

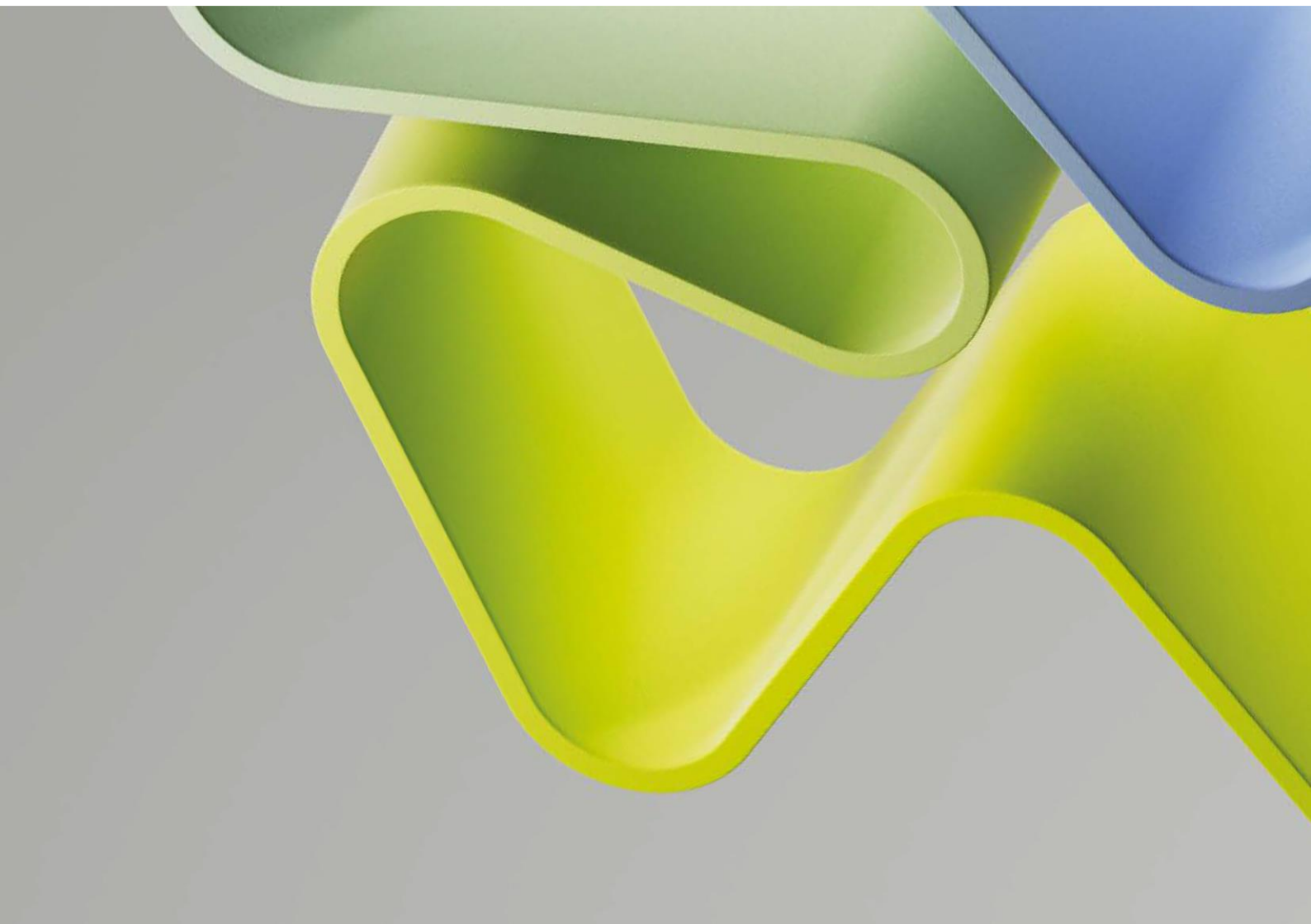
Evaluation of Medicine and Health 2023-2024

Evaluation report – Panel 4b

Research Group: Department of Infection control and Preparedness
(SMSO)

Administrative Unit: Division of Infection Control

Institution: Norwegian institute of Public Health



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Preface

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The primary aim of the evaluation of medicine and health (EVALMEDHELSE) 2023-2024 is to reveal and confirm the quality and relevance of research performed at Norwegian Higher Education institutions, research institutions (the institute sector) and the health trusts, in an international perspective. Such knowledge is useful for the institutions that participate in the evaluation, for the Research Council who advise the authorities on how research should be developed further, and for the authorities, who set targets and frameworks for research and higher education. Research groups submitted by their administrative unit will be assessed by 18 expert panels organised by research subjects or themes. The expert panels will assess research groups across institutions and sectors based on research group's self-assessments and examples of scholarly output. These research reports will be part of the evaluation of their belonging administrative units.

