Health care in the circumpolar world: Greenland

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ABSTRACT
Greenland is part of the Kingdom of Denmark and it is the world’s largest island. An ice cap covers 85% of its territory. The population is about 57,000 inhabitants, with 14,000 living in the capital Nuuk, and 10,000 in villages and other small settlements. There are pronounced regional variations in lifestyle and living conditions.

The Greenland Home Rule Government assumed responsibility for health care on 1 January 1992. Greenland’s territory is divided into 16 health care districts. Queen Ingrid’s Hospital in Nuuk is the national hospital and has 156 beds and numerous specialist physicians associated with it. Each health district has a health care centre with one or more physicians, nurses and other health care personnel appropriate for the number of people living in the district. Each district health centre is responsible for primary health care in towns, villages and other small settlements, and the health centres treat all common illnesses. The health centres handle uncomplicated births, minor surgery, common treatment in internal medicine and community mental health services. The centres have a number of inpatient beds proportional to the number of people in the health district. People with more complicated illnesses are referred to Queen Ingrid’s Hospital in Nuuk or to specialised treatment in Denmark.

Keywords: Greenland, health care system, primary health care, tipping the balance

INTRODUCTION
Greenland is part of the Kingdom of Denmark and the world’s largest island (1). An ice cap covers 85% of Greenland’s territory. The distance from the northernmost point to the southernmost point is 2,670 km. The population is 57,000, 88% of whom are born in Greenland. The 17 towns have 47,000 inhabitants, and 10,000 (19%) live in villages and other small settlements. Nuuk, the capital, has about 14,000 inhabitants (25% of the population). There are no roads outside the towns; transport between towns is by sea or air, and by snowmobiles and dog sledges in the winter in districts north of the Arctic Circle and on the east coast. On the west coast a number of airports have been constructed in most of the towns except in South Greenland. The population is young, approximately 40% being younger than 25 years. The mean life expectancy rate is approximately 10 years lower than in Denmark (2), 63 years for men and 68 years for women, and life expectancy rates have not improved during the last 10 years.

There are pronounced regional variations in lifestyle and living conditions in Greenland. In Nuuk and the biggest towns on the central west coast most people are wage earners, who buy their food in supermarkets. In the more remote villages, on the other hand, hunting and fishing play an important role. The villages generally have lower average household income than do the towns, and socio-economic conditions be-
come increasingly poor the further north and east you go. Adult literacy is approximately 100% throughout the country. Many factors including health care services, economic opportunities, housing, transport and occupation influence health status, leading to striking differences between regions (3) (Table I).

**Organization of health service**

The Greenland Home Rule Government assumed responsibility for health care in January 1992, and the Directorate of Health is the supreme authority. Queen Ingrid’s Hospital in Nuuk is the national hospital and has numerous specialist physicians associated with it. Greenland’s territory is divided into 16 health care districts that largely follow the boundaries of the municipalities varying in population size from 550 inhabitants to 14,000. Each health district has a hospital called a health care centre with one or more physicians, nurses and other health care personnel appropriate for the population in the district. Each district health care centre is responsible for basic primary health care in towns, villages and other small settlements, and treats all common illnesses.

In addition to primary health care, all health centres have operation facilities, and they handle uncomplicated births, minor surgery, legal abortions, common treatments in internal medicine and district psychiatry. The centres have a number of inpatient beds. Under special weather conditions or in cases of emergency they have to treat seriously ill patients - and even major surgery. For example, most of emergency operations for ectopic pregnancies and most of emergency appendectomies are carried out in the districts and not at Queen Ingrid’s Hospital. The need for hospital beds has decreased during recent years as a result of changes in morbidity pattern and socio-economic improvements.

In the large villages of about 300 inhabitants there is a nurse and a village clinic with emergency beds, and in the smaller villages there are health assistants or village health workers.

In each health district there is one or several dental clinics staffed by dentists and dental nurses. Some districts have also employed dental technicians from time to time. The villages are served several times a year by a mobile dental clinic.

