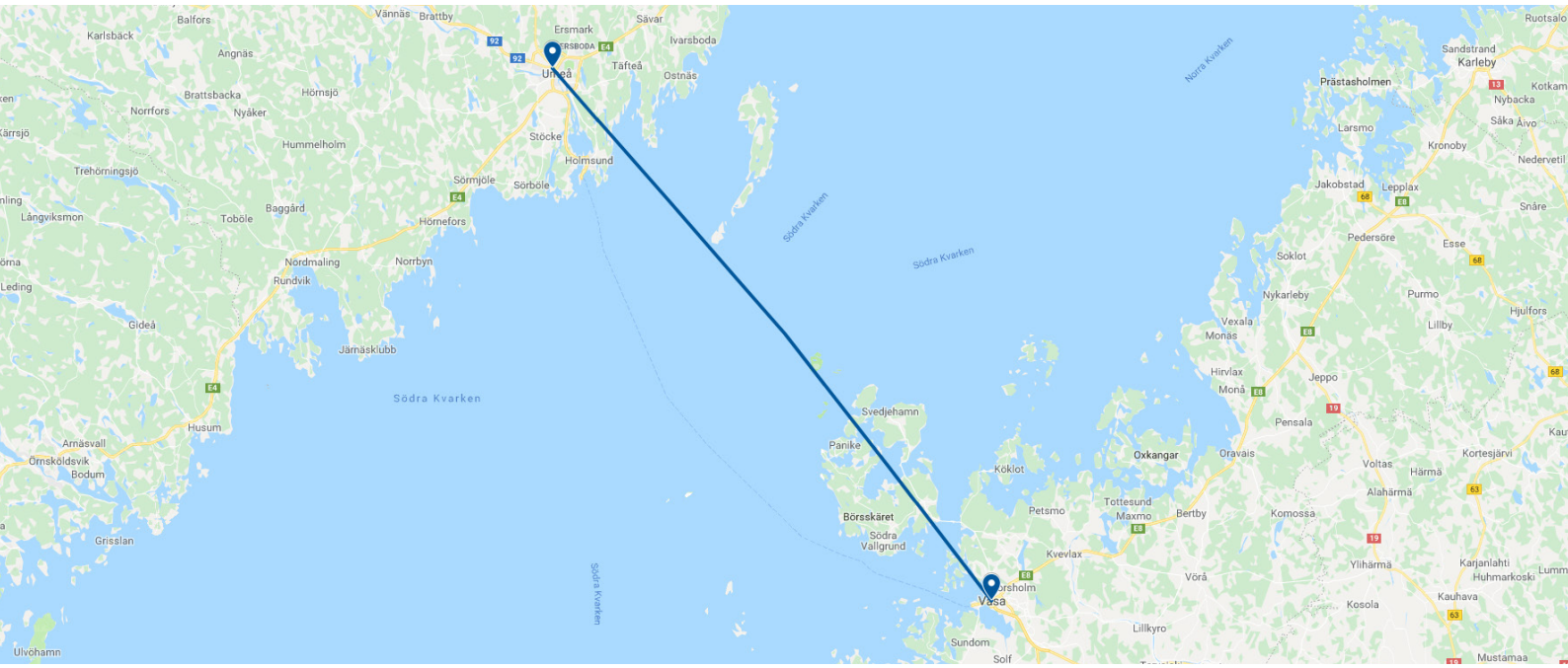
Customer case

Modern telemedicine solution enables cross-border collaboration

Saving the lives of acute stroke patients in Northern Scandinavia



> The possibility to send digital images saves lives by reducing the time to treatment. Time is absolutely critical for performing a thrombectomy, and every single minute can be translated directly into a better chance of survival and recovery.
>
> *Jörgen Strinnholm, Head of the Department of Radiology at Norrland University Hospital*

When patients experience a stroke, the time to treatment is crucial for survival. Every second saved before a thrombectomy* is performed on the patient significantly improves the odds of a positive outcome.

A thrombectomy is typically administered in level one trauma centers, often located at university hospitals. As a result, stroke patients arriving to rural hospitals require transportation to a tertiary care center, preferably after a neuroradiologist has reviewed the CT scan remotely and can confirm the stroke to be treatable. Hence, there is a need for both a remote assessment of the CT scan and an efficient transportation service within a very short time period.

The Umeå–Vasa life-saving collaboration

The hospital in Vasa, Finland is located 80 km across the Baltic Sea from Norrland University Hospital in Umeå, Sweden. Although they serve different countries, the two institutions established a unique cross-border collaboration program for stroke patients in 2018.

* Thrombectomy is an interventional procedure that involves removing a blood clot from a blood vessel in the cerebral arteries.

