TeleCare Nord

Context

TeleCare Nord was initiated in January 2012 by the Region of Northern Jutland who approached the Region’s 11 municipalities and the general practitioners (Interview 1). The Region is home to a bit less than 0.6 million people, some 12% of the Danish population. The demographic composition of the population there is very close to the national average (Region Nordjylland 2020). The collaboration focused on telemedicine for patients suffering from Chronic Obstructive Pulmonary Disease (COPD). The project ran to June 2015, and TeleCare Nord was the first full scale project with telemedicine in Denmark (TeleCare Nord, 2015). The Region of Northern Jutland and the 11 municipalities decided to have the project evaluated by a group of scientists from Aalborg University and included four PhD programs connected to the project. There was a health economic, an organizational, health professional and health literacy view on the project (Interview 1).

TeleCare Nord was based on information and experiences from a previous, smaller project called ‘TeleKat’, where two municipalities (Aalborg and Hjørring) participated (Interview 1; Interview 3), and a development study by the University of Aalborg about telemedicine for COPD-patients (Interview 2). ‘TeleKat’ showed an opportunity for a reduction in hospitalizations, checkups, home care services and an increase in safety and quality of life of the patients involved (Region Nordjylland, 2012). Before beginning the regional implementation, a business case on TeleCare Nord was conducted, where the collaboration applied for external funds and all actors were consulted. The business case had a health economist to examine the possible results of TeleCare Nord by way of a randomized controlled trial (Interview 2; Interview 3; see Udsen et al 2017 for the health economic study).

TeleCare Nord aimed at developing a service that was easy to learn, manage and use by patients without occupying too many resources. Through monitoring devices, the project aimed at educating the COPD patients, i.e. to improve their understanding and control of their illness and provide them with more quality of life and less frequent visits to hospitals and check-up consultations (Interview
There was also an intention of reducing the days of hospital admission, the readmissions and the clinical visits with 70\% compared to normal treatment of patients (Region Nordjylland, 2012). Here it should be noted that the health care provision in Denmark is a shared responsibility between the Ministry of Health (ensuring the legal framework and quality monitoring), the five Regions (who are in charge of all public hospitals and payment of GPs), the municipalities (who provide rehabilitation and training services), and the private GPs (who are paid by the Regions) (Interview 2).

TeleCare Nord had a project secretariat within the Office of Health and Coherence, and where both the municipalities and the region were represented. A steering group was established with a chairperson and representatives from the region, the municipalities, General Practice, the COPD patients Association, a project manager, the leader of the project secretariat and the manager of the Office of Health and Coherence. Under the steering group, working groups were established focusing on the four tracks within the project: IT, implementation, health and organization (see Figure 1). A business committee was also established where the region and the municipalities were represented, because they had the financial responsibility and the political mandate (Interview 1). The aim was to have all actors related to COPD patient care represented. The organization of the project did not rely on contractual agreement. Instead, it was based partly on the business case that explicated the expectation that all municipalities and the hospitals were committed to make the new telemedical service work. Furthermore, patients with COPD were included during the development of the solution and the IT (Interview 2).

The project secretariat had a collective financing of 65-70 million Danish Kroner (DKK) over the three project years (Interview 1). TeleCare Nord also obtained funding from the ‘Obelske Familiefond’, a private foundation, the EU and the Agency of Digitization (under the Ministry of Finance). The remaining costs were decided politically to be shared between the municipalities and the Region of Northern Jutland. The costs of the joint project management were shared by all partners according to their number of inhabitants and the region as a whole (Interview 2). In contrast, operational costs for telemedical services delivered to the patients were financed by the individual municipalities and hospitals. The money allocated for coordinating and managing TeleCare Nord was and still is placed within the project organization (Interview 3).

It was the general practitioners’ task to refer their COPD patients to the project and define the clinical limit values for the health measurements for the individual COPD patients. Most of the patients
involved in the project were monitored by the municipality, and the more complex (very ill) patients were monitored by the hospitals within the region. The municipalities delivered patient education and rehabilitation, and the municipalities’ nurses educated the patients in the use and functions of the TeleKit (Interview 1; Interview 3)
Figure 1: Organization of TeleCare Nord.

(TeleCare Nord, 2015: 10).
ICT

TeleCare Nord involves a TeleKit hardware, which consists of a tablet, body weight, a saturation meter and a blood-pressure meter, and a software solution accumulating and transferring patient data. All the three main actors have access to the health measurements registered by the patients (Interview, 1; Interview 3).

