

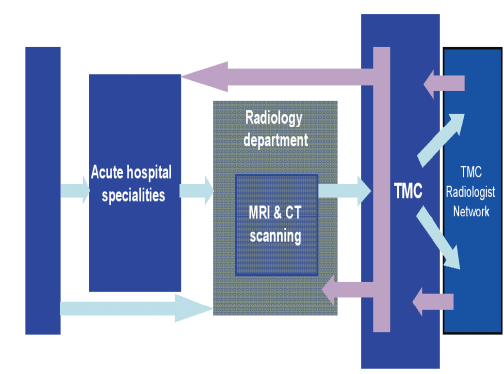
Sollefteå and Borås hospitals; Sjunet, Sweden – radiology consultations between Sweden and Spain

Tele radiology enables radiology departments in hospitals to connect with, and expand, the performance of their radiology services without having to employ extra locum or additional permanent radiologists. Reacting to a shortage of radiologists in Sweden, the involved hospitals implemented the analysed eHealth application, allowing regular teleconsultations for Swedish patients given by specialists in Spain.

This case study evaluates the economic impact of such services at two Swedish hospitals. Radiology nurses at Sollefteå and Borås hospitals conduct magnetic resonance imaging (MRI) examinations, and for less urgent cases the images are sent to the Telemedicine Clinic in Barcelona for analysis via the Swedish secure ICT network for healthcare, Sjunet. Borås also regularly sends a number of computed tomography (CT) images. This lowers the pressure on the radiologists in Sollefteå and Borås, and shortens the patient waiting lists. The hospitals can not only better cope with the shortage of specialists in Sweden, but are also more flexible in coping with short term peaks in demand.

With over 85% of the total economic benefits, estimated at over € 800 000 per year from 2006 onwards, citizens gain significantly from the reduced waiting times. The cost per scan analysis for the two hospitals has already decreased by about 35%. Net economic benefits were achieved in the second year of operation and are sustainable at over € 700 000 per year beyond 2007.

FIGURE: THE PROCESS OF IMAGE REVIEW AND DIAGNOSIS AT TMC



Sollefteå Hospital

When the radiology department at Sollefteå Hospital failed to recruit a specialist in magnetic resonance imaging (MRI), it resolved the problem by seeking a different solution. Employing locums for short time periods would have been demanding because of recruitment difficulties in a geographically remote area. It would also incur a high cost of employment, approximately up to four times more costly than a permanent specialist.

The solution was to rely on teleradiology to link the radiology department with specialists in other locations.

Skilled radiology nurses conduct MRI examinations, some of which are transmitted to the Telemedicine Clinic (TMC) in Barcelona for analysis, advice and opinions. The response arrives back in Sollefteå between 24 to 48 hours later. This model is used for some of the non-emergency examinations, transferring some of the increasing workload to other, extra specialists, and reducing the need for an extra radiologist in Sollefteå.

This increased resource also contributed to reducing waiting lists and times. Since the beginning of the service in March 2003 the waiting time for non-emergency MRI scans has been reduced by 50%.

The success of the initial pilot project was converted into a successful fully operational service. Links with the TMC also provides a source of new medical information. These factors combine to give a considerable return in value on the original MRI investment.

Borås Hospital

At Borås Hospital, sustaining radiology recruitment has been demanding. Reliance on TMC services enables the hospital to continue to meet rising demand during periods when vacancies cannot be filled. Simultaneously, the goal was to reduce waiting times significantly from 52 weeks for MRI scans, and about 12 weeks for CT scans. Using TMC for these has enabled MRI waiting times to be reduced to 22 weeks, down by about 58%, and CT waiting times to be reduced to about



six weeks, a 50% drop. Without these performance improvements, MRI and CT scans would have become a bottleneck for other hospital services, leading to deterioration in their performance. A team of radiologist and specialist nurses complete most of the MRI and CT scans. Appointing locums to fill vacancies temporarily would have been more costly than using TMC's service. It would also be disruptive for the team, having to spend time to seek locum replacements and integrate new people into the team for short periods of time.

Barcelona TMC

TMC is a telecare service based in Barcelona. Its resources include a service centre that receives and despatches information, including images, and a network of radiologists who review and analyse images, and produce diagnostic reports for the originating sites. These connect to create a network of expertise. Over 60 radiologists provide diagnostic services through the TMC service centre. There were two when the service started in 2003.

Sjunet

Carrying the information from the sites to the TMC service centre relies on Sjunet, a secure ICT network for healthcare in Sweden. Data from MRIs and CTs is held in a Picture Archiving and Communication System(PACS), and so can be readily transmitted to and from TMC.

Sjunet sets the data standard and infrastructure architecture. Sjunet was started as a project in 1998 and has been fully operational with all Swedish hospitals connected since 2001. TMC has been connected since 2002 and their teleradiology service started in March 2003.

Core impact:

- Reduction in waiting times for patients by up to 50%
- Improvement of a key bottleneck and more flexibility in coping with peak requirements
- Example for the development of a truly pan-European healthcare services market
- Improved service quality at a considerably lower cost

Main beneficiaries:

- Citizens gain due to reduction in waiting times for MRI and CT image analysis and consultation
- Swedish hospitals benefit from cost savings; no extra local resources are required
- The Spanish Telemedicine Clinic benefits from more sustained business.

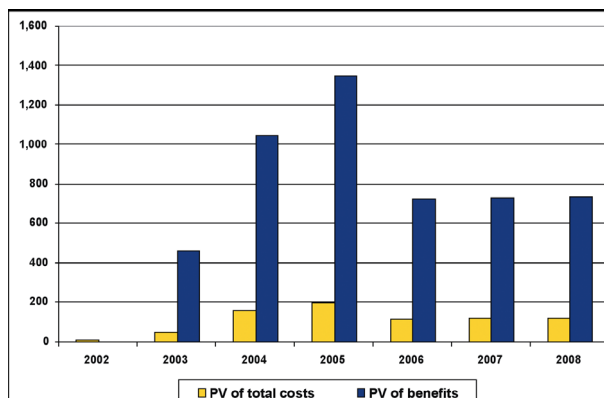
Lessons learned:

- Identifying use of ICT as a tool, not a goal in itself, is a key to realising benefits in health
- Application development was driven by citizen's needs, greatly facilitated by existing infrastructures in Sweden (Sjunet) and Spain (Barcelona Telemedicine Clinic)
- Given the right framework, telemedicine can stimulate the development of a single European healthcare market
- A successful telemedicine project is only one element in a process chain of related health activities

Economic results:

- First year of annual net benefit, i.e. when annual benefits exceed annual costs: 2003, year 2
- Estimated annual net benefit for the year 2008: approximately € 600 000
- First year of cumulative net benefit: 2003, year 2
- Estimated cumulative benefit by 2008: approximately €5 million
- Cumulative investment costs, including operating expenditure, by 2008: approximately €800 000
- Estimated productivity gain, measured in decrease in cost per scan: 34%
- Distribution of benefits to 2008: Citizens – 86%;
- Hospitals – 14%

CHART: ESTIMATED PRESENT VALUES OF ANNUAL COSTS AND BENEFITS - 2002 TO 2008, in € 000s



- www.midsweden.se
- www.lvn.se
- www.carelink.se
- www.telemedicineclinic.com
- www.ehealth-impact.org/case_studies/index_en.htm