Abstract

The focus of the department of Infection Control and Preparedness (SMSO) is on infectious disease preparedness. This has gained significantly in relevance and visibility, and funding opportunities, during the Covid-19 pandemic. It combines both operational and (to a lesser extent) research activities, whereby the need to prioritise operational support during outbreaks can make dedicated research development challenging. The department covers a very wide range of priorities and areas of expertise, with a limited number of staff. Research teams often collaborate across departments. Benchmarks are comprehensive but not very specific. The scientific output and societal contribution of the group is very good and in line with similar PHI research groups.

Overall assessment

The panel considers this Department is overall conducting good quality research, of significant societal relevance. It is an active albeit somewhat overstretched group, with many (inter)national collaborations and interdisciplinarity. The Department went through several reorganisations over the period under evaluation, which may have had an impact on research focus and resources. Surveillance expertise includes diseases arising from food, water and animals, and there is the ambition to broaden this expertise further with data from new sources like wastewater and climate. Several researchers also belong to the cross departmental AMR centre within the overarching Division, which is a focus also reflected in the scientific and societal output from this Department. To strengthen and maintain a competitive research profile, the department may have to invest in developing a distinct research agenda on preparedness, in particular once the focus and funding for Covid-19 wanes in the coming years.

Grading:

Dimensions	Score
Organisational dimension (How adequate the organisational environment is in supporting the production of excellent research).	3
Quality dimension (Research and publication quality/Research group's contribution)	4/3
Societal impact dimension (Research group's societal contribution/User involvement)	4/3

Recommendations

- Consider the development and leading of a distinct research line within the field of preparedness, where the department could build on its networks, create visibility.
- Formulate benchmarks in a way that is more smart and ambitious
- Clarify how (research) synergy is/can be created with other departments within the division working on related topics

1. Strategy, resources and organisation

1.1 Research group's organisation and strategy

This research group is one of several within the Division of Infection Control, with a strong operational focus, for which the research should provide support and evidence. The overarching Division has been reorganised multiple times in the period 2012-2022 resulting in significant shifts in the focus, allocation of resources, and overall structure of the associated research groups/departments. This Department is relatively young, being established in 2019. There is a large variety of scientific expertises, with 5 thematic research priorities, which cover many different infectious diseases. The department is divided into 4 sections, but the focus of each is not specified. Just over a quarter of staff are actively involved in research, most of them are part of multiple (other) research groups.

During the pandemic the department (and institute) temporarily shifted from being line-organized to matrix-organized to facilitate collaborative cross-disciplinary resource mobilization and knowledge production across departments, although posing challenges in managing individual researchers' workload and priorities. Projects are still run across departments, but it is not clear if this has resolved those challenges. There is good access to national data and infrastructure, and they are well embedded in European PH networks, including hosting of EPIET and EUPHEM fellows. Benchmarks are somewhat generic and not very specific. Good support for finance, legal, IT, KE and library services. Dedicated R&I unit to help with increasing external funding and proposal writing.

The panel observed that the research group has extensive operational responsibilities and collaborations, related to preparedness, surveillance, and control of communicable diseases, including outbreaks linked to zoonoses, antimicrobial resistance, healthcare associated infections and food and waterborne infections. Thus, they felt that remit of this department is very wide, and advises it should be considered to define a more focused scope for research, which might enable more impactful research and a more clear profile for the department. Also coherence with and coordination of related research in other groups in the Division can be an asset but was not very clear for the panel. Frequent reorganisations may interfere with development of in-depth expertise, and the current structure with (temporary) project teams working across multiple departments may also be a challenge in this regard.

Education is described in general terms, but the self-assessment does not provide quantitative (number of PhD/MSc, frequency of seminars and workshops) or content (topics) information, making the specific contributions of the Department hard to evaluate. More SMART benchmarks could be useful to guide prioritisation and (self)evaluations.

