WELCOME TO THE

Health Metropolis Ruhr
Welcome to the Health Metropolis Ruhr!

With a population of more than 5 million, the Ruhr region is an important, centrally located European hub. For many years, the Ruhr region was synonymous with coal and steel. Heavy industries, smoking chimneys, and hard physical labor were characteristic of life along the Ruhr River. Today, all of those have been replaced by one of the most vital European centers. Unparalleled structural change has come to the region, to the daily delight of its inhabitants: Today, theaters and museums thrive in the very industrial buildings that once housed steel production plants.

So significant has this change been that the Ruhr region has been named one of the three European Capitals of Culture for 2010. Today, the region’s heartbeat is driven not only by the arts, sports, and reclaimed natural beauty, but also by research, technology, and services. The region’s health economy is the best example of this rebirth.

- The Ruhr region is home to the biggest concentration of health facilities in Germany
- Medical and technological excellence is embodied in a varied and comprehensive supply setting
- The region is an important, centrally located European trade and service hub for medical products and devices
- The region’s reputation as a reference market for medical innovation is growing

Pioneers of Structural Change: Health Associations and Integrated Health-Care

Today, more than 300,000 Ruhr region inhabitants work in the health industry, including health-care institutions and their suppliers and supporting industries. A total of 120 hospitals generate an annual revenue of more than 5 billion euros. Regional health expenditures total almost 17 billion euros, encompassing the services of 9,500 physicians in private practice, 1,400 pharmacies, 1,100 nursing homes, and numerous other health-care providers.

Today’s health industry is strongly rooted in the region’s coal and steel industry traditions. The health-care landscape is characterized by strong networks and associations solidly anchored in the region, with local hospitals at their centers. They are the basis of the region’s trailblazing role in the development of sustainable hospital structures and integrated health-care concepts. One example of this is the region-based Knappschaft, the longest-standing social insurance institution worldwide. Since 1999, the Knappschaft organization has administered one of the most advanced projects for an integrated and fully supplied health-care system that also serves as an ambitious reference project for electronic health records and health-care networks. The region is also host to the first integrated-care system in Germany for the treatment of heart attacks, stroke, and headache, providing model concepts for other regions. With a large and dense population, hospitals solidly anchored in urban surroundings, and a superior infrastructure for outpatient care, the region is ideal for developing sustainable programs that can eventually be implemented nationally.
Close to the People: Applied Health Sciences

With its large population, high density of health-care facilities and networks, the Ruhr region is an El Dorado for epidemiologists and clinical and health-care researchers.

One example is the Heinz Nixdorf Recall Study, which has one of the largest patient populations in Europe and is assessing the risk of heart attack posed by hardened coronary arteries. Another example is the work being done by the Institute for Prevention and Occupational Medicine of the German Social Accident Insurance (IPA), which combines studies in molecular medicine with those in epidemiology. In addition, epidemiologists in the PRISCUS research network are studying novel therapeutic approaches for treating elderly patients who have multiple diseases. Also, the Ruhr region leads in Germany in terms of participation in clinical studies.

The universities and academic institutions founded in the Ruhr region in the 1960s and 1970s are a major boost to the health industry there. The region today has the densest net-work of universities and research institutes in Germany and is home to three medical schools. Bochum’s Ruhr-University has been an innovator in protein diagnostics. Essen University’s West German Tumor is internationally recognized as a top oncology center. At the private University Witten/Herdecke, nursing science is an important focus. The Ruhr region’s dedication to applied health research is also evidenced by four institutes of the prestigious Fraunhofer research organization jointly applying their engineering competence to develop solutions for the hospitals of the future.

The Ruhr region’s health industry’s medical and technological excellence is embedded in a varied and comprehensive health-care setting. It is here that the applied sciences, through teaching hospitals and universities, take center stage. Germany’s first public university to provide education in health-care professions such as ergotherapy, midwifery, speech therapy, nursing, and physiotherapy is Hochschule für Gesundheit (University of Health Care), founded in the region. It is a significant part of Health Care Campus North Rhine-Westphalia that is being built in the heart of the region.

