

In Norway, the state and municipalities share responsibilities for health care planning and delivery. The Directorate of Health coordinated the health system response to COVID-19 as the 2000 Emergency Health Preparedness Act gives the Directorate of Health responsibility for overall coordination of the health system's response to an emergency. The Norwegian Institute of Public Health (NIPH) is the national institution for infection preparedness and control, with associated functions and responsibilities, including for vaccines in the immunisation programmes. NIPH has a central role in national and international emergency preparedness and as a knowledge provider to the health system in close collaboration with national and international authorities, and scientific communities. Together with the National Preparedness Commission Towards Biological Threats, NIPH were key advising bodies throughout the pandemic, including to central and municipal governments, the health services and population at large. Norwegian health information systems allowed a real-time overview of the development of the pandemic. (from State of Health in the EU · Norway · Country Health Profile 2021 [https://health.ec.europa.eu/system/files/2021-12/2021\\_chp\\_no\\_english.pdf](https://health.ec.europa.eu/system/files/2021-12/2021_chp_no_english.pdf))

The Norwegian University of Life Sciences, NMBU coordinates the Horizon Europe project PANDASIA (Pandemic literacy and viral zoonotic spillover risk at the frontline of disease emergence in Southeast Asia to improve pandemic preparedness see <https://cordis.europa.eu/project/id/101095444>).

### **Norwegian experiences during the Covid-19 pandemic**

#### **Targeted and agile funding in response to an Covid-19 outbreak**

The Research Council of Norway, supported by several ministries and in collaboration with other funding agencies and private foundations, promptly responded to a global need for knowledge, making research funding available in a short time. Projects were funded within two months from the opening of the call for proposals, which means that also the review time was significantly shortened. These emergency calls generated significant interest among researchers and a huge and unexpected number of interdisciplinary proposals were received. This is also a clear sign of the resilience and flexibility of the research sector's capability to promptly respond to a global crisis. By facilitating collaborations between scientists and providing financial support for innovative projects, funders have accelerated the pace of research in unprecedented ways. The projects have contributed to better patient treatment, strengthened public health preparedness, stimulated innovation, studied economic and working life-related consequences and contributed to a more effective response to both this pandemic and any future pandemics. Overall, the significant funding dedicated to COVID-19 research has demonstrated the importance of investing in science and collaboration during times of crisis.

Three emergency call for proposals were announced In 2020 by the Research Council of Norway:

- [“COVID-19 Emergency Call for Proposals: Collaborative and Knowledge-building Projects for the Fight Against Coronavirus Disease \(COVID-19\)”](#)
- [COVID-19 Emergency Call for Proposals: Innovation Project Involving Public-Private Collaboration \(BIA-X\)](#)
- [Economic and Labour-market Consequences of the COVID-19 Pandemic for Norwegian Business and Working Life](#)

Results from some of the projects were presented in the webinar series and at the conference [“COVID-19: Research in the Wake of Pandemic”](#) (Conference held in Norwegian)

#### **The call from The Research Council of Norway enabled several projects to quickly get started.**

The establishment of The **Norwegian Science Programme on COVID-19** also made it possible to quickly start projects and initiatives aimed at knowledge gaps throughout the pandemic.

#### **Pandemic centres**

Pandemic centres play an important role in establishing collaboration and synergies and preparing society for future pandemics.

The vision of pandemic centers is to initiate relevant scientific knowledge for the purpose of preventing and managing pandemics in a long-term perspective. The centers aim to commence and organize interdisciplinary research and education related to pandemics

You can read more about the Norwegian pandemic centers on their website:

[Pandemic centre \(University of Bergen\):](#)

[Centre for Research on Pandemics & Society \(PANSOC\)](#)

A new research centre at University of Oslo – [The Centre for Pandemic and One Health Research](#) – established in May 2023 is focusing on strategic pandemic research and a more integrated approach to research including the One Health Perspective in pandemic preparedness and response.

### Corona commission

The Commission has been established to conduct a comprehensive review and assessment of the management of the pandemic by the Norwegian authorities. The corona commission has published three reports including the evaluation of the Norwegian authorities and learning points.

