



# NEWSLETTER



The Helicopter platform at St. Olavs hospital  
Photo: Gunnar Gjeldnes

MIDT, new national research center at St. Olav's hospital	2
Decon-X documents the effect of disinfection robot in the NorTrials project	3
The Minister of Health opened the operating room of the future	4
Training of surgeons in keyhole surgery and endoscopy	6

## MIDT, new national research center at St. Olav's hospital

During 2023, the research department and the various national competence centers located at St. Olav's hospital have undergone major organizational changes.

In dialogue meetings with the Ministry of Health and Care, the Directorate of Health and Central Norway Health and later with dialogue meetings with each of the services, it was decided to bring these together under one umbrella - MIDT, National Research Center for Minimally Invasive and Image-Assisted Diagnostics and Treatment.

The merger of the three national competence centers National Center for Advanced Laparoscopic Surgery (NSALK), Functional MRI (fMRI) and National competence service for Ultrasound and Image-Guided Treatment (USIGT) will provide unique opportunities to further develop the collaboration between clinicians and technologists at St. Olav's hospital, NTNU and SINTEF.

The process has gone on for several years and with a mid-term evaluation and a consultations round regarding the new organization of the national services.

The newsletter we publish 2-4 times a year will from now on contain articles and reports of projects from the overall activity at this centre, including activity related to NorMIT's infrastructure as before.

We hope that you as a reader will continue to follow what we are doing, and we are very happy to receive feedback and assist you in your research activities and product development for the best for our patients.

Good reading!



Thomas Langø, chief researcher, medical technology, Operating Room of the Future, St. Olav's hospital



Jan Gunnar Skogås, managing director, Operating Room of the Future, St. Olav's hospital

## Decon-X documents the effect of disinfection robot in the NorTrials project



To the left, founder and general manager of Decon-X, Bjørn Platou, to the right, engineer Frode Lorentzen

**NorTrials was created to simplify and strengthen the collaboration between the pharmaceutical/medical equipment industry and Norwegian testing environments. NorTrial's Feasibility Portal will function as "One way in" for companies and development environments where requests are forwarded to hospitals that wish to carry out clinical studies within the area in question.**

St. Olav's hospital in Trondheim has been given a national responsibility for taking on tasks to coordinate the development, testing and testing of medical equipment for industrial partners.

Decon-X states that they have accumulated an extensive list of external test reports that substantiate the effectiveness of their disinfection method. However, they have previously had to apply outside Norway to have such laboratory tests carried out. Through the NorTrials collaboration with Fremtidens-Operasjonsrom (FOR), they have now received help from the Faculty of Medicine and Health Sciences at NTNU to test against viruses. This has made it possible for them to meet all the requirements set out in the EN17272 standard for use in medical areas

This is the first time a Norwegian-developed disinfection technology is tested according to this new EN 17272 standard for airborne disinfection methods. The standard differs from other standards in that it also sets requirements for how well the disinfection method reaches all the nooks and cran-

nies in the room.

The robot is produced at Hønefoss. Founder and managing director Bjørn Platou emphasizes that this is a modern disinfection robot that fills the room with a dry disinfection mist of hydrogen peroxide while continuously monitoring the effectiveness of the process. It is possible for users to follow the process online, and a detailed disinfection report is automatically sent out via email and SMS

Adenoviruses are difficult to quantify in infection models in the laboratory. Professor Magnar Bjørås and colleagues at the Department of Clinical and Molecular Medicine therefore had to develop a new method in order to meet the new requirements. Bjørås states that he can well understand why it has presented challenges for established laboratories to carry out the tests. As a result of this work, Bjørås has created a separate company that can take on similar assignments in the future.