The original idea was to connect to the ‘Chronical Dataset’. This would have involved creating a common infrastructure where data could be shared between participating actors on patients with chronical illnesses. However, due to legal and administrative barriers, this did not happen. The key legal barrier has to do with the personal data protection law, which do not allow authorities to share data they have compiled on individual citizens. Such sharing is only possible for research purposes or in instances where the authorities suspect fraudulent conduct on part of the citizen. The main administrative barrier has to do with the fact that the three key actors (the region/hospital, the municipalities, and the GPs) all have their own database systems. Therefore, a collaboration with the local patient database KIH (clinical integrated home monitoring) was established. KIH was connected to sundhed.dk during the project period and integrated with the Danish Central Person Register. However, KIH remained a separate from existing health databases used by the hospitals and the GPs respectively (Interview 2).

Together with the Telekit, the KIH database has benefitted the collaboration between the hospitals, municipalities and the general practitioners. They all have access to the same data (in the KIH database), and therefore they are easily able to notify each other and recommend courses of actions with regard to individual patients when they (the hospital staff, municipal nurses and the GPs) notice a change in the patient’s data. The ICT system has also contributed with a greater professional respect between the actors and more consultations (Interview 3; TeleCare Nord, 2015). Furthermore, the TeleKit has made it easier for the health professionals to communicate with the citizens and check-up on their health measures without having to meet in person, which has improved the citizen’s knowledge and participation (TeleCare Nord, 2015).

The TeleKit’s software is mobile and was developed based on an earlier project from the Central Denmark Region, which was centered on telemedicine for heart patients (Interview 2). TeleCare Nord provides a platform for both the citizens and for the clinicians. The clinicians’ platform was delivered by a private ICT company, Open Tele Health, a derivate of the original deliverer Silver Bullit. They
collaborated closely with the clinicians, which consisted of both General Practice, nurses and doctors with the COPD (pulmonary) specialist from the Region (at Aalborg University Hospital) as well as nurses from the municipalities (Interview 2). The IT working group was involved in the development of the software solution. Their work was primarily focused on the infrastructure behind the solution and the cross sectoral data sharing (Interview 2).

**Efficiency**

When the project finished in June 2015, 1,225 COPD patients had participated and many have examined TeleCare Nord in order to recommend whether the project should be translated onto other areas of the health sector or other regions (TeleCare Nord, 2015). The project proved successful in establishing a strong collaboration and trustful relationships between the health sector actors and substantially improved intersectoral working procedures (Interview 2; Interview 3). The project also resulted in fewer hospitalizations and thereby cost savings. Overall, the savings for the most severe cases of COPD amounted to 7,000 DKK per patient per year. These saving were mainly the result of a reduced number of hospital admissions and a reduction in the time that patients were admitted (TeleCare Nord 2015, p. 5). However, the hitherto most thorough randomized controlled trial of the TeleCare Nord project, comparing costs and increased QALY for randomly selected COPD patients receiving telemedicine compared to a control group receiving the usual care revealed that costs were higher for the telemedicine service group and that improvement in QALY were negligible (Udsen et al 2017). It added that telemedicine is only likely to be cost-effective for the most severely ill COPD patients.

The operational cost savings were asymmetrically divided between the Region and the municipalities according to the interviewees, though this cannot be backed up by quantitative assessment. The interviewees all maintained that it was mainly the region that saved money because of fewer hospital admissions (Interview 1). In contrast, the municipalities had not saved a lot of money. This claim runs counter to the initial business case plan which envisaged the municipalities would save just as much money as the Region (Region Nordjylland, 2012). On the one hand, the municipalities have had to make additional investments in the provision of patient education to enable the patients to use the telemedical system. This has increased costs (Region Nordjylland, 2015). On the other hand, the municipalities have saved resources for some home care for patients who are now able to monitor
their own health condition and are provided with online assistance, rather than physical, in situ assistance. However, as far from all COPD patients have been able to rely only on telemedical service, these savings have not been substantial (Region Nordjylland, 2015), and the municipal interviewee admits that it is hard to measure the municipal costs related to TeleCare Nord (Interview 3). Moreover, in the initial business plan the municipalities envisaged substantial savings due to the expected reduction of COPD patients admitted to hospital for acute treatment (Region Nordjylland 2012). This saving has to do with the general rule that all municipalities co-pay 25% of the costs (held by the Region) when their citizens are admitted to hospital. The final evaluation report claims that such saving have indeed been made, but does not specify their magnitude (Region Nordjylland, 2015).

