Dispatch/Coordinated Call Centre</b></p> <p>Develop an integrated Coordinated Call Centre/Dispatch to serve the entire Nunavut Territory</p> <ul style="list-style-type: none"> <li>Determine whether to develop CCC/D using internal resources or contract out to call centre service provider.</li> <li>Identify facility location</li> <li>Work with three regions to identify local needs and build these into CCC/D policies and procedures.</li> <li>Identify and purchase required office and telecommunications equipment for CCC/Dispatch</li> <li>Equipment delivered and installed at site location</li> <li>Coordinators hired and trained</li> </ul>					<p>Option for external organization to set up and operate CCC/D. Include in contract a requirement to provide incentives for hiring/training Nunavut residents.</p>
<p><b>5.1.3 (a) Common Standards for medical flight crews and carriers</b></p> <p>Based on best practices in the industry, national guidelines, and the needs of residents of Nunavut, develop common standards for medical flight crews and air carriers.</p>					<p>Potential need to involve industry experts in identifying standards.</p>

	0-3 months	3-6 months	6-12 months	12+ months	Resource and support requirements
<ul style="list-style-type: none"> <li>Validate and finalize standards with input from representatives from across the territory.</li> <li>Include standards for aircraft and equipment in Medevac and scheduled air carrier Request for Proposals.</li> <li>Include standards for medical flight crews in medical flight crew Request for Proposals.</li> <li>Link standards to ongoing quality assurance program</li> </ul>					
<p><b>5.1.3 (b) Train and hire local residents as medical flight crew personnel.</b></p> <ul style="list-style-type: none"> <li>Develop detailed implementation plan for training Nunavut residents as medical flight crews.</li> </ul>					Partner with existing training programs or educational institutes
<p><b>5.2 MEDICAL TRAVEL PROGRAM OPERATIONS MANAGEMENT</b></p> <p><b>5.2.1 Reorganize Medical Travel as a single program across the Territory</b></p> <ul style="list-style-type: none"> <li>Identify a senior manager or Executive Director responsible for medical travel.</li> </ul>					Identify a senior manager responsible for medical travel program operations
<ul style="list-style-type: none"> <li>Complete detailed review of staff and processes in each region as a basis for restructuring in line with new roles and responsibilities.</li> <li>Complete detailed review of staff and processes in each region as a basis for restructuring in line with new roles and responsibilities.</li> </ul>					
<p>(See below for implementation Travel Database Strategy)</p>					



	0-3 months	3-6 months	6-12 months	12+ months	Resource and support requirements
<b>5.3 CLINICAL DRIVERS OF UTILIZATION</b>					
<b>5.2.2 Strengthen travel database to create a management information system for medical travel.</b>					
<b>5.3.1 Strengthen use of clinical management information system</b>					
<ul style="list-style-type: none"> <li>■ Define program goals and corresponding information needs. Align plans for data collection and reporting with goals.</li> <li>■ Evaluate capacity and adequacy of current <b>information systems and information management policy and procedures</b> to manage data effectively.</li> <li>■ As required, implement new software, policies and /or procedures (e.g., common data definitions; data security and confidentiality).</li> <li>■ Begin developing management reports to test adequacy and make improvements to newly implemented systems and processes.</li> </ul>					Led by internal senior manager supported by internal or external specialist resources to support: <ul style="list-style-type: none"> <li>Identifying info needs</li> <li>Technology assessment</li> <li>Operational assessment</li> <li>Report design and testing</li> </ul> Once established, ongoing operations to be managed by Program staff.
<b>5.3.2 Review and revise contracts with referral centres.</b>					
<ul style="list-style-type: none"> <li>■ Review existing contracts with referral centres in each region.</li> <li>■ Work with each region to define outcomes, supports and remuneration.</li> <li>■ Enter into time-specific contracts with referral centres, with periodic reviews and evaluation of outcomes.</li> </ul>					Championed by senior manager of medical travel in collaboration with regional Executive Directors and Territory Medical Director.



**APPENDIX A**

**ALIGNMENT OF RECOMMENDED STRATEGIES WITH CLIENT  
TRAVEL POLICY PRINCIPLES**

## APPENDIX A ALIGNMENT OF RECOMMENDED STRATEGIES WITH CLIENT TRAVEL POLICY PRINCIPLES

Guiding Principles from Client Travel Policy, Sept. 2000	Addressed in the proposed contracts
Quality of Cross-Territory	<p>Recommendations establish high standards across the Territory</p> <p>24-hour, 7 day/week coverage for all 13 territories</p>
<b>Responsiveness to people's needs and culture.</b>	<p>24-hour, 7 day/week response to requests for transportation through "one number" and more streamlined processes.</p> <p>System designed based on what currently works well in existing system, including consistent physician travel advisor with assured Nunavut experience.</p> <p>Organizational structure that includes input and participation in evaluation from representatives across the Territory</p>
Accountability and responsibility	<p>Increased accountability through common standards, expectations and requirements for carriers and medical flight crews.</p> <p>Improved information collection and dissemination resulting in better access to information, more consistent and reliable data.</p>
<b>Building a stronger Territorial system</b>	<p>Single senior manager with overall responsibility for medical travel, with territory-wide view of issues, outcomes and program effectiveness.</p> <p>Recommendations identify opportunities to build capacity for local health care improvements.</p> <p>Long term strategies incorporate training local residents as medical flight crews.</p>
Cost-effective use of resources	<p>Assure quality and value for money by establishing standardized contracts for carriers and medical flight crews.</p> <p>Proposed structure creates opportunities to coordinate scheduled and unscheduled flights, and to coordinate scheduled flights across 3 regions to optimize use.</p> <p>Potential through integrated travel management to find additional savings through coordination of medical travel with other government travel.</p>