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Knowledge and passion

> Using an efficient image exchange service allows for improved specialist knowledge, but also contributes to equal access to care among patients—regardless of where they live—as each case can be sent electronically to the appropriate specialist.
>
> *Nicklas Sandström, Regional Advisor in Region Västerbotten*

Ten years in the making

"The idea of sending patients from Vasa has been around for a while," explains Jörgen Strinnholm, Head of the Department of Radiology at Norrland University Hospital. "But the remote assessment in Umeå of the initial CT scan hindered us from establishing a timely workflow."

Gunnar Jonsson, PACS System Administrator at Norrland University Hospital, explains that a teleradiology connection between the hospitals was set up ten years ago. Unfortunately, the project was put on hold due to difficulties in creating a secure connection using the technology available at the time.

In a second attempt to solve the challenge of performing a remote assessment of the CT scan, the hospitals tried a videoconference system. This plan also failed due to the radiologists' requirement that the image transfer system needed to be integrated with the PACS. These two ongoing barriers hindered the project's success, but the goal of providing expedited care for Finnish patients lived on.

The collaboration with Vasa continued to grow in other areas, explains Regional Advisor Nicklas Sandström. So Sectra was contacted in early 2018 and, together with the Department of Radiology in Umeå, they implemented an image sharing solution that proved to be successful.

Using the Sectra Image Exchange Portal to save lives

Sectra, the provider of Norrland University Hospital's radiology PACS, suggested its Image Exchange Portal (IEP)—a service for transferring various types of images and patient information between disparate healthcare providers. In the UK, IEP sends images and patient data among a network of 485 healthcare providers swiftly and securely. It also complies with patient privacy laws as well as encryption and detailed audit logging requirements, which meant that the obstacles faced in 2008 could be eliminated and the project could be jump-started.

The Sectra IEP was implemented and enabled Vasa to upload radiology exams via a web portal directly into Umeå's PACS for review. Once the exam arrives, a radiologist in Umeå is immediately notified and can review it to determine whether

Photo: University Hospital of Umeå

or not the stroke is treatable. If the stroke is deemed treatable, an ambulance flights the patient to Umeå for instantaneous care.

"In late 2018, the first test patient using this workflow was transported within 75 minutes, which is remarkable," says Helge Brändström, Head of Aero Medical Services in Umeå. He adds, "The possibility for Vasa to send images digitally for assessment opens up a workflow that will surely improve the outcome for many patients in the coming years."

The alternative would be to send patients a much longer distance to Tampere, which would take about three and a half hours. The new collaboration with Umeå saves about an hour and a half, which significantly improves the chances of survival," says Nicklas Sandström.

Jörgen Strinnholm is also happy about the reported time savings: "The possibility to send digital images saves lives by reducing the time to treatment. Time is absolutely critical for performing a thrombectomy, and every single minute can be translated directly into a better chance of survival and recovery."

Enables physician competence

The Umeå–Vasa collaboration enabled through efficient image transfer and a reliable patient transportation service

has not only improved the situation for patients, but also for the specialists at Norrland University Hospital, says Jörgen Strinnholm. He explains that through this collaboration, physicians at the Department of Radiology gain access to a larger pool of stroke patients, which is necessary to maintain a high level of competence and to train new specialists.

Nicklas Sandström adds, "From a political standpoint, access to equal care is a hot topic in Swedish healthcare. The possibility of using an efficient image exchange service allows for improved specialist knowledge, but also contributes to equal access to care among patients—regardless of where they live—as each case can be sent electronically to the appropriate specialist."

The journey ahead

Since the combination of image exchange and ambulance flights turned out to be so successful, Vasa and Umeå are currently looking at expanding their collaboration to other types of surgeries and treatments.

"Since the transfer also includes the request and other clinical data, we are also looking into expanding the solution to other areas where consultations and external reviews would be beneficial," says Gunnar Jonsson.

Both politicians and radiology professionals recognize that money can be saved in terms of reduced costs for patient rehabilitation, shortened time back to work and benefits in specialist competence development.

Nicklas Sandström highlights that these kinds of cross-border collaborations could easily be replicated in other regions to improve patient care, something he hopes to see much more of in the future.

Big thanks to Jörgen Strinnholm, Gunnar Jonsson, Helge Brändström and Nicklas Sandström, who were interviewed for this article.

How the image transfer works

When Vasa has scanned the patient via CT, they use the Sectra Image Exchange Portal to send the exam to Umeå. The exam is directly imported into the enterprise imaging system in Umeå, where it is automatically allocated to a prioritized worklist in the PACS. The neuroradiologist reviews the case either by using their PACS workstation or, preferably, using a mobile device, such as an iPad. "The possibility to review with mobile devices saves additional time since the radiologist doesn't have to access a computer if they are not at the hospital," says Jörgen Strinnholm.

Sectra IEP can send and receive images from different PACS vendors, which is utilized in the case of Umeå–Vasa. After surgery in Umeå, the post-CT scan and medical reports are transferred back to Vasa and saved in their PACS, which is a non-Sectra system.

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