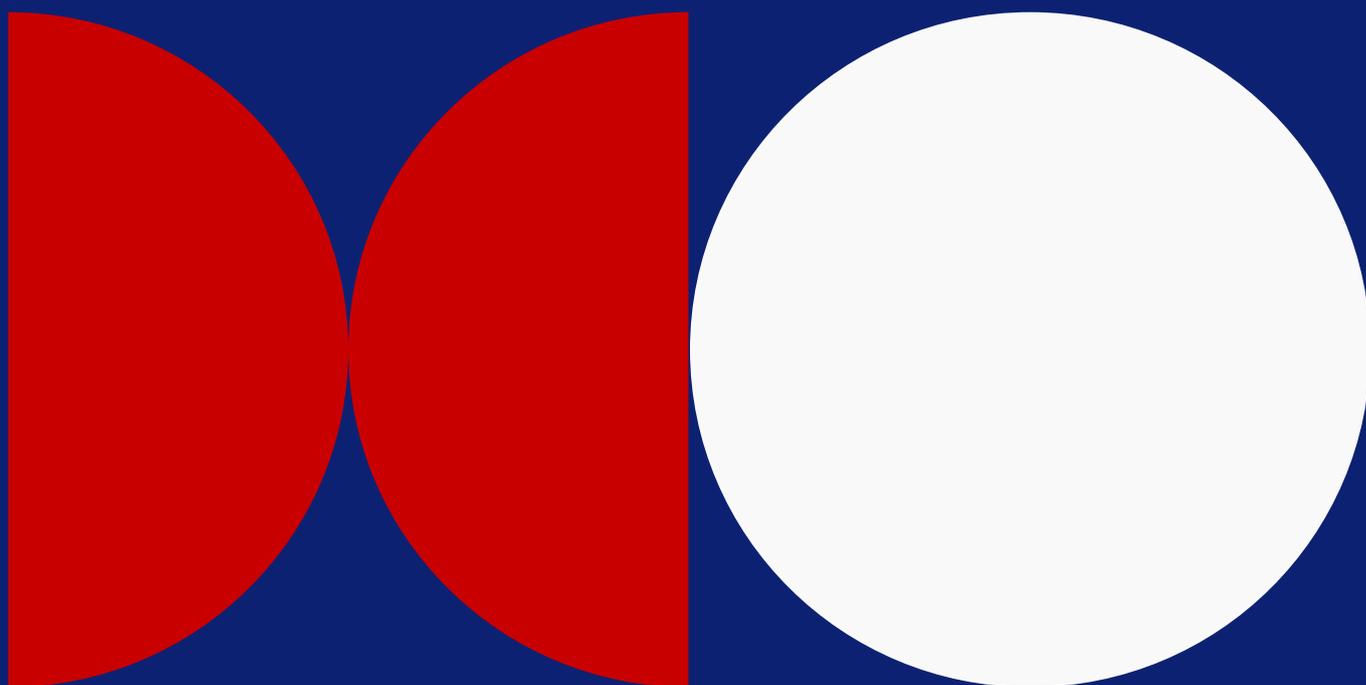


Research review 2023

Clinical therapy research



Research review 2023 – clinical therapy research

VR2304
Dnr 3.5-2021-06624
ISBN 978-91-88943-79-8

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Foreword

This review of clinical therapy research includes recommendations for initiatives to promote clinical research in Sweden, based on analysis of the current situation and a forecast in this scientific field. Together with reviews of other scientific fields, this report will form the foundation for the Swedish Research Council's strategic work. These reviews also form central material when the Swedish Research Council produce documentation for the Government's upcoming research policy bill.

This research review has been compiled by the Committee for Clinical Therapy Research to describe the current situation, highlight topical issues and future strategic areas and challenges, for the purpose of strengthening clinical research and with the goal of creating patient benefit and increased health.

The Committee has noted that several of the areas presented in the previous review from 2019 still remain. This emphasizes the need to highlight and implement several concrete measures to improve Swedish clinical research. During the work, the Committee has obtained and taken into account viewpoints from researchers, faculty representatives and junior researchers active at Swedish university/universities, as well as from representatives of various clinical research actors. The research community has also been given the opportunity to comment on the review via an internet forum.

The texts do not claim to be entirely comprehensive. The focus is on structural issues and challenges for clinical research of high quality. This applies not least to interaction, legal and ethical issues, and opportunities for researchers and clinically active professionals to conduct research.

We would like to thank all who have contributed to the research review, and particularly the Committee for Clinical Therapy Research for interesting and constructive discussions.

Stockholm, January 2023

Miia Kivipelto

Chair, Committee for Clinical Therapy Research, Swedish Research Council

Jonas Oldgren

Secretary General for Clinical Research, Swedish Research Council

Summary

Clinical research is research in medicine and health science that assumes access to the structures and resources of healthcare, and has the goal of solving health problems or identifying factors that lead to increased health. High-quality clinical research is therefore absolutely crucial for our future healthcare, and must be an integrated and natural part of the entire healthcare operation and organisations.

For Sweden to remain a highly productive clinical research nation in the future requires collaboration between national government, university/universities, regions and municipalities, as well as investment, development and support in a number of areas presented in this research review. Society's research resources can be of great benefit in areas such as the prevention of widespread diseases, precision medicine and individualised medicine, primary care and healthcare at home, the impact of climate and environmental changes on health, and the health effects of socio-economic circumstances.

