wtz
west german
cancer center consortium

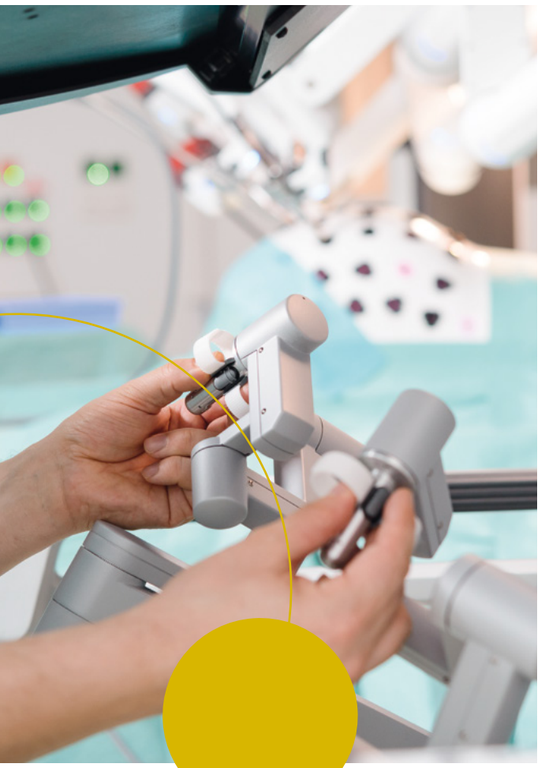
A Dynamic Network

Annual Report 2021

UKM
Universitätsklinikum
Münster

University Medicine Essen

Excellent



Personal

Innovative

Dr. Stefan Palm
General Manager
WTZ Essen

Prof. Philipp Lenz
General Manager
WTZ Network Partner Münster

Dear Reader,

Since early 2021 the Westdeutsches Tumorzentrum (West German Cancer Center, WTZ) Consortium has been an Oncology Center of Excellence, receiving funding from the Deutsche Krebshilfe (German Cancer Aid). As partners in Essen and Münster we have used the time to continue growing together and to progress the development of our network.

The Covid-19 pandemic continues to place restrictions on our daily lives, influencing our clinical activity. During the pandemic, people did not come for cancer screening as much as they normally did – often due to concerns regarding infection. This is just one of the challenges which we as an Oncology Center of Excellence are facing up to. In this connection, one thing we have done is to invest in expanding our collaborations. An overview of our supraregional network can be found on page 9. The continuous expansion of our network means that even more patients can have access to first-rate cancer medicine as close to their home as possible.

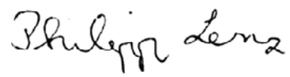
In addition, we are strengthening our profile even more in the WTZ Network with the certification of our Haemato-Oncological Centers, the Center for Familial Breast and Ovarian Cancer (FBREK) and the Paediatric Clinic (see page 18 f.). For the treatment of complex entities such as lung or brain tumours (see pages 12 ff. and 26 ff.), our focus is on top-quality networked, multimodal care. Patients who entrust themselves to the care of WTZ can rely on the fact that, with our expertise, we can jointly offer them innovative, promising options for treatment. We use state-of-the-art surgical procedures which are constantly being refined at our centers (see page 40 ff.). With our research activities we are shaping medicine for the future, guaranteeing our patients at all times care in line with the latest standards (see page 44 f.).

However, it is not only through our research that we are shaping the future of oncology. We are especially interested in training future care professionals specialising in oncology (see page 32 f.). Close collaboration with self-help groups also plays a very important role for us. To this end, we have created within the WTZ Network new positions for dedicated contacts (see page 34 f.). As any diagnosis of cancer always affects all the family, too, it is also important for us to enable intensive psychosocial support to be available. In this respect, WTZ pays particular regard to children and young adults (see page 36 ff.).

This annual report aims to provide testimony of how we as WTZ Consortium are shaping first-rate cancer medicine for the future – for the best possible care for our patients.

We do hope you enjoy reading the report!

Dr. Stefan Palm
General Manager, WTZ Essen



Prof. Philipp Lenz
General Manager, WTZ Network Partner Münster

An exemplary pioneering role

Deutsche Krebshilfe provides more than four million euros in funding for the Westdeutsches Tumorzentrum (WTZ) Network as an Oncology Center of Excellence

All cancer patients in Germany should have access to the best possible diagnostics and to state-of-the-art treatment. This is the declared aim of the Oncology Center of Excellence funding programme run by Deutsche Krebshilfe (DKH). The funding approval for WTZ in February 2021 not only confirms how dynamic and productive the work jointly undertaken by the two partners in Essen and Münster has been since they joined forces in October 2019. The award is also a motivating confirmation of the aims the WTZ Network has set itself: to advance the development of cancer medicine and to provide the best possible care for patients in the Ruhr region and in Westphalia.

For the first time, the WTZ partners in Essen and Münster had applied jointly to be awarded the title of "Oncology Center of Excellence" – and were able to completely convince the experienced, international team of experts from DKH. The fact that WTZ has taken on an exemplary, pioneering role as regards collaboration between cancer centers was singled out for particular praise after the intensive scrutiny undertaken by the experts.

The award of the title entails funding totalling 4.2 million euros over four years. For Prof. Annalen Bleckmann, Director of the WTZ Network Partner Münster, it means that a new phase of collaboration has begun in the Network. "Before we submitted our application," she says, "we made enormous efforts to build up the infrastructure of the collaboration between our clinics. The award has enabled us to focus on starting to put specific projects into practice."

The close networking between the two locations has also benefited, says Bleckmann: "Every week, with our Molecular Tumourboard we sit down together in a virtual meeting with the colleagues in Essen and Münster and discuss specific cases – cases relating not only to patients from both university hospitals, but also to patients from the WTZ Outreach Network and from surgeries and referring hospitals. This means that in the meantime our visibility has increased outside our region."

Prof. Dirk Schadendorf, Director of WTZ Essen, sees in this a good example of successful digital networking within the WTZ Network. "We are constantly endeavouring to benefit even more from one another digitally and, in the process, also integrate the partners in our Outreach Network," he explains. The Molecular Tumourboard – a virtual event – is for him an "initial component" in the strategy of turning the expertise present at both locations into something long-lasting and sustainable on a broad basis.

> *"The award was an enormous boost for the whole team's motivation"*
>
> **Prof. Annalen Bleckmann,**
> Director of WTZ Münster

A boost for the entire network

The funding money has already been used to finance numerous structural measures within the WTZ Network. Additional jobs were also created – for example in the area of psycho-oncological care, which is especially important for patients.

For the WTZ Board of Directors, however, there is another important aspect – besides the financial support – which the award entails which is paramount. "The conclusions of the team of experts, and the positive feedback it contained, were a strong boost to our motivation. Within our institutions the success made one thing very clear: together we are strong!" says Schadendorf. In the same way, Bleckmann speaks of an enormous boost for the entire team: "The award represents the positive fruits of our labours together, demonstrating not only how well everything functions in our everyday work – but also, in particular, the benefit which our patients have from it."

> *"As an Oncology Center of Excellence we are steering the right course, as far as communication and co-operation are concerned, for continuing to advance our projects."*
>
> **Prof. Dirk Schadendorf,**
> Director of WTZ Essen

For Schadendorf, this emphasis on patients' well-being is expressed for example in the newly established Patients Advisory Committee, which advises WTZ on the strategic alignment of various WTZ projects, continuing education, training programmes and other initiatives. It also makes an active contribution to research projects and political bodies, thus drawing attention to the viewpoints of patients and non-medical people.

"As regards content," says Schadendorf, "it is about specific strategic considerations and discussions in which we want to actively involve patients' representatives. The issues of patient orientation and patient involvement within WTZ have shown a gratifying and dynamic development over the past two years." This is an aspect which also played an important role in the DKH team of experts' deliberations – because the focus on patients' well-being is a key qualification for inclusion in the Oncology Centers of Excellence Network.

Structures shaping the future

The positive effects of the award can be felt in many places in the work of the WTZ Network, Beckmann explains, opening up new perspectives to the alliance partners for their continued collaboration. “Interfaces with other projects have opened up both in patient involvement and in the personalisation of medicine, and everyone involved can use the fantastic infrastructure which we have built up with the financial support of the Oncology Center of Excellence,” she says.

It is for this reason that the great value of the DKH funding is not so much in gaining a prestigious award, Schadendorf points out. “We have created a structure with a sustainable content. This provides us with a solid basis for taking the next steps successfully together.”

“The positive assessment shows that by merging with Münster we have taken the right course and significantly expanded the scope of what we can do.”

Prof. Jochen A. Werner,
Medical Director of University Medicine Essen

“The funding enables us to continuously improve the quality of cancer medicine together.”

Prof. Hugo Van Aken,
Medical Director of University Hospital Münster

Focus on patients: the Oncology Center of Excellence Network

The programme to fund and initiate Oncology Centers of Excellence in Germany was set up by DKH in 2007. The aim is to contribute to patients being able to receive state-of-the-art medical care, in line with the latest oncological expertise, right across the country. Setting an example are the Comprehensive Cancer Centers in the USA. An international team of experts defines for DKH those centers which are qualified to be included in the Oncology Center of Excellence Network. To qualify, they have to meet a very wide range of requirements and, for example, continue to develop their care structures and processes, cooperate closely with surrounding hospitals and doctors, and advance cancer medicine through innovative oncological research.

The focus of all activities in Oncology Centers of Excellence is always on the patients. Right from the very first contact, staff at the central contact points help patients to find their way. During the entire treatment, patients receive the best possible support. To this end, the Centers bring together, under one roof, experts on numerous different types of tumour. In tumour conferences, treatment plans are drawn up and tailored to each individual patient. Cancer treatment is carried out in line with the very latest scientific knowledge and state-of-the-art standards. Currently, DKH provides funding for 13 Centers of Excellence. So far, it has invested 127 million euros – money donated by the public – in the funding programme.

More information at:
krebshilfe.de/helfen/rat-hilfe/onkologische-spitzenzentren

Subsidiaries and cooperation partners (selection, as at: December 2021)

WTZ CONSORTIUM Essen, Münster
NOE – NETWORK OF EXCELLENCE IN CANCER MEDICINE
North Rhine-Westphalia Essen, Münster, Cologne, Düsseldorf, Bonn, Aachen
CCCE – Cancer Research Center Cologne Essen
DKTK PARTNER SITE DÜSSELDORF/ESSEN
CIO ABCD – Centrum für Integrierte Onkologie Aachen Bonn Köln Düsseldorf

SUBSIDIARIES OF UNIVERSITY MEDICINE ESSEN

Essen: Herzzentrum Essen-Huttrop gGmbH,
Ruhrlandklinik/Westdeutsches Lungenzentrum am Universitätsklinikum Essen gGmbH,
St. Josef Krankenhaus Essen-Werden GmbH,
Westdeutsches Protonentherapiezentrum Essen (WPE) gGmbH

REGIONAL COOPERATION PARTNERS WTZ ESSEN

Bielefeld: Evangelisches Klinikum Bethel
Cologne: Universitätsklinikum Köln
Dortmund: St.-Johannes-Hospital, MVZ Prof. Dr. Uhlenbrock GmbH
Duisburg: Helios Klinikum Duisburg
Essen: Elisabeth-Krankenhaus,
St. Josef-Krankenhaus Kupferdreh, Philippusstift
Kamp-Lintfort: St. Bernhard-Hospital Kamp-Lintfort
Krefeld: Helios Klinikum Krefeld GmbH,
Kinderonkologisches Zentrum
Mülheim an der Ruhr: Evangelisches Krankenhaus Mülheim an der Ruhr GmbH
Münster: Universitätsklinikum Münster
Recklinghausen: Klinikum Vest GmbH
Volmarstein: Orthopädische Klinik Volmarstein
Wuppertal: Agaplesion Bethesda Krankenhaus Wuppertal gGmbH

Barcelona, Spain: Vall d’Hebron Institute of Oncology
Bremen: Klinikum Bremen Mitte
Halle: Universitätsklinikum Halle, Kinderonkologisches Zentrum
Mannheim: Universitätsklinikum Mannheim GmbH,
Kinderonkologisches Zentrum Mannheim
Oldenburg: Klinikum Oldenburg

SUBSIDIARIES IN MEDICAL CARE UNIVERSITY HOSPITAL MÜNSTER

Steinfurt: UKM Marienhospital Steinfurt GmbH

REGIONAL COOPERATION PARTNERS WTZ MÜNSTER

Arnsberg: Klinikum Hochsauerland GmbH
Coesfeld: Dermatologische Gemeinschaftspraxis Coesfeld (Dr. Pappai und Prof. Schiller)
Essen: Universitätsmedizin Essen
Gütersloh: Onkologisches Zentrum am Klinikum Gütersloh
Münster: End- und Dickdarmzentrum Münster (Dr. Kemmerling, Dr. Tübergen, Dr. Pisek),
Gastroenterologische Gemeinschaftspraxis am Germania-Campus (Dr. Schweitzer, Dr. Holtkamp-Endemann, Dr. Linnepe, Dr. Schmedt, Niehues),
Hämato-Onkologisches Zentrum am Clemenshospital,
Krebsberatungsstelle Münster,
Palliativnetz Münster gGmbH,
Praxis für Innere Medizin (Dr. Fechtrup, Prof. Willeke, Prof. Bettenworth, Dr. Paulus),
St. Franziskus-Hospital GmbH Münster,
Zentrale Dysplasiekonferenz Münster (ZDM)
Rheine: Gemeinschaftspraxis für Internistische Onkologie und Hämatologie (Dr. Innig, Dr. Berning, Dr. Berkemeier, Domine-Rensen)
Soest: MVZ Labor für Cytopathologie Dr. Steinberg GmbH

Munich: Klinikum der Universität München,
Campus Großhadern – Hyperthermie Zentrum

Directorates

WTZ Essen

Prof. Dirk Schadendorf
Director

Prof. Martin Schuler
Deputy Director and CCCE Representative in the Directorate

Prof. Jens Siveke
Deputy Director and Scientific Director

Prof. Uta Dirksen
Vice-Director

Prof. Boris Hadaschik
Vice-Director

Bernadette Hosters MScN, B.A.
Vice-Director

Prof. Verena Jendrossek
Vice-Director

Prof. Jens Kleesiek
Vice-Director

Prof. Tienush Rassaf
Vice-Director

Prof. Christian Reinhardt
Vice-Director

Prof. Martin Teufel
Vice-Director

Dr. Stefan Palm
General Manager

WTZ Network Partner Münster

Prof. Annalen Bleckmann
Director

Prof. Andreas Pascher
Deputy Director

Prof. Georg Lenz
Scientific Director

Prof. Martin Bögemann
Vice-Director

Prof. Hans Th. Eich
Vice-Director

Prof. Michael Schäfers
Vice-Director

Prof. Eva Wardelmann
Vice-Director

Prof. Philipp Lenz
General Manager

Directorates WTZ Network

Pooling expertise – improving chances

Treating lung cancer in the WTZ Network: excellent know-how and new perspectives for patients

One important focus in the WTZ Network is the treatment of lung cancer, which around 50,000 people in Germany fall ill to every year. In many cases the forecast is bad and treatment is complex – often because symptoms often only occur at an advanced stage and so people tend to seek treatment late. In order to provide patients with the best possible diagnosis and options for treatment, the lung cancer centers in the WTZ Network pool the competences of experts from a variety of disciplines and clinics. This opens up the prospect of innovative types of treatment for patients.

