Forskningsrådet

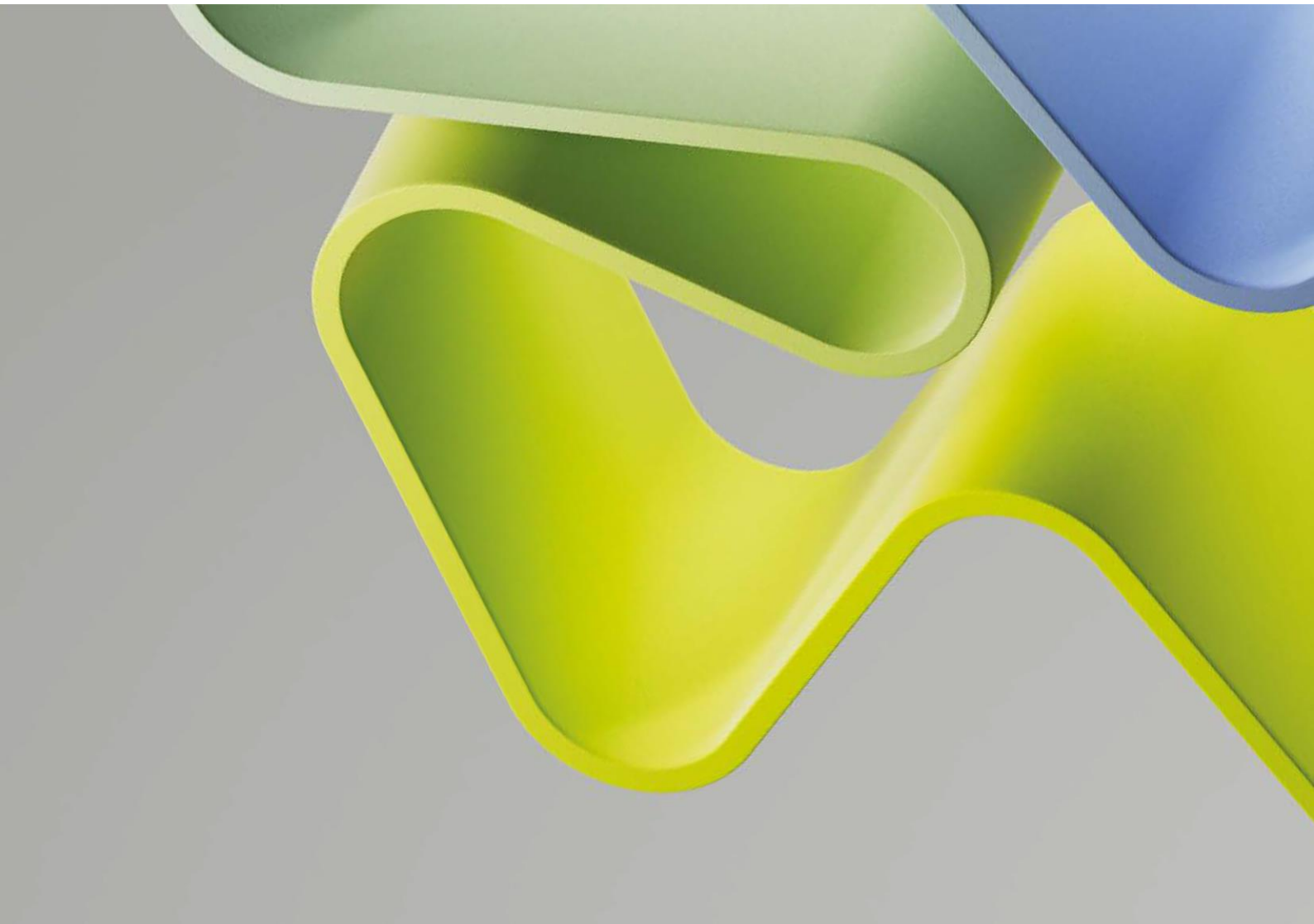
Evaluation of Life Sciences 2022-2024

Evaluation of medicine and health 2023-2024

Evaluation report

ADMINISTRATIVE UNIT: Division of technology and Innovation
INSTITUTION: Oslo University Hospital and University of Oslo

December 2024



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Statement from Evaluation Committee Health Trusts 3

This report is from Evaluation Committee Health Trusts 3 which evaluated the following administrative units representing the hospital trust in the Evaluation of medicine and health 2023-2024:

- Akershus University Hospital, Akershus University Hospital (AHUS)
- Haukeland University Hospital, Haukeland University Hospital
- Division of Laboratory Medicine, Oslo University Hospital and University of Oslo
- Division of Medicine, Oslo University Hospital and University of Oslo
- Division of Radiology and nuclear medicine, Oslo University Hospital and University of Oslo
- Division of Surgery, Inflammatory Diseases and Transplantation, Oslo University Hospital and University of Oslo
- Division of Technology and Innovation, Oslo University Hospital and University of Oslo
- St. Olavs University Hospital, St. Olavs University Hospital
- Stavanger University Hospital, Stavanger University Hospital (SUH)

The conclusions and recommendations in this report are based on information from the administrative units (self-assessment), digital meetings with representatives from the administrative units, bibliometric analysis and personnel statistics from the Nordic Institute for Studies of Innovation, Research, and Education (NIFU) and Statistics Norway (SSB), and selected data from Studiebarometeret (NOKUT). The digital interviews took place in Autumn 2024.

This report is the consensus view from Evaluation Committee Health Trusts 3. All members of the committee have agreed with the assessments, conclusions and recommendations presented here.

Evaluation Committee Health Trusts 3 consisted of the following members:

Professor Jørgen Frøkiær (Chair), Aarhus University

Professor Geoff Bellingan,
University College London Hospitals

Associate Professor Dirk Bender,
Aarhus University

Professor Tomas Jernberg,
Danderyd Hospital

Associate Professor Tuomo Meretoja,
Helsinki University Hospital

Professor Shakila Thangaratinam ,
University of Liverpool

Professor Marie Wahren-Herlenius,
Karolinska Institutet

Veerle Bastiaanssen, Technopolis Group, was the committee secretary.

Oslo, December 2024

Profile of the administrative unit

The Division of Technology and Innovation (TIK), consist of four departments whereas The Intervention Centre (IVS) is the main R&D department. In terms of research staff, the division consists of seven professors, six associate professors, four senior physicians, ten researchers, eight postdocs and ten PhD students. In total, women occupy 20% of positions and out of them none are professors, but share of women has increased the last two years with one professor and one associate professor at IVS

The Division of Technology and Innovation comprises two research environments , IVS and The Oslo Bioimpedance and Medical Technology Group. The latter is not being evaluated separately in EVALMEDHELSE but described in the self-assessment report administrative unit TIK.

The research strategy and the Action plan for research in TIK are influenced by the activities and research profile at IVS where education, research, patient care, and innovation intersect. By fostering collaboration, promoting knowledge exchange, and prioritising patient needs, IVS maximises synergies across its diverse objectives, driving forward the future of technology-based medicine. Moreover, at the core of TIK's strategy and highly interdisciplinary research lies a dedicated focus on Technology-based Medicine, encompassing image-guided (MRI, CT, fluoroscopy, ultrasound) minimally invasive therapies, utilisation of robotics, navigation systems, and simulations for surgeries and interventions, processing of image and big data with artificial intelligence (AI), advancements in sensor technology and explorations in synthetic biology.

The work of the administrative unit in relation to its sector includes its commitment to technology-based medicine with the hospital sector-specific objectives. These include 1. Clinical Trials (with clinical outcome endpoints), 2. Patient experience studies (including QOL and qualitative methodology) 3. Health Economy studies (cost/efficacy for patients, hospital and society) 4. Organisational consequences from new methods 5. Medical technology, ICT and AI R&D. Moreover, TIK is also contributing to achieve both higher education institution- and research sector-specific objectives and has high activity towards private-public partnerships. The former by conducting and disseminating research at the high international level and the latter by, among other things, obtaining competitive national and international research grants and employing permanent researcher staff allocated to research fields within medicine.

Based on the self-assessment, in the future, the TIK might take advantage of internal strengths such as the broad patient base with widespread contacts in OUS and other hospitals, the aggregated technology and innovation environments with experience in establishing startups, private-public partnership and the stable basic funding and good influx of external funding. The TIK might also take advantage of external opportunities such as the increased funding from the Horizon Europe program and the possibility for secondary use of health data for research using Clinical Data Warehouses. There are also challenges that may impact the future situation of TIK. These include limited research support, some lack of collaboration between departments in TIK and lack of unified data infrastructure for research.

Overall evaluation

The committee welcomed the report and information from the Division of Technology and Innovation (TIK), Oslo University Hospital. Evaluation of the unit is based on the Terms of reference and the self-evaluation report, and interview and additional available material. The group appears to be made up from a number of unrelated subgroups and it is not clear how they are bound together for a common research strategy; this was something the team themselves noted too.

There are a number of exciting research and innovation opportunities within the group, both for local and potentially national approaches. The Intervention Centre looks more like a central core facility with research infrastructure rather than a research group. However, the facility is extraordinary and some of the research that has come out from this facility has also been of very high quality. The committee could not determine the degree to which the TIK team or OUH itself saw this facility as a local [OUH/Oslo] resource or a national resource? Given few other places have any such capabilities the Intervention Centre could well be managed more as a national resource however it is not clear this is the way it is being thought of or “sold”. This group aims to be the reference centre for new imaging technologies as well as for minimally invasive procedures, but the committee noted that they had not moved into the robotic surgical space and there was some concern that they need to be more alert to horizon scanning for developing opportunities as technological fields move fast and it is easy to fall behind. The group emphasise they have aspirations to innovate through digital technology / AI. They need to describe their digital governance more clearly.

The group governance is well described. It was ISO9001accredited in 2015. Supervision of master's and PhD theses has been consistently successful. Administrative support from University of Oslo is well described, especially clinical trial unit, centre for biostatistics and epidemiology, team registry support and administrative registry support. The main strength of this group is the ability to carry out high technology interventions linked to innovative approaches to minimally invasive interventions and technology for surgical planning and navigation. Their main weakness is scarcity of internationally funded projects and in attracting sufficient industry funded activities. Indeed, industry driven project funding seemed to provide limited contribution in the budget. Basic funding from the University has steadily grown whilst funding from the Norwegian Research Council and international funding has been decreasing. Thus, it is imperative that the group increase cooperative/ partnering efforts to secure national /international funding and are more attractive to industry.

Aside work on minimally invasive surgery they have positive outputs in thermal ablation, bioimpedance has a good track record including a spin off investment, wireless capsule endoscopy with image sensor chip and machine learning models in pre-clinical testing could all be exciting. Likewise, collaboration on extracellular vesicles for biotherapeutics and a prototype nanonetwork molecular comms system for glioblastoma are also exciting but, for many of these, they need to move on and demonstrate effective impact not just publications.

The expert panel noted that the group should incorporate a specific dissemination plan of all scientific activities under development, communicating them in a lay language to media, press and social media. The group should develop a plan to involve all stakeholders, including patients, patient organizations and advocates, in a platform where they can interact, share and get advice on how to prioritize, plan and develop all patient-oriented research, whatever is clinical or translational.

Recommendations

The committee recommends that the unit works with the local and national policy makers to define the degree to which they are a national resource (especially for the Intervention Centre) to help as a hub for the country for their technology development. This may include understanding any synergies between activities in Trondheim and this Unit which appear to have similar capabilities.

The committee recommends that the TIK develops a strong multidisciplinary horizon scanning capability to ensure they can stay cutting edge with future developments. This is exemplified in the way the Intervention Centre does not have a profile in developing robotic surgical skills. Another example is that it is not clear their capacity / profile re where and how biobanks synergise with current and planned activities.

The committee recommends that the unit ensures that it retains sufficient research and development time and capacity in the Intervention Centre and don't lose this at the expense of operational/clinical pressures.

The committee recommends that the unit needs to focus on increasing partnership working and co-operative working with industry and international partners to secure more diverse funding and importantly to attract new and diverse skilled staff.

The committee recommends that, along with developing a plan for their future work on AI and Big Data, the unit has a clear strategy to underpin this with improved IT functionality.

The Committee recommend the Unit retains their model of a centre with a range of strategic skills to support a wide portfolio of academic clinical and industrial partnerships however they will need to develop a more cohesive team approach and ways of binging the groups together more clearly this can be helped by improved external communications on their activities. and strengthens their governance program so that this balance is safely maintained.

The committee recommends that the Unit is rigorous in retaining sufficient research time in its activities and in the job plans of its key staff.

The committee recommend that, as TIK is so dependent on critical infrastructure including its digital and major capital theatre/imaging technology, that it will need a future funding strategy for replacement and also a business continuity plan for any challenges.

The committee recommends that it is key that researchers in TIK understand that real success lies, not in getting the next grant or publication but in ensuring their technical innovations result in real change in clinical or operational practice for the public and society

1. Strategy, resources and organisation of research

1.1 Research strategy

The Division of Technology and Innovation (TIK) was established in 2021 to consolidate and bolster technological innovation within the hospital. It consists of 4 departments, the Intervention Centre, the department of Clinical and Biomedical Engineering, the department of Technology and e-Health and in the new arena for public-private collaboration Health 2B in which TIK have a responsibility for OUS:

The Intervention Centre is the largest and the TIK research strategy and action plan for research are strongly influenced by IVS activities and research. They aim to foster collaboration, prioritize patient needs and drive advances in technology-based medicine.