The Committee recommends that:

- National government follows up the compliance of the research and development mandates set for the regions and municipalities according to Swedish health and medical care legislation (Hälso- och sjukvårdslag (2017:30))
- Clinical therapy research shall include human subjects irrespective of their socio-demographic background, to create the preconditions for good, equal and equitable healthcare.
- Research in precision medicine is carried out and implemented in healthcare.
- Legislation is continuously reviewed, and future sections and regulations for secondary use of health data take into account the needs and perspectives of healthcare and research, for example in the current report (Dir 2022:41) and European Health Data Space.
- The support to clinical researchers in relation to law and legal issues is adequate and sufficiently comprehensive, both within their own organisations and at permit-issuing public agencies.
- Arenas where the research community and other relevant stakeholders participate are created, for discussing new ethical issues linked to the use of health data, artificial intelligence and precision medicine in healthcare and clinical research.
- Patient and public involvement in clinical research is facilitated and improved through developing and offering specific training in clinical research.
- An investigation is initiated to illuminate whether and how representation by the general public in horizontal prioritisation of clinical research projects is possible and desirable.

- The national system for knowledge direction is used for collaboration within clinical research, to facilitate larger research collaborations that are internationally competitive.
- National government, regions and municipalities fund clinical therapy research in the long term and in a coordinated way, to create new knowledge that produces benefit to healthcare. Funding must correspond to the real costs of translational and clinical research.
- National government reserves new funding for the regions' research and development activities, to ensure that competence provision, research within primary care, and the opportunities to carry out clinical studies become equal within Sweden.
- Long-term funding is safeguarded for national infrastructure, such as national quality registers, Genomic Medicine Sweden, Biobank Sweden and Clinical Studies Sweden, to enable clinical therapy research to be supported and promoted.
- Funding of third-cycle higher education in medicine and health is increased, in particular in clinical disciplines.
- Establish clinical multi-professional graduate schools, representing both hospital healthcare and primary healthcare. National government, regions and municipalities should have joint responsibility and co-fund these.
- Fund special research positions for clinical therapy research, as well as postdoc positions and combined clinical research positions for different professional categories, including associate senior university lecturers.
- Strengthen health sciences research through the creation of attractive career opportunities for future researchers. An agreement corresponding to the ALF Agreement would be valuable and give added power.

Recommendations

Strategically important areas and initiatives

Clinical research is research in medicine and health science that assumes access to the structures and resources of healthcare, and has the goal of solving health problems or identifying factors that lead to increased health. Clinical research of high quality is therefore entirely necessary for good healthcare, now and in the future. Society's research resources are of great benefit in a dynamic world with great needs for clinical research within areas such as the prevention of widespread diseases, precision medicine and individualised medicine, primary care and healthcare at home, the impact of climate and environmental changes on health, and the health effects of socio-economic circumstances. Research must be an integrated and natural part of the entire healthcare operation, to develop and evaluate new medicines and therapy methods, and to reflect initiatives¹ in life science.

Sweden shall be a leading research nation,² and national government, university/universities, regions and municipalities, as well as the business sector, are important partners in an effective and highly productive clinical research nation. To achieve this, the responsibility of the regions and municipalities for clinical research must be clarified, and the collaboration between research and healthcare must be deepened and further developed to ensure the greatest possible benefit and value to patients. It is crucial that there are good opportunities to combine clinical work and research in all parts of healthcare, and for many healthcare professions. It is also central that patients have the opportunity to take part in clinical studies, irrespective of their geographical location and socio-economic circumstances, to enable equality in healthcare.

Research must form a clearer part of the regions' core activities

Swedish health and medical care legislation³ states that regions and municipalities shall participate in the funding, planning and implementation of both clinical research work in the healthcare area, and also of public health science research work. Healthcare is, however, the core activity of the regions, and has a constant need for improvement and development, where quality is carefully tracked and production is measured, in the first instance via the indicators "access to healthcare and treatment". Regionally implemented clinical research should also be measured and reported at national level, which is not the case today. This means that clinical research is at risk of being de-prioritised in relation to healthcare at the regional and municipal level. Instead of being a necessary resource for improving and developing healthcare, clinical research is neglected when the regions' resources are limited. Over time, this will have a

¹ [National strategi för life science](#). Website: Swedish Government.

² Forskningsproposition 2020/21:60

³ Hälso- och sjukvårdslag (2017:30)

negative effect on Sweden as a research and knowledge nation, at the same time as it hinders the country's ability to attract business-funded clinical medicine studies.

In clinical research, regions and municipalities shall collaborate with each other and with the university/universities involved, to the extent needed.⁴ To facilitate this, clear structural measures by national government are needed. A national agreement should be established between national government and the healthcare principals on long-term initiatives to promote infrastructure and competence provision for clinical research. This should state that, in addition to the healthcare operation, research and development are also included in the regions' core operations. The regional funding of research and development shall be carried out using dedicated government funding, and government needs to increase the funding allocated to the regions' research and development operations. A high level of competence among researchers in healthcare can ensure that the clinical research of today creates the therapies of tomorrow. Better utilisation of the competencies and engagement of the research personnel creates sustainable collaboration between healthcare (hospitals, primary care, municipalities) and university/universities. This also promotes recruitment to healthcare. The current governance system in healthcare does not stimulate research, however, as the free healthcare choice by patients and production control push aside research-focused personnel.

