Telemedicine brings specialist healthcare services to patients' homes

Outpatient telemedical follow-up can facilitate quick and ongoing contact between the patient and the primary and specialist healthcare services. A recent pilot study on telemedical follow-up of patients with spinal cord injury and pressure ulcers, conducted at Sunnaas Rehabilitation Hospital, points to a number of positive effects.

Pressure ulcers occur frequently in many patient groups, and the patients will often remain in contact with the healthcare services over a long period of time to receive necessary treatment and follow-up (1–4). In 2012, Sunnaas Rehabilitation Hospital conducted a pilot project in which an interdisciplinary outpatient clinic devoted to patients with spinal cord injuries and pressure ulcers was established on the basis of video conferencing (5, 6). The objective was to investigate whether telemedicine could help improve the utilisation of the outpatient clinic's resources without compromising the quality of the follow-up provided to patients.

Seven patients with active pressure ulcers were followed up by the hospital as outpatients via telemedicine. They were also followed up by municipal home nursing services. Telemedical equipment in the form of PC-based videoconferencing with an external web camera was installed in the patient's home. The specialist health services participated with an interdisciplinary team consisting of a doctor, a specialized wound care nurse, an occupational therapist and a telemedicine technician.

The videoconferencing link was established from Sunnaas Rehabilitation Hospital, and all communication took place in real time via the Norwegian Health Network and encrypted software. No pictures or audio files were stored. The system was deemed highly secure and in accordance with the norms for information security in the health sector (7). All efforts were made to ensure an appropriate dialogue with the patients during consultations, as well as to preserve their dignity, since the ulcers would in many cases be located in the genital area.

Specific items were incorporated into the procedures, for example that the consultations would always start with the camera focusing on the patient's face to establish dialogue, that the camera would be turned off or away during undressing/turning of the patient, and that the consultation would conclude with a dialogue during which the camera again would focus on the patient's face.

Ethical issues pertaining to bringing a telemedicine technician to a visit in the patient's home were considered. In those cases when a technician provided assistance, he would always be accompanied by a competent health worker and he would leave the room during the medical consultation.

Patients were included from March to November 2012, and the project was concluded around year-end 2012. The pressure ulcers were measured in three dimensions (8), and the healing was documented in a separate wound journal (5, 6). The project group also conducted semi-structured interviews with the patients included in the project and with staff members in the municipal home nursing services (5, 6). Cost estimates were also made (6).

«Cost-effective methods for following up patients with pressure ulcers ought therefore to represent an interesting priority area, including with a view to quality of life.»

Effective, useful and profitable

Five of seven ulcers healed during the project period. None of the patients reported any negative experiences with the scheme, and they felt that they participated in the healing process to a greater degree than they would have done hospital. They also referred to the value of being able to stay at home with their families, without having to undertake the arduous journey to and from the hospital to receive outpatient follow-up. The home nursing services reported increased interaction, competence enhancement, heightened confidence and better predictability in the follow-up of patients (5).

On the basis of clinical experience in the project group, we estimate the treatment period for a pressure ulcer in this patient group to amount to approximately five months on average (5). The costs of the different treatment alternatives were estimated for three scenarios:

- Telemedical outpatient clinic
- Regular outpatient clinic at Sunnaas Rehabilitation Hospital
- Hospitalisation at Sunnaas Rehabilitation Hospital

Based on these estimates, the costs of treating pressure ulcers by way of a telemedical outpatient clinic amount to approximately 15 % of the costs of a regular outpatient clinic and only 3 % of the costs of a hospitalisation (6). This indicates that major cost savings are possible with the aid of a telemedical outpatient clinic.

Successful coordination

The objective of the Coordination Reform (9) is to achieve better cooperation between the various units that comprise the healthcare services, move service provision closer to people's homes and increase user co-determination. The specialist healthcare services should transfer knowledge that can enable the municipalities to address their tasks in the best possible way. In light of this study, we believe that telemedicine may help ensure an effective, safe and predictable coordination, through which the specialist healthcare services can transfer their specialist skills to local assistance services in a socioeconomically beneficial manner.

Those involved in this pilot project found that this way of working constituted an efficient method for provision of outpatient services. The service worked well technically, despite varying quality of the Internet connection in rural areas. This is a positive finding in light of the long geographic distances that need to be overcome in Norway. Cost-effective methods for following up patients with pressure ulcers ought therefore to represent an interesting priority area, including with a view to quality of life (10, 11).

This pilot project included only patients with spinal cord injuries and pressure ulcers. We believe, however, that the project also has transfer value for other groups of patients who suffer from pressure ulcers (4, 6, 12). It is thought that the project can provide knowledge about alternative holistic patient pathways that may rein the growth in use of

hospital services, by letting the municipalities provide a larger proportion of the services while cooperating closely with the specialist healthcare services.

Outpatient follow-up via telemedicine has the possibility of becoming a future option for many patients with chronic diseases (13, 14). The technical solutions are available, and out pilot study shows that the specialist healthcare services, the patients and the local service providers are all satisfied with this way of interacting.

As regards the specialist healthcare services, the funding system also needs to be adapted to ensure that outpatient rehabilitation can be a profitable enterprise. In our study, we emphasised treatment of pressure ulcers as outpatient rehabilitation. However, this option is not included in the funding scheme for rehabilitation (15), but must be coded using procedural codes that in no way reflect the specialised, interdisciplinary use of resources involved in this coordination programme.

An alternative for other patient groups

Our findings indicate that a telemedical programme benefits the patients as well as the municipal health care system. It is technically and professionally feasible to follow up patients over long distances. The specialist and primary healthcare services are establishing closer links, and the project is perceived as successful from a coordination perspective.

In socioeconomic terms, this type of scheme can probably be recommended to some patient groups, in preference to traditional outpatient treatment. Further research and cost-benefit analyses of this topic are therefore crucial. Most likely, the results from our pilot study can be generalised to many groups of patients and many medical issues.

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Received 6 July 2015, first revision submitted 23 August 2015, accepted 14 September 2015. Editor: Hanne Støre Valeur.