The Capital Region of Denmark

Annual Report 2014

CEKU

Centre for Clinical Education

Centre for Human Resources

Capital Region of Denmark

Summary

Centre for Clinical Education or Center for Klinisk Uddannelse (CEKU), serves two institutions which are the Capital Region of Denmark and the Faculty of Health and Medical Sciences, University of Copenhagen. This report covers the organisation, the workforce, and the activities at the Centre for Clinical Education during the year 2014.

Staff

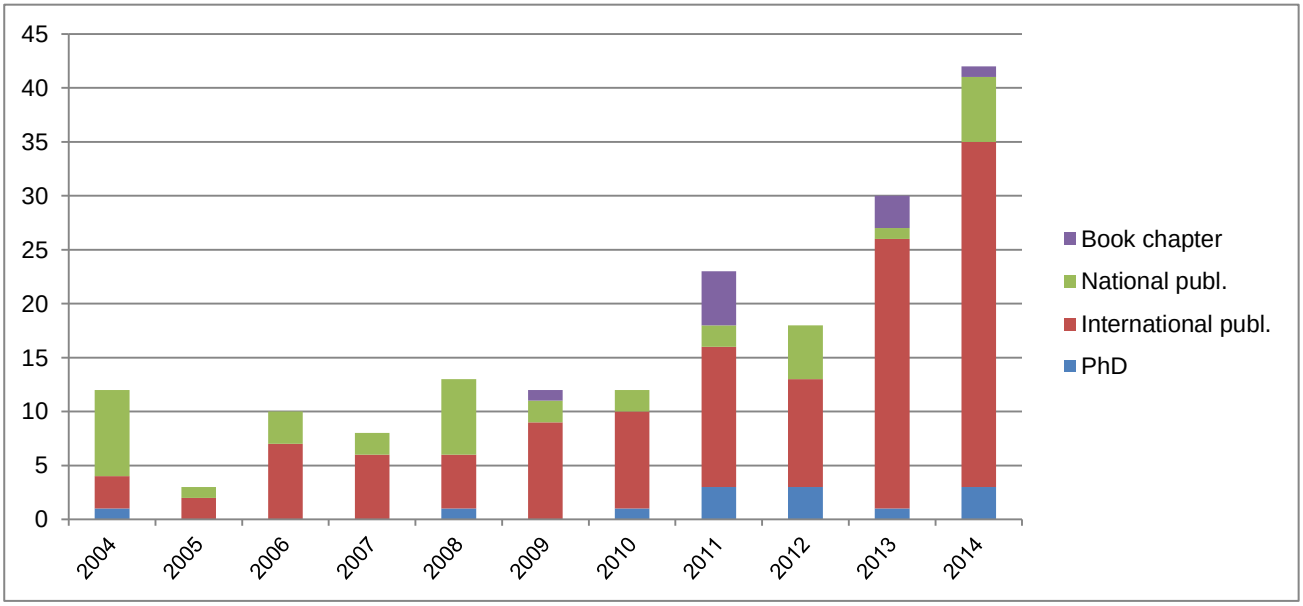
The Centre for Clinical Education consists of 15 people in permanent positions. Additionally, there are 45 medical students who are working as part time teachers and assistants supporting our educational activities. The centre also has a number of part time instructors, lecturers, and associate professors who contribute substantially to our production. Finally, 18 PhD fellows and other researchers have been instrumental towards our achievements in research and development.

Courses, Teaching and Examinations

The overall domain of CEKU is clinical medical education. This ranges from undergraduate to postgraduate education and training. The mission of CEKU is directed towards three main areas: service, development, and research.
By far, the largest volume of skills training is offered to medical students from the University of Copenhagen. In addition to this, CEKU also organises two station-based examinations. CEKU also offers courses in pedagogy and communication for junior doctors as part of the compulsory postgraduate basic training. CEKU offers simulation-based training of advanced technical skills for doctors within a number of specialties. Simulation teaching, introduced by specialists, is followed by self-training and ends with certification: “the driving license concept”.

Research and Development

CEKU is involved in research within medical education and simulation training. Most of the research projects are run in collaboration with both national and international researchers. Funding is obtained from regional, national, as well as international sources. In the last ten years, CEKU has produced 12 PhDs and 150 scientific publications. Our research activities have increased rapidly in recent years. At present, CEKU is involved in 18 PhD research projects.