At the core of TIK's strategy and highly interdisciplinary research is a focus on Technology-based Medicine, encompassing Image-guided minimally invasive therapies, utilization of robotics, navigation systems, and simulations for interventions Image and big data processing with artificial intelligence (AI) and advancements in sensor technology and explorations in synthetic biology

These align with the overarching research strategy of OUS. TIK R&D endeavours are guided by two principal strategies with specific objectives:

1. To establish TIK as a globally eminent hub for research in technology-based medicine: TIK serves as OUS's platform for pioneering new treatment methodologies and operational protocols. The focus on Life Sciences, aims to foster a collaborative nexus with University of Oslo (UIO) Life Science by 2026, centred around "Technology-based medicine".
2. To cultivate a collaborative arena to accelerate innovation in OUS and enhance adoption of innovative solutions: By 2028, TIK aims to host a "Centre for Research-based Innovation" in domains like machine learning, translational research and minimally invasive surgery. The Health2B collaborative arena within TIK, established by 2026 in partnership with Oslo Science Park is anticipated to demonstrate financial benefits for OUS and society. They aim to positioning TIK as a preferred test site in the Nordic region for industry-academia research collaborations focusing on new technology trials.

The IVS quality management system includes clinical, preclinical and technological research, development of future treatment technologies as well as operation of advanced operating rooms and training of personnel. TIK's strategic integration and collaboration are focused to advance technology-based medicine. TIK, via IVS, embeds advanced technological solutions into training modules, offering hands-on experience for students, researchers, medical professionals and collaborations with industry leaders. The Centre serves as a national training hub, exemplified by its role as a Training Centre for minimal invasive Hepato-pancreato-biliary (HPB) surgery in collaboration with Medtronic.

Technologies tested in research settings have been fast-tracked to patient care, successful commercialisation activities have been delivered and IVS is a hub for research innovation and knowledge transfer, hosting seminars, workshops, and conferences. It is not clear that the scale of this is what is envisaged or needed yet.

The committee's evaluation
Established recently to advance technology adoption and innovation this group has a number of able researchers who work to ensure connections to university, clinic and industry. As stated, this is heavily biased to the intervention centre, and they need to be careful that this does not become too operational rather than innovative/research focused. They have the advantage of breadth and are not the domain of only a few clinical areas.

They have been successful in minimally invasive technology improvements but have a risk in that they do not currently have a surgical robotic program. They are also working with big data – though the scale of impact here remains to be seen. They have an interesting sensor technology development pathway and, though little discussed in the pre-provided information, also have other areas that could be important including synthetic biology. They spoke of creating a biobank – this is clearly an exciting area that could be ripe for future work and improve collaboration capabilities, and it is not clear the degree to which there is interaction with Biobank Norway and BBMRI.

They have an established advisory board for prioritisation decisions to balance access and ensure strategic direction; they invite the hospital to participate and bring projects. This is supported by leadership meetings. They are working with several industry companies on current and future plans. They noted navigation system development and the learning on having R&D agreements in place. They also invite industry partners through platform agreements and have connect industry to clinician initiatives.

They noted the new hospital build and potential funding for technology; they described an aim to make an ecosystem hub in Oslo. This raised the question as to the degree they see themselves as a local or a national resource.

Their model is to have a centre with permanent staff to serve the systems that allow collaborative developments. This requires more than clinical and technological expertise. They have a legal advisor, health economists and social scientists. Staff are trained to handle industry cooperation and research. They were able to give good examples of collaboration with research groups not part of the division for example the division of psychiatry and work on AI and research with their registered patients. Similarly for cardiology department where collaboration has translated a research project into routine practice and the establishment of an invasive cardiology group. They did note that in all they are very much in the early phase in linking the hospital, university and industry. They are looking at others, e.g. the Karolinska, who are ahead which is good.

When asked about their overall strategy to improve commonality between hospital and university they positioned the story more broadly by including industry [more med-tech than pharma] and data/AI. They noted funding was always a limiting factor but aimed to involve more the maths science and computing faculties along with human and social sciences.

The committee´s recommendations
The committee recommends that the unit ensures that it retains sufficient research and development time and capacity in the Intervention Centre and don't lose this at the expense of operational/clinical pressures.

The committee recommends that the unit works with the local and national policy makers to define the degree to which they are a national resource to help for a hub for the country for their technology development. This could include discussion on any joint interaction with the facility in Trondheim, if this is seen as aligned.

The committee recommends that the unit ensures they retain sufficient diversification across their portfolio [Intervention Centre, links with Biobank Norway and BBMRI, AI/Big

Data biomedical engineering, Education technology and E health and their Health2B collaborations] to ensure they have resilience.

1.2 Organisation of research

The TIK team describes the OUS and UiO [especially the Faculty of Medicine] as having a very close collaboration with common research groups and many scientists having dual positions. This is shown in that approximately 70 percent of publications combine OUS and the Faculty of Medicine as affiliations and that researchers are often co-located. This also means other facilities [laboratories, biobanks, biostatistics, clinical trial and administrative support etc.] are all close by and available.

The research leadership in TIK includes: A head of division (associate professor at Institute for Physics, UIO); a head of research (professor at Klinmed, UIO); and the research committee in TIK composing 12 research group leaders, Head of IVS and the manager for industry collaborations meets monthly. Academic positions in TIK are distributed among 3 universities and 1 Business School.

As noted above, their model is to have a centre with permanent staff to serve the systems to allow collaborative developments. This requires more than clinical and technological expertise. They have a legal advisor, health economists and social scientists. Staff are trained to handle industry cooperation and research. IVS has 6 high-tech operating rooms with advanced imaging equipment integrated in an operation room environment. Four have adjacent laboratory, MRI and CT scanners. The MR facilities are also a test site for Philips and Siemens. The ORs are approved for both animal research and human operation. All relevant staff have annual Good Clinical Practice Course and are trained to perform preclinical studies/animal testing.

The IVS has 3 university-employed professors, 2 professor emeritus [Faculty of Medicine UIO], 1 professor [Department of Informatics, UIO], 1 professor [Department of Electronics and Telecommunication] and 1 associate professor [Department of Computer Science, Norwegian University of Science and Technology, Trondheim], and 1associated professor [Institute of Psychology, University of Oslo]. A functional MR imaging research group from clinical Psychology is led by a professor [Institute for psychology.] The Bioimpedance and Medical Technology group has one professor and one associate professor [Department of Physics, UIO]. Altogether 111 persons from 26 nations work at IVS. External funding accounts for 40% of the total budget. By January 2023, 48 PhD fellows and 30 master students have their main or co-supervisor from IVS. 47 master's degrees and 55 PhD thesis were finalized in 2012-2022. 7 PhD fellows and 7 master students have their main or co-supervisor from the Bioimpedance and Medical Technology group and 35 master's degrees and 12 PhD thesis were finalized in 2012-2022.

There is evidence of linkage with many industries and movement between groups. The IVS embeds advanced technological solutions into training modules, offering hands-on experience for students, researchers, and medics. TIK collaborates with tech companies and outreach extends online utilizing websites and social media to engage the community,

To ensure time for research for employees with combined positions as senior consultant at OUS and at UiO Klinmed, an agreement between the two institutions means two days per week are normally set aside to safeguard research for OUS and UiO and teaching medical students for UiO. The unit links with the faculty of medicine postdoctoral program for courses in Career development, communicating research, Innovation, Research management, Supervision and Writing grant applications, and a Peer mentoring scheme

TIK supports researchers stays/secondments at other relevant institutions nationally and internationally in duration from 1 week to 9 months. The mobility is mainly funded through the projects and their external funding sources. In general funding schemes like MSCA-RISE and COST-action are sought for mobility support for internal researchers.

The committee's evaluation

The unit were keen to be visible to allow them to attract new talent. They recognised this needs an international network and larger scale funding. They believe they are in a good position within Norway, and they have a network of faculties and have good track record of EU grants and funding. They are not in this position internationally.

They are excited about the potential of funding for the new hospital build and the associated technology they could develop but need a strategic way of choosing how to use this money. They know that AI development is fundamental but are open they don't have a bullet proof plan to advance their AI program decisively but believe they have the right bricks to build this plan from. They are establishing virtual AI centre where they can make all legal affairs, can guide groups in the right direction and can have some control. Retaining some control is vital so as not to spread too thinly. They noted that by having a local research infrastructure and including nurses, statistics, legal etc. they aim to help teams doing research.

They note the new build money is a loan which they would need to pay back and thus this will require careful planning, so their work generates a return. They discussed risks around their IT provider which has many bottlenecks, and this is an important area of concern but also potential development for them. On the funding side they also noted that if they generate an unbalanced amount of external industrial or commercial funding this is also a threat for the unit as it can be difficult to sustain research time in job plans that are mainly commercially resourced. A parallel threat is that with increasing links to industry the comparison of salary scales becomes more apparent, so salary competition is harder, and staff retention can be challenged. They noted that they have a lot of patients going through their facility and they need to take care of them – so highlighting the operational pressure that can be a risk.

The committee felt that the team, though small and quite diverse, did have a fair degree of synergy and common cause. The unit was productive in terms of research output, training and had much to offer in a broader approach to training, education and innovation. The skill set needed to keep the core team effective was well described including legal, health economics, social and health scientists, research nursing and other support staff. This, along with the capital costs for equipment and new technology will make such a unit relatively costly to run but can be highly effective. The need to keep a portfolio of industry and of academic and of directly patient benefitting programs of activity was essential. The governance processes described appeared to be functional at this stage – though it is not clear if they will sustain if other aspects of the unit, such as big data and AI, or biobanking etc. become more important – thus challenging the current power of the intervention centre. Again, the intervention centre will need to keep up to date with technology, such as robotic technology, for surgery/interventions and of more collaborative activities such as creating appropriate biobanks, and this is going to be a continual challenge for the unit to stay cutting edge.

The committee noted the SWOT analysis comment that there is still a lack of collaboration between departments in TIK. The utilization of potential in TIK is therefore suboptimal.

The committee´s recommendations

The committee recommends that the TIK will need to develop a strong multidisciplinary horizon scanning capability to ensure they can stay cutting edge with future developments. This is exemplified in the way the Intervention Centre do not have a profile in developing robotic surgical skills. Another example is that it is not clear their capacity / profile re where and how biobanks synergise with current and planned activities.

The committee recommends that the Unit puts ongoing effort into developing more international academic partnerships to enhance their ability to attract new staff and new skills. In parallel that the development of industrial partnerships is pursued but there is a clear strategic balance that is struck in these endeavours

The Committee recommend the Unit retains their model of a centre with a range of strategic skills to support a wide portfolio of academic clinical and industrial partnerships however they will need to develop a more cohesive team approach and ways of binging the groups together more clearly to improve functionality. This can be helped by improved external communications on their activities. and strengthens their governance program so that this balance is safely maintained.

The committee recommends that, along with developing a plan for their future work on AI and Big Data, that the unit has a clear strategy to underpin this with improved IT functionality

1.3 Research funding

The annual basic funding of approximately NOK 2 billion is allocated to TIK via OUS. About ¾ is spent on the regional ICT service provider, Sykehuspartner. Approx. 2% is dedicated to research and innovation. However, the latter share increases to about 6% after controlling for Sykehuspartner. The share of basic funding used for research is mostly spent by IVS and MTA. Moreover, external funding makes up about 40% of the total expenses at IVS (excl. The Section for Medical Home Treatment). TIK receives an annual funding of 3 MNOK from the Regional Health Trust in the capacity of being regional innovation support for all of the hospitals in the region. Grants from HSØ have also funded R&D and innovation activities in various projects. The NRC has funded projects, events and activities to establish projects, through different programmes such as: IKTPLUSS, GLOBVAC, FRINATEK, HELSEVEL, FORNY2020, PES2020, FORINFRA, BIA and HELSEINNOVASJON. Other national funding sources include the Norwegian Armed Forces Joint Medical Services and the Bergesen Foundation. IVS TestBed has facilitated a wide array of commissioned/contract research and consultation services in collaboration with about national and international 30 companies

Looking at funding the competitive national and international grants the Unit has received they list over 5.4 million NOK from International grants and over 27 million NOK from national grants although the timescale for this is not clear. As noted, then they declare that 40% of funding is external but the committee did not know the detailed mix of commercial vs research grant funding especially the balance with which commercial funding allows R&D.

The committee's evaluation
As described in previous sections this unit has a different need and approach to most of the more traditional research units in that it has this balance of commercial/tech work with academic and with patient-based activities and has costly IT and capital support needs. The group is clearly active in both teaching and training and research with a good number of PhDs, Masters and publications as well as success in grant funding. Indeed, they have had several significant EU funded grants. In parallel they are doing clinical activities and are doing a diverse range of tech-based work. This is essential to their success but in the right moderation. It appears to the committee that they have struck this balance fairly at present, but the unit themselves were aware and concerned about the potential for activities to drift more towards serving only income generating rather than research generating work if not closely monitored

The committee's recommendations
The committee recommends that the Unit is rigorous in retaining sufficient research time in its activities and in the job plans of its key staff.

