

Center for
Clinical Epidemiology

Research strategy 2018-2022

Preface

We, in Center for Clinical Epidemiology, are pleased to introduce our new 5-years research strategy. On the basis of the past growth and increasing activities in the research unit, we now look forward to the future five years.

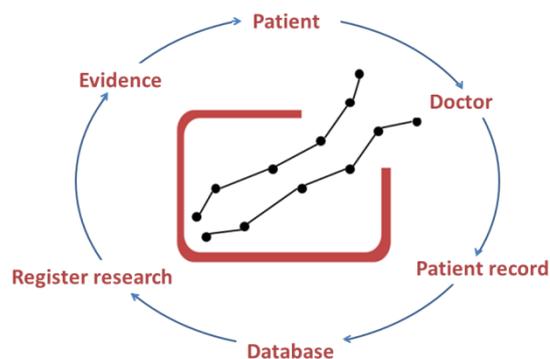
Our activities throughout the past years have been implemented in collaboration with a number of the research units at Odense University Hospital (OUH), and we have supported highly specialized functions. The research activities have also, to the same extent, been in collaboration with several of the regional hospitals. Collaborations have been established with Sydvestjysk Sygehus (the Southwest Jutland Hospital), Sygehus Sønderjylland (the Hospital of Southern Jutland), Sygehus Lillebælt (the Hospital Lillebaelt) and the Psychiatric Services in the region. This cross-disciplinary collaboration between the OUH research units and the research units of the other hospitals in the region has been stimulating and productive, and we look forward to an equally productive cooperation in the years to come.

The affiliation of our two associate professors has also been very gratifying and they have both contributed to interesting initiatives and to the progress of the activities in the center. We have, among many other things, enjoyed research stays and the exchange of academic colleagues between our center in Odense and Brigham and Women's Hospital and Harvard Medical School in Boston.

We will, in the years to come, proceed the development of our research activities within the clinical area. Activities which are already well-established in our center, but we will of course welcome new clinical areas of research as well. We will continue to focus our research on international collaboration as this is a means to increase professional activities, initiative and creativity. Last, but not least, we will continue centering on external funding for our research.

In our capacity of researchers within health science we have an obligation to conscientiously use patient data collected by the health authorities. This enables doctors to improve the treatment of patients and the patients will learn more about their diseases. It is our conviction that when working with databases and registers we are obliged to return the results to the benefit of the patients.

Everybody who has questions about future cooperations as well as the need for special arrangements concerning clinical epidemiology and biostatistical analyses are welcome to contact the center. We are pleased to assist with all aspects of the processes in research.



Bente Mertz Nørgård, Professor, Head of research

Contents:

Mission and values	4
Increasing the recognition of research/websites.....	5
Research and strategy areas	5
Autoimmune diseases	6
Chronic diseases	7
Fertility and reproduction	7
Acute infections.....	7
Cancer.....	7
Vulnerable patients in the health care system.....	7
Patient involvement	8
Research support of cross-disciplinary/highly specialized functions	8
Organization of the work in the research unit/the research production.....	8
Objective and performance, human resources.....	10
Objective and performance, financial resources.....	11
Cross-sectional collaboration	12
Involving patients and relatives.....	14

Mission and values

Accessibility and knowledge of the construction and application of health service data requires a specialized insight right from the planning and through design of the individual studies. In order to secure that relevant research issues can be met, the validity and structure of the data must be known. The staff at the Center for Clinical Epidemiology possesses expertise in the entire research process, from the drawing up of the protocol, the preparation of the specification of the data extractions and application for approvals. We are experts when it comes to handling data on relevant servers to which collaborators also may have access. We conduct biostatistical and epidemiological analyses in Center for Clinical Epidemiology and we fully participate in the process of writing scientific publications.

