OSLO UNIVERSITY HOSPITAL

Comprehensive Cancer Centre

BIENNIAL REPORT 22/23

Oslo University Hospital

Comprehensive Cancer Centre (OUS CCC)

OECI COMPREHENSIVE Cancer Centre

UNIVERSITY OF OSLO

Oslo University Hospital Comprehensive Cancer Centre

As the first cancer centre in Norway and the second in Scandinavia, the European Organisation of Cancer Institutes designated Oslo University Hospital as a Comprehensive Cancer Centre in 2017. In April this year, we achieved a re-accreditation for a next five-year period until April 2028. During this period, the importance of a CCC has been recognised at the highest political level within EU and is part of the EU Commissions "Europe Beating Cancer Plan". The Flagship no 5 states that The Commission will establish, by 2025, an EU Network linking recognised National Comprehensive Cancer Centres in every Member State and that the Cancer Plan aims to ensure that 90% of eligible patients have access to such centres by 2030. This is a high ambition and to ensure the implementation of the goals in EBCP the Commission has defined different actions. OUS CCC is strongly involved in these processes though the Joint Actions Jane and CraNE and the planning of the follow-up implementation projects.

As part of the re-accreditation process, the OUS Cancer Strategy from 2016 was revised. The 2022-26 OUS Cancer strategy is presented in the current report and we will develop bi-annual action plans based on the strategy and for the first year integrated with the improvement plan based on the OECI audit report.

A major task for the OUS CCC is the building of a clinical and proton therapy building at The Radium Hospital. The current plan is to start up with clinical activity in early May next year and to move out from the current buildings in September. The first patient to be treated with proton therapy is planned in December. As part of the future concept for The Radium Hospital we will establish three diagnosis-based centres, for breast, prostate and gynaecological cancer. That means that all diagnostic, clinical and research activity is localised at the same campus in OUS to facilitate coordination and quality improvement in care, research, integration of research and care and education and for our patients the concept will mean "one entrance".

OUS CCC involvement in Europe is strong. In addition to the involvement in organisational processes, we currently lead two major EU projects, PrimeRose on precision cancer medicine including more than 20 University Hospitals across Europe and MyPath on patients centred care including 15 partners and 9 cancers centers in Europa.

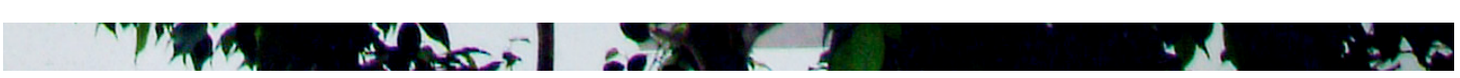
The digital development with primary structured data in the different clinical registries gives opportunities to use real-world data for secondary use for research, quality improvement or centre governance. OUS has developed an in-house data-warehouse solution and reports on the cancer activity on a monthly basis. In addition, we utilize this data-warehouse solution in the DigiOne project sharing standardised core clinical data between seven leading cancer centres, a tool of potential major importance in the era of precision oncology.

To conclude, OUS CCC continues to deliver for our patients, in research and at the regional, national, and European level. The importance of CCC has never been stronger. We have as you will read from this report, achieved on several arenas, but there are important challenges where improvement is needed. However, the CCC structure and the CCC governance give capacity to address and solve these issues.

Prof. Sigbjørn Smeland MD
Head, Division of Cancer Medicine
Chair, OUS CCC Board

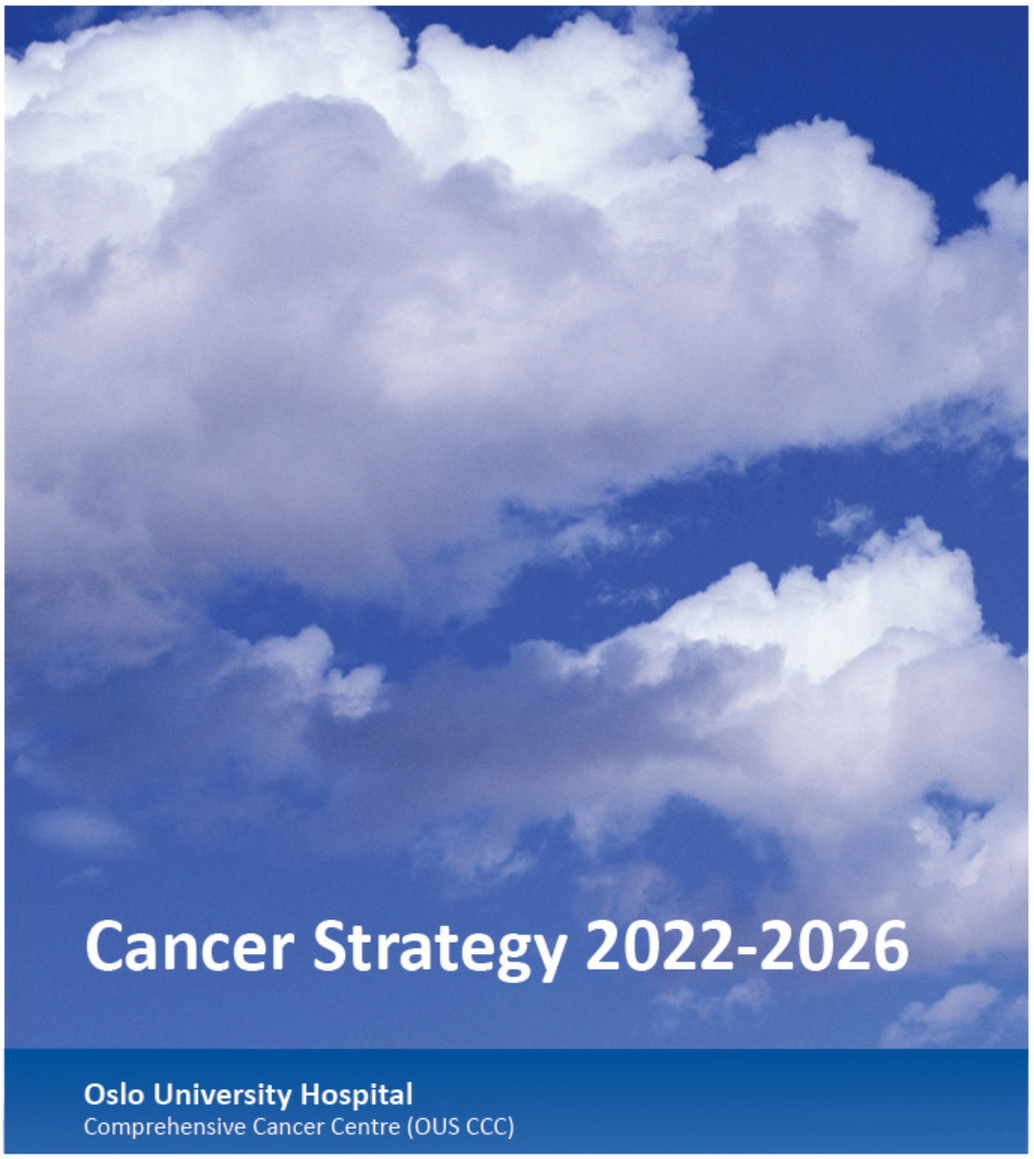
Content

OUS CCC



Oslo University Hospital

Comprehensive Cancer Centre



Cancer Strategy 2022-2026

Oslo University Hospital
Comprehensive Cancer Centre (OUS CCC)

OECI Comprehensive Cancer Centre

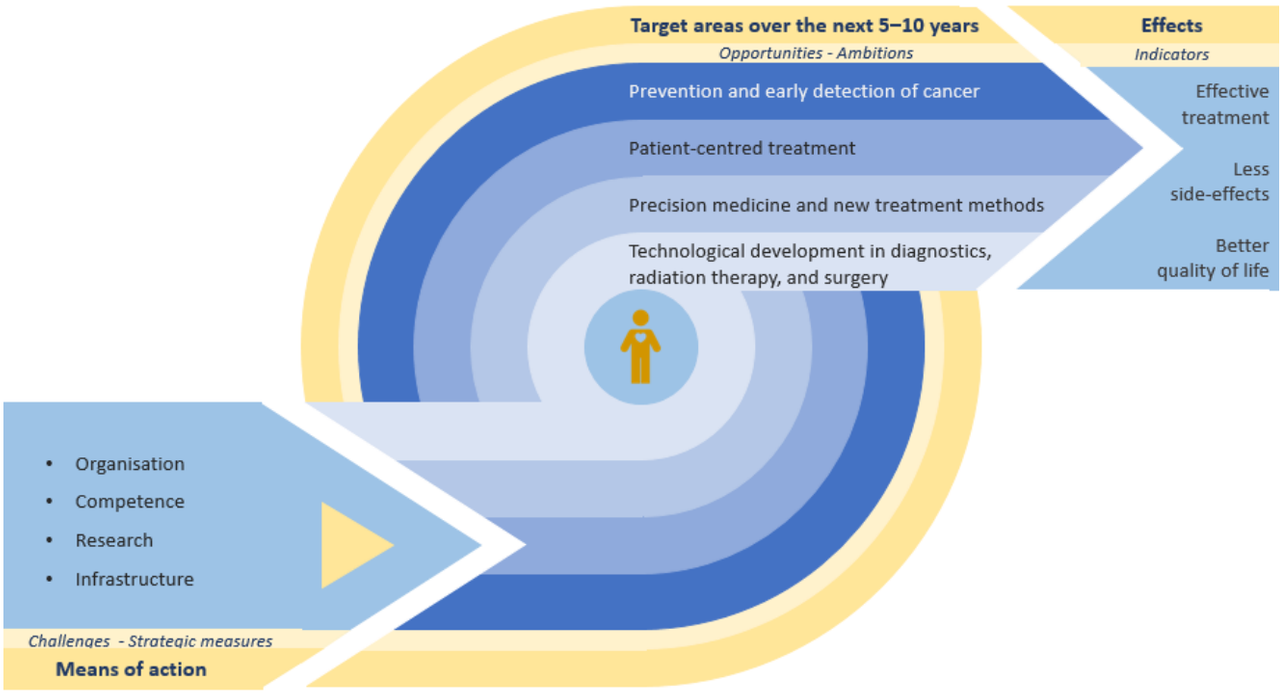
UiO : University of Oslo

A New Cancer Strategy for OUS CCC

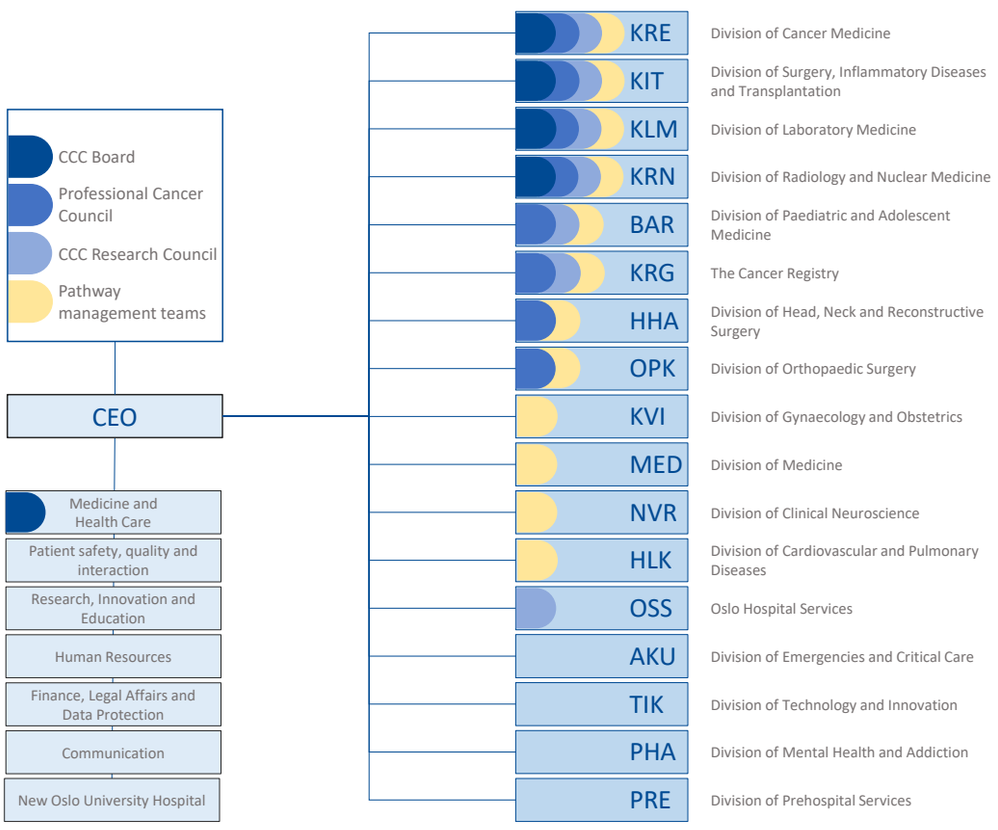
The overall perspective in this strategy is simple: Living longer and better! The figure that has been called “the spin” with the patient in the centre expresses the overall story in the strategy behind this perspective. It also shows the dynamics between the effects we want to achieve, our target areas for the upcoming years, and the more general means of action. The effects are expressed through measurable indicators. We do not have all the numbers today, but they will be part of the future development. We may add more indicators under way. Our developmental ambitions are grouped into four target areas, where the opportunities on which they are based are also expressed. Fulfilling the ambitions requires strategic measures in several of the more generic areas regarding means of actions. The strategic measures we want to take in these areas are identified and so are the challenges these measures will face. This construction of the strategy causes certain themes to be represented in both ambitions and under the means of action – in the first as an opportunity that should be utilized and in the second as a part of strategic measures to achieve these ambitions.