The committee recommends that major international grants such as EU funding or other strategic international research grants form a core basis of the plans for all the departments within the Unit

1.4 Use of infrastructures

TIK self assessment comments that researchers have access to an extensive range of national, regional, and internal infrastructures. Oslo University Hospital (OUS) operates several regional core facilities, and the University of Oslo (UiO) likewise (uio.no). These facilities are located in close physical proximity to our researchers. The infrastructure for biobanks is of great importance to many and is undergoing development and modernization. This is part of the national infrastructure Biobank Norway, which is also a component of the European infrastructure "Biobanking and Biomolecular Resources Research Infrastructure" (BBMRI). Researchers also benefit from the national infrastructure for clinical studies, NorCrin, which is part of the European infrastructure European Clinical Research Infrastructures Network. Digital infrastructure is of particular importance as well. It is crucial for researchers to be able to utilize the TSD at UiO Services for sensitive data (TSD) - University of Oslo (uio.no), as well as services from the bioinformatics core facility at OUS OUH - Bioinformatics Core Facility (ous-research.no). They list the following as the most important infrastructures used in TIK:

- IVS: In addition, facilitation for phantom experiments, pre-clinical and clinical studies.
- NorMIT
- Services for sensitive data (TSD) - University of Oslo (uio.no):
- AI servers with high-end graphics are available at IVS for training AI algorithms and inferencing.
- 3D Printer facility at OUS. www.ous3d.no (research, planning support and surgical guides) The infrastructure of Robotics and Intelligent Systems research group at UiO/IFI. Robin (uio.no):
- Digital Signal Processing and Image Analysis (DSB) - Department of Informatics (uio.no):
- Available for research groups through adjunct position, collaborations and co-supervision of PhD candidates

The committee's evaluation
The committee recognises that TIK is different in that it will need to approach this through different lenses than most research organisations. Indeed, the IVS [operating room] capabilities, and to some degree the digital approaches too, are in many ways unique and the TIK team and their partnerships will have different needs to many research organisations.

The Unit appears to run on the coat tails of much of the Faculty of Medicine for many of its interactions with more formal local and national processes [biobanking, access to support processes etc] and this is probably appropriate for a small and evolving Unit with specialist needs and outputs but there will still be a lot to be gained from ensuring they are availing of the benefits from these kinds of national and international infrastructures.

The committee's recommendations

As TIK is so dependent on critical infrastructure including its digital and major capital theatre/imaging technology, the committee recommends that it develops a future funding strategy for replacement and also a business continuity plan for any challenges.

1.5 Collaboration

The Unit notes that TIK has a robust policy for fostering national and international collaborations, emphasising partnerships, establishing projects' consortia with both national and international partners from universities, hospitals and industry. These consortia actively participate in the preparation of project proposals, leveraging a combination of either similar or complementary expertise. Upon funding, these partnerships translate into joint research activities and project coordination.

They give the example of a successful public-private collaboration between the IVS and the contractor company Sopra Steria, which was granted through NRC through the project HoloCare Cloud and resulted in a co-owned company HoloCare AS, which has now secured EU-funding. The IVS is also a "TestBed" and member of the Nordic Proof network of Nordic TestBeds Nordic Proof and Norway HealthTech Norway Health Tech where the Head of the TIK is in the steering board.

The committee's evaluation
The Unit has some interactions with Trondheim – sharing an associate professor in computer science. It is not clear if this is part of a more strategic plan between the two groups or in their underpinning strategies, but this is worth exploring further to see if advantages exist given the similarities in some of their activities.

The unit has a number of other academic collaborations listed including Oslo Metropolitan University [Extracellular Vesicles for Biotherapeutics], University of Oslo [cardiovascular research], NorMIT [St Olav's hospital], Norwegian computing centre [strengthening cybersecurity] etc. And with a number of commercial collaborations, many of which have strategic value including in the OR/Imaging space especially as MRI test sites and for links with sensor technology and minimally invasive surgery. They have some big data and AI expertise, but it is clear they need to develop this aspect of their work and partnerships. They spoke of developing a biobank for the Comet study and clearly this kind of activity helps encourage a range of future collaborations and should be encouraged and diversified, especially with developments in Biobank Norway and BBMRI.

The committee's recommendations
As noted in the earlier recommendation, there may well be synergies between the Intervention Centre and the facility in Trondheim with which collaborations already exist. The leadership teams should explore the degree to which these facilities should be part of a national research facility.

The committee recommends the Unit focuses on developing more strategic partnerships for example in AI and in the handling of big data/computational approaches as well as considering opportunities for biobanks or collaboration with biobank facilities to all help partners.

1.6 Research staff

TIK noted they had 13 Professors, Professor emeritus or associate Professors. These researchers have full clinical positions at TIK in addition to their academic affiliations. The total number of staff for the TIK was not clear as not all departments were reporting.

The committee's evaluation
The SWOT analysis in the self-assessment noted that another weakness is the limited administration and the need of further development of a full-fledged, internal, clinical research infrastructure with optimal tools for data acquisition, processing and analyses at IVS. The committee is not fully sighted on the scale of core staff the Unit has and needs but these are clearly integrally important to their model and will need to be sure they have sufficient resilience and training and development for these staff. The Unit leadership was alert to the various challenges they faced around recruiting and retaining staff including the need for national and international networking and the risks posed by salary comparisons with industry and the risks on academic/innovation time from commercial endeavours. The solutions are harder and will need a combination of strategic leadership, increased networking internally and externally and ensuring effective major grant funding streams. Overall, the Unit has been doing well since its inception, but it is small and will need to be sure it can retain the right balances as it grows.

The committee’s recommendations
The committee recommends that the leadership team have a clear view of the scale of essential core staff needed to support the common challenges the overall department faces and provide resilience and to then ensure they regularly review this and act to sustain and future proof these staff roles.

As noted in an earlier recommendation the committee recommends that the Unit is rigorous in retaining sufficient research time in the job plans of key staff.

1.7 Open Science

TIK self-assessment notes that UiO has adopted a strategy for open access (2022) and emphasizes that high-quality scientific knowledge must be both visible and accessible to be effective in social and working life. They also state that UiO has adopted a rights retention policy to strengthen the opportunity for employees and students to freely choose which channels they publish in and that UiO and OUS recommend that all employees select journals that allow the article to be openly available. They note the annual research report from the regional health authorities shows that involvement of user groups in research projects is increasing, and in practice has become mandatory for most new clinical projects. Examples given of the IVS transitioning its software developed through research projects from proprietary models to open-source schemes include Slicer-Liver (https://github.com/ALive-research/Slicer-Liver) and 3D Slicer (https://slicer.org), which are the first open-source research software platforms for planning liver resection. However, they also note that some projects, especially those involving intellectual property and industrial applications like our mixed reality developments with HoloLens, initially take a more restricted approach with the HoloCare AS spin-off company, and it’s CE-marked medical devices being examples of this. These industrial ventures often necessitate a period of exclusivity. Open access publications in TIK have increased substantially over the years from 2016 (OA 36.7%) to 2022 (OA 80.7%) in 2022, TIK has contributed to several datasets that are made available to other scientists, examples: PhysioNet. Epicardially attached cardiac accelerometer data (physionet.org), the Biobank for colorectal liver metastasis, and work in collaboration with international databases, including Database Registry, minimally invasive liver surgery, SingHealth Duke-NUS Academic Medical Centre,

www.singhealthdukenus.com.sg and European Consortium on minimally Invasive Pancreatic Surgery E-MIPS, http://www.e-mips.com.

The committee's evaluation
So clearly the industrial R&D agreements are different situation to open access publication, and they appear to have processes to try and monitor this and move to open when feasible, but this may require strengthening especially if national funding is used for such development. For example, not clear what the Phillips and Siemens testbed MRI work means for this?

Overall, the unit has good impact through the IVS on training and exposure of a range of clinicians and scientists to new and innovative skills. They have a reasonable publication record and are raising their open publication profile, and they do engage in translation of science to the public, but these impacts are all areas the unit could and should focus more on. The need for the outcome of their work to result in real translatable skills and development of new approaches to care is paramount to their success. They have had this level of success for some minimally invasive surgical work for hepatobiliary surgery, but a broader translational impact has yet to be convincingly demonstrated. They have the building blocks for this including capabilities in cross sectional imaging and sensor technology as well as good clinical facilities so the next steps will be to broaden their impact. Similarly in big data and AI they have some building blocks and need to see stronger translational impact

The committee’s recommendations
The unit needs to broaden its impact of their translational capabilities across a broader range of fields which will help in recruitment, funding and the overall purpose of making their R&D more accessible and effective for the population.

2. Research production, quality and integrity

The self-assessment from the TIK team emphasise, for their scientific focus, that they have a dynamic approach to research, spanning informatics, multidisciplinary technology, surgical science, radiology and medical imaging as well as electronics and cybernetics, and biomedicine. They correctly note this requires a collaborative spirit. They provide several impact cases showing they can harness the power of informatics and data analytics and employ predictive models and data driven solutions.

They clearly work in innovation areas that are at the intersection of various technological and medical disciplines, and they believe that they foster the convergence of technologies. And in both surgical and imaging fields they pioneer novel approaches to visualise, navigate and treat patients. Similarly for electronics and cybernetics and biomedicine they are focused on the future such as in wearable technologies and advancing personalised medicine. Their real impact in this will need more time and demonstration of lasting impact on clinical care but has definitely been successful in several areas most notably in the Intervention Centre and their minimal invasive surgical and navigation work.

In terms of research integrity, the TIK team note that they adhere to OUS and UiO standards for research integrity which they provide links to, and they have guidelines for research ethics and integrity and for handling cases concerning potential violations of research ethics. They note the role of the Commission for Research Integrity for the Institute of Clinical Medicine and other allied departments and hospitals across Oslo. Similarly, they describe the role of the Research Ombudsman and how they strengthen the importance of attention on research integrity through existing and new courses on research ethics and the fact the Ombudsman and the Chair of the Commission for Research Integrity are regularly invited to present at seminars in the departments in University of Oslo and Oslo University Hospital .

2.1 Research quality and integrity

This part includes one overall evaluation of each research group that the administrative unit has registered for the evaluation. The overall assessment of the research group has been written by one of the 18 expert panels that have evaluated the registered research groups in EVALMEDHELSE. The expert panels are solely behind the evaluation of the research group(s). The evaluation committee is not responsible for the overall assessment of the research group(s).

The Intervention Centre (IVS)

The main strength of this group is the ability to carry out high technology interventions linked to innovative approaches related to minimally invasive interventions, as well as developing technology for surgical planning and Navigation. Their publications on a trial on laparoscopy guided surgery for liver metastases in colorectal cancer patients are relevant. To make this sustainable, it may be critical that they open themselves for a more international network of cooperation. Their main weakness is the scarcity of internationally funded projects. Linking the different units in a cooperative strategy would also be of importance. They should be also taking care in attracting more industry funded clinical trial or interventional studies with innovative devices. The societal impact of their research is moderate. However, some improvement should be done on how to involve other

technological clients as well as patients and patient advocacy groups in the planning and development of future studies.

3. Diversity and equality

TIK lists 45 researchers in their table of Research staff registered exclusively from the Institute of Clinical Medicine at UiO and only 20% of these are women with no full professors or emeritus professors being female and only 2 of the associate professors are women. The unit commented that they have a good representation of female PhD students but clearly do not have a good balance on gender when it comes to senior researcher positions.

The committee's evaluation
They note they have recruitment guidelines and have diversity as a KPI and quality measure when looking at recruitment and performance. This position is fairly common at this stage across the Norwegian institutes and will need a continued strong focus by al leaders to continue to drive improvement.

On diversity aside gender the Unit notes that they have 27 different nationalities working in the departments. It is not clear again at what level these staff are. Working but this diversity is good so long as these staff feel welcomed and have opportunities for development. This is something they will need to build on by measuring staff satisfaction and ensuring development opportunities are equitably available.

The committee’s recommendations
The committee note that the lack of women in senior leadership positions is something the unit will have to focus on and make sure this has a high profile in their strategic and recruitment plans for the immediate future.

The committee noted the units desire to widen their collaborations internationally and this will be positive and will mean a more diverse workforce. They will need to develop ways to ensure they staff members are cared for. This could include developing staff surveys to be aware of any issues and act on these at the earliest opportunity.

4. Relevance to institutional and sectorial purposes

The TIK self-assessment reminds us that TIK is committed to Technology based medicine with the hospital sector-specific objectives:

- Clinical Trials (with clinical outcome endpoints),
- Patient experience studies (including QOL and qualitative methodology)
- Health Economy studies (cost/efficacy for patients, hospital and society)
- Organizational consequences from new methods
- Medical technology, ICT and AI R&D

That TIK also contributes higher education sector-specific objectives by conducting and disseminating research through scientific publications and through its lectures, seminars, workshops and conferences.

The committee's evaluation
The committee agreed that the outputs of TIK were aligned to a large degree with the purposes delineated in the self-assessment. Their clinical trials output was more technological than typical clinical trials but nevertheless was clearly clinical trial based. Patient experience studies were less in evidence as were data showing health economic impact – though these may well be in place.

The committee also noted there was an apparent synergy between TIK and the hospital and the university which worked well.