Mission

- 1) *The center conducts research at an international level within the following areas:
 - a. *Clinical epidemiological research focused on clinically relevant research*
 - b. *Biostatistics and related development of methods**
- 2) *The center holds high quality knowledge on a number of research areas*
- 3) *The center involves patients and relatives in the research processes*
- 4) *The center has a reputation for qualified supervision and offers training within our main competences*
- 5) *The center communicates and exchanges research ideas, research methodology, and research results nationally as well as internationally to both specialists and laymen*

Vision

- 1) *The center is known and respected in relevant national and international research environments for research at a high professional level*
- 2) *The center holds expert knowledge within a large range of clinical areas and can, on this basis, initiate specific research projects and contribute to clinical recommendations*
- 3) *The center is a coveted collaborator in research projects*

Values

- 1) *Professionalism. All research processes, internal as well as external, are characterized by quality, credibility, and professionalism*
- 2) *Creativity. The research is based on sincerity and originality and the results are conveyed to the patients with the purpose of health promotion and increased quality in the treatment*
- 3) *Professional competency. The research environment reflects dialogue and interdisciplinarity*
- 4) *Respect. The center shows respect for staff members and for the differences and competences of all external collaborators in an equal collaboration*

Increasing the recognition of research/websites

Concurrently, with the updating of our research strategy, we have elaborated on our communication with present and future collaborators. This has led to an update of our home page at ouh.dk and sdu.dk, the creation of a new center logo and the opening of a Twitter account @Clin_Epi_OUH for the center.

It is our intention to make the center's research well known by making it more accessible through more standardized and updated home pages and active use of Twitter. It is our hope, that this will increase the salience and strengthen the center profile for both clinicians and patients – from data to patient.

Odense University Hospital:

<http://ouh.dk/wm220632>

University of Southern Denmark:

https://www.sdu.dk/da/Om_SDU/Institutter_centre/Klinisk_institut/Forskning/Forskningsenheder/Klinisk+Epidemiologi

The center's scientific publications are provided here:

[http://findresearcher.sdu.dk:8080/portal/da/organisations/klinisk-epidemiologi\(ad64bacf-78d9-4b18-84a3-53070d6bc23a\)/publications.html?filter=research](http://findresearcher.sdu.dk:8080/portal/da/organisations/klinisk-epidemiologi(ad64bacf-78d9-4b18-84a3-53070d6bc23a)/publications.html?filter=research)