- [The authorities' handling of the COVID-19 pandemic – part 1 \(NOU2021:6\): English summary](#)
- [The authorities' handling of the COVID-19 pandemic – part 2 \(NOU 2022:5\): English Summary](#)
- [The authorities' handling of the COVID-19 pandemic – part 3 \(NOU 2023:16\): English Summary](#)

### Norwegian Science Programme on COVID-19

- <https://www.fhi.no/en/more/norwegian-science-programme-on-covid19/>
- The creation of the *The Norwegian Science Programme on COVID-19* (funding from Ministry of health and care services) was a new and innovative mechanism to help identify and cover knowledge needs in crisis. Experiences from the programme can be useful in preparations for new crises. It was also useful that the Program had a broad scope and could facilitate interdisciplinarity and for collaboration and dialogue between crisis response and other professional environments (internally and externally).
- The programme established priority projects to ensure sufficient focus and effort on topics and knowledge gaps that were identified as important during the pandemic.
- New ways of summarizing knowledge became important, such as regular "monitoring" searches, quick/living systematic reviews and machine learning in the work of summarizing knowledge.
- The Programme's structure was well suited to function as a compensatory mechanism in the event of rapid changes - where there has been a need for a rapid supply of administrative project support, analytic support, data collection or funding to solve newly emerging knowledge needs.

### Beredt C19 – a temporary meta health registry

- An existing legislation adopted after the swine-flu pandemic paved the way for a temporary meta health registry compiling live and continuous data from all relevant registers in Norway, in response to the pandemic outbreak.
- The purpose of *Beredt C19* is to quickly provide an overview and knowledge of how the pandemic and the measures implemented affected the population's health, the use of health services and health-related behaviour.
- Data from *Beredt C19* has also made it possible to follow events almost in real time, e.g. by continuously analyse side effects of corona vaccines and quickly give and recommendations on changes in the vaccination program.
- Legal obstacles to sharing of data has limited national cooperation when it comes to direct analysis of the data prepared in C19, but the analyses have had great national significance and utilized much of the value in Norwegian health data and registers.

### Systematic reviews

- During the pandemic, the Norwegian Institute of Public Health (NIPH) submitted a large number of rapid reviews and systematic reviews as decision-support for recommendations relating to COVID-19 on topics like Covid-19 and risk factors for hospital admissions and Long term symptoms of Covid-19 <https://www.fhi.no/en/sys/search-result/?topics=45271&term=reviews#main> and <https://www.eurosurveillance.org/content/10.2807/1560-7917.ES.2020.25.19.2000687>
- In addition, NIPH established a systematic and living map on Covid-19 evidence: <https://www.fhi.no/en/qk/systematic-reviews-hta/map/> (no longer updated) and introduced machine learning to the production on evidence synthesis.

### Research on Public Health and Social Measures (PHSMs)

- Throughout the world, long-lasting non-pharmaceutical interventions, also referred to as Public Health and Social Measures (PHSMs), have been implemented to limit the spread of the corona virus. However, while massive efforts have been made in researching the effectiveness of medication and vaccines during the Covid-19 pandemic, there have been very few studies of the impact of PHSMs. Centre for Epidemic Interventions Research at the Norwegian Institute of Public Health was established in July 2021. The overall mission for the centre is to produce more and better evidence on the effects of public health and social interventions, and non-pharmacological infection control measures, specifically. This will be of great importance to fight the Covid-19 virus and to be better prepared for future pandemics <https://www.fhi.no/en/more/research-centres/ceir/about-ceir/>.

## Clinical trials

Norway played a significant role in the clinical trial landscape during Covid-19. Some core initiatives:

- Nor Solidarity (trial) – Established as a sub-initiative to the WHO led Solidarity trial. It was launched as an immediate response to the Covid-19 pandemic and was a multicentre trial on the efficacy of different anti-viral drugs in SARS CoV-2 infected patients. First patient enrolment Solidarity was in April 2020.
- EU-SolidAct (trial) – Part of the European research project EU-RESPONSE (funded by the Horizon 2020 Research and Innovation programme) and housing the two adaptive platform trials, Discovery and EU-SolidAct for testing the efficacy of compounds in hospitalised Covid-19 patients. The sponsor of EU-SolidAct is Oslo University Hospital, and the trial has recruited patients from 15 different European countries.
- The Trial Coordination Board (TCB) – Chaired and organized by NIPH. The TCB was established as a joint work package between the EU funded clinical trial projects EU-RESPONSE, RECOVER, ECRAID-Prime and VACCELERATE. The forum originated in summer 2020 as a response to the fragmented research landscape in Europe during Covid-19. The TCB coordinated dialogue and promotes collaboration between European researchers and stakeholders in the field of clinical trials for infectious disease outbreaks. The dialogue is extended to global actors.
- “Panoramic Norway” (trial) – The University of Bergen has initiated a sister trial to the UK multicenter Panoramic trial with funds from the Norwegian Research Council and KLINBEFORSK investigating effects of the new antiviral drug Paxlovid on the symptom load of long Covid (it also evaluates health economic aspects).