Decon-X has several Norwegian partners, Nofima, NMBU, TOPRO, Dateg, MedicalTeknikk, Aven, and say they are happy and proud to be able to continue development and production in Norway. They express extra joy at also having established this important collaboration through St. Olav's hospital, NorTrials MU with FOR



Professor Magnar Bjørås and fellow Erlend Ravlo prepare for testing

## The Minister of Health opened the operating room of the future



Photo: Lars Bugge Aarset, NTNU

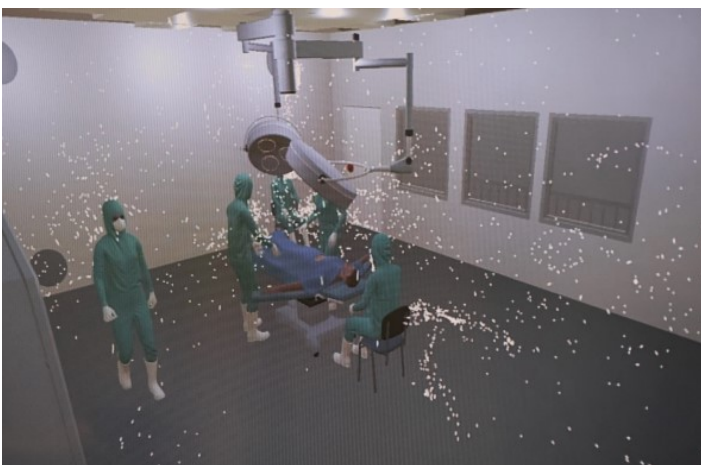
**Norconsult, NTNU and St. Olavs Hospital will reduce dangerous infections caused by airborne and contactborne infection in connection with surgical procedures in hospitals. Today, Minister of Health Ingvild Kjerkol opened what could be the operating rooms of the future.**

In the worst case, the consequence of hospital infections is death, but other consequences include large costs due to more hospitalisation days, the need for reoperation and an increased need for antibiotics. Cheering on the initiative

"Hospital infections are the most common complications in the health service, and unfortunately they happen very often. I am therefore pleased that Norconsult, St. Olavs hospital, NTNU and partners want to help reduce this type of infection. It is also very exciting and important to see how we can use new technology such as XR and machine learning to develop and improve our health service, and solve specific challenges we face as a community. I support this type of initiative, says Ingvild Kjerkol, Minister of Health and Care Services.

The surgical lab will be used to research how the risk of such infections can be reduced through the [POSI-red project](#).

In this project there are many good minds who have come together at NTNU, St. Olavs Hospital and Norconsult. The good cooperation is a strength we will continue to build on. Because collaboration brings results. It is also appropriate to thank the Research Council of Norway and Norconsult for funding the lab," says NTNU Rector Anne Borg.



Real-time digitization of people and equipment in the operating room showing particle flows. Photo: Lars Bugge Aarset, NTNU

This work is very important. The project is in many ways just beginning, but I would still like to thank everyone who is involved and contributes, including our own employees. Their knowledge and expertise are the most important tool in this project," says Egil Hogna, CEO of Norconsult, who is leading the project.

### Augmented reality

The laboratory used in the project is designed as an operating room, with technology and equipment that makes it possible to visualize ventilation flows and particles in the air, as well as stereo cameras that register the movement pattern of healthcare personnel. An XR (augmented reality) tool is being built that captures the interaction between the movements of healthcare personnel, virtual air flows "and the distribution of particles in space.

### Reduces the risk of infection with a ventilation lock

An important part of the solution is to eliminate air contamination from outside the operating room. This has been solved by designing and building a special lock, which the operations team must go through to enter the operating theatre. They must then pass a high-speed air stream, which prevents particles from accompanying staff into the lock and further into the operating room. There are mainly four sources of infection that can cause post-operative infections in an operating room, namely the patients themselves, operating theatre personnel, instruments and airborne infection that accompanies the staff. This ventilation lock reduces the risk of infection from outside the room.