Prevention of wide-spread diseases and research in primary care

Wide-spread non-communicable diseases, such as cardiovascular disease, diabetes, some forms of cancer, mental illness and obesity are already associated with a large proportion of the work and costs of healthcare, and they are expected to increase in the future. This also applies to prevention, with new therapies, diagnostic methods and other measures. Many health challenges arise when the composition of the population is changing and the proportion of elderly persons is increasing. Restructuring of healthcare is in progress, with increased focus on primary care and structuring into levels of highly specialised care. The strength of primary care research is the large number of patients. Multi-professional and national graduate schools for primary health care medicine are central and raise the quality of primary care research. There is, however, a lack of academic supervisors with associate professor competence in primary care.

Operation-proximate healthcare research, implementation research and development will be absolutely necessary, as will increased interaction between primary care, specialist care and academia. This applies to research into the introduction of new therapy methods, diagnostics and drugs. The focus on increased healthcare in primary care and a parallel focus on highly specialised care require new ways of working. Research needs to be done in collaboration with the different actors in an interdisciplinary way, and must be able to include patients in their home environments. This can be altered through healthcare

⁴ Lag (2019:973)

stake-holders by requesting and thereby incentivizing research. Clinical research and development need to be included in the production measurements.

To increase research in primary care, the Swedish Research Council and other funding bodies may introduce a requirement that primary care representatives and patient representatives are included in research applications and review panels, and that patients are recruited from primary care.

Precision medicine – research and implementation

Research in precision medicine, such as new diagnostic methods and advanced therapies for individually adapted investigation, prevention and treatment must be carried out and implemented in healthcare. National coordination in precision medicine as well as stable funding are central.

Several types of cancer, cardiovascular diseases and other chronic and infectious diseases are facing major changes linked to precision medicine. Diagnostics based on gene sequencing are already being used in cancer care. Rare and hereditary diseases also benefit from this method.

Big developments in immune therapy linked to precision medicine are expected. New therapies are being developed using mRNA vaccination by building peptide chains from patients' tumours. New tumour bio-markers will also be used in studies and new therapies. Sequencing of tumour forms enables individually adapted therapies.

Healthcare needs to adapt to allow implementation of new technology through increased opportunities to launch research on new bio-markers, based on genomics, proteomics and imaging, for clinical applications, and thereby increase the opportunities for precision medicine within a number of therapy areas.

The impact of climate and environmental changes on health

Climate change, such as the greenhouse effect, temperature rise, extreme weather events, the burning of fossil fuels and other harmful pollution, impact access to food, clean water and tolerable housing conditions. This leads to changes in the infection panorama and has also both short- and long-term effects on widespread diseases, such as cardiovascular or kidney disease. Older persons, and other risk groups, are particularly vulnerable to heat and other environmental factors. Scenarios that entail refugee waves due to climate change, but also to climate-related diseases, are expected.

Several international bodies, such as WHO⁵, have compiled prioritisations to limit the health effects of climate change. Awareness of how the disease panorama is changing must increase. Clinical research and therapy research are facing great challenges, as is the healthcare industry, which must transition to more environmentally friendly technologies. Research into climate aspects and

⁵ [Climate change and health](#). Website: World Health Organization.

health should be taken into account in the research strategies of the Swedish Research Council and other funding bodies⁶.

The health effects of socio-economic circumstances

The aim of the healthcare system is to achieve good health and healthcare on equal terms for the entire population⁷. However, there are various structural obstacles to achieving this. The covid-19 pandemic has clearly shown that certain groups have been more vulnerable, due to factors such as overcrowded housing and socio-economic burden. Research funding bodies such as the Swedish Research Council must take part in the debate on these issues. In clinical research and clinical trials, we must ensure that patients are included in studies irrespective of their socio-economic background. This should be taken into account in applications to the Swedish Ethical Review Authority. Both targeted initiatives and preventive measures are required to reduce inequitable socio-economic effects in healthcare.

The Committee recommends that

- A national agreement is entered into between the national government and the healthcare principals relating to long-term initiatives to promote infrastructure and competence provision for clinical research.
- The national government follows up on the compliance of research and development mandates set for the regions and municipalities according to Swedish health and medical care legislation.
- Regionally implemented clinical research are measured and reported at the national level, and that production targets and production requirements for research are set.
- Increased research into major wide-spread diseases is carried out in collaboration with primary care, specialist care and academia.
- Research in precision medicine is carried out and implemented in healthcare.
- Clinical therapy research shall include human subjects irrespective of their socio-demographic background, to create the preconditions for good and equal and equitable healthcare.

Law and ethics

New methods for diagnostics and therapy in clinical research, and also changes in healthcare, lead to new ethical and legal issues arising. Similarly, changes to both European and national legislation may have consequences for the opportunities to carry out clinical research. For example, the new EU regulation governing clinical trials (EU Regulation No 536/2014), provides the option under some circumstances to study patients who are unable to make decisions by themselves, which was not possible during the COVID-19 pandemic, as the

⁶ [Climate change and health](#). Website: National Institutes of Health.

