

# SATCC

# Annual Report

# 2021

Research Unit of Surgery  
OUH Svendborg Hospital



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# Preface

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## **The SATCC, Department of Surgery, OUH**

The SATC Center (SATCC) is embedded in the Unit for Neoplastic Colorectal Research, Department of Surgery, Odense University Hospital, Svendborg. The center is dedicated to research, development, teaching and clinical excellence. SATCC has developed in the areas described by its foundation i.e. development of a “National Reference Centre” for advanced adenomas and early colorectal cancer (in Danish: Store Adenomer og Tidlige Cancere i Colon og Rectum” – SATC).

As in 2020, the Covid 19 pandemic had a huge impact on the SATCC activities in 2021. The courses, testing and development of new methods as well as the essential interaction and co-working in the field of research, suffered under the limitations and restrictions due to the pandemic. In spite of this, a few courses were successfully completed in the spring –summer/ autumn. The release and publication of new scientific papers did increase dramatically both in numbers as well as impact.

The breakout of new covid 19 variants and the repeated high impact on our society was not expected. Several courses were cancelled – some just within a week before start. A lot of economy, time and energy was wasted in planning, fees and refunds. As a consequence, we have now decided to plan for courses only in a “safe” period of time next year, ie from mid-May till start November. Hopefully continued vaccination programs and development of public covid19 resistance, will evolve and make these restrictions unnecessary.

Early November, a new series of courses were introduced for a trans-regional improvement of colonoscopy skills involving the five centers in the Region of Southern Denmark. This is a new SATCC commitment, requested by the Regional board for the surgical speciality which consists of Health care politicians and local leaders of the surgical departments. The first educational “Train the trainer” course was successfully completed in early November. The next two courses for novices and experienced endoscopists will take place in the autumn 2022. The effect on colonoscopy quality will be monitored regionally.

Courses in Endoscopic Mucosa Resection (EMR), has been cancelled, because polypectomy techniques are included in the new series of colonoscopy courses.

Additionally, a new field of education is implemented in terms of fellowships for short periods of time. The key focus is in performing and interpretation of transrectal ultrasonography (TRUS) and polyp characterization using different types of narrow band light, and other diagnostic tools. How to choose the best treatment from the large variety of existing methods. Fellowships in clinical application of EMR, Endoscopic Submucosal Dissection (ESD) and in TRUS supplements the specific field and aims for an equal, high standard of care in all hospitals in the region.

In 2021, four fellowships of 1-3 days was completed in our department. Evaluation from attendees were extremely positive. In general, fellowships will be announced in broader scale of subjects in 2022.

The SATCC plans both expert panel meetings a symposium in September. Announcements will start early spring.

The SATCC have engaged in a formalized collaboration with institutions in Malmø and Lund and plan mutual fellowship visits to further refine the ESD technique and also to lead development of new invasive endoscopic procedures. The first fellowship will be in February in Malmø/Lund. A Malmø Re – Visit to our department is expected to take place later in 2022.

### **A new professor in SATCC**

The Surgical Research Unit in Svendborg welcomed a new professor in December, who will be engaged in the SATCC. Anastasios Koulaouzidis came from Edinburgh with top-expertise in Colonoscopy and related disciplines such as camera capsule technology. He is trained as a gastroenterologist and will be a perfect supplement to the current staff.

Anastasios is fully certified as a teacher for Train-The-Trainer courses in colonoscopic techniques. He is further a very productive scientist with an extended international network.

Anastasios will contribute to bring SATCC even higher in activity and quality and to consolidate our leading Scandinavian position.

