

eHEALTH MATTERS IN THE CIRCUMPOLAR AREAS

The triumphal march of medicine in the prevention, diagnostics and treatment of diseases has brought a better quality of life than ever within reach of everybody who lives in developed countries with an advanced social infrastructure. However, there are, on the globe, areas facing considerable difficulties in delivering health-care services to their inhabitants. Among them, the circumpolar regions form a special entity characterized by sparse populations, long distances and demanding atmospheric conditions. In spite of these difficulties, versatile health-care services have been developed.

Alaska does not have a single health-care system, but rather a variety of sites that serve Alaskan natives, active military personnel and their dependants, and veterans, as well as private providers and a state-wide public health system. Most telehealth projects follow these divisions, sharing limited resources with other projects, or building upon earlier successes. While individualized telehealth projects have achieved success, concern has been expressed that the projects are not contributing to broad-based health-care delivery. For example, the Alaska Federal Health-Care Access Network (AFHCAN) was initially developed to provide telehealth capability for only Federal beneficiaries. The cross-over benefit from this system to other private, or state health-care systems in Alaska has not yet occurred. This is because AFHCAN was an extremely large project - with over 240 sites - and was the first step for many organizations into the realm of telehealth. The process of the design, validation and acceptance of the project took years through the development of the appropriate technology, training, support and financial programs. Now, AFHCAN is working towards the vision of an integrated system offering expertise, products and services throughout Alaska and on an international scale.

In the coming years, telehealth in Alaska is expected to grow significantly through several mechanisms: expansion of sites, expansion of services, inter-connectivity of disparate systems, maturation of interfaces, and maturing business relationships. These are the key issues being faced, on a state-wide basis, by the Alaska Telehealth Advisory Council (ATAC).

The expansion of sites will occur as telehealth programs cross over between Federal, private and state programs, and as Alaskan providers link to providers outside the state. Many of these efforts are underway and point to a growing recognition of sharing a limited pool of health-care providers on a much larger scope. Community Health Centers (CHCs) will likely be connected to private providers. Sites providing care to Federal beneficiaries will be connected to private facilities that offer unique services that are unavailable on the Federal side. The Indian Health Service is looking to establish Virtual Centers of Excellence, whereby Alaskan specialists will likely provide consults to the lower 48 states. Teleradiology will grow as a variety of providers (currently Federal and private providers) compete to provide readings for the remote locations.

Growing experience with store-and-forward (S&F) technology, and the growing prevalence of live video-conferencing, will enable a much broader range of clinical specialities to be offered throughout the state. AFHCAN develops, documents and implements clinical workflows for S&F telehealth in many organizations on a regular basis. Funding has been received, and interest has been expressed by private companies, such that a broader, state-wide coordination of VtC efforts is occurring. This will enhance the ability to provide distance education to remote regions, for both patients and providers. Home health-care is always a growing need and is being led in the US (and Alaska) by an initiative within the VA system. Alaskan providers still struggle with the inability to access patient data of individuals referred from other organizations. This is also true for telehealth, as most autonomous organizations have unique Hospital Information Systems that provide minimal, if any, data sharing with other systems. Even within a single organization, health data is not integrated, as separate systems are for used for storing data. The ATAC has recognized this as a priority and formed a committee to begin looking into these issues.

Telehealth is being recognized as a driver for changing business relationships. Private industry is developing packages of services to promote telehealth in Alaska, and is forging relationships with health-care providers. With a heavy emphasis on support and training, these relationships are powerful tools for promoting interconnectivity between providers, both within Alaska and outside.

The vast land area of Canada, with its limited transportation options and harsh climate in the very scarcely populated northern parts, challenges the delivery of health services. A distinct problem in this respect, is the diversity of the aboriginal populations, which differ by language, culture and tradition and live in distinct health jurisdictions, each with different health service-related policies. The delivery of direct eHealth services to these populations is hindered by the fact that only a small percentage of the aboriginals have personal computers at home.