The narrative in this strategy centres around two dimensions. The first dimension focuses on creating greater accuracy in everything that is done throughout the entire cancer trajectory. This implies two lines of development. One line of development is related to biological and technological advances (including information and communications technology) and the tools for developing and using this new knowledge in tumour-targeted treatment. The second line of development towards accuracy is related to the patients’ personal needs and wishes with development of technology and methodology for adapting communication, symptom-oriented treatment and follow-up. This is called patient-centred treatment.

The second dimension looks at the phases of the patient pathway in which the efforts must be particularly enhanced. Many initiatives and strategic measures that are launched aim to have an effect along the entire timeline, but with the overall perspective, living longer and better, the extremes of the timeline become particularly important. One of them is new knowledge and new methods aimed at prevention and early detection of cancer. The focus on the other end of the timeline is about using knowledge to improve the lives of people with advanced disease and short life expectancy or late effects after cancer treatment.



OUS Management Structure



Pathway Management Teams

There are 23 pathway management teams in OUS. These consist of professionals from the disciplines involved within the cancer pathways, often a surgeon, oncologist, radiologist, pathologist as well as patient pathway coordinators from the different departments.

The most important work areas include:

- Patient logistics and pathway
- Multidisciplinary team meetings
- Integration of clinical research
- Quality improvement
- Documentation

Patient Involvement

Enhancing the patient influence in cancer care and research, is one of nine focused action points resulting from our CCC accreditation process in 2023. When we were first accredited in 2017, we considered ourselves to be a pioneer in this field. However, during our last accreditation we had to admit that we do not stay as a fore front runner without extending the ambitions. One of our active patient representatives are here describing how patient involvement is practiced and further developed not least in relation to research.

User Participation

Espen Stang

Users, defined as patients, their family and next to kin, are the major “customers” of OUS CCC. User representation, and most of all, user participation, are thus very important. The Division of Cancer Medicine has a user board which meet regularly with head of the division, Sigbjørn Smeland. The board consists of three members with long experience as user representatives and as peers for cancer patients. At the meetings issues raised by the board, or by the management of the division, are discussed and the users are informed and updated about the current and future status of the division. An important issue has been, and is, the building and organization of a new Oslo University Hospital. Users have participated in committees dealing with all from design of patient rooms to organization the patient’s clinical path. Defined pathways for cancer patients into the hospital were set several years ago. New, however, is the establishment of patient pathways home, meaning set lines for how transfer out of the hospital and follow up outside the hospital is organized. This includes challenges both to the hospital and to the local health authorities. Likewise does the future health care which to a much larger extent will be grounded on home-based treatment and digital communication. It is important that this will be to the benefit, and not a burden, to the users. These are issues currently discussed by the user board. We feel we are well informed, our views are listened to and taken into consideration.

User participation is also important with respect to research and a user representative is member of the OUS CCC Research Council. To get an overview of current user participation, the Research Council sent a questionary to all research group leaders. The response was good, a majority of the leaders responded. Most researchers know the necessity of user participation, but it often comes into mind at a late stage of the planning. User representation appears to be well established in clinical and translational research, but less well in basic research. A reason for the later may be that user participation in basic research is hard to define, both for researchers and users. A better coursing of both researchers and users with respect to user participation was thus asked for. With respect to this it should be noted that some of our user representatives are members of a Norwegian Cancer Society user group which deals with guiding related to user participation. Several institutes and research group constellations, among others the Institute for Cancer Genetics and Informatics, the Cancer Registry, CanCell, and most recently the Department of Experimental Cancer Treatment, have established user panels where users are informed about, and discuss, ongoing and planned research. It is, however, important that users participate to an even larger extent than today, directly on each specific research project. Our overall conclusion is that user participation is well established and included within the OUS CCC.

CCC Board

The CCC board contributes to strengthening the line managements' power of action across organisational divides and where activities are located. This is strived for by strengthening the overall ability to coordinate work with operational challenges and the development and implementation of the cancer strategy. The work includes diagnostics, treatment, research, care, and rehabilitation.

Main focus areas in 2022-23:

- Patient logistics and pathway
- Multidisciplinary team meetings
- Integration of clinical research
- Quality and activity indicators, analysis and data dashboard
- Precision cancer medicine
- Cancer survivorship
- Organizational topics related to cancer care
- Collaboration with other hospitals in the region
- Collaboration in a Nordic and European framework
- Revised cancer strategy and CCC accreditation process

CCC Board

- Prof. Sigbjørn Smeland MD PhD, Head, Division of Cancer Medicine (Chair)
- Assoc. Prof. Morten Tandberg Eriksen MD PhD, Head, Division of Surgery, Inflammatory diseases and Transplantation
- Prof. Åslaug Helland MD PhD, Head of Research, Division of Cancer
- Eli Gunhild By, CCC Quality director
- Prof. Andreas Matussek MD PhD, Head, Division of Laboratory Medicine
- Paulina Due-Tønnessen MD PhD, Head, Division of Radiology and Nuclear Medicine
- Hilde Myhren MD PhD, Director of Medicine
- Prof. Stein Kaasa MD PhD, Head, Department of Oncology
- Elin Henriksen, Head, Department of Gastro- and Paediatric Surgery
- Per Magnus Mæhle, Secretary, Division of Cancer Medicine

Professional Cancer Council

- *CCC Board*
- Prof. Giske Ursin MD PhD, Director, The Cancer Registry of Norway
- Prof. Geir Tjønnfjord MD PhD, Head, Department of Haematology
- Prof. Emeritus Gunnar Sæter MD PhD, Senior Advisor, Division of Cancer Medicine
- Tove Nakken, Patient representative
- Erik Rokkones MD PhD, Head, Department of Gynaecological Cancer
- Assoc. Prof. Bodil Bjerkehagen MD PhD, Head, Department of Pathology
- Prof. Kjetil Taskén MD PhD, Head, Institute for Cancer Research
- Anne-Grethe Bechensteen MD PhD, Head, Department of Paediatric Oncology and Haematology
- Ole-Jacob Norum MD PhD, Head, Department of Cancer Orthopaedics
- Torill Krøvel, Senior advisor, Staff Division of Surgery, Inflammatory diseases and Transplantation
- Bjørn Wølstad-Knudsen, Union representative, Norwegian Union of Municipal and General Employees
- Anne Marit Wang Førland MD, Union representative, The Norwegian Medical Association
- Svein Erik Urstrømmen, Union representative, Norwegian Nurses Organisation

CCC Research Council

The CCC Research Council at OUS aims at contributing to comprehensive, optimal use and further development of the OUS potential within the field of cancer research. The scope of the Research Council includes clinical research, translation-research, foundation research and research-based innovation. The Research Council at OUS will work based on specific tasks from the CCC Board at OUS, but have several projects areas with an independent initiative.

Main focus areas in 2022-23:

- Inclusion in clinical studies
- Time allocated to clinical research
- Precision Cancer Medicine
- Translational studies
- Biobank

CCC Research Council

- Prof. Åslaug Helland MD PhD, Head of Research, Division of Cancer Medicine (Chair)
- Prof. Knut Jørgen Labori MD PhD, Group leader, Division of Surgery, Inflammatory diseases and Transplantation
- Prof. Kristin Bjordal MD PhD, Head, Department of Research Support, Oslo Hospital Services
- Prof. Kjetil Taskén MD PhD, Head, Institute for Cancer Research, Division of Cancer Medicine
- Espen Stang PhD, Patient representative
- Monica Cheng Munthe-Kaas MD PhD, Head, Department of Paediatric Oncology and Haematology
- Assoc. Prof. Knut Håkon Hole MD PhD, Division of Radiology and Nuclear Medicine
- Assoc. Prof. Bodil Bjerkehagen MD PhD, Head, Department of Pathology, Division of Laboratory Medicine
- Prof. Stein Kaasa MD PhD, Head, Department of Oncology
- Mari Nygård MD PhD, Research Director, The Cancer Registry
- Prof. Dag Kvale MD PhD, Institute leader, Institute of Clinical Medicine, Med. Faculty, UiO
- Prof. Lars Eide PhD, Head of Research, Division for Laboratory Medicine
- Prof. Emeritus Gunnar Sæter MD PhD, Senior Advisor, Division of Cancer Medicine
- Anders Øverbye, PhD, Administrative Manager, UiO
- Per Magnus Mæhle, PhD Secretary, Division of Cancer Medicine

SCIENTIFIC ADVISORY BOARD

- Prof. Josep Tabernero MD PhD, Vall d'Hebron Institute of Oncology, Barcelona
- Prof. Carl-Henrik Heldin PhD, University of Uppsala and Chairman of the Board, The Nobel Institute
- Prof. Mef Nilbert MD PhD, Director of Research, Danish Cancer Society, Copenhagen
- Prof. Kjeld Schmiegelow MD PhD, Professor of Paediatrics and Paediatric Oncology, University Hospital Rigshospitalet, Copenhagen
- Prof. Jenny Chang-Claude PhD, Division of Cancer Epidemiology, DKFZ Heidelberg
- Prof. Fabien Calvo MD PhD, Chief Scientific Officer, Cancer Core Europe and Institut Gustave Roussy
- Prof. Inger Sandlie PhD, Institute of Biosciences, University of Oslo

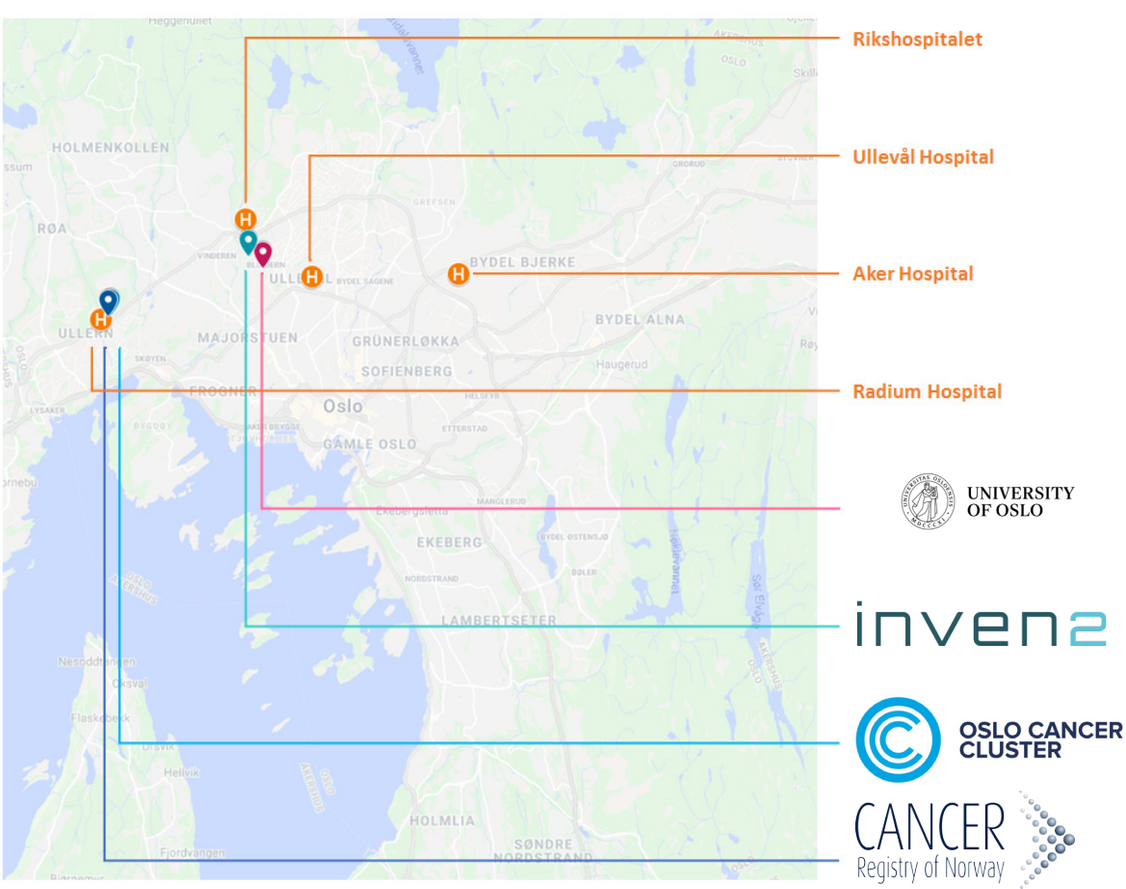
Collaborating Partners

University of Oslo (UiO)
OUS has close organizational links with a number of faculties at the University of Oslo, in particular the Faculty of Medicine and The Faculty of Natural Sciences. Around 100 of the Cancer division's employees are also employed by The University of Oslo's Faculty of Medicine, teaching medical students in six of the twelve semesters. Guest students are also received from other universities in Norway and from abroad. OUS is the major institution for specialized training in oncology for physicians and nurses in Norway. The close collaboration between the hospital and University of Oslo is an important platform for this.

Oslo Cancer Cluster (OCC)
OCC is an oncology research and industry cluster dedicated to improving the lives of cancer patients by accelerating the development of new cancer diagnostics and treatment. OCC is a national non-profit member organization with about 90 members, including OUS CCC along with other Norwegian and international companies, research and financial institutions, university hospitals and organizations – all working in the cancer field. OCC represent the entire oncology value chain, doing everything from exploratory research to selling therapeutics and diagnostics to global markets.

Cancer Registry of Norway
The Cancer Registry of Norway is part of South-Eastern Norway Regional Health Authority and is organized as an independent institution under Oslo University Hospital Trust, with its own board. The Cancer Registry of Norway, consisting of about 40 researchers, collects data and produces statistics of the cancer prevalence in Norway, and has an extensive research activity. They also got the administrative responsibility for the public screening programmes in Norway.

