The Capital Region of Denmark

Annual Report 2016

CAMES

Copenhagen Academy for Medical Education and Simulation

Centre for HR

Capital Region of Denmark

CAMES – the background

Copenhagen Academy for Medical Education and Simulation (CAMES) is a fusion of the Centre for Clinical Education (CEKU) at Rigshospitalet and the Danish Institute for Medical Simulation (DIMS) at Herlev Hospital, under the Unit for Education at Center for HR, The Capital Region.

CAMES is partly funded from and serves the two institutions 1) Capital Region of Denmark, which runs all hospitals in the capital region, and 2) University of Copenhagen, Faculty of Health Science. The overall domain of CAMES is clinical medical education ranging from undergraduate to postgraduate education and faculty development. The mission of CAMES is directed towards the three main areas: Education, research, and development.

It is the ***mission*** of CAMES to stand for education, research and development to promote the quality and safety of patient care in the Capital Region.

It is the ***vision*** of CAMES to develop and provide evidence-based programs for healthcare professionals at a top international level.

CAMES-RH

CEKU was established in 2004 by the merger of the Laboratory for Clinical Skills (formed in 1996) and H:S Postgraduate Medical Institute (formed in 1997). The activities at CAMES-RH take place in the Teilum building (ground floor and first floor) at Rigshospitalet and at Hammershusgade. CAMES-RH takes care of a number of basic compulsory courses for medical students at the University / Faculty in clinical skills and communication and for young doctors (education and communication). Besides this, CAMES-RH also runs courses for students, nurses and doctors as well as simulation-based training of technical procedures for doctors in several specialties. All training is flexible and finishes with a certification called the driving license model.

CAMES-Herlev

The activities at CAMES-Herlev take place on the top floors of Herlev Hospital as well as in the basement, in a number of specialized simulation and training rooms at a total of 4,400 m2. The activities at Herlev began with anesthesia simulation back in the early 1990s forming the background for establishing DIMS in 2001, as an independent, regional, educational unit. CAMES-Herlev trains clinical supervisors and instructors in simulation. National as well as international trainees participate. Moreover, CAMES-Herlev offers a number of courses related to special training, including ambulance practitioners, nurses and physicians in clinical basic, introductory and specialty training, participants on management courses, administration and cooperation (SOL). CAMES-Herlev also organizes resuscitation training for individuals as well as for teams.

Research at CAMES

CAMES has a strong research and development profile, mainly within medical education and simulation. During 2016 6 PhDs and 62 scientific publications have emanated from CAMES and the research activity has increased markedly compared to previous years.

Organization and Staff

To carry out the mission of CAMES a number of different people are involved and the staff is a compound of professional experts working together across various professions, all together more than 50 Whole Time Equivalent are employed at CAMES. As something unique CAMES has more than 70 medical students employed, each about eight hours a week. The students are trained to teach younger medical students in clinical skills courses, to act as patients, and run the simulators and some are even involved in development- as well as research projects. In addition CAMES has an associated staff of more than 300 people. These include associated professors, medical doctors, psychologists, nurses, midwives, as well as standardized patients, actors, and patient-teachers.

Management of CAMES

Director of CAMES: Doris Østergaard, MD, DMSc, MHPE, Professor of Medical Education.
Head of CAMES-Herlev: Anne Lippert, MD, Consultant (Anaesthesiology), CHPE, FERC.
Head of CAMES-RH: Torben V. Schroeder, MD, DMSc, FACS, Professor of Surgery (until October) and Anne Mette Mørcke, MD, PhD, Associate Professor of Medical Education (from October).

Employees at CAMES-RH

Administration and support

Ann Petersen, Course Administrator

Ditte Guldmann Kryger Rasmussen, Administrative Coordinator
Jørgen Krull, Service Employee
Mai-Britt Brauer Pedersen, Course Administrator
Marianne Unger Kejlaa, Course Administrator
Rasmus Lundhus Jørgensen, Project Manager
Therese Møller-Andersen, RN, Operational Coordinator

Research and education

Amandus Gustafsson, MD, Consultant (Orthopedic Surgery), Course Director (30%)

Anne Marie Skaarup, MA (Education), Course Director
Anne Marie Rieffestahl, RN, MA (Anthropology), Ph.D. Fellow, Course Director
Camilla Thamdrup, MA (Communication), Course Director
Charlotte Søjnæs, MA (Education), PhD Fellow, Course Director
Jacob Melchiors, MD, Consultant (ENT), Course Director, PhD Fellow (20 %)