A user survey conducted among the participating COPD patients showed that 72% felt safer and better capable of managing their illness and 50% reported that they were now better able to recognize and react to detriments in their health (TeleCare Nord, 2015). This is also reported by the nurses connected to the project (Interview 3). Based on the experiences of TeleCare Nord, a business case was made in 2017 for the national roll out of telemedicine for COPD patients (PA Consulting Group, 2017). The business case estimated annual net saving to be 202 million DKK, on the condition that only COPD patients with severe symptoms are targeted (PA Consulting Group, 2017, p. 6). For groups, with less severe symptoms the net gains are likely to be much smaller. The main driver for these savings is reduction in the number and duration of hospital admissions.

Telecare Nord was proven especially beneficial for patients with severe COPD, and the criteria of inclusion has therefore been changed accordingly (Interview 2). If the project targets a group of patients with severe COPD this produces both cost savings around 7000 DKK annually per patient and on quality-adjusted life years. If a targeted group of patients with severe COPD is not chosen, the project showed to still produce a positive effect in quality-adjusted life years but additional costs of approximately 5400 DKK annually per patient (TeleCare Nord, 2015). The patients with a lesser degree of COPD can gain positive results later on in the progress of their illness, but this group (with relatively mild symptoms) is inducing relatively small costs to the health sector and therefore the potential savings for this group is limited at that stage of the disease (Interview 1).
Red tape

The TeleCare Nord has functioned quite well and has so far been able to overcome / work around administrative and legal obstacles. However, as we shall see not all of these issues have been permanently settled.

The §119 of the Danish Health Law allows for quite a wide range of patient centered prevention actions (Interview 3). However, in the beginning, the issue was the definition of telemedicine and devices. There were different regional and local understandings e.g. if it was rehabilitative support (currently the responsibility of the municipalities) or treatment (which is the responsibility of the Region). This discussion reflected the uncertainty about who was responsible for delivering and financing the services. This is not yet solved, at least no formalized agreement has been reached. The solution was a common set-up with a collaborative secretariat who had and still has the responsibility for orchestrating the services (Interview 2).

A key administrative issue impinging on the service is that it is run by three different authorities: the general practitioners, the municipalities and the region. Among other things, this makes the sharing of data complicated. Patient consent to data sharing was also an issue that had to be dealt with in order to allow the research bases evaluation of the project. It was difficult to design the systems so that only authorized / relevant medical staff had access to the data. It is possible in practice, but legally very difficult if data regulations on privacy regarding personal information is to be respected. Moreover, having three authorities running the service meant that accountability was not clear, in particular who would be responsible if mistakes occur during patient treatment (Interview 2). This was also mentioned as a possible issue in the business case from 2012 (Business case, 2012).

Another administrative issue raised in the business case was the support and engagement from the general practitioners. Here it should be noted that the GPs are private entities who are paid but not employed by the Region. The general practitioners’ involvement in the collaboration was negotiated during the collective bargaining between the General Practitioners’ Organization and Danish Regions on their fees and responsibilities. This collective bargaining process is always a sensitive process. Moreover, the collective agreement does not stipulate the responsibilities of the local GPs in relation to such projects as TeleCare Nord (Interview 2). Fortunately, the Quality Unit of General Practice in the Region of Northern Jutland had some highly motivated general practitioners that wanted to participate in the project (Interview 1).
A third admin-legal-professional issue has to do with mandatory professional guidelines. The TeleCare Nord participants had initial discussions about how to convince the hospitals to abstain from the Danish Health Authority’s clinical rules and guidelines. The project showed that there was a decreasing need for controls and check-ups from the hospitals. However, the clinical rules and guidelines dictated a minimum frequency and therefore limited the success and results of the project (Interview 1).

Finally, following the decision in 2016 to roll out the telemedical system for COPD patients nationally, there were some disagreements on whether or not to use the national electronic identity key when accessing patient data (NemID). The Region of Northern Jutland is not using this key, but other Regions do. It has been decided that the future national telemedical service for COPD patients will have to use this key (the NemID). This will require some important changes in Northern Jutland for the patients using the system, and there is concern of losing current patients in the project; mainly the oldest patients who have never use the many other public digital services requiring NemID (Interview 3).