Inven2
Inven2 is Norway's largest player in the commercialization of research and is owned by the University of Oslo and Oslo University Hospital. Inven2 is the next generation of innovation company, established to safeguard and further develop Norwegian innovation, building bridges between outstanding research and the industry of the future.



Regional Cancer Coordination

– A Tool for Joint Cancer Actions and a Key to give the Population Equal Access to Advanced and Experimental Diagnostics and Treatment

Oslo University Hospital (OUS) is the regional hub for the largest health care region in Norway. The region has 2,6 million inhabitants. In addition to OUS the region consists of seven other hospital organizations providing cancer care located at almost 20 sites. More than 60 % of the cancer patients treated at OUS do not live in the catchment areas that is directed linked to OUS and 40 % of our new cancer patients start their pathway at another hospital in the region. These numbers indicates that lots of patients there is a tight mutual interdependence between the performance at our hospital and their nearby hospital. Until 2022, there was no proper managerial fora taking care of the management of this interaction and the challenges that might be present there. This lack of collaborative management might also result in unequal access to advanced treatment and clinical trials.

Based on a mandate given by the regional health authority, OUS then in 2022 initiated a regional coordinating board consisting of two leaders of cancer related departments in each of the hospital organizations.

We also organized coordination fora on diagnose level at the some of the diagnoses where we considered it most urgent; gynaecological cancer, lung cancer, colorectal cancer, lymphoma and brain cancer.

The regional coordinating board has so far been engaged in for example these topics:

- Identifying bottlenecks in the interaction between hospitals regarding cancer patient pathways
- Enhancing collaboration on cancer related systems as for medication, radiation therapy, MDT related information, electronic patient record documents.
- Developing a joint regional program for cancer survivorship
- Coordinating input to a national cancer strategy
- Joint addressing the challenges in educating and recruiting cancer related specialists
- Regional comparative analysis of outcome data
- Developing a regional development plan for radiation therapy

Cross-National Networking of Cancer Centres in the Nordic-Baltic Region

In 2017, OUS was the second cancer centre in the Nordic countries being accredited as a CCC. We have since then applied our experiences in supporting several other university hospitals in the Nordic countries in their preparations to be accredited as CCCs. Based on the networks that emerged from this, in 2019 we initiated the first meeting of representatives from Nordic centres. We were then nine centres represented. After a pause during the pandemic, we arranged the second meeting in June 2022. Then a coordinating committee was selected and we decided to rotate the responsibility for the meetings between the counties and the centres. In 2023, three meetings have been held and we decided to invite representatives from centres in the three Baltic countries as well.

An initial glue in this networking was obviously the joint reference of going through the CCC accreditation and not least through that establishing a cancer centre and a cancer board structure in a general university hospital. So far, we have experienced that this Nordic stage might be a kind of common ground for fruitful common initiatives and mutual learning connected to cancer care and research. We consider still this network to be on an early stage of its development and we are on some areas exploring possible way of organizing collaboration.

Activities and topics that has been on the agenda of the Nordic CCC network are:

- Sharing experiences with the Cancer centre model
- Sharing clinical data for research purposes – RWD/RWE
- Collaborating on precision cancer medicine
- Cooperating on making clinical studies available for patients across national borders
- Sharing experiences on developing the role and competence of cancer nurses
- Sharing experiences on establishing diagnose based centres
- Making proton therapy available for patients in the participating countries
- Coordinated engagement in EU projects

International Collaboration on Clinical Proton Therapy Trials

Marianne Grønlie Guren

A proton therapy facility is under construction at OUS Radium Hospital. The cyclotron, two treatment gantries and a research gantry is in place. Patient treatment is scheduled to start in December 2024. There are currently some established indications for proton therapy, in particular for children and young adults, and these patients are now treated abroad. With proton therapy, most patients in Norway will be treated within clinical trials, to generate evidence for the efficacy and late effects of the treatment, and establish future treatment indications.

We have an established collaboration with the Danish Centre for Particle Therapy, Denmark, and the Scandion Clinic, Sweden, with specific plans to participate in several of their ongoing clinical trials. One study, PRO-GLIO, initiated from Norway, is already recruiting in Norway and Sweden. Furthermore, there are plans for Nordic collaboration of developing new clinical trials, and this was a main discussion topic at the DCPT annual scientific symposium in June 2023.

A collaboration is initiated with the proton center at the James Cancer Center, Ohio State University, US. A collaborative meeting held in Oslo in August 2023 had discussions encompassing physics, biology, and clinical research, and further plans are to identify and initiate collaborative projects.

OUS re-accredited as Comprehensive Cancer Centre (CCC)

A systematic approach towards development and improvements that we should do anyhow.

In April 2023, OUS was designated as a comprehensive cancer centre for a second five-year term. This was actually third time we went through the process of documentation, self-assessing and an audit-visit since we had almost full pre-audit exercise the two years before the first accreditation accomplished by Organization of European Cancer Institutes (OECI). The preparations for the re-accreditation started more than a year before the submission of the self-assessment. The preparations included

- Analysing possible needs of development and improvement to reach a satisfactory level of quality and performance at all core elements and build necessary initiatives
- Developing a revised Cancer strategy for the hospital and the cancer centre
- Involving all relevant professional communities related to their topics in the self-assessment process and in the development of the cancer strategy
- Gathering developing necessary evidence and documentation
- Establishing the necessary commitment in the Cancer Centre Board and other relevant leaders of the hospital
- Preparing and accomplishing the site visit with round 150 key employee active during the two days site visit of the peer-based audit team.

After the visit, the audit team delivered a report. This was negotiated with the Cancer Centre Board. Joint conclusions were drawn and an improvement plan decided and approved. The main action points were these:

- Improving the cancer center governance structure
- Improving the quality governance of the CCC
- Enhancing the patient influence in cancer care and research
- Enhance professional impact of nurses in cancer care
- Building a Program for cancer survivorship
- Spreading excellent praxis of palliative care to cover all relevant departments and pathways
- Improving the quality and efficiency of MDT meetings
- Broadening the comprehensiveness of clinical and translational research
- Improving the logistics of pathology related to cancer pathways

We have then integrated these action points with the cancer strategy follow-up activities for the coming two years into an overall development plan for the Cancer Centre.

Our experience from three accreditation processes is now an excellent platform for taken an active role in the developing of the framework for a EU CCC certification scheme and the development of a European network of CCCs through the EU Joint Actions of the CraNE project and the coming EUNetCCC project. (See a separate article).

Major Events 2022-23

2022

- Three new Centres of Excellence awarded by Research Council of Norway: PRIMA, CRESCO, INTEGREAT
- Håvard Danielsen awarded King Olav V's Prize for Cancer Research
- European Research Council Starting Grant to Helene Knævelsrud
- OUS' Excellent Researcher Award to Håvard Danielsen and Early Career Award to Geir Ringstad
- Harald Stenmark received Anders Jahre's Medical Prize
- Nature Medicine: "Implementation of Precision Medicine in Norway"
- Establishment of Regional Specialist Forum in Oncology ("Regional fagllederforum")
- Norwegian Cancer Society funds 16 OUS-CCC cancer research projects
- South-Eastern Regional Health Authority funds 11 OUS-CCC projects
- Major national Infrastructure grant to advanced light microscopy (NALMIN-II)
- Establishment of board for research bio-banking at OUS
- Kick off MATRIX – Norwegian Centre for Clinical Cancer Research
- Kick-off MyPath project- The digital solution to patient-centered cancer care
- DigiONE platinum membership achieved
- Partner in PCM4EU- EU4Health Project
- Partner in CCI4EU – Horizon Europe Mission on Cancer Project
- Coordinating PRIME-ROSE – Horizon Europe Mission on Cancer Project

2023

- Re-accreditation as Comprehensive Cancer Centre (CCC)
- Åslaug Helland receives King Olav V's Prize for Cancer Research
- Kjetil Taskén awarded UiO's Innovation Prize
- Harald Stenmark awarded Erik K. Fernström Nordic Prize
- Kushtrim Kryeziu receives OUS' Early Career Award
- Matthew Woke Ng Yui recipient of HM The King's Gold Medal for PhD Thesis at The Medical Faculty, UiO
- Eirinni Giannopolou Young Scientist Prize at Oncology Forum Norway
- Johanna Olweus obtains ERC Proof-of-Concept funding
- Youxian Li granted Researcher Project for Young Talent from FRIPRO RCN
- Three OUS-CCC surgical cancer projects receive funding from extraordinary Cancer Society Call
- TARACAN theranostic project awarded funding from RadForsk to Ø. Bruland/A. Juzeniene/ ME. Revheim
- Norwegian Cancer Society funds 18 new OUS-CCC cancer research projects
- Strategy for nursing competence within clinical cancer treatment
- DigiONE meeting in Oslo
- James Cancer Hospital, Ohio State University visit to Oslo
- Nordic Conference in Precision Cancer Medicine
- Society for Natural Immunity Conference NK 2023
- Stakeholder Forum CraNE EU4Heaøth in Oslo
- Cyclotron infrastructure arrive at the new Proton Therapy Building, Radiumhospitalet


Radiumhospitalet
P2 Besøkende


Rikshospitalet


HOVEDINNGANG
SENTRALBLOKKEN

Highlights

The randomized, placebo-controlled ALICE trial investigated the effect of treating metastatic triple-negative breast cancer patients with a combination of the immune checkpoint inhibitor atezolizumab and chemotherapy. Conclusions from this trial, led by *Jon Amund Kyte* at Oslo University Hospital (OUS), have now been published in Nature Medicine in an article titled "Atezolizumab plus anthracyclin-based chemotherapy in metastatic triple-negative breast cancer: the randomized, double-blind phase IIb ALICE trial". The publication garnet national attendance and was featured at NRK (national broadcasting company). ALICE is the first randomized trial in metastatic triple-negative breast cancer investigating the addition of an immune checkpoint inhibitor to anthracyclines, although anthracyclines are widely used for this disease.

Another Nature Medicine publication from OUS-CCC was about the Norwegian cancer initiatives and receive international attention. The precision cancer medicine ecosystem established in Norway and the ongoing implementation in the health care system are unique in an international context. The description of the entire ecosystem was published in on May 5th, by first author *Kjetil Taskén*, Director, Institute of Cancer Research, OUS. A national precision cancer medicine implementation initiative for Norway.

A 6-mill EUR grant from the European Commission Cancer Mission program was awarded to the PRIME-ROSE consortium for precision medicine implementation, led by *Kjetil Taskén*.

Helene Knævelsrud secured a Starting grant from European Research Council (ERC StG). The grant amount to 1.5M€ over five years dedicated to her project FINALphagy- Final act of autophagy symphony: Whole organism orchestration of autophagy termination. The aim of the project is to determine key mechanism of autophagy termination in individual cells within a tissue and dissect how this connects to systemic signaling and behavioural changes.

Kristina Lindemann pioneered a new education platform – PEARLS. This novel training program for medical students at the University of Oslo implements a 3-stage EBM training program which is concluded by a 15-minute presentation given by the students. PEARLS motivates the students to use a research-based method for critical assessment in a future clinical activity with a local and global perspective. PEARLS has been initiated by Ass. Prof. Kristina Lindemann at the Department of Gynecological Oncology in collaboration with the Centre for Learning, Innovation and Academic Development at the University of Oslo and the University of Sydney.

Clinical trial of a new gene therapy against leukemia in children and adults. The working group of *Johanna Olweus with Jochen Büchner* has developed a T-cell receptor (TCR) that specifically recognizes TdT, an intracellular enzyme that is expressed in B- and T-cell acute lymphoblastic leukemia (ALL) in both children and adults. The TCR can be genetically inserted into the patient's own healthy immune cells, which then recognize and kill the leukemia cells (TCR T-cell therapy). In 2022, Klinbeforsk has allocated funds to prepare, implement and carry out a clinical phase I-IIa «first-in-human» study («InsighT-1») which will test the TdT TCR-T, developed and produced at OUS, as a new treatment strategy for patients >1 year old with resistant T-/B-ALL.

Lawyers at the CRN found a very narrow safety valve derogation in the EU General Data Protection Regulation (GDPR) 2016/679 to enable data transfers from EU to federal institutions in the US for medical research. The Norwegian Data Protection Authority (DPA) concurred with our use of this legal option. To our knowledge, this is the first time-use of this derogation in Europe (Bentzen et al., 2023).

Directorate of Health approved the switch from cytology to human papillomavirus- based testing in the Norwegian cervical cancer screening program for women aged 25 to33 years Introducing the sensitive HPV test to the entire screening target population is a major step towards elimination of cervical cancer in Norway. The evidence outlined by the researchers at the CRN underpinned the health authority approval (led by *Ameli Tropé*). This change supports the WHO global cervical cancer elimination initiative.

In 2022 the Cancer Registry received funding from EU ERA PerMed 2022 call “Prevention in personalized medicine” (PI: *Renée Turzanski Fortner*). This will fund the project MirPOC-miRNA – miRNA as biomarkers in early detection and personalized treatment in ovarian cancer. The aim of the project is to identify biomarkers that can be used in treatment of ovarian cancer patients. (sum?)

CRC screening in Norway launched in 2022 (Head, national implementation project: *Kristin Ranheim Randel*). After decades of important Norwegian contributions to research on colorectal cancer (CRC) screening, a national colorectal cancer screening programme was launched in Norway in 2022. The implementation of a standardized and structured electronic medical reporting (EMR) for colonoscopies has improved quality assurance (QA) work also for routine non-screening colonoscopy services. Having realized the importance of improved QA, the professional community of gastroenterologists and gastro nurses have been eager to apply for training courses in the Norwegian Endoscopy School – a much welcomed demand which stimulates the school to expand and refine courses for the profession. The screening programme itself and the new EMR for colonoscopies embracing also routine non-screening colonoscopies constitute platforms for high-quality research on screening and non-screening CRC preventive initiatives.

