

# Remote cardiac auscultation & health parameter assessment

– *Examples of telemedicine applications in Sweden*

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# Telemedicine – *“Healing at a distance”*

**Definition according to WHO:** *“The delivery of health care services, where distance is a critical factor, by all health care professionals using information and communication technologies for the exchange of valid information for diagnosis, treatment and prevention of disease and injuries, research and evaluation, and for the continuing education of health care providers, all in the interests of advancing the health of individuals and their communities*

*Four elements are germane to telemedicine:*

- Its purpose is to provide clinical support.
- It is intended to overcome geographical barriers, connecting users who are not in the same physical location.
- It involves the use of various types of information and communication technology - ICT.
- Its goal is to improve health outcomes.

# Introduction to Västerbotten County

Total area 55 432 km<sup>2</sup>

260 217 inhabitants (2012)

4,69 inhabitants/km<sup>2</sup>

About 50.000 reindeers

The county is mainly covered by forest and stretches from coast to “fjäll”



# Introduction to the VB county council

~ 32 primary health centers and community hospitals

3 hospitals, including one teaching hospital – Umeå University Hospital

Due to the special conditions in Northern Sweden, “rural medicine” can since 2009 be the focus of the residency (specialist training/ST training)



# Telemedicine in Västerbotten county & The Northern care region



## Administrative meetings

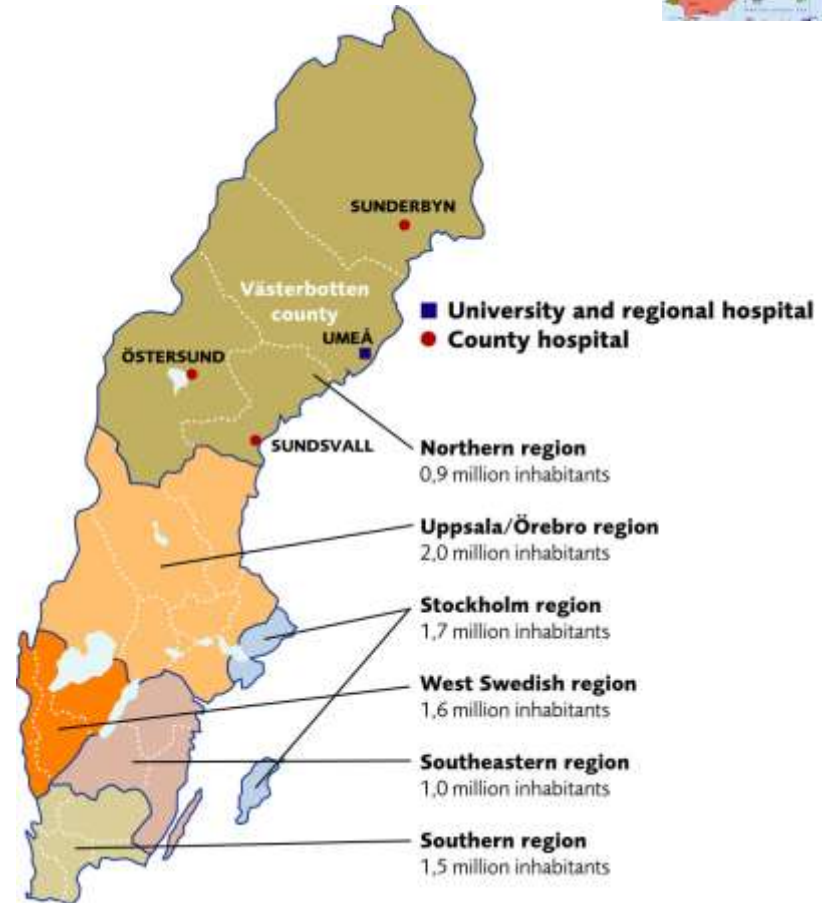
- Project meetings
- Economy
- Procurement

## Business meetings

- Education
- Conferences

## Clinical applications

- Consultations
- Follow-up visits
- Rehabilitation
- Hospital rounds
- Remote control of diagnostics instruments



*The North-south distance of the northern care region is about 1000 km*

# Examples from Västerbotten

Example from a ground breaking project in Västerbotten  
- Speech therapy at distance.



**194 Patients** (e.g. aphasia, Parkinson's disease, children with speech impairments), of which 36 in their own home,  
**779 treatments**, of which 219 in the home,  
**25 care facilities** participated in the study

## Environment

154 840 kilometers of travel was saved for the patient

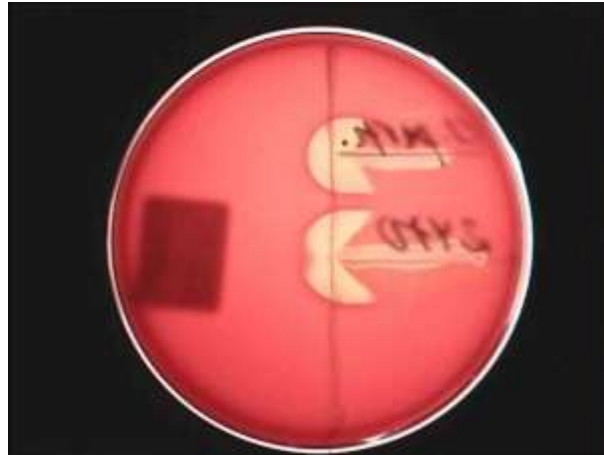
## Economy

1 million SKR or about 100.000 EUR were saved during approximately one year – based only on reduction in patient travels. Staff reduced their time on the road with 1-3 days.

## Patient benefits

The telemedicine treatment resulted in better results and compliance and fewer patients dropped out of rehab.





**Bacteriology** Umeå – Östersund (400 km)



**Teleradiology** Umeå - Spain (3700 km)

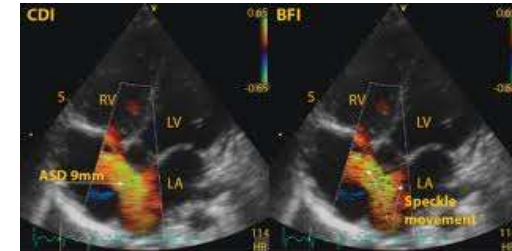
## Children with cleft palate

- First meeting with specialist and speech therapist via video



## Newborn with suspected heart disease

- Cardiologist in Umeå diagnoses the ultrasound examination via video



## Rehabilitation after hand surgery

- Patient get treatment and rehabilitation in their home or at the nearest primary care center



## Distributed radiotherapy

- Treatment planning and education





## *Presentation and Demo*



Remote consultant and CheckUp<sup>®</sup>

Kenji Claesson