Organisation and Staff

Torben V Schroeder, Professor and Chief Executive of Vascular Surgery at Faculty of Health and Medical Sciences, is head of the centre. The staff is composed of different professional expertise working together, such as consultant, psychologist, educationalist, nurse, anthropologist and physiotherapist, in addition to administrative staff. During 2014, CEKU has had 18 PhD fellows attached to major research projects. CEKU has nearly 50 medical students employed to assist in teaching. They are employed on a part-time basis, 8 hours weekly on average. The students are trained to teach younger medical students basic clinical skills courses. Some are also involved in research and development projects. CEKU is also composed of a huge group of different, associated staff of 116 people. These include associated professors, part time teachers who are either doctors or psychologists, and groups of standardised patients, real patients, and actors.

Centre for Clinical Education (CEKU) is situated at Rigshospitalet in the Capital Region of Denmark. The facilities are located in the Teilum building as well as in an adjacent teaching facility in Hammershusgade. CEKU was established in 2004 after fusion of the Laboratory for clinical skills, which was established in 1995, and the postgraduate institute at the Capital region, which was established in 1997. Since 2013 CEKU has been part of Centre for Human Resources (CHR), Capital Region of Denmark.

Chair & administration

Torben V Schroeder, Head of Centre, Professor of Vascular Surgery
Britt James, Economical Manager - shared with CHR
Rasmus Lundhus Jørgensen, Project Manager – shared with CHR
Rita Dalhammer, Administrator, PA to Head of Centre
Ditte Guldmann Kryger Rasmussen, Centre Administrator
Marianne Unger Kejlaa, Course Administrator
Mai-Britt Brauer Pedersen, Course Administrator
Bodil Højbjerg, Course Administrator (stopped Sept 2014)

Academic staff

Mikael Bitsch, Consultant, Clinical Associate Professor of Surgery
Lars Konge, Consultant, Clinical Associate Research Professor in Medical Education
Betina Ristorp Andersen, Part time consultant, Associate Professor of Gynecology and Obstetrics (stopped Sept 2014)
Anne Marie Skaarup, Educationalist
Pia Meldgaard, Psychologist (stopped Sept 2014),
Anne Marie Rieffestahl, Nurse and Anthropologist,
Judit Vibe Madsen, Physiotherapist and MA Health Science (started Dec 2014)
Charlotte Søjnæs, Educationalist, PhD Fellow

Part time employees

CEKU's courses are managed in collaboration with a number of part time educators, standardised patients, real patients, and actors, as well as nearly 50 medical students.

Academic staff associated to CEKU

Klavs Holtug, associate professor of internal medicine/medical gastroenterology
Freddy Lippert, associate professor of anaesthesiology
Henriette Svarre, associate professor of gynaecology and obstetrics
Christian Nolsøe, associate professor of radiology with special reference to ultrasonography
Jens Hillingsø, associate professor with responsibility for MFTL examination
Ulrich Knigge, associate professor with responsibility for OSCE examination
Michael Mørk Petersen, professor of orthopaedic surgery
Martin G. Tolsgaard, PhD, post doc

Morten Bo Svendsen, Engineer

Phd Fellows and research associates

Maria Birkvad Rasmussen, University of Copenhagen.
Ann Sofia Skou Thomsen, University of Copenhagen
Steven Andersen, University of Copenhagen
Jeppe Jensen, University of Copenhagen
Flemming Bjerrum, University of Copenhagen
Lise Pyndt Jørgensen, University of Copenhagen
Ditte Dencker, University of Copenhagen
Mikael Henriksen, University of Copenhagen
Michael Strøm, University of Copenhagen
Ebbe Thinggaard, University of Copenhagen
Jacob Melchiors, University of Copenhagen
Mia Østergaard, University of Copenhagen
Charlotte Søjnæs, Roskilde University
Mikkel Taudorf, University of Copenhagen
Mette Kehlet, University of Copenhagen
Kåre Håkansson, University of Copenhagen
Charlotte Green Carlsen, Aarhus University
Kim K Bredahl, University of Copenhagen
Katrine Jensen
Louise Preisler
Tobias Todsen

Research students

Charlotte Loumann Krogh (Research year student)
Lykke Østergaard Laursen (Research year student)
Signe Bojsen (Research year student)
Thomas Gyldenløve (Research year student)
Mona Savran (Research year student)
Philip Nielsson (Bachelor project)
Line Engelbrecht (Master's thesis)
Poul Pedersen (Master's thesis)
Martin Lawaetz (Master's thesis)
Yousif Subhi

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Center for HR

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Courses, teaching and examinations

Compulsory courses for medical students

All medical students at University of Copenhagen receive a total of 67 hours of clinical training at CEKU with focus on technical and communication skills. (See list below). The courses are centred on basic clinical skills that are necessary for student's clerkship. These courses are delivered in the beginning of their master (MA) programme. The total number of students in each semester is 250-300 and sometimes 350. All training is given is small groups, i.e. no more than 8 people. Course activities are monitored each term by the central evaluation unit at the Faculty of Health and Medicine Sciences. In general, the courses are ranked high with an average score of between 5 and 6 on a scale from 1 to 7, with 7 being the highest.

