#DigitalHealth

From Digital Twin to Improved Patient Experience. Page 4.

#PrecisionMedicine

Why do more and more labs choose Atellica Solution as a cornerstone in their lab? Page 6.

#PatientExperience

Frequent visitors to the emergency can now stay at home, assisted by a professional medical team. Page 8.

#TransformingCareDelivery

Move knowledge, not staff with remote scanning cockpit, as they have done in Switzerland. Page 24.

Next Level

Customer Magazine for the Nordic and Baltic countries

Making Mammography More Comfortable for the Patient - and More Precise

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Issue 1 - 2019

The future of healthcare is digital

Healthcare is changing and at a more rapid pace than ever. One major advancement in recent years has been the increasing role that digitalization, data sharing and artificial intelligence (AI) plays in both saving costs and improving patient outcomes.

Data sharing will allow faster and more accurate analysis of conditions and give insights into patients' health. AI will be used to analyze data flowing from medical tests and devices, predicting the likelihood of individuals contracting certain diseases. Digital technology will also help model therapies and their effects on individual patients.

We at Siemens Healthineers have a long history as an innovation leader. Today, we can provide our customers with state-of-the-art data and decision support tools that assist in the optimization of entire care delivery chains. We are dedicated to making the healthcare landscape better for patients, healthcare professionals and overall society by integrating this goal in our corporate vision and culture.

In this issue of our customer magazine Next Level, we showcase the way we try to be a true partner for our customers within the area of digitalizing healthcare. You can read about the workflow simulations we have done in Ireland, and how we use *syngo* virtual cockpit for remote scanning assistance in Switzerland. And of course, you can also read about experiences, innovations and insights from customers across the Nordic and Baltic countries.

Enjoy!

Leticia Boatman
Head of the Nordic and Baltic countries
Head of Denmark

Fredrik Altmeier
Head of Norway

Tomas Kramar
Head of Sweden

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Front page picture
Senior radiologist Lisbet Brønsro Larsen, MD, and radiographer Melika Khanzadeh with the new MAMMOMAT Revelation scanner at Odense University Hospital.

Scheduled Siemens Healthineers Academy Courses

On our web page you can find the continuously updated course calendar. * The course will be held in english.

Courses	Date	Place
Computer Tomography		
CT Basic	1-2 October	Solna, Sweden
CT Dual Energy Symposium*	4-5 September	Copenhagen, Denmark
Magnetic Resonance Imaging		
MRI Dot	25-27 September	Solna, Sweden
Nordic MRI Safety Seminar*	10-11 September	Uppsala, Sweden
MRI Advanced	14-15 November	Solna, Sweden
MRI Sequence Optimization	20-22 November	Gävle, Sweden
Laboratory Diagnostics		
Advanced user training Sysmex CS-5100	30. Sept- 3. October	Solna, Sweden
Advanced user training Sysmex CS-2000i/2100i/2500	4-7 November	Solna, Sweden
syngo		
syngo Dynamics Report & Design	21-22 August	Solna, Sweden
syngo for technicians	19-20 November	Solna, Sweden
syngo.via		
syngo.via CT for radiographers	17-18 September	Bergen, Norway
syngo.via CT for radiologists	19-20 September	Bergen, Norway
Ultrasound		
Technical training for ACUSON SC2000	15-17 October	Gothenburg, Sweden
Technical training for ACUSON S-Family	5-7 November	Gothenburg, Sweden
Technical training for ACUSON NX2 / NX3	1-2 October	Gothenburg, Sweden

User forums	Date	Place
MR User Forum (MAGNETOMforum)	25-27 September	Drammen, Norway
MR - SMUC (MAGNETOM User Club)	24-25 October	Stockholm, Sweden
Nordic and Baltic Atellica Solution User Forum	6-7 November	Copenhagen, Denmark
Scandinavian User Forum in Hematology	5-6 February	Oslo, Norway

CT Dual Energy Symposium 4-5 September, Copenhagen

The symposium will cover the following topics:

- Dual Energy physics and Dual Energy scan methods
- Dual Energy protocol setup, datasets
- Tips and tricks
- syngo.via Dual Energy applications (Applications classes and profiles)
- How to work with Dual Energy on syngo.via
- Dual Energy Urology, Oncology, Emergency procedures and Orthopedics
- Possibility to try syngo.via during breaks

Click here for more information

From digital twin to improved patient experience

Improvements that previously took months or years of trial and error can now be achieved in a matter of days or weeks. A digital twin creates a faster, simpler route to workflow optimization, cost efficiency, and excellent patient care. The Mater Private Hospital in Dublin applied digital process optimization using workflow simulation and achieved impressive improvements.

Workflow Simulation is a huge step into the digital future of healthcare and one of the enterprise services offered by Siemens Healthineers. With Workflow Simulation, you can build a 3D computer model of real-life operations in your clinical environments in for example, radiology department, emergency department, operating room and laboratories. Using realistic graphical animation and extensive performance reports, you can rapidly identify challenges and evaluate alternative solutions. As a "what-if" tool, workflow simulation predicts the operational and financial impact of proposed solutions and offers quantitative feedback to help you quickly find the optimal solution.

Gained operational improvements

Mater Private Hospital in Dublin in Irland wanted to take advantage of Siemens Healthineers virtual solution for workflow simulation to make improvements in the radiology department. The use of a digital twin gave them the ability to gain state-to-the-art insights they needed to make informed decisions about redesigning facility design, processes optimization and future operations.

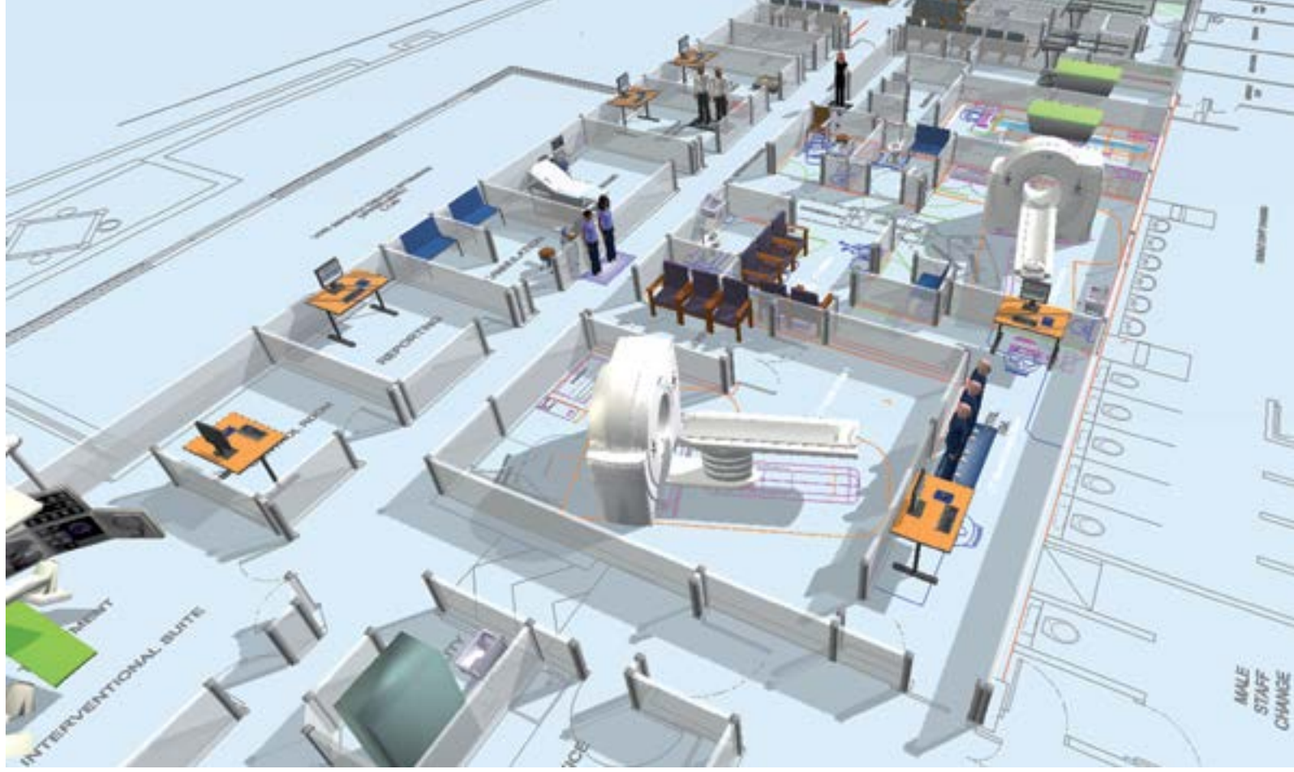
"It was amazing watching our 2D plans transform into 3D and then 4D reality. Thanks to our digital twin, we now have the best possible configuration for our department. With the increasing focus on value-based radiology, where the patient experience matters as much as cost, it's reassuring to have this kind of insight at our fingertips. Thanks to Siemens Healthineers, for helping us integrate our patient flow with spatial design. Our patients are already noticing the difference," explains Associate Professor Paddy Gilligan, Chief Physicist & Registered Radiation Protection Advisor, at Mater Private Hospital Dublin.