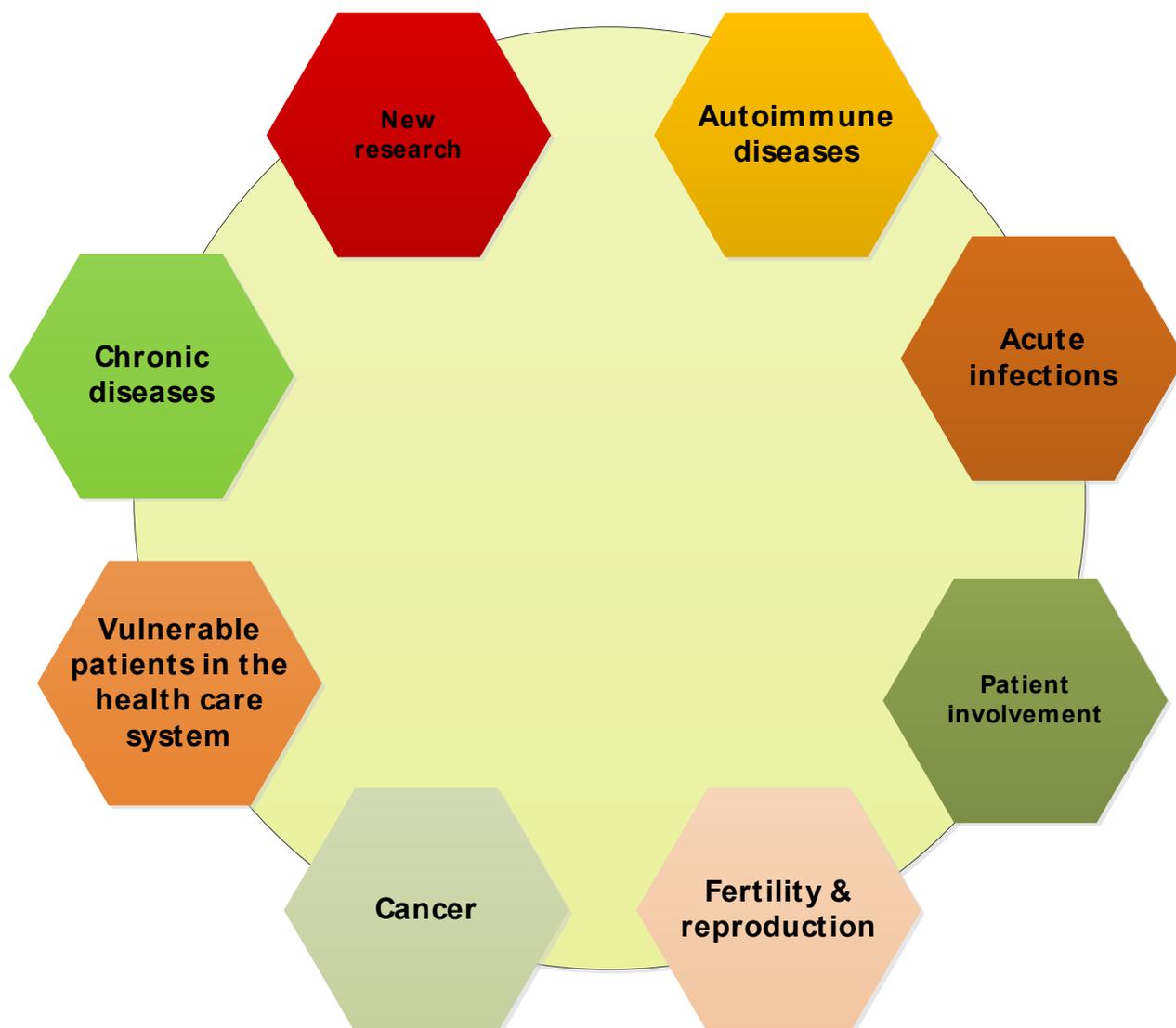
Twitter:

@Clin_Epi_OUH

Research and strategy areas

For many years the most general and recurring research has been conducted within the areas shown in the below Figure 1. A brief characterization of the present areas will follow below.

Figure 1: Research and strategy areas



Autoimmune diseases

Autoimmune diseases comprise relatively frequent conditions and they cover a wide spectrum of diseases such as diabetes, chronic inflammatory bowel disease, systemic lupus erythematosus, rheumatoid arthritis, coeliac disease, multiple sclerosis, thyroid diseases. The research within this area is extremely important as the frequency of several of the diseases is increasing and the reason for this increase is unknown. Many of the diseases also involve complex treatment patterns which challenge both doctors and patients. The problem in treating these conditions is that no conclusive optimal treatment exists, and the area is characterized by a constant variability in the medical options and methods. Biological therapy for these conditions has gained acceptance over the past quite many years, but a considerable research effort is required as the treatments are very cost-intensive; some patients do not benefit from the treatment and a large number of patients suffer from considerable adverse effects.

Chronic diseases

An increasing number of people live with chronic diseases including a series of autoimmune diseases. In Center for Clinical Epidemiology we conduct research in chronic diseases from a clinical epidemiological perspective, be it in relation to diagnostics, treatment (medical or surgical), disease course, and competing conditions and diagnoses. Factors like the importance of fluctuating disease activity, which is characteristic for a number of chronic diseases, are also the subjects of research. The focus of the predominant part of the research in this area is on prognostic studies in patients with these chronic diseases. Furthermore, the research group participates in epidemiological and biostatistical method development within the area of chronic diseases.