**APPENDIX B**  
**CONTRACTS AND REQUEST FOR PROPOSAL OVERVIEW**

APPENDIX B    CONTRACTS AND REQUEST FOR PROPOSAL  
OVERVIEW



## Contract Management

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## Contract Management

*Introduction*

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- Request For Proposal
- Provider Contract




## Contract Management

### *Program Overview*

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- Program Responsibility
- Summary of Requirement
- Background



## Contract Management

### *Introduction and Scope*

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- Request For proposal terminology
- Mandate
- Purpose
- Eligibility





## Contract Management

### *RFP Process For Evaluation*

- Bidders' Meeting
- Enquiries
- Mandatory Criteria
- Short List
- Evaluation Committee
- Evaluation and Selection
- Debriefing
- Negotiation Delay



## Contract Management

### *Proposal Preparation*

- Receipt confirmation form
- Closing date and location
- Late proposals
- Alternative solutions
- Notification of changes
- Changes to proposal wording
- Working language
- Irrevocability of proposals
- Proponents' expenses
- Limitation of damages
- Firm pricing
- Currency and taxes
- Completeness of proposal

## Contract Management

### *Selected Contract Clauses*

- Registration with workers' compensation Board
- Arbitration
- Indemnity
- Funding
- Contract administration
- Payment holdback
- Compliance with laws
- Certification costs

## Contract Management

### *Additional Terms*

- |                           |                                  |
|---------------------------|----------------------------------|
| ■ Subcontracting          | ■ Financial stability            |
| ■ Acceptance of proposals | ■ Ownership of proposals         |
| ■ Definition of contract  | ■ Freedom of information         |
| ■ Liability for errors    | ■ Use of RFP                     |
| ■ Acceptance of terms     | ■ Confidentiality of information |
| ■ Laws                    | ■ Reciprocity                    |



## Contract Management

### *Selected Contract Clauses*

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- Registration with workers' compensation Board
- Arbitration
- Indemnity
- Funding
- Contract administration
- Payment holdback
- Compliance with laws
- Certification costs



## Contract Management

### *Requirements*

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- |                                 |                                  |
|---------------------------------|----------------------------------|
| ■ Scope, Budget, Time-frames    | ■ Security of aircraft & content |
| ■ Dispatch of flights           | ■ Permanent bases                |
| ■ Aircraft requirements         | ■ Contractor's organization      |
| ■ Cabin configuration           | ■ Flight/Medical crew training   |
| ■ Aircraft safety requirements  | ■ Audits & inspections           |
| ■ Flight operations             | ■ Compliance with terms          |
| ■ Flight crew requirements      | ■ Insurance                      |
| ■ Pilot-In-Command              | ■ Payment & pricing              |
| ■ Second-In Command             | ■ Performance bond               |
| ■ Aircraft maintenance          | ■ Incidents of non-compliance    |
| ■ Maintenance crew requirements | ■ Reports                        |



## Contract Management *Evaluation Criteria*

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- Mandatory criteria
- Desirable criteria
- Bidders response
- Proposal format
- Proposal pricing
- Proposal layout
- Proponent checklist
- Receipt confirmation form
- Remedies for non-compliance
- Invoice format
- Pilot duty time
- AME Duty Time



## Contract Management *Summary*

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The RFP and contract content must be designed to meet the needs of a particular program.

An RFP design and evaluation committee provides an opportunity to involve a wide range of stakeholders and experts.

A professional purchasing agent should lead the RFP/contract process.

**APPENDIX C**  
**AIR AMBULANCE STANDARDS**



## APPENDIX C

## AIR AMBULANCE STANDARDS

## STANDARDS DOCUMENT FOR NUNAVUT

ICAT has developed a set of global standards that can be customized to suit a particular program or company.

**Development**

The air medical transportation industry is a relatively new industry. It began with the siege of Paris in 1870, where wounded French soldiers were airlifted by balloons over the heads of a Prussian siege, and has developed to where we are today with up-to-date aircraft and advanced medical teams and equipment. There are many excellent air ambulance programs and companies throughout the world. There are also individuals whose practices do not meet industry standards.

There are many professional bodies that have developed standards that cover their particular functions. These include:

AMES	Association of Air Medical Services
HAI	Helicopter Association International
NFNA	National Flight Nurses Association
NFPA	National Flight Paramedics Association
ALEA	Airborne Law Enforcement Association
NEMSPA	National EMS Pilots Association
NAACS	National Association of Air Medical Coordination Specialist
PATA	Professional Aeromedical Transportation Association
Transport Canada	
FAA	Federal Aviation Administration
NTSP	National Transport Safety Board
AMPA	Air Medical Physicians Association
CAMTS	Commission on Accreditation's of Medical Transportation Systems

*The International College of Aeromedical Transport (ICAT)* has gathered a diverse team of experts who together have hundreds of years of experience. We have examined the best the industry has to offer, and established a comprehensive set of standards, based on best practice, for doing the Air Ambulance business. The ICAT Medical Advisory Committee reviews and approves ICAT Standards.