⁷ Hälso- och sjukvårdslag (2017:30)

regulation came into force in 2022. The interpretation is still not entirely clear, however.⁸

Safeguarding independent research is a fundamental principle in Sweden, and independent clinical research shall always be carried out within clear regulatory frameworks. One challenge is that clinical researchers may perceive the regulatory frameworks as being both wide-reaching and complicated. In order for clinical research in Sweden to continue strong, there must be adequate support for researchers, in areas such as law and data management. It is important that the research community is involved in the formulation of new laws and regulations that affect clinical research.

Access to health data

Large amounts of data about patients are collected in healthcare, for example in the form of patient records, sample results, X-ray images. The purpose of the data collection is primarily to deliver healthcare, often known as ‘primary use of data’. Equally important is the secondary use of patient data, when the information is aggregated to be usable in clinical research or for the development of healthcare. Digitisation and new analysis methods, for example genomics, has meant that large amounts of data can be made accessible for clinical research and offer entirely new opportunities for understanding disease conditions and developing new therapies.

The healthcare provider is responsible for patient data, which are protected by strong confidentiality. Secondary use of patient data for clinical research is conditional on personal integrity being protected. Sweden has developed procedures that enable this, for example via the National Board of Health and Welfare’s mandatory national registers, or the national quality of care registers. In order to benefit from the opportunities that new technology, digitisation and new analysis methods offer, the methods for accessibility to and sharing of data also need to change. Hospital stays are significantly shorter today than just a decade or so ago, and patients move more quickly between levels of care. Municipal healthcare will form an ever more important link in the healthcare chain, not least as patients are increasingly cared for in their own homes. Follow-up of patients’ conditions throughout the entire course of disease is made more difficult when confidentiality limits are crossed, for example between specialist care and primary care, or between regional and municipal healthcare. Clinical research is often carried out within different healthcare organisations, and often assumes that patients can be followed over time. The opportunity to collect data over time, irrespective of where the patient is located, is also an important precondition for carrying out clinical studies.

Access to platforms for sharing data

Through digitisation of data from healthcare, opportunities to analyse significantly larger data amounts are opened up. In clinical research, there is

⁸ [Nya EU-regler kan lösa kritiserat forskningsstopp](#). Website: Life-time/Forskning.
[Möjligt inkludera medvetlös patient i klinisk forskning](#). Website: Läkartidningen.

often a need to link data from several sources, such as data from patient records that are linked to data from national registers. To enable sharing of data for research purposes without having to make several copies of large data sets, we need opportunities to carry out analyses of shared data on secure platforms. Sweden has some platforms for analysing large data sets, such as Bianca/SNIC in Uppsala and Statistics Sweden's Mona platform. But no national platform covers all the needs of the research community, such as being accessible for researchers from university/universities or regions, providing the statistics tools requested, allowing own data to be uploaded, or having an established procedure for linking from several public agencies.

Administration times for permits and releases

Clinical research requires a number of different permits before it can go ahead, and in addition the release of samples or data may be required. A recurrent criticism from the Swedish research community and from companies carrying out research is of the long administration times of bodies such as the Medical Products Agency for permits to be issued, or public agencies and healthcare providers for releasing data. This hinders both the possibility of answering requests to take part in company-funded clinical trials, and also the possibility of completing studies within the planned time frame for funding awarded.

Current practice versus new opportunities

The development of artificial intelligence (AI) is conditional on access to large data amounts from different sources. AI research is to a large extent explorative and hypothesis-generating. On the other hand, bodies such as the Swedish Ethical Review Authority often bases its decisions on the model that clinical research is hypothesis-driven, and that data is collected or requested in order to test a specific research question. This creates uncertainty about how AI research should be assessed, for example when it comes to requests for data to be released. Other examples that challenge the current legislation or current interpretation of the same is the development in precision medicine, where data sharing between care providers is sometimes necessary.

New ethical questions

The development in IT and digitisation, artificial intelligence, 'big data' and precision medicine is very rapid, and raises new ethical questions. Patients' opportunities to share self-reported data, and also to take part in and influence the accessibility of the data collected in conjunction with healthcare, will be greater than before. The research community has a responsibility to continue to maintain a high level of trust in clinical research through a high level of data security, transparency, peer review, and replication/validation of results. To maintain a high level of trust in research and the research community, it is crucial that central issues relating to law and ethics are continually discussed in broad circles. This could, for example, be done by the Swedish Research Council, in collaboration with the actors involved, issuing an invitation to an annual conference on research ethics in relation to accessibility and use of health data, artificial intelligence and the developments in precision medicine. Such a

conference should involve participation by a broad representation from different scientific fields, such as philosophy, law and behavioural sciences, for example.

New methods for clinical trials

New methods for clinical trials can give more patients the opportunity to take part in studies on an equivalent basis and make Sweden a more attractive country for academic and company-run studies. This requires collaboration between public agencies and executors of clinical research, with support in the interpretation of laws and regulations, and may need legislation to be adapted. Examples of such studies are de-centralised randomised clinical studies with virtual study centres, digital consents, sample-taking at home, study medicines distributed straight to patients, and so on. A further example are cluster-randomised studies with a simplified consent procedure, where the need for such a study was put forward during the pandemic, to compare the effectiveness and safety of approved vaccines against COVID-19. The new EU regulation for clinical trials that came into force in 2022 enables cluster-randomised studies, but Swedish legislation is not considered to have legislation to cover this. This is identified as a failing in the Swedish government's report on access to vaccine against COVID-19 (SOU 2022:3)⁹, and cluster-randomised studies could be of value also in many other areas.