Fertility and reproduction

For both women and men with chronic diseases a large number of issues concerning fertility and reproduction remain unresolved. For most patients with chronic diseases it is still unclear how the diseases affect the ability to become pregnant or to impregnate the partner and at the same time, it is unsettled how the drugs, used in the treatment of these diseases, affect the fertility in both men and women. The number of patients, who are unable to become pregnant naturally, is increasing and the need for IVF treatment is equally increasing. The effect and the consequences of IVF treatments is thus an evident future research area. All research in fertility and reproduction is considered paramount as it obviously concerns our ability to reproduce ourselves. The issues about reproduction in patients with chronic diseases are of major importance as the incidence and prevalence are increasing for many of these diseases.

Acute infections

The core area of interest in patients with acute infections is the prognostic aspects. Up until now, acute infections have focused primarily on bacteraemia, but other infections, such as lower urinary tract infections, will be included in the future. Acute infections are also used as a marker for compromised immune status in other patient groups. An ongoing project elucidates bacteraemia in hematological cancer patients. In addition, prognostic relevant biomarkers such as C-reactive protein and plasma albumin are included.

Cancer

This area comprises prognostic and etiologic aspects in patients with cancer. Previously, cancer research has been focused on prognosis, but the importance of other factors, including medical treatment and misclassification between cancer types, will also be analyzed. Another approach involves the significance of psychiatric diagnoses or stress as markers for vulnerability in different patient groups. Upcoming projects will illustrate the cancer treatment in patients with psychiatric disorders. Another project examines the misclassification of biliary cancer and the incidence and survival adjusted for relevant confounders. Generally, prognostic and relevant confounders, type of treatment, drugs, and biomarkers are involved besides clinical data.

Vulnerable patients in the health care system

This area of research focuses on vulnerable patients' course of treatment through the health care system, and vulnerable patients are represented by different types of patient groups. The crucial questions here are whether vulnerable patients receive the same, a better, or a poorer treatment in the health care system

and whether the prognosis for these patients is the same as for patients not considered as vulnerable. Several of the populations we study comprise patients with indefinite and inconclusive diagnoses within for example patients with back pain, patients with depression, patients with psychiatric disorders, and the elderly medical patient. We apply a number of different markers for vulnerability in the studies, including specific diagnoses, medicine use, work stress, et cetera. Generally, we apply a large number of different data sources in the studies, and we bring focus on a series of different prognostic outcomes. A focus of interest is also on the vulnerability that arises in connection with transfer of patients across hospitals and sectors. Such a research area is a matter of high priority, but there are also problems associated with this area including the access to complete and valid data sources.

Patient involvement

The involvement of patients and relatives in the research process is one of the center's strategic areas. Improving the involvement of patients and relatives is mentioned as one of the center's missions and we therefore mention it here as well under our Research and strategy areas. For further information, please refer to the last section in this research strategy.

Research support of cross-disciplinary/highly specialized functions

Clinical epidemiologic methods provide a unique possibility of supporting the research in many cross-disciplinary activities, in a number of different clinical wards, and in connection with many diverse and highly specialized functions.