A Reference Market: Centrally Located Hub for Trade, Services, and Development

With a population of more than 5 million, the Ruhr region is the heart of the largest German federal state, North Rhine-Westphalia (NRW). If it were a separate entity, NRW would be among the 20 strongest economies worldwide; the region is a huge market in a small area. It is a booming market for the health-care industry as well.

With the densest infrastructure anywhere in Germany, NRW and the Ruhr region form a European trade hub. One third of all consumers, representing 45% of Europe’s purchasing power, are within 300 miles—a day’s drive by truck. Industries face no logistical limits in this region that is home to Düsseldorf’s international airport, the world’s largest inland port at Duisburg, and the densest railway network in Germany. This enormous economic market long ago made the region an attractive center for trade and services.

This is particularly true for medical products and devices. Germany’s largest supplier of medical products, Roesser Medical, is headquartered in the Ruhr region. International companies providing health-care products and services are located here as well. More and more companies use the region as a reference market, as a springboard, and as a platform for translating scientific innovations into marketable products and services. Medical information technology (IT) and e-health offer particularly strong examples of this practice, but it is also apparent in many other areas as diverse as molecular diagnostics, rehabilitation services, and hospital facility management.
Oncology

Cancer continues to be one of the biggest challenges for science and clinical medicine alike. In the fight against cancer, two aspects are particularly important: translating molecular medical research into clinical research and integrating this research into interdisciplinary health-care networks. These arenas are where the Ruhr region is strongest: It features a wide range of research centers and health-care networks focused on cancers of the colon, prostate, liver, and pancreas. The region leads in the early detection of occupational and environmental causes of cancer as well as in palliative medical care. One beacon is the Westdeutsches Tumorzentrum (West German Tumor Center) at Essen’s university hospital, a designated comprehensive cancer center and a leading institution of oncology in Europe. Bone marrow was transplanted here as early as in 1975. Today, it is second in the field only to Seattle’s Fred Hutchinson Cancer Research Center. A highlight at the tumor center is the Westdeutsches Protonentherapiezentrum (West German Proton Therapy Center), founded in 2009. The center is exploring new pathways in precision beam-radiation of moving target tumors.

Cardiology

Cardiovascular disease is the number-one cause of death in Germany. The competencies necessary to fight it are concentrated in the Ruhr region. The predominant institutions in the field are the Westdeutsches Herzzentrum (West German Heart Center) at Essen’s university hospital and the cardiology clinics of Bochum’s Ruhr-University. The Contilia Group’s clinics, in conjunction with the Institute of Myocardial Infarction Research Ruhr, are pioneers in cardiac medicine. With roughly 1.5 billion patient records, the institute is one of the largest and most important study centers in Europe. In Germany, the Contilia Group is a leader in catheter laboratory procedures, bringing new developments to the bedside. More than 2,000 cardiac magnetic resonance imaging (MRI) exams and the European Cardiovascular Magnetic Resonance Registry make it an internationally recognized leader in diagnostic imaging. The institute’s home is the Herzinfarktverbund Essen (Myocardial Infarction Association at Essen), a pioneer in integrated cardiac care in Germany.

Chronic Pain

Several million people in Germany must deal with chronic pain. Because chronic pain is a consequence of complex interactions of neurobiological and psychosocial factors, it requires highly specific diagnostic procedures. Prevention and treatment of chronic pain, therefore, require sophisticated care management, the patient playing an active role. The Ruhr region is host to pioneers in these areas. The Westdeutsches Kopfschmerzzentrum (West German Headache Center), part of Essen’s university hospital, is an international leader in headache and migraine research. The clinics of Bochum’s Ruhr-University focus mainly on neuropathic pain, having assembled the largest database on this condition worldwide of more than 4,000 patients. The University Witten/Herdecke houses another distinguished specialty: the leading national and internationally recognized institute for the treatment of pain in children.
Pulmonary Medicine