How was the simulation done?

The teams involved analyzed and applied operational data to simulate the actual MRI and CT workflows while the current layouts were reviewed to identify potential improvements. To gain further insights into the current set-up, they conducted a one-week on-site assessment, which included workshops, stakeholder interviews, and process observation. Based on the analysis outcomes, the team created a 3D computer model of the radiology department and its operations in a digital twin. They could then test different new operational scenarios and layouts. Realistic 3D animations and quantitative reports made it possible to predict the operational scenarios and instantly evaluate alternative options to find the right solution to transform care delivery.

"Thanks to our digital twin, we now have the best possible configuration for our department."

Assoc. Prof Paddy Gilligan, Chief Physicist & Registered Radiation Protection Advisor at Mater Private Hospital Dublin, Ireland, Diagnostic Imaging Department.



Mater Private Hospital stepped into the digital future of healthcare with workflow simulation by creating a 3D computer model of the radiology department and its operations. The result was a so-called digital twin that enabled them to test different new operational scenarios and layouts. Some of the benefits achieved at Mater Private hospital were improved patient experience, greater process efficiency, smarter resource allocation, enhanced clinical safety, increased operational flexibility and staff satisfaction.

Mater Private Hospital, Irland

One of the leading private hospitals in Dublin, Ireland. Founded in 1986, MPH's goal is to make its facilities the best place to receive care, to work and to practice medicine. The 205 bed hospital treats 480 patients daily.

For more information about workflow simulation click here

Results achieved at Mater Private Hospital:

Shorter wait times for patients:

- Reduction of 13 min. for CT
- Reduction of 25 min. for MR

Faster patient turnaround from arrival to departure:

- Reduction of 25 min. for CT
- 80.5%

Increased equipment utilization:

- Capacity up by 32 % in MRI
- Capacity up 26 % in CT

Lower staffing costs:

- 50 minutes less MRI overtime per day
- Up to €9,500 annual savings

#PrecisionMedicine

The Atellica Solution community is growing in the Nordic and Baltic countries

We asked our customers what they appreciate the most with Atellica Solution, and what they think about the partnership with Siemens Healthineers. This is what they said.

Fürst Medical Laboratory was represented in the Customer Advisory Board when Atellica Solution was in development, and was also one of the first customers to go live with Atellica Solution globally, already in September 2017.

"What we appreciate the most is the sample handling, the loading of reagents and the automatic re-runs," says Sissel, Anne Kari and Bente. They all work in the Special Analysis Team at Fürst Medical Laboratory.

The automation go live was celebrated in Riga 6 September 2018

"We are proud to be one of the first users of Atellica Solution in our region. We highly appreciate the onboarding and QC calibrator storage, the HIL-system and the amount of data the system provides us with," says Dr. Janis at P.Stradins Clinical University Hospital in Riga. "We immensely enjoy how the samples travel through the system, and can look at it for hours and hours and still be facinated. Of course, with a new innovative system there are also things to improve, but the service engineers are aware of this and in total we are very excited."

Lab automation track at Eksote

"Siemens Healthineers was a great partner in planning and delivering our new automated laboratory at Eksote, including Atellica Solution. We value this long-standing partnership immensely," says Arja Nenonen, the Chief Chemist at Eksote.

They signed the contract 2 February 2018, and started routine operations from 18 October. The opening ceremony was held 14 Februar 2019.

The timeline is based on date of signed contract from June 2017 to June 2019.

Viborg Hospital — **Furst Medical Laboratory** — **Falu Lasarett** — **Silkeborg Hospital** — **Pauls Stradiņš Clinical University Hospital** — **Eksote**

Nordlandssykehuset HF — **Vestre Viken HF, Bærum sykehus** — **HUSLAB** — **Region Skåne** — **Herlev-Gentofte Hospital**

Who is up next?

There are several upcoming tenders in the Nordic and Baltic region this year. We are exited to find out who the next Atellica Solution customers will be.

Atellica Solution user forum

The first Atellica Solution user forum will take place in Copenhagen 6 - 7 Novemer. Some of the topics in focus will be acridinium ester technology, Magline transport system, software developments, open channel applications, Atellica Diagnostics IT, customer experiences and much more.

Employees at the the medical biochemistry lab at Bærum Hospital

"Choosing Atellica Solution was a natural continuation of the good cooperation we have had with Siemens Healthineers for several years. We are very satisfied with how they have stood up as a supportive partner, and we have come up with good solutions together. Now we look forward to getting the Atellica Solution in place. The expectations are high when it comes to getting a faster turnaround time," says Silja Schaug Aarstad, Section Manager at the medical biochemistry lab at Bærum Hospital.

The contract was signed in January 2019.

In December 2018, HUSLAB chose Siemens Healthineers to deliver an automated laboratory solution to almost all of its laboratories in Finland. HUSLAB is the leading provider on clinical laboratory services in Finland and they run around 24,5 million laboratory tests a year.

28 November the contract with Region Skåne was signed for the installation of four automation solutions, and a total of 34 Atellica Solution systems in ten different laboratories.

"Clinical chemistry in Skåne is facing an extensive technology update in the near future, from receiving orders for paper remittances with lots of manual routines, to building an automated platform where the individual tube normally not will be touched by a human hand," says Sten-Erik Bäck, Project Manager for the installation, Process Manager in clinical chemistry and Associate Professor at Labmedicine in Skåne.

"Our ambition is to achieve a more stable production, smoother and shorter turn around times and a better working environment. The Atellica instruments will be a cornerstone in this ambition, with the possibilities for, among other things, automatic handling of calibrations and control runs. We therefore look forward to a long-term cooperation with Siemens Healthineers and Atellica Solution, where we develop the business together."

Read more about Atellica Solution here

How the epoc® point-of-care analyzer can keep you where you want to be

There is no place like home. Frequent visitors to the emergency department can now stay at home, assisted by a professional team. The results are appreciated by patients, relatives, doctors and hospitals in the Swedish county Ängelholm.

Text and photo: Per Simonsson, Medical Advisor, Siemens Healthineers

The mobile care team unloads their kit outside the old lady´s house, far into the Swedish county-side. I help them with one of the four bags, the one with the laboratory equipment. We are about to make one of the regular visits to the sick old woman.