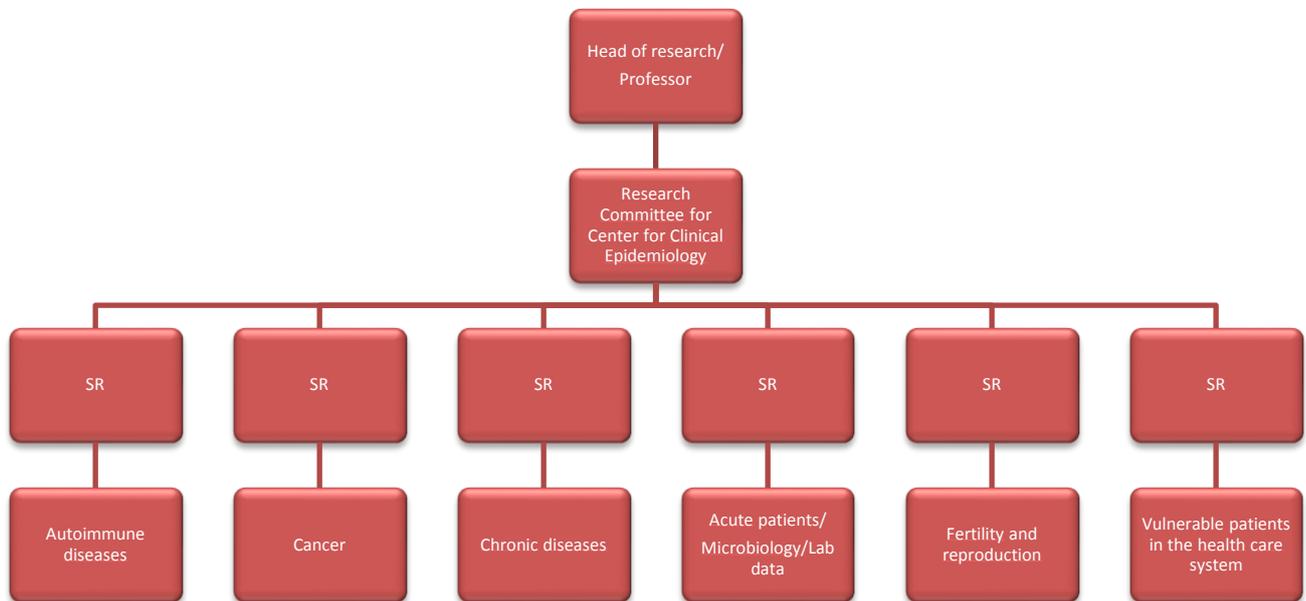
At the Center for Clinical Epidemiology we apply these advantages to a series of highly specialized wards at the Odense University Hospital, and we will continue our focus on the increase of these activities.

The existing supporting research within highly specialized functions at the Odense University Hospital is rendered to for example the following areas in collaboration with the relevant research units: human reproduction, obstetrics, gynecology, gastroenterology, hematology, surgery, infectious diseases, and clinical genetics.

Organization of the work in the research unit/the research production

The overall responsibility of the center's research lies with the head of research. The research committee of the center considers all options related to research, larger initiatives, and projects and the members of the committee have contributed to the design of this research strategy. The work within our strategic research areas are organized with a senior researcher attached to each research sub-section. Typically, the senior researcher is the 'main entrance' and co-actor when decisions are made on the initiating of new projects within his or her area (please see Figure 2). The senior researcher also supervises the projects attached to the area.

