

AI & Robotics Implementation and Pitfalls

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Trends in Telemedicine

Telemedicine Clinic (TMC), part of the Unilabs Group, is one of the largest providers of elective subspecialist teleradiology reporting services and night-time emergency teleradiology services in Europe, with more than 330 radiologists servicing around 140 hospitals in Sweden, Denmark and the U.K. HealthManagement.org spoke to Henrik about the vision of TMC, its services, and how he perceives the future of radiology to be.



HENRIK
AGRELL

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Reflecting on your vision for TMC in 2002, what materialised and what did not?

When we started TMC 20 years ago, we wanted to bring high-quality radiology services to patients, regardless of location. Even if the patient was scanned in a small hospital, we wanted them to have access to specialist radiology reporting services by using teleradiology. In 2002, we started to promote teleradiology, but most hospitals were not ready to outsource radiology services. They saw the potential, but they were also very sceptical. Step by step, we built up a very large network of expert radiologists and matched the incoming exams with the right subspecialists. Today, we have more than 330 radiologists in our network, providing highly specialised services to our clients. That was the vision we managed to materialise. It took time and was complex, but today we have a powerful service up and running.

What other obstacles did you face, and how did you overcome them?

We had a plethora of different obstacles when we started, not only technical obstacles, but credibility was also a big topic. Would a hospital trust us enough to send out part of its radiology production for external reporting? It was a lot of questions around responsibility, quality, and reliability of the service, and step by step, we had to secure that. We had a stable technology setup and the ability for quick image transfer and stability of data transfer back and forth. But we had to build strong credibility with respect to quality assurance.

The use of various types of telediagnostic services, both outsourced and done between university clinics, for example, or their satellite hospitals, is a norm in practice today, not only in teleradiology but also in areas like telepathology and teledermatology. Many of these image-based diagnostic areas are suitable for remote diagnosis to some extent. It is now an established tradition which has also been driven by technology, as now you have faster and more stable connections. It's also driven by need.

There is a shortage in many European countries of doctors in general and radiologists in particular. What role can teleradiology play in training and teaching radiology residents? Does TMC have any programmes which help hospitals in training radiologists?

Teleradiology could have both a positive and a potential negative impact on the training of residents. If you take on the negative side first, when you outsource radiology volumes, you might send out a lot of relatively easy

volume work, depending on what the hospitals decide to outsource. That can reduce the volume of non-complex scans for the residents. Sometimes there might also be a lack of senior radiologists on-site supporting the residents. These risks needed to be mitigated. Therefore, we created something we call the TMC Academy some years ago, providing a range of training services to residents and specialists. There is training through conventional courses and online training - what we call mini-fellowships - that we provide. Another thing we do for quite a few of our client hospitals is that we provide second reads for the local radiologists in training. They do the preliminary first reads locally, and then we provide subspecialty supportive feedback to the local residents. We also provide follow-up webinars that support them in their training. Our clients are increasingly interested in this because of the shortage of local senior radiologists. It's difficult sometimes to have sufficient local capacity to support the registrars in their training.

Do you think teleradiology has a place in after-hours coverage regarding reading speed and the threat of malpractice?

After-hours coverage is one of our most important service areas. We cover the night shifts for many hospitals in Scandinavia and the UK. We do that partly with radiologists based in Australia. We use the time difference, which allows us to work with night shift emergency cases during the Australian daytime. We think this can have a positive quality impact and help avoid night-time work. We have been doing that for around 15 years. It's a clever way to use teleradiology and explore possibilities with time differences. We can also provide subspecialties into the night shift services because we have many radiologists working in our remote radiology team. Instead of having junior radiologists working in the middle of the night, we have a whole group of radiologists working during the daytime. We also see an increase in the need for more complex scans during night shifts like stroke MRI, CT perfusion etc. The emergency radiology needs for hospitals are increasing in complexity, and it's advantageous if you have sub-specialist radiologists who can provide these services.

Given the number of radiologists you employ and keeping the shortages in mind, how do you attract radiologists?

We need to be able to attract and retain good-quality radiologists. One of the key reasons why radiologists have chosen to work with TMC is our quality focus and

the focus on subspecialist radiology. Our radiologists have the possibility to work with exactly the case types they are interested in and have the skills for, which can sometimes be difficult in a hospital where you might have to work with a broader range of examinations. We also benefit from having a nice reporting location for our radiologists, which also helps. We have radiologists who report from our hubs in Noosa and more in Sydney. We will soon offer possibilities to report emergency radiology from Japan and New Zealand back to Europe. Also, we are quite a strong medical-focused company.

Today, AI is everywhere. How much can it help TMC? What role does it play, and valuable is it in assisting radiologists?

This is probably one of the most important questions we are working with. We were early adopters of AI and implemented our dedicated AI Centre of Excellence team four years ago. We have seen a huge, significant, positive quality impact using AI. We have several algorithms running continuously to help us detect pathologies that could sometimes be missed, especially in an emergency setting. We for example use algorithms

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We try to provide the best possible working conditions, technical advice for our radiologists, everything from IT support and reporting environment, and possibilities to grow. All TMC radiologists have access to TMC Academy. We have a huge range of training services. Last year we produced around 27,000 CME credits for radiologists participating in TMC Academy activities. Hence, we see a positive influx of new interested radiologists and a high retention rate. We have many radiologists working for TMC for more than ten years, and some people have been here for over 15 years.