"The treatment of lung cancer has developed enormously over the past few years," says Prof. Martin Stuschke, Director of the Radiotherapy Clinic at University Hospital Essen and medical spokesperson for the Lung Cancer Center at WTZ in Essen. Here, two locations of University Hospital Essen join forces with specialists for Interventional Bronchology and Thoracic Surgery at Ruhrland Hospital and for Oncology, Radiotherapy, Radiology and Pathology at University Hospital Essen. "One of the things we focus on is multimodal treatment – the best possible combination of operation, radiation and chemotherapy and immunotherapy. This enables us to make significant progress in treatment nowadays," says Stuschke.

"In the case of lung cancer we can offer the complete range of possible treatments, going beyond what is standard – from early detection and treatment at an early stage to individually tailored concepts for treatment," adds Prof. Clemens Aigner, Director of the Clinic for Thoracic Surgery and Thoracic Endoscopy at Ruhrland Hospital.

An important part is played by a very wide range of experts and clinics in the WTZ Network, collaborating across locations and disciplines. This benefits lung cancer patients, as Prof. Annalen Bleckmann, an oncologist and Director of the WTZ Network Partner Münster, emphasises. "Colleagues in Molecular Pathology, for example, play a large part in our interdisciplinary collaboration," she says. "By characterising cancer cells not only histologically but also molecularly, we can perfectly match the treatment to the patient." This is because the great progress made in the last few years in genetics and immunology have made it possible today to offer innovative, highly individualized treatments – known as "personalised medicine" – which improve patients' chances, even at an advanced stage of the illness.

"For lung cancer patients, innovative studies from the WTZ Network are opening up access to entirely new forms of treatment," says Prof. Martin Schuler, Director of the Internal Medicine Clinic (Tumour Research) at University Hospital Essen and Deputy Director of WTZ Essen. What is involved, he explains, is a molecular genetic analysis of the properties of a tumour – not only before treatment starts but also during treatment, for research purposes. In "personalised cancer medicine", there is a highly sensitive distinction between cancer cells and normal body cells, for example as a result of "construction defects" in the protein structure. Based on an exact characterisation of the tumour at the molecular level, the treatment can then be accurately tailored to match.

Sotorasib study

New impulses from cancer research

2021 saw great progress in medication therapy for cancer patients. Promising results were published involving the active substance sotorasib for treating a special form of lung cancer for which there had previously been no specific form of treatment. Sotorasib acts in the case of tumours which have a particular genetic mutation of the KRAS gene, occurring in 25 to 30 per cent of patients, and shows an early and lasting positive effect in such cases. One of the authors of the study, which was published in the New England Journal of Medicine was oncologist Martin Schuler.

"The results of the study and the successes in treatment represent a breakthrough in cancer medicine. Once again, we have succeeded in combining, on the one hand, healthcare involving specific forms of treatment and tailored therapy with, on the other, internationally visible cancer research to the benefit of patients," says Schuler. A joint study platform is currently being created with the aim of further expanding networking within WTZ at research level, adds Annalen Bleckmann. "The platform enables everyone involved in Essen and Münster to see which studies are being carried out at the different locations. This means that specific colleagues can be contacted and brought in when, for example, a patient matches the profile in the study."

Martin Stuschke, too, sees enormous benefits here. "A network such as the WTZ is an excellent basis for creating a complementary profile in order to display the variety of laboratory investigations for everyone to use. Also, a lot of study projects are initiated directly by, and under the leadership of, researchers at the lung cancer centers at WTZ specialist clinics, because we want to systematically investigate new approaches," Stuschke adds. "In 2021 these involved multicentric studies such as NEOpredict Lung, ESPADURVA and PEESURST. These are special projects because they were conceived at the locations, as a result of the collaborative work they carry out."

NEOpredictLung study

ESPADURVA study

PEESURST study

Prof. Clemens Aigner, Director of the Clinic for Thoracic Surgery and Thoracic Endoscopy at Ruhrland Hospital

“State-of-the-art” treatment options – technical and scientific

In radiation therapy, too, there are positive effects resulting from successes with other forms of treatment for lung cancer. “The improved efficacy of medication therapy enables us to treat cancer with lower volumes of radiation and more effectively,” Stuschke explains. Also in combination with thoracic surgery – an area which is very well developed in the WTZ Network – all the necessary technologies, including minimally invasive surgery and robotics, are firmly established here. In diagnostics, both in Essen and in Münster, navigated bronchoscopy is also used.

“We have a lot more options for treatment than we had just a few years ago,” says Dr. Michael Mohr, Head of Pneumology at Medical Clinic A at University Hospital Münster. “Thanks to collaboration in the Network, we can pool the competences of the experts working in all the specialist disciplines involved and thus offer our patients individual solutions. As a result, patients today have better long-term prospects. Even in the case of a relapse, there are promising alternative treatments, he adds.

It is in such cases in particular that the experience which a large lung cancer center and network has comes into play, says Prof. Kaid Darwiche, Head of the Bronchoscopy Department at the Pneumology Clinic in Essen. Through a combination of different forms of treatment, patients today get a second and a third long-term chance. In such cases, even more experience and expertise is necessary than in the initial therapy – and in the WTZ Network both are comprehensively available.

Germany’s first Lung Cancer Center with a certified mesothelioma unit at WTZ Essen

In 2021, the mesothelioma unit at WTZ Essen’s Lung Cancer Center was the first to be certified in Germany by the DKG (German Cancer Society). The cause of malignant mesothelioma is primarily contact with asbestos and, with around 20 diagnoses per year per million inhabitants, it is a relatively rare occurrence. This type of tumour is a complex one to diagnose and to treat – which makes it all the more important to pool expertise in centers. Over the past few years the Lung Cancer Center has already established a special focus for the treatment of patients with mesothelioma. This high standard of treatment is something that DKG highlighted and acknowledged in particular.

The new Cooperative Lung Cancer Center at WTZ Münster

Specialists from University Hospital Münster and St. Franziskus Hospital are engaged in interdisciplinary collaboration in the Cooperative Lung Cancer Center Münster, set up in 2021, in order to provide patients with access to first-rate medicine in all areas. The cooperation makes possible not only innovative structures and processes, but also an improved coordination of individual treatment and therapy options, which patients benefit from directly. For individual cases, physicians from all relevant fields can be involved in a fast and uncomplicated way. The overarching WTZ Network also enables a supraregional exchange of expertise.

Dr. Michael Mohr, Head of Pneumology at Medical Clinic A at University Hospital Münster.

Many more options for treatment

The North-West German Abdominal Center at University Hospital Münster

The complete range of benign and malignant diseases of the abdomen are treated at the North-West German Abdominal Center at University Hospital Münster. A member of the WTZ Network, the Center offers modern therapies and gentle surgical techniques in line with the highest level of scientific and clinical knowledge.

The dedicated, highly qualified team at the North-West German Abdominal Center is headed by Prof. Andreas Pascher, Director of the Surgical Clinic at University Hospital Münster and Deputy Director of the WTZ Network Partner Münster. For Pascher, the interdisciplinary collaboration and networking between experts from a variety of disciplines plays a decisive role in developing the correct individualised course of treatment for patients.

"The treatment of cancer in the abdominal region is often very complex," Pascher explains, "and this means that it is particularly important that all the doctors from different disciplines who are involved in the treatment should be able to communicate in a fast, uncomplicated way in order to discuss the various options for treatment – and not only within specialised centers, but also with doctors' surgeries in the respective regions."

The North-West German Abdominal Center also includes the Visceral Oncology Center at University Hospital Münster which specialises in the treatment of tumour diseases in the digestive system, the liver, the bile duct and gall bladder, the pancreas and the diaphragm. This means that a wide range of expertise and forms of treatment are available to patients, as Pascher emphasises.

Prof. Andreas Pascher
Director of the Surgical Clinic at University Hospital Münster and Deputy Director of the WTZ Network Partner Münster

"With 200 to 250 cases of robotic surgery every year, we are among the top three cancer treatment centers in Germany in this field."

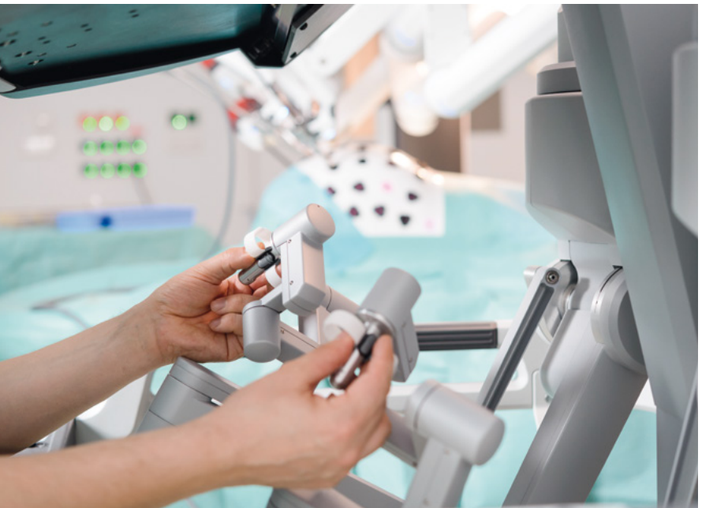
Extremely precise surgery thanks to latest-generation robots used in operations

In the North-West German Abdominal Center, specialised interdisciplinary teams undertake their work using state-of-the-art technology and applying the latest methods to enable the best possible tailored treatment to be provided for patients. "Especially cancer at an advanced stage requires comprehensive multimodal treatment, and therefore belongs in very experienced hands," says Pascher. Technically demanding robot-assisted operations are carried out for so-called "keyhole surgery".

Since early 2021, surgeons at University Hospital Münster have been able to use a new system. "The new da Vinci Xi® is a surgical robot of what is now the fourth generation and it provides us with an even better view of the operating area. Accordingly, we can work even more accurately, and with practically no loss of blood," says Dr. Jens Peter Hölzen, Head of Robotic Surgery at the Visceral and Transplant Surgery Clinic at Münster University Hospital.

Hölzen alone has already performed more than 500 robot-assisted operations – one of the few surgeons in Germany to have done so – and 100 of these have been for oesophageal cancer. Along with surgery on tumours of the liver and the pancreas, this is what the clinic with the robotics center specialises in. "With 200 to 250 cases of robotic surgery every year, we are among the top three cancer treatment centers in Germany in this field," says Pascher. He plans to considerably extend the range of robotic operations at his clinic. "We will have the opportunity to offer an even wider range of cancer treatment."

"Thanks to the scientific and technical progress that has been made, we can today offer significantly more options for treatment. In addition, new surgical methods are extremely precise, safe and particularly gentle," Pascher explains. And patients have a direct benefit: "The advantages are fewer complications, less postoperative pain and as broad a maintenance of bodily functions as possible. Our aim is to improve the chances of recovery and, at the same time, increase patients' quality of life.



North-West German Abdominal Center

Newly certified in the WTZ Network

First certification for the Center for Haematological Neoplasia (University Hospital Essen)

In early 2021, the Center for Haematological Neoplasia at WTZ Essen received its first certification from the German Cancer Society (DKG). The Center is located at the Clinic for Haematology and Stem Cell Transplants at University Medicine Essen and is represented by Dr. Bastian von Tresckow, Deputy Director of the Clinic, and Dr. Christine Hanoun, Center Coordinator. “DKG also assesses how well we look after patients – not only the medical care, but also the psychosocial and psycho-oncological care. To that extent, the certification is a great success and an important advertisement for our clinic,” says a delighted Christine Hanoun. It means that patients can rely on what has been certified as “very good care by nursing staff and doctors,” she adds. One important aspect for the certification was also the close contact with self-help groups. Through this contact, the Center for Haematological Neoplasia provides additional support for patients.

First certification for the Haemato-Oncological Center (University Hospital Münster)

In the Haemato-Oncological Center at University Hospital Münster, patients with malignant diseases of the haematopoietic system are treated at the topmost university level. The Center is part of the WTZ Network Partner Münster and received its first certification from DKG in 2021. The focuses for treatment lie in the area of acute leukaemias, aggressive lymphomas and autologous and allogeneic stem cell transplants. The Haemato-Oncological Center is also among the first in Germany to use the new and promising CAR-T cell therapy as an option for treatment. “This certification by DKG provides important evidence for patients that we meet the high quality and safety standards for carrying out the most up-to-date therapies and producing innovative studies,” says Prof. Christoph Schliemann, Head of the Center.

First certification for Mesothelioma Unit at the Lung Cancer Center (University Medicine Essen)

The mesothelioma unit at the Lung Cancer Center of University Medicine Essen, WTZ Essen and Ruhrland Hospital was certified by DKG in 2021 – the first in Germany (more on page 14 f.).

Certification of the Center for Familial Breast and Ovarian Cancer (University Hospital Münster)

The Center for Familial Breast and Ovarian Cancer (FBREK Center) at University Hospital Münster was audited in 2021 by OnkoZert, on behalf of DKG, and successfully certified. At the Center, a team of specialists – from, among others, the Human Genetics Department, the Gynaecological Cancer Center, the Breast Center, Radiology, Pathology and Psychosomatics – look after families in which there is suspected hereditary breast or ovarian cancer. “We worked towards the certification for around a year; it is an important milestone for the Oncology Center in Münster,” says human geneticist Dr. Ulrike Siebers-Renelt, who coordinated the process with Dr. Isabel Radke from the Breast Center at Münster University Hospital. Prof. Annalen Bleckmann, Director of the WTZ Network Partner Münster, is delighted at the success. “We are very glad to have the certified FBREK Center as a further organ-specific center under the umbrella of WTZ,” she says.