The drafting of the research strategy was allegedly structured with the assistance of chatGPT, which is surprising. The panel would expect a scientific Department to be able to structure its research strategy without such help. The use of chatGPT here might explain the somewhat limited concrete objectives and priorities.

Recommendations:

- Explain the need to use of chat GPT in structuring a research self-assessment; and in case of use in future applications or reports, explain this upfront.
- Prioritise a few research areas where the department may have a strong position and competitive advantage, to build and lead long-term scientific activity and which can guide strategic choices re funding, PhDs, etc.

- The Division should aim to avoid frequent reorganisations, but could reconsider the added value of a matrix structure as operational in the Division. This would require clear guidance on responsibilities, leadership and support for the specific topics per department

1.2 Research group's resources

The department consists of 40 staff members, of whom 12 are engaged in research: 6 as senior researchers, 5 as senior advisors, and one as special advisor. A large array of qualifications is mentioned, although academic qualifications are not mentioned, except that all have a PhD. The department director has administrative, financial, and strategic responsibility for the department, including its research activities. Research teams often span across departments (8/12 researchers from part of multiple research groups in the division). About half of the research funding is from core and half from external national and international funding. Operational overload is mentioned in the 'challenges'.

The panel felt that the relatively large amount of external research funding is excellent, and is in line with increasing awareness of the need to strengthen preparedness and the increasing funding opportunities for this. On the other hand, the panel noted that there was more external funding prior to Covid-19 than more recently, and is also a bit concerned that external funding opportunities may decline now that Covid-19 is less at the forefront, and budgetary constraints may increase. At the same time, the panel assumes that the workload during Covid-19 for this Department was very high, which may have been interfering somewhat with developing new research and/or with in depth analysing of available data. The specific roles and contributions of the senior/special advisors in research were not clarified, making it hard to assess their role. The large amount of expertise covered in a single department can be seen as a strength, but raises some concerns re sufficient critical mass for cutting-edge research.

Recommendations:

- Pro-actively develop strategy to maintain external funding in post-Covid times
- Balance the need for sufficient critical mass versus having a very diverse but potentially too thinly spread range of expertises by clear prioritisation at Department and Division level

1.3 Relevance to the institution

A key role of the department is its (operational) role in outbreaks, and its embedding in European preparedness structures, including the EPIET network. This relates to support with major international pandemics, but also local outbreaks. Preparedness is in fact one of the three institutional priorities, thus both the operational expertise and knowledge building related to surveillance outcomes support this institutional mandate. They contribute to core institutional priorities (crisis management/dynamic adjustment, interventions that work, grand societal challenges (AMR, One health), advanced analysis, Norway and Europe and the world (participation in EU programmes). The Department manages several national infrastructures and benefits from international (data)infrastructures. It is responsible for several national health registries and systems and operates microbial diagnostic laboratories with reference functions. They managed the national (pilot) system for wastewater-based surveillance started during the Covid-19 pandemic.

The panel noted that it was stated as an institutional objective to ensure that research activities in this Department do not compromise its operational responsibilities. This unclear institutional support for the research activities of the Department makes it unclear to what extent the Division or the Institute values or prioritises the need for a strong research profile on preparedness (or considers this Department in a position to be or become scientifically competitive). Also, there might be inherent tensions, as operational tasks will often require ad-hoc shifting of resources, and may hamper the development of a dedicated, competitive research profile.

Overall, the panel thinks that the Institute should clarify further its strategic and management support for the research ambitions and related expectations of this Department.

Recommendations:

- Clarify the support for an independent strong research profile of the department, and negotiate protected research time for selected researchers.
- Consider a Divisional rather than a Departmental strategy on infectious disease research, in which expertise of this Department can blossom and contribute.

2. Research quality

2.1 Research group's scientific quality

The scientific output of the group is largely based on a wide range of surveillance systems, and is relevant both nationally and internationally. Six relatively broad key scientific domains are mentioned (surveillance and outbreak research; antibiotic use, AMR and HAI; bio-preparedness; One Health; climate change; Covid-19), all of these domains -except one (bio-preparedness)- are reflected in the projects presented. Three of the 5 papers selected relate to AMR (which is a specific research centre within the Division, evaluated independently) also; all five have a first and/or last author based in the Department. Four of the papers relate to the situation in Norway only, a fifth publication is based on an international collaboration but is a viewpoint, not original research.