Patients with more complicated illnesses are referred to a specialist, either a mobile consultant specialist – sometimes even one who performs operations - or to Queen Ingrid’s Hospital in Nuuk, or to specialised treatment at University clinics in Denmark. Part of the chemotherapy in some cancer treatments can probably be carried out in Greenland, and this is being analysed at the

| Table I. Child mortality in Greenland 1992-1999 according to region: combined stillbirths and infant deaths per 1,000 births and deaths among children 1–14 years per 100,000 person years, with the Ratio (95% CI) for the rate for 1992–1999 to the rate for 1987–1991. |
|---------------------------------------------------------------|
| **Region** | **Stillbirths and infant deaths** | **Deaths among 1-14-year-olds** |
| | **n** | **Rate** | **Ratio (95% CI)** | **n** | **Rate** | **Ratio (95% CI)** |
| **Towns** | | | | | | |
| Nuuk | 30 | 16.7 | 1.09 (0.60–1.96) | 8 | 35.3 | 0.85 (0.28–2.60) |
| Southwest | 63 | 25.0 | 0.79 (0.55–1.13) | 15 | 45.8 | 0.47 (0.24–0.93) |
| Northwest | 50 | 24.9 | 0.76 (0.51–1.14) | 26 | 98.1 | 0.63 (0.36–1.09) |
| East | 24 | 55.0 | 0.83 (0.44–1.56) | 12 | 238.0 | 1.21 (0.43–3.44) |
| **Villages** | | | | | | |
| Southwest | 12 | 20.3 | 0.73 (0.33–1.64) | 6 | 73.7 | 0.89 (0.25–3.14) |
| Northwest | 31 | 34.3 | 0.59 (0.36–0.97) | 15 | 129.0 | 0.61 (0.29–1.28) |
| East | 5 | 19.2 | 0.20 (0.07–0.57) | 9 | 265.0 | 0.71 (0.28–1.80) |
| North Greenland | 7 | 41.9 | 0.71 (0.24–2.09) | 0 | 0.0 | – |
| **All Greenland** | 222 | 25.5 | 0.73 (0.60–0.89) | 91 | 80.4 | 0.66 (0.48–0.89) |
moment. Some project surgery has been carried out, and Queen Ingrid’s Hospital now has brand new operating facilities in one of the larger district hospitals at its disposal.

**Telemedicine**

Much is happening in Rural Health. This is the age of the Internet and telemedicine, and we do in fact have a telemedicine project at a hibernating stage. But the health care centres have equipment for transmitting X-rays and digital photos by e-mail, and they have the equipment for video conferences, including ultrasonic examinations. Tele-dermatology and telepsychiatry are being used. Recently we did a small study of the use of telemedicine, and it became obvious that we must expand and improve the organisation of telemedicine and intensify its use.

**National health programmes**

We have some national health programmes. In principle, children’s health check-ups and vaccinations are organised similarly to the programmes in Denmark. However, it is very difficult to reach the remote villages at regular intervals. Some districts have many villages to serve. A new Executive Order from the Directorate of Health will be implemented in the near future. Perinatal mortality in Greenland is declining, but is still 3 to 4 times as high as in Denmark (2). New guidelines have been introduced 2 years ago, and now pregnant women at risk are referred more often and earlier to Queen Ingrid’s Hospital in Nuuk. Cervical cancer is the third most frequent cancer among women after lung cancer and breast cancer, with a rate of 40 per 100,000 women (2). A screening programme was implemented some years ago with a marked increase in the detection of the illness. Tuberculosis is still a major problem in Greenland with 87 reported cases last year and accumulation in some districts (2). A special programme with a central tuberculosis group and a mobile tuberculosis nurse was established a few years ago to monitor and control the situation and to support the health districts. The systematic provision of dental service includes in principle only school children, and all others are treated individually. Monitoring of dental health status is carried out in collaboration with The School of Dentistry in Copenhagen. PAARISA, The Office for Prevention and Health Promotion, has as its goal to reduce the rate of unwanted pregnancies by 50% within the next 5 years, and this spring a campaign was carried out in 8 municipalities.

**Health care expenditure**

Compared to the other Nordic countries Greenland spends less money on health care measured in absolute figures, but a larger percentage of the GDP (4). In the other Nordic countries citizens contribute directly to financing, partly through insurance schemes, partly by paying user charges. In general, health services in Greenland are free of charge, transport to health care and medicine included. All pharmaceutical products are distributed through the health service except for certain OTC-drugs, which are available on a very limited basis from certain general stores and to a varying degree distributed by district health services. All public dental care is free of charge. However, dentists may offer treatment against payment outside office hours.