The Committee recommends that

- All patients group are given the option to take part in studies, including those who are critically ill, or for other reasons have a reduced ability to give consent.
- Legislation is continuously reviewed, and future sections and regulations for secondary use of health data take into account the needs and perspectives of research, for example in the current report (Dir 2022:41) and European Health Data Space.
- The support to clinical researchers on law and legal issues is adequate and sufficiently comprehensive, both within their own organisations and at permit-issuing public agencies
- Arenas are created where the research community and other relevant stakeholders participate and discuss new ethical issues linked to the use of health data, artificial intelligence and precision medicine in healthcare and clinical research.
- The research community as well as regions are well represented already at the planning stage of the preparatory work for new regulations relating to clinical research.
- National platforms are created for data sharing and analysis of large data sets for clinical research, as the existing platforms do not fully cover the needs.

⁹ [Sveriges tillgång till vaccin mot covid-19 – framgång genom samarbete och helgardering \(SOU 2022:3\)](#). Website: Swedish Government.

Patient and public involvement

Participation by patients and their relatives in healthcare is clarified in legislation, both the law governing healthcare¹⁰ and, in particular, in the law relating to patients¹¹. In healthcare, patients are increasingly regarded as active agents rather than as passive healthcare recipients. This applies not just for their own healthcare but also in the involvement in the development of care programmes and care processes. In the national system for knowledge management, patient representatives are involved at all levels. This raises the issue about participation by patients and their relatives in the planning and implementation of clinical research, primarily to ensure that the research questions to be investigated are relevant from the patient perspective, but also to increase transparency and to maintain trust in research.

The United Kingdom and the United States are often highlighted as the countries that have led the way in patient and public involvement in clinical research. For example, at the UK National Institute for Health Research (NIHR) and the US Patient Centered Outcomes Research Institute (PCORI), patients participate in selection committees and processes, and NIHR requires a plan for patient participation to be included in all research projects funded. According to NIHR, such participation can be seen as important, in order to identify relevant research questions, define relevant health outcomes and to strengthen recruitment of persons to clinical studies, for example.¹² It is also becoming more common for strong requests for increased patient collaboration and involvement, both in the planning and the implementation of clinical studies, by Swedish research funding bodies, including the Swedish Research Council and the Committee for Clinical Therapy Research.

The difficulty of identifying patient representatives in some areas is a challenge. There is also a risk that patient participation occurs “to keep up appearances”, and without real influence. Well-functioning patient participation places demands on both the participating researchers and the patient representatives. There is therefore a need for education in real and functioning patient participation for both groups.

Patients have so far not been involved in the work on prioritising clinical research between different subject areas, diagnosis groups or research projects (horizontal prioritising). Any participation by patients in horizontal prioritising raise a number of questions relating to research ethics and research philosophy that need answers, such as:

- Is the experience of being a patient within an area valuable in the work of prioritising between different areas and research projects, and if so, in what way?
- If so, what patient groups should take part?

¹⁰ Hälso- och sjukvårdslag (2017:30)

¹¹ Patientlag (2014:821)

¹² Barham, Leela: 2011. Public and patient involvement at the UK National Institute for Health and Clinical Excellence. *Patient*, 4(1):1-10.

- How can the needs of diseases/areas with no or weak patient representation be satisfied?
- How do you strike a balance between immediate patient benefit and a more uncertain, but potentially large, long-term benefit?
- Will this disadvantage independent, curiosity-driven research?
- Should it instead be representatives of the general public, in their capacity as future potential patients, that take part in horizontal prioritising?

These questions should be investigated thoroughly, and both possible advantages and risks and any international experiences should be highlighted.

The Committee recommends that

- Patient representatives are included in the identification of gaps in knowledge and prioritisation of research issues within a defined diagnosis group.
- Patient representatives are included in the planning and implementation of clinical research.
- A specific training course in clinical studies is developed for patient representatives, to facilitate and improve their participation in clinical research.
- A training course is developed for researchers in how to collaborate with patient representatives in the planning and implementation of clinical studies.
- The Swedish Research Council initiates an investigation to illuminate whether representation by the general public/patient in the horizontal prioritising of clinical research projects would be possible and desirable.

Strengthen and coordinate the funding of clinical research.

Investing in medical and clinical research is profitable from the perspectives of both health economics and social economics. There are several international studies showing exceptionally good return of investments, in terms of both health and economics. In an investigation of the situation in the United Kingdom, a return in the form of pure health gains was estimated at 7–10 per cent annually, with a further 15 per cent gain in broader economic benefits¹³.

The arguments for investing in research in medicine, healthcare and health are therefore convincing. In the latest Government bills on research, the national government has also prioritised medical and healthcare research, which is reflected in increased financial support. The latest ALF agreement¹⁴ from 2015 prioritises high-quality and relevant clinical research more clearly than before. Private funding bodies, such as the Swedish Cancer Society, the Swedish Heart-Lung Foundation and the Wallenberg Foundations have also greatly increased their support for medical research fields.