Figure 2: Organization of the work

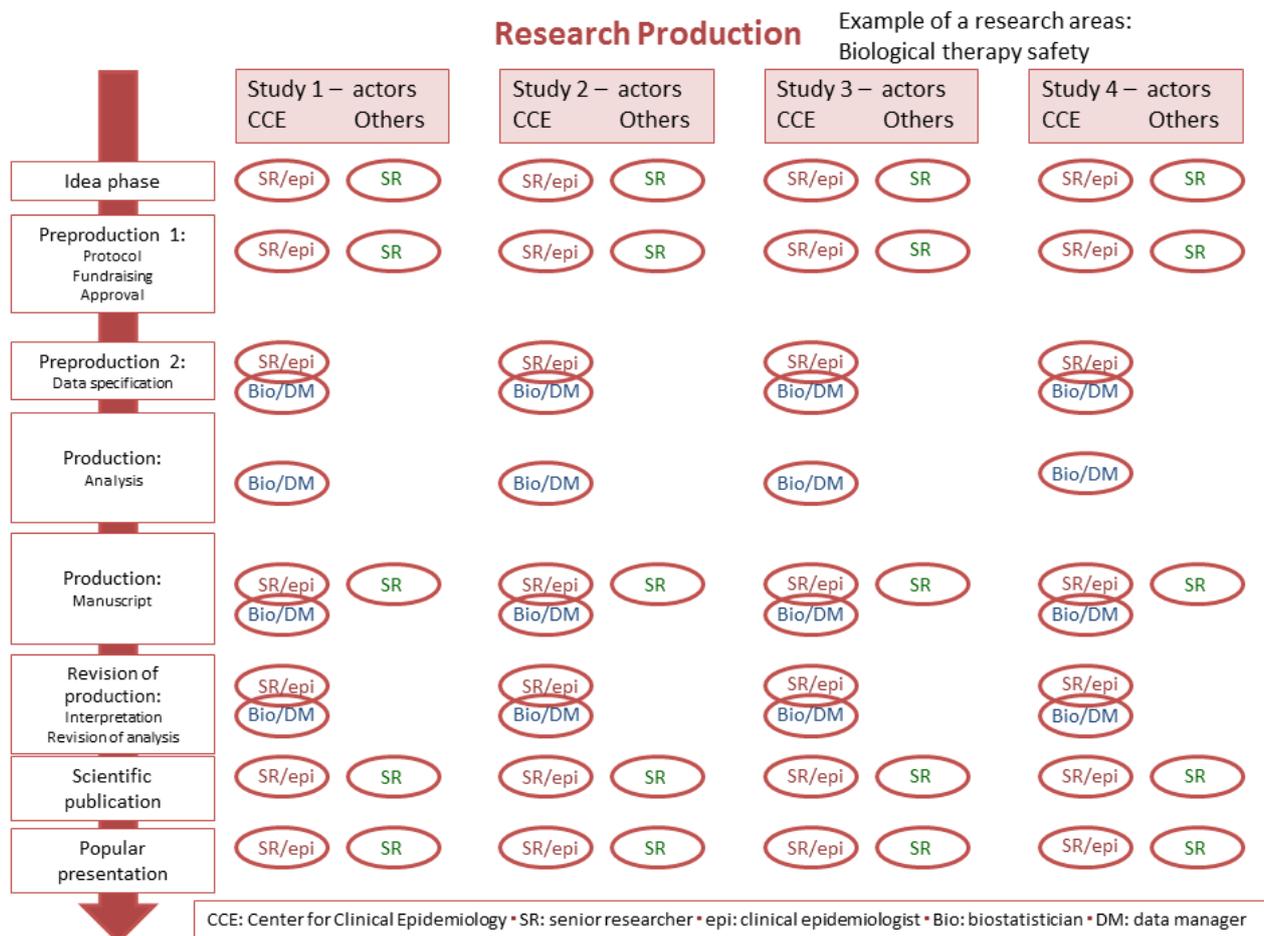


SR: Senior researcher

In order to ensure that the productivity within each clinical area is sufficiently high, the below model is often applied, which means several analogue approaches to each research problem and thus providing a larger number of publications (please refer to the four studies in Figure 3). This contributes to an increase of the evidence within a certain area of research. This further secures an optimal use of collected data and an increased number of publications.

Figure 3 shows that the process of producing scientific papers is divided into sub-processes and only the necessary actors contribute to each step in the production (Figure 3).

Figure 3: Research production



Objective and performance, human resources

The research at the Center for Clinical Epidemiology must be intensified by allowing competence development, increasing the international collaboration, increasing the external research financing, and by increasing the collaboration interfaces in general. A major portion of the advisory services provided by the center often results in research projects. An increased portfolio of advisory services will thus result in an increased number of research projects.

We constantly focus on increasing the number of research fellowships, undergraduate research year students, PhD students, and senior researchers. Our aim is to affiliate PhD students to all our prioritized research areas.

We prioritize that the career path of each staff member is suited to the combined effort between research tasks and the other operational tasks in the center in the best possible way.

Objective and performance - human resources

The increase in the number of research staff members

- Under graduate research students and research fellowships increasing from 3 in 2018 to 8 per annum in 2022
- PhD students increasing from 2 internal at the Center for Clinical Epidemiology and 4 external affiliated to the Center for Clinical Epidemiology in 2018 to 4 and 8 in 2022, respectively
- Postdocs/associate professors: increasing from 4 in 2018 to 10 in 2022
- Professors: increasing from 1 in 2018 to 2 in 2022
- Adjunct professors: increasing from 2 in 2018 to 4 in 2022

All staff members with a PhD and affiliation with the University of Southern Denmark will be responsible for head supervision of at least one PhD student

Objective and performance, financial resources

Obtaining internal and external research funds will give the staff members the opportunity to be partly released from their normal duties in order to concentrate on research projects and to engage PhD students. We will in the forthcoming years persist in raising external funds for research in the center.