The goals of the standards assembled by ICAT, building on those of relevant professional organizations, are to:

- ✓ Promote patient care
- ✓ Encourage research
- ✓ Advance industry safety
- ✓ Provide clear, decisive leadership
- ✓ Advocate standards

ICAT works with private sector providers to evaluate their equipment and operations against standards, and on the basis of ICAT accreditation, provides assurance to third party organizations that contract for air ambulance services of high quality service.

The following is a list of areas of air ambulance operation covered by ICAT Standards.

**Organization Purpose**

- Mission Statement
- Goals and Objectives
- Client Care Philosophy

**General Information**

- Quality Assurance
- Certifications & Affiliation
- Position Description
- Qualifications
- Training / In-Service
- Dress Code
- Advanced Acts
- List of Advanced Acts And Medications
- Travel Documents
- Infection Control
- Care of Equipment
- Care of Medications and Narcotics
- Medication Errors

**Patient Assessment**

- Charting Guidelines
- Initial Patient Assessment
- Pre-Flight Assessment
- In-flight Assessment
- Arrival Assessment

**Patient Movements**

- Pre-flight preparation
- Movement Minimization
- Loading into Aircraft
- Securing into Aircraft
- Unloading from Aircraft

**Protocols**

- Advanced Cardiac Life Service (ACLS)
- Paediatric Advanced Life Service (PALS)
- Advanced Trauma Life Service (ATLS)
- Neonatal Advanced Life Service (NALS)
- Critical Care Transport Protocols

**Drips & Dosages**

Dopamine / Dobutamine, Nipride / Isuprel / EPI / Levophed

Nitroglycerin / Heparin, Adalat, Adenosine, Amiodarone, Aminophylline, Anexate, Ativan, Calcium Gluconate, Cardizem, Dobutamine, Fentanyl, Haldol, Heparin, Hepalean, Insulin, Labetalol, Levophed, Mannitol, Magnesium Sulfate, Maxeran, Nitro Dur, Nitro IV, Ranitidine, Rocuronium, Solu Cortef, Stemetil.

**Patient Safety**

- Trapped Gases
- Safety Considerations
- Sedation of Intubated Patient
- Notes
- Coordination
- Geography
- Medical Terminology
- Call Assessment
- Resource Management
- Data Management
- Ground Transport Services
- Aviation Weather
- Navigation & Map Usage
- Customer Service

**Aircraft**

- Cockpit Management
- Basic Aerodynamics
- Helicopters (Rotary Wing)
- Airplanes (Fixed Wing)
- Weight and Balance
- Pressurization

**Air Regulations**

- Flight Crew
- Flight Operations
- Certification & Maintenance
- Heliports
- Airports
- Aeromedical Operations

**Aircraft Maintenance**

- Scheduled Maintenance
- Unscheduled Maintenance
- Airworthiness Directives / Service Bulletins
- Records and Parts
- AME Training Standards

**Flight Operations**

- Dispatch & Flight Following
- VFR / IFR Operations

- Aircraft Performance
- Typical Flight Profile
- Hazards (Icing, Turbulence, etc.)
- Pilot Standards

**Helipads / Scene Landing Zones**

- Selecting and Preparing a Landing Zone
- Securing the Landing Zone
- Landing Zone Communication

**Safety**

- Outside The Aircraft
- Inside The Aircraft
- Helicopter-Specific Hazards
- Hot Loading / Unloading
- Protective Clothing

**Emergency Procedures**

- In-flight Emergencies
- Unscheduled Landing
- Ditching
- Evacuation
- ELTs
- Personal Floatation Devices
- Survival Techniques
- Search and Rescue

**APPENDIX D**  
**COORDINATED CALL CENTRE/DISPATCH**  
**DEVELOPMENT REQUIREMENTS**



## COORDINATED CALL CENTRE IMPLEMENTATION

This appendix provides a high level implementation plan for Coordinated Call Centre/Dispatch. The estimated timeline for implementation is approximately 9 months.

Details are presented in four key areas:

- Facility – describes the requirements for a CCC/D facility and location.
- Dispatch Technology – equipment requirements, options and costs.
- Human Resources – number and type of staff required, options for staff shifts and staff mix.
- Development Requirements – Policies, procedures and protocols that must be in place for the CCC/D to be successfully operational.

It is anticipated that the majority of the resources required to implement the recommendations in this report can be secured through re-allocating existing resources in the system. Staff currently working to support or coordinate medical travel may be re-assigned. Savings achieved through establishing contracts with providers or by combining missions can be re-directed to system priorities.

### FACILITY

Ideally, public safety dispatch facilities should be located in post-disaster rated structures on a site that is selected based on the following criteria:

- Seismic risks
- Proximity to other risks (Pipelines, high fire hazards, etc.)
- Proximity to telephone infrastructure (Availability of telephone infrastructure)
- Potential direct radio coverage for communications
- Links to outside technology infrastructure (Internet access, commercial paging, cellular, etc.)

Location is very important, especially when considering risks and the need for radio coverage. Generally speaking, dispatch centres are located on a site that is elevated within the community it serves. Ground elevation is a major factor in providing direct radio coverage, although the use of remotely controlled radio equipment can compensate for a lack of elevation. The risk is higher in operating remote equipment in that failure of the control link can render the dispatch centre inoperative.

