



The West German Centre for Infectious Diseases

Combatting viruses and bacteria







Dear Reader,

our immune system is put to the test practically every day each time the human body is confronted with new infectious micro-organisms (pathogens). These viruses or bacteria particularly affect patients with weakened immune systems: When patients require new organs or suffer from tumours, to achieve the best possible medical outcome they have to undergo treatment which involves suppressing the immune system. This can often result in an immune deficiency which makes the patient more susceptible to infection.

Treating and – preferably – preventing infections requires a great deal of expertise. Infections involving resistant pathogens are especially difficult to treat and call for new strategies in the management of treatment, for example special isolation measures. For this reason, an interdisciplinary team of internal medicine specialists, clinical infectious disease specialists, paediatricians, dermatologists, microbiologists, virologists and immunologists of the highest medical calibre work in close collaboration at the West German Centre for Infectious Diseases (WZI). Clinical hygiene is also an effective help in preventing infections from occurring.

Founded in 2013, WZI brings together the relevant infectious disease management disciplines at the University Hospital of Essen and promotes close interaction between doctors and scientists. Our clinical experts in the infectious disease outpatient unit and an interdisciplinary infections ward diagnose and treat all relevant infectious ailments. In large collaborative research projects funded by the German Research Foundation (GRF), scientific experts investigate the causes and origins of the diseases, thereby laying the foundation for better treatment prospects.

By founding WZI and pooling our skills and capabilities, we serve patients by offering the very highest level of medical care, putting them at the centre of what we do every single day.

.Vittmer

Prof Dr Ulf Dittmer (D.Sc.) Executive Director of WZI and Director of the Institute of Virology at the University Hospital of Essen

Prof Dr Oliver Witzke (M.D.) Executive Director of WZI and Director of the Clinic for Infectiology at the University Hospital of Essen

Preventing

infection together



We humans are constantly surrounded by viruses and bacteria. The fact that we are not constantly getting infections is primarily thanks to our immune system. Medical progress and social change have also contributed to the significant decline in the risk of many infectious diseases in recent decades.

However, especially where the immune system is weakened – say as a result of tumours, transplants or severe organ diseases such as kidney, liver, heart and lung diseases – infections can often be life-threatening.

"The term 'infection' is derived from the Latin – literally an 'invasion' or 'poisoning' of the system. This refers to the invasion and subsequent multiplication of pathogenic, i. e. illness-inducing, living organisms or molecules within an organism", explains Prof Dr Ulf Dittmer (D.Sc.), Director of the Institute of Virology at the University Hospital of Essen (UH Essen). "A good way of describing what happens when the body's own immune system is weakened is: the immune system is unable to put up an adequate defence to the invaders, and the body is inundated by pathogens, resulting in disease", he continues.



In his view, there is set to be an increase in the number of immune deficiency patients in future years. "Medical progress is actually one of the reasons for this because it's a major contributor to ever-growing life expectancy of people in industrialised nations like Europe and North America. In advanced age, though, there's also an increased risk of things like cancer and major organ diseases that often require immunosuppressive therapy. At the same time, the functioning of the immune system is significantly reduced in old age even without organic diseases. These factors weaken the immune system in a lasting way and encourage infectious diseases", concludes Prof Dittmer. Greater research into infections and, as a result, better treatment of infectious disease patients, is therefore of growing social and medical relevance.

Doctors, scientists and nurses at UH Essen recognised this trend early on and responded to the growing medical importance of infections by establishing the West German Centre for Infectious Diseases (WZI) in 2013.

The management of infectious disease is an interdisciplinary science – reflected in the fact that WZI pulls together the UH Essen clinics and institutes dealing with the study, prevention, diagnosis and treatment of infectious diseases. WZI has teams of internal medicine and infectious disease specialists, paediatricians, dermatologists, microbiologists, virologists and immunologists working closely together for the benefit of patients. Other specialists in other disciplines can be brought in quickly as required to advise on treatment. The UH Essen Clinical Hygiene Unit, all intensive care units and the Antibiotics Consultancy Service are also involved in the centre's work.

This pooling of expertise is a real advantage because, particularly with infectious diseases, doctors and scientists involved in diagnosis and treatment should work together in an interdisciplinary manner as the diseases do not usually fall under any single discipline alone. Accordingly, the staff of participating clinics and institutes meet for regular case conferences and to discuss the best treatment or therapy for each patient from different specialist medical perspectives.