John Brochorst Christensen, MD, Consultant (Thoracic Surgery), Course Director (20%)
Jonas Eiberg, MD, PhD, Consultant (Vascular Surgery), Course Director, Associate Research Professor (50%)
Judit Vibe Madsen, Physiotherapist and MA (Health Science), Course Director

Kirsten Greineder Engel, MD, Course Director (50%)
Lars Konge, Professor of Medical Education, MD, PhD, Research Group Leader

Leizl Joy Nayahangan RN, MHCM (Health Care Management), Research Project Manager
Lene Løvbjerg Russell, MD, Consultant (Anaesthesiology), Course Director (20%)
Marie Kristina Rue Nielsen, MD, PhD, Consultant (Radiology), Course Director (20%)
Mikael Bitsch, MD, Consultant, Associate Professor of Surgery, Course Director (20 %)

Paul Clementsen, MD, PhD, DMSc, Consultant (Pulmonary Medicine), Course Director (40%)

Pia Hass, MD, PhD, Consultant (Cardiology), Course Director (20%)

Rikke Bølling Hansen, MD, PhD, Consultant (Urology), Course Director (20%)

Ph.D. Fellows and research-semester students

Andreas Slot Vilmann, University of Copenhagen
Ann Sofia Skou Thomsen, University of Copenhagen
Caroline Amalie Taksøe-Vester, University of Copenhagen
Diana Haunstrup Bregner Overgaard, University of Copenhagen
Ditte Dencker, University of Copenhagen
Ebbe Lahn Bessmann, University of Copenhagen
Ebbe Thinggaard, University of Copenhagen
Flemming Bjerrum, University of Copenhagen
Jeppe Jensen, University of Copenhagen
Karn Kjerstad, University of Copenhagen
Katrine Jensen, University of Copenhagen
Kirsten Gjeraa, University of Copenhagen
Lisbeth Anita Andreasen, University of Copenhagen
Lise Pyndt Jørgensen, University of Copenhagen
Louise Preisler, University of Copenhagen
Maria Birkvad Rasmussen, University of Copenhagen
Mia Østergaard, University of Copenhagen
Michael Strøm, University of Copenhagen
Mikael Henriksen, University of Copenhagen
Nanna Jo Borgersen, University of Copenhagen
Philip Mørkeberg Nilsson, University of Copenhagen
Steven Andersen, University of Copenhagen
Stine Sørensen, University of Copenhagen
Tobias Todsen, University of Copenhagen

Part time employees

CAMES-RHs courses are managed and delivered in collaboration with a number of part time educators, which include 21 psychologists, 23 physicians, 57 medical students, and 75 standardised patients, patient-teachers, and actors.

Academic staff associated to CAMES-RH

Christian Nolsøe, MD, Associate Professor of Radiology with special reference to ultrasonography
Freddy Lippert, MD, Associate Professor of Anaesthesiology
Henriette Svarre, MD, Associate Professor of Gynaecology and Obstetrics
Jens Hillingsø, MD, Associate Professor with special responsibility for MFTL
Klavs Holtug, MD, Associate Professor of Internal Medicine/Medical Gastroenterology
Martin G. Tolsgaard, MD, PhD, Lecturer
Michael Mørk Petersen, MD, Professor of Orthopaedic Surgery
Ulrich Knigge, MD, Associate Professor with special responsibility for OSCE

Employees at CAMES Herlev

Administration and support

Adam Hesselfeldt-Nielsen, Communications consultant
Anette Bukh, Gastronomic employee
Arnth Mørk, Practical coordinator
Birgit Munk Andersen, Course administrator
Dorte Rosenstand Weiglin, Course administrator

Francis Grinderslev, Course administrator
Henriette Wiese Ikkala, Course administrator
Irene Sparwath, Gastronomic employee
Jeppe Hartmann, Course administrator
Mads Leonard Jensen, Student assistant
Marianne Christensen, Practical coordinator
Merete Nyraad, Secretary
Michael Brix Iversen, Technician
Pia Anette Frese Berg, Course administrator
Tim Garder, Administrative consultant
Yvonne Jensen, Gastronomic employee

Research and education

Andreas Ravn, Researcher
Anna Sofie Mundt, Course director
Anne-Mette Helsø, Course director
Annette Berit Larsen, Course director
Bodil Thorsager Svendsen, Course director
Camilla Ahrensbach, Course director
Hanne Bonde, Project manager
Helle Folden, Course director
Helle Teglgaard Lyk-Jensen, Researcher (40%)
Iben Mariann Kragh, Course director (50%)
Jesper Dyhring Petersen, Course director (20%)
Kim Dalgaard, Course director (50%)
Lene Funck Petersen, Course director
Louise Graae Zeltner, Researcher (30%)
Marlene Mohr, Course director
Martin Alex Lyberth, Course director (20%)
Mikael Rewers, Course director (30%)
Morten Lindkvist Møller, Course director (20%)
Peter Dieckmann, PhD, Phycologist, Head of Research
Pina Kunstek, Team coordinator
Randi Beier-Holgersen, Consultant, Surgery (20%)
Sandra Viggers, Researcher
Thomas Lynge Andersen, Course director (60%)
Tim Kristensen, Course director (20%)

Part time employees

CAMES-Herlev's courses are managed and delivered in collaboration with a number of part time educators, which include, 40 nurses, 18 paramedics and midwives, 125 physicians and 38 medical students.