¹³ Grant, Jonathan & Buxton, Martin. 2018. [Economic returns to medical research funding](#). Website: BMJ Open.

¹⁴ [ALF-avtal 2015](#) (PDF). Website: Swedish Research Council.

For clinical research, however, the overall support from public funding bodies has stagnated or fallen since 2015¹⁵. In relative terms, the support is greatest for explorative basic research and translational research, but reduces gradually in relation to basic research for clinical studies, therapy research, healthcare research and implementation research. The allocation reflects a greater interest and focus among funding bodies on ground-breaking basic research than on costly clinical studies of major interest to patients and medical care. Basic research and translational research are important for clinical research, but to create patient benefit, increased funding is needed also for clinical research. The imbalance in the funding is also affected by the divided allocation of responsibility for clinical research, for the following reasons:

- The regions see their main responsibility as being to offer good prerequisites for research, in the form of infrastructure and research environments within clinics and laboratories.
- National government. via research councils and academia, give support primarily to employment, third cycle higher education, and project funding
- National and international funds and organisations give support to project funding and specific research positions.

At a time when the flow of knowledge is accelerating ever faster, and new therapies and methods are available, at the same time as personnel shortages and personnel turnover are high within healthcare, it is a challenge to both fund and carry out clinical research and also implement new research findings. The need for competence support personnel to carry out clinical research of high scientific quality has increased. This includes project coordinators, clinical trial leaders, data managers, statisticians, and others. National government funds healthcare using around 11 per cent of GDP, while national government's funding of research and development in medicine and health sciences is estimated at around 0.18 per cent of GDP¹⁶, and the latter should be increased to 0.4 per cent of GDP to meet the needs.

The latest ALF evaluation¹⁷ showed that clinical research is generally of good quality, with a number of good examples in the seven university regions in terms of research quality, clinical benefit and also prerequisites (infrastructure). At the same time, there is a big improvement potential, as the number of clinical medicine trials is not increasing despite expressed national goals, which risks limiting the relevance of studies carried out for Swedish healthcare. This also impacts negatively on the competence and the ability to carry out clinical studies of good quality, and the interpretation of study results is made more difficult in the regions' work with clinical evaluations and prioritisation.

¹⁵ Data to end of 2019 from Statistics Sweden and inflation-adjusted using GDP deflator. Konjunkturinstitutet.

¹⁶ [Lägesrapport år 2022. Forskning i Sverige, investeringar och kvalitet, fokus life science](#) (PDF). Website: Forska!Sverige.

¹⁷ [Utvärdering av den kliniska forskningens kvalitet vid de landsting som omfattas av ALF-avtalet](#) (PDF). Website: Swedish Research Council.

Experiences from the pandemic in 2020–2021 showed the need for agile research environments that are able to quickly focus on initiatives in the event of a significant challenge to public health. Both the Swedish Research Council and the Wallenberg Foundations acted early on during the pandemic with targeted calls that contributed to increased knowledge about COVID-19, with grants aimed at basic virus research, follow-up of the vaccine effect, and investigation and treatment of post-COVID conditions.

The Committee recommends that

- National government, regions and municipalities fund clinical therapy research in the long term and in a coordinated way, to create new knowledge that produces benefits to healthcare and patients. Funding must correspond to the real costs of translational and clinical research.
- National government allocates new funding for the regions' research and development activities, to ensure that competence provision, research within primary care, and the opportunities to carry out clinical studies become equal in Sweden.
- Special research positions for clinical therapy research are funded, as well as postdoc positions and combined positions.
- Regions take into account the research mandate, according to health and medical care legislation, in their healthcare agreements and follow-up with healthcare providers.

Increase resource collaboration and strengthen infrastructure for high-quality clinical research

Swedish clinical research needs to be better coordinated in order to defend its position nationally and internationally. Cooperation between national government and regions should be strengthened, and in collaboration with industry, strive to achieve a nationally coordinated infrastructure for clinical research and development. This is necessary if we are to achieve the goals in the national Life science strategy to utilise healthcare data for clinical research and innovation, but also to enable integration of research and innovation in healthcare. Collaboration structures between regions and research actors need to be developed and become established, with a long-term perspective. Different ways of supporting these collaboration structures need to be developed.

Regional coordination in the national system that has been established within Clinical Studies Sweden is one part of developing this infrastructure. The national knowledge management system, including 26 national programme areas and a national interaction group for research and life sciences, should be used also in research. The knowledge management system, not least in the national working groups, has clinical and scientific competence. This competence, in interaction with strong research teams and networks, can provide opportunities for clinical research that covers large parts of the country and becomes more internationally competitive. Further development of Biobank Sweden and stimulating the development of a joint national IT architecture are also important.

Sweden has well-developed quality of care registers, the main purpose of which is to monitor the quality of healthcare, but they are also used in clinical research, for both observational studies and registry-based randomised clinical studies. The quality registers also provide unique opportunities to monitor the implementation and effect of new treatments, and to monitor how research successes are implemented to benefit patients. Supporting competences in biostatistics and informatics that use patient and quality registers, as well as the development of machine learning and other AI methods can drive the development onwards. The investment in precision medicine through the national structures within Genomic Medicine Sweden and SciLifeLab are other sources of data that can drive both research and healthcare onwards, and strengthen Sweden's position within life science.