The committee´s recommendations
The committee recommend that it is key that researchers in TIK understand that real success lies, not in getting the next grant or publication but in ensuring their technical innovations result in real change in clinical or operational practice for the public and society.

4.1 Health trusts

TIK self-assessment comments on the Unit having a multifaceted approach to clinical research, innovation, and commercialisation that has had positive impacts especially in establishing surgical standards for minimally invasive HPB surgery but also fostering collaborations leading to the creation of new medical devices, and advancing diagnostics, treatments, and healthcare practices in a number of fields. They discuss several impact case examples [see below].

The committee's evaluation
It is clear that there have been several positive impacts from TIK that contribute towards development, assessment and implementation of new diagnostic methods, treatment, and healthcare technologies. In addition, there are some exciting opportunities for example the collaboration with industrial partners “SopraSteria” and other healthcare providers has given rise to the creation of "HoloCare" - a company dedicated to the development of innovative medical devices. There are other spin-off developments also noted. Despite these, it is not clear that the Unit is getting sufficient “bang for it’s buck” yet but it does appear to have many of the right building blocks to enable them to go from strength to strength.

Many of the earlier recommendations [core team, horizon scanning, external funding growth, protection of research time etc.] will aim to increase the resilience and impact of TIK and should help secure this more formally.

The committee’s recommendations

The committee recommends that it is key that researchers in TIK understand that real success lies, not in getting the next grant or publication, but in ensuring their technical innovations result in real change in clinical or operational practice for the public and society.

5. Relevance to society

TIK self-assessment notes that especially through IVS, TIK has had long and close contact with Health Authorities and is a driver for the future specialized health services. The Ministry of Trade, Industry, and Fisheries launched the report: The Health Industry — Meld. St. 18 (2018–2019) Meld. St. 18 (2018–2019) - regjeringen.no at IVS. Ministries in the Government regularly visit IVS, with scheduled visits by the Ministry of Health and Care Service and Ministry of Digitalization and Public Governance in 2024. Head of IVS is in the steering board in the development of Oslo Science City Oslo Science City and in the advisory board for Regional technological core facilities in HSØ, providing opportunities for TIK to shape future investments in R&D and Life Sciences. TIK contributes to all 3 overall objectives in The Norwegian Long-term plan for research and higher education, Meld. St. t (2022-2023) Meld. St. 5 (2022–2023) - regjeringen.no:

The committee's evaluation
The self-assessment report was not particularly strong on societal impact. The committee can see that TIK has had a number of positive impacts on health care and the potential to see this grow. They also have a number of risks to delivering on this exciting agenda – not lest good digital support but also setting the right balance of research and commercialisation and ensuring they truly do stay at the cutting edge of what they need to do and deliver for the country. It is this horizon scanning and future planning that will be vital.

The committee's recommendations
Recommendations are contained in most of the prior sections – as noted in the last section, the final recommendation is that it is key that researchers in TIK understand that real success lies in not getting the next grant or publication but in ensuring their technical innovations do result in real change in clinical or operational practice for the public and society.

Comments on impact case 1 – OSLO-COMET
As the first randomized controlled trial (RCT) in the field, OSLO-COMET contributed to worldwide implementation and an increased level of evidence of minimally invasive liver surgery for malignant liver tumours. The study found that minimally invasive liver surgery causes less complications and pain to patients, has improved quality of life, and is cost-effective, compared to the traditional open surgery. The main impact was achieved in 2019 when the results were presented as part of the official press release program at the annual meeting of the American Society of Clinical Oncology (ASCO), with 40 000 delegates including a broad media coverage.

This was a truly important trail and covered the 3m population of south Norway and showed how a technologically adept research unit could function and change practice. It compared laparoscopic (keyhole) liver surgery to the standard open liver surgery has had international impact. It was however completed in 2016, and the world has moved on since. Many areas of disease are using robotic techniques rather than laparoscopic and many areas are now using endovascular or even other approaches (cryotherapy) and in other parts of the body focal ultrasound [HIFU] etc are commonplace and theragnostic is not far round the corner for some. So, this case demonstrates the potential of such a unit and also demonstrates the need to stay abreast of technology and advancing clinical practice. It is not clear how much they were able to biobank at the same time which would increase the potential gains from such a study.

Comments on impact case 2 - Technology for Surgical Planning and Navigation:
TIK developments on cutting-edge technologies in surgery planning and navigation, highlighted by automatic patient-specific models and innovative mixed reality tools, can dramatically transform surgical practices, and improve surgical precision and patient outcomes. Moreover, our mixed reality-based navigation methods can potentially improve diagnostic accuracy and provide better learning conditions for surgeons in training. All these new advancements led to the establishment of HoloCare AS, representing a landmark collaboration between the public and private sectors, setting new standards in medical technology. Finally, HoloCare AS has obtained a CE mark for its liver surgery planning, demonstrating a tangible, regulated application of these innovations.

This is a successful story. The interesting thing with this impact case is how they have been able to create a spin-out company, and this company has since secured EU funding and is itself advancing knowledge and care. The degree to which the initial funding was government and thus the degree to which there is a return to the public from this spin out are not clear but would be of interest.

Comments on impact case 3 - Wireless Capsule Video Endoscopy
TIK research has contributed to the design, development, and establishment of a novel batter-free wireless data transmission method integrated with artificial intelligence demonstrated for automatically investigating the entire gastrointestinal tract by the user. The technology enables a cost-effective, user-friendly, population-based colon cancer screening method.

This is another success story and as they note; based on the results obtained through the abovementioned projects and patents, a spin-off company, Salveo Solutions AS, was established in 2022 to bring the technology into the market. Their summary “The impact of the research performed by IVS’s researchers and supported by NFR, EU and other funding agencies in Norway like HSØ innovation grant has had several important developments and discoveries. Several spin-off research and innovation activities have led to other new avenues within molecular biology and nanotechnology. One example is integrating synthetic bacteria in wireless capsule endoscopy to study the gut for various diseases. This research has been supported with a 16 MNOK grant awarded by NFR for “CLIPEUS: Internet of Bio-NanoThings for Prediction and Prevention of Infectious Diseases” in 2020” shows how this kind of innovative tech research can genuinely be rewarding – being commercially successful, academically exciting and innovative and can transform patient care.

The risk with these is the number you have to fund that don’t work while waiting for the one that does make this a higher risk environment hence the need to be alert to venture capital. You then need strong legal support to ensure the right royalties are achieved for all parties

Appendices

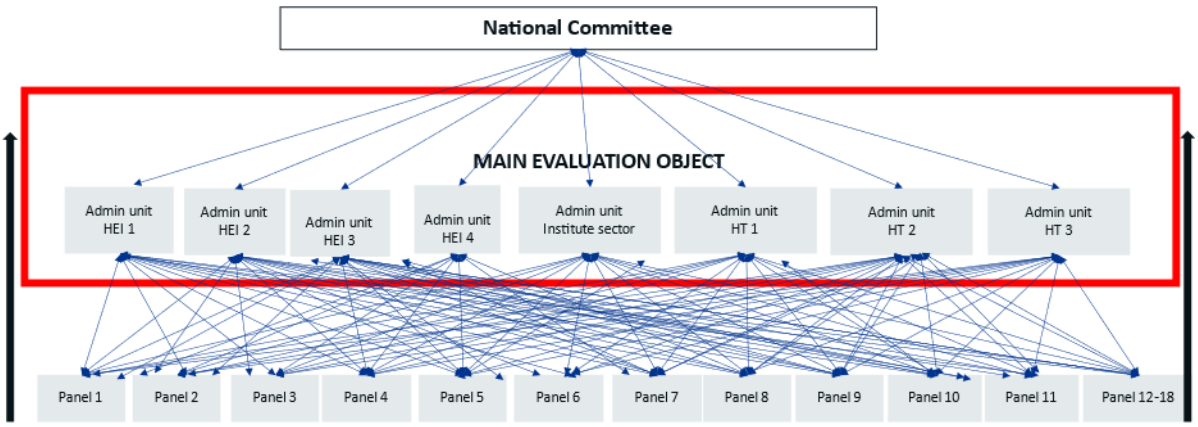
Evaluation of Medicine and health 2023-2024

By evaluating Norwegian research and higher education we aim to enhance the quality, relevance, and efficiency. In accordance with the statutes of the Research Council of Norway (RCN), the RCN evaluates Norwegian professional environments to create a solid and up-to-date knowledge base about Norwegian research and higher education in an international perspective.

The evaluation of life sciences is conducted in 2022-2024. The evaluation of medicine takes place in 2023-2024. The evaluation of biosciences was carried out in 2022-2023. The primary aim of the evaluation of life sciences is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), the institute sector and the health trusts. The evaluation shall result in recommendations to the institutions, the RCN and the ministries.

Evaluation of medicine and health (EVALMEDHELSE) 2023-2024
The evaluation of medicine and health includes sixty-eight administrative units (e.g., faculty, department, institution, center, division) which are assessed by evaluation committees according to sectorial affiliation and other relevant similarities between the units. The administrative units enrolled their research groups (315) to eighteen expert panels organised by research subjects or themes and assessed across institutions and sectors.

Organisation of evaluation of medicine and health 2023-2024



The institutions have been allowed to adapt the evaluation mandate (Terms of Reference) to their own strategic goals. This is to ensure that the results of the evaluation will be useful for the institution's own strategic development. The administrative unit together with the research group(s) selects an appropriate benchmark for each of the research group(s).

The Research Council of Norway has commissioned an external evaluation secretariat at Technopolis Group for the implementation of the evaluation process.

Each institution/administrative unit is responsible for following up the recommendations that apply to their own institution/administrative unit. The Research Council will use the results from the evaluation in the development of funding instruments and as a basis for advice to the Government.

The web page for the evaluation of medicine and health 2023-2024: [Evaluation of medicine and health sciences (forskningsradet.no)]

Forskningsrådet

Se vedlagte adresseliste

Vår saksbehandler / tlf.	Vår ref.	Deres ref.	Sted
Hilde G. Nielsen/40922260	23/3056	[Ref.]	Lysaker 28.4.2023

Invitasjon til å delta i fagevaluering av medisin og helsefag (EVALMEDHELSE) 2023-2024

Vi viser til varsel om oppstart av nye evalueringer sendt institusjonenes ledelse 9. november 2021 (vedlegg 2).

Porteføljestyret for livsvitenskap har vedtatt å gjennomføre fagevaluering av livsvitenskap 2022-2024 som to evalueringer:

- Evaluering av biovitenskap (EVALBIOVIT) (2022-2023)
- Evaluering av medisin og helsefag (EVALMEDHELSE) (2023-2024)

Hovedmålet med fagevalueringen av livsvitenskap 2022-2024 er å vurdere kvalitet og rammebetingelser for livsvitenskapelig forskning i Norge, samt forskningens relevans for sentrale samfunnsområder. Evalueringen skal resultere i anbefalinger til institusjonene, til Forskningsrådet og til departementene. Den forrige fagevalueringen av biologi, medisin og helsefag ble gjennomført i 2010/2011 (vedlegg 3).

Fagevaluering av livsvitenskap retter seg mot UH-sektor, helseforetak og instituttsektor (vedlegg 4). Forskningsrådet forventer at aktuelle forskningsmiljøer deltar i evalueringene, selv om beslutning om deltagelse gjøres ved den enkelte institusjon. Videre ber vi om at deltakende institusjoner setter av tilstrekkelig med ressurser til å delta i evalueringsprosessen, og at institusjonen oppnevner minst én representant som kontaktperson for Forskningsrådet.

Invitasjon til å delta i fagevaluering av medisin og helsefag (2023-2024)

Fagevaluering av medisin og helsefag er organisert over to nivåer (vedlegg 4, side 11). Internasjonale ekspertpaneler vil evaluere forskergrupper på tvers av fag, disiplin og forskningssektorer (UH, institutt og helseforetak) etter kriteriene beskrevet i kapittel 2 i evalueringsprotokollen (vedlegg 4).

Panelrapporten(e) for forskergruppene vil inngå i bakgrunnsdokumentasjonen til forskergruppen(e)s administrative enhet (hovedevalueringsobjektet i evaluering), og som vil bli evaluert i internasjonale

sektorspesifikke evalueringskomiteer. Evalueringskriteriene for administrative enheter er beskrevet i kapittel 2 i evalueringsprotokollen (vedlegg 4).

Innmelding av administrative enheter og forskergrupper – frist 6. juni 2023

Administrative enheter (hovedevalueringsobjektet i evalueringen) – skjema 1

Forskningsrådet inviterer institusjonene til å melde inn sine administrative enhet/er ved å fylle ut skjema 1. Definisjonen av en administrativ enhet i denne evalueringen er å finne på side 3 (kap 1.1) i evalueringsprotokollen (vedlegg 4). Ved innmelding av administrativ/e enhet/er anbefaler Forskningsrådet institusjonene til å se innmelding av administrativ enhet/er i sammenheng med tilpasning av mandat for den administrative enheten (Appendix A i evalueringsprotokollen).