Many miners paid a high price for the coal industry’s success: their health. The high regional incidence of lung and bronchial disease, however, has led to the development of comprehensive centers specializing in pulmonary medicine. Patients, science, and the health-care industry continue to benefit from these centers. The Westdeutsches Lungenzentrum (West German Lung Center) at Essen’s university hospital is one of the preeminent facilities for the treatment of lung cancer, chronic obstructive pulmonary disease, and cystic fibrosis. Another pulmonary center is located at Bergmannsheil Hospital, another clinic of Bochum’s Ruhr-University. It is associated with the IPA. Early diagnosis and therapeutic control of lung cancer and lung infections are research focuses at the Leibniz-Institut für Analytische Wissenschaften – ISAS, e.V., at Dortmund. Both large and small ventilation and inhaler technology businesses appreciate the close proximity to institutes of clinical pulmonary medicine and pulmonary research in the Ruhr region today—a long time after the region’s air has been cleared of smoke and dust.

Stroke

Each year in the Ruhr region alone, 15,000 people experience a stroke. Outcomes in stroke treatment are strongly time-dependent: Every minute that passes without treatment means a worsening of the prognosis. The region is competing in this race against time with an unparalleled health-care network, at the center of which are the stroke units of 26 neurological clinics. The importance of a close-knit care infrastructure for stroke patients was recognized here as early as in 1999. In Essen, this resulted in the establishment of Germany’s first stroke network. It comprises health authorities, health insurance companies, physicians in private practice, local clinics in Essen, and emergency responders. They all work hand in hand to provide rapid responses and uninterrupted care from the time an emergency call is received until outpatient rehabilitation is completed. Because of these activities, stroke-related mortality has decreased by 15% and the number of those requiring permanent care has decreased by 30% since their introduction. This successful approach has been copied throughout Germany. The Ruhr region is also home to a network of facilities and businesses specializing in technological solutions for the early detection of stroke risks, for acute diagnosis and treatment of stroke, and for the sensorimotor and visual rehabilitation.
**Protein Diagnostics**

The human genome has been deciphered, but the medical breakthroughs that scientists hoped would result have not been realized. This is in part due to the fact that the proteome, the full set of an organism’s proteins and their functions, is at least as important as the genome. The Ruhr region has made a name for itself in the field of proteomics. The Medizinisches Proteom-Center (Medical Proteome Center) at Bochum’s Ruhr-University is an international leader in protein analytics, coordinating, for example, the Brain Proteome Project of the Human Proteome Organization (HUPO). It focuses on identifying biomarkers for the early detection of diseases and for treatment decisions. The Protein Research Unit Ruhr within Europe (PURE) is currently being established in cooperation with the IPA and regional clinical partners. The research unit is intended to build the necessary bridges from basic research to clinical research, laboratory medicine, and industrial development. In addition to oncology, neuroproteomics is another field in which the Ruhr region is raising the bar, seeking diagnostic and therapeutic innovations for Alzheimer disease, Parkinson disease, and multiple sclerosis.

**Imaging**

For much of its existence, the Ruhr region looked deep down into the Earth in the search of coal. Today, the region’s eyes are set on the interior of the human body. The Ruhr’s researchers, inventors, and engineers are hard at work to make pathologic changes inside the body visible—as early and as reliably as possible. The Zentrum für Medizinische Bildgebung Ruhr (Ruhr Center for Medical Imaging) at Bochum is a new interface between industry and research, bringing innovative ideas to the market and thus to the patient. The center’s focus is on novel developments in ultrasound technology. The Zollverein Coal Mine Industrial Complex in Essen not only is a UNESCO World Cultural Heritage site but also unites visions and traditions: The former control center of the coking plant today houses one of the world’s very few 7-tesla MRI scanners, belonging to the Erwin L. Hahn Institute. These leading research centers are part of a dynamic network of radiological facilities. In October 2010, the initiative Teleradiologieverbund Ruhr (Teleradiology Network Ruhr) was founded to eventually connect more than 100 clinics and radiology offices. The network is closely linked with local suppliers of medical IT, such as VISUS, an internationally recognized company specializing in image transfers.
Medical Information Technology