Identification and development of expert networks/collaboration networks within clinical research is a necessity for better coordination and implementation of clinical studies. These networks can enable more regions to collaborate, and more patients to take part in clinical research. The national system for knowledge management should also be utilised for better collaboration in clinical research.

Furthermore, the development of a technical solution enabling a national feasibility function would also improve the prerequisites for conducting clinical studies, by enabling an overview of potential patients available for inclusion in clinical studies, competent clinical investigators, and infrastructure for clinical research. As a first step, a national portal for feasibility studies (country requests and clinic requests) are currently used. The service is offered via Clinical Studies Sweden, but a more digitised solution needs to be developed. In the longer term, a database should also be built up where clinical investigators can register, and thereby networks can be built up automatically.

The Committee recommends that

- Collaboration between national government, regions, municipalities and the business sector should be strengthened and regulatory frameworks and legal prerequisites reviewed, so that clinical therapy research and implementation research is facilitated.
- Long-term funding is safeguarded for national infrastructures, such as National quality registers, Genomic Medicine Sweden, Biobank Sweden and Clinical Studies Sweden, to enable clinical therapy research to be supported and promoted.
- The national system for knowledge management is used for collaboration within clinical research, to facilitate larger research collaborations that are internationally competitive.
- Expert and collaboration networks in clinical research are identified and/or developed, to enable more clinical studies of high quality.
- A digital solution is developed for national assessment of feasibility for clinical studies, with the long-term aim of becoming a database of registered clinical investigators.

Safeguard competence provision

The future competence provision is crucial for maintaining and developing clinical research in Sweden. Large numbers of experienced clinical researchers reaching retirement age in the next few years, and difficulties for junior clinical researchers to find the time and space to develop their research expertise means that innovative thinking and concrete initiatives are urgently needed. The incentives for carrying out clinical research also need strengthening. The incentives can consist of higher weighting of clinical research merits when filling employment positions and in academic appointments.

Several inquiries have been conducted and agreements reached to meet healthcare's future challenges of increased and equal health in the population. The reports "Effective care"¹⁸, with its continuation "Coordinated development for good and nearby healthcare"¹⁹ indicate a national development towards increased investment in primary care and care at home, and less focus on hospital care. The reports also point to regions and municipalities having to clarify and develop the role of primary care in clinical research, for example by supplying supervisors and time for the task. Such a change also entails challenges for university/universities and university hospital healthcare. These have to date mainly had links to hospital healthcare through combined positions, while similar job descriptions and competences are usually lacking in primary care and in municipal healthcare. As healthcare is becoming more multi-disciplinary, with needs for new competences, such as hospital physicists, bioinformaticists and clinical molecular biologists, we also propose that initiatives are taken to strengthen such necessary competences in order to develop clinical research in many different areas.

The National Health Competence Council proposes that "the newly established regional health competence councils initiate collaboration on doctoral student initiatives between municipal healthcare, the regions' primary care and the university/universities that are included in each healthcare region".²⁰ An important collaboration structure has been created within the national system for knowledge management: "Samverkansgruppen för Forskning och Life Science". It has been tasked to lead and coordinate national joint tasks, for example by assisting the National Steering Group for ALF and coordinating the regions' R&D managers into a network. One important area should be universities, regions and other research actors coordinating and following up the development of clinical research competence. In conjunction with the generational change-over, it has become ever clearer that the future shortage of research leaders will impact negatively on several clinical research fields. For this reason, the opportunities for a continued research career is an important issue.

¹⁸ [Effektiv vård \(SOU 2016:2\)](#) (PDF). Website: Swedish Government.

¹⁹ [Samordnad utveckling för god och nära vård \(S 2017:01\)](#). Website: Swedish Government.

²⁰ [Fem förslag för bättre kompetensförsörjning i vården](#). Website: National Health Competence Council.

Widened and improved career paths for clinically active researchers

Clinical research can be strengthened in the long term across the entire country by promoting interest in research at an early stage of professional careers, increasing clinical research competence in healthcare, and stimulating the development of multidisciplinary research environments.

Initiatives to recruit research students early on in their careers can provide a clearer route “from student to associate professor”. It is important to identify and disseminate good examples. First-cycle educational programmes shall stimulate curiosity and drivers for taking part in and contributing to clinical research activities. To facilitate recruitment of research students early on in their clinical careers, it is important that pre-clinical and clinical research is introduced in all the relevant first-cycle educational programmes. It is also important that opportunities for career positions are developed, where newly qualified physicians can combine continued clinical work with research, for example via research-based internships, but also positions for other professions in healthcare. The way in which strategies for developing clinical research competence are integrated in the proposed changes, within healthcare and within university/universities respectively, will be crucial for promoting clinical research competence in the healthcare organisations. Changes that related directly to clinical research and education are the ALF agreement²¹ from 2015, and “Education evaluations at research level”²². ALF funds are an important source for funding competence development in clinical research²³.

The number of doctoral degrees awarded fell in 2020 for the fourth year running, and the largest decrease was in medicine and health sciences.²⁴ This is a worrying trend, not least against the background of national proposals for increased investment in and development of primary care. There is also an increased need for new competence in several areas, such as precision medicine, innovation and artificial intelligence. To meet these needs, a broad and coordinated investment in third cycle higher education is needed, in particular in clinical disciplines.