## Research & Innovation for Pandemic Preparedness Policies and Strategies

Country has a dedicated strategy for research and innovation related to pandemic threat? Yes

The Norwegian Government's Management of the Coronavirus Pandemic <https://www.regjeringen.no/en/dokumenter/nou-2022-5/id2910055/>

Long-term COVID-19 strategy to normalise everyday life <https://www.regjeringen.no/en/aktuelt/long-term-covid-19-strategy-to-normalise-everyday-life/id2907426>

Norwegian Science Programme on COVID-19

<https://www.fhi.no/en/more/norwegian-science-programme-on-covid19/>

Country has an open science portal with information on publicly financed scientific research? Yes

R&I portal <https://prosjektbanken.forskingsradet.no/en/explore/projects>

Website open science/ open data initiative with respect to pandemic threats, such as COVID-19 open

Name	URL	Short Description
	<a href="https://www.norcrin.no/nasional-oversikt-over-covid-19-studier">https://www.norcrin.no/nasional-oversikt-over-covid-19-studier</a>	
	<a href="https://www.forskingsraadet.no/en/">https://www.forskingsraadet.no/en/</a>	

R&D portfolio of CEPI (Coalition for Epidemic Preparedness Innovations)	<a href="https://cepi.net/research_dev/our-portfolio/">https://cepi.net/research_dev/our-portfolio/</a>
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Country has coordinating structures to link public health needs and research needs? Yes

Coordinating structures URL <https://www.forskingsradet.no/en/>

## R&I Infrastructures

Country has the following research infrastructure for infectious diseases and outbreaks available, or under construction

BSL 3; BSL 4; Clinical trial units; High level isolation units; Emergency intervention units; High level isolation transport; Open genome deposits for viruses; Open genome deposits for bacteria; Open genome deposits for AMR; Reference centres of excellence

Name Infrastructure	Type Infrastructure	URL	Max Capacity	Available for	Open to
Biobank Norway		<a href="https://bbmri.no/">https://bbmri.no/</a>			

Norwegian Defence Research Establishment (FFI)	BSL3 and 4- (minus)	<a href="https://www.ffi.no/en">https://www.ffi.no/en</a>	Yes
Norwegian Institute of Public Health	BSL3, Open genome deposits for viruses, bacteria and AMR, Ref,	<a href="http://www.fhi.no/en">www.fhi.no/en</a>	Yes
Norwegian national research infrastructure		<a href="https://www.norcrin.no/en/">https://www.norcrin.no/en/</a>	
Norwegian Veterinary Institute	Zoonoses, laboratories	<a href="https://www.vetinst.no/en">https://www.vetinst.no/en</a>	Yes
Oslo University Hospital, High level isolation & transport		<a href="https://oslo-universitetssykehus.no/avdelinger/medisinsk-klinikk/akuttmedisinsk-avdeling/nasjonalt-behandlingstjeneste-for-cbrne-medisin">https://oslo-universitetssykehus.no/avdelinger/medisinsk-klinikk/akuttmedisinsk-avdeling/nasjonalt-behandlingstjeneste-for-cbrne-medisin</a>	
CBRNE Centre			Yes
The Norwegian Primary Care Research Network		<a href="https://www.uib.no/en/praksis-nett">https://www.uib.no/en/praksis-nett</a>	
Universities in Oslo, Bergen, Trondheim and Tromsø	Four main universities	<a href="https://www.uio.no/english/">https://www.uio.no/english/</a> ; <a href="https://www.uib.no/en">https://www.uib.no/en</a> ; <a href="https://www.ntnu.edu/">https://www.ntnu.edu/</a> ; <a href="https://en.uit.no/startside">https://en.uit.no/startside</a>	

Country supporting the participation to the following ESFRI initiatives relevant for infectious diseases      BBMRI; EATRIS; ECRIN; ERINHA

Website network of clinical trials (e.g. to facilitate the access to clinical trials) the country is involved in

<https://eu-response.eu/> (with DisCoVeRy and SolidAct)