OSCE and MFTL exams

CEKU, together with the examination chairpersons, is responsible for two station- based exams. The OSCE at 3rd semester master involves 12 stations, 100 lecturers, and 60 administrative and logistical personnel. In 2014, a total of 528 students had enrolled.
CEKU also organizes an OSCE for doctors educated outside the EU (MFTL). This was less demanding as only 51 doctors had enrolled in 2014.

Compulsory undergraduate courses		*Course leader*
	1. BA basic resuscitation	Mikael Bitsch
	1. MA anamnesis	Anne Marie Skaarup
	1. MA clinical skills	Mikael Bitsch
	1. MA ultrasound	Mikael Bitsch
	1. MA objective examination	Mikael Bitsch
	1. MA examination of the joints	Mikael Bitsch
	1. MA resuscitation	Mikael Bitsch
	3. MA patient information	Anne Marie Skaarup
	3. MA ward round – interprofessional training	Anne Marie Skaarup
	4. MA breaking bad news	Anne Marie Skaarup
	6. MA basic gynaecological skills	Mikael Bitsch
	6. MA gynaecological communication	Anne Marie Skaarup
	6. MA advanced resuscitation	Mikael Bitsch
	6. MA ethics and communication	Anne Marie Skaarup
Exams		
	3. MA OSCE exam	Mikael Bitsch
	Medical exam for 3rd country doctors (MFTL)	Mikael Bitsch

Patients as instructors

CEKU has developed courses for health professional students – mainly medical and nurse students – which involve patients as instructors. Doctors or other healthcare professionals assist these courses. For many years, CEKU offered courses where patients with rheumatologic diseases provide teaching with respect to examination of the joints. Thanks to support from the Capital Region of Denmark, this tender was expanded in 2013 to include patients with COPD, cardiac disease, diabetes, lower back problems, and dementia.
CEKU administers and develops the project, and conducts research. The most demanding process is the pedagogical qualification of patient instructors and until now more than 70 patient instructors have been recruited and qualified. In total more than 1.500 students have participated in courses where patient instructors took part. These seminars have been graded very favourable, scoring on average above 5 on a scale from 1 to 7, with 7 being the highest.

Patient Instructor courses	*Course leader*
Rheumatologic diseases	Anne Marie Rieffestahl
Dementia	Anne Marie Rieffestahl
Lower back problems	Judit Vibe Madsen
COPD	Judit Vibe Madsen
Diabetes	Anne Marie Rieffestahl
Cardiac diseases	Anne Marie Rieffestahl

Compulsory postgraduate courses

CEKU also attends to postgraduate courses for young doctors. These include two pedagogical courses and a communicative course, which are compulsory (see table below). The duration of these courses is 2, 2 and 3 days, respectively
The courses are graded satisfactorily and our goal to attain 75% of the evaluation score > 4 was fulfilled in all three.

Compulsory postgraduate courses	*Course leader*
Courses for House officers (KBU) and Intro doctors	
Pedagogy I (KBU)	Charlotte Søjnæs
Pedagogy II (Intro doctors)	Charlotte Søjnæs
Patient communication (KBU)	Anne Marie Skaarup

Other courses

CEKU organises a number of electives for young doctors, specialists, GPs and etc. The centre offers courses in ultrasonography for GPs and other specialists, which have been popular. 68 participants attended a one-day and 30 took part in a two-day basic course on point-of-care ultrasound. Another course that is offered is a one-day course in statistical analysis using SPSS. The Capital Region has also requested a 10-day course for newly qualified nurses. This course aims to provide nurses a practical clinical skills upgrade. Procedures such as basic resuscitation, intravenous access, fluid and pain management are being trained on this course. Two courses of 20 participants have been accomplished during 2014

Other courses	*Course leader*
Well on the way for nurses	Mikael Bitsch
Postgraduate ultrasound	Mikael Bitsch
Øresund Symposium	Torben V Schroeder
SPSS statistical course	Mikael Bitsch

Training of advanced technical procedures

The Simulation Centre at Rigshospitalet, which is a part of CEKU, offers simulation-based training of advanced technical procedures within a number of specialties. Teaching is undertaken by specialists with dedicated knowledge and expertise followed by self-training, where the trainee is assisted by dedicated simulator assistants. Training ends with an assessment by the specialist followed by certification: “the driving license concept”.