PATIENT TREATMENT

Multi Disciplinary Team Meetings

Some cancer diagnoses have a long tradition for multi disciplinary team (MDT) meetings, whilst others introduced these when the standardised cancer pathway reform came in 2016. Today, 38 MDT meetings exist in OUS CCC. The meetings are typically attended by professionals from oncology, surgery, radiology and pathology, as well as cancer patient coordinators.

In 2022, a small working group had fruitful conversations with professionals involved in six different MDT meetings. Observations from these conversations include that there are varying definitions of what a MDT meeting should entail: for instance whom should be present or which patients should be included. Importantly, there are no systematic self evaluations of the meetings. This will be implemented as part of the new cancer strategy. Future development is also connected to the application of the new structured health journal as this will facilitate a standardised presentation of patients.

Ambulant Palliative Team

In spring 2023, an ambulatory palliative care team was launched at the Radium Hospital , Department of palliative care in collaboration with two municipal districts in Oslo. The ambulatory palliative care team consists of palliative care physicians and nurses trained in palliative care. The main goal is to increase the quality of home care and give patients and family members the possibility to stay at home . It is also a goal in the project to facilitate home death will if this is a wish from patients and their families. There is close collaboration between the ambulatory palliative care team, the general practitioners, and the home care services, including the cancer coordinators. The results so far have shown that hospital admissions are avoided. Furthermore, the patients and the relatives feels secure at home, and they rely more on the home care services as they experience the close collaboration with the hospital. The plan is to expand the offer to patients living in other municipal districts Oslo University Hospital is serving.

Development of Competence Program for Oncology Nurses at OUS

Prior to the summer of 2023, the project unveiled the outcomes of an ambitious initiative at Oslo University Hospital (OUS), aimed at creating a comprehensive Competence Program for Oncology Nurses. The objective was to enhance the nursing expertise in cancer care, attract and retain highly qualified nurses, and enhance patient safety and care quality.

The project engaged experienced nurses from various departments at OUS. Collaboratively, they identified and formulated a structured competence program with four distinct stages. Each stage encompasses defined learning objectives and skill-enhancing measures, adaptable to each nurse's individual needs.

The developed Competence Program for Oncology Nurses at OUS emphasizes five pivotal domains: health, disease, and nursing; research and evidence-based practices; ethics, communication, and interaction; professional leadership, quality, and patient safety; as well as technology and digital competence. The program is designed to be integrated with formal studies, including master's and doctoral degrees.

Through a thorough approach to nursing competence advancement in oncology, OUS strengthens its status as an internationally acclaimed cancer center. The program facilitates individual growth, continuous enhancement, and quality assurance in patient care.

The establishment of the Competence Program for Oncology Nurses at OUS is a positive outcome of targeted efforts to enhance patient care and professional development. This program represents a significant leap forward for the nursing field, underscoring OUS's commitment to the utmost patient safety and care excellence.

Photo: from left: Kristin Øverlie, Kristin Hjelkrem, Eli Gunhild By, Elisabeth Strandberg, Torill Krøvel og Kjersti Stokke.

The Colorectal Screening Program at OUS

Gry Håvi and Asle W. Medhus

The Colorectal Screening Program is a national screening program, in which the population receives an invitation in the year when they turn 55 years of age. The screening is performed by applying a test for blood in the stool that can be taken at home and sent to a dedicated laboratory for analysis. When this test is above a predefined threshold, the subjects are invited to a colonoscopy. If the stool test is negative, new sampling is offered every second years until the age of 65.

In the beginning of 2023, the Department of Gastroenterology at Oslo University Hospital implemented the screening program and now has a dedicated endoscopy suite for these procedures. Screening colonoscopies are performed every week and the present experience is that a substantial proportion of subjects with a positive stool test have colorectal polyps. Over the years, these polyps might develop into cancer and are therefore removed during the colonoscopy. Due to the algorithm with repetitive stool test, the number of colonoscopies generated by the screening program is expected to increase during the coming years. The department is prepared for this upcoming increase.

Norwegian Competence Network for Precision Medicine

Olga Nævisdal and Hege G. Russnes

(The Norwegian network for precision medicine (NorPreM) is an arena for information exchange, experience transfer and knowledge sharing within relevant subject areas of precision medicine. Established in 2019 on the assignment of the Ministry of Health and Care Services, NorPreM is involving all hospitals in Norway. The main aim is to facilitate standardization, harmonization through shared competence and increased cooperation nationally in order to promote implementation of precision medicine in the Norwegian public health care.

Hege G. Russnes is a national leader of NorPreM. The administrative leaders of the four Norwegian health networks own NorPreM and the inter-regional board of directors' meeting is NorPreMs steering group. NorPreM has four regional networks that form the basic structure, each lead by a regional leader: Rune Sundset (Northern Norway Regional Health Authority), Gunnar Douzgos Houge (Western Norway Regional Health Authority), Hans-Johnny Schjelderup Nilsen (Central Norway Regional Health Authority) and Hege G. Russnes (South-East Norway Regional Health Authority). NorPreM activities span across health regions, disciplines and subject areas. Key activities are working groups identifying bottlenecks, knowledge gaps and disharmonized services within the hospitals, but also workshops, courses and conferences, strengthening inter-disciplinary knowledge sharing. As of 2023, more than 300 employers from Norwegian hospitals have actively contributed to NorPreMs activities as reflected by the comprehensive project portfolio

Prehabilitation of Patients with Ovarian Cancer

Erik Rokkones and Ikram Mahnin

Ovarian cancer is often diagnosed at advanced stages, making it the leading cause of death among gynecological cancers. The standard treatment involves a combination of optimal cytoreductive surgery and chemotherapy, which can pose significant challenges, particularly for patients with compromised physical and mental health.

The concept of «prehabilitation» is aimed at improving the pre-operative health of patients, enabling them to better withstand the surgery, both physiologically and psychologically, and facilitating a quicker recovery. Prehabilitation typically includes various elements, such as physical activity, nutritional guidance, smoking and alcohol cessation, and psychosocial support. Studies indicate that multidisciplinary prehabilitation, incorporating these components, can reduce complications, shorten hospital stays, enhance quality of life, and improve post-surgery stress.

Our department has already successfully implemented «Enhanced Recovery After Surgery» (ERAS), and now, prehabilitation serves as an additional tool to promote overall health and well-being for patients undergoing a major surgery. We have started the enrolling and the responses from the patients has been overwhelmingly positive, thanks to the dedicated interdisciplinary team driving this initiative within our division. We look forward to seeing the results from the study, and hopefully expand this to other cancer groups.

Standardised Care Pathway for In-patients for Elective Chemotherapy

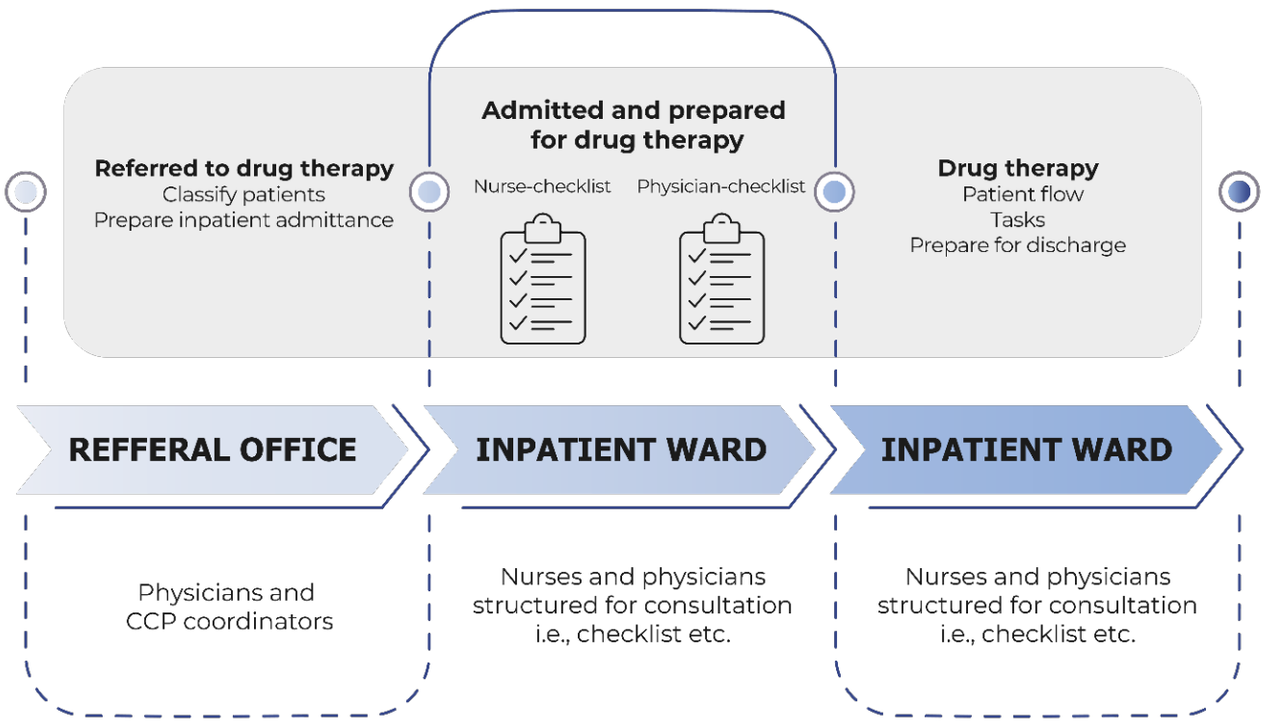
Elin Høy, Ragnhild Mæhle Kaurin, Marianne Guren, and Stein Kaasa

Department of Oncology has five in-patient hospital wards at two locations, The Radium Hospital and Ullevål Hospital. The patient flows and work tasks for nurses and physicians differ between and within our in-patient wards. In order to improve the quality of handling the patients and to optimize the use of health care resources, we have developed a standardized care pathway for these patients planned for chemotherapy starting from time of admittance to the hospital, through the hospital stay, and ending with when and how the patients are leaving the hospital. The project also addresses the issue on how to allocate the right health care personnel during all parts of the pathway in order to avoid unnecessary delay and task duplication as well as offering the patients optimal treatment and care.

First, a thorough mapping of current routines and patient flows was performed. Patient flows and areas for improvement were identified among the wards. This knowledge formed the basis for the standardized care pathway.

The main areas of focus were related to routines at admittance and discharge of the patients. Key factors are the right competence to make decisions. Pre-screening of general condition may be relevant. Patient categories can be eligible for time effective checklist based admittance, or need evaluation of treatment response or patient factors before chemotherapy administration. A plan for tasks to be done prior to discharge is made.

The figure illustrates the structure and content of the pathway.



This generic standardized care pathway is now being implemented in the different wards.

#Sjekkdeg

September marks Cervical Cancer Awareness Month in Norway. Since 2021, we have actively supported The Norwegian Cancer Society's «Sjekk deg» campaign.

Over 100 women took advantage of our free cervical cytology screening, many of them for the very first time. The interest exceeded expectations, with more than 200 women expressing their willingness to participate. The dedication of over 30 employers within our Department played a fundamental role in making this event a reality.

Despite cervical cancer being a preventable condition, over 300 women in Norway in 2022 receive this diagnosis. It primarily affects women in their 30s and 40s, but can be prevented through regular screenings and vaccination. Unfortunately, approximately only 70% of Norwegian women participate in the national screening program. Early detection remains the key in combating this disease, and our department will continue to raise awareness. Our ultimate goal is to eliminate cervical cancer.

Laparoscopic robot-assisted surgical oncology

Ebbe Billmann Thorgersen, MD, PhD, Section for Surgical Oncology

Robot-assisted surgery has become a major tool in all surgical specialties. Characteristics like high magnification, stable 3D-vision and ability to dissect in confined spaces have made the robotic platform the preferred choice. Rigorous training including hours in console simulator, much like in aviation, is preparing the surgeon. Furthermore, the ability to use two surgical consoles makes training of new robotic surgeons safe and efficient as the senior surgeon can instantly assist the operation from the second console. A new robotic system located at the Radium Hospital was installed May 2020 with a designated purpose of scientific clinical research, thanks to a donation from The Radium Hospital Foundation. A program for colorectal surgical oncology started in 2019 and has proven feasible with great oncological results and enhanced recovery with shorter hospital stay.

The Section for Advanced Oncologic Pelvic Surgery has become an International Case Observation Center to train colleagues. A multi-disciplinary program for reconstructions has been implemented including urological and plastic reconstructive robotic surgery. The first study from our unit is under review and several studies spanning the impact on the immune system after rectal surgery, robotic plastic reconstruction with VRAM flap, and robotic pelvic exenterations with reconstruction of the urinary tract are ongoing and recruiting.