<https://ecrin.org/>

<https://www.forskningsradet.no/en/apply-for-funding/funding-from-the-research-council/centres-for-clinical-treatment-research-scheme>

<https://www.who.int/emergencies/diseases/novel-coronavirus-2019/global-research-on-novel-coronavirus-2019-ncov/solidarity-clinical-trial-for-covid-19-treatments>

<https://vaccelerate.eu/>

<https://www.recover-europe.eu/>

## **Budget mobilisation mechanisms and funding sources**

### **Basic Research**

url <https://www.forskningsradet.no/en/>  
[www.cepi.net](http://www.cepi.net)

funding for basic research accessible for industry?      Yes

source of funding      Public (research) agencies; Private industries/ philanthropic; Non-profit organisation

### **Applied Research**

url <https://www.forskningsradet.no/en/>

funding for applied research accessible for industry?      Yes

source of funding      Public (research) agencies; Private industries/ philanthropic; Non-profit organisation

### **Translational Research**

url <https://www.forskningsradet.no/en/>

funding accessible for industry?      Yes

source of funding      Public (research) agencies; Private industries/ philanthropic; Non-profit organisation

### **Clinical Research (in general)**

url <https://www.forskningsradet.no/en/>

funding accessible for industry?      Yes

source of funding Public (research) agencies; Private industries/ philanthropic; Non-profit organisation  
phase funded? Phase 1; Phase 2; Phase 3; Phase 4

**The regional health trusts** (governmental specialty health services) have allocated through the annual national budget a sum for research, including but not specified to health security, pandemic preparedness, and response. In 2022, the budget was ca. € 80 million, including € 3 million to NorTrials <https://nortrials.no/en>

### Clinical Research (in pandemic phase)

url <https://helse-sorost.no/>  
<https://www.forskingsradet.no/en/>

accessible for industry? Yes

source of funding Public (research) agencies; Private industries/ philanthropic; Non-profit organisation

phase funded ? Phase 1; Phase 2; Phase 3; Phase 4

### Innovation Projects

url <https://www.forskingsradet.no/en/>

funding for innovation projects accessible for industry relevant for infectious diseases? Yes

source of funding Public (research) agencies; Private industries/ philanthropic; Non-profit organisation

flexible funding possible in case of emergency <https://www.forskingsradet.no/en/>

## R&I actors, authorities and activated processes that are activated in case of a health threat

R&I actors, authorities & processes ministries involved in case of an outbreak; mobilisation processes of research forces; (existing) national or regional structures that advise governments on R&I during emergencies; assessment of research outputs produced during a crisis; incentives ensuring qualitative scientific dissemination during a crisis; mechanisms to identify promising therapies or medical products for pandemic preparedness that are in the pipeline; international scientific collaboration in case of an outbreak

Name	Description	url
CEPI - Coalition for Epidemic Preparedness Innovations	CEPI is an innovative global partnership working to accelerate the development of vaccines against epidemic and pandemic threats.	<a href="https://cepi.net">cepi.net</a>
Government	National government will take the lead in emergencies, incl. providing research funding	<a href="https://www.regjeringen.no/en/id4/">https://www.regjeringen.no/en/id4/</a>
Government, Ministries, and subordinate agencies -Norwegian Directorate for Health		<a href="https://www.helsedirektoratet.no/english">https://www.helsedirektoratet.no/english</a>
Government, Ministries, and subordinate agencies -Norwegian Institute for Public Health		<a href="https://www.fhi.no/en">https://www.fhi.no/en</a>
Norwegian research Council		<a href="https://www.forskingsradet.no/en/">https://www.forskingsradet.no/en/</a>
Norwegian University of Life Sciences (NMBU) research group		<a href="https://www.nmbu.no/en/research">https://www.nmbu.no/en/research</a>
SINTEF – one of Europe’s largest independent research organisations		<a href="https://www.sintef.no/en/">https://www.sintef.no/en/</a>
Regional Health Trusts	Under the four regional health authorities are hospitals and other specialist healthcare services, organised as separate health trusts (HT).	<a href="https://helse-nord.no/">https://helse-nord.no/</a> <a href="https://helse-vest.no/en">https://helse-vest.no/en</a> <a href="https://helse-midt.no/">https://helse-midt.no/</a> <a href="https://helse-sorost.no/south-eastern-norway-regional-health-authority">https://helse-sorost.no/south-eastern-norway-regional-health-authority</a>



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