ERN PaedCan certification for Paediatric Clinic III (University Medicine Essen)

Paediatric Clinic III at University Medicine Essen was certified by the ERN PaedCan (European Reference Network for Paediatric Cancer) in 2021. The European Reference Networks are an EU initiative which promotes cooperation between national health systems in the interest of patients. “In submitting our application, we included our entire range of treatments in paediatric oncology. The application was then not only approved, we were also selected for an audit,” explains Prof. Uta Dirksen, Deputy Director of Paediatric Clinic III. The Clinic passed the audit with flying colours. “The auditors were deeply impressed by the structures which we have built up here, and they are suggesting that they should be adopted for other European centers,” Dirksen adds.

The future of personalised cancer medicine

Funding from North Rhine-Westphalia for new researchers in the Cancer Research Center Cologne Essen – CCCE

With this funding from the state of North Rhine-Westphalia (NRW), we can effectively pool the structures of our two first-rate cancer centers in Essen and Cologne in the CCCE, in what is so far a unique form, in order to establish an NRW-wide network of cancer research close to patient care."

Prof. Martin Schuler,
Deputy Director WTZ and CCCE
Representative in the WTZ Directorate

Since 2018, the West German Tumour Center (WTZ) at University Hospital Essen and the Center for Integrated Oncology (CIO) at Cologne University Hospital have been pooling their expertise in the Cancer Research Center Cologne Essen – CCCE. As part of the funding being provided by the state of North Rhine-Westphalia for the CCCE, and in line with the state-wide establishment of an "Excellence Network for Cancer Medicine", four professorships and six junior researchers groups were set up in Essen and Cologne to advance patient-oriented research in the field of personalised cancer treatment.

The new researchers in Essen are working in the fields of "Medical Data Sciences in Oncology", "Translational Image-Guided Oncology" and "Trustworthy Machine Learning".

As Prof. Martin Schuler, Deputy Director of WTZ Essen and Director of the Internal Medicine Clinic (Tumour Research) at University Medicine Essen, explains: "With this funding from the state of North Rhine-Westphalia (NRW), we can effectively pool the structures of our two first-rate cancer centers in Essen and Cologne in the CCCE, in what is so far a unique form, in order to establish an NRW-wide network of cancer research close to patient care. The new professorships and junior researchers groups strengthen the already close, interdisciplinary collaboration that we have, especially in the fields of data sciences and immunological cancer treatment. The aim is for results to benefit cancer patients directly and improve even further what is already an excellent system of care with personalised diagnoses and therapies."

Dr. Jörg Schlötterer heads the new junior researchers group "Knowledge Extraction and Integration" at the Essen campus. The group aims to promote the exchange of knowledge – not only between models of machine learning, but also between people and machine learning models. One of the issues involved is how relevant data can be extracted from unstructured sources – for example, patients' files – and prepared for use. The work done by Schlötterer and his team supports the research being done by Prof. Christin Seifert in Essen. Seifert, who is Professor of Medical Data Sciences in Oncology, enhances the CCCE with her research group "Multimodal Computing & Machine Intelligence (MCMI)" at the Institute for Artificial Intelligence in Medicine (IKIM).

The junior researchers group "AI-guided Therapies" is headed by Dr. Jan Egger on the Essen campus. Its aim is to use artificial intelligence (AI) to develop innovative methods for analysing medical data and image material. These methods are then designed to be used for therapeutic applications and surgical treatment supported by augmented reality and virtual reality. The junior researchers group works under Prof. Jens Kleesiek, who, since August 2020, has been augmenting the CCCE team in Essen as Professor of Translational Image-Guided Oncology; he also heads the Medical Machine Learning field of research at IKIM.

In order to strengthen networking with other university medicine locations in NRW, a third CCCE University Medicine Essen junior researchers group was set up at the Faculty of Computer Science at Bochum University. The "Trustworthy Machine Learning" group, headed by Dr. Michael Kamp, is developing trustworthy and data-protection-compatible methods of machine learning for applications in healthcare. To this end, theoretical bases of deep learning are used and examined, as is the collaborative training of explainable models.

In September 2020, as part of a National Decade against Cancer, the CCCE was nominated as a new location for the National Center for Tumour Diseases (NCT), and in this context the CCCE, with its new researchers, is extremely well-positioned for the future. "A central feature of 2021 was the drawing-up of a joint concept for all new locations selected for the expansion of the NCT, as well as for the Heidelberg and Dresden locations and the German Cancer Research Center (DKFZ). The fields in which our highly specialised researchers work point the way for our common alignment and our endeavours to make our mark among national and international competitors for the future of personalised cancer medicine," says Schuler.

ccce.nrw

Selected funding in the WTZ Network

German Cancer Aid (DKH) funds the WTZ Network

In an assessment carried out by an experienced team of experts, the West German Tumour Center (WTZ) was able to completely convince the team. As a result, it was jointly declared an Oncology Center of Excellence by DKH for the first time. WTZ, which was established as a Comprehensive Cancer Center at University Medicine Essen in 2007, was extended in autumn 2019 by a network partnership with University Hospital Münster (UKM). The DKH award, for which Essen and Münster had, for the first time, submitted a joint application, entails an approval of funding amounting to a total of 4.2 million euros over four years (see page 6 ff.).

Making individualised methods of treatment accessible nationwide

One aspect of the Innovation Fund of the Federal Joint Committee (Gemeinsamer Bundesauschuss, G-BA) is the expansion of personalised medicine. In the field of oncology in particular, it can open up new treatment methods and continuously improve therapies if an illness is complex or advanced. The aim, working together with the national university cancer centers – the Comprehensive Cancer Centers (CCCs) – is to pool competences nationally in a German Network for Personalised Medicine (DNPM). Common standards, the establishment and expansion of a Molecular Tumourboard and a joint database will supply new insights regarding the continued development of personalised medicine. The project is being funded to the tune of around 21 million euros for 41 months, and the consortium partners will include Essen and University Hospital Münsters.

ToSyMa study on breast cancer screening

The German Research Foundation (DFG) is providing more than 1.6 million euros up to 2025 for the continuation and expansion of the so-called ToSyMa study. This research project, which is being undertaken at University Hospital Münster, is one of the largest studies worldwide on digital imaging techniques for the early detection of breast cancer and how they affect the efficacy of mammography screening. The DFG is thus supporting the aim of assessing the chances of a changed approach to detecting breast cancer. In the ToSyMa study, an interdisciplinary team at the University of Münster examines whether the further technical development of digital mammography to produce images in sections (digital breast tomosynthesis) advances the current standard in screening processes – which is a two-dimensional mammographic examination of the breast. As Prof. Walter Heindel, Director of the Radiology Clinic and Head of the Mammography Reference Center at University Hospital Münster – who also led the study – says, the further development of digital mammography to breast tomosynthesis offers a technology which “reduces potential tissue overlays in the breast by computing 3D data sets, thus producing diagnostic benefits.”

Research on dangerous breast cancer sub-type

The so-called “triple-negative breast cancer” is a subtype of the cancer which displays a high level of resistance to therapy. In a project at the Radiotherapy and Radiation Oncology Clinic at University Hospital Münster, researchers are searching for ways of making these tumour cells more amenable to radiotherapy. The Else Kröner-Fresenius Foundation (EKFS) is providing 200,000 euros of funding for the two-year project.

SATURN3 research network

The aim of the research network entitled SATURN3 (Spatial and Temporal Resolution of Intratumoural Heterogeneity in Three Hard-to-Treat Cancers) is to discover the molecular causes of therapy resistance in pancreatic, breast and bowel cancer. The objective is to find new ways of preventing such resistance and to overcome it through more efficient treatments. SATURN3 is being coordinated by researchers at the German Consortium for Translational Cancer Research (DKTK), WTZ Essen, the stem cell institute HI-STEM, the German Cancer Research Center (DKFZ) and the Technical University of Munich. The German Ministry of Education and Research (BMBF) is providing funding of more than 15 million euros over five years, as part of the National Decade against Cancer.

Medical Scientist Academy

In 2021, the Else Kröner-Fresenius Foundation (EKFS) provided first-time support for academies for natural scientists in the field of medicine (medical scientists). One of the two newly set-up Else Kröner academies is the University Medicine Essen Medical Scientist Academy at University Hospital Essen. At the academy, the scientific and clinical resources of WTZ Essen are being used to discover new markers for tumour diseases and to identify treatment methods. The funding amounts to one million euros for four years.

Neurosurgical PDT study

Since April 2021, the Stereotactical Photodynamic Therapy (PDT, see page 26 f.) – developed by a team headed by Prof. Walter Stummer, Director of the University Neurosurgery Clinic in Münster – has been reviewed in a randomised study. The study is being conducted by the Faculty of Medicine at the University of Münster and University Hospital Münster. Those involved are the neurosurgery centers in Essen, Düsseldorf, Dresden and Munich. A total of 100 patients are being treated in the project. The funding provided by German Cancer Aid – whose Neuro-Oncology Working Group is also patron of the study – amounts to 510,000 euros.

Funding in paediatric oncology

As part of the “EpiRT” project, researchers from Paris, Augsburg and Münster (Dr. Kornelius Kerl, Paediatric Haematology and Oncology Clinic, Münster University Hospital) are evaluating – in a project funded by “Fight Kids Cancer” (ITCC) – the efficacy and the mechanisms of resistance development of an EZH2 inhibitor. In their project, entitled “EZH2 inhibition in combination with tumour cell specific drug delivery of ATO in AT/RT2 and funded by German Cancer Aid, the researchers are conducting research together with chemists from Augsburg to find a specific therapy combining an EZH2 inhibitor with a chemotherapeutic agent packed in nanoparticles.

Funding is continuing to be made available for the NHL-BFM Registry 2012. The aim here is to ensure the best possible treatment for children and adolescents with a Non-Hodgkin lymphoma (NHL). All children and adolescents from Germany, Austria, the Czech Republic and German-speaking Switzerland who have been diagnosed with NHL are put onto the register. The register is being run by, among others, Dr. Birgit Burkhardt, a senior physician at the Paediatric Clinic – Paediatric Haematology and Oncology at University Hospital Münster. The follow-up funding from the German Childhood Cancer Foundation amounts to a total of around 220,000 euros and is set to run over a period of two years.

Research on radiotherapy and metabolism

The German Ministry of Education and Research (BMBF) is funding a research alliance for three years, in which the Helmholtz Center Munich, the Institute of Cell Biology (Tumour Research, IFZ) at University Hospital Essen and the Clinic at the University of Munich are all working together. The researchers involved are studying the connection between tumour metabolism and the success of clinical radiotherapy. Of the total funding, 600,000 euros go to the IFZ at the Faculty of Medicine at the University of Duisburg-Essen (UDE) and at University Hospital Essen, which is setting up a junior researchers group.

Well-positioned

Selected new professorships in the WTZ Network

Since October 2021, **Prof. Sven Benson** has been the new Professor of Medical Education within University Medicine Essen (UME). Benson, the recipient of multiple awards, examines the question of how the communicative and scientific skills of medical students can be optimised (more on this on page 46 f.). In addition to further developments in the curriculum, he also undertakes experimental research into stress and pain.

Since June 2021, **Prof. Christoph Schliemann** has been the new Professor of Molecular Pathogenesis of Acute Leukaemias within Medical Clinic A at University Hospital Münster (UKM) and, as such, has the team of the WTZ Network Partner Münster. An oncologist, Schliemann has already been working for many years in the team headed by Clinic Director Prof. Georg Lenz, developing, in particular, new tailor-made therapies in the field of leukaemia.

Prof. Andreas Jacobs took up a professorship for Target Biology and Target Chemistry at the European Institute for Molecular Imaging (EIMI) at the University of Münster on 1 May 2021. His research interests include imaging of dynamic changes in heterogeneous tumour tissue compartments.

Since March 2021, **Prof. Katharina Lückerath** has been the new Professor for Preclinical Nuclear Medicine Theranostics at the Nuclear Medicine Clinic at UME. She researches into how the biological processes in tumours proceed and develops new approaches for radionuclide therapies and imaging processes.

Prof. Andreas Rink took up the Professorship for Minimally Invasive Oncological Surgery at UME in August 2021. He is the Deputy Director of the Clinic for General, Visceral and Transplant Surgery and will be optimising minimally invasive operation techniques in the case of bowel tumours in order to reduce the physical burden on patients.

Since August 2021, **Prof. Luise Erpenbeck** has been the new Professor for Translational and Experimental Immunodermatology at the Dermatology Clinic at UKM. She is augmenting the team led by Dr. Carsten Weishaupt at the Skin Tumour Center at UKM. Her field of research is the importance and the functioning of the innate immune system in infectious diseases.

Prof. Alpaslan Tasdogan has been the new Professor of Dermatology and Tumour Metabolism at UME since October 2021. He studies how cancer cells adapt their metabolism during metastasis. His research focus is on malignant melanoma. His professorship is being funded with a returnee scholarship amounting to 1.25 million euros for five years. This is the first time that a researcher has come to UME in this way.

Since January 2021, **Prof. Julian Varghese** has held the newly created professorship for Health Informatics at the Institute of Health Informatics (IMI) at UKM, where he took on the position of provisional Head on 1 May 2021. Among other things, the IMI develops technical infrastructures for collecting patients' data, as well as bioinformatic and AI-based analyses for research purposes, the results of which contribute, for example, to improving cancer therapies.

New impulses in brain tumour therapy

The WTZ Netzwork researches and uses new methods of treatment for glioblastoma and with smart-networked operations

Glioblastoma is one of the most aggressive types of brain tumour. Despite great progress as regards treatment, it is still not curable, can hardly be removed in its entirety, and recurs quickly. While researchers at WTZ Essen investigate why even immune therapies are not effective enough against this insidious brain tumour, the cancer experts at the WTZ Network Partner Münster are taking a new approach for treatment: “Stereotactical Photodynamic Therapy (PDT)”.

Specialists at the Brain Tumour Center at WTZ Münster fight glioblastoma using red laser light

With his team, Prof. Walter Stummer, Director of the Clinic for Neurosurgery at University Hospital Münster and spokesperson for the Brain Tumour Center there, developed and clinically tested the promising new PDT method.

