

Telemedicine — cure for the North

Following are excerpts from an article by Dr. Irvine Paghis, in the spring issue of *In Search*, 1977.

Many Canadians who live in remote or isolated areas of the country cannot call for help in an emergency because of unreliable communications. Transportation to medical centres takes a long time, is costly and is sometimes downright dangerous. Medical diagnosis and treatment is often seriously delayed while the patient's condition deteriorates.

The gap between medical and health-care services in populated centres compared to similar services in remote (especially northern) areas of Canada has to be seen to be believed. We may almost be immune to statistics these days but individual cases make a deep impression. An example: a patient recently had his chest X-rayed at a northern nursing station on suspicion of active tuberculosis. The X-ray film had to go South for interpretation and was returned — after the usual one-month delay — with the notation: "Unsatisfactory film — please re-ray"!

Medical isolation

The medical-care system for the inhabitants of remote areas in Canada usually consists of three distinct levels: the local first-aid or nursing station; the regional hospital staffed by general practitioners, a surgeon and perhaps an anaesthetist; and a large, usually distant hospital with specialist facilities and staff. The effectiveness of the over-all system is critically dependent on communications between these three levels.

At the Kashechewan (Kash for short) Nursing Station at an Indian village on the west coast of James Bay there are two registered nurses. The nearest doctors are at the Moose Factory Hospital; there are three physicians, one of whom is a surgeon.

The distance to Moose is 200 km. In good weather, it is two days by boat, ten hours by snowmobile or one hour by float or ski plane. During the six-week freeze-up and break-up seasons, boats, snowmobiles and planes are all equally useless; in good wind and weather conditions, a helicopter can land.

There is no telephone line from Kash to Moose Factory and the shortwave radio links are unreliable. In an emergency, radio stations up and down the

coast help out. During the day, it is almost always possible to get through to Moose within several hours. The transmission quality is usually poor and only a well-trained radio operator can understand the messages.

High-cost health care

Improved methods of diagnosis and treatment depend on expensive equipment, on highly trained staffs to operate and maintain this equipment and on specialists, technologists and doctors to interpret the data, diagnose the patient and provide treatment. It follows that these staff and resources must be concentrated in a few locations, where they can provide the most service per dollar expended.

Recent advances, however, in electronics and computer technology and the advent of communications satellites have greatly increased the capabilities and potential benefits of using telemedicine. The technical feasibility of using telemedicine to support the delivery of a wide range of high-quality medical services is now established and evaluation of economic factors is well under way.

Canada now has the world's first domestic communications satellite system, Telesat's *Anik*, capable of providing reliable telephone service anywhere in Canada. The northern *Anik* telephone services usually require government subsidies and the few currently available lines are severely overloaded, but on January 22, 1977, the Federal Government announced a \$9-million funding program to bring reliable long-distance telephone services to all communities in the Northwest Territories within the next five years.

The next step is to plan, conduct and evaluate a wide range of telemedicine pilot projects so that economical systems can be designed and implemented within several years. There is a vast difference between the simple use of a telephone for medical consultation and the design of a telemedicine system that improves the efficiency and capability of the over-all health care systems. The Canadian *Hermes* telemedicine experiments are a major step in this direction.

Telemedicine by Hermes

Hermes, a joint Canada-U.S. communications technology satellite launched in January 1976, is now nearly through a planned two-year experimental program. There are over 20 Canadian experiments on community development, cultural exchange, educational and medical services, data communications and the advancement of technology. Two of the tele-

