CHARITÉ
UNIVERSITÄTSMEDIZIN BERLIN

WIR DENKEN
GESUNDHEIT NEU

Rethinking Health.

CHARITÉ 2030

STRATEGIC ORIENTATION OF CHARITÉ –
UNIVERSITÄTSMEDIZIN BERLIN

Our Strategy
at a glance

RETHINKING HEALTH.

Charité will be the driving force behind the value-oriented further development of healthcare provision based on three premises:

→ We understand people in all their aspects (Human Ecosystem)

→ We are pioneers (Exploring Boundaries).

→ We justify our actions with science (Based on Science).

We use our structural diversity and individual skills for the common goal of Rethinking Health.

IN 2030 CHARITÉ – UNIVERSITÄTSMEDIZIN BERLIN WILL BE:

→ a leader in education, research, translation and healthcare provision;

→ together with its partner institutions, the driving force behind the structural and content-based development of healthcare provision, both regionally and beyond;

→ a constantly innovating and economically healthy organization.

ESSENTIAL REQUIREMENTS FOR ACHIEVING THESE OBJECTIVES INCLUDE:

→ highly skilled and motivated employees;

→ a modern infrastructure.

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Preface

In the years to come, the healthcare system in Germany will have to cope with a massive need for change. This is due in particular to the consequences of demographic development, the handling of advances in biomedicine, and digitalization as the central challenge of the coming decade. Charité – Universitätsmedizin Berlin has always held a special responsibility for research, translation, healthcare provision and the imparting of knowledge and medical competence. It will take comprehensive measures to tackle these challenges, even while it is also faced with extensive internal change processes. In addition, the COVIDw19 pandemic in 2020 has shown that our organization must be able to deal with completely unexpected demands quickly and with agility. We expect that increasing global mobility and the health consequences associated with climate change will result in additional, fundamentally new tasks for our institution. In order to prepare Charité for these changes, we members of the Executive Board have initiated the Charité 2030 strategy process.

With this strategy process, we are taking the opportunity to help shape developments in biomedicine and the healthcare system in the interests of the people of Berlin and Germany in the coming years. Our aim is to achieve this from the position of an organization of international excellence in biomedicine, as a support pillar of the healthcare system in Berlin, and as an actor in one of the leading regions for science and health internationally.

In this report, we present the cornerstones of Charité's strategic direction. In addition to strategic goals, our report also contains a plan for the development of the clinical locations of Charité in Berlin. The strategy process was actively supported by many managers and employees at Charité. We would like to take this opportunity to thank you for that support. With a high number of employees actively contributing to the further development and implementation of the strategy, this will contribute to Charité's long-term success.

Prof. Dr. Heyo K. Kroemer

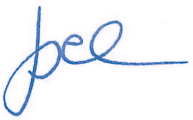
Chief Executive Officer

Prof. Dr. Axel Radlach Pries

Dean

Astrid Lurati

Chief Financial and Infrastructure Officer



Carla Eysel

Chief HR and Care Officer

Prof. Dr. Martin Kreis

Chief Healthcare Officer

Prof. Dr. Christopher Baum

Chief Translation Research Officer

1 Medicine in Transition

In the coming years, the framework conditions for the healthcare system and for biomedical science will see extremely quick and radical change. These changes will have far-reaching consequences for the allocation of resources in healthcare provision and the competitiveness of biomedical research at university medical centers in Germany.

The healthcare system in Germany is set to face major challenges in the coming years, and the pressure to change continues to increase. Notably, the COVID-19 pandemic has shown the strengths in this system, but also highlighted its weaknesses and cracks. Just the first few months of the pandemic acted like a magnifying glass, bringing into focus certain developments that have been emerging in biomedicine and healthcare provision for years. Other questions, however, such as the future configuration of the inpatient care landscape, have been pushed into the background, but will be all the more prominent on the agenda of decision makers in the coming months.

Looking at all the developments taken together, it becomes clear that the environment in which Charité operates is changing dramatically, and this will have a major impact on Charité's strategic positioning in the future. This creates great opportunities for Charité to help shape how things develop. However, it also means that in order to find answers to these coming challenges, Charité must start today.