Proximity to other risk factors should be considered in the selection of a location. In particular, risks such as nearby pipelines, train tracks, or hazardous industry that might impact on the operations. In addition, the site selection should include a study of nearby businesses to ensure that there is no prominent source of electrical interference that may impact communications capabilities. A welding shop is an example of a business that could severely interfere with communications.

The facilities should be built with allowances for future expansion and growth, and should be purpose built to house the necessary emergency telecommunications systems and personnel. The facility should be designed as a near self-sufficient environment for extended operations during an emergency situation. Full backup systems including uninterruptible power supplies (UPS) for critical systems, and generator backup capable of sustaining all facility electrical circuits need to be included. On-hand fuel supply for

the generator should be sufficient to allow enough time to replenish the supply, even following a major event or disaster occurring.

The dispatch and call taking area should be ergonomically correct to enhance workflow and reduce the risk of repetitive task injuries to staff. Ergonomically designed office workstations should be used to minimize the effects of prolonged exposure to the work environment. Consoles should have integrated cabling trays and wiring to accommodate the necessary computer and telephone equipment. Sufficient power must be available to provide task lighting and independent heaters for the staff.

From a pure technology perspective, the location of a dispatch centre with respect to the area it serves is no longer a significant consideration. Even so, facilities that meet these requirements are often more costly than typical office space and acceptable locations (risk, cost, etc.) are often difficult to find. Purpose-built facilities are often the only alternative, despite the higher cost of implementation. Many organizations plan an alternate site as part of their business continuity plan to ensure ongoing operations in all disruptive scenarios.

## DISPATCH TECHNOLOGY

### Telephone Equipment

The core system within any dispatch centre is the telephone platform. This key system provides the mechanism by which calls for service are received. The system should allow for future expansion and be capable of handling a number of incoming and outgoing trunks. The size of the system is determined by examining the number of calls for service, the number of dispatcher and call taker workstations and administrative desks, and the number of users on the system.

Many emergency dispatch telephone systems are designed with fully redundant switches with automatic fail-over. This reduces the risk that an equipment failure would cause missed calls and delayed responses. It is imperative that spares be kept on hand in the event that a single point of failure causes the system to go down. Having spares on hand will greatly reduce down time and related risk.

Consideration should also be given to tracking the number of calls both incoming and outgoing in the centre. This metric, along with a number of others, will provide information that can be used to measure workload within the centre and can be used to determine staffing levels. This can sometimes be accomplished through the reporting capability of the Logging Recorder system.

### Console Workstations

Specialized console workstations are essential to the successful installation of a dispatch facility. Consoles designed for this purpose can incorporate radio shielding to avoid interference problems, as well as built-in pathways to accommodate the installation of cabling and wiring. In areas where humidity is low, the use of anti-static mats can reduce the incidence of equipment failure due to static electricity discharges. The consoles should also be designed to meet WCB ergonomic guidelines and robust enough to withstand 24 hour per day, 365 day per year usage.

Ergonomic issues are a major consideration in the design of facilities where employees are required to occupy positions for extended periods. Properly designed console workstations incorporate many features that allow for adjustments reducing work related injuries and the high costs of absenteeism due to this type of injury.

The physical layout of the dispatch center workstations should be designed to enhance workflow and support manual processes. Where direct interaction between dispatchers or call takers is needed, consideration should be given to reducing the distance between workstations and therefore the amount of effort required on the part of the staff to perform their duties.

### Radio Control Equipment

Radio control equipment is used when the radio and the user are separated. The system becomes more complex as the equipment is further apart. Radios can be controlled remotely over great distances. This requires the use of a dedicated telephone circuit which connects the two pieces of equipment. In some cases, a dial up connection is adequate, depending on the specific use of the radio link.

Radio control equipment is designed to control multiple radios and has many features that can be used to enhance communications. Business need generally drives the features that are included in the console equipment.

### Antenna Systems

The antenna systems required for a dispatch center are designed to allow the necessary transmission of radio signals to support the operation. Consideration should be given to the erection of towers and whether there are restrictions because of local bylaws or Transport Canada regulations.

If High Frequency (HF) radio is to be used, the facility must have a ground system designed to provide a ground plane for the frequencies being used. Insufficient grounding can also cause radio interference to the surrounding community and greatly reduce the ability to communicate over long distances. In addition, HF antennas tend to be rather large and cumbersome. If this type of communications is being contemplated, it is important to consider the antenna system in the selection of a site for the centre.

### Possible Radio Systems

There are a number of options in radio systems depending on the range required. Where localized communications is needed, VHF or UHF radio will generally provide sufficient coverage. However, where greater distances are involved, High Frequency Single Side Band (HF SSB) provides much greater point-to-point coverage capability.

There are two satellite systems currently in operation that might address the needs of a dispatch organization where other infrastructure options such as cellular telephone are not available. The first is Globalstar, a Low Earth Orbit (LEO) satellite system that provides world-wide telephone capability. The system is based on a constellation of satellites in orbit around the earth on a number of orbital planes. The theory is that at least one satellite is visible in the sky at all times.

LEO satellite systems have a limitation in that the user must have a direct view of the satellite. The system will not work indoors, and is therefore not practical to use as a primary alerting system for responding crews.

Globalstar's future is still uncertain given the company has not met revenue projections and has a limited operating budget. Consequently, some potential users are reluctant to invest in the technology. Another similar service, Iridium, went bankrupt leaving many of its users with expensive equipment that could not be used for any other purpose.