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# Activity 1: SATCC Education and Learning

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## Teaching and Education:

The primary purpose of the teaching center is to achieve a uniform and high-level standard for treatment of advanced adenomas and early colorectal cancer in the Region of Southern Denmark. Consistent application of the state-of-the-art treatment principles throughout the region will reduce the number of major surgical procedures significantly. Achieving the full clinical gain of recent years' breakthroughs requires intensive efforts to make the guidelines generally known and to increase the number of endoscopists trained in Advanced Endoscopic Techniques This is a prerequisite for spreading the principles and competences regionally on a voluntary basis. Furthermore, it is important to establish an evidence based expansion of the indications for organ-preserving treatment

## SATCC courses

1. Endoscopic Mucosa Resection (EMR); Module 1 (The fundamentals) concerning management of advanced adenomas.
2. The advanced EMR course, Masterclass, Module 2.
3. Professional Communication; - intensive and dedicated education in the field of patient communication and nursing care of colorectal cancer patients.
4. Masterclass Course in transanal and transrectal Ultrasonography ( TRUS )
5. Principles in Endoscopic removal of large polyps and early cancer. Course for assisting or colonoscopying nurses.
6. Colonoscopy
  - a. Train the Trainer (TKT) For Experts.
  - b. For Specialists
  - c. For beginners – 2 x courses on different levels (50-200 procedures)

## Symposias

SATCC & DCCC Symposium: Individualized prevention of colorectal cancer

Expert panel meeting on bowel preparation for camera capsule endoscopy

Besides hosting courses on location in Svendborg, we deliver presentations at meetings in Denmark and abroad, promoting the SATCC and its field of interest.

Again this year, we have held courses for both doctors and nurses. Employees of the Region of Southern Denmark are exempted from the course fee. Due to the covid 19 close down several courses had to be cancelled. Only two courses were conducted.

Principles in Endoscopic removal of large polyps and early cancer - Course for assisting or colonoscopying nurses.

11. maj 2021 at Hotel Christiansminde, Svendborg.

Faculty: Project Nurses Anja Wulle, Christina Petersen, Nurse Dorte Bennebjerg, doctor Anders Høgh, coordinator Lene von Fintel Sostack and Consultant Niels Buch

Colorectal Polyps, small cancers anatomy, pathology, macroscopic appearance, procedures and methods. Complications and how to handle them. Communication, cooperation, organizing and set up on the Endo Ward, esp. when therapeutic procedures are needed. Hands on – demo and testing of specialized equipment.

Train the Trainer course

11. - 12.nov 2021 SATC Center, House of Research Svendborg Hospital

Faculty: Consultant Bo Søndergaard, Hvidovre Endoscopy unit. Consultant Søren Meisner, Copenhagen, Staff member Anders Høgh SATCC, Consultant Niels Buch SATCC, Coordinator Lene von Fintel Sostack, Staff member.

2 day course. Theoretic and Hands on. Training on dummies. Guided colonoscopy on patients.

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## Activity 2: EndoConf

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EndoConf is a real-time audio-video-link system between the endoscopy room and the receiving part - the specialist endoscopist, who are on call receives EndoConf calls on a mobile tablet. The system was invented by the SATCC and developed in collaboration with the IT department at OUH. The system offers a solution, which means higher confidence in strategy planning of the treatment of pathologic findings. Furthermore online guiding is a new tool for bed side teaching: Removal of polyps with difficult position ore large size calls for lifting before removal. The EndoConf system is now routinely used, since the summer 2019. In average there is one live EndoConference every day. Technical aspects are solved and live contact to the expert endoscopist is established within 3 minutes.

The EndoConf System has been the subject of great interest. Both endoscopists in the private sector and endoscopic hospital center show interest in the direct, real time conference which this system offers. This system clearly represents a future area of development. Though, we still need to address

the IT challenge to communicate with vulnerable data through the firewall of the Region of Southern Denmark's Network. This is necessary if the EndoConf system should connect between the private endoscopists and our regional expert center.

The EndoConf system is now being implemented at the endoscopy units in Esbjerg and soon after in Åbenrå.

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## Activity 3: SATCC Website

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The website [www.satccenter.com](http://www.satccenter.com) serves as a platform for course registration and communication as well as continued development of a network for the participants, who have attended our courses. Course announcements, specific information- both supplemental literature as well as practical information is available here. After the course, a key entrance to the website enables the participants to find presentations as well as ask questions directly to the faculty or chairmen.

The website is planned to expand in 2022 adding a number of educational videos, literature referrals in the area of colonoscopy, colorectal polyp and cancer detection, recognition and treatment.