The key philosophy behind the programs at the Simulation Centre is flexibility in training and mastery learning. The flexibility relates to the timing of the training according to residents’ clinical rotations and hence the possibility of subsequent clinical training. Another aspect of flexibility relates to trainees’ different paces of learning and need for time to train. Rather than offering cours-

es of a fixed duration, CEKU provides a program for every clinical procedure consisting of theoretical preparation, on-site introduction to the simulation training, assisted; self-regulated practicing of the procedure, and end-of-simulation training certification.

The vast majority of the trainees are postgraduate residents and physicians because of the focus on advanced technical simulation. However, other health care personnel performing advanced clinical procedures, e.g. endoscopy nurses, can also train. Currently, all trainees from the 18 hospitals in the eastern part of Denmark can sign up for the any of the simulation-based programs free of charge, as the Capital Region of Denmark provides funding. The consultants responsible for education at each local hospital department acts as a "gatekeeper" to ensure that the residents receive the preparatory training at a time relevant to their clinical training. Approximately 800 physicians passed the final tests in 2014 and became certified within that specific procedure.

Technical Simulation	*Course leader*
Endoscopic procedures	
Flexible bronchoscopy	Lars Konge
Flexible optical intubation	Lars Konge
Gastroscopy	Lars Konge
Colonoscopy	Lars Konge
Cystoscopy	Lars Konge
Endobronchial ultrasound (EBUS)	Lars Konge
Diagnostic procedures	
Abdominal ultrasound	Mikael Bitsch
Thoracic ultrasound	Lars Konge
Musculoskeletal ultrasound	Mikael Bitsch
Vaginal Ultrasound	Lars Konge
Percutaneous procedures	
Lumbar puncture	Mikael Henriksen
Emergency tracheotomy	Lars Konge
Chest tube insertion	Lars Konge
Endovascular procedures	
Endovascular procedures (PTA)	Lars Konge
Endovascular aortic aneurysm repair (EVAR)	Lars Konge
Coronary arteriography (KAG)	Lars Konge
Open surgery	
Eye surgery – cataract surgery	Lars Konge
Ear surgery - temporal bone drilling	Lars Konge
Hip fracture surgery	Lars Konge
Minimally invasive surgery	
Basic laparoscopic surgery	Lars Konge
Thoracoscopic surgery	Lars Konge
Knee arthroscopy	Lars Konge

Research and development

Clinical clerkships

Development of professional identity is essential for medical students to become good doctors. Introduction to the clinical setting, role models, reflection, structure, learning strategy and inclusion in community of practice are important factors. Much of the clinical education takes place during the clerkships at various clinical departments. Medical students start as novices and

through 14 rotations, they acquire the basic skills to enable them to function as newly graduated doctors. For each rotation, the Faculty of Health and Medical Sciences in collaboration with the department has prepared goals for their stay as well as a logbook, which draws the competencies to be acquired.
The project ”Focus on the clinical instructor during clerkships”, has been funded by a quality assurance fund at the Faculty of Health and Medical Sciences since 2011. Based on the evaluations given by the medical student after their clerkships, we selected two departments of internal medicine and two departments of surgery scoring high and low, respectively. Observations and interviews revealed huge differences in educational practice in the clinical departments. The departments with low evaluation scores need to improve their practice. Individual guidance inside the department, which adjusts for medical specialty, potentials and challenges, could initiate future progress.