In PDT, extremely fine glass fibres are placed in the tumour tissue – computer-guided and precise to the millimetre. Red laser impulses are then conducted through the glass fibres, which destroys the tumour cells. In 2021 at WTZ Münster, as part of a study, the first patient worldwide was treated with Stereotactical Photodynamic Therapy.

Several preparatory steps are necessary to use this new type of treatment, as Stummer explains: “First, the tumour has to be made sensitive to light. For this purpose we give the patient 5-aminolevulinic acid. This results in a red dye, protoporphyrin IX, being produced – and restricted to the tumour tissue.” This dye has the effect that under a certain light the tumour tissue fluoresces. This effect is used to precisely isolate and mark the operation area.

> *“In this way we can very selectively destroy the tumour. In the case of deep-lying tumours which are difficult to access, this is a great advantage over traditional operations – and sometimes the only possibility we have.”*
>
> **Prof. Walter Stummer,** Director of the Clinic for Neurosurgery at University Hospital Münster

Another welcome effect of the protoporphyrin is that it makes cancer cells sensitive to laser light. “In this way we can very selectively destroy the tumour. In the case of deep-lying tumours which are difficult to access, this is a great advantage over traditional operations – and sometimes the only possibility we have,” says Stummer. Another advantage that the neurosurgeon sees in the new form of therapy is that, unlike operations using chemotherapy and radiotherapy, it has hardly any side effects and places few restrictions on patients – apart from a short-term increase in sensitivity to sunlight.

Stummer and his team of researchers and physicians have been testing the hypothesis on which Stereotactical Photodynamic Therapy is based since April 2021 in a randomised study. Those involved in this study – led by University Hospital Münster and the Faculty of Medicine at Münster University – are the neurosurgery centers in Essen, Munich, Dresden and Düsseldorf.

A total of 100 patients are to be treated in the study, which is being funded by German Cancer Aid (DKH), whose own Neuro-Oncology Working Group is also patron of the project.

Stummer draws a positive conclusion as regards the first use worldwide of Stereotactical Photodynamic Therapy in Münster: “During surgery, the patient’s brain tumour melted, as planned, so the hoped-for effect was achieved.”

The Neuro-Oncology Center at WTZ Essen scores with translational research and smart operation technology

In 2021, in the Neuro-Oncology Center at WTZ Essen – headed by Prof. Martin Glas and Prof. Ulrich Sure – not only was promising progress made in research on new methods of treatment, but forms of operation were also modernised and expanded.

In the Translational Neuro-Oncology Department at WTZ Essen, a team there headed by the DKTK/DKFZ researchers Dr. Igor Cima and Prof. Björn Scheffler are looking into the question of why modern immune therapies – which are successful in other types of cancer – do not show satisfactory results in treatment for glioblastoma. And in their work they have made decisive progress.

The researchers examined specimens of glioblastoma and of healthy brain tissue. In all the specimens of malignant tumours they discovered stem cells and progenitor cells of the haematopoietic system – and were able to observe that these blood stem cells suppress the immune system and help tumours to grow.

Collaborating with Prof. Ulrich Sure, Director of the Clinic for Neurosurgery and Spinal Surgery at University Medicine Essen, the team also compared healthy and diseased cells. The results of the analysis show how tumour-promoting cell populations can be rendered harmless in future. The WTZ cancer researchers published their study on glioblastoma in the “Nature Communications” journal in June 2021.

Glioblastoma study

“The results of this study are extremely important and, in my view, they will in all likelihood open up entirely new possibilities for the medication treatment of glioblastoma in future.”

Prof. Ulrich Sure,
Director of the Clinic for Neurosurgery and Spinal Surgery at University Medicine Essen.

Prof. Martin Glas,
Head of the Clinical Neuro-Oncology Department at University Medicine Essen’s Oncology Clinic.

Prof. Martin Glas strengthens the work done at WTZ with a new professorship

Since February 2021, Prof. Martin Glas (Head of the Clinical Neuro-Oncology Department at the Oncology Clinic) has been Professor of Clinical Neuro-Oncology at the Medical Faculty at the University of Duisburg-Essen, and as such has been helping to further optimise treatments for brain tumours. “We can best treat brain tumours,” says Glas, “if we work together in an interdisciplinary fashion. The WTZ Network has all the experts it needs for that: we can make the best possible personalised treatment available.”

Top-level technological support in operations on brain and spinal tumours

Since September 2021, at the Clinic for Neurosurgery and Spinal Surgery at University Medicine Essen, a state-of-the-art operating room has been augmenting and expanding the options for treating tumours of the brain, the spinal cord and the spine itself. The pieces of equipment in the room are interconnected digitally and, through constant interaction, provide the surgeons operating with valuable intraoperative information on the progress being made.

A medium-range seven-figure amount was invested to enable the large-scale conversion of the room to be carried out, with the funding coming from the state of North Rhine-Westphalia and the German Research Foundation. The operating room has a comprehensive range of equipment, including a robot-assisted X-ray machine and a state-of-the-art digital platform which visualises imaging data for the surgeon on screens, almost in real time. This means the installation offers additional safety and increased precision for the operations, which are, as a rule, highly complex matters.

“Networking and digitalisation in this form are very rare – and entirely to the benefit of patients,” says Sure. “Especially in our difficult, complicated operations on brain and spinal tumours, this impressive interaction provides us with top-level technological support and extra safety. This makes it not only smart, but also extremely efficient.”

People and moments

1.1.
Funding from German Cancer Aid for the WTZ Network as an Oncology Center of Excellence

6.1.
Joint Ruhr Cancer Day

5.5.
Spring Symposium held by the Münster Visceral Oncology Center

10.9.
Cooperative Lung Cancer Center Münster set up

17.9.
German Health Minister Jens Spahn is informed about proton therapy at University Medicine Essen

2.11.
The Eyeline Chair goes into operation at the West German Proton Therapy Center (WPE)

9.11.
First certification of the FBREK Center at Münster University Hospital

January | February | March | April | May | June | July | August | September | October | November | December

4.2.
“Covid-19 vaccinations for cancer patients?” Joint online event on World Cancer Day

18.2.
ETOS – Translational Oncology Symposium in Essen; joint event

14.8.
16. Sarcoma Tour organised by WTZ Essen with record donations of 126,580 euros

1.10.
Sailing event in Münster for young adults with cancer

27.10.
WTZ Thoracic Oncology Day in Essen

27.10.
Third Münster Autumn Symposium

Specialist care

Advanced specialist training in oncological care in the WTZ Network

Andrea Schmidt-Rumposch,
Director of Nursing and
member of the UME Board

“With our internal advanced courses in oncology care, we are ensuring that our cancer patients get the best possible care at all times.”

Caring for cancer patients makes special demands on nursing staff. Besides additional, highly specialised knowledge relating to current forms of therapy, what is also important is interprofessional collaboration between various areas. Care professionals can acquire the requisite knowledge and skills at University Medicine Essen (UME) and University Hospital Münster (UKM) in special training courses in oncological care.

The two-year course of training provides insights into the different fields of oncology and combines practical sessions on wards with theoretical knowledge on clinical pictures, therapies and side effects relating to oncology. Teaching is also given on providing advice and guidance, acting in multi-professional teams, networking, project work and palliative care.

In Essen, the “Advanced training in oncology care (DKG)” course is given at the UME Academy every two years. This also used to be the case in Münster, where such specialised training is held at the Training Institute for Care and Health at UKM. However, as demand for places has increased so strongly, the course here is now offered every year. The high level of interest at both locations is also due to the fact that advanced training presents attractive career opportunities.

New career perspectives

Both in Essen and in Münster, course participants obtain the additional “Palliative Care” qualification. Moreover, they have an opportunity of undertaking the shortened practice supervisor’s training course provided by the German Hospital Federation. But these are just two of many advantages associated with advanced training, says Bernadette Hosters, Head of the Development and Research in Care Department in Essen.

“Specialist knowledge is fundamentally deepened, both in theory and in practice,” Hosters explains. “For example, issues such as taking evidence-based approaches, or shared decision-making, are part of normal vocational training – but nowhere in such depth as is offered in advanced training.”

“The increasing demand for places speaks for the high quality of this advanced training in oncological care. For us, it’s an important element with which we can actively counter the lack of skilled professionals in nursing.”

Thomas van den Hooven,
Director of Nursing and
member of the UKM Board

Oncology Care UME

Information for patients

Healthcare professional and paediatric nurse Petra Flick likewise emphasises that the advanced training opens up new perspectives for career options. She herself also did the training course – which was conceived and organised by nursing scientist Elke Goldhammer – and is responsible in Münster, together with Burkhard Schulze Brockhoff, for theory-to-practice transfer as part of practice supervision and support work on the wards. “Participants are often carers who have already been working on cancer wards for some years and who want to have some advanced training,” Flick explains. “Our principle of rotation ensures that there are intensive exchanges between carers. Someone coming from haemato-oncology, for example, can work in surgery or in palliative care. Working in paediatric oncology or on the bone-marrow transplant ward is also possible.”

Course participants can use the additional qualification they have gained in a number of different ways. In their everyday work, carers are in demand on cancer wards for case reviews, nursing rounds, instructing new colleagues or certifications. They are also closely networked in the WTZ Network, via a working group for care, where they continue to develop oncology care. In Essen, for example, the working group organises the successful Essen Care Symposium every year. Moreover, carers have pooled their expertise in work teams at both locations in order, for example, to collate patient information relating to the side effects caused by treatment.

“After their advanced training, carers can obtain further qualifications in healthcare studies and, as a result, work as healthcare experts, for example,” Hosters adds.

Creating a new quality of cancer care

The wards involved in the specialist clinics at both locations also benefit from this advanced training, says Hosters. “It is a great advantage for us to be able to offer all of this ourselves in-house.” Being thus embedded within the organisation makes it possible to match advanced specialist training to needs and conditions, she says. “As a result, we can integrate our own lecturers from the clinic into this training – which is simply perfect for theory-to-practice transfer.”

This aspect of putting into practice what has been learned in theory is very important for Petra Flick, too. In addition to her work as practice supervisor, she provides support for the “Young with Cancer” team at WTZ Münster, which offers special care and advice for young people who have cancer (see page 38 f.). “As a result of additional training, cancer care assumes an entirely new quality,” she says. “The things taught in theory should be applied on the wards. Not all of it can be implemented 100 per cent – but there are always ways of helping patients.”

A strong community

The work done by self-help groups in the WTZ Network creates a lively community

Most patients experience the diagnosis that they have cancer as a profound turning-point in their lives. In this difficult situation, self-help groups can open up new perspectives. Speaking in confidence with people who have the same illness helps patients to cope with everyday life with, and after, cancer.

Katharina Kaminski, Advisor for Patients' Networks and Self-Help, WTZ Essen

"A lot is triggered as soon as patients hear the word 'cancer' in the discussion with their doctor. Often, they don't register much of the rest of what is said because the feeling of shock predominates," says Katharina Kaminski. Since October 2021 she has been Advisor for Patients' Networks and Self-Help at WTZ Essen. "My task is to bring individual self-help groups together, enable them to network with one another, and thus make them strong," she says.

To this end, she not only works directly with the groups but also with the respective contact persons in the individual clinics, whom she supports with the latest information on group offers as well as in other areas such as therapy management and side-effects management. "Our aim, on the one hand, is to strengthen awareness of the self-help networks within the individual indications. But it's also about WTZ overall: self-help work should come to have an important status, so that everyone sees themselves as a part of the overarching WTZ Network," she says.

Strengthening patient autonomy

The aim and the focus of work with self-help groups is always to make patients stronger. This is an aspect which is also of central importance for Julia Beusing-Markmann. She works in the Social Services Department at University Hospital Münster and, since July 2021, she has also been responsible for the coordination of patient involvement and self-help at WTZ Münster. "Discussions in the groups promote the acquisition of knowledge and, as a result, patients' own competence in health matters," she says. "That strengthens patients' autonomy, as well as improving their communication – both with doctors and with carers."

In line with this, Beusing-Markmann describes self-help groups as important "interfaces" for patients – for example, with the experiences that other patients have, with information on treatment options, and with new scientific findings. Discussing these things in the groups enables them to find what is for them the right way to deal with their illness. In all this, the emotional aspect plays an important role," Katharina Kaminski adds. "In self-help groups you don't find pity – you find compassion. And the assurance that you're not alone with what you're going through."

Establishing WTZ as a contact and a platform for self-help groups

Katharina Kaminski and Julia Beusing-Markmann work together on establishing this feeling of solidarity at a higher level in the WTZ Network. "There is a very diverse range of self-help groups, both regional and supraregional ones. We want to intensify our work with the groups, introduce them to WTZ and offer it as a platform for further networking," says Beusing-Markmann. "We act as a 'booster', so to speak, for expanding the supraregional network and filling it with more life," Kaminski adds.

There are plans, both in Essen and in Münster, to establish personal contact with the leaders of the self-help groups in the region – initially in video-conferences, due to Covid-19 – in order to introduce the WTZ and present it as a point of contact. In addition, the aim is to have regular get-togethers online and, as soon as possible, in person, so that the self-help network can grow and joint activities can be planned.

Julia Beusing-Markmann, Coordination of Patient Involvement/Self-Help at WTZ Münster

Information and exchanges via social media

An important role in exchanges with the self-help groups is played by the Patients Advisory Committee at WTZ, which represents patients' interests and gives the WTZ Network advice from its own perspective. The Committee also makes contributions in political bodies and research projects, drawing attention to the views of patients and non-medical people. It is made up of nine patients and family members who are being treated in the WTZ Network or who are active in oncological self-help.

On the WTZ Patients Advisory Committee Facebook page, patients' organisations and self-help groups are invited to introduce themselves and, for example, announce events. After all, as Julia Beusing-Markmann points out, "There's more to the self-help groups than just talking about illnesses. It's also about leisure activities undertaken together so that people can 'get out' and have an opportunity to talk about other things."

Patients Advisory Committee on Facebook

Overview of the Patients Advisory Committee

A special kind of solidarity

“AYA – the Blue Ward” for adolescents and young adults at WTZ Essen

For young people in particular, having cancer diagnosed is a dramatic event in their lives. Their personal needs are very different from those of young children or older patients with cancer. In setting up “AYA – the Blue Ward” (“AYA” stands for “adolescents and young adults”) University Medicine Essen (UME) has created a special place where adolescents and young adults at WTZ Essen are provided with holistic treatment appropriate to their age.