MSAT provides both telephone and direct communication capability. Units can be configured as telephones for one-to-one communication similar to cellular systems, but can also be configured for one-to-many communication using what is known as a virtual talk group. Subscribers can arrange to occupy a talk group on the satellite where all units so configured can communicate directly, anywhere within the footprint of the satellite. The communication is private and restricted to users on that specific talk group.

Globalstar equipment is more portable, with units slightly larger than many cellular telephones. Portable MSAT units are approximately the same size as most laptop computers. The operator must aim the antenna (disguised as the lid) in the general direction of the satellite to establish a link.

MSAT units in general require more power to reach the satellite and mobile units also require a specialized antenna system to be able to track the satellite. MSAT is also restrictive where buildings or natural land masses block the view to the satellite. The look angle at the 50th parallel is approximately



30-35 degrees above the horizon, and the angle decreases as one moves north. Any obstruction will cause a break in the link and communication will not be possible until the view of the satellite is restored. MSAT has undergone restructuring following its initial launch and is a lower risk investment than Globalstar.

### **Computer Aided Dispatch (CAD)**

A Computer Aided Dispatch (CAD) system is the central system in an efficient dispatch centre. It provides the ability to capture all call information and record the progress throughout a response. Most EMS CAD systems are focused on ground ambulance transportation although some of the systems can be adapted for use in an air ambulance environment.

Data captured by CAD is instrumental in an agency being able to measure its effectiveness in terms of response time to calls for service. An agency should establish Key Performance Indicators and structure its data capture to support the information required to monitor its performance and evaluate corrective measures taken.

The CAD and other systems should be integrated on a single Local Area Network (LAN) to allow the call takers and dispatchers to access all the information required from a single computer workstation. This might include the radio control console, CAD system and Logging recorder system with instant replay capability. LAN security should be given high priority to ensure protection from outside connection if the LAN is attached to a modem or has other access to the Internet.

### **Logging Recorders**

A medical dispatch centre should be equipped to record all telephone and radio conversations. The logging recorder system should also provide a time base and time stamp all conversations for future reference. A system of this type will protect the agency by being able to reconstruct events and providing indisputable legal evidence in cases where timing is contentious.

Modern logging recorder systems utilize Network Attached Storage (NAS) devices to store conversations digitally as data. This allows quick reference to conversations and provides a valuable tool for investigations and legal matters. Conversations can be easily converted to common .WAV files, playable on most computers.

### **Crew notification**

The most crucial part of the dispatch system is the mechanism used to alert the responding crew. Once the call has been prioritized and the location determined, the dispatch centre must alert the responding crew and deliver the relevant information with regard to the call. This link must be highly reliable and robust in order to ensure that responses to calls for service are not delayed. Where redundant mechanisms are not available, clear protocols and procedures must be in place to ensure that contact can be made with the crew.

Pagers or portable radios are often used to alert "on-call" crews to respond. Where commercial paging is not readily available, other private systems can be established that provide adequate coverage with minimum risk of failure. An in-depth study of the areas involved would need to be completed to establish the best mechanism for alerting crews while considering available infrastructure, geographical and topographical profiles, etc.



**BUDGET**

The following budget estimates are provided as a general guideline only. Geographical location and other factors can greatly influence the cost of installation. These estimate figures are for equipment only. The configuration and complexity of the dispatch centre will have a direct impact on the budget.

- Telephone Equipment, ranging from a small key system \$25K to a full PBX system \$100K+.
- Console Workstations - \$5 – 10K per position
- Radio Control Equipment - \$50K- 200K
- Antenna System - \$10K – 50K
- GlobalStar sets - \$2K – 5K each plus usage charges
- MSAT sets - \$5K – 7K each plus usage charges
- Logging Recorder System - \$35K – 65K

## HUMAN RESOURCES

Identification of sufficient coordinators to staff the center is required. Staffing numbers may vary dependent on the model that is adopted. Hours of operations would be 24 hours a day, seven days a week.

### OPTION 1

One coordinator on duty for 24 hours a day, 7 days a week

- 12.5 hour shifts
- 2 day shifts followed by 2 night shifts
- Half hour overlap between shifts to adequately update coordinator starting tour of duty
- 5 full time regularly scheduled coordinators
- 1 full time irregularly scheduled coordinator for holiday relief

### OPTION 2

One coordinator on duty for 24 hours a day, 7 days a week

- 8 hour shifts
- 5 shifts per coordinator a week
- 3 shifts per 24 hr period (Day, afternoon and night)
- Part time coordinators cover weekends
- 3 full time regularly scheduled coordinators
- 1 full time irregularly scheduled coordinator for holiday relief
- 3 or more part time regularly scheduled coordinators for weekends and short term book off

### OPTION 3

One coordinator on duty for 24 hours a day, 7 days a week two coordinators on duty during day

- 12.5 hour shifts
- 2 day shifts followed by 2 night shifts
- Half hour overlap between shifts to adequately update coordinator starting tour of duty
- 10 hour day shifts (4 days on 4 days off)
  - 7 full time regularly scheduled coordinators
  - 1 full time irregularly scheduled coordinator for holiday relief
- One or more part time staff for extra shifts holiday relief could not complete and for short term book off

### OPTION 4

One coordinator on duty for 24 hours a day, 7 days a week two coordinators on duty during day