Technical simulation-based education

CEKU and the Simulation Centre have a long tradition for research in formative and summative assessment of procedural skills and optimization of simulation-based education. Testing motivates learning and increases retention. At the Simulation Centre, we have described a 5-step approach of gathering validity evidence for simulator metrics and that includes standard setting. This has been used to allow objective, summative assessment in several diverse areas such as hip fracture surgery and vaginal ultrasonography. We aim at providing further evidence of validity for every simulation-based test used at our centre. The focus on research offers many advantages. It creates attention and adds credibility to the Simulation Centre among clinical and political key opinion leaders. Research also drives the evolution of new training programs and helps attract funding for new equipment and personnel. The projects range from smaller individual projects to PhD studies. Currently, there are 12 PhD fellows affiliated with the Simulation Centre regarding lumbar puncture, emergency crico-thyroidotomy, virtual reality (VR) laparoscopy, black-box laparoscopy, VR thoracoscopy, team training for minimally invasive lung surgery, endovascular aneurysm repair, VR-abdominal ultrasonography, point-of-care ultrasonography, colonoscopy, temporal bone drilling, and cataract surgery.

Overall, four medical students work as research assistants on projects regarding theoretical testing, e-learning, ultrasonography, and 3- dimensional laparoscopy training. Finally, there are on-going projects regarding hip fracture surgery, knee arthroscopy, gastroscopy, and cystoscopy. All researchers at the Simulation Centre have a group of supervisors consisting of an expert in medical education and 1 or 2 clinical content experts from adjacent hospitals. This composition of research groups results in a close collaboration with leading experts in neurology, ENT surgery, thoracic surgery, anaesthesiology, vascular surgery, radiology, ophthalmology, urology, orthopaedic surgery, cardiology, and pulmonology.

The involvement of leading clinicians in research projects has contributed substantially to the implementation of simulation-based training as an integral part of the postgraduate training curricula. Computerized systems performing real-time motion analysis of the trainees could assist in acquiring necessary technical skills and might aid in certification in the future. Mixed research groups consisting of engineers and physicians have described the development of these systems and the first evidence of validity. A close collaboration with providers of equipment for simulation-based education has led to the development of new teaching modalities. An example is the first commercially available software for virtual reality simulation of video-assisted thoracic surgery that was presented in June 2014 at the European Society of Thoracic Surgeons’ conference

Committee and council members

Bitsch M.

- Committee on Health Research Ethics at Capital Region of Denmark, chairman committee B.
- Educational committee on 1st and 3rd semester MA, Faculty of Health and Medical Sciences, University of Copenhagen
- Danish Society for General Practitioners (DSAM) committee on implementation of point-of-care ultrasonography
- Corps of examiners in surgery, Danish Universities
- OSCE-committee, Faculty of Health and Medical Sciences, University of Copenhagen

Konge L.

- Danish Society for Medical Education (DSMU), vice-chairman
- Task group on undergraduate medical education, Danish Medical Association and DSMU
- Association of Medical Education Europe (AMEE), Simulation Special Interest Group, Co-chair.

Rasmussen DGK.

- Liason committee for interdisciplinary working environment and security at Teilum Building.
- Organisation of working environment at Centre for Human Resources
- Contact group at Centre for Human Resources

Schroeder TV.

- Chief Executive of Vascular Surgery, Institute for Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen
- Doctors' and Patients' Handbook (Lægehåndbogen and Patienthåndbogen), Editor-in-Chief
- Medico-legal Council (Retslægerådet), Department of Justice
- The Bibliometric Research Indicator, Chairman group 49 (surgery), Ministry of Higher Educations and Science
- Board of Qualification (Kvalifikationsnævnet), advisor of health educations, Ministry of Higher Educations and Science
- The Danish Heart Foundation, Board of directors
- Sub-commission for implementation of National Clinical Guidelines (NKR), Danish Health and Medicines Authority.

Skaarup AM.

- Task group on undergraduate medical education, Danish Universities

Søjnæs C.

- Steering committee of Eastern Region for compulsory postgraduate courses during medical in-service training.

Publications

PhD dissertations

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- Håkansson K. An investigation of co-existing upper and lower airway disease: the ”united airways” confirmed. KU 1. juli 2014. Supervisors: Christian von Buchwald, Vibeke Backer, Simon Francis Thomsen, Lars Konge.
- Bredahl KK. Abdominal aortic aneurysm surveillance – the added value of 3d and contrast-enhanced ultrasound. KU 6. Nov 2014. Supervisors: Eiberg JP, Sillesen HH, Lönn LB, Schroeder TV

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2. Bredahl K, Jensen LP, Schroeder TV, Sillesen H, Nielsen H, Eiberg JE. Early mortality and complications following 3767 aortic bifurcated bypass procedures for chronic aorto-iliac occlusive disease. J Vasc Surg. Accepted 18. Dec 2014
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Bachelor and Master theses

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- Bachelor thesis: Sebastian Roed Rasmussen