Overall the panel thinks the networks and scientific quality of the research group are internationally very good in terms of significance and rigour, but fall somewhat short of the highest standards of excellence. Research is seen as integral to and supportive of the preparedness function of the Department. This requires regular (mainly reactive rather than proactive) shifts in focus, and doesn't necessarily facilitate the development of in-depth expertise or long-term research strategies. As such, there may be some inevitable tension between the ambition to be an operational backstop for any public health threat, and to build a distinct research profile. The papers are of good scientific quality and published in well-known journals. A significant amount of international research funding has been obtained, but mostly from before 2020 – it would be good to see an increase in current funding in the coming years by proactively pursuing (collaborative) grants in their field of expertise, preferably with international partners also. The 6 key scientific domains listed under research quality (2.1) differ somewhat from the 5 themes mentioned under the research strategy (1.2), although there is still quite some overlap. The department benefits from a focus on topics like One health, climate change, AMR, and water safety, opening more opportunities for collaborations and funding beyond outbreaks and preparedness. At the same time, the interconnectedness with the cross-departmental AMR group, also evaluated separately as a research group in this round, makes it complicated to assess credits. The department can also benefit from technological advancements (such as AI and machine learning) to be incorporated in their work, could use a clear (SMART) strategy to evaluate how to benefit from these opportunities.

Recommendations:

- Clarify ownership and contributions of AMR projects and publications between department and AMR centre.
- Clarify how synergy is/can be created with other departments within the division working on related topics
- Define a few concrete research topics among the many priorities covered operationally in the department where unique added value exists, and generate management support for these

2.2 Research group's societal contribution

By investigating the effect on control measures to reduce the spread of health-care-associated infections and AMR, the department greatly contributes to strengthening healthcare systems, especially in the context of infectious disease control. Otherwise, societal impact is described in rather generic terms for education, economic impact, societal and cultural development. Most of the concrete products listed refer to publications on the NIPH website. Strong stakeholder involvement is mentioned but not specified, except for international collaboration with other PHIs and international organisations (including TATFAR, in line with the research focus on AMR). Public-private partnerships are mentioned, but risks and benefits are not clarified. It is not clarified when, where, how practices, management and policies have changed based on their outcomes and data.

The panel thinks that the group's contribution to economic, societal and/or cultural development in Norway and/or internationally is considerable given what is expected from groups in the same research field. This is related to the close connection of research to concrete societal challenges.

With regard to user involvement the panel feels that societal partners have an important involvement in the research process, from problem formulation to the publication and/or process or product information, but this could have been illustrated more clearly.

The research of the group enables the overall public health mission of the institute, by generating knowledge and surveillance insights on trends and risks as well as supporting outbreak investigations. Stakeholders are involved, and they refer to strong user involvement, but it is not clear to what extent interaction with end users is bidirectional. The societal impact of a department focusing on outbreak control and preparedness is self-evident. There might opportunities to enhance impact by more targeted communication and increased involvement of non-academic partners. Public-private partnerships can be powerful, but for a public health institute, public trust is key, and the risks of (perceptions of) conflict of interest warrant a very critical approach.

Recommendations:

- Provide concrete example of societal impact, e.g. to clarify how preparedness was modified, what the societal impact of an outbreak investigation or control activities was, how knowledge was translated, where a difference was observed
- Liaise with communication experts on opportunities for disseminating surveillance and research findings also in the lay press and/or via social media
- Clarify the role of stakeholders (public, politicians) in the prioritisation and implementation of research

Appendices

Evaluation of Life Sciences in Norway 2022-2024

Evaluation of Medicine and Health 2023-2024

Mandate Expert panels

The Research Council of Norway (RCN) is given the task by the Ministry of Education and Research to perform subject-specific evaluations. The Portfolio board for Life Sciences in the Research Council of Norway has decided to carry out an evaluation of medicine and health in 2023-2024 as the second of two evaluations within Life Sciences. The evaluation of biosciences takes place in 2022-2023.

1. The objective of the evaluation

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), by the institute sector and by health trusts.

The results of the evaluation will be used as recommendations to the institutions, the Research Council, and the ministries.