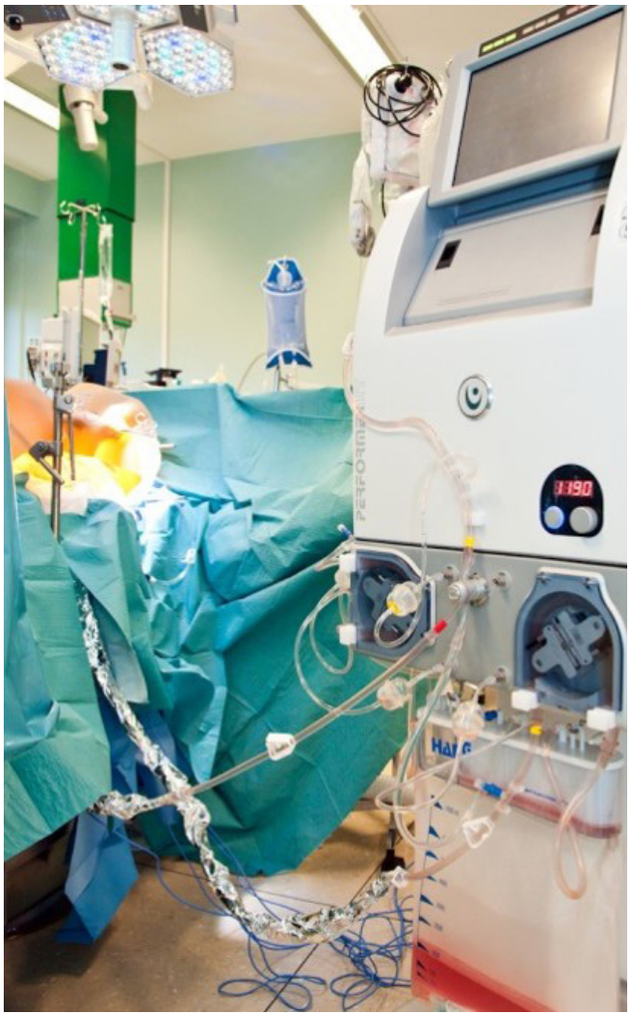
National Service for Treatment of Peritoneal Metastases from Colorectal Cancer with Cytoreductive Surgery and Hypertherm Intraperitoneal Chemotherapy (CRS-HIPEC)

Stein Gunnar Larsen, MD, PhD,
Section for Surgical Oncology

Peritoneal metastasis (PM) from colorectal cancer carries a dismal prognosis despite extensive cytoreductive surgery and hyperthermic intraperitoneal chemotherapy (CRS-HIPEC). The National service for treatment of peritoneal metastasis from colorectal cancer, abdominal mesothelioma and pseudomyxoma peritonei has been at the Radium Hospital since 2000. Yearly about 300 patients are evaluated in weekly MDT meetings, 120 operated.

The outcome of perioneal metastasis is serious, and most patients will experience disease recurrence, 5-year overall survival (OS) in about 40%. The median disease-free survival (DFS) is short and 2/3 of patients suffer either from new peritoneal relapse or from distant metastases. Hence, there is a definite unmet medical need for novel treatments against abdominal cancer dissemination and novel therapeutic strategies that may help preserve the surgical complete response after CRS-HIPEC.

The last 2 years a first-in-human phase-1 study was conducted, in collaboration with Uppsala Academic Hospital and Oncoinvent A/S with the α-emitting radionuclide radium-224 (224Ra) (Radspherin®) which was administered intraperitonellay 2 days after CRS-HIPEC as a dose sscalation study. All dose levels of Radspherin® were well tolerated with DLT not reached. No deaths occurred and no serious adverse events were considered related to Radspherin®. A dose of 7MBq was choosen as the recommended dose, and larger patient series are now explored.



Re-accreditation as the European Training Centre in Gynaecological Oncology

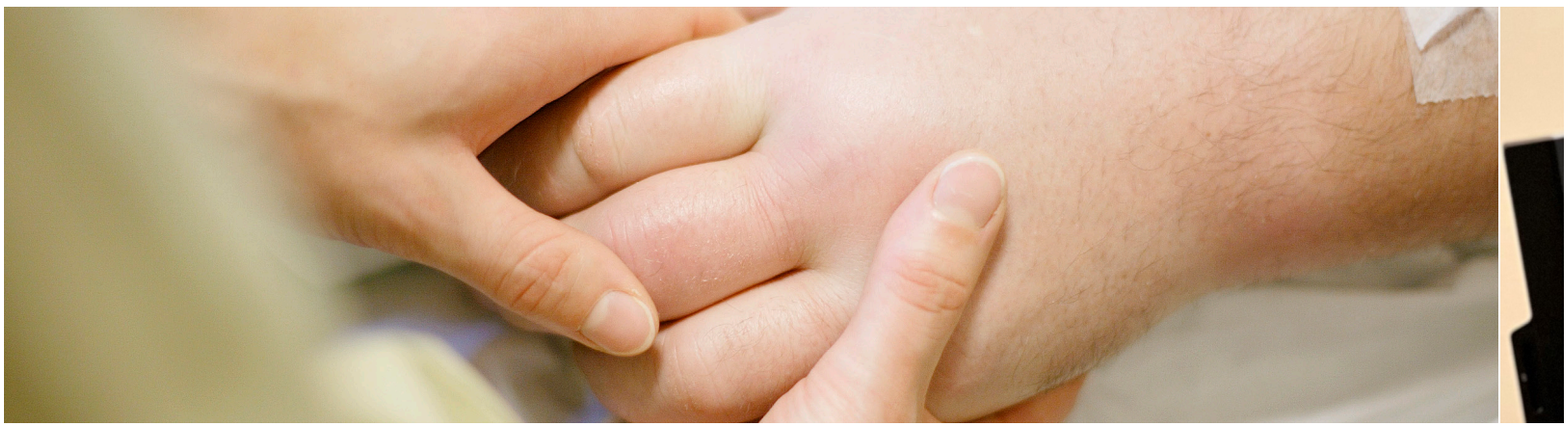
June 17th, 2022, we had an on-site visit of the re-accreditation team from the European Society of Gynaecological Oncology (ESGO). Up front, there was a considerable joint effort from the leaders of our department in updating all necessary governance documentation and educational programs. ESGO Training Committee made on September 16th, 2022 the decision that our centre has been accredited for two training positions for a 2-3 years training program. The accreditation is valid for 5 years.

According to the report: the Radium Hospital in Oslo is a well-organized department with a huge caseload (>700+ gynaecological oncology operations annually) making it one of the largest centres in Europe. The hospital has a well-established legacy and history as a cancer centre. The centre is responsible for half of the population in Norway (plus referral centre) and is the most important centre in the country. Five out of 15 Gynaecological oncologists working at the department are ESGO-certified. There are 25 dedicated beds. It is a well-functioning clinical academic department. It is the only Centre for exenterative surgery in Norway. As in other Norwegian centres, the Gynaecological oncologists are responsible for giving chemotherapy for their patients. Member of EURACAN, accredited as CCC by the OECI.

The improvement issues presented will be studied closely and followed by a post re-accreditation.

(left) Head of Department; Dr. Erik Rokkones, ESGO representatives; Dr. Manchanda & Dr Razumova, Dr. Eyjolfsdottir and Dr. Skeie-Jensen (right) Certificate proving reaccreditation

The department has a well-functioning clinical trials unit. There is high quality research in the department and these activities have expanded under the leadership of Dr. Kristina Lindemann. The department is extremely active in clinical trials within The European Network for Gynaecological Oncological Trial groups and Nordic Society of Gynaecological Oncology-CTU, serving as national coordinators for most of them. It is the second largest recruiter to clinical trials for women with Gynaecological cancer in the Nordic countries. In addition, is currently running numerous phase II-II trials, studying promising therapeutic approaches such as cancer vaccines and anti-drug conjugates but also novel surgical approaches. In 2022, we, amongst others sites recruited to the practice changing RUBY trial demonstrating the benefit of adding immunotherapy to chemotherapy in patients with endometrial cancer and have initiated a multicenter international trial in palliative care.



Cancer Survivorship

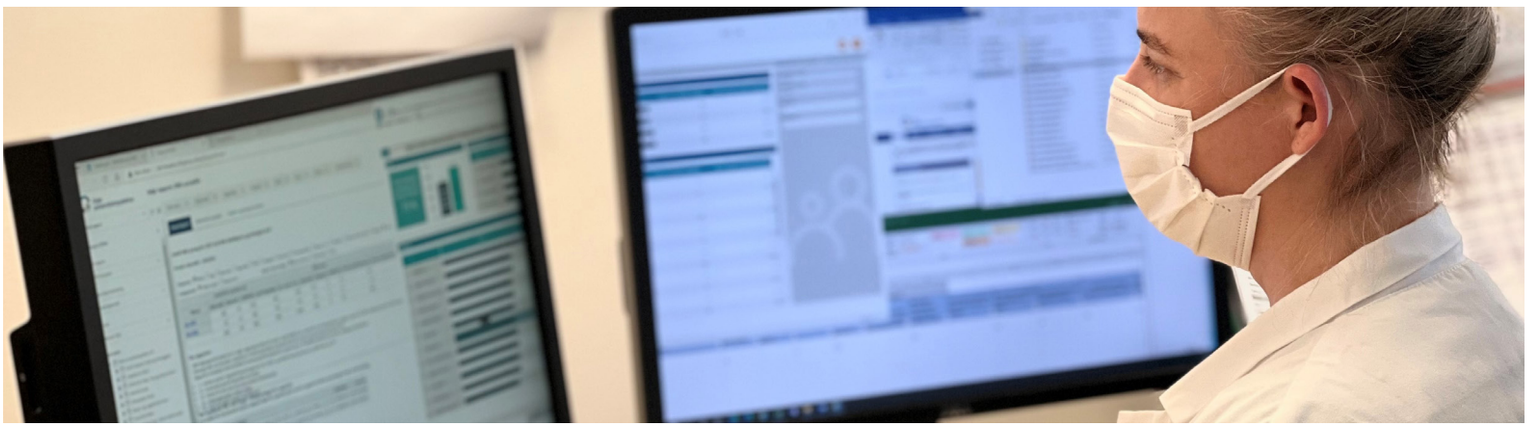
The number of cancer survivors are increasing. In 2021 there were 315 000 cancer survivors in Norway, of which 200 000 (65%) were alive five years or more after diagnosis (long-term survivors). A large proportion of these live patients in our health region (180 000 and 115 000 respectively).

Cancer survivors carries the risk of late-effects due to the cancer illness and treatment. Although efforts have been made on several levels in the health service, an overarching structure is needed to ensure care of the patient group in the region and across diagnoses.

The intent of the programme is to provide effective, adapted and coordinated offers and pathways for cancer survivors who need follow-up care related to somatic, psychological and social consequences of illness and/or treatment. The target group is cancer-free patients post-treatment (>18 years old).

Tasks and deliveries:

- Develop a regional standard for how patients across diagnostic groups are mapped and how the results of this mapping are to be followed up.
- Develop patient pathways that can be implemented in the respective hospitals in collaboration with the primary healthcare service.
- Within this, describe offers, responsibilities/professional background, requirements for competence and opportunity for competence development.
- Follow-up of organ complications
  - Identify patient groups where, due to a high risk of organ complications, follow-up in the specialist health service is recommended.
  - Prepare an overview of organ complications after cancer treatment and how this should be followed up in the patient's course.
- Contact national professional groups and the Directorate of Health for the implementation of measures in the national action programmes.
- Describe ambitions for research, knowledge development and knowledge sharing in a regional and national network.
- Measures for knowledge transfer to GPs and the primary healthcare service.



CANCER DATA FOR QUALITY, RESEARCH AND MANAGEMENT

Every day, an enormous amount of information is registered by clinicians, secretaries, diagnosticians, patient coordinators and more. Next to the electronic health journal, there are systems related to type of diagnostics and treatments. Furthermore, data is entered in additional registries for, for example, monitoring surgical complication or research purposes. However, data in does not necessarily equate data out.

The process of being accredited as a Comprehensive Cancer Centre (CCC) created a consciousness of how we manage our data. In 2020 the work began to compile and present cancer data in our in-house Clinical Data Ware House. For the first time, patients could be counted and presented according to cancer diagnosis and not by organisational visit. Since then, several intertwined processes have been initiated, including Structured Electronic Health Journal, and the DigiONE and IDEAL4RWE projects. Together, these processes shape an infrastructure increasingly facilitating insight and possibilities for quality improvement, research and management.

Structured electronic Health Record

Ragnhild Lund

The Norwegian Regional Health Authorities and Health trusts have established a joint plan to develop a structured Electronic Health Record (EHR/EPJ). When proton therapy starts in Norway, it was stated as a prerequisite that data to the Proton Research Registry should be collected directly from the HER/EPJ.

Oslo University Hospital initiated a project to develop structured documents for use in the treatment of cancer patients. The goal is to collect data directly to quality and research registers, while also assisting doctors and healthcare workers in their daily documentation. Reuse of information will prevent duplicate entries, save time, and reduce errors. The project collaborates with similar initiatives in two other Regional Health Authorities, the EHR vendor DIPS, and clinical representatives from specific tumour groups, with meetings on a weekly basis. The project follows a dynamic approach with agile development of the structured documents, and the documents are taken into production as pilots as they are ready. This provides users with an opportunity to give feedback whilst the project is ongoing, thereby contributing to the creation of more clinically adaptable products.