The field of colorectal cancer prevention is an extremely important issue and the scientific activity and high level of research in this area at the SATCC is among the leading in the world.

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## Activity 4: SATCC Clinical Excellence

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### **Clinical Excellence:**

Focus on clinical excellence in our own endoscopy activity was started back in 2016 supported by a major grant from the Danish Cancer Society to build a National Center of Reference for advanced adenomas and early cancers of the colon and rectum. The formal collaboration between the SATCC-center and the researchers on the one side and the department management and clinicians on the other has by now become well established and have led to a significant upgrading. The activities are now organized into dedicated clinics with highly specialized personnel. We receive short term fellows from the entire Denmark now who want to develop clinical skills and also to be inspired to the effective patient-friendly way in which we organize out-clinic activities. By the intervention of the endoconf system we now aim to provide the same quality and CME to other units on Funen and in the entire region. The Endoconf System is our own invention. It enables real time communication as well as, transfer of images and videos from ongoing endoscopies to experts in another hospital in the region for immediate consultation and decision making and avoid many repeat-colonoscopies by the expert center. The Endoconf System has been the subject of great interest

Database hosting and quality assessment is a natural element of continuous improvement of clinical

procedures and significant efforts were invested in the updating of the EMR - ESD and TEM Database. The aim is to include new parameters necessary for further advancement and updating of the quality of our clinical activity.

We have upgraded equipment and specialist competences in a group of dedicated doctors and nurses. We are working to organizationally strengthen the endoscopic activity by placing it under the responsibility of a dedicated specialist. By enhancing our knowledge and skills, we can expand these to the other departments in the region. Both via courses and direct cooperation. Fellow visits concerning specific procedures such as Trananal Ultrasonography and ESD, initiates and inspires our colleges.

The SATCC activity depends on a strong professional environment, and the department management (Department of Surgery, OUH) has contributed to strengthening the quality of the clinical activity. On a national level, we are already in the lead concerning activity level, number of dedicated people, and number of publications.

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## Activity 5: CICA CENTRE

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Late 2019 The research unit at Surg Dept A, OUH achieved grants and acceptance for establishing an RSD center of Excellence, with the aim of exploring and developing Camera Capsule Endoscopy (CCE), within a variety of different clinical indications. CCE is another more technological method to visualize the large bowel. It is our belief that the CCE could become an alternative to colonoscopy in a variety of indications. It might further relieve some of the burden that the colonoscopy units are experiencing since the introduction of bowel cancer screening. In collaboration with several partners, the center has intentions to investigate existing and new fields where the benefits of artificial Intelligence (AI) in picture analysis, ie colonoscopy and CCE, could be a part of a clinical solution. Main interest and primary aim is to develop more gentle and patient-friendly methods for gastrointestinal examination and “intelligent tools” for diagnostic purpose. The CICA Centre is actually not an integrated part of SATCC. It is an individual centre of excellence with research and development in areas of interest quite similar to the SATCC, and the centre is located in the same buildings and hosted by the same teams on a daily basis. The SATCC and the CICA already now experience a high level of synergism in all fields.

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## Activity 6: AI & polyp recognition

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In 2019 the SATC center, Maersk McKinny institute and Corporate Health developed further research and software development in computerized polyp detection and evaluation. Videos and pictures captured in the various cilinical trials are kept in a comprehensive database and serves to develop AI solutions for picture analysis. The aim is to develop a camera capsule which can characterize polyps by size, location, type of tissue and more to determine the risk associated with the polyp. Furthermore a standard evaluation of the huge amounts of information from the 50.000 pictures in a single CCE is both

time consuming and expensive when performed manually. Using AI for this procedure could reduce manpower, time and costs. The software will be used for both camera capsules endoscopy as well as conventional colonoscopy.

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## Activity 7: SATCC Research

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It has become increasingly difficult to distinguish between the research in our unit, which is SATCC research and which is not. We have previously defined SATCC research as research funded by the SATCC grant, but the external funding of our unit has increased significantly and has amounted to 11.5 mio DKK per year during the last two years. We have therefore redefined SATCC to include all research in the area of advanced adenomas and early cancers. More than 35 scientific papers have been published in the last two years within this area, two PhD students have submitted their theses for review, and further one student will do so within a few months. The SATCC acts as principal investigator and as a collaboration hub in a number of trials with a focus on early rectal cancer and significant polyps of the colon and rectum. The SATCC acts as a national catalyst in a growing area of early detection and organ preserving treatments of the colon and rectum.