She smiles and invites us into the living room. After talking to the doctor about her complaints, the nurse takes a venous blood sample and runs it on the epoc point-of-care instrument. We sit around the coffee table, waiting for the epoc to generate the results. The lady has a multitude of cardiac drugs and there has been continuous problems with her electrolytes. Now it is time to check if the latest changes in medication has had a positive effect. Soon the printer produces a slip of paper. The doctor examines the results, the electrolytes and the creatinine values. He nods.

"Yes, the results from the tests look good now," he tells the patient. They both nod and smile.

The lady is one of 36 patients continuously taken care of by the local mobile care team in Ängelholm, Sweden. She used to be a frequent visitor to the emergency department. Now she can stay at home, assisted by the professional team that is responsible for her advanced therapy. It was a long time since she had to go by ambulance in the middle of the night to the hospital. And the lady is happy. And so is the team, and the emergency department.

A few years ago the old lady would have to call the ambulance regularly and spend days at the hospital. She was frequently re-admitted. The treatment was not structured. Acute symptoms were cared for but not her whole medical situation.

One day her GP referred her to the mobile care team. She was a patient in need of their advanced yet decentralized care. A plan for her care was established, together with the lady, and plans for different possible actions were developed. What should be done in different situations? Who should be called, and when? This approach gave the lady – and the health care providers both in general and specialized medicine – a new tool, customized to the lady's need, based on solutions available in today's medicine.

Point-of-care a central tool in the new mobile care system

"It is indispensible," Marie Bladh says with emphasis as we discuss point-of-care in advanced home care.

"This is highly professional care for patients normally treated at the hospital. And then the doctors need the right tools to make correct decisions. On the spot, at the patient's home. There is no room for guessing."

Dr. Johan Anderberg, returning from a patient visit with epoc.

“We have to coordinate and communicate...”

Marie Bladh, Head of the home care team in Ängelholm, Sweden

Marie Bladh is head of the department. She is a spider in a complicated web of health care providers: specialized hospital care, general practice and community care. Making a patient-centered program in this network calls for new ideas and new ways of working. Getting out of the silo-thinking has been essential for the implementation and the success.

“We have to coordinate and communicate with all players,” says Marie Bladh.

Today the project is an established pillar in the care of the chronically ill patients, the ones for whom there is no curative treatment, the ones that demand constant interventions to minimize disability. And to keep quality of life as high as possible. At home, where the patient wants to be.

“We provide care for two groups of patients, the old with acute conditions and the ones with a continuous need for advanced medical treatment. And this can be done at the patients’ home, far from the over-crowded emergency department,” says Bladh.

In the few cases when hospital care is really needed, the patients can be admitted directly to the ward without passing the emergency department.

“The results are appreciated by patients, relatives, doctors and hospitals. This is something new. And you have to remember that these are the really seriously ill patients, many of them in their last year of life. A year they now can spend at home, not in hospital,” Marie Bladh says.

Visit 6-7 patients every day

Two mobile teams - one nurse and one doctor - each visit 6-7 patients every day. At the start of the treatment the visits may be weekly but as the care plan is implemented the visits become less frequent. The patients and the doctors by then know what to do. Treatment is optimized.

Each team is equipped with four bags with a multitude of tools for diagnosis and treatment. Apart from the epoc blood gas analyzer and a CRP instrument, they carry a bladder scanner for detecting urine bladder retention. They can also administer blood transfusions and intravenous antibiotics.

What do you want for the future?

“It’s all about IT,” Marie Bladh exclaims. “We want all results and all documentation from all sources to come together in one IT system. Now the epoc results have to be manually transferred to the IT system, and more importantly, we have three different IT systems, one in the hospital, one in general practice and one in community care. And they don’t communicate.”

With the clinical success of the project it is obvious that the challenge is in informatics. The multi-disciplinary team is in place, with high-end tools needed for advanced care, but the IT tools are lagging behind. They need to be interconnected, seamlessly, to live up to the needs of a new way of providing healthcare.

Inspire colleagues

The Ängelholm team is inspiring colleagues. A similar system is going to be implemented in the whole region of southern Sweden. Other regions are going in the same direction. Internationally this is a hot topic. There is no turning back. The focus on home care is essential.

“Otherwise we have to build more hospitals,” Marie Bladh states and adds with a smile: “Or install deck beds, with one patient on top of the other!”

As my talk with Marie Bladh comes to an end, the door opens. A team dressed in red coats just returns from the front. The cold winter air fills the corridor and they unload their bags. I ask Dr. Johan Anderberg for a short interview. He declines, there is a lot of work to be done, but he holds up the epoc that has just done its duty far into the countryside. I remember my own visit to the old lady’s living room, how we sat peacefully together, discussing how her life could be as good as possible. How I looked down on the epoc. How I realized that I was not only seeing a small hand-held medical device, but I was also experiencing the future of laboratory medicine. Right there, on a coffee table.

The home care team preparing for a patient visit. Mats Larsson, Siemens Healthineers, joins nurse Annika Fridfors and Dr. Viktor Lundblad.

Pioneers in the new field of medicine, home based care

The mobile care team in Ängelholm are pioneers in this new field of medicine. This is not just traditional home visits. This is a multi-professional and structured approach to treatment of some of the most frail and sick patients, the old, with multiple serious conditions, with a multitude of pharmacological treatments. You have to have at least four serious conditions and six drugs to be admitted to their care. The clinical outcome is excellent. The emergency admission rate for the patients under the team’s care has gone down by more than 90 %.

Read more about epoc here

More information about the topic, where there are potential and how the pitfalls are approached, is illustrated by a recent expert discussion in Clinical Chemistry (Parker ML et al. There’s no place like home: Exploring home-based, acute-level healthcare. Clin Chem 2018;64:1136-1142)

What is wrong, dear Zoey?

The two-year-old family dog Zoey, an active and avid Toller who loved to do agility with her best friend, appeared to be completely healthy until she got seriously ill the second day of christmas.

"We went straight to our local veterinary office where we got her examinated. As Zoey still had seizures when we got there, and the blood tests did not show signs of anything else, the assessment was that this was epilepsy," says Victoria Hamren. "The veterinarian referred us to further examinations after New Year, with medication and MRI as part of this."

A more accurate prognosis with MRI technology

Disease and damage to the central nervous system (CNS) can be difficult to diagnose as the nervous system is well protected by the skull and vertebrae. Blood samples do not always provide good enough answers, and an MRI of the head may be needed if you are looking for pathology in the brain and nervous system.

"With the use of MRI technology from Siemens Healthineers we can quickly answer whether it`s a tumor, see the size of it and where it is located," says Veterinarian and General Manager Halldor Skålnes at Anicura Jeløy Animal Hospital. "This makes it much easier to provide an accurate prognosis."

The animal owners travel from all parts of Norway to get their cat, dog or other small animal diagnosed or treated at the recognized animal hospital outside the city of Moss. Our four-legged family members have limited opportunities to communicate their pains and problems, and the owners are willing to do a lot to get a precise answer on what they could do to help.

"For the owner it`s important not to expose their animal to unnecessary intervention, and to get an accurate answer on what is wrong, before making a decision on what to do next," says radiographer Milena Licina.

An MRI examination may be relatively costly, but as this might avoid unnecessary operations and interventions, it can potentionally also save the owner both money and concern. The value of knowing that they have done everything they can for the four-legged family member is very important for the owners.

"With open intervention, there is always a risk, and by taking an MRI image of a knee joint, we can find out if there is a meniscus injury without opening," Skålnes explains.

"For the owner it`s important not to expose their animal to unnecessary intervention, and to get an accurate answer on what is wrong, before making a decision on what to do next."

Milena Licina, radiographer,
Anicura Jeløy Dyresykehus

Anicura Jeløy Animal Hospital has invested in a new MRI machine, MAGNETOM Amira 1.5 tesla, to give their patients the best possible diagnosis and treatment.