One main focal point of the work at WZI is the treatment of immune deficiency patients. An immune deficiency can arise from an immunosuppressive therapy after an organ transplant, after chemotherapy for the treatment of tumour diseases or in the case of chronic infection. In addition to caring for affected patients, research and teaching in the field of infectious diseases take high priority. Doctors at our centre in Essen are also engaged in developing new diagnostic procedures and treatment recommendations to ensure lasting improvements in the quality of care nationwide.



HPSTD-Ambulanz

Excellent outpatient care

For outpatient care as well as pre-stay and post-stay inpatients we have a **General Infection Outpatient Unit, several specialised outpatient clinics** and an **infectiousdisease surgery** available at WZI. In the outpatient clinics, doctors treat patients with immune deficiencies, unexplained syndromes and suspected infectious diseases. For diagnostic evaluation they generally involve specialists from the Institutes of Medical Microbiology and Virology. Together, the doctors and scientists then determine diagnostic measures and treatment plans.

In addition to the General Infection Outpatient Unit, people with HIV/AIDS and other sexually transmitted and proctologic diseases are looked after in **HPSTD Outpatient Unit**. Staff can provide not only highly specialised medical care but also psycho-social support and assistance. Our Hepatitis Outpatient Unit provides screening for and early diagnosis of hepatitis and other liver diseases. These disorders can be caused by viruses and often manifest themselves in uncharacteristic symptoms, thus requiring careful diagnosis.

For liver and kidney transplant patients, **two transplant outpatient units** are available: In the **Renal Transplant Outpatient Unit** patients with kidney and pancreas transplants have skilled experts on hand for all post-op aftercare issues. This availability is especially important from a treatment success point of view, as infectious-disease and immunological problems can occur before and after transplantation.

People with liver transplants receive excellent care in the Liver Transplant Outpatient Aftercare Unit. Lifelong immunosuppressive medication following a transplant requires a very precise, customised programme of aftercare aimed at protecting patients from infectious disease.

The Bone Marrow Transplantation (BMT) Outpatient Unit looks after oncology patients recovering from allogeneic peripheral blood stem cell or bone marrow transplantation with the aim of prevention, early detection and suitable treatment of infectious-disease complications, thereby ensuring long-term treatment success.

Staff at the outpatient units are also points of contact for inpatient and outpatient physicians throughout the Ruhr conurbation on serious issues associated with infectious diseases.



New Clinic for Infectiology for inpatients

Inpatients are generally treated in those clinics under the WZI umbrella or on the "M-INF" interdisciplinary infections ward of the Radiotherapy Clinic. Patients who are not accommodated on the new infections ward, but on other wards, are looked after by the **Infectiological Consultation Service** (second opinions, etc.) and the **Antibiotics Consultancy Service**, both of which are located on-site.

The M-INF ward under the medical leadership of Prof Dr Oliver Witzke (M.D.) from the Clinic for Infectiology has a total of nine single rooms, four doubles and one patient reception room. Seven single rooms and one double are fitted out as isolation rooms: "The ward has isolation beds where patients with particularly severe infectious diseases, poor immune response or mandatory isolation requirements can be given the best possible care", Prof Dr Witzke explains. Vacuum-operated air-lock entrances ensure that pathogens are unable to spread throughout the entire ward. In addition, the spread of dangerous germs is also prevented by an adapted ventilation system and separate entrances to the isolation rooms. "We developed the underlying safety blueprint, which includes regular training of ward staff, in

conjunction with the UH Essen's Clinical Hygiene Unit", continues Prof Witzke, emphasising the special importance of interdisciplinary collaboration. Infectious disease specialists on hand right at the bedside work closely with colleagues from the diagnostic virology and microbiology departments, making it possible to diagnose infection disorders more quickly and, thereby, home in and get started on the optimum treatment plan. In order to avoid subjecting critically ill patients to strenuous and stressful bed moves, the M-INF interdisciplinary infections ward offers one further advantage: thanks to the technical equipment on hand in the ward, diagnosis is performed in the immediate vicinity of the patient.

However, WZI staff do not just deal with the acute phase of an infectious disorder, but also handle the aftercare period which is of great importance to the patient. "Close psychosocial care is particularly important to patients. They allow the impending release and subsequent convalescence activities to be planned and initiated in a more patient-oriented manner", explains Prof Witzke, referring to the package of therapies and interventions offered by WZI.