- 8 hr shifts
- 5 shifts per coordinator a week
- 4 shifts per 24 hour period
- 2 day shifts, 1 afternoon shift and 1 night shift
- Part time coordinators cover weekends
- 4 full time regularly scheduled coordinators
- 1 full time irregularly scheduled coordinator for holiday relief
- 4 or more part time regularly scheduled coordinators for weekends and short term book off

### OPTION 5

One coordinator on duty for 24 hours a day, 7 days a week two coordinators on duty during day

- 8 hour shifts

- 5 shifts per coordinator a week
- 3 shifts per 24 hr period (Day, afternoon and night)
- 10 hour day shifts (4 days on 4 days off)
- Part time coordinators cover weekends
- 5 full time regularly scheduled coordinators
- 1 full time irregularly scheduled coordinator for holiday relief
- 3 or more part time regularly scheduled coordinators for weekends and short term book off

### **Recommended Staffing Levels**

We recommend option 3 or 4 as a model for staffing levels. This would provide a coordinated team approach during the day shifts when volume is highest.

## DEVELOPMENT REQUIREMENTS

**Call Assessment Protocol:** *Assess the patient's requirements and properly prioritize for airevacuation response.*

### Considerations:

In addition to the patient's condition, consideration should be given to medical staff fatigue; local medical ability and environmental conditions.

Priority 1: The patient's condition is life and/or limb threatening and requires immediate transport to a facility which can provide appropriate patient care. Requires immediate take-off when crew and aircraft are ready; no avoidable delays are acceptable.

Priority 2: The patient's condition is serious but stable. A response can be delayed by 2 – 3 hours.

Priority 3: The patient's condition is such that the patient should be in the receiving hospital within a determined time frame (e.g., 12 hours)

Priority 4: The patient's condition is not critical and does not require a higher level of care. The patient does require airevacuation and is not suitable for commercial aircraft.

Priority 5: Patient's condition is not critical and does not require airevacuation. The patient and situation are suitable for commercial aircraft.

**Medical Response Protocol:** *Develop a protocol that addresses both of the concerns of the community:*

- a) *A desire to retain decision making ability,*
- b) *While supporting and advising local clinicians who may be new medical recruits and/or inexperienced in aviation medicine.*

### Actions:

Provide Transport Advisors to the Coordinated Call Centre/Dispatch. These advisors are typically Emergency Room physicians or Intensivists.

Develop protocols through which access to the Medical Transport System is accomplished with one phone call.

Develop protocols supported by technology that allow a three-way conversation between CCC/D, Transportation Advisor and local clinician to establish a Priority Code.

Transport Advisor's role includes arranging an acute care bed; leading the development of a patient transport plan; giving pre-flight instructions; providing support to local clinicians and medical flight crew if required during transport.

**Air Ambulance Coordinator Authority:** *Ensure that Air Ambulance Coordinators at CCC/D have the ability to authorize and track all missions*

**Actions:**

Develop protocols whereby service providers are not permitted to respond with out an Authorization Number (provided by CCC/D only). These numbers authorize and guarantee payment for equipment, personnel, aircraft fees and any other expenses incurred during patient transportation.

Coordinators must be given the authority to respond with other agencies (e.g., Canadian Military; Canadian Coast Guard; RCMP) when necessary.

**Coordinator Duties and Responsibilities**

Air ambulance coordinators complete all arrangements for the transport of patients, providing "bed to bed" service.

- authorize medical transports
- accurately complete patient information and associated data
- participate in call assessment to prioritize response
- assign appropriate aircraft and crew, based on patient needs and assessment
- coordinate responses that may involve outside agencies (e.g., police, fire departments, military, Coast Guard)
- coordinate with regional centres and, where necessary, arrange ground travel

**Coordinator Training Program:**

Once the format for the coordinator's schedule has been established, the next step would be to identify and hire the staff.

**PERFERED REQUIREMENTS**

- Grade 12 or equivalent
- EMS background
- Good interpersonal skills
- Geographic knowledge of the Territory of Nunavut
- Computer skills
- Typing skills



ACTION

- OFA (Occupational First Aid) Course (Local college or other facility)
- Medical terminology course (Local college or other facility)
- Preceptor-ship on local aircraft for period of time for familiarization
- In depth coordination training ( local or other facility) including:
  - Geography
  - Medical Terminology
  - Patient Protocol
  - Call Assessment
  - Communication Skills
  - Navigation & Map Usage
  - Post Accident & Incident Plans
  - Aviation Administration
  - Aviation Weather
  - Record keeping & Data Base Management
  - Resource Management
  - Aircraft
  - Ground Transport Services
  - Simulations & Scenarios

## OPTION 1

- Coordinators identified and hired by September 2002
- OFA, Medical terminology and aircraft preceptor-ship given locally by January 2003
- Coordinators given in depth training locally January to March 2003
- Go live April 2003
- Coordinator support given till May 2003

## OPTION 2

- Coordinators identified and hired by September 2002
- OFA, Medical terminology and aircraft preceptor-ship given locally by January 2003
- Contract for temporary remote coordination and training commencing January 2003
- Coordinators given in depth training at the contracted site January to March 2003
- Coordinators given preceptor-ship coordinating Nunavut medical travel at remote site March 2003

Go live April 2003

**Transport Management System:** A database to support management of the Medical Travel program and the operations of the CCC/D may be either electronic (computer entry directly into database) or manual (information collected on patient information form and entered into database). Information should include:

**General Information:** Date of request; date of transportation; times; coordinator responding to request

**Patient Information:** Name; age; gender; diagnosis; sending and receiving physicians; priority code; patient authorization number.