Do you think teleradiology can get final reports in a timely fashion for emergency room imaging readings? And if not, what would be needed to make this happen?

We cannot deliver an emergency reporting service unless we can do that in a speedy and timely way. For very acute cases, for example, stroke and trauma, we typically have reporting times that are less than 10 minutes. We also have direct communication with the local referring clinician, the trauma surgeon, for example, and we have a direct phone or video link in some cases. You cannot deliver emergency services unless you can do that quickly because it is part of the service. There is no other alternative. We might even be able to provide a speedier service than you can do locally because many hospitals, before using outsourced radiology for the night shift, will need to bring a radiologist into the hospital within 30 minutes. We have the whole team on standby, so we can provide very short turnaround times for urgent cases.

today to detect bleedings in the brain or pulmonary embolism. We are carefully testing and evaluating solutions that are out there in the market space. I think we can safely say that we get quite an important and valuable quality gain by using AI. One of the areas that we are still trying to explore is how much efficiency gain we can get from AI. You sometimes need to look beyond the actual image interpretation activity and look at other aspects of the radiology workflow to get efficiency gains. We have, for example, implemented a tool that helps us ensure that the images are, automatically and correctly, presented for our radiologists. By triggering the correct hanging protocols, the cases are presented in the way that individual radiologists would like to have them presented, and you can save the time that it normally would have taken for the radiologist to hang the images themselves. We have also other solutions we're looking into to automate other parts of the workflow. But we are also testing solutions that can potentially, in the future, help us automate part of the interpretation as well, such as filtering out all the normal cases so that radiologists can focus on cases where they are more likely to be pathologies for example. It is a rapidly growing area. We are 100% sure that AI will play a very important role. It does already today, but it will play an increasingly important role going forward. Exactly how much would we be able to substitute what the radiologists are doing and when is very difficult to predict today. Some providers in the market claim they can provide full autonomous rates for some areas, which is an interesting development. But it's still a lot of caution.

What benefits can providers like TMC provide our audience to conduct their business?

The most important thing we can provide to a healthcare system is flexible access to high-quality radiology reporting. We can also help them to increase quality and make sure they can introduce new radiology methods because we typically have subspecialties across a broad range of areas. For small and midsize hospitals specifically, who would like to introduce a new type of examination but might not have the local competence to do so, we can support them with complex exams for the night shifts. It's a no-brainer how valuable that is because it frees up daytime capacity for the hospitals and increases the quality of the services by using more senior radiologists working from a different time zone. It can also reduce costs, especially for small and midsize hospitals that might need radiologists on call doing very few cases.

What are some countries TMC is considering expanding into? Is there any expansion on specific specialties?

At TMC, we currently provide teleradiology services to clients in Sweden, Denmark and the UK. We are exploring other European markets and would like to bring our services into more European hospitals. We are also looking at other types of services. One example is the stroke MRI service during night-time that we recently implemented in Denmark. We also see several areas where we will implement more 24/7 coverage, in general, to provide acute reporting. We are also looking into other diagnostic areas. We provided pathology services previously, and that's an area that is growing now, especially in the UK, where more and more pathology labs are digitalising their histopathology activities, which makes it possible to provide efficient telehealth services. We are looking into a wider range of teleradiologic areas but also to be there for a more complex development of medical imaging and radiology and to use our subspecialist approach to support our clients to introduce new methods, even if it's in the middle of the night. That is the focus area right now.

Do you think radiologists will lose more ground in the future?

That's a very interesting question. I think it's quite likely that some areas of radiology might go over to some clinician groups, such as orthopaedic surgeons. With more powerful AI solutions, it could be that AI plus non radiology clinicians could cover some of the radiology areas in the future. The role of radiology will slightly

change. Also, going forward, if you have more AI solutions, doing more of the support work, radiologists will probably have a more consultative role in the future to participate even more in the clinical work with other colleagues in the tumour boards, for example, and to play more of a consultant, and spend less time for pure image reading potentially. It would be important for radiologists and for our profession, too, to make sure that we stay ahead and make radiologists still relevant in the future by adopting new technologies. Radiology is a very technology-driven profession, and many radiologists have a deep knowledge of technology. So I think radiologists are well positioned to take a proactive lead when it comes to introducing more advanced imaging technologies but also AI and safely using these solutions.

Today, we are facing the problem of a shortage of radiologists, which in some countries, like the UK, is getting very problematic. We need radical new ideas to be able to deal with them. In some countries, it can take many weeks before a case is reported. I think a more radical solution might be needed to deal with this because it's a problematic situation. Since radiology has such an impact on patient care, it needs to deliver and work in a timely fashion. Let's see what role AI will play here, for example to prioritise cases with potential important pathology.

Radiology is extremely well-paid in comparison to many other disciplines. Where's the problem? Why does nobody want to be one to become a radiologist?

The shortage of radiologists is multifactorial and varies from market to market. There is a huge interest in radiology in general. This is a specialty that quite a few young doctors proactively decide to go for in their careers. There has been underfunding when it comes to radiology training positions in many countries for reasons that are difficult to understand. Hence, I don't think there's a lack of interest from young doctors. There was a discussion for some time that AI would take over a radiologist's job, and that would reduce the interest to come to this specialty. Today that is not the case. Most radiologists are interested in coming into this specialty because of the interesting things happening around the new technologies in general. I think it has been more of a chronic underfunding of training positions for a long period. ■



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