Institutes at the WZI

In addition to the outpatient units, the institutes also play a key part in successful treatment of patients at WZI, because there can be no optimum treatment without detailed and rapid diagnosis.

The **Institute of Medical Microbiology** headed by Prof Dr Jan Buer (M. D.) detects infectious agents (bacteria, fungi and parasites) using conventional and the very latest molecular biological methods and tests their sensitivity to antibiotics. One area of focus is the microbiological monitoring of patients with particular risk of infection, for example after chemotherapy and transplants. Within the interdisciplinary team, the Antibiotics Consultancy Service (ACS) conducts consultations on the diagnosis and treatment of serious infections. The Institute of Virology is led by Prof Dr Ulf Dittmer (D.Sc.). It offers an extensive range of services for the diagnosis of viral infections. One special area of focus is the detection of chronic viral infections. These include infections in patients with immune deficiencies following an organ or bone marrow transplant. But the Institute of Virology has its part to play in everyday matters too: at the vaccination and travel health advisory surgery anyone can register to receive guidance on recommended vaccinations when travelling far afield. It offers a full range of advice on travel vaccinations, putting together a medicine and first aid kit, how to avoid traveller's diarrhoea and much more besides - all tailored to the country of visit and the type of travel involved.

As the official yellow fever vaccination point for the province of North-Rhine Westphalia, the travel vaccination surgery also offers inoculation against yellow fever as well as all other important vaccines.

Small children are in the stage of life which brings the most infections. Added to this is the fact that, per head of population, young children in German outpatient units are prescribed the most antibiotics. This can lead to fear and uncertainty on the part of parents. The **Paediatric Infections** & Advice Surgery is aimed at parents with children who suffer unusually often from infections or who show signs of rare or especially serious infections.

Applied research

for the benefit of patients



Improving the treatment of infections in patients with immune deficiencies requires a fundamental understanding of the causeand-effect interaction of these disorders. For this reason, research into infectious disorders at UH Essen is of great importance, extremely practice-led and linked into international networks. Our number one objective is to allow basic research findings to be adopted in clinical care settings as soon as possible. Researchers at WZI conduct studies on the following topics:

Antiretroviral treatment of HIV infections

Nowadays, HIV infections can be treated by using so-called antiretroviral drugs. However, the drugs must be taken longterm and can cause long-term side effects. In our national **HPSTD Outpatient Unit**, virologists and HIV specialists develop strategies to optimise HIV treatment with a view to minimising the emergence of resistance and side effects in patients over the long term.

Antiviral treatment for infective hepatitis

Untreated, hepatitis B and C virus infections can result in chronic inflammation of the liver and eventually lead to liver failure or liver cancer. In order to develop effective drug-based therapies for the treatment of chronic hepatitis, doctors and scientists need an intimate understanding of the basic mechanisms of the human immune response to these viruses. To this end, research is undertaken at WZI as part of an international research network (Transregio SFB) and a German Research Foundation Postgraduate Group as well as in special clinical study protocols. Of particular note is the very close interaction between foundational researchers and clinic-based hepatitis specialists who are able to fast-track research results into clinical care settings.

Infection prevention following solid organ transplants

Following an organ transplant, patients have a significantly increased risk of both mortality and the development of severe infections. Often these are infections involve "atypical" pathogens, also known as "opportunistic" pathogens, which are usually harmless when found in healthy people. For years, doctors and scientists at WZI have been investigating and optimising preventive treatments and vaccines aimed at avoiding, or treating more effectively, such infections in organ recipients, with a focus on infections involving the cytomegalovirus.

Significance of T-lymphocytes in patients following solid organ transplants

The significantly increased risk of infection following an organ transplant is explained by the immunosuppressive treatment required, which not only suppresses rejection responses but also lowers defence against infections.

WZI staffs are working hard to investigate the effect which various immunosuppressive treatments have on the immune response of transplant patients. In experimental models and in patients, strategies are being evaluated as to how, for example, an immune response to infection can be enhanced by means of vaccination without provoking rejection responses.