A tragedy for the family

Toller Zoey was a highly beloved dog who slept in the children's bed each night. Unfortunately, she got a new epileptic seizure just a week after the first, so there was no time to do any further examinations.

"When we got to the veterinary office again she had been without oxygen for about 40 minutes and nothing seemed to help. In consultation with the veterinarian, we decided to let her go," says Victoria. "What happened to Zoey was a tragedy for us and something the whole family took very hard."

Increasing demand

Anicura Jeløy Animal Hospital has given MRI examinations to dogs and cats for 12-13 years already, and is experiencing a steadily increasing demand. Several institutions now have concrete plans to start using MRI technology on animals, such as the Norwegian University of Life Science (NMBU).

"We are very pleased that other institutions are introducing this, because then the knowledge around MRI on animals will also get better," says Skålnes.

Zoey was a highly beloved dog who slept in the children's bed each night. It was a tragedy for the familiy to loose her.

Will ethics be lost when health care is taken over by AI?

by Tomas Kramar, Head of Sweden, Siemens Healthineers

Artificial intelligence's rapid introduction in almost every industry, such as the weapons industry, sport, media, the world of finance and the construction sector, is running at record speed. In many industries there are margins for error, but not where human beings are in the centre as with health care. Any AI failures will be nothing but a consequence of human shortcomings such as prestige, pride and fear. We must therefore continue to discuss AI and its ethical pitfalls.

More to read about AI? Click here

Everyone is currently talking about artificial intelligence (AI), but possibly without knowledge or understanding. It is therefore necessary to provide a brief definition. AI is a human product with the purpose of imitating human intelligence. Another slightly longer definition is that AI is a development of machines and systems that effectively perform tasks that normally require human intelligence. AI can practically not make any mistakes since it learns from its mistakes during "training" and refuses to be started until all mistakes are eliminated. Paradoxically, however, AI can learn incorrectly and thereby make mistakes, dependant on input and programming and the fact that it is humans who start the program, after validation. AI, like other technology, is neither bad nor good, it's up to us what we do with it. All technology is neutral, it is a tool to strengthen our own ability. AI is a tool, a mean to accomplish something, such as healthier people or a cleaner world.

Safety and prestige

The maintenance of high levels of safety in AI and machine learning requires constant updating of human competence, in medicine among other things. When new conditions and challenges arrive in health care, involving new illnesses or new treatment opportunities, the risk is that this competence is lacking. It is ethically important that AI does things correctly, in terms of safety, and that AI performs the correct tasks.

Prestige can be a stumbling block to the development of AI and can lead to a setback. There are conservative forces in health care that slow down the process of machines and artificial intelligence taking over the hospital's experienced care personnel's competence and even taking over their work. This is all about the fear of losing their right of existence. If the profession does not allow better care by going against the new technology in the form of AI, this might be considered unethical.

Information and humanity

If we imagine that a urologist sends his patient to an MRI examination for a suspected prostate cancer, then the urologist evaluates results related to the suspected diagnosis and nothing else. A 15 minute MRI scan with automatic AI based computations can deliver immensely more findings from the body's various organs. Valuable additional data can be passed on to the medical expertise. It is therefore possible to detect other diseases at an earlier stage and give the patient better living conditions and at the same time lower costs for hospitals. But the ethical question is whether the radiologist should send this unsolicited information to the appropriate medical expertise for the type of disease depicted.

From the perspective of information the requirement for data in order to develop AI is another interesting question of an ethical nature. Suppliers who want to develop AI do not have access to data, but the hospitals do. Can the hospitals sell this data? Can patients share or sell their own data? Who owns all the data generated by healthcare?

A successful introduction of AI into healthcare will give us opportunities to obtain a more accurate diagnosis and better proposal for therapy than doctors are able to provide currently. However, care and treatment will continue to need the human contact with its magic, intimacy and manual intervention that health care offers at present. Neither a digital doctor nor AI will be able to replace this. Being a human is not just about living a healthy life but also a good life. The ethical question is, of course, how far will it go and where is it is ethically right for AI to take over the manual intervention with humans?

Responsibility and scapegoats

Humans have always found it hard to admit to faults. In the middle ages a goat served as a scapegoat for various mistakes. In the future, AI will be the perfect scapegoat, there is not the slightest doubt about it. Judgements and decisions are made by someone other than a human being. The question of responsibility raises ethical issues. Can we blame faults on a machine, or is the machine owner responsible, or is it the programmer, the company or even the society that allows new technology? The ethical question of responsibility is as important as the introduction of driverless cars.

Economy and prioritisation

There are, of course, already ethical issues within the health system. One of the current topics is which patient should receive effective but expensive medicine? Since the most effective medicines have a high price tag and at the same time the resources are not endless, more distinctive horizontal priorities between individuals and patient groups will be required on an ongoing basis. Can we leave this prioritisation to algorithms by inputting principles of human values, principles of needs and principles of efficiency?

How should we enter the ethical principles for different cultures or the different economic conditions in for example a developing country? Currently AI is created by a very narrow group that probably share much of each other's background and outlook on life. How is AI democratised?

These are just a few ethical dilemmas that we need to be aware of and which we should constantly have on our agenda for discussion, so that we can take advantage of AI's amazing opportunities while avoiding its pitfalls.

If we can manage the ethical dilemmas in the right way, doctors, nurses and other nursing staff are facing an exciting future where, together with AI, they are able to deliver even more care, be even more present for their patients and reduce the risk of medical errors. Or what do you think?

Making Mammography More Comfortable for the Patient – and More Precise

Mammography can be a source of anxiety for the patient. In Denmark,one university hospital is putting great emphasis on making breast examinations more comfortable, while at the same time enabling more personalized care with improved diagnostic accuracy.

Text: Niels Anner | Photos: Robert Wengler

A quiet, friendly atmosphere pervades at the hospital. As to be expected, still many women who are cared for at the Department of Mammography at Odense University Hospital are nervous or even frightened, according to Radiographer Julie Hauge Andersen. Some patients find the compression of the breast during the examination extremely unpleasant, while others fear that the findings could indicate a malignant tumor. Hauge Andersen and her colleague Melika Khanzadeh know that good communication is key in these situations. They explain the examination to the patient and help them understand that the compression of the breast is crucial in order to obtain precise X-ray images. "We explain that the quality of the diagnosis depends on a very clear image," says Khanzadeh. While communication with the patients is vital, the department has also acquired new technology to help enhance the patient experience as well.

Full focus on the patient thanks to a simplified workflow

According to Hauge Andersen and Khanzadeh, they have already seen a number of improvements since the new MAMMOMAT Revelation system was installed. A simplified workflow and improved image quality have made the work of the radiography team easier. Faster results and a smooth transition from 2D mammography to 3D breast tomosynthesis have saved time, says Khanzadeh: "And that is time that we can spend on the patient and making sure the breast is correctly positioned." Optimizing the workflow thus not only provides benefits for the department as a whole, but also helps contribute to enhancing the patient experience.

Optimized compression adjusted to the individual breast

What is vitally important, the radiographers explain, is that the patients feel as comfortable as possible. The flexible height adjustment of the new system helps the facility to enable a more personalized and comfortable examination. Patients notice a big difference when it comes to breast compression, which many find uncomfortable. The new compression paddles with soft edges reduce the pressure on the muscles. «Many patients have told us that they noticed the difference right away,» says Khanzadeh. She adds that it is also easier to position the breast with the hand, as there is more room to remove the hand with the rounded paddles.

Patients appreciate the gentler compression that the system allows for. As soon as the paddle meets resistance, the compression slows down automatically and the system adjusts the pressure to the individual breast. This results in optimized image quality while avoiding unnecessary pressure. "We can also use the same compression paddle for 2D and 3D examinations,» explains Khanzadeh. "This results in a reduction of necessary steps and a more relaxed examination. And, because we are achieving optimal compression regardless of the patient or technician, we are able to further optimize our workflow."