**Transport Information:** Transportation origin and destination; aircraft routing; other transport utilized (ambulance/taxi); Medical Crew

**Aircraft Information:** Type of plane; charter or commercial; statute miles; committed costs

The transport management system is used to produce regular and ad-hoc reports to monitor and evaluate the system. Reports include daily reports on patient activity; activity by aircraft or company; monthly or yearly reports of the number of requests and transports.

**APPENDIX E**  
**MEDICAL FLIGHT TEAMS**

## APPENDIX E

## MEDICAL FLIGHT TEAMS

**CURRENT SITUATION**

There are no medical flight teams who are made up of residents of Nunavut. Staff are currently brought in from outside the Territory to service bases in each of the Territory's three regions. The composition of these teams varies. Solo flight nurse staff two bases and one base consists of flight paramedics either Basic Life Support or Advanced Life Support.

These flight paramedics may be very experienced and knowledgeable in the flight environment, or they may have little or no experience in the industry. All Medical Flight Teams are dedicated and their job is to be prepared to respond to medical travel requests.

**MEDIUM TERM ACTION PLAN (3-5 YEARS)**

**Goal:** Train Nunavut residents as medical flight crew personnel to increase local capacity and sustainability.

**Option 1**

Hire additional nurses who would be non-dedicated but who would work in the local Health Facility and respond when required. Provide aeromedical training customized to suit Nunavut requirements.

- ✓ Advantage = provide additional staff to local health facility
- ✓ Disadvantages
  - Possible confusion regarding who will respond to a request for service
  - Possible delay in responding to a request for service
  - Possible interruption of services provided in the Health Facility
  - All nursing staff would be provided with the aeromedical training in order to ensure response capabilities
  - Larger group of respondents rather than a small manageable group

**Option 2**

Hire flight nurses who would be dedicated to responding to request for air medical transports. Provide aeromedical training customized to suit Nunavut requirements.

- ✓ Advantages
  - Provide dedicated respondents to request for service
  - Provide a small manageable group for specialized training
- ✓ Disadvantage = Possible difficulties recruiting and retaining staff

**Option 3**

Train flight nurses who would be dedicated to responding to request for air medical transports. Provide aeromedical training customized to suit Nunavut requirements.

- ✓ Advantages
  - Provide dedicated respondents to request for service
  - Provide a small manageable group for specialized training
  - Provide partnership possibilities with Arctic College
  - Compliant with Bathurst Mandate

- ✓ Disadvantages
  - Length of training period for Nursing program
  - Possibility of student not finishing program
  - Possibility of student leaving after completing program

#### Option 4

Train flight paramedics who would be dedicated to responding to request for air medical transports. Provide aeromedical training customized to suit Nunavut requirements.

- ✓ Advantages
  - Provide dedicated respondents to request for service
  - Provide a small manageable group for specialized training
  - Provide partnership possibilities with Arctic College
  - Provide possible career paths for those who may not normally chose a nursing career
  - Provide a graduated approach to training (Basic Life Support, Advanced Life Support, Advanced protocols)
  - Provide a source of pride for a home grown Nunavut Air Ambulance Service
  - Compliant with Bathurst Mandate
- ✓ Disadvantage
  - Transition period from current work practices

#### COSTS

Current costs are estimated at being \$1.6 million dollars per annum. The service that Nunavut receives for this expenditure is:

- A solo responder service for the majority of responses
- Employment of non-residences
- Varying span of experience and exposure to the Medevac Industry.

#### WORKING CONDITIONS

It is unclear what the current work patterns are or the shift pattern. The current medical flight crews have a tour of duty that lasts 3 weeks. These crew- members could be on duty or on call for the entire 24-hour working day during their 3-week tour.

#### PROPOSAL

The goal would be to have three bases staffed 24-hours a day. The medical flight teams would consist of two dedicated endorsed-endorsed crewmembers.

#### Kitikmeot

One dedicated medical flight crew on duty 24 hours a day.

- 4 teams required for coverage
- 8 regular scheduled employees
- 1 irregular scheduled employee for holiday coverage
- Total of 9 employees

#### Kivalliq

Two dedicated medical flight teams on duty during day shifts. With one dedicated medical flight crew on duty for the entire 24-hour period.

- 6 teams required for coverage
- 12 regular scheduled employees



- 1 irregular scheduled employee for holiday coverage
- Total of 13 employees

**Baffin**

Two dedicated medical flight teams on duty during day shifts. With one dedicated medical flight crew on duty for the entire 24-hour period.

- 6 teams required for coverage
- 12 regular scheduled employees
- 1 irregular scheduled employee for holiday coverage
- Total of 13 employees

**Employees Required**

Kitikmeot	= 9 crewmembers
Kivalliq	=13
Baffin	=13
Total	35 crewmembers

Based on an annual wage of \$50,000. Plus 15% for mandatory employer contributions the annual cost per employee would be \$57,500 annually.

Cost per employee	\$57,500
Total employees	x35
Total expense	\$2,012,500
Approximate Current Costs	\$1,600,000
Estimated new costs	\$ 412,500

**Possible Cost Recovery****Current trip costs**

➤ Kitikmeot Adler Air	\$ 9,768.74
➤ Kivalliq Average Keewatin & Skyward	\$11,792.13
➤ <u>Baffin Ken Borek</u>	<u>\$ 3,059.25</u>
➤ Current total trip costs	\$24,620.12

The rationale for two endorsed team members is to comply with industry standards and make possible the transport of multiple patients. Understanding that efficiencies will be realized, it is difficult to estimate the actual numbers.