Scientific exchanges with China

When people develop chronic viral infections such as hepatitis B, hepatitis C or HIV, there are still only limited treatment options available that can be used to eliminate viruses and avoid protracted consequences from these chronic infections. For this reason, in 2009, German and Chinese scientists joined forces to create what became known as the Transregio 60 Collaborative Research Centre (TRR 60). Researchers at the University Hospitals of Duisburg-Essen and Bochum Universities are collaborating with universities and institutions in Wuhan and Shanghai (China) to investigate the interaction of viruses with cells of the immune system to develop foundations for new immunotherapies and vaccines.

They analyse the mechanisms underlying the transition from acute to chronic infection in order to develop an understanding of how viruses are able to escape the defence mechanisms of the human immune system. All scientists involved meet regularly in Germany and China at annual workshops to discuss the latest findings from their research.

The second period of funding for the project has been approved by the German Research Foundation (GRF) for a further three and a half years. The success of recent years, with over 100 scientific publications, was reason enough to provide the 80+ project staff in Germany and China with an extra 7.5 million euros to develop new strategies for immune treatments and vaccines combatting chronic viral infections. The common goal now is to develop drugs and vaccines to overcome the "slowdown mechanisms" of the immune system and thereby be able to bring an end to chronic viral infections. "If we're successful we could combat a very major global health problem long-term", explains Prof Dr Ulf Dittmer (M. D.), Director of the Institute of Virology and Chairman of the Research Syndicate.

Another side effect of international collaboration which is good news for patients is: thanks to the close interaction with foreign colleagues, the German researchers now have fast access to new viruses and other pathogens – such as avian influenza viruses (bird 'flu) – that are first detected in Asia, and are able to develop effective detection methods and medicines for Europe.



Supporting young professionals

The **BIOME Postgraduate Group** has been supporting doctoral candidates in medicine and the natural sciences in their sophisticated scientific training since 2010. Founded by the Faculty of Medicine and Faculty of Biology at the University of Duisburg-Essen, it provides a platform for regular scientific exchange and discussion.

Launched in April 2014, the new 1949 Postgraduate Group also offers young researchers the opportunity to obtain their doctorates at a high professional level in the field of infection research. The postgraduate group is receiving total funding of 4.5 million euros from the German Research Foundation for the first four and a half years. This enables up to 30 scientists at the three participating universities (Ruhr-University Bochum, Heinrich-Heine-University Düsseldorf and Duisburg-Essen University) to be supported financially and academically. When asked about the material the group will be addressing, Prof Dr Astrid Westendorf (D.Sc.), Institute of Medical Microbiology, and Prof Dr Mirko Trilling (D.Sc.), Institute of Virology, say "The researchers will in future be concerning themselves with the way the immune system responds to infectious diseases". They direct and coordinate the group of researchers together.

There are good reasons for choosing this subject area: Despite intensive research, vaccines and treatment options are nowhere near available for all pathogens. As a result, the immune response of anyone affected is of great importance as it largely determines how an infection will progress. For this reason, the postgraduate group's name also carries the subtitle "Immune response in infectious diseases – regulation of innate and acquired immunity". The interaction between the early immune response and the subsequently acquired pathogen-specific immunity is set to be analysed in detail. "This type of collaboration setting, such as joint seminars and courses conducted in an alternating form at the three universities in Bochum, Düsseldorf and Duisburg/Essen, are helpful in achieving a doctorate at a very high professional level", says Prof Westendorf who is certain that multi-university research and training of doctoral students offers the best opportunities young scientists can get.





Using research to prevent post-transplant complications

WZI pulls together experts from different disciplines to enable patients to obtain the best medical care. On the next two pages we introduce two scientists looking to use their research to build a foundation for successful clinical treatment.

One key challenge in transplant medicine is the high risk of infection. A very effective measure for preventing this complication is vaccination. A detailed analysis of post-vaccination immunity enables doctors to assess more accurately, in the case of organ recipients, how effective a vaccine has been and to what extent the patient's body has succeeded in building adequate immune protection following the transplant. For this reason, the overarching goal of a working group led by medical doctor Prof Dr Monika Lindemann from the Transfusion Institute is to establish and improve innovative methods of diagnosis in transplant recipients. Such detection methods help measure even weak responses of the immune system and detect whether the body could fight off an infection.