The new ward is a place where patients between the ages of 15 and 30 are designed to feel safe and in good hands. The adolescents and young adults are looked after by a specially trained team, with experts from the fields of paediatric and internal oncology, psycho-oncology, and art and movement therapy. In this special setting, the patients give each other support and receive advice on issues such as getting school qualifications and starting work, changing life and family planning, the potential loss of peer groups and partnerships/relationships, and the associated worries and fears triggered by the illness.

The “Blue Ward” contains a lot of well-considered equipment for the target group. A comprehensive set of IT equipment, for example, enables patients to stay in digital contact with family and friends. Virtual reality headsets allow them to explore other worlds and forget their illness for the moment. Art and movement therapy sessions are integrated into everyday life in the clinic. As soon as time permits, the aim is to offer group sessions in talking therapy, music therapy and art therapy.

Prof. Uta Dirksen, Deputy Director of Paediatric Clinic III**, with a patient.**

The initiator is Prof. Uta Dirksen, Deputy Director of Paediatric Clinic III at UME and Head of the Sarcoma Center at WTZ Essen. She is in charge of the ward, working together with Prof. Sebastian Bauer, Chief Physician at the Sarcoma Center. Donations raised with the help of the University Medicine Foundation have allowed the ward to be specially equipped in the way it is.

AYA ward

Further offers of support for young cancer patients at WTZ Essen:

Art therapy
Using a variety of materials and techniques, art therapy offers young patients an opportunity to engage with their own wishes, hopes and fears in an artistic way and thus give expression to them.

Therapy dog
Therapy dog Hannibal has already been giving service for several years in Paediatric Clinic III. This animal-based therapy is accompanied by a study of the benefits and by observing any possible risks. The dog gives the patients a lot of pleasure and supports their cancer treatment.

Sport therapy
Movement therapy and sport therapy are not only possible, but also make sense, during cancer treatment. The latest scientific findings show that individually adapted sports programmes have positive effects on physical and mental health. The young patients receive individual training from a qualified sports scientist on two or three days a week on the ward.

ActiveOncoKids Network
The young patients can benefit from the movement therapies offered and from the advice given through the ActiveOncoKids Network. On offer are, among other things, support in reintegration into sports structures after completion of the therapy, and participation in age-appropriate activities offered by the Ruhr Center, such as sailing or skiing.

Yoga courses
The West German Proton Therapy Center Essen (WPE) has been offering patients and their families yoga courses since October 2021. Many patients come from far away to Essen and have only a few, or no, members of the family nearby to provide support. The course offers an opportunity to switch off from everyday life in the Clinic. The project is made possible by the WPE’s Psychosocial Services, together with “Be Strong for Kids”.

Relaxed in the MRI scanner through virtual reality
This collaborative project involving medical technology, the games industry and research is investigating the efficacy of VR systems in increasing patients’ sense of well-being in an MRI scanner. The aim is to dispel young cancer patients’ fear and reduce stress during medical treatment by means of interactive virtual worlds.

Cancer care experts
Cancer care experts are on hand if advice is needed on issues such as, for example, management of side effects in tumour therapy. These experts can be called on for consultation and can talk with patients in detail about specific questions and problems.

Psychosocial Services
Falling ill with cancer gives rise to fears, worries and financial challenges. The Psychosocial Services at Paediatric Clinic III provide support for young cancer patients and their families in both the outpatient and inpatient areas. They also offer psychological advice, discuss requirements for help, provide support in claiming social security entitlements and organise further assistance. They are also on hand to help in acute crises and challenges.

In the midst of life

New offer especially for young adults at WTZ Münster: “Young with Cancer”

Any young adult falling ill with cancer often faces special physical, mental and financial challenges. “Young with Cancer” is an overarching programme at WTZ Münster offering support and advice aimed especially at this group of patients, enabling help to be given which fits each individual situation.

The aim of the programme is to provide help personally to young patients and their families in dealing with the illness. The “Young with Cancer” team provides advice and support, for example on issues relating to coping with the illness, incapacity to work, social and financial burdens, and needs regarding rehabilitation and care. In addition, there is psychosocial support on offer appropriate to the needs of this age group.

“In the case of students, parents with young children, or other young adults, cancer puts a large question mark against their own current life and plans for the future,” explains Prof. Philipp Lenz, General Manager of WTZ Münster. “Our aim, in what we offer, is to address this specifically so that patients’ treatment can progress in the best possible way,” he adds.

Andrea Wietstock, social worker/social pedagogue (M.A.) and a member of the Social Services team at WTZ Münster, is also a member of the multi-professional “Young with Cancer” team. She emphasises how important it is to align offers and measures to patients’ individual situations. “A need for advice and support can arise at any age and is quite individual, depending on each person’s particular situation. Particularly in the case of young patients, a longer period of illness can entail considerable changes to their personal, job and financial situation – which is why any psychosocial support needs to be matched in each individual case to the person’s life situation and age.”

Young with Cancer

Prof. Annalen Bleckmann, Peter Overschmidt, Andrea Wietstock, Christina Strotmann and Prof. Philipp Lenz (from left)

The following is on offer for patients in the “Young with Cancer” programme at WTZ:

Physiotherapy
There is a wide range of physiotherapy interventions on offer such as endurance sport, manual lymphatic drainage or training therapy. The aim of these therapies is to improve the quality of life, reduce fatigue syndrome and emotional stress, and preserve and promote autonomy and self-efficacy.

Art and music therapy
Individual art and music therapy helps young adults to find their identity by promoting their experience of self. In the case of cancer, it helps patients not to lose sight of their quality of life.

Self-help groups
Self-help groups offer participants the opportunity to talk with one another and make contacts. In the groups, discussions take place in an unforced manner on experiences and problems; patients can also share information about themselves.

Advice on care
The aim of cancer care advice is to minimise fears and uncertainties in dealing with the illness, with the necessary treatment, and with the therapy-induced side effects. Patients receive help in feeling safe and able to function in their home surroundings.

Social Services
Social Services provide advice on the following, for example: rehabilitation measures, organising help both during and after a stay at the clinic, financial and social security issues, outpatient and inpatient care, and psychosocial issues.

Psycho-oncology
Treatment involving psycho-oncology focuses not only on physical treatment, but also on mental health and on the current life situation. Psycho-oncology has a positive effect on physical and mental stress and can help to make a lasting improvement.

Palliative medicine
The Palliative Services team at University Hospital Münster cares for seriously ill adult patients during their stay in hospital. The aim of these measures is to improve the quality of life of these patients and their families.

Pastoral care
Pastoral workers provide support for patients by offering opportunities to talk things over, by giving advice and/or support in a spiritual context. They can help patients and their families to give expression to their questions and find answers – also independently of religion or denomination.

“On the water together”: WTZ sailing event for young adults with cancer

Sun, wind and dry weather – excellent conditions for the first sailing event for young adults with cancer. The event was held on 1 October 2021 as part of the support programme entitled “Young with Cancer”; the hosts were WTZ Münster, together with the Münster Cancer Advice Center and Overschmidt Yachting School. The six participants were able to enjoy the superb sailing weather in a great atmosphere. They had their first experience of manoeuvring a sailing boat safely over Lake Aa.

Rethinking operations

Digital transformation in ENT

The smart operating center at the Ear, Nose and Throat (ENT) Clinic in Essen, which started up in April 2021, strengthens the WTZ Network. It offers the most up-to-date possibilities for performing operations in connection with tumour therapy. “The opening of the new ENT operating rooms marks the beginning of a new era of patient care for University Medicine Essen,” says Prof. Stephan Lang, Director of the Ear, Nose and Throat Clinic.

The new three-storey building is equipped with state-of-the-art digital operations technology, as well as a new ENT outpatients section. In the operating rooms, the individual elements – from preparation and planning to performing surgical therapy – are networked and automated.

“The concept of the new operating center has five components,” Lang explains, “virtual reality, artificial intelligence, 3D visualisations in 4K resolution, robotics and networking. With these, we are very much at the cutting edge of innovation,” Lang says. He emphasises that the new technology makes improvements possible at all levels. “For example, in the case of complex tumours we can convert 2D tomography – i.e. CT and MRI images – into 3D structures, ‘enter’ them using a VR headset and thus plan the operation better.”

During operations, the 4k resolution of the imaging and the monitors produce a much better working environment. “We stand in the middle of what’s happening, so to speak, we have extremely sharp images, and can see the tiniest structures,” says Lang. “Then we have the robotics, which allow us to more easily reach areas which used to be difficult to access, in particular the deep sections of the throat. This enables us to perform operations in a minimally invasive and even in a gentler way – which directly benefits patients.”

Everyone involved is “extremely pleased” with the new Center and the new possibilities it offers, Lang reports. “We are now working in an operating room with the best medical technology in the world,” says Prof. Stefan Mattheis, Deputy Director of the Ear, Nose and Throat Clinic. “That creates a tangible momentum in all our staff and makes them feel proud.”

Press release on the new operating center

Very well prepared

3D printers in the Tumour Orthopaedics Center open up a wide range of possibilities for planning operations and producing precision implants

There is a total of four 3D printers in use at the Clinic for General Orthopaedics and Tumour Orthopaedics at University Hospital Münster. The printers are an enormous help to medical staff and make their work easier – which also has many benefits for WTZ patients.

The 3D printers are used to produce perfect-scale synthetic models of bones and joints, for example. The basis for this is CT images of patients which are prepared with the aid of software. This enables surgeons and orthopaedists to produce individual, millimetre-precise replicas of the body parts in question – in order to better assess and treat an ingrown tumour, for example, or a complicated malposition.

“We can prepare ourselves for an operation really well with the models from the 3D printer,” says Prof. Georg Gosheger, Director of the Clinic for General Orthopaedics and Tumour Orthopaedics. “We can mark angles, test positions and rotations, practice sawing and drilling, and define the exact spot where we remove a tumour.” This intensive preparation not only improves the result, it also shortens the operating time by ten to 15 per cent.

The printers are also used for the production of precision implants. “We produce a prototype, test it, check the load transfer and make changes again if necessary,” Gosheger explains. Only then does a manufacturer make the implant on the basis of the 3D printed object. For patients, this increases the certainty that the implant fitted will fulfil its function reliably and for a long time to come.

3D printers also open up new perspectives in research and teaching. “Using a 3D print of a pelvis, for example, we can train and optimise realistic surgical procedures and even develop and test new surgical possibilities,” say the Heads of Experimental Orthopaedics, Dr. Vincent Hofbauer and Dr. Martin Schulze. For students it is likewise important, they say, to be able to hold 3D models in their hands to get a more tactile impression than is possible with just 3D VR headsets.

Tumour orthopaedics

Very well equipped

State-of-the-art technology in the WTZ Network

Robotics upgrade
Brought right up to date: with the new da Vinci Xi®, the surgeons at the Robotics Center at WTZ Münster now have the most up-to-date system for operations. Robot-assisted surgery has been a firm component in the operations portfolio of the Clinic for Urology and Paediatric Urology since as long ago as 2014 – and also in the Clinic for General, Visceral and Transplant Surgery at University Hospital Münster since 2018. At the beginning of 2021 a fourth generation da Vinci Xi® – including the new intelligent energy system E100 – was then added to the existing two da Vinci Xi® systems. In March 2021, the two existing Si systems were then replaced by two fourth-generation da Vinci Xi® systems. One Si system with a double console remained at the Clinic for training purposes – with the aim of building up an international training center.

The new da Vinci Xi® provides the surgeons – who have been specially trained to work with it – with an even better view of the operating area. In addition, with the robot, they have maximum flexibility in operating in all quadrants of the abdominal region. The minimally invasive operations thus have a high degree of precision and are especially gentle for patients.

Smart operating rooms for ENT (see page 40)
A new era in patient care began for University Medicine Essen and WTZ Essen with the opening of the new operating rooms at the Ear, Nose and Throat Clinic in April 2021. To plan operations better – for example, in the case of tumours – and before surgery is carried out, VR headsets enable 3D visualisations and an evaluation of the tumours' position to be made in relation to vital anatomical structures. From an intraoperative point of view, 4K 3D camera systems make precise surgery possible through the high-contrast, spatial display of extremely fine tissue structures. Two further advantages are the markedly higher resolution in comparison with conventional systems, and the 1.5-metre working distance from the 55" monitor.In tumour surgery, special visualisation methods such as narrow band imaging and autofluorescence produce a much clearer image of the tumour, thus increasing the diagnostic and therapeutic precision. A 3D surgical microscope makes it possible to transmit radiological images directly into the eyepieces and thus make them available during the operation. The real-time transfer of electrophysiological measuring data, for example as part of cochlea implant operations, increases the therapeutic precision.

Precision radiation therapy – accurate to the millimetre
For radiation treatment on tumours, WTZ Münster has a new piece of equipment which uses the technology of intensity-modulated radiation therapy (IMRT). It enables precise, spot-on radiation to be carried out which spares the surrounding tissue. Moreover, the exposure time is reduced from 30 to approximately ten minutes. "This machine is incredibly accurate, incredibly fast, and can produce ultra-modern radiation therapy for the great majority of tumours – for example of the prostate, the brain, or the lung," says Prof. Hans Theodor Eich, Director of the Clinic for Radiation Therapy at University Hospital Münster.

High-tech operating room for neurosurgery (see page 28 f.)
Patients at the Clinic for Neurosurgery and Spinal Surgery at WTZ Essen benefit from state-of-the-art technology in the operating room which was opened in September 2001. A robot-assisted X-ray machine supplies not only traditional X-rays but also tomographic diagnostics and the diagnostics of blood vessels by means of high-resolution images. For this purpose, the operating tables were made of high-quality carbon materials. Table and X-ray robot are linked digitally so that intraoperative and individual imaging is possible at all times and in all positions. Also, a neuro-navigated ultrasound examination is available which enables an intraoperative assessment of a step in an operation to be made. The installation is supported by a digital platform of a navigation unit which displays the image data for the surgeon in almost real time. Image data can also be visualised in the smart operating room in "virtual reality" using a 3D headset. The entire installation is coupled with a second digitally supported robot which enables surgeons to achieve additional safety and increased precision.

Ultra-precise 3D printing (see page 41)
In the Clinic for General Orthopaedics and Tumour Orthopaedics at University Hospital Münster, a professional 3D printer was purchased for continuous carbon-fibre-reinforced components for developing prototypes as part of the development of new tumour implants. This printer can be used to produce ultra-precise prototypes for individual prosthetics based on patients' anatomy. A high-resolution 3D scanner is also in use with which complex structures can be digitalised precisely. The interaction between these two technologies makes it possible to drive top-level innovations in tumour orthopaedics from which patients benefit directly.

