

# Agnes

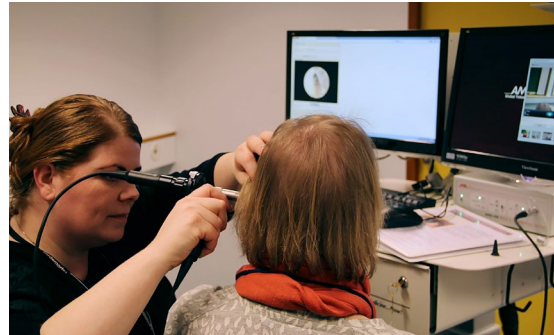
— health clinic with telemedicine



# Summary

Since 2013, specialized telemedicine equipment has been available at the health clinic in Kirkjubæjarklaustur, with digital HD cameras for inspection of the ears, throat and eyes. A vital signs monitor, ECG, respiratory monitor, dermatology camera and digital stethoscope also form part of the solution. The equipment was funded by the health clinic's charity organization, which received donations from citizens in the district. The goal was to increase the efficiency and availability of health care in the area and bring specialized care closer to rural residents.

The equipment makes it possible for the nurse at the clinic to connect with a physician for observation and diagnosis purposes.



## Main effects of the solution

- Increased availability of health care that was not previously available, including specialized health care.
- Empowerment of healthcare workers in the district.
- Reduced cost of travel and transportation for both residents in the health district and healthcare workers.
- Reduced travel time and time off work for citizens.
- Reduced cost of health care and increased efficiency through better management of chronic diseases.
- Shared health professional staffing.
- Fewer or shorter hospital stays.

## Users

- Citizens in the South healthcare district, Iceland.
- Healthcare workers in the South healthcare district, Iceland.
- The equipment is used for all age groups.

It is not yet possible to extract data from the system in order to establish who is using the service.

## Quotes/Testimonials

"I want to use the new machine".

– Patient

# Elaboration

## Needs and challenges

Kirkjubæjarklaustur is a small town in Southern Iceland comprising 600 inhabitants. Its health clinic serves a large rural area and the area also has a large number of tourists who visit every year. It has been difficult to recruit physicians to the municipality and short-term contracts have proved to be very costly. Previous arrangements involved a full-time nurse during the daytime. A physician was on call all year round but when absent because of leave, no emergency service was available. In the event of an accident or an emergency after the day shift ended, assistance was provided by the neighbouring region, some 70–130 km away. Local access to a clinical specialist such as a psychologist or medical sub-specialists is often limited and a system that could help fill such gaps in the service of patients was needed.

## Solution and function

New ways were sought to increase services and the availability of health care. The result was telemedicine. AGNES is web-based telemedicine software that enables remote clinical healthcare providers to capture and share medical device data, exchange documents and medical images in real time and participate in a live video conference – all on a single web-based platform. Currently, the clinic engages a part-time physician and a full-time nurse, as well as a secretary. In the event that the physician is not on duty, staff can contact the physician via the phone or telemedicine equipment. This has resulted in much more secure communication and case discussions between the nurse and physician.

The solution comprises digital HD cameras for inspection of the ears, throat and eyes, a vital signs monitor, ECG, respiratory monitor, dermatology camera and digital stethoscope. A computer, two monitors, keyboard, mouse and software connect everything together.

The consultant (end user) receives a link via e-mail and logs on to connect to the patient and can then examine the patient in real time, instruct the staff member at the other end in use of the correct equipment (camera, stethoscope), review the results and previous test results, photographs, etc. and watch video recordings via the EMH.

## Implementation

Purchasing equipment is the easy part as several solutions are available. The important part is education and training in a developing environment and changing an ingrained culture, both amongst health professionals and patients. It took some time to integrate the solution into the national EMR but this has now been resolved. Integrating and coordinating the practise of telemedicine must be addressed.

- Using telemedicine must form part of the everyday tasks of all clinical staff.
- Information, courses and teaching must form part of the medical curriculum in order to facilitate a change in the overall attitude of clinical specialists.
- Changing legal and regulatory work is of paramount importance to reimbursement.

The main challenge is to stimulate and requires the conservative medical corpus to adopt telemedicine in everyday practice. The system has not yet been included in the general medical system, e.g. concerning reimbursement and legal and regulatory work.

## Economy

The equipment was funded by local charities but has saved travel expenses by treating patients locally when they previously had to be referred to the nearest hospital 200 km away. The cost of the equipment ranges from ISK 3–5 million. The cost of training is negligible. It is easy to learn.

## Process

The decision to start the process was made by local healthcare workers. Funding was by provided by a local charity. Integration into the national EHR was conducted in cooperation with the Directorate of Health.

Each health clinic must decide and agree to implement e-health services. Recently, the Directorate of Health issued directives on digital information safety standards in e-health and the Ministry of Health emphasized the importance of implementing e-health solutions as soon as possible.

- [Directives on information security in the provision of remote health services »](#)

The project is still ongoing, mainly due to various technical and safety issues. The payment method still needs to be formulated in order to collect payment for the service. The law prohibits collecting payment for telemedicine unless the patient visits the clinic.

## Organisation and politics

A cross-political parliamentary resolution was agreed upon to strengthen e-health services and a working group was appointed. The working group has submitted two reports on the issue and the need for speedy processing and a budget for the execution is vital in order to finalise development and implementation.

Data collection must take place within the scope of the rules and regulations in Iceland, as well as the GDPR.

## Follow-up/monitoring

Anecdotal data is available on function but collective data is still pending. The project has been presented at conferences and meetings in order to promote the work and clinical staff have taken part in professional work on behalf of the Ministry of Health. The promotion is taking place alongside clinical work and is mostly voluntarily. Thus, no specific summaries or reports are available.

## Communication

This is pioneering work in Iceland and it has been introduced to politicians and other rural healthcare clinics. An agreement between the South and East healthcare regions now exists in order to expand the use of this solution. Politicians and ministers have reviewed the work and all parties appear to be very interested and positive. The residents themselves provided the funding.

## More about effects

Increased quality and safety for patients is evident. Empowerment for local healthcare workers also enables more effective teamwork. There is a very positive attitude from patients and local residents towards IT solutions. There has already been a reduction in travel expenses both from private funds as well as public subsidies.

It is now possible for physicians to treat patients whenever they need treatment and wherever the patient is located via a computer or smartphone.

## Learning and tips

The equipment is very user friendly and can easily be managed by non-professionals after a few days of training. The data collected is automatically sent to the national EMR and can be observed at most medical facilities in the country.

## Context

The solution can easily be used in all areas in which G3 or G4 is available. Ordinary use of Wi-Fi is not permitted for security reasons, i.e. preservation of personal data. The solution can be used across borders within the EU-EFTA area. Scalability is part of the solution. Additional clinical equipment can be incorporated and the software can be upgraded. The solution can be used to diagnose and follow up treatment for the majority of health problems, both acute and long-term.

## Contact details

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## Name of the service

AGNES - Fjarheilbrigdisþjonusta HSU (HSU-telemedicine)

## Service provider

Amd global telemedicine

[amdtelemedicine.com](http://amdtelemedicine.com)

[Trs.is](http://Trs.is)