"The tomosynthesis biopsy examination is extremely accurate and the workflow is easy."

Melika Khanzadeh, Radiographer, Odense University Hospital

More comfortable mammography screenings: Radiographer Melika Khanzadeh demonstrates the MAMMOMAT Revelation's patient-friendly design.

More flexible workflows reduce the number of hospital visits

Patient numbers are continually increasing at the hospital managed by the Danish public health system. "We have a high throughput of patients," says Senior Radiologist Lisbet Brønsro Larsen, MD. Every day, women with symptoms such as a lump in the breast are referred to the department for diagnosis. A variety of methods can be efficiently performed on the new system, including mammography, tomosynthesis, and biopsy, and are used to support an accurate diagnosis. This also helps the department in deciding about and scheduling further diagnostic examinations, such as ultrasound. "Especially the use of tomosynthesis will make our work processes more flexible in the future. And patients will not require as many hospital visits," explains Larsen.

Higher image quality at a reduced dose level

It seems entirely natural to the senior physician that the hospital should use the latest imaging technology. Larsen was already a front-runner over ten years ago when digital mammography had its breakthrough: "Of course, we want to offer our patients the best, most effective and gentlest examination, but we also want to contribute to the further development of clinical diagnostics. MAMMOMAT Revelation offers better image quality than all the previously used systems," Larsen says. The system acquires the tomosynthesis images by taking various projections in an angular range of 50°. As a result, the 3D images are sharper and more

"Especially the use of tomosynthesis will make our work processes more flexible in the future. And patients will not require as many hospital visits."

Lisbet Brønsro Larsen,
Senior Radiologist,Odense University Hospital

Senior Radiologist Lisbet Brønsro Larsen, MD, and Radiographer Melika Khanzadeh with the new MAMMOMAT Revelation scanner at Odense *University Hospital.

detailed, allowing the radiologist to see more lesions than possible with 2D. Furthermore, radiation dose can be reduced by up to 30 percent in 2D mammograms thanks to the software-based anti-scatter solution called PRIME Technology.

Integrated breast density assessment for personalized diagnosis

Once staff are completely familiar with the new system, the plan is to keep introducing additional solutions to further help customize workflows and enable more personalized examinations. Breast density, which is different in every woman,is one example. It is more challenging to image patients with dense breasts. Knowing the breast density can help plan further diagnostics, such as tomosynthesis. With the system, it is now possible to obtain breast density measurement automatically, directly on the acquisition workstation screen. This will help the hospital adapt its workflows. For patients with a high breast density, for example, they will perform tomosynthesis right away. In the past, the patient would have had to schedule another appointment. The hospital will soon adapt its policies accordingly. This development is an advantage for both patients and staff, saving time and providing a diagnosis sooner.

Advanced diagnostics in one system

For Lisbeth Brønsro Larsen, the increased diagnostic accuracy provided by tomosynthesis is a significant benefit. Thanks to the system's 50-degree wide angle, the facility can achieve a high depth resolution, allowing for lesions in dense breast tissue to be detected that are not seen on 2D mammography.

With the new system, Larsen's team can also perform biopsies under the guidance of tomosynthesis. This provides great benefit in biopsy targeting, especially when it comes to microcalcifications, which are often small and difficult to biopsy accurately. These services were not previously offered by the department, so patients needed a further appointment in another department, such as MRI. The tissue samples can also be scanned during the same biopsy procedure. With other systems, the tissues needed to be scanned at a different system, adding extra time to the examination. The radiologist and technician can stay with the patient now during the entire procedure and the time the breast is under compression can also be reduced. "The tomosynthesis biopsy examination is extremely accurate and the workflow is easy," says Melika Khanzadeh. "As biopsies can be very stressful for the patients, it is a great solution for us and it reduces the time under compression."

A further innovation for Larsen and her team is the possibility of contrast-enhanced X-ray imaging. She plans to carry out a study on functional imaging this fall with selected patients who are being treated for a tumor. The new technology will replace some MRI examinations in future so that patients no longer need a separate hospital visit, explains Larsen. These new multifunctional devices reduce patient waiting times with their associated anxiety and at the same time enable a more precise diagnosis.

Video interview about tomosynthesis with Prof. Sophia Zackrisson, Lund University, Sweden click here

New MRI center in Jyväskylä in Finland

Mehiläinen, a private healthcare provider in Finland, has been focusing on the growth and quality of its services in Central Finland. A new MRI center can cater all patients to achieve everything from orthopedic to neurological diagnoses. Mehiläinen decided to trust Siemens Healthineers' MRI technology with the new MAGNETOM Sempra.

Mehiläinen has seen growth in their hospital business and specialized orthopedic services have become a daily occurrence at their Jyväskylä branch. The MRI-center is part of a larger investment for Mehiläinen: Siemens Healthineers has also provided an MRI for their center in Pori as well, using the same equipment and concept to further benefit patient care.

"The MRI center improves our patient's experience by getting them the care they need – all under the same roof. Our patients appreciate the fact that we can now provide imaging services every day. Our patients expect quality service, and this is an integral part of providing that," says Mila Korhonen, the Director of the Jyväskylä unit at Mehiläinen.

Tight schedule and high standards

Mehiläinen was eager to get the center up and running as quickly as possible. This created challenges for both Mehiläinen and Siemens Healthineers. There's a lot to take into consideration when introducing an MRI to a new location. Everything needs to be planned out from the actual imaging room to the energy sources and air-conditioning. The end result was a well-executed project that got the MRI center up and running in schedule.

Siemens Healthineers Project Manager Kenneth Blomqvist credits cooperation for the successful project outcome: "These kinds of projects require seamless cooperation between us, the customer and subcontractors. In this case the main contractor fulfilled expectations and we were able to proceed as planned, with great results."

"The MRI center improves our patient's experience by getting them the care they need – all under the same roof."

Mila Korhonen, Director of the Jyväskylä unit at Mehiläinen

"In the end we were happy that we were able to get everything in place on time", adds Mila Korhonen.

Getting the MRI up and running

Part of the package is education and training for the MRI technicians that will be using the center on a daily basis. Ahti Nurmesjärvi, a MR technician with 22 years of experience says that the education process went smoothly. Siemens Healthineers provided an expert to go through the specifics of the new MRI and the operating system. "I felt that the training was thorough. It was good to have enough time for the training beforehand so that we didn't have to practice alongside patient care," says Nurmesjärvi.

Patient care at the forefront

The main reason for the new MRI center was, of course, patient experience. "We used to have a MRI-truck that serviced our patients. This new MRI and the opportunity to provide imaging services on a daily basis has really transformed the way we can deliver care. In case of, for example, a knee injury, we are able to get the patient into the office to see an orthopedic specialist almost right away and to provide necessary images to come up with a treatment plan in no time," says Korhonen.

Click here to read more about MR

Facts about Mehiläinen, a private healthcare provider in Finland

- Mehiläinen provides social and healthcare services with high quality and customer-oriented approach almost everywhere in Finland with over 100 years of experience.
- Services in over 440 different units and employs more than 18,800 professionals in healthcare and social care services around Finland.
- Mehiläinen provides all services from primary care to specialized medicine.
- Siemens Healthineers delivered a MAGNETOM Sempra to be used in all imaging needs in the Jyväskylä unit.

MR fingerprinting

A giant leap for precision medicine

Magnetic Resonance diagnostics is at the frontier of a paradigm shift. Until now, an MR image has been a mixture of weighted tissue properties, provided by sequential, repetitive data-acquisition with fixed parameters. Diagnostic evaluation has been purely qualitative, and highly dependent on system parameters. Magnetic Resonance Fingerprinting (MRF) makes it possible to glean quantitative information from scans that enable decisions based on digital tissue data, not visual impressions. The target anatomy can be described numerically instead of visually.