State-of-the-art whole-body imaging
Since 2021, the Radiology Department at University Medicine Essen has had a new MRI scanner which is located in the Radiation Clinic, which now has such a high-end scanner for the first time. "With this scanner we can reduce the time needed for outpatients and the transport distances for inpatients while maintaining our high-quality diagnostics," says Prof. Michael Forsting, Director of the Institute of Diagnostic and Interventional Radiology and Neuroradiology. "Also, there is again a marked improvement in the links to our oncological departments." The new scanner, which cost something in the low seven-figure range, is a 3 Tesla MRI of the latest generation. It is used not only in scanning but also in research.

Latest CT technology for intraoperative use
Greater safety for patients and high-resolution imaging during operations – this is what the new CT scanner at the Clinic for Neurosurgery at Münster University Hospital (UKM) promises which has been in use since 2021. Unlike "normal" CTs, this one is intended for intraoperative use in operations – in other words, it is used during surgery. One of the things this scanner makes possible is improved checks on the position of implants and on the extent of resections of the spine. UKM is one of the first clinics in the region to use such a CT. What patients benefit from especially is that during the operation, for example, the position of implants can be assessed by surgeons. This avoids any possible second operation in case an implant was not positioned properly, or a tumour was not completely resected. The new CT scanner is operated in collaboration with the Radiology Clinic at UKM.

Proton radiation for eye tumours
In 2021, the Clinic for Particle Therapy at the West German Proton Therapy Center in Essen (WPE) at University Medicine Essen treated its first eye patient with a uveal melanoma. In collaboration with WPE, the Clinic for Ophthalmology at University Medicine Essen is the only tumour center worldwide to offer its patients – in the WTZ "Eye Tumours" treatment programme – all possible forms of treatment for malignant tumours of the eye in children and adults. As the eye can be positioned precisely for the defined proton radiation, the proton therapy has advantages for many eye tumours. Because of the physical properties of protons, the radiation can be controlled precisely and it hits the tumour at exactly the spot intended, destroying the DNA of the tumour. The tissue behind and next to the tumour is largely spared, as a result of which acute and long-term side effects can be reduced.

An individual prognosis

Gene signature study produced by WTZ Essen for melanoma patients

The NivoMela study is the first clinical study on melanoma for which the patients taking part are selected on the basis of the gene signature of their tumour. The nationwide study, initiated by University Hospital Essen, is being led by Prof. Dirk Schadendorf, Director of Essen Dermatology Clinic and of WTZ Essen.

The target group consists of melanoma patients (stage II) who have a high risk of a tumour reoccurring but have no lymph node metastases. Each of the primary tumours of the 423 participants are examined for a certain gene signature. In this way, a prognostic score is ascertained which shows how high the individual patient's risk is.

In around 70 per cent of the patients, this score is in the high-risk range. This group is divided up in a randomised way in a ratio of two to one. The patients are either treated with a checkpoint inhibitor or continue to be regularly checked. At the same time, the third cohort of patients who have a low risk according to the test also continue to be observed.

"In this study we firstly want to evaluate the test, because so far there have not been any such gene marker studies with a complex prognosis score in clinical applications," Schadendorf explains. "And secondly, in our treatment of high-risk patients we are trying to demonstrate to them the advantage of being treated over not being treated."

Prof. Dirk Schadendorf
Director of WTZ Essen

The study is a good example of what the WTZ Network would ultimately like to achieve: putting its own ideas into practice and thus offering patients new options for treatment."

The first results from the NivoMela study, organised and led by WTZ Essen, are expected in early 2023. "The study is a good example of what the WTZ Network would ultimately like to achieve: putting its own ideas into practice and thus offering patients new options for treatment," says Schadendorf.

The aim of the study is to increase the efficacy of chemotherapy in the tumour."

Prof. Christoph Schliemann,
Medical Clinic A at University Hospital Münster

An absolute innovation

Nationwide Phase III TRABTRAP study carried out by WTZ Münster

The medication trabectedin is a standard part of the treatment of soft-tissue sarcoma. One of the aims in the Phase III TRABTRAP study is to enclose this trabectedin inside the tumour – the "TRAP" part of the name explains this.

In the two-armed study, the standard trabectedin therapy is compared with an experimental therapy in which patients are given trabectedin in combination with the investigational drug tTF-NGR, developed in Münster. This investigational drug is a fusion protein from two components which direct a coagulation-triggering molecule into the tumour blood vessel system and dock it there. The effect is that blood coagulation sets in within the tumour and the tumour infarcts, i.e. its blood vessels close up.

"The consequence of this is that the chemotherapeutic agent trabectedin is trapped inside the tumour and accordingly diffuses out of the tumour tissue more slowly, which increases the efficacy," explains Prof. Christoph Schliemann from Medical Clinic A at University Hospital Münster, who is heading the project. The primary aim of the study is to prolong patients' progression-free survival through the combination therapy in comparison to the trabectedin monotherapy.

"Worldwide, we are the first to introduce targeted blood coagulation in tumours to clinical testing," says Prof. Wolfgang E. Berdel, in whose laboratory at University Hospital Münster, around 20 years ago, the idea of the innovative fusion protein tTF-NGR was first born. Since then, the production and distribution of tTF-NGR as an investigational drug has been pursued "with enormous effort". According to Berdel, it is "an absolute innovation", because the production of and approval for investigational drugs for multicentric studies is more the task of the pharmaceuticals industry and not of a university clinic.

Phase III of the TRABTRAP study is being carried out multicentrically all over Germany – in close coordination with the WTZ Network.

More than just theory

Next generation: medical training in the WTZ Network

Medical students need more than lectures, seminars and textbooks to acquire all the skills they will require in their later careers. Apart from specialist knowledge, social competences also play a big part in a physician's everyday work – in particular when empathy is needed in speaking with patients. In both Essen and Münster, the curriculum is therefore augmented by modules in which students can train essential elements of a doctor's work realistically and in a safe environment.

Especially in oncology – in which patients are often supported over a long period of time and through different phases of illness and therapy – physicians must be able to deal with demanding and challenging situations. "We are aware of how important communication is in the medical profession – primarily with patients, but also between the various professions looking after them," explains Prof. Joachim Fandrey, Vice-Dean of Studies and Teaching at the Medical Faculty at University Medicine Essen.

"We need to move away from simply passing on knowledge to students, towards developing their competences more. In doing so, it is not only specialist and subject-related competence that needs to be built up, but also social competence and self-management skills," adds Prof. Bernhard Marschall, Dean of Studies at the Medical Faculty of University Hospital Münster. This human side, he says, is especially important in view of the rapid technical developments taking place in medicine."

Prof. Joachim Fandrey,
Vice-Dean of Studies and Teaching at the Medical Faculty at the University of Duisburg-Essen.

We are aware of how important communication is in the medical profession – primarily with patients, but also between the various professions looking after them."

Prof. Bernhard Marschall,
Dean of Studies at the Medical Faculty of University Hospital Münster

We need to move away from simply passing on knowledge to students, towards developing their competences more."

Breaking down inhibitions, building up competences

For this purpose, "Essen Curriculum Communication" – ECKO for short – was set up a few years ago at the Medical Faculty in Essen. "Here, for example, we have a module entitled 'Breaking Bad News for Beginners' to prepare students for revealing a diagnosis of cancer, for example," says Prof. Sven Benson from the Institute of Didactics and Curriculum Development in Medicine at University Medicine Essen. "This is an enormous challenge, of course, which students often initially feel unable to deal with." To counteract this, discussions are held with simulation patients – particularly in the first semesters – where the underlying situation is uncoupled from specialist medical knowledge. "We have had good experience with this, because a lack of specialist knowledge is often inhibiting for the younger students. The feedback given is very good, which is why we have expanded the module in the past few years," Benson reports.

Practising with simulation patients and qualified feedback

In Münster, the communication training units in the Medical Faculty's teaching hospital are combined together – "purely locally, but also conceptually and content-wise," Marschall explains. This gives medical training an innovative, realistic framework with a practical orientation: students are in a safe learning environment in which they can freely practise the most important elements of medical work – under conditions which correspond to their later working environment. When they attend a course in the teaching hospital, communication with simulation patients is at the forefront.

"A standardised feedback setting is decisive for learning progress here," explains Dr. Hendrik Ohlenburg, Medical Director of the teaching hospital. "The conversations in the patient rooms are all observed by the other members of the semester groups through a one-way mirror. Afterwards, everyone involved discusses their impressions together. "We have a standardised concept for this which everyone knows, and which always follows the same procedure." At the end, the lecturers or tutors for the course also express their opinions and summarise what has been said, so that the students have a solid basis for reflecting on their experiences in the simulation.

Participants have psychological support in the process, both in Essen and in Münster. This is especially important in oncology, says Prof. Philipp Lenz, Medical Director of Palliative Medicine at University Hospital Münster and General Manager of WTZ Münster. After all, he adds, the personal situation of each individual student also plays a role. "For example, if I have just lost my grandmother to pancreatic cancer, and then I'm in simulations which reflect precisely that – then, of course, that triggers something inside me," says Lenz. For this reason, as Benson adds, it is important that the simulations take place "under very controlled and safe conditions."

Continuous further training in daily clinical work

Lecturer Dr. Mitra Tewes emphasises the key role which social and communication competences play in clinical work in oncology. Tewes, a palliative physician, heads the Palliative Medicine Working Group at the Internal Clinic (Tumour Research) at University Medicine Essen. It is easier, she says, "to learn by heart a chemotherapy scheme and guidelines than to break the news that further therapy is no longer possible – or at what point palliative medicine should be integrated." This is why, at the Internal Clinic (Tumour Research), young junior doctors are offered not only a basic course in palliative medicine to give them an overview of this area and the opportunities it offers, but also a six-month rotation on the palliative ward. "This improves not only their specialist knowledge but also their expectations regarding their own self-efficacy – in other words, giving them the assurance that they are helping patients to actually understand palliative medicine and offering them appropriate pain management," Tewes explains. And she emphasises that "training in oncology is a continuous process."

Excellence in figures

University Medicine Essen and University Hospital Münster

79
clinics

71
institutes

22.200
employees

3.300
beds

59.300
patients undergoing surgery

311.800
outpatients

87.600
inpatients

43.700
cancer patients

14.000
cancer inpatients

29.700
cancer outpatients

Core area of oncology

(number of patients)