Multidisciplinary and multiprofessional graduate schools may be one way of more quickly creating a good infrastructure for the development of clinical research competence within new healthcare structures. A national graduate school for general practitioners, supported by the Swedish Research Council, is a successful example.²⁵ In collaboration between Karolinska Institutet and Region Stockholm, a graduate school in clinical therapy research started in autumn

²¹ [Vägledning för utbildningsutvärdering på forskarnivå](#) (PDF). Website: Swedish Higher Education Authority.

²² [ALF-avtal 2015](#) (PDF). Website: Swedish Research Council.

²³ [Karriärstöd - Från student till docent](#). Website: Vårdgivare Skåne.

²⁴ Universitetskanslersämbetets årsrapport 2021, utbildning på forskarnivå.

²⁵ [Tioårsuppföljning av Nationella forskarskolan i allmänmedicin \(lakartidningen.se\)](#) Website: Läkartidningen.

2022; the first with such a focus.²⁶ The purpose is to provide a scientific, critical, analytical and ethical approach and in-depth knowledge about practical clinical research methodology, to enable researchers to prioritise, plan and carry out research within areas with patient benefits. To emphasise the joint responsibility for the development of clinical research competence, greater collaboration and co-funding by national government and healthcare is also needed.

Targeted clinical postdoc positions, designed to be combined with clinical work, may be crucial for a continued research career. It should also be emphasised that the value of postdoctoral education that takes place in an international environment and researchers' mobility can be of crucial importance for the continued careers of clinical researchers. Careers can be facilitated by various support forms that also take into account the conditions for clinical active researchers²⁷.

Positions such as research-based resident, university specialist doctor, and similar career positions allow specialist training and clinical work in combination with research. For clinical researchers with doctoral degrees to be able to develop into the research leaders of the future, employments that facilitates accruing merit up to associate professorship level are needed. In its evaluation of university hospital care from 2018, the National Board of Health and Welfare states that "To reduce the shortage of associate professors and increase the progression to associate professorship, strategic initiatives need to be taken to ensure third-cycle higher education occurs at a younger age, and to stimulate more professional categories to start doing research early on in their careers"²⁸.

There is a risk of disadvantaging clinical researchers when applying traditional merit assessment criteria. The assessment of merits should be reviewed, so as not to disregard experience of different parts of clinical research activities, irrespective of whether these have been carried out in clinical, academic or industrial environments. To counteract any undesirable effects, the clinical work of researchers must be upgraded when weighting research merits.

An associate senior lecturership is an attractive career position that enables clinical work to be combined with research during a six-year period to achieve an associate professorship, and after assessment a combined university teaching position. It is important that these positions are made available for clinical researchers. It is also worth pointing out that university teachers must be guaranteed sufficient time for research and supervision in relation to teaching at first-cycle level.

²⁶ [Karolinska Institutet - Region Stockholm Forskarskola i klinisk behandlingsforskning](#). Website: Karolinska Institutet.

²⁷ Future choices for the Swedish research system – Knowledge, quality and integrity, Swedish Research Council 2019.

²⁸ [Utvärdering av universitetssjukvård. Strukturer och processer](#) (PDF). Website: National Board of Health and Welfare.

Clinical researchers in health and caring sciences have difficulty obtaining employment that combines clinical work and research in competition with researching physicians. A position document by the Swedish Association of Local Authorities and Regions on clinical research emphasises that it is important that the opportunities to combine clinical work with research and research-level education shall increase, and “that there are positions for researching personnel in different professions throughout their careers”²⁹. An equivalent of ALF funding, “VULF”³⁰, for medium-length healthcare education programmes has been proposed, to strengthen healthcare science research.

The Committee recommends that

- Funding of third-cycle higher education in medicine and health is increased, in particular in clinical disciplines.
- Clinical interprofessional graduate schools, representing both primary and hospital-based healthcare are established, with co-funding from national government, regions and municipalities for joint responsibility.
- Special research positions for clinical therapy research are funded, as well as postdoc positions and combined clinical research positions for different professional categories, including associate senior university lecturers.
- Health and caring sciences research is strengthened through the creation of attractive career opportunities for future researchers in these fields. An agreement corresponding to the ‘ALF Agreement’ would be valuable.
- Expand different career paths to enable competence provision within clinical research. This can be done through collaboration between the actors responsible: healthcare principals, university/universities and research funding bodies.
- Support for international postdoc stays are created.
- The range of combined clinical research positions between local, regional and national level is broadened and coordinated, to form a more comprehensive system for different professional categories. Investment is made in employment forms that facilitate accruing merit for associate professorship for different professions.
- Merit evaluation for clinical research/researchers is reviewed. The current system risks disadvantaging the value of the link between clinical experience and research.

²⁹ [Samhället, patienterna och hälso- och sjukvården behöver klinisk forskning. Positionspapper om klinisk forskning – för bästa möjliga vård – inte bara idag utan även imorgon](#) (PDF). Website: Swedish Association of Local Authorities and Regions.

³⁰ [Framtidens specialistsjuksköterska – ny roll, nya möjligheter \(SOU2018:77\)](#) (PDF).

Website: Swedish Government.



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