Magnetic Resonance Fingerprinting (MRF) uses quantitative information to generate a more precise understanding of a patient's condition. Quantitative MRF offers enormous potential to improve tissue differentiation and enable less invasive diagnostics. Based on reliable, absolute numbers, MRF data could increase objective comparisons in follow-up studies. Ultimately, aided by artificial intelligence (AI), quantitative measurements will lead to more personalized treatments. MR Fingerprinting is at the frontier of a new dimension in quantitative imaging.

To read more click here

Hemoglobin A1c test for diagnosing and monitoring diabetes now available on the Atellica Solution

Increased demand for diabetes testing is a challenge for clinical laboratories. The Atellica® CH Enzymatic Hemoglobin A1c (A1c_E) Assay is an easy-to-implement chemistry test, offering precise and accurate results for diabetic patient management. It is less prone to testing interference and greatly improves HbA1c testing throughput compared to traditional HPLC assays.

To read more click here

Parametric imaging: From research to clinical use

25 years of dedicated research has been translated into the clinical use of parametric imaging at one of Scandinavia's largest nuclear medicine departments in Aarhus University Hospital, Skejby, Denmark. We visited the department to learn about their experiences.

New technique allows complete disease profiling

Many different radiotracers have been researched for many years at the Nuclear Medicine Department in Skejby. In fact, the PET department started as a pure research department, but has been continuously supplemented by the clinic. Parametric imaging has been used for research purposes only in the past, since it was only possible to scan a limited area of the body with the scanners available on the market. But with the new techniques offered by Biograph Vison 600, the whole body can be scanned in one dynamic scan, making it possible to follow the radiotracer and thus get a more complete disease profile immediately.

"Biograph Vision 600 means we are able to use the technique in a clinical context, and to avoid the previously time-consuming procedures concerning blood sampling and processing. A parametric scan with Biograph Vision 600 automatically produces curves and data that tell how much tracer is absorbed into individual tissues, and that can be transformed into an integrated parametric image," explains Dr Lars Christian Gormsen, PhD.

Process

"A parametric scan takes 70 minutes. That's why every day we assess which of our first 4 patients is best suited to being completely silent for the 70 minutes the scan requires, as even very small movements can destroy the image," says Nuclear Medicine Technologist Helle Danielsen, and adds:

Medical Physicist, Ole Lajord Munk, PhD and Dr. Lars Christian Gormsen, PhD

"Biograph Vision 600 means we are able to use the technique in a clinical context, and to avoid the previously time-consuming procedures concerning blood sampling and processing."

Dr. Lars Christian Gormsen, MD, PhD, Aarhus University Hospital

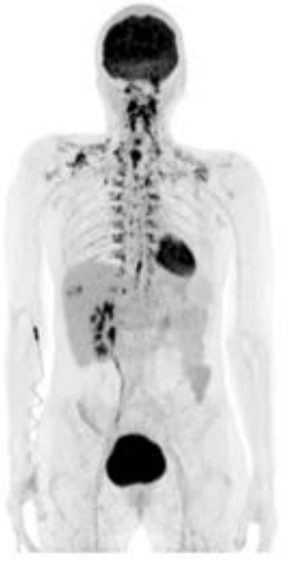
Parametric imaging

A diagnostic procedure in which an image of tracer uptake is derived mathematically, potentially enabling doctors to identify cancerous lesions or map such things as blood flow and cardiac activity.

PET scan with FDG (glucose)

The most commonly used radiotracer in PET examinations is a radioactive-tagged sugar substance called 18F-FDG (Flour-deoxyglucose). The body absorbs the radiotracer in the same way as sugar, and the radioactive element allows the distribution of the trace substance in the body to be followed.

Parametric DWB FDG PET



Standard static WB FDG PET

"The patient is injected with the radioactive tracer lying on the trolley, and we ensure that they are comfortable with the arms down their sides and by wedging the head comfortably. That's extra important, as we have to avoid movement. The scan is started and the process is then automatic. The scanner starts by recording for 6 minutes over the heart, giving us inlet curves. The whole body is then scanned. So far, we've scanned 35 patients in this way."

The department is in the middle of the process of setting up protocols for the new scanners. There are lots of new things to consider, but with its history as a research department, in which any idea is initially positively received, trying out and learning from new methods is a familiar process.

The new scanners have been well received by patients, who are particularly fond of *Flow Motion*, which provides a more comfortable scan due to the fluid movement of the trolley. This means fewer patient movements during scanning, and that the scanner can be set up exactly for the patient.

Research is the key

As part of its current research, the department wants to find out how to optimise the entire process and logistics for an examination, to be able to make it shorter. In particular, the progress of the radiotracer in the heart region compared to the amount of radiotracer in the blood, in order to be able to create a template for how patients with a certain age and cardiac function respond. In the long term, the goal is to be able to skip parts of the process.

"Personally, I would also really like to measure treatment response in chemotherapy, for example. We currently assess treatment responses visually, but I see a lot of potential in the use of parametric imaging in which we can accurately measure how much glucose the individual cancer process uses. That will allow us to determine threshold values for when there is an acceptable response," says Lars.

From SUV values to parametric imaging

"By measuring how much tracer flows to individual organs instead of using SUV values (correction of injected tracer in relation to patient size), we also avoid any variation if, for example, the injection value entered is incorrect due to retained liquid at the injection point. This is a big advantage!" says Medical Physicist Ole Lajord Munk, PhD.

Nuclear Medicine Technologist Helle Danielsen talks to the patient during examination

About the department

One of Scandinavia's largest Nuclear Medical Departments. 130 staff members and researchers cover a variety of research fields. The staff includes dedicated Physicists, Radiochemists, Clinical Researchers, Basic Scientists and Nuclear Medicine Technologists.

Daily clinical activities are focused on molecular imaging, mainly in oncology and cardiology, performing 30,000 patient examinations yearly.

Currently, more than 30 PET tracers are in active use at the department, and more than 100 have been tested over the last 25 years of research.

What's in it for the patient?

With the new generation of scanners, patients receive a lower dose of radioactive tracer, and scan time is reduced. The image quality is now so good that the setting of other parameters can be looked at. For example, reduce the amount of radioactive tracer or scan time and optimise an individual examination to the benefit of the patient. Compared to previous scanners, PET dose is reduced by 20 % and scan time is halved. These are two factors that otherwise normally play against each other.

"Due to the better noise/signal ratio from a parametric scan, we can gain an overview of several disease processes, as glucose absorbed is more prominent. This could trigger more studies as we increase the sensitivity of what we see, as is often the case with the introduction of new study procedures. But it gives the patient a quicker diagnosis, and ensures in the long term that the patient passes through the system correctly," says Lars.

Technology and innovation shape the future

The Nuclear Medicine Department at Skejby is a department where the technological fix works, and where they continually streamline the way of working. Investment in technology can pay. The theoretical foundation for optimising PET examinations is there, and engineering skills are constantly being enhanced.

"I believe that parametric imaging is a method that will be used for other types of radiotracers accumulated in tissues, and not just FDG. That will mean that a larger part of our patient groups can benefit from it. An example could be the use of PSMA tracer used in connection with prostate cancer, where we find it difficult to see very small lymph nodes using traditional scanning methods. Increased sensitivity here will allow the detection of very small lymph nodes and metastases at an early stage," Lars points out.

According to Helle, the future could also offer the development of new dedicated radiotracers. "Several cancer patient groups could benefit from this type of examination, and we can work towards personalised medicine. It's also possible to imagine that we could use one tracer for detection, add another, and treat immediately. That would let us see exactly where in the body treatment should be applied."