2. Tasks of the expert panels

The panels are requested to:

- evaluate the strategy, resources and organisation of/for the research groups.
- evaluate research production and quality of the research groups.
- grade and write a short evaluation text to the evaluated research groups.

Each of the expert panels will write a brief report with evaluations of the different research groups as well as specific recommendations.

3. Time schedule

Digital panel meetings will take place in the period March 15. - June 15. 2024.

Deadline for submitting panel report to the Research Council: June 15. 2024.

4. Miscellaneous

Other important aspects of Norwegian life sciences research that ought to be given consideration.

EVALMEDHELSE 2023-2024 – Panel group description – January 2024

Panel group	Description	Panel no.
Group 1 PHYSIOLOGY Physiology-related disciplines (human physiology), including corresponding translational research	Anatomy, physiology, embryology, nutritional physiology, pathology, basic odontological research, exercise physiology, neurobiology, toxicology, pharmacology, medicinal chemistry, chemistry, biology, pathology.	Panel 1a Panel 1b
Group 2 MOLECULAR BIOLOGY Molecular Biology, including corresponding translational research	Microbiology, bacteriology, inflammation and infection disease research, forensic medicine, genetics, immunology, vaccine development, microbiological diagnostics, pharmaceutical microbiology, cell biology, molecular medicine and -biophysics, medical biochemistry, omics, organoids, imaging, toxicology, pathology, drug development, cancer research, translational research, systems biology, personalized medicine, biomarkers, oncology, genetics, genomics, epigenetics, proteomics, bioinformatics-/statistics, computational science, AI, biology, virology, radiology, ionisation, molecular biology, microbiology, pharmacology, pharmacogenomics, regenerative medicine and related subjects.	Panel 2a Panel 2b Panel 2c
Group 3a CLINICAL RESEARCH	Clinical Research, including surgery and translational research within: paediatrics, women's health, gynaecology, otorhinolaryngology, head and neck surgery, oncology, haematology, radiology and medical imaging.	Panel 3a_1 Panel 3b_2
Group 3b CLINICAL RESEARCH	Clinical Research, including surgery and translational research within: general medicine, emergency medicine, anaesthesiology, neurology, geriatric medicine, rehabilitation medicine, cardiology, nephrology/urology, endocrinology, pulmonary medicine, orthopaedics, rheumatology, Infection, gastroenterology.	Panel 3b_1 Panel 3b_2 Panel 3b_3
Group 4 PUBLIC HEALTH Public Health and Health-related Research	Public health, community research, epidemiology, preventive medicine, mental health, behavioural research and ethics, medical statistics, environment, nutrition, preventive medicine, physiotherapy, sports medicine, implementation research, public health, health care services research, global health, nursing	Panel 4a Panel 4b Panel 4c

	sciences, rehabilitation sciences, public health systems, digital health care services, ICT, HTA, health competence, genetic and epigenetic epidemiology, non-communicable diseases, pharmacology, nursing research, professional research, occupational medicine.	Panel 4d Panel 4e Panel 4f
Group 5 PSYCHOLOGY Psychology and Psychiatry	Clinical psychology, personality psychology, developmental psychology, cognitive psychology, biological psychology and forensic psychology, psychiatry, including geriatric psychiatry, child and adolescent psychiatry and biological psychiatry, social-, community- and workplace psychology, organizational psychology, developmental psychology, behavioural and health psychology, health promotion and well-being.	Panel 5a Panel 5b

Panel group 4 PUBLIC HEALTH

Expert panel 4b

Name	Title	Institution
Marianne van der Sande (chair)	Professor	Institute of Tropical Medicine Antwerp
Baukje de Roos	Professor	University of Aberdeen
Lars Rylander	Professor	Lund University
Anders Stålmán	Docent	Karolinska Institutet

Baukje de Roos had a conflict of interest with the evaluation of the Department of Nutritional epidemiology at the University of Oslo (report 13) and Lars Rylander had a conflict of interest with the Department of Food Safety (KMMT) at the Norwegian Institute of Public Health (report 1). This meant that for those evaluations they did not have access to the self assessments or survey data and they did not participate in the discussion of the research group, nor did they participate in the preparation and completion of the evaluation report.