Ph.D. Fellows

Asbjørn Børch Hasselager, University of Copenhagen
Niels Egholm Pedersen, University of Copenhagen
Rikke Malene Jepsen, University of Copenhagen
Thea Palsgaard Møller, University of Copenhagen

Education: Courses, training and examinations

CAMES-Herlev

The portfolio of CAMES-HERLEV is very broad and all centers around the improvement of patient safety: at the hospital level and in the prehospital sector. The activities at CAMES-Herlev include the following areas:

- Development and implementation of educational programs for individuals, interdisciplinary teams and wards within the hospital sector as well as in the pre-hospital sector.
- Using simulation based training as research methodology to analyze human and organizational factors.
- Development and implementation of educational programs for facilitators/instructors both nationally and internationally.
- Complex development- and educational concepts, including simulation based training, based on research, development and partnership.
- Offering advice and consultancy on medical education and simulation for decision makers, institutions, wards and individuals, working with development in education and simulation.

CAMES-Herlev offers mainly post-graduate training. CAMES-Herlev educates clinical supervisors and instructors in simulation, both in Denmark and internationally. CAMES' courses in relation to specialist training, are mainly aimed at paramedics, nurses, doctors in basic clinical rotation, introductory- and specialist education as well as participants in the regional courses on leadership, administration and cooperation. CAMES-Herlev has been responsible for the education of emergency medical services personnel since 2008. CAMES-Herlev also participated in the regional private/public innovation project called Healthcare Innovation Lab. CAMES is continuously involved in e-learning projects, to support activities in CAMES as well as in the entire Capital region of Denmark. The courses are mono-disciplinary, multi-disciplinary or inter-professional.

CAMES also offers courses in team training for cardiac arrest teams, trauma teams and other team training courses, and also customizes courses to suit the needs of our customers.

CAMES-Herlev leads and participates in several development and research projects, where simulation is used as a method to analyze organizational, technical and human factors. CAMES is involved in projects like Healthcare Innovation Lab and safe transfer. Several other projects are directly related to patient safety.

The number of courses at CAMES-Herlev is rising at a steady pace. Activities take place at the 25 and 26 floor of Herlev Hospital and in the 400 sq.m. in the basement. Around 12.000 course participants (measured in number of full course days) go through CAMES-Herlev, of which about 8.000 course participants were engaged in specialist training and about 3.800 engaged in multi-disciplinary training for healthcare personnel and students. About 200 persons have participated in the instructor courses. The table below illustrate course activities at CAMES-Herlev.

Courses at CAMES-Herlev	No. of courses	No. of participant days
Clinical basic year training for doctors and nurses	71	3.228
Specialist training	114	3.104
Post specialist training	10	211
Pre-hospital courses	66	2.168
Inter-professional courses	12	267
Resuscitation courses	328	1.832
Student courses (patient safety)	22	714
ITExperimentatium	8	10
Facilitator training	58	1.343
In total	**689**	**12.877**

CAMES-RH

Compulsory courses for medical students

All medical students at University of Copenhagen receive a total of 67 hours of clinical training at CAMES-RH with focus on basic clinical skills that are necessary for student's clerkship. These courses are delivered in the beginning of their Bachelor (BA) program and throughout their master program (MA) – see table below. All training sessions are 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 Medical Sciences. In general, the courses are ranked high with an average score over 5 on a scale from 1 to 7, with 7 being the best.