The main area of research in the SATCC is dedicated to early detection and screening. Besides CCE other tracks are pursued to fulfill this purpose.

“DETECT” is a study testing the applicability of Dual Energy CT for stage assessment of rectal cancer. Dual energy CT is an advanced radiomic tool aiding the clinicians in tissue differentiation based on unique quantitative measurements. We are testing its accuracy in assessing lymph nodes and tumour regression grade after chemoradiation therapy for rectal cancer to establish a potential route of deferral from major surgery to local excision or an active surveillance based on complete tumour disappearance after chemoradiotherapy.

SATCC is a collaborator of the international watch and wait database, contributing to the very valuable data obtained for rectal cancer patients with a complete disappearance of their rectal cancer after chemoradiotherapy, the so-called “watch and wait” programme.

SATCC is the holder of a large database recording parameters for all local excisions of rectal tumours and endoscopic resections of colonic lesions. Data from the database has resulted in a number of publications and national guidelines to aid in the management of significant polyps and early colorectal cancers.

VORATES is a trial investigating the role of postoperative chemoradiotherapy for locally resected rectal cancers. Evidence is building towards a general ethos of rectal preservation instead of major resections

for early rectal cancers. VORATES is randomizing patients between postoperative chemoradiation and active surveillance of locally excised rectal cancer.

#### **Publications from SATCC 2021:**

##### [\[Colon capsuleendoscopy\].](#)

Bjørsum-Meyer T, Schelde-Olesen B, Koulaouzidis A, Nadimi ES, Baatrup G. Ugeskr Laeger. 2021 Aug 23;183(34):V12200976. PMID: 34477082 **Free article.** Review. Danish.

##### [Feature Point Tracking-Based Localization of Colon Capsule Endoscope.](#)

Herp J, Deding U, Buijs MM, Kroijer R, Baatrup G, Nadimi ES. Diagnostics (Basel). 2021 Jan 28;11(2):193. doi: 10.3390/diagnostics11020193. PMID: 33525715 **Free PMC article.**

##### [Scoring systems in clinical small-bowel capsule endoscopy: all you need to know!](#)

Rosa B, Margalit-Yehuda R, Gatt K, Sciberras M, Girelli C, Saurin JC, Valdivia PC, Cotter J, Eliakim R, Caprioli F, Baatrup G, Keuchel M, Ellul P, Toth E, Koulaouzidis A. Endosc Int Open. 2021 Jun;9(6):E802-E823. doi: 10.1055/a-1372-4051. Epub 2021 May 27. PMID: 34079861 **Free PMC article.** Review.

##### [Colon Capsule Endoscopy as a Diagnostic Adjunct in Patients with Symptoms from the Lower Gastrointestinal Tract.](#)

Bjørsum-Meyer T, Baatrup G, Koulaouzidis A. Diagnostics (Basel). 2021 Sep 13;11(9):1671. doi: 10.3390/diagnostics11091671. PMID: 34574011 **Free PMC article.**

##### [Patient outcomes: The only size that eventually matters in dealing with colonic neoplasia.](#)

Bjørsum-Meyer T, Koulaouzidis A, Baatrup G. Endosc Int Open. 2021 Nov 12;9(11):1843-1844. doi: 10.1055/a-1591-0593. eCollection 2021 Nov. PMID: 34790519 **Free PMC article.** No abstract available.

[Local excision after polypectomy for rectal polyp cancer: when is it worthwhile?](#) Jones HJS, Al-Najami I, Baatrup G, Cunningham C. Colorectal Dis. 2021 Apr;23(4):868-874. doi: 10.1111/codi.15480. Epub 2020 Dec 24. PMID: 33306264

[Colon capsule endoscopy as an entry level test under the right circumstances.](#) Bjørsum-Meyer T, Koulaouzidis A, Baatrup G. Colorectal Dis. 2021 Dec;23(12):3276-3277. doi: 10.1111/codi.15935. Epub 2021 Oct 9. PMID: 34601795 No abstract available.