"Due to the better noise/signal ratio from a parametric scan, we can gain an overview of several disease processes, as glucose absorbed is more prominent."

Dr. Lars Christian Gormsen, MD, PhD, Aarhus University Hospital

Here's what the experts say about the accuracy of Biograph Vision

Move knowledge, not staff with remote scanning cockpit

Lucerne Cantonal Hospital (LUKS) in Switzerland is one of the first to virtually share in-house expertise across teams and sites with the new software *syngo* Virtual Cockpit. Even in times of staff shortage, they can offer more procedures at all your locations – because the experts are more available. With remote scanning assistance they can also achieve a higher level of standardization.

"The main challenges for our radiology network are to homogenize our examination protocols over all sites and to have adequate staffing at the right site at the right time. Syngo Virtual Cockpit allows us to distribute expert knowledgde to our remote sites and to relocate patients who are in need of advanced examinations to a site where a scanner is available," says Dr. med. Jürgen Fornaro Head of Computed Tomograhy at Lucerne Cantonal Hospital in Switzerland.

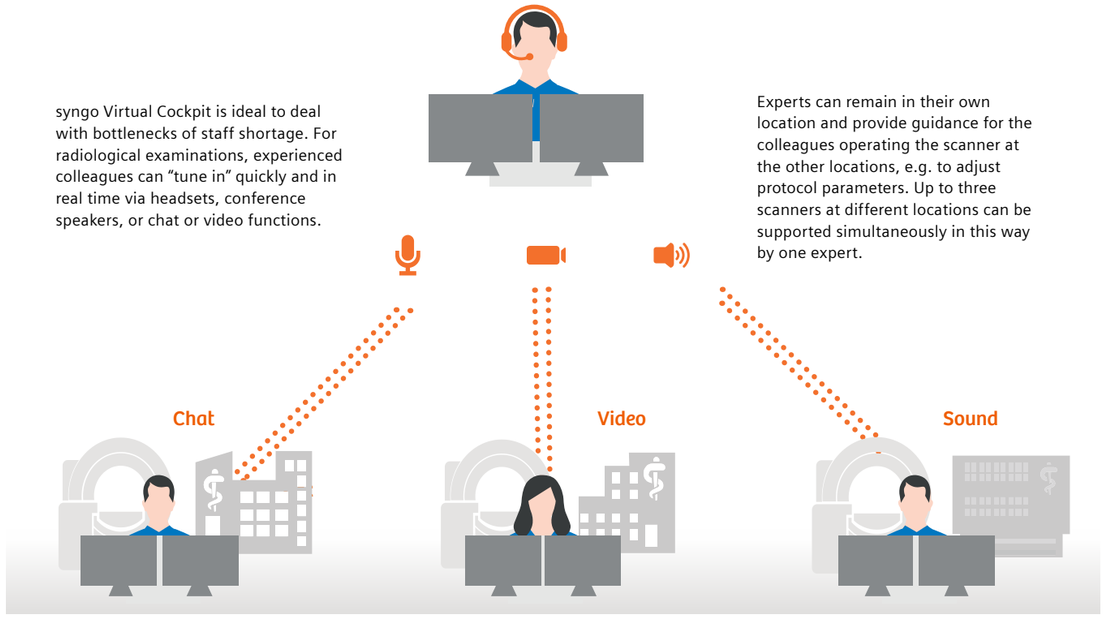
The software is also great for training purposes. Earlier the staff had to go to Lucerne to get trained, but now they can stay at their local hospital without travelling.

syngo Virtual Cockpit is now deployed at three sites and will be deployed to all the six hospitals in the region, starting with the CT-scanners. After that the plan is to extend *syngo* virtual cockpit to the MR-fleet.

"We will have less costs by not sending dedicated experts from one site to the other. We can also utilize our scanner fleet and the patient will not have to travel across the network to get a specialist examination. We gain more flexibility and our ultimate goal is to provide better healthcare for our population," says PD Dr. med. Justus Roos Head of Radiology and Nuclear Medicine.

4 situations when you'll need to know about remote scanning:

1. During routine examinations. You can always call on a colleague.
2. In cases of rare or advanced examinations, a remote expert can assist in protocol adjustment via chat and voice.
3. Due to vacation periods, illness or night shifts, personnel from other sites can fill in remotely assisting staff on site.
4. For training and education of staff.



Read more

With the help of syngo Virtual Cockpit six hospitals in Switzerland can work more effectively togheter and utilize their capaticity with one main hospital and five remote hospitals for a population of 800.000 inhabitants.

PD Dr. med. Justus Roos Head of Radiology and Nuclear Medicine and Dr. med. Jürgen Fornaro Head of Computed Tomography at Lucerne Cantonal Hospital can steer several sites at a time and increase the effiency even further with *syngo* Virtual cockpit.

The response from the Nordic customers has been fantastic during RSNA, ECR and Arab Health.

"*syngo* Virtual Cockpit helps you to share in-house expertise across teams and sites, in real time. With remote scanning assistance, you achieve a higher level of standardization with a higher quality output in the end. Whether it is about routine exams or advanced procedures where an expert is needed, your knowledge and experience are always right at hand. It is an ideal product to deal with bottlenecks of staff shortage. Just like cloning your most experience people!" says *syngo* Business Manager Christoffer Tjärnehov, Siemens Healthineers Sweden.

"It is just like cloning your most experienced people!"

Christoffer Tjärnehov, *syngo* Business Manager, Siemens Healthineers Sweden

Innovation news

Do you know eSieLink ™ for ultrasound?

We are continously developing our remote assistance services. With eSieLink Remote Assistance you can aquire support from one of our application specialists or service engineers in real time directly on your ultrasound screen via chat, voice- and/or video conversation. By remote assistance we can solve clinical or technical issues and provide support and guidance through the menus and features of the equipment. With this useful new functionality we can help you quickly, and give you a flexible and cost efficient service. Would you like to know more? Contact your local Customer Care Center.

Assays for measuring DOAC are now available

Siemens Healthineers has now supplemented the portfolio with assays for measuring DOACs. We can offer BIOPHEN™ DiXal kit, an anti-Xa chromogen method for quantification of direct factor Xa inhibitors (DiXaIs), from Hyphen BioMed for measuring of Apixaban, Rivaroxaban and Edoxaban.

DOACs, Direct Oral anticoagulants are clinically used to prevent and treat thrombotic disorders, like for instance stroke caused by atrial fibrillation and venous thromboembolism. These medicaments includes inhibitors of factor IIa, like Dabigatran and factor Xa, like Rivaroxaban, Apixaban and Edoxaban

The new oral anticoagulants are promoted as medicaments not requiring lab testing or monitoring. However, there is an agreement among haemostasis experts that certain situations require testing. Like for instance before surgery, accumulation due to renal dysfunction, acute bleeding of unknown causes and to monitor that the patient takes the medicaments as prescribed.

Oslo University Hospital will soon conduct analysis for measuring of DOACs with assays and instruments from Siemens Healthineers. The hospital is proceeding well with implementing of the new coagulation instruments, model Sysmex CS-5100.

"We are pleased with the training and would like to point out the great Norwegian training manuals, your patience and service", says Manager Marit Jansrud at Aker, Oslo university Hospital.

Read more about hemostasis here

Siemens Healthineers can offer assays for measuring of DOACs. INNOVANCE Dabigatran Assay is an anti-IIa chromogen method for quantification of direct factor IIa inhibitor Dabigatran.

Photo above: Marit Jansrud and Martin Arne Nilsen at Aker, Oslo University Hospital are pleased with the application training.

Photorealistic 3D visualization app for surgery planning

Siemens Healthineers will make its photorealistic 3D visualization technology Cinematic Rendering available as an app for the HoloLens 2 from Microsoft. Using a mixed-reality headset instead of viewing the clinical images on a 2D monitor gives surgeons a realistic 3D overview of the surgical area. This could make it easier to select the right operating room and strategy and thereby increase the accuracy of the surgery.