Compulsory undergraduate courses CAMES-RH	No. of courses	No. of participants
1st semester BA: basic resuscitation	104	832
6th semester BA: examination of the joints	73	584
6th semester BA: ultrasound	73	584
1st semester MA: medical history taking	73	584
1st semester MA: clinical skills	73	584
1st semester MA: objective examination	73	584
1st semester MA: resuscitation	73	584
2nd and 3rd semester MA: patient information	100	800
2nd and 3rd semester MA: interprofessional ward rounds	100	800
4th semester MA: breaking bad news	72	576
6th semester MA: basic gynaecological skills	88	704
6th semester MA: gynaecology communication	88	704
6th semester MA: ethics and communication	88	704
6th semester MA: advanced resuscitation	22	176
6th semester MA: ABCDE and emergencies	88	704
in total	**1,188**	**9,504**

Compulsory postgraduate courses

CAMES-RH also offers postgraduate courses for young doctors in their clinical basic year and introduction year (postgraduate year 1 and 2). These include two pedagogical courses and a communication 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 CAMES-RH	No. of courses	No. of participants
Pedagogy I	29	580
Patient communication	22	352
Pedagogy II	19	304
in total	**59**	**1,236**

Training of advanced technical procedures

CAMES-RH 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. The self-training period ends with an assessment by the specialist followed by certification: "the driving license concept". The key philosophy behind this program is flexibility in training and mastery learning. The flexibility relates to the timing of the training according to residents' clinical rotations and hence

their possibility for subsequent clinical training. Another aspect of flexibility relates to trainees' different paces of learning and the time each individual need to train. Rather than offering courses of a fixed duration, CAMES-RH 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 as described. 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 specific procedures as needed.

Advanced technical skills training CAMES-RH	**No. of participants**
Transvaginal Ultrasound	102
Lumbar Puncture	93
Laparoscopy	71
Bronchoscopy	71
Basic surgical assistance course (Operative)	63
Basic surgical assistance course	63
Emergency crichothyroidotomy	55
Laparoscopy (Operative)	51
Abdominal ultrasound	45
Practical ENT ultrasound	43
Chest tube insertion (small drain)	43
Chest tube insertion (big drain)	39
Ophthalmoscopy	36
Focused lung ultrasound	35
Knee arthroscopy	32
Colonoscopy	31
Transabdominal ultrasound (Fetal medicine)	27
Cystoscopy	24
Cataract surgery	22
Temporal bone drilling	22
Clinical course in diagnostic imaging of the acute patient	20
Basic anastomotic technique course	19
Basic anastomotic technique (Operative)	19
Gastroscopy	17
Neuro anaesthesiology	16
Hip fracture surgery	13
Endobronchial Ultrasound (EBUS-TBNA)	13
Central Venous Catheter	11
Ultrasound-guided nephrostomy insertion	11
Flexible optic intubation	9
Cornary angiography (CAG)	8
Laryngoscopy	5
Basic endovascular techniques	4
Total	**1133**

Research and development

CAMES is conducting research on the use of simulation for education and training of healthcare professionals across professions, disciplines and career stages. CAMES also uses simulation as the research setting to investigate, how work systems in healthcare can be improved.

Our research is mainly of an applied character, informing training activities on a regional, national and international level. We use research in all stages of our activities - from the initial formulation of new ideas, via the sound investigation of supporting or contradicting evidence to the implementation in clinical practice.

Ph.D. dissertations

1. Rikke Malene Jepsen. Towards assessment of anaesthesiologists' non-technical skills. Supervisors: Doris Østergaard, Charlotte Ringsted, Peter Dieckmann (04.03.2016)
2. Jeppe Jensen. Learning Non-anaesthesiologist Administered Propofol Sedation (NAPS). Supervisors: Peter Vilmann, Lars Konge, Ann Merete Møller. (24.04.2016)
3. Maria Birkvad Rasmussen. Beyond a standardized approach to managing in-hospital emergencies: Exploring factors related to the individual and the context. Supervisors: Charlotte Ringsted, Doris Østergaard, Peter Dieckmann, S. Barry Issenberg (27.05.2016)
4. Steven Andersen. The Visible Ear Simulator. Validation and development of evidence based software for integrated self-directed learning and assessment. Supervisors: Mads Sølvsteen Sørensen, Per Cayé-Thomasen, Lars Konge. (24.06.2016).
5. Tobias Todsen. Point-of-care ultrasonography performed by surgeons. Supervisors: Lars Konge, Charlotte Ringsted, Morten Lind. (01.12.2016).
6. Ebbe Thinggaard. Off-site simulation training in Laparoscopy. Supervisors: Ismail Gögenur, Lars Konge. (02.12.2016).