During the opening, the minister and the other participants were given a thorough review of the project, as well as a demonstration of the laboratory where a surgical team from St. Olav's Hospital carried out a simulated operation. Photo: Lars Bugge Aarset, NTNU



## Educational activity

### Training of surgeons in keyhole surgery and endoscopy

*The newly established research and education centre, MiDT, trains several hundred young doctors every year. The courses vary in content and theme, but are often characterized by a large proportion of practical exercises. These vary between the use of different types of simulators, simulation with organs from animals or surgery on pigs. The courses are evaluated after completion so that the centre can adjust and improve the learning activity continuously. In addition to this, the centre have research activities, preferably in close collaboration with the course participants. In 2016, MiDT laparoscopy was accredited in NASCE - The Network for Accredited Skills Centers in Europe - and is still the only center in Norway with this seal of approval.*

Through the education towards becoming a specialist, several courses are needed to achieve the necessary skills. At MiDT's skills lab for laparoscopic education, participants from all over Norway are trained in basic laparoscopy, advanced laparoscopy, hernia surgery and therapeutic endoscopy and more.

The skills lab is well equipped with Virtual reality (VR) simulators for laparoscopy and endoscopy. In addition, the centre has several organ simulators and access to an animal lab (surgery on pigs) in adjacent premises. There are analogue boxes that are used to train basic eye-hand coordination during laparoscopy.

Each course have defined learning objectives that must be covered during the course. The courses end with a course exam, either practical and/or theoretical.

If a participant does not meet the requirements for a course certificate, the course management contacts the participant's supervisor to set up a training plan for the next few weeks. Course certificates will be issued when the candidates achieves given criteria.

Over the years, MiDT has established a good cooperation with experienced instructors and lecturers in several fields: gastrointestinal surgery/ gastroenterology, urology, anesthesia, gynecology, thoracic surgery and more. Here, other health regions are also involved to contribute on the lecture/instructor side. By having instructors who are closely involved in a training situation, the value of the courses increases considerably. This is clearly shown in the feedback from the courses.



In addition to the larger courses, MiDT works together with the different clinics/specialties at the hospital, for training in relevant areas. This could for example be for gynaecologists, urologists, pulmonologists and nurses.

The education centre is a mainstay within the surgical education for doctors in specialization and has a close dialogue both with the Norwegian Medical Association and the Regional Educational Centers, to meet the needs for education.



All photos: Hilde Merete Klungerbo

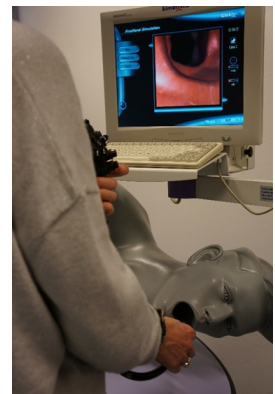
MiDT is also co-organizer of a separate master's course in obesity and health, together with the university (NTNU).

In 2023, MiDT was one of the organizers of a major national network conference in medical simulation at St. Olav's hospital. In this way, knowledge about surgical training/simulation was put on the agenda.

The educational centre also has an important role as an adviser to other hospitals when it comes to invest in simulators for their own doctors. By gaining knowledge about which simulators provide the best training effect, one can avoid investing in expensive simulators on an already tight hospital budget. The centre has also developed its own simulator setups for practical exercises that work well for training purposes.

In recent years, MiDT has established a good cooperation with different surgical equipment companies, regarding quality assurance when using laparoscopic instruments. The skills centre have arranged several workshops with practical training on simulators and/or pigs in relation to this.

In recent years, over 400 doctors have visited the education centre per year (with the exception of the pandemic years) in connection with courses, seminars or other learning activities. We are proud that they seem to enjoy themselves at MiDT's skills lab, that the learning methods seem activating, and that the courses stimulate for further learning.



On 25 February 2016, the National Competence Service for Advanced Laparoscopic Surgery was accredited in "the Network for Accredited Skills Centers in Europe" (NASCE). The competence service is the only skills lab with this approval in Norway.


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