

---

## CONFERENCE ABSTRACT

### Telemedicine for meeting patients at home

European Telemedicine Conference 2016, Oslo 15-16 November

Andreas Sundkvist<sup>1</sup>, Thomas Willows<sup>2</sup>, Kristina Groth<sup>1,3</sup>

1 Innovation Center, Karolinska University Hospital, Stockholm, Sweden

2 Department of Neurology, Karolinska University Hospital

3 Clintec, Karolinska Institutet, Stockholm, Sweden

Correspondence to: Andreas Sundkvist, +46-737473042; andreas.sundkvist@karolinska.se

---

**Purpose:** Telemedicine can be used to find more cost and time efficient solutions, for both caregivers and patients. In an attempt to turn inpatient care to outpatient care, we have explored and evaluated a telemedicine solution where the patient can be at home during treatment periods. We have also introduced video visits, in outpatient care, as a complement to physical meetings. Both initiatives is expected to lead to considerable benefits for both the patient and Karolinska University Hospital (Karolinska).

**Context:** Traditionally, patients with Parkinson's disease have been hospitalized during the titration period of a new drug. Using telemedicine, these patients can stay at home. The patient meets with the neurologist and a nurse continuously during the titration period, using dedicated HD-video conferencing equipment at the hospital, with the nurse and at the patient's home. A medical tube is placed through the nose of the patient to adjust the medication. The neurologist continuously assesses the impact of the drug through video meetings. Once it is proven that the treatment has the sought effect the medical tube is surgically placed.

In addition, patients in ordinary outpatient care are offered video visits by the neurology nurses for continuous check-ups. This requires that the patient has a computer with a camera or a mobile device, and enough bandwidth at his/her location. Client based video conferencing tools are used for the video visits.

**Methods:** A proof-of-concept (PoC) was conducted in 2012 with three patients being titrated at home [1]. To verify the results from the PoC, a national study with four hospitals were conducted in 2015. The level of quality needed for the video conferencing equipment were tested with neurologists. Patients and staff were interviewed after the PoC and responded to a questionnaire after the national study. To enable video visits, we used a combination of systems already available at Karolinska, a computer based and a web based video client. A pilot was conducted in the Fall 2015. Patients and staff responded to a questionnaire after the video visits.

**Results and discussion:** Both home titration and video visits are implemented at Karolinska. Two neurologists use home titration when their patients need the specific drug as part of advanced

treatment. Nurses at the outpatient clinic within the neurology department have recently started to offer patients video visits instead of physical meetings. Video visits have also been implemented at other patient flows at Karolinska, e.g, speech therapy, obesity treatment, diabetes, heart failure.

The home titration solution was proven to be efficient. Although expensive equipment is needed, the PoC showed a return of investment after four patients per year. The experience has been positive for the patients that could stay at home in a familiar environment and continue to work. The PoC showed that the total time per day the neurologist spends with the patient is about the same as in traditional care, but the number of days of treatment is shorter with home titration. Also, the nurse can spend time with the patient in a more flexible way than with the hospitalized patients.

Video visits were considered to be of more benefit to the patient than to Karolinska. However, we have seen new ways of meeting with and treating the patients, and indications of fewer missed meetings. The technology used can be improved, e.g., with additional functionality such as feedback on waiting time and removing unnecessary functionality that may lead to unnecessary information noise for the users.

[1] Willows, T., Groth, K., Björkehag, J., Andersson, M., Larsson, J. & Permert, J. (2015) Moving health care to the patients home: An innovative approach to introduce levodopa-carbidopa intestinal gel (LCIG) treatment. Abstract at The MDS 19th Int. Congress of Parkinson's Disease and Movement Disorders.

---

**Keywords:** telemedicine; neurology; home care

---