Core Activity Data 2022

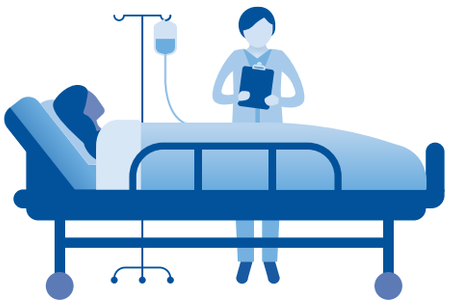
Patient Treatment

Number of cancer patients:

30 233

Total number of new cancer patients referred to OUS:

11 495



Number of outpatient consultations:

127 059

Number of beds:

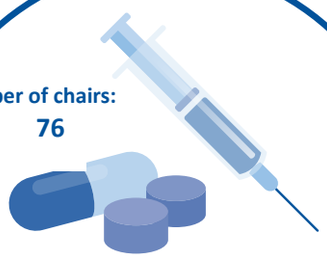
263

Number of over-night stays:

73 062

Number of chairs:

76



Chemotherapy treatments:

39 041

Radiotherapy: treatment series:

6 781

Radiotherapy: number of fractions:

101 159

Radiotherapy: number of patients:

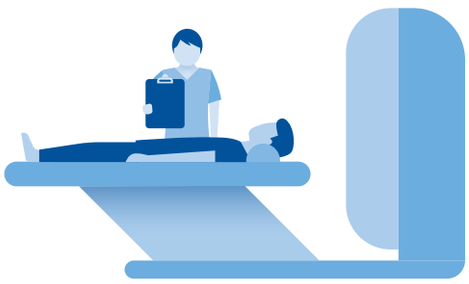
6 520

MRI scans:

13 142

CT scans:

21 128



Radiology examinations:

68 157

Cytology:

6 794

Histology:

41 839

Molecular pathology:

13 257

* Number of radiology examination requests for cancer patients

Key Indicators in Research

2022

Total number of peer-reviewed publications (with OUS-CCC first or last author):

796 (404)

Number of publications with impact factor >10 (with OUS-CCC first or last author):

147 (51)

Number of publications with impact factor >20 (with OUS-CCC first or last author):

44 (14)

Budget: estimate of research budget (by parameters):

95 M€

Completed Ph.D. degrees:

28

Disclosures of Invention (DOFIs):

21

Number of active clinical trials:

152

Active projects funded by EU (H2020):

22

Percentage of new patients included in clinical trials

12.2%

Approx. Total number of FTEs in cancer research:

650

Number of new patients included in clinical trials

1404

Cancer Patients

Location	ICD-10	Number of cancer patients in OUS*				Number of new cancer patients in OUS*				Number of newly diagnosed cancer patients in OUS**			
		2019	2020	2021	2022	2019	2020	2021	2022	2019	2020	2021	2022
All	All	32 312	31 938	32 061	32 825	12 482	11 939	12 092	12 437	4714	4566	4530	4 456
Breast	C50	4 743	4 676	4 954	5 236	1 721	1 617	1 879	1 946	588	564	633	664
Head and neck	C00 -C32	1 348	1 397	1 413	1 450	553	575	598	538	335	357	375	350
Myeloma	C90	492	491	510	515	168	159	160	155	33	44	41	34
Lymphoma	C81-C86, C88	1 925	1 711	1 568	1 603	594	521	469	490	241	199	201	211
Pancreas	C25	463	476	449	445	275	261	230	254	143	134	139	118
Colorectal	C18-C21	2 497	2 464	2 514	2 596	1 182	1 077	1 095	1 141	330	333	352	354
Bladder	C65-C67	1 106	1 135	1 103	1 182	275	295	262	319	144	163	130	167
Kidney	C64	479	455	453	475	185	155	165	191	103	79	84	118
Prostate	C61	4 554	4 651	4 528	4 416	1 523	1 525	1 482	1 431	636	613	592	568
Penis	C60	156	172	180	159	46	55	52	42	31	33	35	21
Testis	C62	1 425	1 382	1 279	1 206	205	183	197	200	67	78	70	81
Uterus	C54-C55	653	571	565	572	339	301	291	313	197	179	170	185
Ovary	C56	842	692	670	660	383	276	314	305	251	207	183	163
Cervix	C53	611	572	553	563	272	241	218	195	162	137	137	104
CNS	C71	784	802	855	926	281	290	319	342	153	149	162	177
Lung	C33-C34	1 896	1 941	1 985	1 966	1 157	1 165	1 190	1 191	385	341	322	357
Esophagus and stomach	C15-C16	655	723	789	773	389	368	390	352	172	174	200	151
Liver	C22	165	181	197	183	107	115	101	104	57	74	61	70
Sarcoma	C40-C41, C48-C49	1 053	1 001	968	997	410	339	285	311				
Thyroid gland	C73	851	887	862	989	190	229	236	274	106	142	129	169
Melanoma	C43	1 266	1 218	1 096	1 136	589	603	507	563	392	390	338	324
Bile ducts	C22,C24	148	131	135	158	112	94	94	110	70	58	57	70

** OUS' definition of cancer patients: Including all ICD-10 C-diagnoses excl. C44, incl. D32-33, D35.2-35.4, D42-3, D44.3-D44.5, D45-47 and Z08.

**ICD-10 codes related to patient pathways.

Patient Satisfaction

In 2022, there were 15 386 responses from cancer patients to OUS' web-based survey. Results show overall high satisfaction scores (>90%). In addition, many patients left valuable comments. The feedback conveys important information on what we should improve and what we should continue to do. Reports are provided monthly for continuous improvement.

	2021	2022
Did the clinicians speak to you in such a way that you understood them?	97 %	97 %
Do you have confidence in the skills of the clinicians?	98 %	98 %
Do you have confidence in the skills of the other staff?	97 %	97 %
Did you receive sufficient information about your diagnosis / your ailments?	92 %	92 %
Did you experience that the treatment was adapted to your situation?	95 %	95 %
Were you sufficiently* involved in decisions concerning the treatment?	76 %	86 %
Did you experience that the institutions' work was well organized?	92 %	91 %
Did you have the impression that the institutions' equipment was in good condition?	94 %	93 %
All in all, was the assistance and treatment you received in the institution satisfactory?	96 %	96 %
Do you believe that you were given the wrong medical treatment (as far as you can judge)?	97 % **	97 % **
Did you have to wait to receive help from the institution?	95 % **	94 % **
All in all, what benefit have you had from the treatment in the institution?	93 %	92 %

*The word sufficiently was added in September 2021.

** Percentage represents negative responses.

Relative Survival

There has been a considerable improvement in relative survival within several diagnoses during the last five-year period. This is due to both medical development and changes in the task division between OUS and community hospitals. Diagnoses with a >10 percent point increase from the previous period are shown in the table below.

The data for relative survival is from the Cancer Registry (See Cancer in Norway for definition of relative survival).

Relative survival (%) estimated for two five-year periods for patients treated at OUS (operation or radiotherapy), with the associated 95% confidence intervals (CI).

Gender	ICD-10	Location	Years from diagnosis	2008–2012			2018–2022		
				%	CI	N	%	CI	N
All	All	All	3	71,4	(70,7–72,1)	30460	78,9	(78,4–79,5)	33542
			5	67,1	(66,3–67,9)		74,7	(74,1–75,4)	
	C15	Esophagus	3	22	(17,8–27,2)	397	38,1	(33,9–42,8)	572
			5	17,3	(13,3–22,6)		30,8	(26,6–35,5)	
	C16	Stomach	3	48	(40,7–56,6)	292	57	(51,1–63,7)	368
			5	39,1	(30,6–49,9)		50,4	(43,9–57,9)	
	C22	Liver	3	50,4	(40,2–63,2)	174	66,2	(59,5–73,7)	333
			5	43,4	(33,1–56,8)		55,4	(48,1–63,9)	
	C25	Pancreas	3	27,1	(22,0–33,3)	387	45	(40,5–50,0)	591
			5	22,4	(17,8–28,3)		36,3	(31,8–41,4)	
	C33-34	Lung	3	30,3	(28,5–32,1)	3697	49	(47,4–50,7)	4595
			5	23,7	(22,0–25,5)		39,7	(38,0–41,5)	
	C43	Melanoma	3	61	(58,1–64,1)	1392	84,1	(82,1–86,1)	2094
			5	56,5	(53,3–59,9)		80,5	(78,0–83,2)	
	C81	Hodgkin lymphoma	3	84,1	(73,6–96,1)	157	95,9	(91,6–100,5)	140
			5	83,6	(72,9–95,7)		94,8	(89,8–100,1)	
	C90	Myeloma	3	44,6	(37,2–53,4)	265	59,9	(52,4–68,5)	207
			5	30,7	(23,9–39,5)		43,5	(35,9–52,7)	
Female	C56, 57.0-4, C48.2	Ovary	3	68,7	(65,0–72,6)	999	76,1	(72,9–79,6)	970
			5	57,2	(53,0–61,7)		66,5	(62,8–70,4)	
Male	C61	Prostate	3	82,3	(80,5–84,3)	5753	94,1	(93,0–95,2)	5173
			5	81,7	(79,6–83,8)		94,2	(92,8–95,5)	

Relative survival (%) estimated for Norway and regional catchment areas defined by patients' area of residence, with associated 95% confidence intervals. Five years from diagnosis, all genders. The estimates are predicated for 2018-2022.

ICD-10	Location	Norway		South East Region		Oslo	
		%	CI	%	CI	%	CI
All	All	77,3	(77,0–77,6)	77,3	(76,9–77,7)	79,1	(78,0–80,2)
C00-14	Oral cavity and pharynx	75,1	(73,1–77,1)	75,4	(72,9–78,1)	73,4	(66,7–80,9)
C15	Esophagus	24,8	(22,5–27,3)	23,5	(20,6–26,8)	18,3	(12,4–27,1)
C16	Stomach	31,4	(29,1–33,8)	29,1	(26,1–32,5)	26,4	(19,0–36,7)
C18	Colon	70,6	(69,5–71,6)	69,8	(68,4–71,2)	68,5	(64,7–72,4)
C19-20	Rectum	72,7	(71,4–74,2)	71,3	(69,3–73,2)	71	(65,9–76,6)
C22	Liver	24,7	(22,1–27,5)	24,4	(21,2–28,1)	29	(20,9–40,2)
C23-24	Gallbladder and biliary tract	25,7	(22,5–29,5)	22,8	(18,7–27,8)	24,4	(14,8–40,3)
C25	Pancreas	15	(13,8–16,3)	14,5	(12,9–16,2)	15,2	(11,2–20,7)
C33-34	Trachea and lung	30,2	(29,3–31,0)	29,3	(28,1–30,4)	31,4	(28,2–35,0)
C43	Melanoma	93	(92,2–93,9)	92,6	(91,4–93,8)	91,6	(88,3–95,0)
C40, C41	Osteosarcoma	67,9	(62,2–74,2)	71	(63,3–79,6)		
C64	Kidney	80,5	(79,0–82,1)	79,2	(77,1–81,4)	86,4	(80,7–92,4)
C67	Bladder	62,6	(60,3–65,0)	62,3	(59,1–65,6)	64,9	(55,7–75,6)
C70-72	CNS	67,2	(65,8–68,7)	68,1	(66,2–70,1)	67,1	(62,1–72,4)
C73	Thyroid gland	93,8	(92,4–95,3)	94,4	(92,4–96,4)	93,7	(89,5–98,1)
C81	Hodgkin lym-phoma	89,8	(87,3–92,5)	88,4	(85,0–91,9)	91,9	(83,0–101,9)
C82-86, C96	Non-Hodgkin lymphoma	79,3	(77,8–80,8)	78,4	(76,4–80,5)	82,9	(77,7–88,6)
C90	Myeloma	64,7	(62,3–67,2)	64,8	(61,6–68,3)	63,4	(55,4–72,5)
C91-95, excl.C91.1 and C92.1	Leukemia	65,2	(63,5–67,0)	64,6	(62,3–67,0)	70,7	(64,8–77,2)
C91.1	Chronic lympho-cytic leukemia	93,5	(91,2–95,9)	92,5	(89,3–95,8)	97,4	(89,5–105,9)

Oslo University Hospital connecting to the European Cancer initiatives

Europe is currently the venue for a large investment in supporting and facilitating measures on cancer. EU´s selection of cancer as one of the highly prioritized mission areas and through the EU Beating Cancer Plan (EBCP) are expressions of this. Norway takes active part in these programmes not least through Oslo University Hospital. We have leading roles in Cancer Mission programs, both research projects and coordination and support (CSA) projects as well as in Joint Actions in EBCP. In this section, we give a glimpse of these engagements. All together, they show that we consider European networking and collaboration to be a strategic investment for us – both to learn from others, to find partners to explore future possibilities together with and cancer centres that we can possibly to share our experiences with target at improving cancer care in Europe.

DIGICORE

Åslaug Helland, OUS CCC Head of Research and DigiCore Board Member

Digicore aims to develop real world outcomes research from hospital records further. Several prominent cancer centres in Europe are part of Digicore, in addition to two cancer networks and two commercial partners. Standardising routine electronic health records is necessary for high-quality research which can improve clinical practice. Oslo Comprehensive Cancer Centre is part of DIGICORE, and also part of several of DIGICORE's activities and projects (https://digicore-cancer.eu/).

DigiONE

Digital Oncology Network of Europe

Elin Hallan Naderi

In the fall of 2022, Oslo University Hospital was announced as one of six European cancer centres selected to join DigiONE. The DigiONE pilot is scheduled to run from Q1 2023 to Q2 2024, and aims to define a scalable international minimum dataset for cancer outcome research, achieve interoperability and high data quality on automated extraction of such a dataset from electronic health records at each site, and federate the centres allowing for complex protocollized research on real world data without the transfer of de-identified patient level data between the participating centres. Eventually, the DigiONE pilot aims to demonstrate that "fully digital" real world evidence is possible in a broader range across European countries. Engagement in DigiONE gives Oslo University Hospital the opportunity to build local competence and an international network facilitating future participation in real world evidence studies. In June 2023 DigiONE-Oslo hosted an international DigiONE network meeting. Currently, development of local technical solutions are ongoing, and several pilot studies are under development.

IDEAL4RWE

IQVIA-DIGICORE EArly career Leadership programme for Real World Evidence

Elin Hallan Naderi

As part of DIGICORE's mission to improve cancer care outcomes in Europe, they identified the need to equip future clinical researchers with the skills to scale digital methods into care systems, enabling them to drive real world evidence (RWE) research in the future. During the spring of 2022, DIGICORE launched a 12-month IDEAL4RWE leadership training programme including web-based seminars on RWE in cancer, group-based research leadership skills courses, and funding opportunities for RWE studies. Oncologist Elin Hallan Naderi participated from Oslo University Hospital, and is currently involved in a IDEAL4RWE-funded RWE study on immunotherapy in recurrent/metastatic head and neck cancer in collaboration with centres in Slovenia, Poland, Italy, Spain, Portugal, Belgium and UK.