IT has become the backbone of virtually every business operation—in particular, the health-care industry. The sheer amount of medical data is increasing daily, making intelligent data management and networking an ever-growing challenge. The Ruhr region is a stronghold of medical IT research and development, and with good reason. On the one hand, the Ruhr region offers optimum conditions for large-scale pilot projects because of its huge population and the existing health-care networks. On the other hand, internationally industry leaders such as iSOFT Health, CompuGroup, Tieto, Siemens, and IBM have already chosen to base their research and development departments here.

The Ruhr region offers the most comprehensive expertise in electronic health records in Germany. The two major German projects for the introduction of electronic health records are coordinated by institutions based in the Ruhr region: the Fraunhofer Institute for Software and Systems Engineering and the ZTG Competence Centre for Telematics in HealthCare. Together, both consortia cover an extremely large part of the national market and have significant potential for innovation, realization, and transfer activities. Another focus for both is on digital patient aides: solutions for delivering information to patients and for monitoring patients.

Microtechnology

The geographic and commercial hub of microtechnology in Germany is the Ruhr region, the city of Dortmund in particular. One of the most important fields of application of microtechnology is medicine. Medical micro innovations find their way from the region to markets and patients around the world. Minimally invasive “keyhole” procedures were initially developed and practiced here in the 1990s, at the Grönmeyer Institute. A subsidiary of the coal technology company STEAG has evolved into an internationally leading enterprise of medical micro fluidics and is today owned by pharmaceutical company Boehringer Ingelheim. The technological spectrum in the region includes items as disparate as microstructured nozzle heads for asthma therapy, implantable pressure-sensor systems for monitoring intraocular and blood pressure, endovascular implants, and stroke therapy instruments.

Hospital Engineering

To meet the new medical, economic, ecological, and social challenges that clinical health-care is facing today, society must view and manage hospitals as integrated systems. The Ruhr region is home to the pioneering field of hospital engineering. Four institutes of the Fraunhofer-Gesellschaft, Europe’s largest application-oriented research organization, are cooperating with businesses and hospitals to enable a new holistic and systemic view of the technical aspects of hospitals, aiming to deliver innovative concepts for the hospital of the future. Jointly, they develop solutions for transparent goods and information logistics, for user-friendly and secure patient-management systems, for better energy efficiency and ecological sustainability, and for intelligent and patient-friendly room and building systems. This work also addresses the entire range of suppliers, from the Essen-based construction multinational HOCHTIEF to regional craft and trade businesses.
Health-Care Campus North Rhine–Westphalia

The idea behind Health-Care Campus North Rhine–Westphalia is to bundle resources, capabilities, and skills for better outcomes. At the heart of the campus, centrally located in the Ruhr region, this hub of an unparalleled working, teaching, and research network was founded in May 2009.

Statewide partnerships include not only active and supporting research efforts but also industry and knowledge-transfer partners, aiming to provide the people of NRW with reliable health-care services throughout the coming decades. This concept, the only one of its kind in Germany, is intended to serve as a model for others. One of the first projects of the Health Care Campus is to analyze which specific challenges the health-care system will face in coming years.

The project illustrates the wide range of activities and players that the Health-Care Campus will bring together: both young and old, both epidemiological research and target-group project measures, both education and training and clinical practice, both networking support groups and multinational corporations.

About MedEcon Ruhr

MedEcon Ruhr [Medicine Economy Ruhr] is the heart of the health-care industry in the Ruhr region. We have approximately 200 members from all arenas of the industry, including hospitals, health-insurance companies, other health-care providers, health-care industry suppliers, universities and research institutions, and business incubators and business organizations. Their central point of contact is MedEcon Ruhr Ltd. Our services include network management, project development, and promoting the region.

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