Forskergrupper – skjema 2

Forskningsrådet ber de administrative enheter om å melde inn forskergrupper i tråd med forskergruppedefinisjonen (kap 1.1) og minimumskravene beskrevet i kapittel 1.2 i evalueringsprotokollen. Hver administrative enhet melder inn sin/e forskergruppe/r ved å fylle ut Skjema 2. Vi ber også om at forskergruppene innplasseres i den tentative fagpanelinndelingen for EVALMEDHELSE (vedlegg 5).

Forskningsrådet vil ferdigstille panelstruktur og avgjøre den endelige fordelingen av forskergruppene på fagpaneler *etter* at alle forskergrupper er meldt inn. Mer informasjon vil bli sendt i slutten av juni 2023.

Invitasjon til å foreslå eksperter – skjema 3

Forskningsrådet inviterer administrative enheter og forskergrupper til å spille inn forslag til eksperter som kan inngå i evalueringskomitéene og i ekspertpanelene. Hver evalueringskomité vil bestå av 7-9 komitémedlemmer, mens hvert ekspertpanel vil bestå av 5-7 eksperter.

Obs. Det er to faner i regnearket:

- FANE 1 – forslag til medlemmer til evalueringskomitéene. Medlemmene i evalueringskomitéene skal inneha bred vitenskapelig kompetanse, både faglig kompetanse og andre kvalifikasjoner som erfaring med ledelse, strategi- og evalueringsarbeid og kunnskapsutveksling.
- FANE 2 – forslag til medlemmer til ekspertpanelene. Medlemmene i ekspertpanelene skal være internasjonalt ledende eksperter innen medisin og helsefaglig forskning og innovasjon.

Utfylte skjemaer (3 stk):

- innmelding av administrative enhet/er (skjema 1)
- innmelding av forskergruppe/er (skjema 2)
- forslag til eksperter (skjema 3)

sendes på epost til evalmedhelse@forskningsradet.no **innen 6. juni 2023.**

Tilpasning av mandat – frist 30. september 2023

Forskningsrådet ber med dette administrative enheter om å tilpasse mandatet (vedlegg 4) ved å opplyse om egne strategiske mål og andre lokale forhold som er relevant for evalueringen.

Forskningsrådet

Tilpasningen gjøres ved å fylle inn de åpne punktene i malen (Appendix A). Utfylt skjema sendes på epost til evalmedhelse@forskningsradet.no innen 30. september 2023.

Digitalt informasjonsmøte 15. mai 2023, kl. 14.00-15.00.
Forskningsrådet arrangerer et digitalt informasjonsmøte for alle som ønsker å delta i EVALMEDHELSE.

Påmelding til informasjonsmøtet gjøres her: Fagevaluering av medisin og helsefag (EVALMEDHELSE) - Digitalt informasjonsmøte (pameldingssystem.no) .

Nettsider
Forskningsrådet vil opprette en nettside på www.forskningsradet.no for EVALMEDHELSE hvor informasjon vil bli publisert fortløpende. Her kan dere lese om Fagevaluering av biovitenskap (EVALBIOVIT) 2022-2023. Fagevaluering av medisin og helsefag vil bli gjennomført etter samme modell.

Spørsmål vedrørende fagevaluering av medisin og helsefag kan rettes til Hilde G. Nielsen, hgn@forskningsradet.no eller mobil 40 92 22 60.

Med vennlig hilsen
Norges forskningsråd

Ole Johan Borge	Hilde G. Nielsen
avdelingsdirektør	spesialrådgiver
Helse	Helse

Dokumentet er elektronisk godkjent og signert og har derfor ikke håndskrevne signaturer.

Kopi
Helse- og omsorgsdepartementet
Kunnskapsdepartementet

Vedlegg
1. Adresseliste
2. Nye fagevalueringer – varsel om oppstart november 2021
3. Erfaringer med oppfølging av fagevaluering av biologi, medisin og helsefag 2010/2011
4. Fagevaluering av livsvitenskap 2022-2024 – Evalueringsprotokoll
5. Tentativ panelinndeling EVALMEDHELSE mai 2023
6. Skjema 1 – Innmeldingsskjema Administrative enheter
7. Skjema 2 – Innmeldingsskjema Forskergrupper
8. Skjema 3 – Forslag til internasjonale eksperter til evalueringskomiteene og ekspertpanelene
9. Appendix A – word format

The Research Council of Norway

Evaluation of life sciences in Norway 2022-2023

LIVSEVAL protocol version 1.0

By decision of the Portfolio board for life sciences April 5., 2022

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www.forskningsradet.no/publikasjoner

Oslo, 5 April 2022

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1 Introduction

Research assessments based on this protocol serve different aims and have different target groups. The primary aim of the evaluation of life sciences is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), and by the institute sector and regional health authorities and health trusts. These institutions will hereafter be collectively referred to as Research Performing Organisations (RPOs). The assessments should serve a formative purpose by contributing to the development of research quality and relevance at these institutions and at the national level.

1.1 Evaluation units

The assessment will comprise a number of *administrative units* submitted for evaluation by the host institution. By assessing these administrative units in light of the goals and strategies set for them by their host institution, it will be possible to learn more about how public funding is used at the institution(s) to facilitate high-quality research and how this research contributes to society. The administrative units will be assessed by evaluation committees according to sectoral affiliation and/or other relevant similarities between the units.

The administrative units will be invited to submit data on their *research groups* to be assessed by expert panels organised by research subject or theme. See Chapter 3 for details on organisation.

Administrative unit	An administrative unit is any part of an RPO that is recognised as a formal (administrative) unit of that RPO, with a designated budget, strategic goals and dedicated management. It may, for instance, be a university faculty or department, a department of an independent research institute or a hospital.
Research group	Designates groups of researchers within the administrative units that fulfil the minimum requirements set out in section 1.2. Research groups are identified and submitted for evaluation by the administrative unit, which may decide to consider itself a single research group.

1.2 Minimum requirements for research groups

1) The research group must be sufficiently large in size, i.e. at least five persons in full-time positions with research obligations. This merely indicates the minimum number, and larger units are preferable. In exceptional cases, the minimum number may include PhD students, postdoctoral fellows and/or non-tenured researchers. *In all cases, a research group must include at least three full-time tenured staff*. Adjunct professors, technical staff and other relevant personnel may be listed as group members but may not be included in the minimum number.

2) The research group subject to assessment must have been established for at least three years. Groups of more recent date may be accepted if they have come into existence as a consequence of major organisational changes within their host institution.
3) The research group should be known as such both within and outside the institution (e.g. have a separate website). It should be able to document common activities and results in the form of co-publications, research databases and infrastructure, software, or shared responsibilities for delivering education, health services or research-based solutions to designated markets.
4) In its self-assessment, the administrative unit should propose a suitable benchmark for the research group. The benchmark will be considered by the expert panels as a reference in their assessment of the performance of the group. The benchmark can be grounded in both academic and extra-academic standards and targets, depending on the purpose of the group and its host institution.

1.3 The evaluation in a nutshell

The assessment concerns:

- research that the administrative unit and its research groups have conducted in the previous 10 years
- the research strategy that the administrative units under evaluation intend to pursue going forward
- the capacity and quality of research in life sciences at the national level

The Research Council of Norway (RCN) will:

- provide a template for the Terms of Reference[1] for the assessment of RPOs and a national-level assessment in life sciences
- appoint members to evaluation committees and expert panels
- provide secretarial services
- commission reports on research personnel and publications based on data in national registries
- take responsibility for following up assessments and recommendations at the national level.

RPOs conducting research in life sciences are expected to take part in the evaluation. The board of each RPO under evaluation is responsible for tailoring the assessment to its own strategies and specific needs and for following them up within their own institution. Each participating RPO will carry out the following steps:

1) Identify the administrative unit(s) to be included as the main unit(s) of assessment
2) Specify the Terms of Reference by including information on specific tasks and/or strategic goals of relevance to the administrative unit(s)

[1] The terms of reference (ToR) document defines all aspects of how the evaluation committees and expert panels will conduct the [research area] evaluation. It defines the objectives and the scope of the evaluation, outlines the responsibilities of the involved parties, and provides a description of the resources available to carry out the evaluation.

3) The administrative unit will, in turn, be invited to register a set of research groups that fulfil the minimum criteria specified above (see section 1.2). The administrative unit may decide to consider itself a single research group.
4) For each research group, the administrative unit should select an appropriate benchmark in consultation with the group in question. This benchmark can be a reference to an academic level of performance or to the group's contributions to other institutional or sectoral purposes (see section 2.4). The benchmark will be used as a reference in the assessment of the unit by the expert panel.
5) The administrative units subject to assessment must provide information about each of their research groups, and about the administrative unit as a whole, by preparing self-assessments and by providing additional documentation in support of the self-assessment.

1.4 Target groups

- Administrative units represented by institutional management and boards
- Research groups represented by researchers and research group leaders
- Research funders
- Government

The evaluation will result in recommendations to the institutions, the RCN and the ministries. The results of the evaluation will also be disseminated for the benefit of potential students, users of research and society at large.

This protocol is intended for all participants in the evaluation. It provides the information required to organise and carry out the research assessments. Questions about the interpretation or implementation of the protocol should be addressed to the RCN.

2 Assessment criteria

The administrative units are to be assessed on the basis of five assessment criteria. The five criteria are applied in accordance with international standards. Finally, the evaluation committee passes judgement on the administrative units as a whole in qualitative terms. In this overall assessment, the committee should relate the assessment of the specific tasks to the strategic goals that the administrative unit has set for itself in the Terms of Reference.

When assessing administrative units, the committees will build on a separate assessment by expert panels of the research groups within the administrative units. See Chapter 3 'Evaluation process and organisation' for a description of the division of tasks.

2.1 Strategy, resources and organisation

The evaluation committee assesses the framework conditions for research in terms of funding, personnel, recruitment and research infrastructure in relation to the strategic aims set for the administrative unit. The administrative unit should address at least the following five specific aspects in its self-assessment: 1) funding sources, 2) national and international cooperation, 3) cross-sector and interdisciplinary cooperation, 4) research careers and mobility, and 5) Open Science. These five aspects relate to how the unit organises and actually performs its research, its composition in terms of leadership and personnel, and how the unit is run on a day-to-day basis.

To contribute to understanding what the administrative unit can or should change to improve its ability to perform, the evaluation committee is invited to focus on factors that may affect performance.

Further, the evaluation committee assesses the extent to which the administrative unit's goals for the future remain scientifically and societally relevant. It is also assessed whether its aims and strategy, as well as the foresight of its leadership and its overall management, are optimal in relation to attaining these goals. Finally, it is assessed whether the plans and resources are adequate to implement this strategy.

2.2 Research production, quality and integrity

The evaluation committee assesses the profile and quality of the administrative unit's research and the contribution the research makes to the body of scholarly knowledge and the knowledge base for other relevant sectors of society. The committee also assesses the scale of the unit's research results (scholarly publications, research infrastructure developed by the unit, and other contributions to the field) and its contribution to Open Science (early knowledge and sharing of data and other relevant digital objects, as well as science communication and collaboration with societal partners, where appropriate).

The evaluation committee considers the administrative unit's policy for research integrity and how violations of such integrity are prevented. It is interested in how the unit deals with research data, data management, confidentiality (GDPR) and integrity, and the extent to which independent and critical pursuit of research is made possible within the unit. Research integrity relates to both the scientific integrity of conducted research and the professional integrity of researchers.

2.3 Diversity and equality

The evaluation committee considers the diversity of the administrative unit, including gender equality. The presence of differences can be a powerful incentive for creativity and talent development in a diverse administrative unit. Diversity is not an end in itself in that regard, but a tool for bringing together different perspectives and opinions.

The evaluation committee considers the strategy and practices of the administrative unit to prevent discrimination on the grounds of gender, age, disability, ethnicity, religion, sexual orientation or other personal characteristics.

2.4 Relevance to institutional and sectoral purposes

The evaluation committee compares the relevance of the administrative unit's activities and results to the specific aspects detailed in the Terms of Reference for each institution and to the relevant sectoral goals (see below).

Higher Education Institutions

There are 36 Higher Education Institutions in Norway that receive public funding from the Ministry for Education and Research. Twenty-one of the 36 institutions are owned by the ministry, whereas the last 15 are privately owned. The HEIs are regulated under the Act relating to universities and university colleges of 1 August 2005.

The purposes of Norwegian HEIs are defined as follows in the Act relating to universities and university colleges[2]

- provide higher education at a high international level;
- conduct research and academic and artistic development work at a high international level;
- disseminate knowledge of the institution's activities and promote an understanding of the principle of academic freedom and application of scientific and artistic methods and results in the teaching of students, in the institution's own general activity as well as in public administration, in cultural life and in business and industry.

In line with these purposes, the Ministry for Research and Education has defined four overall goals for HEIs that receive public funding. These goals have been applied since 2015:

1) High quality in research and education
2) Research and education for welfare, value creation and innovation
3) Access to education (esp. capacity in health and teacher education)
4) Efficiency, diversity and solidity of the higher education sector and research system

The committee is invited to assess to what extent the research activities and results of each administrative unit have contributed to sectoral purposes as defined above. In particular, the committee is invited to take the share of resources spent on education at the administrative units into account and to assess the relevance and contributions of research to education, focusing on the master's and PhD levels. This assessment should be distinguished from an

[2] https://lovdata.no/dokument/NLE/lov/2005-04-01-15?q=universities

assessment of the quality of education in itself, and it is limited to the role of research in fostering high-quality education.