26.100
medical oncology

6.800
surgical oncology

4.000
haemato-oncology

3.600
radio-oncology

1.800
paediatric oncology

cancer patients

12.500
newly diagnosed

Publications

01 Statins affect cancer cell plasticity with distinct consequences for tumor progression and metastasis. Dorsch M, Kowalczyk M, Planque M, Heilmann G, Urban S, Dujardin P, Forster J, Ueffing K, Nothdurft S, Oeck S, Paul A, Liffers ST, Kaschani F, Kaiser M, Schramm A, Siveke JT, Winslow MM, Fendt SM, Nalbant P, Grüner BM. Cell Rep. 2021 Nov 23;37(8):110056. doi: 10.1016/j.celrep.2021.110056. PMID: 34818551; PMCID: PMC8640221. | **02** Adrenomedullin-CALCRL axis controls relapse-initiating drug tolerant acute myeloid leukemia cells. Larrue C, Guiraud N, Mouchel PL, Dubois M, Farge T, Gotanègre M, Bosc C, Saland E, Nicolau-Travers ML, Sabatier M, Serhan N, Sahal A, Boet E, Mouche S, Heydt Q, Aroua N, Stuani L, Kaoma T, Angenendt L, Mikesch JH, Schliemann C, Vergez F, Tamburini J, Récher C, Sarry JE. Nat Commun 12, Article number: 422 (2021) | **03** Sotorasib for Lung Cancers with KRAS p.G12C Mutation. Skoulidis F, Li BT, Dy GK, Price TJ, Falchook GS, Wolf J, Italiano A, Schuler M, Borghaei H, Barlesi F, Kato T, Curioni-Fontecedro A, Sacher A, Spira A, Ramalingam SS, Takahashi T, Besse B, Anderson A, Ang A, Tran Q, Mather O, Henary H, Ngarmchamnanrith G, Friberg G, Velcheti V, Govindan R. N Engl J Med. 2021 Jun 24;384(25):2371-2381. doi: 10.1056/NEJMoa2103695. Epub 2021 Jun 4. PMID: 34096690. | **04** Molecular and functional profiling identifies therapeutically targetable vulnerabilities in plasmablastic lymphoma. Frontzek F, Staiger AM, Zapukhlyak M, Xu W, Bonzheim I, Borgmann V, Sander P, Baptista MJ, Heming JN, Berning P, Wullenkord R, Erdmann T, Lutz M, Veratti P, Ehrenfeld S, Wienand K, Horn H, Goodlad JR, Wilson MR, Anagnostopoulos I, Lamping M, Gonzalez-Barca E, Climent F, Salar A, Castellvi J, Abrisqueta P, Menarguez J, Aldamiz T, Richter J, Klapper W, Tzankov A, Dirnhofer S, Rosenwald A, Mate JL, Tapia G, Lenz P, Miething C, Hartmann W, Chapuy B, Fend F, Ott G, Navarro JT, Grau M, Lenz G. Nat Commun12, Article number: 5183 (2021) | **05** Tumor-associated hematopoietic stem and progenitor cells positively linked to glioblastoma progression. Lu IN, Dobersalske C, Rauschenbach L, Teuber-Hanselmann S, Steinbach A, Ullrich V, Prasad S, Blau T, Kebir S, Siveke JT, Becker JC, Sure U, Glas M, Scheffler B, Cima I. Nat Commun. 2021 Jun 23;12(1):3895. doi: 10.1038/s41467-021-23995-z. PMID: 34162860; PMCID: PMC8222381. | **06** Donor cell memory confers a metastable state of directly converted cells. Kim KP, Li C, Bunina D, Jeong HW, Ghelman J, Yoon J, Shin B, Park H, Han DW, Zaugg JB, Kim J, Kuhlmann T, Adams RH, Noh KM, Goldman SA, Schöler HR. Cell Stem Cell. 2021 Jul 1;28(7):1291-1306.e10. doi: 10.1016/j.stem.2021.02.023. Epub 2021 Apr 12. | **07** Hope and Distress Are Not Associated With the Brain Tumor Stage. Mayer S, Fuchs S, Fink M, Schäffeler N, Zipfel S, Geiser F, Reichmann H, Falkenburger B, Skardelly M, Teufel M. (2021). Frontiers in psychology, 12, 642345. | **08** Final analysis of the randomized trial on imatinib as an adjuvant in localized gastrointestinal stromal tumors (GIST) from the EORTC Soft Tissue and Bone Sarcoma Group (STBSG), the Australasian Gastro-Intestinal Trials Group (AGITG), UNICANCER, French Sarcoma Group (FSG), Italian Sarcoma Group (ISG), and Spanish Group for Research on Sarcomas (GEIS). Casali PG, Le Cesne A, Velasco AP, Kotasek D, Rutkowski P, Hohenberger P, Fumagalli E, Judson IR, Italiano A, Gelderblom H, Penel N, Hartmann JT, Duffaud F, Goldstein D, Martin-Broto J, Gronchi A, Wardelmann E, Marréaud S, Zalcberg JR, Litière S, Blay JY. Ann Oncol. 2021 Apr;32(4):533-541. doi: 10.1016/j.annonc.2021.01.004. Epub 2021 Jan 19. | **09** Investigating immune and non-immune cell interactions in head and neck tumors by single-cell RNA sequencing. Kürten CHL, Kulkarni A, Cillo AR, Santos PM, Roble AK, Onkar S, Reeder C, Lang S, Chen X, Duvvuri U, Kim S, Liu A, Tabib T, Lafyatis R, Feng J, Gao SJ, Bruno TC, Vignali DAA, Lu X, Bao R, Vujanovic L, Ferris RL. Nat Commun. 2021 Dec 17;12(1):7338. doi: 10.1038/s41467-021-27619-4. PMID: 34921143; PMCID: PMC8683505. | **10** Lenvatinib with etoposide plus ifosfamide in patients with refractory or relapsed osteosarcoma (ITCC-050): a multicentre, open-label, multicohort, phase 1/2 study. Gaspar N, Venkatramani R, Hecker-Nolting S, Melcon SG, Locatelli F, Bautista F, Longhi A, Lervat C, Entz-Werle N, Casanova M, Aerts I, Strauss SJ, Thebaud E, Morland B, Nieto AC, Marec-Berard P, Gambart M, Rossig C, Okpara CE, He C, Dutta L, Campbell-Hewson Q. Lancet Oncol. 2021 Sep;22(9):1312-1321. doi: 10.1016/S1470-2045(21)00387-9. Epub 2021 Aug 17. | **11** Stable isotope tracing to assess tumor metabolism in vivo. Faubert B, Tasdogan A, Morrison SJ, Mathews TP, DeBerardinis RJ. Nat Protoc. 2021 Nov;16(11):5123-5145. doi: 10.1038/s41596-021-00605-2. Epub 2021 Sep 17. PMID: 34535790. | **12** 8th European Conference on Infections in Leukaemia: 2020 guidelines for the use of antibiotics in paediatric patients with cancer or post-haematopoietic cell transplantation. Lehrnbecher T, Averbuch D, Castagnola E, Cesaro S, Ammann RA, Garcia-Vidal C, Kanerva J, Lanternier F, Mesini A, Mikulska M, Pana D, Ritz N, Slavin M, Styczynski J, Warris A, Groll AH. 8th European Conference on Infections in Leukaemia. Lancet Oncol. 2021 Jun;22(6):e270-e280. doi: 10.1016/S1470-2045(20)30725-7. Epub 2021 Mar 31. | **13** Prognostic value of post-induction chemotherapy volumetric PET/CT paramteres for stage IIIA/B non-small cell lung cancer patients receiving definitive chemoradiotherapy. Guberina M, Poettgen C, Metzenmacher M, Wiesweg M, Schuler M, Aigner C, Ploenes T, Umutlu L, Gauler T, Darwiche K, Stamatis G, Theegarten D, Hautzel H, Jentzen W, Guberina N, Herrmann K, Eberhardt WEE, Stuschke M. J Nucl Med. 2021 May 20;62(12):1684–91. doi: 10.2967/jnumed.120.260646. Epub ahead of print. PMID: 34016730; PMCID: PMC8612197. | **14** Hotspot DNMT3A mutations in clonal hematopoiesis and acute myeloid leukemia sensitize cells to azacytidine via viral mimicry response. Scheller M, Ludwig AK, Goellner S, Rohde C, Kraemer S, Staeble S, Janssen M, Mueller JA, He LXZ, Baumer N, Arnold C, Gerss J, Schoenung M, Thiede C, Niederwieser C, Niederwieser D, Serve H, Berdel WE, Thiem U, Hemmerling I, Leuschner F, Plass C, Schlesner M, Zaugg J, Milsom MD, Trumpp A, Pabst C, Lipka DB, Muller-Tidow C. Nature cancer 2(5), 527 - 544 (2021) [10.1038/s43018-021-00213-9] | **15** Bcl-2/Bcl-xL inhibitor ABT-263 overcomes hypoxia-driven radioresistence and improves radiotherapy. Ritter V, Krautter F, Klein D, Jendrossek V, Rudner J. Cell Death Dis. 2021 Jul 13;12(7):694. doi: 10.1038/s41419-021-03971-7. PMID: 34257274; PMCID: PMC8277842. | **16** The Burden of Survivorship on Hematological Patients-Long-Term Analysis of Toxicities after Total Body Irradiation and Allogeneic Stem Cell Transplantation. Oertel M, Martel J, Mikesch JH, Scobioala S, Reicherts C, Kröger K, Lenz G, Stelljes M, Eich HT. Cancers (Basel). 2021 Nov 11;13(22):5640. doi: 10.3390/cancers13225640. | **17** Discovering Digital Tumor Signatures-Using Latent Code Representations to Manipulate and Classify Liver Lesions. Kleesiek J, Kersjes B, Ueltzhöffer K, Murray JM, Rother C, Köthe U, Schlemmer HP. Cancers (Basel). 2021 Jun 22;13(13):3108. doi: 10.3390/cancers13133108. PMID: 34206336; PMCID: PMC8269051. | **18** Dose escalation and expansion phase I studies with the tumour-targeting antibody-tumour necrosis factor fusion protein L19TNF plus doxorubicin in patients with advanced tumours, including sarcomas. Schliemann C, Hemmerle T, Berdel AF, Angenendt L, Kerkhoff A, Hering JP, Heindel W, Hartmann W, Wardelmann E, Chawla SP, de Braud F, Lenz G, Neri D, Kessler T, Berdel WE. Eur J Cancer. 2021 Jun;150:143-154. doi: 10.1016/j.ejca.2021.03.038. Epub 2021 Apr 23. | **19** HER2 mediates clinical resistance to the KRASG12C inhibitor sotorasib, which is overcome by co-targeting SHP2. Ho CSL, Tüns AI, Schildhaus HU, Wiesweg M, Grüner BM, Hegedus B, Schuler M, Schramm A, Oeck S. Eur J Cancer. 2021 Dec;159:16-23. doi: 10.1016/j.ejca.2021.10.003. Epub 2021 Oct 26. PMID: 34715459. | **20** Imaging temozolomide-induced changes in the myeloid glioma microenvironment. Foray C, Valtorta S, Barca C, Winkeler A, Roll W, Müther M, Wagner S, Gardner ML, Hermann S, Schäfers M, Grauer OM, Moresco RM, Zinnhardt B, Jacobs AH. Theranostics. 2021 Jan 1;11(5):2020-2033. doi: 10.7150/thno.47269. eCollection 2021. | **21** Role of Tumor-Infiltrating B Cells in Clinical Outcome of Patients with Melanoma Treated With Dabrafenib Plus Trametinib. Brase JC, Walter RFH, Savchenko A, Gusenleitner D, Garrett J, Schimming T, Varaljai R, Castelletti D, Kim J, Dakappagari N, Schultz K, Robert C, Long GV, Nathan PD, Ribas A, Flaherty KT, Karaszewska B, Schachter J, Sucker A, Schmid KW, Zimmer L, Livingstone E, Gasal E, Schadendorf D, Roesch A. Clin Cancer Res. 2021 Aug 15;27(16):4500-4510. doi: 10.1158/1078-0432.CCR-20-3586. Epub 2021 Jun 9. PMID: 34108180. | **22** WNT11/ROR2 signaling is associated with tumor invasion and poor survival in breast cancer. Menck K, Heinrichs S, Wlochowitz D, Sitte M, Noeding H, Janshoff A, Treiber H, Ruhwedel T, Schatlo B, von der Brelie C, Wiemann S, Pukrop T, Beißbarth T, Binder, C & Bleckmann A. J Exp Clin Cancer Res 40, 395 (2021). | **23** Uncovering and Correcting Shortcut Learning in Machine Learning Models for Skin Cancer Diagnosis. Meike Nauta, Ricky Walsh, Adam Dubowski and Christin Seifert: Diagnostics. 2022; 12(1):40. | **24** Establishment of a Palliative Care Consultation Service (PCCS) in an Acute Hospital Setting. Engel PT, Thavayogarajah T, Görlich D, Lenz P. Int J Environ Res Public Health. 2020 Jul 10;17(14):4977. doi: 10.3390/ijerph17144977. | **25** Resistance to Avapritinib in PDGFRA-Driven GIST Is Caused by Secondary Mutations in the PDGFRA Kinase Domain. Grunewald S, Klug LR, Mühlenberg T, Lategahn J, Falkenhorst J, Town A, Ehrt C, Wardelmann E, Hartmann W, Schildhaus HU, Treckmann J, Fletcher JA, Jung S, Czodrowski P, Miller S, Schmidt-Kittler O, Rauh D, Heinrich MC, Bauer S. Cancer Discov. 2021 Jan;11(1):108-125. doi: 10.1158/2159-8290.CD-20-0487. Epub 2020 Sep 24. PMID: 32972961. | **26** Dose-adjusted EPOCH-rituximab or intensified B-NHL therapy for pediatric primary mediastinal large B-cell lymphoma. Knörr F, Zimmermann M, Attarbaschi A, Kabíčková E, Maecker-Kolhoff B, Ruf S, Kühnle I, Ebinger M, Garthe AK, Simonitsch-Klupp I, Oschlies I, Klapper W, Burkhardt B, Woessmann W. Haematologica. 2021 Dec 1;106(12):3232-3235. doi: 10.3324/haematol.2021.278971. | **27** 68Ga-FAPI as a Diagnostic Tool in Sarcoma: Data from the 68Ga-FAPI PET Prospective Observational Trial. Kessler L, Ferdinandus J, Hirmas N, Bauer S, Dirksen U, Zarrad F, Nader M, Chodyla M, Milosevic A, Umutlu L, Schuler M, Podleska LE, Schildhaus HU, Fendler WP, Hamacher R., J Nucl Med. 2022 Jan;63(1):89-95. doi: 10.2967/jnumed.121.262096. Epub 2021 Apr 30. PMID: 33931468; PMCID: PMC8717183. | **28** An extracellular vesicle-related gene expression signature identifies high-risk patients in medulloblastoma. Albert TK, Interlandi M, Sill M, Graf M, Moreno N, Menck K, Rohlmann A, Melcher V, Korbanka S, Meyer Zu Hörste G, Lautwein T, Frühwald MC, Krebs CF, Holdhof D, Schoof M, Bleckmann A, Missler M, Dugas M, Schüller U, Jäger N, Pfister SM, Kerl K. Neuro Oncol. 2021 Apr 12;23(4):586-598. doi: 10.1093/neuonc/noaa254. | **29** BRAF mutations and BRAF mutation functional class have no negative impact on the clinical outcome of advanced NSCLC and associate with susceptibility to immunotherapy. Wiesweg M, Preuß C, Roeper J, Metzenmacher M, Eberhardt W, Stropiep U, Wedeken K, Reis H, Herold T, Darwiche K, Aigner C, Stuschke M, Schildhaus HU, Schmid KW, Falk M, Heukamp L, Tiemann M, Griesinger F, Schuler M. Eur J Cancer. 2021 May;149:211-221. doi: 10.1016/j.ejca.2021.02.036. Epub 2021 Apr 16. PMID: 33872981. | **30** The Colony Stimulating Factor-1 Receptor (CSF-1R)-Mediated Regulation of Microglia/Macrophages as a Target for Neurological Disorders (Glioma, Stroke). Barca C, Foray C, Hermann S, Herrlinger U, Remory I, Laoui D, Schäfers M, Grauer OM, Zinnhardt B, Jacobs AH. Front Immunol. 2021 Dec 7;12:787307. doi: 10.3389/fimmu.2021.787307. eCollection 2021. | **31** Thymomectomy plus total thymectomy versus simple thymomectomy for early-stage thymoma without myasthenia gravis: a European Society of Thoracic Surgeons Thymic Working Group Study. Guerrera F, Falcoz PE, Moser B, van Raemdonck D, Bille A, Toker A, Spaggiari L, Ampollini L, Filippini C, Thomas PA, Verdonck B, Mendogni P, Aigner C, Voltolini L, Novoa N, Patella M, Mantovani S, Bravio IG, Zisis C, Guirao A, Londero F, Congregado M, Rocco G, Du Pont B, Martucci N, Esch M, Brunelli A, Detterbeck FC, Venuta F, Weder W, Ruffini E; European Society of Thoracic Surgeons (ESTS) Thymic Working Group Participating Centers, Klepetko W, Olland A, Du Pont B, Nonaka D, Ozkan B, Lo Iacono G, Braggio C, Filosso PL, Brioude G, van Schil P, Nosotti M, Valdivia D, Bongiolatti S, Inci I, Dimitra R, Sánchez D, Grossi W, Moreno-Merino S, Teschner M. Eur J Cardiothorac Surg. 2021 Oct 22;60(4):881-887doi: 10.1093/ejcts/ezab224. PMID: 34023891. | **32** 5-Aminolevulinic Acid-Induced Porphyrin Contents in Various Brain Tumors: Implications Regarding Imaging Device Design and Their Validation. Suero Molina E, Kaneko S, Black D, Stummer W. Neurosurgery. 2021 Nov 18;89(6):1132-1140. doi: 10.1093/neuros/nyab361. | **33** Lutetium-177-PSMA-617 for Metastatic Castration-Resistant Prostate Cancer. Sartor O, de Bono J, Chi KN, Fizazi K, Herrmann K, Rahbar K, Tagawa ST, Nordquist LT, Vaishampayan N, El-Haddad G, Park CH, Beer TM, Armour A, Pérez-Contreras WJ, DeSilvio M, Kpamegan E, Gericke G, Messmann RA, Morris MJ, Krause BJ; VISION Investigators. N Engl J Med. 2021 Sep 16;385(12):1091-1103. doi: 10.1056/NEJMoa2107322. Epub 2021 Jun 23. PMID: 34161051; PMCID: PMC8446332. | **34** The Lymph-Sparing Quotient: A Retrospective Risk Analysis on Extremity Radiation for Soft Tissue Sarcoma Treatment. Sarif I, Elsayad K, Rolf D, Kittel C, Gosheger G, Wardelmann E, Haverkamp U, Eich HT. Cancers (Basel). 2021 Apr 27;13(9):2113. doi:10.3390/cancers13092113. | **35** A Systematic Review of the Safety, Feasibility and Benefits of Exercise for Patients with Advanced Cancer. De Lazzari N, Niels T, Tewes M, Götte M. Cancers (Basel). 2021 Sep 6;13(17):4478. doi: 10.3390/cancers13174478. PMID: 34503288; PMCID: PMC8430671. | **36** Total tumor volume reduction and low PSMA expression in patients receiving Lu-PSMA therapy. Seifert R, Kessel K, Schlack K, Weckesser M, Kersting D, Seitzer KE, Weber M, Bögemann M, Rahbar K. Theranostics. 2021 Jul 13;11(17):8143-8151. doi: 10.7150/thno.60222. eCollection 2021. | **37** Initial clinical experience with 90Y-FAPI-46 radioligand therapy for advanced stage solid tumors: a case series of nine patients. Ferdinandus J, Fragoso Costa P, Kessler L, Weber M, Hirmas N, Kostbade K, Bauer S, Schuler M, Ahrens M, Schildhaus HU, Rischpler C, Grafe H, Siveke JT, Herrmann K, Fendler W, Hamacher R., J Nucl Med. 2021 Aug 12:jnumed.121.262468. doi: 10.2967/jnumed.121.262468. Epub ahead of print. PMID: 34385340. | **38** The genetic landscape of choroid plexus tumors in children and adults. Thomas C, Soschinski P, Zwaig M, Oikonomopoulos S, Okonechnikov K, Pajtler KW, Sill M, Schweizer L, Koch A, Neumann J, Schüller U, Sahm F, Rauschenbach L, Keyvani K, Proescholdt M, Riemenschneider MJ, Segewiß J, Ruckert C, Grauer O, Monoranu CM, Lamszus K, Patrizi A, Kordes U, Siebert R, Kool M, Ragoussis J, Foulkes WD, Paulus W, Rivera B, Hasselblatt M. Neuro Oncol 2021 Apr 12;23(4):650-660. doi: 10.1093/neuonc/noaa267. | **39** The Pediatric Precision Oncology INFORM Registry: Clinical Outcome and Benefit for Patients with Very High-Evidence Targets. van Tilburg CM, Pfaff E, Pajtler KW, Langenberg KPS, Fiesel P, Jones BC, Balasubramanian GP, Stark S, Johann PD, Blattner-Johnson M, Schramm K, Dikow N, Hirsch S, Sutter C, Grund K, von Stackelberg A, Kulozik AE, Lissat A, Borkhardt A, Meisel R, Reinhardt D, Klusmann JH, Fleischhack G, Tippelt S, von Schweinitz D, Schmid I, Kramm CM, von Bueren AO, Calaminus G, Vorwerk P, Graf N, Westermann F, Fischer M, Eggert A, Burkhardt B, Wößmann W, Nathrath M, Hecker-Nolting S, Frühwald MC, Schneider DT, Brecht IB, Ketteler P, Fulda S, Koscielniak E, Meister MT, Scheer M, Hettmer S, Schwab M, Tremmel R, Øra I, Hutter C, Gerber NU, Lohi O, Kazanowska B, Kattamis A, Filippidou M, Goemans B, Zwaan CM, Milde T, Jäger N, Wolf S, Reuss D, Sahm F, von Deimling A, Dirksen U, Freitag A, Witt R, Lichter P, Kopp-Schneider A, Jones DTW, Molenaar JJ, Capper D, Pfister SM, Witt O. Cancer Discov. 2021 Nov;11(11):2764-2779. doi: 10.1158/2159-8290.CD-21-0094. Epub 2021 Aug 9. PMID: 34373263. | **40** Imaging temozolomide-induced changes in the myeloid glioma microenvironment. Foray C, Valtorta S, Barca C, Winkeler A, Roll W, Müther M, Wagner S, Gardner ML, Hermann S, Schäfers M, Grauer OM, Moresco RM, Zinnhardt B, Jacobs AH. Theranostics. 2021 Jan 1;11(5):2020-2033. doi: 10.7150/thno.47269. eCollection 2021. | **41** Shift in G1-Checkpoint from ATM-Alone to a Cooperative ATM Plus ATR Regulation with Increasing Dose of Radiation. Li F, Mladenov E, Dueva R, Stuschke M, Timmermann B, Iliakis G. Cells. 2021 Dec 27;11(1):63. doi: 10.3390/cells11010063. PMID: 35011623; PMCID: PMC8750242. | **42** CTLA4 promoter hypomethylation is a negative prognostic biomarker at initial diagnosis but predicts response and favorable outcome to anti-PD-1 based immunotherapy in clear cell renal cell carcinoma. Klümper N, Ralser DJ, Zarbl R, Schlack K, Schrader AJ, Rehlinghaus M, Hoffmann MJ, Niegisch G, Uhlig A, Trojan L, Steinestel J, Steinestel K, Wirtz RM, Sikic D, Eckstein M, Kristiansen G, Toma M, Hölzel M, Ritter M, Strieth S, Ellinger J, Dietrich D. J Immunother Cancer. 2021 Aug;9(8):e002949. doi: 10.1136/jitc-2021-002949. | **43** An Autochthonous Mouse Model of Myd88- and BCL2-Driven Diffuse Large B-cell Lymphoma Reveals Actionable Molecular Vulnerabilities. Flümann R, Rehkämper T, Nieper P, Pfeiffer P, Holzem A, Klein S, Bhatia S, Kochanek M, Kisis I, Pelzer BW, Ahlert H, Hauer J, da Palma Guerreiro A, Ryan JA, Reimann M, Riabinska A, Wiederstein J, Krüger M, Deckert M, Altmüller J, Klatt AR, Frenzel LP, Pasqualucci L, Béguelin W, Melnick AM, Sander S, Montesinos-Rongen M, Brunn A, Lohneis P, Büttner R, Kashkar H, Borkhardt A, Letai A, Persigehl T, Peifer M, Schmitt CA, Reinhardt HC, Knittel G. Blood Cancer Discov. 2021 Jan;2(1):70-91. doi: 10.1158/2643-3230.BCD-19-0059. PMID: 33447829; PMCID: PMC7806186. | **44** The multiple myeloma microenvironment is defined by an inflammatory stromal cell landscape. de Jong MME, Kellermayer Z, Papazian N, Tahri S, Hofste Op Bruinink D, Hoogenboezem R, Sanders MA, van de Woestijne PC, Bos PK, Khandanpour C, Vermeulen J, Moreau P, van Duin M, Broijl A, Sonneveld P, Cupedo T. Nat Immunol. 2021 Jun;22(6):769-780. doi: 10.1038/s41590-021-00931-3. Epub 2021 May 20. | **45** Ferroptosis response segregates small cell lung cancer (SCLC) neuroendocrine subtypes. Bebber C M, Thomas E S, Stroh J et al. Among Authors: Reinhardt HC. Nat Commun 12, 2048 (2021). https://doi.org/10.1038/s41467-021-22336-4. | **46** Pembrolizumab alone or combined with chemotherapy versus chemotherapy as first-line therapy for advanced urothelial carcinoma (KEYNOTE-361): a randomised, open-label, phase 3 trial. Powles T, Csőszi T, Özgüroğlu M, Matsubara N, Géczi L, Cheng SY, Fradet Y, Oudard S, Vulsteke C, Morales Barrera R, Fléchon A, Gunduz S, Loriot Y, Rodriguez-Vida A, Mamtani R, Yu EY, Nam K, Imai K, Homet Moreno B, Alva A, KEYNOTE-361 Investigators. Lancet Oncol. 2021 Jul;22(7):931-945. doi: 10.1016/S1470-2045(21)00152-2. Epub 2021 May. | **47** Evaluation of dose, volume and outcome in children with localized, intracranial ependymoma treated with proton therapy within the prospective KiProReg Study. Peters S, Merta J, Schmidt L, Jazmati D, Kramer PH, Blase C, Tippelt S, Fleischhack G, Stock A, Bison B, Rutkowski S, Pietsch T, Kortmann RD, Timmermann B. Neuro Oncol. 2021 Dec 29:noab301. doi: 10.1093/neuonc/noab301. Epub ahead of print. PMID: 34964901. | **48** Lenvatinib plus Pembrolizumab or Everolimus for Advanced Renal Cell Carcinoma. Motzer R, Alekseev B, Rha SY, Porta C, Eto M, Powles T, Grünwald V, Hutson TE, Kopyltsov E, Méndez-Vidal MJ, Kozlov V, Alyasova A, Hong SH, Kapoor A, Alonso Gordoa T, Merchan JR, Winquist E, Maroto P, Goh JC, Kim M, Gurney H, Patel V, Peer A, Procopio G, Takagi T, Melichar B, Rolland F, De Giorgi U, Wong S, Bedke J, Schmidinger M, Dutcus CE, Smith AD, Dutta L, Mody K, Perini RF, Xing D, Choueiri TK; CLEAR Trial Investigators. N Engl J Med. 2021 Apr 8;384(14):1289-1300. doi: 10.1056/NEJMoa2035716. Epub 2021 Feb 13. PMID: 33616314.