Publications

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4. Andersen SA, Mikkelsen PT, Konge L, Cayé-Thomasen P & Sørensen MS. The effect of implementing cognitive load theory-based design principles in virtual reality simulation training of surgical skills: a randomized controlled trial. Adv Simul 2016; 1. 20 20-27
5. Anderson MB, Tolsgaard MG, Wolvaardt JE, Duvivier R. Introduction. Med Educ. 2016; 50: 562-3.
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12. Dencker, D., Taudorf, M., Luk, N. H. V., Nielsen, M. B., Kofoed, K. F., Schroeder, T. V., Søndergaard, L., Lönn, L. & De Backer, O. Frequency and Effect of Access-Related Vascular Injury and Subsequent Vascular Intervention After Transcatheter Aortic Valve Replacement. Am J Cardiol. 2016; 118: 1244-1250

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14. Dieckmann, P., Glavin, R., Jepsen, R. M. H. G. & Krage, R. Non-Technical Skills Bingo: a game to facilitate the learning of complex concepts. Adv Simul 2016; 1: 23

15. Dieckmann, P., Zeltner, L. G. & Helsø, A-M. "Hand-it-on”: an innovative simulation on the relation of non-technical skills to healthcare. Adv Simul 2016; 1: 30

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17. Dyre L, Nørgaard LN, Tabor A, Madsen ME, Sørensen JL, Ringsted C, Tolsgaard M. Collecting Validity Evidence for the Assessment of Mastery Learning in Simulation-Based Ultrasound Training. Ultraschall Med. 2016; 37: 386-92.

18. Farr A, Clementsen PF, Herth F, Konge L, Rohde G, Dowsland S, Annema J. Endobronchial ultrasound: Launch of ERS structured training program. Breathe 2016; 12: 217 – 220.

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Reports

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Workshops, Conferences, Congresses and Presentations

CAMES participated actively at several national and international gatherings and have participated with more than 50 oral presentations, posters and workshops. CAMES was present at AMEE, SESAM, IMSH.

Several of our senior researchers have had the honour of participating at congresses as invited speakers or keynote speakers Doris Østergaard has been invited as an honorary speaker at the Swedish Anaesthesiology Society and at SIM health Australia.

Doris Østergaard and Peter Dieckmann were two amongst 32 appointed inauguration fellows of the Society for Simulation in Health Care.

Committee and council membership

CAMES staff regularly serve on committees and councils that develop and guide the field and CAMES forward.

Anne Lippert

- Executive committee in the international Society for Rapid Response Systems
- Capital region of Denmark's Committee on Cardiac Arrest
- Capital Region of Denmark's Committee on Rapid response systems-Udvalg for Mobil Akut System
- Herlev Hospitals Committee for cardiac arrest and critically ill patients
- Reference group for pre-hospital education, Danish Regions
- The steering group in the Capital Region for the introduction of Early Warning Score
- The implementation group for Early Warning Score, Herlev Hospital
- Steering group for ALS, EPLS, ETC og StaR courses (Danish Resuscitation Council)
- Educator for ALS, EPLS, ETC and STaR courses in Denmark.

Anne Marie Skaarup

- Task group on undergraduate medical education, Danish Universities

Anne Mette Morcke

- Advisory board for the Danish schools of Dental Studies
- Advisory board for the Danish schools of Media and Journalism
- Supervisory examiner for the Medical School at the University of Oslo

Charlotte Søjnæs

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

Ditte GK Rasmussen

- 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

Doris Østergaard

- Member and Past President of SESAM (Society in Europe for Simulation Applied to Medicine)
- Member and past board member of the Society for Simulation in Healthcare (SSH)
- Fellow of the Academy of the Society for Simulation in Healthcare
- Chairman at Sophus H. Johansens Fond 1999 –
- Board member at Laerdal Foundation 2005 –
- The Steering group for courses in specialist training for doctors Sundhedsstyrelsen 2008 –
- The Educational Committee in the Capital Region 2013 –
- The National council for doctors education 2013 –

Lars Konge

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

Marlene Mohr

- Steering Committee for compulsory courses in the rotation and specialist training in region East 2003 –

Mikael Bitsch

- Committee on Health Research Ethics at the 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

Peter Dieckmann

- Member and Past President of SESAM (Society in Europe for Simulation Applied to Medicine)
- Member of the Society for Simulation in Healthcare (SSH)
- Fellow of the Academy of the Society for Simulation in Healthcare
- Member of “Aktionsbündnis Patientensicherheit” (Patient Safety Task Force)
- Member of the Simulation Expert group, Association for Medical Education in Europe (AMEE)

Torben V Schroeder

- Chief Executive of Vascular Surgery, Institute for Clinical Medicine, Faculty of Health and Medical Sciences, University of Copenhagen
- Editor-in-Chief Doctors’ and Patients’ Handbook (Lægehåndbogen og Patienthåndbogen)
- Member of Medico-legal Council (Retslægerådet), Department of Justice
- The Bibliometric Research Indicator, Chairman group 49 (surgery), Ministry of Higher Educations and Science
- The Danish Heart Foundation, Board of directors