Prof Dr Monika Lindemann



Vaccinations are not only used in transplant recipients, but also for live donors of organs or blood stem cells. The background is that in the context of transplants, immune cells – and with them immune responses to infections – are transferred from donors to recipients. This immune transfer through blood stem cell transplantation has already been used in treatments: "The immune protection of donors has been transferred to infected patients by means of transplantation", says Prof Lindemann, explaining her approach. "By vaccinating the donor before the transplant we've already managed to heal cases of hepatitis B in two blood stem cell recipients", she continues.

The second key challenge in transplant medicine are rejections. The aim of the work of Prof Lindemann and her team is to improve donor selection and medical treatment. To this end, the doctors estimate the risk of rejection in both donors and recipients in the laboratory before transplantation. The focus here is on live kidney transplants: Transplants can be planned and, as a result, the immunological risks can be analysed accurately before the transplant is made. The lab results can be used to help scientists and case doctors determine further treatment measures.

About Prof Dr Monika Lindemann (M. D.):

As laboratory medicine specialist, Prof Dr Lindemann works in the Robert-Koch House on the UH Essen site and was appointed a supernumary professor at the University of Duisburg-Essen in 2012. In the same year, together with Prof Dr Oliver Witzke of the Clinic for Infectiology at the UH Essen, she was awarded the Hans U. Zollinger Research Prize by the German Nephrology Society. The two Essen researchers were honoured for their joint work in the field of transplant immunology. The scientists use their scientific research to improve the knowledge of the specific immune capabilities of kidney transplant patients after vaccination, and also to improve the prediction of post-transplant complications.



Junior researcher wants to decrypt herpes viruses

Together with seven colleagues, young scientist Prof Dr Mirko Trilling (D.Sc.) is undertaking foundational research into the field of herpes viruses: Since mid-2012, the working group in Essen has been looking at cytomegaloviruses (CMVs), which include the human herpes virus 5 and can cause disease in humans. Depending on age, between 30% and 60% of German adults are latent, i.e. hidden, carriers of this virus - infected, but often unaware of the fact. In the human body it can affect various organs such as the lungs, liver, or the retina of the eye. Infection during pregnancy is especially dangerous, as herpes virus 5 can pass through the womb to the unborn child, causing permanent damage such as malformations or other impairments, e.g. hearing deficiencies or mental disabilities.

The working group led by Prof Trilling is working to uncover fundamental mechanisms by which these viruses evade the human immune response, causing lifelong infections. The viruses divert functions and components of the human organism and oppose the defence mechanisms of the immune system with sophisticated countermeasures. This allows the immune



Prof Dr Mirko Trilling



system to respond to the viruses, but never fully defeat them. The pathogens remain latent in the body until the equilibrium between the immune system and viral countermeasures is so corrupt that the virus can no longer be kept in check. This is the case, for example, when patients are immunosuppressed due to disease or organ transplants.

"Once we've found the genes responsible and once we understand the basic mechanisms of viruses, we should be able to remove specific genes from the genome of the viruses to produce attenuated viruses for vaccine purposes. It would also be possible to use the knowledge gained for specific development of pharmacological substances, or – put more simply – apply medicines more appropriately", says Prof Trilling as he looks to the future. By blocking the viruses' "sheep's clothing", patients' immune systems could be helped to defeat them entirely.

What Prof Trilling especially values about Essen as a research location are the outstanding scientific environment and the clear link to clinical research and, thus, to the patient. This is made possible, among other things, by an interdisciplinary approach: "Collaboration between scientists and medical doctors in different hospitals and institutes here in Essen is exceptionally good, with the result that we've got the very best environment for developing the right medicines and effective agents".

About Prof Dr Mirko Trilling (D.Sc.):

The biology graduate has been an assistant professor of virology at the UH Essen Institute of Virology since 2012. He researches and teaches at the Robert-Koch House on Virchowstraße. In 2013, Prof Trilling was awarded the IFORES Special Programme for Innovative Research by the UH Essen (part of the University of Duisburg-Essen). His research project on the mode of action of immune cells was judged to be particularly innovative and received faculty funding.



Outlook

Our medical and nursing activities are characterised throughout by focussing on patients and their specific needs. For this reason, we are particularly pleased that, by founding the WZI, we are now also able to pool knowledge and information more effectively in the field of infectious disease management – benefitting from the very latest research both medically/scientifically and in terms of patient care.

Protective vaccines and drugs are not yet available for all dangerous pathogens: That is reason enough to move ahead strongly and continue to support our highly motivated researchers in this field.