Research institutes (the institute sector)

Norway's large institute sector reflects a practical orientation of state R&D funding that has long historical roots. The Government's strategy for the institute sector[3] applies to the 33 independent research institutes that receive public basic funding through the RCN, in addition to 12 institutes outside the public basic funding system.

The institute sector plays an important and specific role in attaining the overall goal of the national research system, i.e. to increase competitiveness and innovation power to address major societal challenges. The research institutes' contributions to achieving these objectives should therefore form the basis for the evaluation. The main purpose of the sector is to conduct independent applied research for present and future use in the private and public sector. However, some institutes primarily focus on developing a research platform for public policy decisions, others on fulfilling their public responsibilities.

The institutes should:

- maintain a sound academic level, documented through scientific publications in recognised journals
- obtain competitive national and/or international research funding grants
- conduct contract research for private and/or public clients
- demonstrate robustness by having a reasonable number of researchers allocated to each research field

The committee is invited to assess the extent to which the research activities and results of each administrative unit contribute to sectoral purposes and overall goals as defined above. In particular, the committee is invited to assess the level of collaboration between the administrative unit(s) and partners in their own or other sectors.

The hospital sector

There are four regional health authorities (RHFs) in Norway. They are responsible for the specialist health service in their respective regions. The RHFs are regulated through the Health Enterprises Act of 15 June 2001 and are bound by requirements that apply to specialist and other health services, the Health Personnel Act and the Patient Rights Act. Under each of the regional health authorities, there are several health trusts (HFs), which can consist of one or more hospitals. A health trust (HF) is wholly owned by an RHF.

Research is one of the four main tasks of hospital trusts.[4] The three other mains tasks are to ensure good treatment, education and training of patients and relatives. Research is important if the health service is to keep abreast of stay up-to-date with medical developments and carry out critical assessments of established and new diagnostic methods,

[3] Strategy for a holistic institute policy (Kunnskapsdepartementet 2020)

[4] Cf. the Specialist Health Services Act § 3-8 and the Health Enterprises Act §§ 1 and 2

treatment options and technology, and work on quality development and patient safety while caring for and guiding patients.

The committee is invited to assess the extent to which the research activities and results of each administrative unit have contributed to sectoral purposes as described above. The assessment does not include an evaluation of the health services performed by the services.

2.5 Relevance to society

The committee assesses the quality, scale and relevance of contributions targeting specific economic, social or cultural target groups, of advisory reports on policy, of contributions to public debates, and so on. The documentation provided as the basis for the assessment of societal relevance should make it possible to assess relevance to various sectors of society (i.e. business, the public sector, non-governmental organisations and civil society).

When relevant, the administrative units will be asked to link their contributions to national and international goals set for research, including the Norwegian Long-term Plan for Research and Higher Education and the UN Sustainable Development Goals. Sector-specific objectives, e.g. those described in the Development Agreements for the HEIs and other national guidelines for the different sectors, will be assessed as part of criterion 2.4.

The committee is also invited to assess the societal impact of research based on case studies submitted by the administrative units and/or other relevant data presented to the committee. Academic impact will be assessed as part of criterion 2.2.

3 Evaluation process and organisation

The RCN will organise the assessment process as follows:

- Commission a professional secretariat to support the assessment process in the committees and panels, as well as the production of self-assessments within each RPO
- Commission reports on research personnel and publications within life sciences based on data in national registries
- Appoint one or more evaluation committees for the assessment of administrative units.
- Divide the administrative units between the appointed evaluation committees according to sectoral affiliation and/or other relevant similarities between the units.
- Appoint a number of expert panels for the assessment of research groups submitted by the administrative units.
- Divide research groups between expert panels according to similarity of research subjects or themes.
- Task the chairs of the evaluation committees with producing a national-level report building on the assessments of administrative units and a national-level assessments produced by the expert panels.

Committee members and members of the expert panels will be international, have sufficient competence and be able, as a body, to pass judgement based on all relevant assessment criteria. The RCN will facilitate the connection between the assessment levels of panels and committees by appointing committee members as panel chairs.

3.1 Division of tasks between the committee and panel levels

The expert panels will assess research groups across institutions and sectors, focusing on the first two criteria specified in Chapter 2: 'Strategy, resources and organisation' and 'Research production and quality' The assessments from the expert panels will also be used as part of the evidence base for a report on Norwegian research within life sciences (see section 3.3).

The evaluation committees will assess the administrative units based on all the criteria specified in Chapter 2. The assessment of research groups delivered by the expert panels will be a part of the evidence base for the committees' assessments of administrative units. See figure 1 below.

The evaluation committee has sole responsibility for the assessments and any recommendations in the report. The evaluation committee reaches a judgement on the research based on the administrative units and research groups' self-assessments provided by the RPOs, any additional documents provided by the RCN, and interviews with representatives of the administrative units. The additional documents will include a standardised analysis of research personnel and publications provided by the RCN.

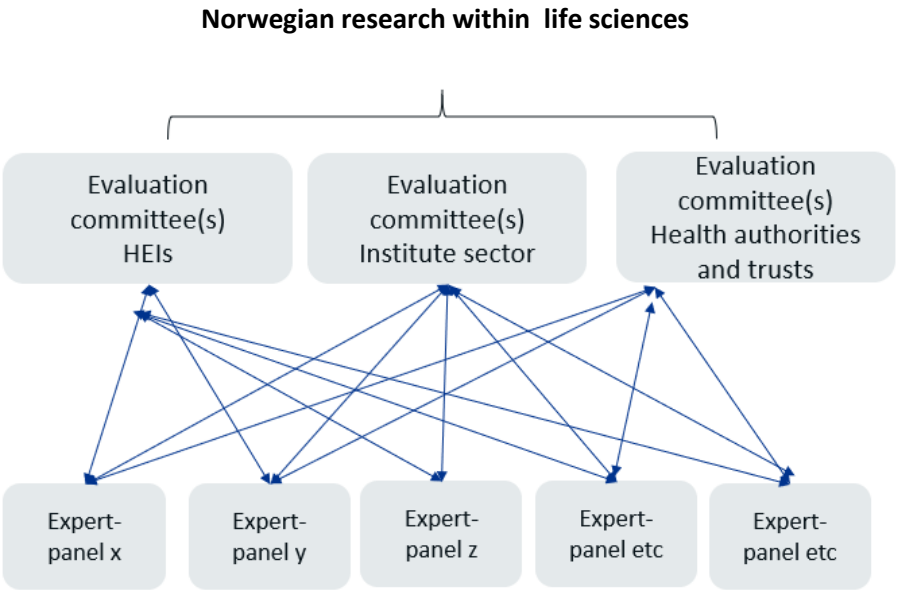

Figure 1. Evaluation committees and expert panels

The evaluation committee takes international trends and developments in science and society into account when forming its judgement. When judging the quality and relevance of the research, the committees shall bear in mind the specific tasks and/or strategic goals that the administrative unit has set for itself including sectoral purposes (see section 2.4 above).

3.2 Accuracy of factual information

The administrative unit under evaluation should be consulted to check the factual information before the final report is delivered to the RCN and the board of the institution hosting the administrative unit.

3.3 National level report

Finally, the RCN will ask the chairs of the evaluation committees to produce a national-level report that builds on the assessments of administrative units and the national-level assessments produced by the expert panels. The committee chairs will present their assessment of Norwegian research in life sciences at the national level in a separate report that pays specific attention to:

- Strengths and weaknesses of the research area in the international context
- The general resource situation regarding funding, personnel and infrastructure
- PhD training, recruitment, mobility and diversity
- Research cooperation nationally and internationally
- Societal impact and the role of research in society, including Open Science

This national-level assessment should be presented to the RCN.

Appendix A: Terms of References (ToR)

[Text in red to be filled in by the Research-performing organisations (RPOs)]

The board of [RPO] mandates the evaluation committee appointed by the Research Council of Norway (RCN) to assess [administrative unit] based on the following Terms of Reference.

Assessment
You are asked to assess the organisation, quality and diversity of research conducted by [administrative unit] as well as its relevance to institutional and sectoral purposes, and to society at large. You should do so by judging the unit's performance based on the following five assessment criteria (a. to e.). Be sure to take current international trends and developments in science and society into account in your analysis.

a) Strategy, resources and organisation
b) Research production, quality and integrity
c) Diversity and equality
d) Relevance to institutional and sectoral purposes
e) Relevance to society

For a description of these criteria, see Chapter 2 of the life sciences evaluation protocol. Please provide a written assessment for each of the five criteria. Please also provide recommendations for improvement. We ask you to pay special attention to the following [n] aspects in your assessment:

1. …
2. …
3. …
4. …

…

[To be completed by the board: specific aspects that the evaluation committee should focus on – they may be related to a) strategic issues, or b) an administrative unit's specific tasks.]

In addition, we would like your report to provide a qualitative assessment of [administrative unit] as a whole in relation to its strategic targets. The committee assesses the strategy that the administrative unit intends to pursue in the years ahead and the extent to which it will be capable of meeting its targets for research and society during this period based on available resources and competence. The committee is also invited to make recommendations concerning these two subjects.

Documentation
The necessary documentation will be made available by the life sciences secretariat at Technopolis Group.

The documents will include the following:

- a report on research personnel and publications within life sciences commissioned by RCN
- a self-assessment based on a template provided by the life sciences secretariat
- [to be completed by the board]

Interviews with representatives from the evaluated units
Interviews with the [administrative unit] will be organised by the evaluation secretariat. Such interviews can be organised as a site visit, in another specified location in Norway or as a video conference.

Statement on impartiality and confidence
The assessment should be carried out in accordance with the *Regulations on Impartiality and Confidence in the Research Council of Norway*. A statement on the impartiality of the committee members has been recorded by the RCN as a part of the appointment process. The impartiality and confidence of committee and panel members should be confirmed when evaluation data from [the administrative unit] are made available to the committee and the panels, and before any assessments are made based on these data. The RCN should be notified if questions concerning impartiality and confidence are raised by committee members during the evaluation process.

Assessment report
We ask you to report your findings in an assessment report drawn up in accordance with a format specified by the life sciences secretariat. The committee may suggest adjustments to this format at its first meeting. A draft report should be sent to the [administrative unit] and RCN by [date]. The [administrative unit] should be allowed to check the report for factual inaccuracies; if such inaccuracies are found, they should be reported to the life sciences secretariat no later than two weeks after receipt of the draft report. After the committee has made the amendments judged necessary, a corrected version of the assessment report should be sent to the board of [the RPO] and the RCN no later than two weeks after all feedback on inaccuracies has been received from [administrative unit].

Appendix B: Data sources

The lists below shows the most relevant data providers and types of data to be included in the evaluation. Data are categorised in two broad categories according to the data source: National registers and self-assessments prepared by the RFOs. The RCN will commission an analysis of data in national registers (R&D-expenditure, personnel, publications etc.) to be used as support for the committees' assessment of administrative units. The analysis will include a set of indicators related to research personnel and publications.

- **National directorates and data providers**
- Norwegian Directorate for Higher Education and Skills (HK-dir)
- Norwegian Agency for Quality Assurance in Education (NOKUT)
- Norwegian Agency for Shared Services in Education and Research (SIKT)
- Research Council of Norway (RCN)
- Statistics Norway (SSB)

National registers

1) R&D-expenditure
    a. SSB: R&D statistics
    b. SSB: Key figures for research institutes
    c. HK-dir: Database for Statistics on Higher Education (DBH)
    d. RCN: Project funding database (DVH)
    e. EU-funding: eCorda
2) Research personnel
    a. SSB: The Register of Research personnel
    b. SSB: The Doctoral Degree Register
    c. RCN: Key figures for research institutes
    d. HK-dir: Database for Statistics on Higher Education (DBH)
3) Research publications
    a. SIKT: Cristin - Current research information system in Norway
    b. SIKT: Norwegian Infrastructure for Bibliometrics
    (full bibliometric data incl. citations and co-authors)
4) Education
    a. HK-dir/DBH: Students and study points
    b. NOKUT: Study barometer
    c. NOKUT: National Teacher Survey
5) Sector-oriented research
    a. RCN: Key figures for research institutes
6) Patient treatments and health care services
    a. Research & Innovation expenditure in the health trusts
    b. Measurement of research and innovation activity in the health trusts
    c. Collaboration between health trusts and HEIs
    d. Funding of research and innovation in the health trusts
    e. Classification of medical and health research using HRCS (HO21 monitor)

Self-assessments

1) Administrative units
    a. *Self-assessment covering all assessment criteria*
    b. Administrative data on funding sources
    c. Administrative data on personnel
    d. Administrative data on the division of staff resources between research and other activities (teaching, dissemination etc.)
    e. Administrative data on research infrastructure and other support structures
    f. SWOT analysis
    g. Any supplementary data needed to assess performance related to the strategic goals and specific tasks of the unit

2) Research groups
    a. *Self-assessment covering the first two assessment criteria (see Table 1)*
    b. Administrative data on funding sources
    c. Administrative data on personnel
    d. Administrative data on contribution to sectoral purposes: teaching, commissioned work, clinical work [will be assessed at committee level]
    e. Publication profiles
    f. Example publications and other research results (databases, software etc.) The examples should be accompanied by an explanation of the groups' specific contributions to the result
    g. Any supplementary data needed to assess performance related to the benchmark defined by the administrative unit

The table below shows how different types of evaluation data may be relevant to different evaluation criteria. Please note that the self-assessment produced by the administrative units in the form of a written account of management, activities, results etc. should cover all criteria. A template for the self-assessment of research groups and administrative units will be commissioned by the RCN from the life sciences secretariat for the evaluation.