[\[Lokal resektion af tidlige kolorektale cancer - og hvad gør vi så?\].](#) Baatrup G. Ugeskr Laeger. 2021 Jun 28;183(26):V205068. PMID: 34219640 **Free article.** Danish. No abstract available.

[Long-term Functional Urinary and Sexual Outcomes in Patients with Anorectal Malformations-A Systematic Review.](#) Bjoersum-Meyer T, Kaalby L, Lund L, Christensen P, Jakobsen MS, Baatrup G, Qvist N, Ellebaek M. Eur Urol Open Sci. 2021 Feb 3;25:29-38. doi: 10.1016/j.euros.2021.01.007. eCollection 2021 Mar. PMID: 34337501 **Free PMC article.** Review.

[Efficacy of bowel preparation regimens for colon capsule endoscopy: a systematic review and meta-analysis.](#) Bjoersum-Meyer T, Skonieczna-Zydecka K, Cortegoso Valdivia P, Stenfors I, Lyutakov I,

Rondonotti E, Pennazio M, Marlicz W, Baatrup G, Koulaouzidis A, Toth E. *Endosc Int Open*. 2021 Nov 12;9(11):E1658-E1673. doi: 10.1055/a-1529-5814. eCollection 2021 Nov. PMID: 34790528 **Free PMC article**. Review.

[Patient-Reported Outcomes and Preferences for Colon Capsule Endoscopy and Colonoscopy: A Systematic Review with Meta-Analysis](#). Deding U, Cortegoso Valdivia P, Koulaouzidis A, Baatrup G, Toth E, Spada C, Fernández-Urién I, Pennazio M, Bjørsum-Meyer T. *Diagnostics (Basel)*. 2021 Sep 20;11(9):1730. doi: 10.3390/diagnostics11091730. PMID: 34574071 **Free PMC article**. Review.

[EndoConf: real-time video consultation during endoscopy; telemedicine in endoscopy at its best](#). Deding U, Høgh A, Buch N, Koulaouzidis A, Baatrup G, Bjørsum-Meyer T. *Endosc Int Open*. 2021 Nov 12;9(11):E1847-E1851. doi: 10.1055/a-1548-1631. eCollection 2021 Nov. PMID: 34790555 **Free PMC article**.

[Effects of Screening Compliance on Long-term Reductions in All-Cause and Colorectal Cancer Mortality](#). Shaukat A, Kaalby L, Baatrup G, Kronborg O, Duval S, Shyne M, Mandel JS, Church TR. *Clin Gastroenterol Hepatol*. 2021 May;19(5):967-975.e2. doi: 10.1016/j.cgh.2020.06.019. Epub 2020 Jul 4. PMID: 32634624

[Erratum: Scoring systems in clinical small-bowel capsule endoscopy: all you need to know!](#) Rosa B, Margalit-Yehuda R, Gatt K, Sciberras M, Girelli C, Saurin JC, Cortegoso Valdivia P, Cotter J, Eliakim R, Caprioli F, Baatrup G, Keuchel M, Ellul P, Toth E, Koulaouzidis A. *Endosc Int Open*. 2021 Jun;9(6):C6. doi: 10.1055/a-1521-0901. Epub 2021 Jun 14. PMID: 34141864 **Free PMC article**.

[Colon capsule endoscopy in colorectal cancer screening: Interim analyses of randomized controlled trial CareForColon2015](#). Deding U, Bjørsum-Meyer T, Kaalby L, Kobaek-Larsen M, Thygesen MK, Madsen JB, Kroijer R, Baatrup G. *Endosc Int Open*. 2021 Nov 12;9(11):E1712-E1719. doi: 10.1055/a-1546-8727. eCollection 2021 Nov. PMID: 34790535 **Free PMC article**.