The following calculation is based on the assumption that each base could realize an efficiency of 1 saved trip per two-week pay period.

Current Total Trip Costs	\$24,620.12
Total pay two-week pay periods	x26
Possible recovery	\$640,123.12
Estimated new costs	\$412,500.00
Possible net savings	\$227,623.12

**APPENDIX F**  
**PARAMEDICAL AND AEROMEDICAL TRAINING**

## APPENDIX F

## PARAMEDICAL TRAINING PROGRAMS

The following examples provide an overview of selected medical training programs. Note that content and duration differ by jurisdiction and by training institute.

**Justice Institute of BC - Paramedic Academy**

<p><b>First Responder</b>  <i>Level I: 1 day</i>  <i>Level II: 2 days</i>  <i>Level III: 5 days</i></p>	<p><u>Level I:</u> This program is designed to give first responders a few critical paramedic skills that allow first professional intervention. Our goal is that they will suitably perform these few critical skills under any circumstances, in any weather, and at any time.</p> <p><u>Level II &amp; Level III:</u> These programs provide increased skills in patient assessment, interventions in life-threatening injuries and conditions, oxygen therapy, medical emergency and trauma management, and environmental emergencies.</p> <ul style="list-style-type: none"> <li><input type="checkbox"/> General patient care</li> <li><input type="checkbox"/> AED</li> <li><input type="checkbox"/> Oxygen</li> <li><input type="checkbox"/> Spinal Management</li> <li><input type="checkbox"/> Suctioning</li> <li><input type="checkbox"/> BCLS (Basic Cardiac Life Support)</li> </ul>
<p><b>Paramedic Level I* (EMA I)</b>  <i>Length: 9 weeks (4 weeks independent study &amp; 5 weeks hands-on instruction)</i></p>	<p>This teaches the core EMA skills needed to manage medical and trauma emergencies. You learn to assess patients, intervene in life-threatening conditions, perform basic treatments, and report patient information.</p> <p>The course includes anatomy, physiology, and the mechanics of lifting patients. You learn the principles of safe, defensive driving and the use of ambulance equipment, including automatic external defibrillators.</p>
<p><b>Paramedic Level II* (EMA II)</b>  <i>Length: 6 months</i></p>	<p>This course enables you to treat life threatening emergencies, relieve pain as well as treat specific conditions such as anaphylaxis, asthma, and traumatic injuries. By strengthening your patient assessment and decision making skills, you function as the 'General Practitioner' of paramedics.</p> <p>This course combines independent study, workshops, station work, simulations, hospital sessions, and ambulance time in Vancouver.</p>

\* These 2 levels would be considered "Basic Life Support" using BLS/ALS nomenclature.

**Advanced Life Support-ALS  
(EMA III)***Length : 12 Months*

The course provides extensive in-hospital training, followed by a six month internship on ambulances. After completing this training, you can function as an extension of the hospital emergency department, capable of starting and maintaining medical procedures once reserved for physicians.

This calibre of paramedic is employed in the large centres where call volumes enable them to maintain a high skill level. The services of these highly qualified 'specialists' are made available to smaller communities via the BC Air Ambulance Service.

The course combines independent study, presentations, station work and simulations, clinical sessions in hospital, and ambulance time in Vancouver.

You learn EMA III procedures for:

- endotracheal intubation
- needle thoracentesis
- ECG monitoring and interpretation
- manual defibrillation and cardioversion
- interosseous infusion
- cricothyrotomy
- external jugular vein cannulation
- cardiac arrest and cardiac dysrhythmias
- acute respiratory distress
- multiple trauma
- pediatric and diabetic emergencies
- anaphylaxis and seizures
- altered levels of consciousness

## Sample course modules for aeromedical training – Supplemental to BLS/ALS training

<p><b>Aeromedical Training</b>  <i>International College of  Aeromedical Transport</i></p> <p><i>Length: 2 weeks</i></p>	<p><b>Course Modules</b></p> <ul style="list-style-type: none"> <li>□ Administration  <i>Includes: Data management; customer service; cost of transport; quality management; medical protocols; infection control; international regulations.</i></li> <li>□ Flight Operations  <i>Includes: Different types of aircraft, class ratings; Aircraft systems; Helicopters; Pilots &amp; aircrews; Aircraft evacuation</i></li> <li>□ Air Ambulance Environment  <i>Includes: Hypoxia/hyperventilation; medical equipment; transport contraindications; medical configuration of aircraft; in flight medical crisis; patient preparation; loading &amp; unloading the patient.</i></li> <li>□ Air Ambulance Coordination  <i>Includes: Information recording; medical terminology; intro to navigation; resource management; communications system</i></li> </ul>
<p><b>Advanced Life Support Air Evacuation Course</b>  <i>Justice Institute</i></p> <p><i>Length: 2 weeks</i></p>	<p>This course prepares practicing paramedics for air ambulance duty. It covers:</p> <ul style="list-style-type: none"> <li>○ Techniques and procedures related to aero-medical physiology</li> <li>○ Spinal management and intensive care patient transport</li> <li>○ Evacuation and aircraft operations</li> </ul>