**Major health problems**

Traditionally we count our high infant mortality rate, four times that in Denmark, among our major health problems, in addition to the large number of legal abortions. The infant mortality rate is declining following general social trends and general improvements in the health care system. The number of legal abortions is certainly not declining. Sexually transmitted diseases remain a problem in much of the country, especially in remote areas, though syphilis is close to eradication. Dental caries is a huge problem, and the majority of the elderly have no teeth. The abuse of tobacco and alcohol is a big problem, but it is declining, however. The alcohol consumption has now decreased to approximately 12 litres per year, which is almost the same level as in Denmark. 10 years ago 80% of the adults smoked cigarettes; this has now been reduced to 65%. Tuberculosis is
present in all our districts to a varying degree. Treatment of cancer is very expensive. The presence of these health problems is up to a certain point a function of social and cultural factors influencing health status and poor access to basic primary health care. In addition to these problems there will be changes in the demographic composition of the population with more old people, and in the future we have to deal with an increasing burden of diseases following the modern western lifestyle, for example diabetes, cardiovascular diseases and cholesterol disorders, as the prevalence or detection of these diseases is increasing dramatically. Besides this, there are many indications that mental health is threatened and needs more attention.

The use of health services
What do we know about this? Not as much as we would like to know, but at least we know something! Based on a few studies (5,6) and a few databases we know that 78% of the population reports being in good health, that about 50% is in contact with the health care system during a 3-month period, that one third is been seen by a doctor, that 90-95% of the contacts are taken care of in the districts, meaning that only 5-10% are referred to specialists, and that only very few are getting highly specialised treatment at a university clinic. Now it is possible to look at this in different ways – we can focus on the treatment of a few, but very ill patients - or we can look at the community as a whole.

Some operational challenges
It is a good idea for health care services to be present where people live. However, geography, a small population and the present structure of the health care system cause special problems, as does the shortage of doctors, nurses, midwives and other health professionals. We have no medical school, and only a few nurses and health assistants are educated every year. Many doctors and nurses are afraid of the professional responsibilities in the remote areas, and recruiting and retaining staff members has been one of our biggest problems during the last 10 years. Presently only 34% of physician’s jobs outside Nuuk are filled on a permanent basis, the rest on a short-term basis. This unstable staff situation, which is the case both in the districts and at Queen Ingrid’s Hospital, has a negative influence in several ways, causing loss of continuity in treatment, difficulties in planning and waste of resources.

Our resources are of course limited, but more than 100 million DKr is spent on transport, which is almost 12% of our total budget for health care. The transport of patients within Greenland alone costs 40 million DKr including emergency evacuations. A working group is currently analysing these problems.

Tipping the Balance
Specialised treatment in Denmark or Iceland is very expensive and makes up almost 12 percent of the total budget. Most of this is cancer therapy. On the other hand, prevention and health promotion is given less than 1%, and the national programme for dental care only 6% of the total budget. Specialised treatment is expensive and resources are limited, so economic analyses and pricing will play an important role in working out a list of available health services at Queen Ingrid’s Hospital and in Denmark.

One could ask whether it is possible from a political and a public point of view to accept limitations in the availability of specialised treatment health services? Is it possible to set other priorities and to tip the balance towards better primary health care, and to change the structure in the rural areas and combine some districts, resulting in fewer but larger units? The present organisation of health care has been ideal for many years, where doctors and nurses were less specialised and transport more difficult, but in the future it seems impossible to maintain the same level of hospital treatment in all the small districts, at the same level of readiness 24 hours a day. It is very difficult to recruit qualified doctors, nurses and other trained health workers to the small districts, where they are professionally isolated. It is also difficult to maintain qualified local management. The pub-
lic and professional demand for health services on specialist level is increasing, but more centralising is not the solution at the present time because of very high transport costs.

People in rural and remote areas have the right to expect what people here in the capital take for granted: access to good, basic, primary health care and even more specialised medical expertise on a regular basis.

As I see it, setting priorities aimed at better primary health care and restructuring the health care system is necessary. We do not yet have a plan for this, but we do have a lot of hope.

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