[Diagnostic accuracy of capsule endoscopy compared with colonoscopy for polyp detection: systematic review and meta-analyses](#). Kjølhede T, Ølholm AM, Kaalby L, Kidholm K, Qvist N, Baatrup G. *Endoscopy*. 2021 Jul;53(7):713-721. doi: 10.1055/a-1249-3938. Epub 2020 Aug 28. PMID: 32858753

[Local excision after \(near\) complete response of rectal cancer to neoadjuvant radiation: does it add value?](#) Jones HJS, Al-Najami I, Baatrup G, Cunningham C. *Int J Colorectal Dis*. 2021 May;36(5):1017-1022. doi: 10.1007/s00384-020-03813-6. Epub 2021 Jan 6. PMID: 33409564

[Risk of post colonoscopy colorectal cancer following screening colonoscopy with low-risk or no adenomas: A population-based study](#). Nielsen JC, Ploug M, Baatrup G, Kroijer R. *Colorectal Dis*. 2021 Nov;23(11):2932-2936. doi: 10.1111/codi.15886. Epub 2021 Sep 5. PMID: 34427981

[Magnetic resonance imaging of the anal sphincter and spine in patients with anorectal malformations after posterior sagittal anorectoplasty: a late follow-up cross-sectional study](#). Bjørsum-Meyer T, Christensen P, Baatrup G, Jakobsen MS, Asmussen J, Qvist N. *Pediatr Surg Int*. 2021 Jan;37(1):85-91. doi: 10.1007/s00383-020-04774-1. Epub 2020 Nov 3. PMID: 33141917

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## Activity 8: SATCC Database

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The database has primarily followed benign polyps and we have over time collected several thousand. We have now assessed that we cannot get further research value out of the numbers, therefore we continue the database exclusively with polyp cancer.

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## SATC Center Organisation

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SATCC is located in the House of Research (Forskningens Hus), Department of Surgery, OUH Svendborg Hospital, Baagøes Allé 15, entrance 41, 5700 Svendborg, Denmark.

### **Department of Surgery Management**

Executive Consultant Claus Christian Vinther

Head Nurse Susanne Barren

### **SATCC Secretariat**

Professor Gunnar Baatrup, Director of Research

Consultant Niels Buch, Head of clinical development / courses

Education Secretary & Communication Lene von Fintel Sostack

Staff Doctor Anders Høgh

Project Nurse Christina Petersen

Student Assistant Sofie Sajan

Student Assistant Karoline Kjøller

Student Assistant Ola Selnes

Student Assistant Emma Tubæk

Student Assistant Camilla Nielsen

Student Assistant Lea Østergaard

### **External faculty members**

External faculty members are employed by the SATCC in order to benefit from sparring and assistance on an international top level in advanced adenomas and early cancers. Together with the other employees in the SATCC, the advisors' primary task is to ensure the high professional quality in the provided courses, as well as to give presentations. The advisors are experts in their respective fields.

#### Senior Advisors:

Senior Consultant Søren Meisner  
Professor Neil Borley, Cheltenham General Hospital, UK  
Professor Deirdre McNamara, Trinity College, Dublin.

#### Advisors:

Radiologist Søren Rafaelsen, Vejle Hospital  
Professor Ismail Gögenur, Zealand University Hospital.

#### Regional Working Group

A regional working group, consisting of specialist doctors from each of the specialist units in the region's hospitals, has been formed. The working group's task is to pave the way for regional prioritization and coordination of the center activities, including the preparation of education programmes/concepts.

Executive Consultant Claus Christian Vinther lead the working group, which is assisted by the secretariat.

#### Advisory Board

The Advisory Board provides advice and sparring on visions, strategies, and professional matters within the core area. Members of the Advisory Board:

Claus Duedal Pedersen, Chief Consultant, Dept. of Clinical Development, OUH University Hospital, Svendborg Hospital.

Birger Endreseth, Trondheim, Surgical Clinic, St. Olav's Hospital, Norway.

Deidre Mc Namara, Associate Professor, Head of dept. Clinical Medicine, Tallaght Hospital, Trinity College Dublin.

Professor Regina Beets-Tan, Dept. of Radiology, The Netherlands Cancer Institute, Amsterdam.