Objective and performance - financial resources

- Each responsible senior researcher has made plans for applications/fund raising from 2018
- The responsible senior researchers contribute to obtaining funds covering at least one year's PhD salary plus salary expenses (appr. DKK 150,000 per annum)
- An overall increase in the number and the size of the means obtained from external foundations. Each responsible senior researcher sends an application to at least four larger foundations per annum

Cross-sectional collaboration

The research unit has a wide cross-sectional collaboration. The below figures show that our collaboration comprises collaborating actors across the region, nationally and internationally. Our two adjunct professors have, to a very large degree, contributed to this increased international collaboration.

Regional collaboration

The center collaborates among others with the following hospitals in the Region of Southern Denmark (the list is not complete as regards the individual departments/wards at the hospitals):

Hospital Lillebælt, Middelfart (Spine center of Southern Denmark, Middelfart), Hospital Lillebælt, Vejle (oncology), Hospital Lillebælt, Kolding (gynecology/obstetrics), Hospital of Southwest Jutland (Medical department), Hospital of Southern Jutland (Urgent Care Clinic, Emergency department/FAM).

All clinical microbiological departments in the Region of Southern Denmark are combined via our Sydbak project involving Esbjerg, Sønderborg, Vejle og Odense.

We collaborate with the psychiatric sector in the Region of Southern Denmark and with the psychiatric sectors in other regions.

Odense University Hospital (the list is not complete):

Emergency department, FAM, OUH, Emergency department, FAM, Svendborg, Geriatric department, The Hans Christian Andersen Children's Hospital, Gynecology and Obstetrics, Humane Reproduction, Medical Gastrointestinal Diseases, Surgery, Clinical Genetics, Clinical Microbiology, Oncology, Cardiac, Thoracic and Vascular Surgery, Infectious Diseases, Hematology, Clinical Biochemistry and Pharmacology, and OPEN.



National and international collaboration

We collaborate with a number of national and international research groups. The below list is not complete.

Boston: Brigham and Women's Hospital and Harvard Medical School, Boston

Lisbon: Unidade de Cuidados Intensivos Polivalente, Hospital de São Francisco Xavier, CHLO, Lisbon

Singapore: Department of Clinical Epidemiology, Institute of Infectious Diseases & Epidemiology, Tan Tock Seng Hospital (TTSH), 11 Jalan Tan Tock Seng, Singapore

Toronto: University of Ontario, Institute of Technology, Faculty of Health Sciences

Research groups at hospitals in North Denmark Region, Central Region Denmark, Region Zealand, and Capital Region of Denmark: We collaborate with a number of relevant clinical departments throughout the country, for example clinical microbiology departments in Aalborg, Herlev, and Hvidovre, and clinical epidemiological departments and palliative care units across the country.

Figure 4: National and international collaboration



Involving patients and relatives

We are starting a process involving patients and relatives in the entire research process. For some time now we have established a research collaboration with the Patientforeningen Lungekræft (lung cancer patients association).

The involvement of patients and relatives in the research process is a new discipline for all of us, and we have to practice this discipline and improve it now and in the future. Patient involvement is research in collaboration with the patients or the patients' relatives and is as such not about or for them. We need to improve the communication of our results to patients, relatives and citizens, but they must also form an active part right from the start of the research process, i.e. already when the projects are initiated (see the first subprocesses in figure 3).

As a start, a patient and relatives representative has been an active part in the elaboration of this research strategy and we would like to convey our gratitude for this cooperation. We are looking forward to the future collaboration in the research unit committee.

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