#Innovation

Innovation news

New perspectives in 3D with C-arm CIOS Spin in surgery

Finally it's here! Cios Spin is our latest innovation of mobile C-arms for intraoperative 3D-imaging. Cios Spin designed to meet the increasing demand of more minimal invasive surgery. It can help you improve outcomes and reduce operational costs and risks with new insights. The surgical outcome can be safeguarded to be able to perform intraoperative corrections to avoid postoperative complications. Automatic detection of screws in 3D is also supported.

Intraoperative 3D Imaging: More Precision and Reduced Surgical Revisions. Read the article

Intraoperative image support

Cios Spin enables precise intraoperative quality control based on dedicated 3D technologies for image guided orthopedic, trauma and spine surgery. With precise 3D visualization anatomical structures, implants, screws, and devices can clearly seen.

The image quality is exceptional thanks to Retina 3D scan technology, 16 cm x 16 cm x 16 cm volume, metal artifact reduction and iso-centric technology.

Cios Spin is built on a smart plug-and-play concept. For efficient and uninterrupted surgical workflows, Cios Spin comes with feature packages such as Easy 3D: easy to learn, easy to use, and easy to integrate into your surgical routine.

Screw scout provides automatic localization of screws in 3D where you can easily control if screws are places correctly.

New AI-powered platform in radiology

AI-Rad Companion is a new radiology tool based on AI. The software automates workflow processes and speeds up image interpreting.

AI-Rad Companion highlights, identifies and measures relevant anatomy and abnormal findings within radiology. Reports can also be done in a more simple way, faster and time can be saved. It is a vendor-neutral, multi-organ augmented reading solution. AI-Rad Companion **Chest CT** is the first application based on the new AI-Rad Companion platform. It is designed to help radiologists interpret images faster and more accurately.

"We use artificial intelligence to identify and measure findings on CT images of thorax. The software can differentiate between the various structures of the chest, highlight them individually, and mark and measure potential abnormalities. The software automatically turns the findings into a quantitative report," says Head of Communication Espen Mathisen in Siemens Healthineers.

AI-Pathway Companion is also recently introduced is a AI-based decision support tool. "t is new clinical decision support system based on artificial intelligence that supports physicians in making diagnostic and therapeutic decisions along the clinical pathway. AI-Pathway Companion is designed to help optimize the processes along clinical pathways and thus support personalized as well as standardized patient management," says Mathisen.

Video

Improved patient experience during MRI exams

Comfort, speed and a brand new entertainment system has now improved the exeperience of being in a MR scanner significantly for the patients.

Noisy and boring MRI examinations are now a thing of the past. With the revolutionary in-bore infotainment system Innovision patients can watch their favorite video during an MRI exam. Available for all 70-cm Open-Bore systems, the innovation reduces the anxiety that can result in motion artifacts or even mean that the exam has to be stopped. Innovision features a wide screen monitor to create an immersive visual experience. It makes the inside of the scanner seem virtually larger and also displays the remaining scan time. Both can be beneficial to patients suffering from claustrophobia and anxiety. A specially designed pillow transmits clear audio signals and attenuates scanner noise substantially.

Read more

Innovation news

"I really appreciate the e-learning. Everyone working on the instruments at our lab use PEP and get standardized training. Everybody sees and listens to the same content and nothing is forgotten. This way our employees are well prepared for working on the instrument in the daily routine."

Beathe Mittet, Bioengineer,
Vestre Viken HF, Bærum sykehus

PEPconnect - learn 24/7

Our innovative e-learning solution PEPconnect provide you with the knowledge you need when it fits your schedule.

E-learning is a smart connection to knowledge for everyone, catering to all roles and levels of experience. You can aquire the knowledge in a peaceful environment away from the busy daily routine. Especially in the introduction phase, this tool is very useful for new employees.

Advantages:
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Instruments and modules available:
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- Advanced Visualization (syngo) / Digital ecosystem
- CT / MR / Mammography / X-ray
- Angiography / Mobile C-arms / Nexaris
- Ultrasound / Radiation Theraphy / Nuclear medicine

Explore PEPconnect

New angiography system Artis icono

At the European Congress of Radiology (ECR) Siemens Healthineers introduced the Artis icono biplane, an angiography system with special functions for neuroradiology. An outstanding feature of the new system is improved 2D and 3D imaging, improving image quality and reducing the radiation dose required.

The C-arm can perform new movement patterns and the areas of the cranial base and skull cap can now be represented with practically no artifacts in a 3D visualization.

"Improving visualization of bleedings that occur in the cranial area can make it possible to skip prior conventional imaging for certain patients with a suspected stroke – which means that these patients can be taken directly to the angio lab for diagnosis and treatment, shortening the lead time before the vascular occlusion is removed," says Michael Scheuering, Head of Interventional Radiology at Siemens Healthineers.

Video

Any time saved in treating strokes can mean the difference between living independently and living in a wheelchair. Artis icono is therefore expanding precision medicine to advance therapy outcomes

MRI safety risks - what can happen, and why does it happen?

Text: Markus Fahlström, Akademiska Sjukhuset in Uppsala

I and two colleagues attended Dr. Kanal's MRI Safety Seminar in Copenhagen, 2018. At Akademiska Sjukhuset working to identify risks and subsequent possible complications for a patient with a given implant is an important tool in our risk-to-benefit assessment. However, at the seminar, addressing the same issue with a similar approach, "the three bucket analysis", was a complete eye-opener and proof that we were not heading the wrong direction. Dr Kanal's thoughts and expertise on the subject was a positive experience and we were filled with new knowledge to implement at home and to improve our clinical workflow regarding patient safety and deploy it in the MR environment.

The seminar is highly recommended and focuses on "what can happen, and why does it happen" giving the audience the knowledge to perform a risk-to-benefit assessment and the tool to minimize the risk for the patient. This is an important aspect since we can not only minimize the risk for the patient, but we can also minimize the risk of denying a patient a MR examination of high clinical value. Dr Kanal delivers his message with humour and clarity, despite long days and a lot of information, his commitment will give you the extra boost.

"...giving the audience the knowledge to perform a risk-to-benefit assessment and the tool to minimize the risk for the patient."

Get a learning boost at the MRI Safety Seminar

10-11 September, Uppsala, Sweden. Hosted by the renowned expert Dr. Emanuael Kanal

Understanding the principles underlying potential MRI safety issues and then applying them to clinical decision making are the main objectives of this course.

- Review of the basic principles behind the potential security areas affected by MR image processing and magnetic resonance environment.
- Clinical decision processing for risk assessment regarding MR imaging of various (active and passive) implants.
- Formalization of the decision making process with a (distributed) clinical MR Safety Implant Risk Assessment decision tree.

More information

Siemens Healthineers enables healthcare providers worldwide to increase value by empowering them on their journey towards expanding precision medicine, transforming care delivery, improving patient experience and digitalizing healthcare. A leader in medical technology, Siemens Healthineers is constantly innovating its portfolio of products and services in its core areas of diagnostic and therapeutic imaging and in laboratory diagnostics and molecular medicine. Siemens Healthineers is also actively developing its digital health services and enterprise services.

In fiscal 2018, which ended on September 30, 2018, Siemens Healthineers generated revenue of €13.4 billion and adjusted profit of €2.3 billion and has about 50,000 employees worldwide. Further information is available at www.siemens-healthineers.com

In the Nordic and Baltic countries Siemens Healthineers has sales and service personnel close to our local customers. With approx. 550 employees across the region, we strive to be a trusted partner for healthcare providers, with in-depth knowledge on their specific challenges and opportunities.

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