Table 1. Types of evaluation data per criterion

Evaluation units / Criteria	Research groups	Administrative units
Strategy, resources and organisation	Self-assessment Administrative data	Self-assessment National registers Administrative data SWOT analysis
Research production and quality	Self-assessment Example publications (and other research results)	Self-assessment National registers
Diversity, equality and integrity		Self-assessment National registers Administrative data
Relevance to institutional and sectoral purposes		Self-assessment Administrative data
Relevance to society		Self-assessment National registers Impact cases
Overall assessment	*Data related to:* *Benchmark defined by administrative unit*	*Data related to:* *Strategic goals and specific tasks of the admin. unit*

Evaluation of Medicine and Health (EVALMEDHELSE) 2023-2024

Self- assessment for administrative units

Date of dispatch: **15 September 2023**
Deadline for submission: **31 January 2024**

Institution (name and short name):_____
Administrative unit (name and short name): _____
Date:_____
Contact person:_____
Contact details (email):_____

Content

Introduction

The primary aim of the evaluation is to reveal and confirm the quality and the relevance of research performed at Norwegian Higher Education Institutions (HEIs), the institute sector and the health trusts. These institutions will henceforth be collectively referred to as research performing organisations (RPOs). The evaluation report(s) will provide a set of recommendations to the RPOs, the Research Council of Norway (RCN) and the responsible and concerned ministries. The results of the evaluation will also be disseminated for the benefit of potential students, users of research and society at large.

You have been invited to complete this self-assessment as an administrative unit. The self-assessment contains questions regarding the unit's research- and innovation related activities and developments over years 2012-2022. All submitted data will be evaluated by international evaluation committees. The administrative unit´s research groups will be assessed by international expert panels who report their assessment to the relevant evaluation committee.

Deadline for submitting self- assessments to the Research Council of Norway – 31 January 2024
As an administrative unit you are responsible for collecting completed self-assessments for each of the research groups that belong to the administrative unit. The research groups need to submit their completed self-assessment to the administrative unit no later than 26 January 2024. The administrative unit will submit the research groups' completed self-assessments and the administrative unit's own completed self-assessment to the Research Council within 31 January 2024.

Please use the following format when naming your document: name of the institution and short name of the administrative unit, e.g. *NTNU_FacMedHealthSci* and send it to evalmedhelse@forskningsradet.no within 31 January 2024.

For questions concerning the self-assessment or EVALMEDHELSE in general, please contact RCN at evalmedhelse@forskningsradet.no.

Thank you!

Guidelines for completing the self-assessment

- Please read the entire self-assessment document before answering.
- The evaluation language is English.
- Please be sure that all documents which are linked to in the self- assessment are in English and are accessible.
- The page format must be A4 with 2 cm margins, single spacing and Calibri and 11-point font.
- The self-assessment follows the same structure as the evaluation protocol. In order to be evaluated on all criteria, the administrative unit must answer all questions.
- Information should be provided by link to webpages i.e. strategy and other planning documents.
  - Provide information – provide documents and other relevant data or figures about the administrative unit, for example strategy and other planning documents.
  - Describe – explain and present using contextual information about the administrative unit and inform the reader about the administrative unit.
  - Reflect – comment in a reflective and evaluative manner how the administrative unit operates.
- Data on personnel should refer to reporting to DBH on 1 October 2022 for HEIs and to the yearly reporting for 2022 for the institute sector and the health trusts. Other data should refer to 31 December 2022, if not specified otherwise.
- Questions in 4.3c should **ONLY** be answered by administrative units responsible for the Cand.med. degree programme, cf. Evaluation of the Professional programme in Medicine (NOKUT).
- It is possible to extend the textboxes when filling in the from. **NB!** A completed self- assessment cannot exceed 50 pages (pdf file) excluding question 4.3.c. The evaluation committees are not requested to read more than the maximum of 50 pages. Pages exceeding maximum limit of 50 pages **might not** be evaluated.
- Submit the self- assessment as a pdf (max 50 pages). Before submission, please be sure that all text are readable after the conversion of the document to pdf. The administrative unit is responsible for submitting the self-assessment of the administrative unit together with the self-assessments of the belonging research group(s) to evalmedhelse@forskningsradet.no within **31 January 2024.**

Please note that information you write in the self- assessment and the links to documents/webpages in the self- assessment are the only available information (data material) for the evaluation committee.

In exceptional cases, documents/publications that are not openly available must be submitted as attachment(s) to the self- assessment (pdf file(s)).

1.Strategy, resources and organisation

1.1 Research strategy

Describe the main strategic goals for research and innovation of the administrative unit. You may include the following:

- How are these goals related to institutional strategies and scientific priorities?
- Describe how the administrative unit's strategies and scientific priorities are related to the "specific aspects that the evaluation committee should focus on" indicated in your Terms of Reference (ToR)
- Describe the main fields and focus of research and innovation in the administrative unit
- Describe the planned research-field impact; planned policy impact and planned societal impact
- Describe how the strategy is followed-up in the allocation of resources and other measures
- Describe the most important occasions where priorities are made (i.e., announcement of new positions, applying for external funding, following up on evaluations)
- If there is no research strategy – please explain why

Table 1. Administrative unit`s strategies

For each category present up to 5 documents which are most relevant for the administrative unit. Please delete lines which are not in use.

Research strategy		
No.	**Title**	**Link**
1		
2		
3		
4		
5		
Outreach strategies		
No.	**Title**	**Link**
1		
2		
3		
4		
5		
Open science policy		
No.	**Title**	**Link**
1		
2		
3		
4		
5		

1.2 Organisation of research

a) Describe the organisation of research and innovation activities/projects at the administrative unit, including how responsibilities for research and other purposes (education, knowledge exchange, patient treatment, researcher training, outreach activities etc.) are distributed and delegated.

b) Describe how you work to maximise synergies between the different purposes of the administrative unit (education, knowledge exchange, patient treatment, researcher training, outreach activities etc.).

1.3 Research staff

Describe the profile of research personnel at the administrative unit in terms of position and gender. Institutions in the higher education sector should use the categories used in DBH, https://dbh.hkdir.no/datainnhold/kodeverk/stillingskoder.

RCN has commissioned reports from Statistics Norway (SSB) on personnel for the administrative units included in the evaluation. These reports will be made available to the units early November 2023.

Only a subset of the administrative units submitted to the evaluation is directly identifiable in the national statistics. Therefore, we ask all administrative units to provide data on their R&D personnel. Institutions that are directly identifiable in the national statistics (mainly higher education) are invited to use the figures provided in the report delivered by Statistics Norway. Please delete lines which are not in use.

Table 2. Research staff

	Position by category	**No. of researcher per category**	**Share of women per category (%)**	**No. of researchers who are part of multiple (other) research groups at the admin unit**	**No. of temporary positions**
No. of Personell by position	Position A (Fill in)				
	Position B (Fill in)				
	Position C (Fill in)				
	Position D (Fill in)				

1.4 Researcher careers opportunities

a) Describe the structures and practices to support researcher careers and help early-career researchers to make their way into the profession.

b) Describe how research time is distributed among staff including criteria for research leave/sabbaticals (forskningstermin/undervisningsfri).

c) Describe research mobility options.

1.5 Research funding

a) Describe the funding sources of the administrative unit. Indicate the administrative unit´s total yearly budget and the share of the unit's budget dedicated to research.

b) Give an overview of the administrative unit's competitive national and/or international grants last five years (2018-2022).

Table 3. R&D funding sources
Please indicate R&D funding sources for the administrative unit for the period 2018-2022 (average NOK per year, last five years).

For Higher Education Institutions: Share of basic grant (grunnbevilgning) used for R&D[1] **For Research Institutes and Health Trusts: Direct R&D funding from Ministries (per ministry)**	
Name of ministry	NOK

National grants (bidragsinntekter) (NOK)	
From the ministries and underlying directorates	
From industry	
From public sector	
Other national grants	
Total National grants	
National contract research (oppdragsinntekter)[2] (NOK)	
From the ministries and underlying directorates	
From industry	

[1] Shares may be calculated based on full time equivalents (FTE) allocated to research compared to total FTE in administrative unit

[2] For research institutes only research activities should be included from section 1.3 in the yearly reporting

From public sector	
Other national contract research	
Total contract research	
International grants (NOK)	
From the European Union	
From industry	
Other international grants	
Total international grants	
Funding related to public management (forvaltningsoppgaver) or (if applicable) funding related to special hospital tasks, if any	
Total funding related to public management/special hospital tasks	
Total all R&D budget items (except basic grant)	

1.6 Collaboration

Describe the administrative unit's policy towards national and international collaboration partners, the type of the collaborations the administrative unit have with the partners, how the collaboration is put to practice as well as cross-sectorial and interdisciplinary collaborations.

- Reflect of how successful the administrative unit has been in meeting its aspirations for collaborations
- Reflect on the importance of different types of collaboration for the administrative unit: National and international collaborations. Collaborations with different sectors, including public, private and third sector
- Reflect on the added value of these collaborations to the administrative unit and Norwegian research system

Table 4a. The main national collaborative constellations with the administrative unit
Please categorise the collaboration according to the most important national partner(s): 5-10 institutions in the period 2012-2022. Please delete lines which are not in use.

National collaborations

Collaboration with national institutions – 1 -10	
Name of main collaboration or collaborative project with the admin unit	
Name of partner institution(s)	
Sector of partner/institution(s)/sectors involved	
Impacts and relevance of the collaboration	

Table 4b. The main international collaborative constellations with the administrative unit
Please categorise the collaboration according to the most important international partner(s): 5-10 international institutions in the period 2012-2022. Please delete lines which are not in use.

International collaborations

Collaboration with international institutions – 1-10	
Name of main collaboration or collaborative project with the admin unit	
Name of partner institution(s)	
Sector of partner/institution(s)/sectors involved	

Impacts and relevance of the collaboration	

1.7 Open science policies

a) Describe the institutional policies, approaches, and activities to the Open Science areas which may include the following:

- Open access to publications
- Open access to research data and implementation of FAIR data principles
- Open-source software/tools
- Open access to educational resources
- Open peer review
- Citizen science and/or involvement of stakeholders / user groups
- Skills and training for Open Science

b) Describe the most important contributions and impact of the administrative unit's researchers towards the different Open Science areas cf. 1.7a above.

c) Describe the institutional policy regarding ownership of research data, data management, and confidentiality. Is the use of data management plans implemented at the administrative unit?

1.8 SWOT analysis for administrative units

Instructions: Please complete a SWOT analysis for your administrative unit. Reflect on what are the major internal Strengths and Weaknesses as well as external Threats and Opportunities for your research and innovation activities/projects and research environment. Assess what the present Strengths enable in the future and what kinds of Threats are related to the Weaknesses. Consider your scientific expertise and achievements, funding, facilities, organisation and management.

Internal	**Strengths**	**Weaknesses**
External	**Opportunities**	**Threats**

2. Research production, quality and integrity

2.1 Research quality and integrity

Please see the bibliometric analysis for the administrative unit developed by NIFU (available by the end of October, 2023).

a) Describe the scientific focus areas of the research conducted at the administrative unit, including the unit's contribution to these areas.

b) Describe the administrative unit's policy for research integrity, including preventative measures when integrity is at risk, or violated.

2.2 Research infrastructures

a) Participation in national infrastructure

Describe the most important participation in the national infrastructures listed in the Norwegian roadmap for research infrastructures (Norsk veikart for forskningsinfrastruktur) including as host institution(s).

Table 5. Participation in national infrastructure

Please present up to 5 participations in the national infrastructures listed in the Norwegian roadmap for research infrastructures (Norsk veikart for forskningsinfrastruktur) for each area that were the most important to your administrative unit.

Areas in roadmap	Name of research infrastructure	Period (from year to year)	Description	Link to website

b) Participation in international infrastructures

Describe the most important participation in the international infrastructures funded by the ministries (Norsk deltakelse i internasjonale forskningsorganisasjoner finansiert av departementene).

Table 6. Participation in international infrastructure

Please describe up to 5 participations in international infrastructures for each area that have been most important to your administrative unit.

Project	Name	Period (from year to year)	Description	Link to infrastructure

c) Participation in European (ESFRI) infrastructures

Describe the most important participation in European (ESFRI) infrastructures (Norske medlemskap i infrastrukturer i ESFRI roadmap) including as host institution(s).

Table 7. Participation in infrastructures on the ESFRI Roadmap
Please give a description of up to 5 participations that have been most important to your administrative unit.

Social sciences and the humanities				
Name	**ESFRI-project**	**Summary of participation**	**Period (from year to year)**	**Link**

d) Access to research infrastructures
Describe access to relevant national and/or international research infrastructures for your researchers. Considering both physical and digital infrastructure.

e) FAIR- principles
Describe what is done at the unit to fulfil the FAIR-principles.