Advancing Health in Europe - EU4Health 2021-2027

Ingrid Jenny Guldvik

The EU4Health Initiative addresses long-term health challenges, strengthening accessible health systems. With a €5.3 billion budget for 2021-27, it prioritizes public health, laying the foundation for a European Health Union. EU4Health is a stand-alone programme that brings added value and complements national efforts through 4 broad areas:

- To improve and foster health in the Union
- To tackle cross-border health threats
- To improve medicinal products, medical devices, and crisis-relevant products
- To strengthen health systems, their resilience, and resource efficiency

EU4Health will also help fund the Commission's policy priorities, i.e., cancer. €1·25 billion of EU4Health funding goes to Europe's €4 billion Beating Cancer Plan (EBCP), which aims to tackle the entire disease pathway, with ten flagship programmes spanning from prevention to the quality of life of patients and survivors. OUS CCC is an active partner in both EU4Health and EBCP through Flagship no. 5 and no. 7 in EBCP; Joint Action Network of Comprehensive Cancer Centres JA CraNE and Joint Action Network of Expertise (JANE).

JA CraNE - Network of Comprehensive Cancer Centres

The CraNE Joint Action aims to establish an EU Network of National Comprehensive Cancer Centres (CCCs) to support quality-assured early detection, diagnosis, and treatment of cancer patients. The main goals of CraNE JA are to create a sustainable structure for the EU Network of CCCs, improve access to comprehensive, high-quality cancer care, and develop a consensus model for CCCs. It gathers more than 46 partners across 25 countries.

OUS co-leads Work Package 7 (WP7 with Institute National de Cancer (INCa) in France, and are responsible for delivering the framework and criteria to enable the implementation of CCCs within an EU Network, both. The work in WP7 focuses on the development of harmonised standards and a governance model for CCCs that raises the bar for health care and research throughout Europe. The process will facilitate the integration of existing and potential CCCs across all countries. This with a strong focus on reducing the inequity in access to high-quality cancer care.

CraNE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PRIME-ROSE

Gro Live Fagereng, Kjetil Taskén

PRIME-ROSE- Precision Cancer Medicine Repurposing System Using Pragmatic Clinical Trials

PRIME-ROSE is a Horizon Europe Mission on Cancer project with 24 partners from altogether 18 European countries. The project was launched 1 July 2023 and will be running over five years. PRIME-ROSE is led by Prof Kjetil Taskén, Head of Institute for Cancer Research at Oslo University Hospital, and the project is funded with 6 million EUR. In addition, PRIME-ROSE is part of the Cancer Mission cluster of projects on Diagnosis and Treatment.

The PRIME-ROSE vision is access to affordable precision cancer medicine that prolongs life at the best quality possible for all cancer patients. The consortium composition reflects the unique approach taken by the community that has assembled around the shared interest of providing cancer patients who have exhausted other treatment options with access to precision medicine diagnostics and treatments.

The PRIME-ROSE project builds on a bottom-up, clinician-initiated family of PCM clinical trials which have been particularly successful in bringing up inclusion rates to offer additional lines of treatment and in providing patient benefit. These trials share the pragmatic clinical trial design of the original Dutch DRUP trial, with broad inclusion criteria and a limited set of endpoints. However, the trials are anchored into national context and are funded independently. The result is a distributed DRUP-like clinical trial network that addresses local priorities while collaborating internationally for scale and impact.

PRIME-ROSE uses these existing adaptive and pragmatic clinical trial platforms to answer key questions regarding clinical effectiveness, provide health-economic evaluations, and contribute to scientific progress across cancers. In particular, the cross-country collaboration provided by PRIME-ROSE will build capacity as well as enable cross-trial data aggregation and analysis, initiate shared cohorts across borders and provide health-economic evaluations. To ensure successful implementation, the consortium will work together with regulators, policymakers, payers, healthcare providers and patient advocacy groups to implement evidence-based precision cancer medicine in routine practice and address inequalities in access.

PRIME-ROSE is building on and collaborating closely with the related EU project PCM4EU. PRIME-ROSE is treatment-oriented whereas PCM4EU focuses on deployment of novel PCM diagnostic tools. Altogether, this EU-wide PCM deployment will address key scientific and methodological questions, leading to accelerated and improved access to new and effective cancer treatments. The ongoing effort is already leading to harmonization, standardization and pragmatic consensus.

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PRIME-ROSE

PCM4EU

Gro Live Fagereng, Kjetil Taskén

Personalised Cancer Medicine for all EU citizens

Personalised Cancer Medicine for Europe, PCM4EU, is a project funded under Europe's Beating Cancer Plan by EU4Health. The project is about facilitating implementation of molecular cancer diagnostics for precision oncology and has been granted 3 million Euro.

PCM4EU was launched in January 2023 and will be running over two years. The project is coordinated from Leiden University Medical Centre (LUMC) and has altogether seventeen partners from fifteen European countries. Oslo University Hospital CCC is the Norwegian partner in the project and is co-leading three work packages.

The PCM4EU project is set up to facilitate the use of precision cancer medicine diagnostics and pragmatic trials across Europe, and builds on the family of DRUP-like clinical trials. The consortium aims at using already existing entities as well as use proven successes of best practices to widen the access to molecular diagnostics and precision cancer medicine within regions and countries in the EU.

PCM4EU will:

- Evaluate current standards and provide best practice guidelines
- Provide recommendations on state-of the-art genomic diagnostics, implementation and interpretation
- Build shared cross-DRUP-like trial capacity in molecular diagnostics
- Facilitate mechanisms for interpretation of molecular and clinical data through harmonization and collaboration, thereby anticipating the benefits of the upcoming European Health Data Space
- Facilitate cross-border access to genomic testing and precision cancer medicine
- Facilitate implementation of results into the healthcare system in a cost-effective manner
- Provide education for all stakeholders, including physicians, pathologists, patients and decision makers

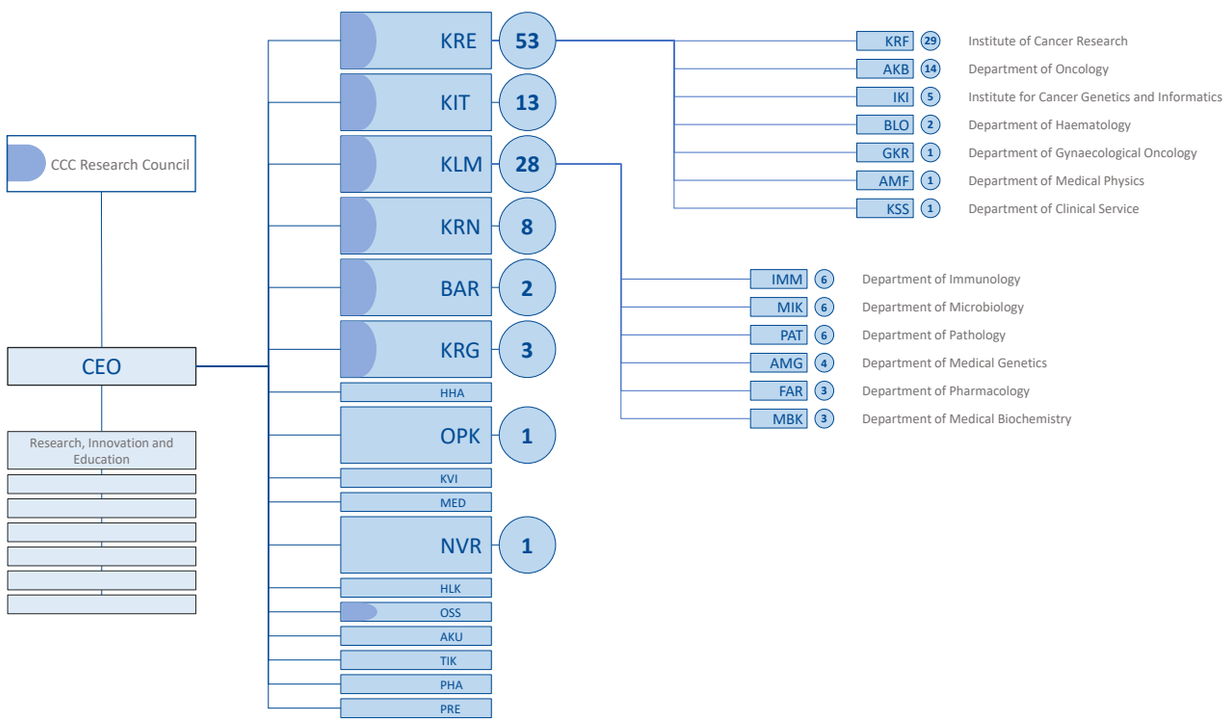
PCM4EU consists of six closely aligned and fully integrated work packages. Oslo CCC is co-leading three of these work packages:

WP2 Molecular diagnostics & Tumor Boards (Hege Russnes)

WP3 Implementation of Drup-like trials (Åslaug Helland)

WP4 Implementation and Dissemination (Kjetil Taskén)

CCC Research Groups



OUS CCC Research Activity 2022-23

Research is one of the main pillars in Oslo University Hospital Comprehensive Cancer Centre, and we have research strength in several different research topics. In 2022, we went through an accreditation process as Comprehensive Cancer Centre, and received important feed-back from the visiting committee, also in research. The year 2022 was a year with several highlights. Professor Håvard Danielsen received the King Olav V's research price (Kong Olav V Kreftforskningspris) for his work in artificial intelligence and prognostication of colorectal cancer. He was also awarded the Oslo University Hospital's research price. Professor Harald Stenmark received the Anders Jahre's major medical prize for 2022. Anders Jahre's Awards honours outstanding research in basic and clinical medicine. The prize is awarded by the University of Oslo and is one of the most prestigious awards in Nordic biomedical research. Professor Stenmark received this award for his significant studies of processes in cell membranes and how misregulation of such processes affects the development of cancer. In 2023 he also received Erik K. Fernströms prize, establishing Stenmark among of the most prominent researchers in Norway.

New centres of excellence was awarded from The Norwegian Research Council. PRIMA- Precision Immunotherapy Alliance- is led by Profs Kalle Malmberg and Johanna Olweus. The centre will focus on developing personalised immunotherapy to cancer patients. In addition, a centre of excellence led by profs Arnoldo Frigessi and Ingrid Kristine Glad also received funding. This centre is called Integrate, and will further develop artificial intelligence The third centre with cancer-related research was CRESCO- Centre for Embryology and Healthy Development .

In 2022 796 papers were published in peer reviewed journals of which 147 in journals with impact factor above 10.

There is extensive collaboration between different groups, departments including the Norwegian Cancer Registry and the University of Oslo, taking advantage of synergies and complementary competence. Still, trying to expand this collaboration and ensure even more collaboration between different groups is a focus area for the coming years.

In 2022, 1404 patients have been included in clinical trials, an increase from 2021 (956), we are currently running 152 trials in the clinic. Through several actions, we are working on increasing this number,
- both the number of patients included in studies and the number of ongoing clinical studies.

Research in OUS CCC constitutes of all cancer-related research in all of OUS' 15 Divisions as well as the Cancer Registry.

Prof. Åslaug Helland MD
Head of Research, Division of Cancer Medicine
Chair, OUS CCC Research Council

InPred

The regional health trusts have funded the implementation of advanced molecular diagnostics during the past 2-3 years. Infrastructure for Precision Diagnostics (InPreD[1]) was established with sites (nodes) at each of the six university hospitals in Norway. The two largest hospitals; Oslo University Hospital and Haukeland University Hospital, are responsible for implementation of advanced technology into standard diagnostics. Currently, a comprehensive gene panel test, the Truesight 500 test (TSO500) from Illumina[2], has been chosen as a starting point, after thorough consideration. This test was to be available for patients with advanced cancer, to assess eligibility for clinical trials. The comprehensive genomic profiling was implemented in Oslo University Hospital first, as the first InPreD node. However, the diagnostics were to be offered nationally securing equal access to testing. As testing capacity initially was much lower than the potential need, patients were referred to a national team who could prioritise which patients might have the greatest probability for a finding with clinical consequence. During the following 2 years, comprehensive genomic profiling was implemented at Haukeland University Hospital, Akershus University Hospital, and St.Olavs University Hospital as well, and today most patients referred will be tested. The coming year, the last two university hospitals will establish the same analyses, in order to have the necessary capacity. The selected comprehensive genomic profiling test analyses 527 genes, on DNA / RNA level, giving results on the most commonly altered cancer related genes. In addition, whole genome sequencing and methylation arrays are established for selected patient groups by InPreD. These diagnostic tests are part of the publicly available health care system, with reimbursement, aiming to identify patients for experimental treatment and clinical studies. InPreD coordinates the molecular tumour board meetings and personnel from all public hospitals are invited to participate, presenting their patients and discuss the results.


A molecular tumor board meeting for InPred and IMPRESS

IMPRESS

The IMPRESS-Norway clinical study was initiated April 1, 2021. This is a national investigator initiated clinical trial, with participation from all hospitals with a cancer department. The study has one profiling phase, where patients are included and the molecular analyses available in the InPreD pipeline is performed on tumour tissue. In addition, some patients also have analyses of the circulating tumour DNA in blood samples.

Thereafter, some of the patients are offered treatment based on the molecular profile of the tumour cells. This is dependent on the findings in the diagnostic work-up, and if there are drugs available in the study that matches the molecular alteration. The study has several drugs in its' repertoire, provided by different pharmaceutical companies to the trial. All drugs are approved by EMA and / or FDA and are used outside of their current indication. When the trial started, 8 drugs from Roche were available, and today 24 drugs are in the repertoire of the trial. This trial uses the diagnostics offered by InPreD, and more than 1400 patients have been included into screening as of November 1st 2023. Up to now, 21% of the patients have been offered treatment in IMPRESS-Norway based on the findings in InPreD. In addition, 11% have been offered treatment in other clinical trials or through so-called early access programs. These are programs were the pharmaceutical companies provide drugs to specific patients prior to approval.