Evaluation of Medicine and Health (EVALMEDHELSE) 2023-2024

Self-assessment for research groups

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

Updated: **13. October 2023**

Institution (name and short name): _____

Administrative unit (name and short name): _____

Research group (name and short name): _____

Date: _____

Contact person: _____

Contact details (email): _____

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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 a research group. The self-assessment contains questions regarding the group's research- and innovation related activities and developments over the years 2012-2022. All submitted data will be evaluated by expert panels.

Deadline for submitting the self- assessment to your administrative unit – 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 submit completed self- assessment to the administrative unit no later than 26 January 2024.

Please use the following format when naming your document: [short name of the institution]_[short name of the administrative unit]_[short name of the research group], e.g. *UiT_DepPsy_Short name of the research group*.

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 link to websites/documents in the self-assessment where relevant.
- Please be sure that all documents linked to in the self- assessment are written 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 the two evaluation criteria described in the evaluation protocol, the research group must answer all questions.
 - ⇒ Provide information – provide documents and other relevant data or figures about the research group, for example strategy and other planning documents, as well as data on R&D expenditure, sources of income and results and outcomes of research
 - ⇒ Describe – explain and present using contextual information about the research group and inform the reader about the research group.
 - ⇒ Reflect – comment in a reflective and evaluative manner how the research group operates.
- Data on personnel should refer to data reported to DBH on 1 October 2022 for HEIs and to the yearly reporting for 2022 for the institute sector and the health authorities. Other data should refer to 31 December 2022 if not specified otherwise.
- It is possible to extend the textboxes when filling in the form. **NB!** A completed self- assessment form cannot exceed 25 pages (pdf file). Expert panels are not requested to read more than the maximum of 25 pages. Pages exceeding maximum limit of 25 pages **might not** be evaluated.
- Submit the self- assessment as a pdf (max 25 pages) to the administrative unit within **26 January 2024**. Before submission, please be sure that all text are readable after the conversion of the document to pdf. The self- assessment should be sent from the administrative unit to evalmedhelse@forskningsradet.no within **31 January 2024**.

Please note that information you write in the self assessment and the links to documents/websites in the self-assessment are the only available information for the expert panel.

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

1. Organisation and strategy

1.1 Research group's organisation

Describe the establishment and the development of the research group, including its leadership (e.g. centralised or distributed etc.), researcher roles (e.g. technical staff, PhD, post docs, junior positions, senior positions or other researcher positions), the group's role in researcher training, mobility and how research is organised (e.g. core funding organisation versus project based organisation etc.).

Table 1. List of number of personnel by categories

Instructions: Please provide number of your personnel by categories.

For institutions in the higher education sector, please use the categories used in DBH, <https://dbh.hkdir.no/datainnhold/kodeverk/stillingskoder>. Please add new lines or delete lines which are not in use.

	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 Personnel by position	Position A (Fill in)				
	Position B (Fill in)				
	Position C (Fill in)				
	Position D (Fill in)				

1.2 Research group's strategy

a) Describe the research group's main goals, objectives and strategies to obtain these (e.g. funding, plans for recruitment, internationalization etc.) within the period 2012-2022.

b) Please describe the benchmark of the research group. The benchmark for the research group should be written by the administrative unit in collaboration with the research group. The benchmark can be a reference to an academic level of performance (national or international) or to the group's contributions to other institutional or sectoral purposes.

Example: A benchmark for a research group is related to the research groups' aim which again is included in the strategy for the administrative unit. A guidance for the administrative unit to set a benchmark for the research group(s) can e.g. be: What do the administrative unit expect from the research group(s)?

c) Describe the research group's contribution to education (master's degree and/or PhD).

d) Describe the support the host institution provides to the research group (i.e., research infrastructure, access to databases, administrative support etc.).

1.3 Relevance to the institutions

Describe the role of the research group within the administrative unit. Consider the research group's contribution towards the institutional strategies and objectives, and relate the research group's benchmark to these.

1.4 Research group's resources

Describe the funding portfolio of the research group for the last five years (2018-2022).

Table 2. Describe the sources of R&D funding for the research group in the period 2018-2022.