3. Diversity and equality

Describe the policy and practices to protect against any form of discrimination and to promote diversity in the administrative unit.

Table 8. Administrative unit policy against discrimination
Give a description of up to 5 documents that are the most relevant. If the administrative unit uses the strategies, policies, etc. of a larger institution, then these documents should be referred to.
Please delete lines which are not in use.

No.	**Name**	**Valid period**	**Link**
1			

4. Relevance to institutional and sectorial purposes

4.1 Sector specific impact

Describe whether the administrative unit has activities aimed at achieving sector-specific objectives or focusing on contributing to the knowledge base in general. Describe activities connected to sector-specific objectives, the rationale for participation and achieved and/or expected impacts. Please refer to chapter 2.4 in the evaluation protocol.

- Alternatively, describe whether the activities of the administrative unit are aimed at contribution to the knowledge base in general. Describe the rationale for this approach and the impacts of the unit's work to the knowledge base.

4.2 Research innovation and commercialisation

a) Describe the administrative unit's practices for innovation and commercialisation.

b) Describe the motivation among the research staff in doing innovation and commercialisation activities.

c) Describe how innovation and commercialisation is supported at the administrative unit.

Table 9. Policies for innovation including IP policies, new patents, licenses, start-up/spin-off guidelines
Describe up to 5 documents of the administrative unit's policies for innovation, including IP policies, new patents, licenses, start-up/spin-off guidelines, etc., that are the most relevant. If the administrative unit uses the strategies, policies, etc. of a larger institution, then present these documents. Please delete lines which are not in use.

No.	Name	Valid period	Link
1			

Table 10. Administrative description of successful innovation and commercialisation results
Please describe up to 10 successful innovation and commercialisation results at your administrative unit in the period 2012-2022. Please delete lines which are not in use.

No.	Name of innovation and commercial results	Link	Description of successful innovation and commercialisation result.
1			

4.3 Higher education institutions

a) Reflect how research at the administrative unit contributes towards master and PhD-level education provision, at your institutions and beyond.

b) Describe the opportunities for master students to become involved in research activities at the administrative unit.

c) **ONLY** for administrative units responsible for the Cand.med. degree programme, cf. Evaluation of the Professional programme in Medicine (NOKUT).

- Reflect on how research at the administrative unit contributes towards the quality of the Cand.med. degree programme at your institutions and beyond.
- Describe the different opportunities for students on the Cand.med. degree programme to become involved in research activities at the administrative unit, and the extent to which students use those opportunities.

4.4 Research institutes

a) Describe how the research and innovation activities/projects at the administrative unit contribute to the knowledge base for policy development, sustainable development, and societal and industrial transformations more generally.

b) Describe the most important research activities with partners outside of research organisations.

4.5 Health trusts

a) Reflect on how the administrative unit's clinical research, innovation and commercialisation contribute towards development, assessment and implementation of new diagnostic methods, treatment, and healthcare technologies.

b) Reflect on how research at the unit contributes towards the quality of relevant education programme at your institutions or beyond.

c) Describe the different opportunities for students on relevant educational programmes to become involved in research activities at the administrative unit, and the extent to which students use those opportunities.

5. Relevance to society

Reflect on the administrative unit's contribution towards the Norwegian Long-term plan for research and higher education, societal challenges more widely, and the UN Sustainable Development Goals.

5.1 Impact cases

Please use the attached template for impact cases. Each impact case should be submitted as an attachment (pdf) to the self-assessment.

Impact case guidelines

Each case study should include sufficiently clear and detailed information to enable the evaluation committee to make judgements based on the information it contains, without making inferences, gathering additional material, following up references or relying on members' prior knowledge. References to other sources of information will be used for verification purposes only, not as a means for the evaluation committee to gather further information to inform judgements.

In this evaluation, impact is defined as an effect on, change or benefit to the economy, society, culture, public policy or services, health, the environment or quality of life, beyond academia.

Timeframes

- The impact must have occurred between 2012 and 2022
- Some of the underpinning research should have been published in 2012 or later
- The administrative units are encouraged to prioritise recent cases

Page limit

Each completed case study template will be limited to **five pages** in length. Within the annotated template below, indicative guidance is provided about the expected maximum length limit of each section, but institutions will have flexibility to exceed these so long as the case study as a whole remains no longer than **five pages** (font Calibri, font size 11). Please write the text into the framed template under the sections 1–5 below. The guiding text that stands there now, can be deleted.

Maximum number of cases permitted per administrative unit

For up to 10 researchers: one case; for 10 to 30 researchers: two cases; for 30-50 researchers: three cases; for 50-100 researchers: four cases, and up to five cases for units exceeding 100 researchers.

Naming and numbering of cases

Please use the standardised short name for the administrative unit, and the case number for the unit (1,2,3, etc) in the headline of the case. Each case should be stored as a separate PDF-document with the file name: [Name of the institution and name of the administrative unit] [case number]

Publication of cases

RCN plans to publish all impact cases in a separate evaluation report. By submitting the case the head of the administrative units consents to the publication of the case. Please indicate below if a case may not be made public for reasons of confidentiality.

If relevant, describe any reason to keep this case confidential:

Please write the text here

[Name of the institution and name of the administrative unit] [case number]

Institution:
Administrative unit:
Title of case study:
Period when the underpinning research was undertaken:
Period when staff involved in the underpinning research were employed by the submitting institution:
Period when the impact occurred:

1. Summary of the impact (indicative maximum 100 words)
This section should briefly state what specific impact is being described in the case study.

2. Underpinning research (indicative maximum 500 words)
This section should outline the key research insights or findings that underpinned the impact, and provide details of what research was undertaken, when, and by whom. This research may be a body of work produced over a number of years or may be the output(s) of a particular project. References to specific research outputs that embody the research described in this section, and evidence of its quality, should be provided in the next section. Details of the following should be provided in this section:

- The nature of the research insights or findings which relate to the impact claimed in the case study.
- An outline of what the underpinning research produced by the submitted unit was (this may relate to one or more research outputs, projects or programmes).
- Dates of when it was carried out.
- Names of the key researchers and what positions they held at the administrative unit at the time of the research (where researchers joined or left the administrative unit during this time, these dates must also be stated).
- Any relevant key contextual information about this area of research.

3. References to the research (indicative maximum of six references)
This section should provide references to key outputs from the research described in the previous section, and evidence about the quality of the research. All forms of output cited as underpinning research will be considered equitably, with no distinction being made between the types of output referenced. Include the following details for each cited output:
- Author(s)
- Title
- Year of publication
- Type of output and other relevant details required to identify the output (for example, DOI, journal title and issue)
- Details to enable the panel to gain access to the output, if required (for example, a DOI or URL).

All outputs cited in this section must be capable of being made available to panels. If they are not available in the public domain, the administrative unit must be able to provide them if requested by RCN or the evaluation secretariate.

4. Details of the impact (indicative maximum 750 words)
This section should provide a narrative, with supporting evidence, to explain:

- How the research underpinned (made a distinct and material contribution to) the impact;
- The nature and extent of the impact.

The following should be provided:
- A clear explanation of the process or means through which the research led to, underpinned or made a contribution to the impact (for example, how it was disseminated, how it came to influence users or beneficiaries, or how it came to be exploited, taken up or applied).

- Where the submitted administrative unit's research was part of a wider body of research that contributed to the impact (for example, where there has been research collaboration with other institutions), the case study should specify the particular contribution of the submitted administrative unit's research and acknowledge other key research contributions.
- Details of the beneficiaries – who or what community, constituency or organisation has benefitted, been affected or impacted on.
- Details of the nature of the impact – how they have benefitted, been affected or impacted on.
- Evidence or indicators of the extent of the impact described, as appropriate to the case being made.
- Dates of when these impacts occurred.

5. Sources to corroborate the impact (indicative maximum of ten references)

Institution	Administrative unit	Name of research group	Expert panel
Oslo University Hospital	Division of Technology and Innovation	Intervensjonssenteret	Panel 3a-2

Scales for research group assessment

Use whole integers only – no fractions!

Organisational dimension

Score	Organisational environment
5	An organisational environment that is outstanding for supporting the production of excellent research.
4	An organisational environment that is very strong for supporting the production of excellent research.
3	An organisational environment that is adequate for supporting the production of excellent research.
2	An organisational environment that is modest for supporting the production of excellent research.
1	An organisational environment that is not supportive for the production of excellent research.

Quality dimension

The quality dimension consists of two judgements: 1) Research and publication quality, and 2) Research group's contribution. The first judgement is defined as follows:

Score	Research and publication quality	Supporting explanation
5	Quality that is outstanding in terms of originality, significance, and rigour.	**The quality of the research is world leadin**g in terms of quality, and is comparable to the best work internationally in the same area of research. The publications submitted provide evidence that the work of the group meets the highest international standards in terms of originality, significance, and rigour. Work at this level should be a key international reference in its area.
4	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.	**The quality of the research is internationally excellent**. The research is clearly of an international standard, with a very good level of quality in terms of originality, significance, and rigour. Work at this level can arouse significant interest in the international academic community, and international journals with the most rigorous standards of publication (irrespective of the place or language of publication) could publish work of this level.
3	Quality that is recognised internationally in terms of originality, significance and rigour.	**The quality of the research is sufficient to achieve some international recognition.** It would be perceived nationally as strong and may occasionally reach an internationally recognised level in terms of originality, significance and rigour. Internationally recognised journals could publish some work of this level.
2	Quality that meets the published definition of research for the purposes of this assessment.	The international academic community would deem the research to be nationally acceptable, but below world standards. Legitimate nationally recognised peer-reviewed journals could publish work of this level.
1	Quality that falls below the published definition of research for the purposes of this assessment[1].	**The quality of the research** is well below international level, and is unpublishable in legitimate peer-reviewed research journals.

[1] A publication has to meet all of the criteria below:

Societal impact dimension

The societal impact dimension is also composed of two judgements, defined as presented in the table below.

Score	Research group's societal contribution, taking into consideration the resources available to the group	Score	User involvement
5	The group has contributed extensively to economic, societal and/or cultural development in Norway and/or internationally.	5	Societal partner involvement is outstanding – partners have had an important role in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
4	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is very considerable given what is expected from groups in the same research field.	4	Societal partners have very considerable involvement in all parts of the research process, from problem formulation to the publication and/or process or product innovation.
3	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is on par with what is expected from groups in the same research field.	3	Societal partners have considerable involvement in the research process, from problem formulation to the publication and/or process or product innovation.
2	The group's contribution to economic, societal and/or cultural development in Norway and/or internationally is modest given what is expected from groups in the same research field.	2	Societal partners have a modest part in the research process, from problem formulation to the publication and/or process or product innovation.
1	There is little documentation of contributions from the group to economic, societal and/or cultural development in Norway and/or internationally.	1	There is little documentation of societal partners' participation in the research process, from problem formulation to the publication and/or process or product innovation.

Methods and limitations

Methods

The evaluation is based on documentary evidence and online interviews with the representatives of Administrative Unit.

The documentary inputs to the evaluation were:

- Evaluation Protocol Evaluation of life sciences in Norway 2022-2023
- Administrative Unit´s Terms of Reference
- Administrative Unit's self-assessment report
- Administrative Unit's impact cases
- Administrative Unit's research groups evaluation reports
- Panel reports from the Expert panels
- Bibliometric data (*NIFU Nordic Institute for Studies of innovation, research and education*)
- Personnel data (*Statistics Norway (SSB)*)
- Funding data – The Research Council´s contribution to biosciences research (*RCN*)
- Extract from the Survey for academic staff and the Student Survey (*Norwegian Agency for Quality Assurance in Education (NOKUT)*)

After the documentary review, the Committee held a meeting and discussed an initial assessment against the assessment criteria and defined questions for the interview with the Administrative Unit. The Committee shared the interview questions with the Administrative Unit two weeks before the interview.

Following the documentary review, the Committee interviewed the Administrative Unit in an hour-long virtual meeting to fact-check the Committee's understanding and refine perceptions. The Administrative Unit presented answers to the Committee's questions and addressed other follow-up questions.

After the online interview, the Committee attended the final meeting to review the initial assessment in light of the interview and make any final adjustments.

A one-page summary of the Administrative Unit was developed based on the information from the self-assessment, the research group assessment, and the interview. The Administrative Unit had the opportunity to fact-check this summary. The Administrative Unit approved the summary without adjustments. ***(Adjust the text if the AU asked for corrections. Include the AU request and explain what adjustments were made).***

Limitations

(Choose one of the three options below and delete the others. Feel free to elaborate slightly if necessary. For example, if you choose option 3, explain the missing information. Note that the Committee can provide detailed feedback and suggestions on improving the evaluation in the Memorandum to the RCN. This section has to remain concise and only summarise whether the information was or was not sufficient.)

(1) The Committee judged the information received through documentary inputs and the interview with the Administrative Unit sufficient to complete the evaluation.

(2) The Committee judged that the Administrative Unit self-assessment report was insufficient to assess all evaluation criteria fully. However, the interview with the Administrative Unit filled gaps in the Committee's understanding, and the information was sufficient to complete the evaluation.
(3) The Committee judged that the Administrative Unit’s self-assessment report was insufficient to assess all evaluation criteria fully, and some information gaps remained after the interview with the Administrative Unit.

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