MBTelehealth, a province-wide telehealth network, is an example of the efforts to enhance the delivery of services and the development of the community capacity to support telehealth. Relationships are being built with other actors of health-care for cross-jurisdictional cooperation, in order to integrate telehealth into the current regional and provincial service delivery systems. The indisputable cost-effectiveness of consultations by video-conferencing in the remote areas of Labrador has been demonstrated, for instance, in psychiatry and rheumatology. The costs of merely transporting a patient for specialist services may be about 1000 euros. The high prevalence of chronic diseases with needs for repetitive medical consultations among the aboriginals emphasizes the significance of telemedicine.

eHealth is on the agenda of the European Union. It has been shown to have potential for improving access, quality, effectiveness and equity of health-care services, all matters of weight for the citizens. Hence, the European Commission has paid special attention for the development and use of information technology for health-care. Since 1988, about 500 million Euro have been granted to versatile projects and activities in health and health related issues. In this context, it is worth mentioning that many of the EU research and development programmes co-operate with non-EU circumpolar countries, such as Iceland, Norway, Canada, USA and Russia. The Action Plan for the European eHealth Area published by the Commission, and endorsed by the health ministers of the Member States in 2004, means that there is now a coherent agenda for implementation of eHealth in the EU.

In Iceland, the implementation of telemedicine services has been realized by projects in several specialities of medicine, with focus on consultations and communications between primary and secondary health-care. The Icelandic Healthnet has been developed for a technical framework, in order to provide secure and functional commu-

nication for telemedicine. Special attention has been attributed to maritime medicine, for which a versatile device using Internet technology has been developed.

In Finland, the key targets of the ICT strategy for health-care have included information sharing by reliable and secure information systems, and the maintenance of professional skills of health-care staff. Citizen empowerment and participation in health-care services are expected to be promoted. The implementation of eHealth is carried out simultaneously at the local, regional and national levels. The local information systems are being integrated and linked to form regional networks. At the national level, common messaging standards and the basic structure of the electronic health record are being defined. The development of a secure communication platform, the definition of the necessary legislation, and the architecture of the national eHealth info-way, are being coordinated by the implementation of the national EHR.

Teleradiology is one of most important applications of telemedicine. In this context, the circumpolar region has been a pioneer, because a radiological network had already been established between university hospitals in Finland (Oulu), Iceland (Reykjavik) and Norway (Tromsø), as early as in 1993, representing one of the first international teleradiology network connections in the world. An effective delivery of radiological services concerns not only the transfer of images, but also the integration of radiological systems as part of other patient data systems. Taking into consideration the special conditions prevailing in the circumpolar regions, the applications of mobile medicine may well be important elements of future health-care development.

In Norway, the central administration has, for a long time, had a very purposeful grasp on the implementation of telemedicine and information technology applications in general, in public sector. Research and development, as well as education and training, in telemedicine have been put under the responsibility of the National Center of Excellence for Telemedicine of Tromsø. The centre also serves as a test-bed for innovative solutions, such as an automatic wireless transfer system for monitoring lab tests. The role of the Norwegian Centre for Health Informatics is to develop and contribute to the development and implementation of standardization and coding in the information systems. The Norwegian Health Net has been established as an exclusive infrastructure for health services, in order to guarantee secure and seamless interactions between actors in health-care.

Sweden is also among the pioneering countries in telemedicine. Following some earlier use of telemedicine for emergency services and remote reading of biosignals, a boom started in the 1990s, yielding applications for many specialities of medicine. Practically all hospitals now have access to teleradiology. As a remarkable landmark in the development of information systems, even by international comparison, there is reason to note the Sjunet, a nation-wide broadband communication network infrastructure for health-care

Health-care in Antarctica faces the same kinds of challenges as the space stations. There are regions from which emergency evacuations may be impossible, or extremely expensive. However, when injuries and illnesses occur in research stations, the non-medical personnel may need urgent advice, or a case may be beyond the routine skills of the local doctor. Under such circumstances, telemedicine is the method of choice, and Antarctica has served as an extreme test-bed for its applications. Starting with Morse code telegrams and radio transmissions, frequently interrupted by blackouts, the achievements of modern technology have made it possible to transmit text, voice and many kinds of images for off-line and on-line consultations, over distances of thousands of kilometres, to and from centres located, for instance, in Plymouth, UK, or in Rome.

In this issue, among the articles of the health-care experts, we have also the opinion of a customer as an expert of his own needs for health-care. A farmer by profession, he is also the chairman of a municipal board of health in northern Finland. He underlines, as one of the major benefits of telemedicine, the fact that patients, doctors and nurses can communicate in real-time and interactively, regardless of distances.

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