	2018 (NOK)	2019 (NOK)	2020 (NOK)	2021 (NOK)	2022 (NOK)
Basic funding					
Funding from industry and other private sector sources					
Commissioned research for public sector					
Research Council of Norway					
Grant funding from other national sources					
International funding e.g. NIH, NSF, EU framework programmes					
Other					

1.5 Research group's infrastructures

Research infrastructures are facilities that provide resources and services for the research communities to conduct research and foster innovation in their fields. [These](#) include major equipment or sets of instruments, knowledge-related facilities such as collections, archives or scientific data infrastructures, computing systems communication networks. Include both internal and external infrastructures.

- Describe which national infrastructures the research group manages or co-manages.
- Describe the most important research infrastructures used by the research group.

1.6 Research group's cooperations

Table 3. Reflect on the current interactions of the research group with other disciplines, non-academic stakeholders and the potential importance of these for the research (e.g. informing research questions, access to competence, data and infrastructure, broadening the perspectives, short/long-term relations).

Interdisciplinary (within and beyond the group)	About 1/3 page
Collaboration with other research sectors e.g. higher education, research institutes, health trusts and industry.	About 1/3 page
<u>Transdisciplinary</u> (including non academic stakeholders) <i>Transdisciplinary research involves the integration of knowledge from different science disciplines and (non-academic) stakeholder communities with the aim to help address complex societal challenges.</i>	About 1/3 page

2. Research quality

2.1 Research group's scientific quality

Describe the research profile of the research group and the activities that contribute to the research group's scientific quality. Consider how the research group's work contributes to the wider research within the research group's field nationally and internationally.

Please add a link to the research group's website:

Short version

Table 4. List of projects

Instructions: Please select 5-10 projects you consider to be representative/the best of the work in the period 1 January 2012 – 31 December 2022. The list may include projects lead by other institutions nationally or internationally. Please delete tables that are not used.

Project 1 -10: <i>Project title/Project period (year from – year to)</i>	Project owner(s) (project leaders organisation)	
	Total budget and share allocated to research group	
	Objectives and outcomes (planned or actual) and link to website	

Table 5. Research group's contribution to publications

Instructions: Please select 5-15 publications from the last 5 years (2018-2022) with emphasis on recent publications where group members have a significant role. **If the publication is not openly available, it should be submitted as a pdf file attached to the self-assessment.** We invite you to refer to the Contributor Roles Taxonomy in your description: <https://credit.niso.org/>.

Cf. Table 1. List of personell by categories: Research groups up to 15 group members: 5 publications. Research groups up to 30 group members: 10 publications. Research groups above 30 group members: 15 publications.

Please delete tables that are not used.

Publication 1 -15: <i>Project title/Journal/Year/DOI/URL</i>	Authors (Please highlight group members)	
	Short description	
	Research group's contribution	

Table 6. Please add a list with the research group's monographs/scientific books.

Please delete lines which are not used.

1	Title - Authors (Please highlight group members)- link to webpage (if possible)
2	

2.2 Research group's societal contribution

Describe the societal impact of the research group's research. Consider contribution to education, economic, societal and cultural development in Norway and internationally.

Table 7. The research group's societal contribution, including user-oriented publications, products (including patents, software or process innovations

Instructions: Please select 5–10 of your most important user-oriented publications or other products from the last 5–10 years with emphasis on recent publications/products. For each item, please use the following formatting. Please delete lines which are not used.

3. Challenges and opportunities

Information about the strengths and weaknesses of the research group is obtained through the questions above. In this chapter, please reflect on what might be the challenges and opportunities for developing and strengthening the research and the position of the research group.

Short version

Scales for research group assessment

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

Score	Research and publication quality	Score	Research group's contribution Groups were invited to refer to the Contributor Roles Taxonomy in their description https://credit.niso.org/
5	Quality that is outstanding in terms of originality, significance and rigour.	5	The group has played an outstanding role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
4	Quality that is internationally excellent in terms of originality, significance and rigour but which falls short of the highest standards of excellence.	4	The group has played a very considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
3	Quality that is recognised internationally in terms of originality, significance and rigour.	3	The group has a considerable role in the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
2	Quality that meets the published definition of research for the purposes of this assessment.	2	The group has modest contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.
1	Quality that falls below the published definition of research for the purposes of this assessment.	1	The group or a group member is credited in the publication, but there is little or no evidence of contributions to the research process from the formulation of overarching research goals and aims via research activities to the preparation of the publication.

Societal impact dimension

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.

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