We are here for you!

Essen

Prof. Dirk Schadendorf
Director WTZ
+49 201 723-2431
dirk.schadendorf@uk-essen.de

Dr. Stefan Palm
General Manager WTZ
+49 201 723-1614
stefan.palm@uk-essen.de

Wibke Bomholt
Coordinator, Cooperations and Reporting, CCCE Project Management
+49 201 723-1904
wibke.bomholt@uk-essen.de

Leonard Engert
Coordinator, Event Management
+49 201 723-1903
leonard.engert@uk-essen.de

Katharina Kaminski
Advisor, Patients' Networks and Self-Help
+49 201 723-1603
katharina.kaminski@uk-essen.de

Anete Matisa
Coordination Contact for Tumour Documentation Team
anete.matisa@uk-essen.de

Anja Merkel-Jens
Clinical Cancer Registry
+49 201 723-77258
anja.merkel-jens@uk-essen.de
www.imibe.de

Raya Rausch
Coordinator, Funding Programmes
+49 201 723-1947
raya.rausch@uk-essen.de

Nina Reckert
Project Assistant and Secretariat
+49 201 723-1614
nina.reckert@uk-essen.de

Janine Scholz
Advisor, Patient Strategy and Communications
+49 201 723-6543
janine.scholz@uk-essen.de

WTZ Network locations

Münster

Prof. Annalen Bleckmann
Director WTZ
+49 251 83-57655
annalen.bleckmann@ukmuenster.de

Prof. Philipp Lenz
General Manager WTZ
+49 251 83-43745
philipp.lenz@ukmuenster.de

Dr. Klaus Wethmar
Medical Clinic A
+49 251 83-57655
klaus.wethmar@ukmuenster.de

Julia Beusing-Markmann
Coordination of Patient Involvement/Self-Help
+49 251 83-48035
julia.beusing-markmann@ukmuenster.de

Silke Brandl
Clinical Cancer Registry
+49 251 83-57143
silke.brandl@ukmuenster.de

Antje Duda
Coordinator, Oncological Center
+49 251 83-58576
antje.duda@ukmuenster.de

Heike Duhme
Clinical Cancer Registry
+49 251 83-58575
heike.duhme@ukmuenster.de

Dr. Stefanie Gögel
Studies Coordination
+49 251 83-50047
stefanie.goegel@ukmuenster.de

Geraldine Henneböhl
Coordinator, WTZ Network and Funding Programmes
+49 251 83-51621
geraldine.henneboehl@ukmuenster.de

Patricia Liersch
Communications Advisor
+49 251 83-54043
patricia.liersch@ukmuenster.de

Vanessa Schücker
Cancer Patients' Support
+49 251 83-50067
vanessa.schuecker@ukmuenster.de

Birgit Storm
Secretariat
+49 251 83-57655
birgit.storm@ukmuenster.de

Publishing details

Publisher
WTZ Network
www.wtz.nrw

University Hospital Essen
Hufelandstraße 55
45147 Essen

University Hospital Münster
Albert-Schweitzer-Campus 1
48149 Münster

Editors and Project Management
Patricia Liersch
(responsible for the purposes
of German media law)
Communications Advisor,
WTZ Network Partner Münster

Janine Scholz (responsible for the
purposes of German media law)
Advisor, Patient Strategy and
Communications, WTZ Essen

Corporate Communications
University Medicine Essen
Achim Struchholz
Head of Group Marketing and Communications

University Hospital Münster
Corporate Communications

Text
Tim Stelzer | Münster

Graphic design
goldmarie design
Broda & Broda GbR | Münster

Printers
Wentker Druck GmbH | Greven

Picture credits UME
Jan Ladwig (pp. 3, 33, 36), Medienzentrum UK Essen
(pp. 4, 10, 21, 25, 44, 46, 52), Frank Preuss (p. 10), Ruhr-
landklinik (p. 14), Universität Duisburg-Essen (p. 24),
K. Lückerath (p. 24), A. Tasdogan (p. 25), M. Sucker (p. 28),
M. Glas (p. 29), Marius Becker (p. 31), UME (p. 31),
K. Kaminski (pp. 34, 52), HNO-Klinik/UME (p. 40)

Picture credits UKM
UKM (pp. 2, 7, 8, 11, 24–27, 31, 46, 53), UKM/Wibberg
(pp. 2 bottom left, 2/3 bottom, 4, 16, 17, 32, 35, 41, 45),
Shutterstock (p. 13), UKM/Marschalkowski (pp. 15, 30),
EIMI/Kuhlmann (p. 24), UKM/Leßmann (p. 31),
UKM/Jeremies (p. 38)

wtz.nrw