Similar clinical investigator-initiated trials have been initiated in several European countries. The first such study was the DRUP trial in the Netherlands and thereafter several countries have initiated similar trials.

A Social Science Research Project on Cancer Care

Unveiling the Steps of Cancer Patient Pathways: On Managing Coordination in Complex Health Care Processes

Per Magnus Mæhle

Developments in cancer care are characterized by functional and organizational fragmentation resulting in complex structures and processes that still are closely interdependent. We rely on demanding processes of coordination to connect the mutually dependent steps - interacting in time, in space, and across organizational borders between linked specialists and entities and between several organizational levels- involving politics, administration, professionals, and patients. The main objective of this research project has been to expand our understanding of this coordination by answering the questions: How can we explain the coordination of politics and of practice related to cancer pathways?

The project consisted of two qualitative comparative case studies. One study includes the national decision and implementation processes of a similar reform in three Scandinavian countries investigating into coordination processes aiming to integrate policy goals with actual professional and administrative behavior. Another study explore the coordinating mechanism in the actual practicing of cancer patient pathways by studying this in three diagnoses and four hospitals. The analysis build on knowledge, concepts and models from the disciplines of sociology, political science and health care research.

The thesis concludes that coordination in this kind of complex implementation process and complex organizational context depends on managing the alignment of the legitimate institutional logics present – the medical logic, the economic-administrative logic and the patient related logic. This has an impact on managing the structuring organizational contexts of the pathways through different rules of conduct (direct control, negotiation, consensus processes, and consultation). When the processes of coordination in these cases seem to work, they are characterized by a certain mixture and iterative interaction between standardization and improvisation. This should be performed based on the recognition of that one size does not fit all—whether it is patients, diagnoses, pathways, hospitals, or health care systems.

Research Centres

European Palliative Care Research Centre

Tonje Lundeby and Stein Kaasa, Co-lead and lead of PRC

PRC is an international research centre at the Department of Oncology at Oslo University Hospital that is funded by the Norwegian Cancer Society and conducts large national and international studies focusing on patient-centred cancer care. During 2022 PRC has in addition to continuing ongoing studies, collaboration and educational activities gotten funding for three EU-projects (MyPath, JANE and EUonQoL). PRC also received funding through MATRIX, the national centre of excellence for clinical cancer treatment, where PRC members lead two WPs. Stein Kaasa is co-lead of the centre.

MyPath is a 5-year research and innovation project with PRC as project coordinator. MyPath aims to develop and implement digital patient-centered care pathways that can be systematically incorporated into routine cancer care using Implementation Science. In 2022 the consortium had its kick-off and the work of developing the patient-centred care pathways began.

In November PRC's annual international research seminar was conducted in Aarhus, Denmark entitled International collaboration – the key to progress. The seminar was a great success with participants from all over the world, and with high quality scientific content.

MyPath

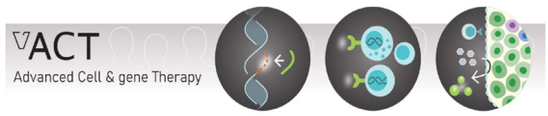
At the seminar results from our national project "Brain metastases in Norway- improved classification and treatment" was presented. The project aims to get more knowledge about patients´ with brain metastases and their caregivers´ experiences, symptoms and functioning. Clinical implications for further patient care were highlighted at the seminar. The project was also presented at the ESMO congress.

Advanced Cell Therapy (ACT) Centre

Cell and gene therapy are dynamic research areas that offer new treatments for diseases. This includes Advanced Therapy Medicinal Products (ATMPs) that target the underlying biology of the disease, offering the possibility of a cure. The success of cancer immunotherapy has driven the development of new therapies, such as CAR-T cell therapy for B cell malignancies. Stem cell biology advancements also provide opportunities to regenerate cells and tissues for chronic diseases and organ failures.

However, the development of these therapies is hindered by the lack of clinical-grade cell engineering and manufacturing. To address this, the ICR and the Department of Cancer Immunology, along with the OUS-CCC and the Department of Oncology and Section for Cell Therapy, have proposed restructuring the cell therapy unit at OUH. The goal is to ensure that Norway remains at the forefront of cell and gene therapy development and to make novel therapies available to Norwegian patients.

The ACT-centre will serve as a single entry point to support and guide clients through the necessary steps from research to clinical trials. This includes facilitating regulatory issues, process development, validation, agreements, and financing. ACT has the competence and resources to develop customized production processes for approved projects



MATRIX

Elisa Bjørgo

MATRIX – Norwegian Centre for Clinical Cancer Research

MATRIX is a national Centre for Clinical Treatment Research (FKB) co-funded by the Research Council of Norway and the Norwegian Cancer Society. The Centre officially opened in August 2022, and the over-all ambition of MATRIX is to help patients with hard-to-treat cancers to live longer with better quality of life. Professor Åslaug Helland is the Director of the Centre.

The Centre will develop next-generation precision diagnostics and treatment, facilitate advanced clinical trials as well as develop and implement digital patient-centred pathways that secure treatment and follow-up tailored to the individual. Furthermore, a Clinical Trial Engine is established for handling regulatory, logistical and clinical needs across Norway, and MATRIX will in addition contribute to training of study personnel. Oslo University Hospital is the host institution of MATRIX, but the Centre has partners and study sites across Norway. Altogether, fifteen hospitals with cancer departments as well as the University of Oslo and OsloMet are partners.

MATRIX collaborates with and builds on already ongoing national as well as international initiatives within precision cancer medicine and patient-centred care, including InPreD, IMPRESS-Norway, CONNECT, PCM4EU and MyPath. The Centre develops and tests new treatment strategies in clinical trials, including in earlier lines of treatment

MATRIX
NORWEGIAN CENTRE FOR
CLINICAL CANCER RESEARCH

New Centres of Excellence

OUS-CCC will harbour three new Research Centres of Excellence – CoEs, organized by the Norwegian Research council (RCN). The centres receive 15 M€ over a 10-year span.

- **PRIMA** – Precision immunotherapy alliance (Karl-Johan Malmberg & Johanna Olweus).

- **CRESCO**- Centre for Embryology and Healthy Development (Arne Klungland & Lorena Arranz).

Integreat –The Norwegian centre for knowledge-driven machine learning (Arnoldo Frigessi & Ingrid Glad).

PRIMA Director Malmberg (3rd left) with centre PIs during CoE award ceremony with Director RCN Mari Sundli Tveit (left) and Secretary of Education Ola Borten Moe (2nd left)

CanCell - Centre of Cancer Cell Reprogramming

Anders Øverbye, Harald Stenmark

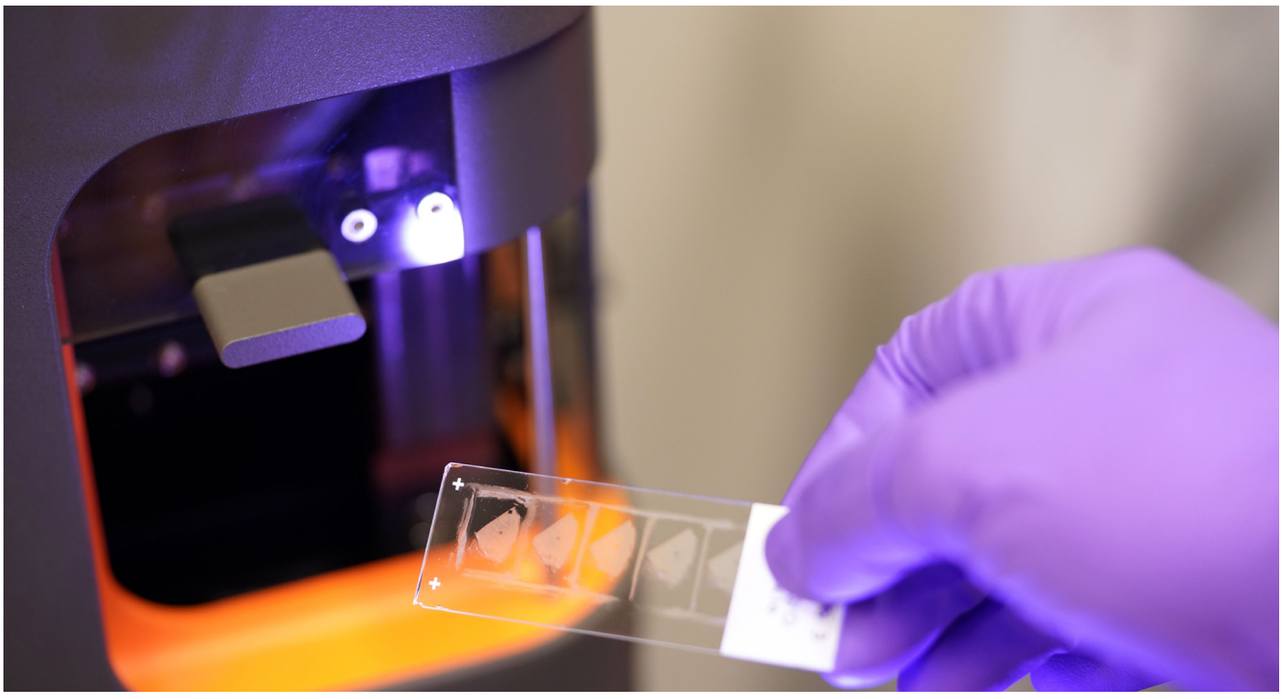
CanCell is a Centre of Excellence initiated by Norwegian Research Council (NFR) in December 2017. It numbers 125 researchers and technical staff distributed among six research groups at two locations – Institute for Cancer Research (Enserink, Rusten, Wesche and Stenmark) and Institute for Basic Medical Sciences (Eskeland and Simonsen). The Centre is led by Professor Harald Stenmark and co-director Professor Anne Simonsen, and has an average annual internal and external funding of around 100 MNOK (10M€) until 2027, of which 16.7 MNOK is granted by NFR. In addition, seven prominent investigators are associated with CanCell, including Åslaug Helland, Eivind Hovig and Yngvar Fløisand from OUS-CCC.

Customarily Norwegian Centres of Excellence are reviewed at midterm (5 years) by an external panel appointed by the Research Council of Norway (RCN) as a condition for receiving continued funding. However, due to funding constraints the revision was cancelled for fourth installment CoEs such as CanCell. Although this is good news, the cancelled midterm review also came as a bit of a disappointment for CanCell since the midterm review would have been a good occasion to showcase the accomplishments of CanCell´s scientists so far. We believe that CanCell has delivered very well in terms of ground-breaking science, acquisition of prestigious national and international grants, career development and public science dissemination, and CanCell's success in promoting the careers of young researchers is demonstrated by the graduation of 20 PhDs so far, the award of 5 large-scale career grants, and the fact that 5 of CanCell's junior scientists have obtained positions as associate professor. CanCell continues to disseminate its research results for wide audiences, and last year's "CanCell communicator of the year", Pilar Ayuda-Duran, is a good example of a young scientist who communicates science in multiple channels

K.G.Jebsen Centre for B-cell malignancies

Ludvig Munthe, June Myklebust

The Centre, consisting of three clinical groups (Fosså, Schjesvold and Tjønnfjord) and four research groups (Munthe, Myklebust, Schjerven and Taskén), started up in 2018 and was recently extended with two additional years. The center aims to identify new biomarkers and to develop and test new therapies for patients with leukemia (B-ALL and CLL), lymphoma and multiple myeloma. The clinical portfolio continues to increase and currently includes 80 clinical trials. Of these, 26 studies are actively recruiting patients, 18 studies are in start-up phase and 36 were in follow-up. The record high number of clinical studies also in start-up phase demonstrates the Centre's position in providing the latest therapeutic treatment regimens, available globally, for Norwegian patients with hematological malignancies. New therapies under testing include new combinations of chemotherapy with kinase inhibitors, new monoclonal antibodies directed to tumour cells, and various forms for immunotherapy including CAR T cells, new bispecific T-cell engagers and immune checkpoint inhibitors. The Centre also has a strong translational research profile. This includes preclinical development of immunotherapy with innovative CAR constructs, targeting tumour cells or suppressive elements in the tumour microenvironment to skew immune responses towards anti-tumour immunity. We have also developed novel functional assays for precision medicine and new models for risk stratification to identify high-risk patients in need of more intensive treatment. In addition, we have been instrumental for the ground-breaking initiatives for personalized medicine and contributed to new ways of thinking and design of such studies – this includes the IMPRESS Norway trial and the InPreD-Norway biomarker discovery platform. Research groups within the Centre has strongly contributed to COVID-19 and SARS-CoV-2 vaccination research with focus on high-risk groups. In 2022, we published 59 articles of which 48 were original articles and 10 of these were results from clinical trials. Many were published in top international journals including N Engl J Med, Nat Med, Nat Biotechnol, Lancet Oncol, Lancet Rheumatol, Lancet Haematol, Nat Comm and Blood.



Editiorial Staff

Ingrid Kristine Small Hanto

Anders Øverbye

Sigbjørn Smeland

Åslaug Helland

Per Magnus Mæhle

Photography

Thea Tønnessen, OUS

Per Marius Didriksen, OUS

Lars Petter Dyvik, OUS

Øystein Horgmo, UiO

Katrine Lunke, Apeland

Kreftregisteret

Helse Sør-Øst

OSLO UNIVERSITY HOSPITAL
Comprehensive Cancer Centre

02770

www.oslo-universitetssykehus.no/oslo-university-hospital

E-mail: oushfkreftstyret@ous-hf.no