In recent years, great strides have been made in pathogen-specific treatments, primarily in the field of virology: Here, the number of effective drugs has multiplied over a very short space of time. An example of this is the treatment of the hepatitis C viral infection which, until 2013, did not have a great success rate and caused severe side effects. Since 2014, however, several clinical care medications have been approved which are able to cure chronic infection completely in most patients. However, new drugs are sometimes associated not just with favourable, but also adverse long-term consequences: some viruses develop resistance, as they are often genetically highly variable. That said, modern diagnostics is well armed against this complication as the latest methods make it possible to pinpoint the genetic information of viruses accurately. In this way, a "genetic fingerprint" can be created for each individual patient's infection virus. Using this information, the case doctor can select effective drugs to which the type of virus in question has no resistance.

Personalised, individually tailored medical service for each patient is a new treatment strategy that has already become reality at WZI within the UH Essen.



Your contacts at WZI

Institute of Medical Microbiology

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Institute of Virology

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Surgery hours: by appointment

New M-INF Infections Ward

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Tel. +49 (0) 201 723-22 18

www.uk-essen.de www.wzi-essen.de

Interdisciplinary Infectious Diseases Outpatient Unit

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Surgery hours: by appointment

Antibiotics Consultancy Service (ACS)

Contact: Prof Dr Peter-Michael Rath (M.D.) (Head of ACS)

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Vaccination and Travel Health Advisory Surgery E-Mail: impfsprechstunde@uk-essen.de

Directions and Map

SatNav address:

Universitätsklinikum Essen Hufelandstraße 55 45147 Essen

Getting here by public transport

Due to limited parking space around the grounds of University Hospital of Essen, we recommend that patients and visitors travel by public transport. The University Hospital is in a central location and therefore very easy to reach by bus or train: The underground rail services and tram services run every 10 minutes.

From Central Station, take the U17 towards U Margarethenhöhe to the University Hospital. Get off at the "Holsterhauser Platz" stop.

The No. 106 tram stops right at the main Ή entrance of the University Hospital - the name of the stop is "Klinikum". The No. 106 runs from Altenessen Station via Essen Central Station ("Hauptbahnhof") to "Helenenstraße" in Altendorf (and at times all the way to Bergeborbeck).

The "Klinikum" stop on the 160 and 161 bus routes is also near the main entrance. The buses will also take you to the Essen districts of Borbeck and Stoppenberg.



There is also a taxi rank by the main entrance on Hufelandstraße. Patients

can also have someone call a taxi for them on the wards or at the car entrance security gate, tel. +49 (0) 201 723-2617.

From Düsseldorf International Airport you \rightarrow

can travel to the University Hospital either by train (the S1 or RE1 service) to Essen Central Station ("Hauptbahnhof") and change there onto the U17 towards Margarethenhöhe. If you come this way, please get off at the "Holsterhauser Platz" stop. Alternatively you can also get a taxi from the airport.

Getting here by car

The University Hospital of Essen is located in the Holsterhausen district, two kilometres southwest of Essen Central Station ("Hauptbahnhof"). The route is signposted in the city. If you are coming from outside Essen, the following motorways can be used:

Essen / Gladbeck exit



Turn right onto the B224 following signs for Essen. At the junction of Gladbecker Straße and Grillostraße, and thereafter, follow the "Universitätsklinikum" signs.

Essen-Nord motorway intersection



towards Essen. At the junction of Gladbecker Straße and Grillostraße, and thereafter, follow the "Universitätsklinikum" signs.

Essen-Holsterhausen / Altendorf exit



right if approaching from Duisburg). At the end of the exit slip road follow the signs towards the "Universitätsklinikum".

Essen-Rüttenscheid exit



At the end of the exit slip road follow the signs towards the "Universitätsklinikum".

Parking is available in multi-storey car parks Ρ near the main entrance on Hufelandstraße and also on Virchowstraße (charges apply).

Entry and exit are permitted at any time of day or night. You can purchase discounted car park tickets for your entire hospital stay at the car entrance security gate. For details of the various tariffs, just ask the staff at the car entrance security gate or call them on +49 (0) 201723-2617. Persons donating blood or blood platelets at the Transfusion Institute are allowed to use the multi-storey car parks free of charge.

For further information on how to get here, and for the UH Essen site map, please go to www.uk-essen.de/anfahrt450/

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