1.1. Shifts in medical needs

In the next two decades there will be significant changes in the medical needs of the population. These changes are being accelerated by extensive global developments such as increasing mobility and the consequences of climate change, and are becoming even more visible than before due to health crises such as pandemics. Four developments stand out in this respect:

→ More patients due to demographic trends

The absolute number of elderly persons in Berlin-Brandenburg and in Germany will increase in the coming years. Based on today's incidence of serious illness, this means an increase of tens of thousands of inpatient cases per year in Berlin, for example.[1] Most of these patients will develop more than two – and many even more than four – different pathologies at the same time, thus necessitating permanent care. The need for inpatient centers which can bundle complex and specialized types of healthcare provision will increase.

→ Increased need for care of the chronically ill

Medical progress is increasingly making it possible to stabilize the course of diseases that previously caused severe impairment or death, such as cancer or cardiovascular diseases, with a high quality of life lasting many years. Breakthroughs in basic research point to further advances in the coming decade. The resulting change in the burden of disease requires high-performance medical care in many areas, which at the same time ensures an acceptable quality of life for the patient. The resources needed by the healthcare system to care for patients with chronic diseases will continue to increase.

1 Source: Modelling of the demographic development of Berlin and its consequences for the expected incidence of illness, Charité Corporate Controlling, February 2020.

→ The increasing importance of prevention in the context of demographic change

Innovative concepts in biomedicine will enable us to better understand and use mechanisms for prevention and early detection, as well as regeneration. Applications will include innovative diagnostics, intelligent interlinking of data, and interventions at the cellular and molecular level. Both healthy and sick people, medical insurers and healthcare providers will increasingly use or offer this expanded health maintenance spectrum.

→ Increase in outpatient or telemedical treatment options

Some elements of inpatient medical care will be substantially replaced by outpatient or telemedical forms of treatment. With the same or even higher quality and lower costs, there is a high potential in some specialist areas for shifting more care to provision on an outpatient basis. Compared with other countries, Germany has some catching up to do here. Both cost pressures in the healthcare system and the needs of patients will accelerate this development in the coming years. Changes in infrastructure and expertise will be necessary to ensure precisely coordinated interaction between inpatient and outpatient care.

1.2. Opportunities and challenges for biomedical progress

The past two decades have been marked by extraordinary advances in biomedical research and its implementation in clinical practice. Modern imaging, adaptive cancer therapies and the treatment of hepatitis C are just a few examples. Findings from current basic research and early applied research suggest that the intensity and speed of biomedical progress is set to continue or increase. For national healthcare and science systems and their associated institutions, this presents great opportunities, but also fundamental challenges:

→ The central importance of translation for healthcare

The global volume and variety of knowledge acquired in biomedicine will continue to increase. The need to translate this gain in knowledge into the health and well-being of people in regional and national healthcare systems will increase. Medical needs cannot be met without rapid and successful translation. The transfer of available knowledge into clinical practice will come up against organizational, cultural and financial barriers. Institutions that work successfully to overcome these barriers will gain influence internationally.

→ Increase in research at disciplinary boundaries

In the future, knowledge and innovation in biomedicine will increasingly emerge at the limits of previously separate disciplines. This applies to developments within biomedicine – such as research into the interaction between the gastrointestinal microbiome and functions of the brain – as well as interdisciplinary approaches such as those between physics, biology, computer science and medicine.

This has far-reaching consequences for the positioning of individual scientific institutions. Associations and institutions that use the

potential for interaction and remove disciplinary hurdles quickly and effectively will be able to make particularly good use of opportunities in the competition for knowledge and resources.

→ Science needs more legitimation

Innovative research in biomedicine will continue to require high levels of public funding in the future. Its findings will influence political decisions and the distribution of scarce social resources. The negative consequences of incorrect or hasty measures, but also the benefits of well-founded scientific knowledge, became apparent soon after the onset of the COVID-19 crisis. In the competition for funding, the demands of public donors regarding the relevance and reproducibility of scientific results will increase significantly. Institutions that can legitimize the high investment sums and use these to maximum advantage through their clear strategic orientation, their expertise and their quality will be strengthened.

1.3. Change through digitalization

The digitalization of medicine will be the main challenge facing the healthcare system in the coming decade. Many established institutions in healthcare and biomedical research will have to completely realign themselves in order to be able to continue to exist successfully in the long term. Globally active technology corporations will increasingly enter individual segments of the healthcare system and introduce innovative services in those segments. From a quantitative, methodological and technological perspective, medicine and research will be radically more digital in 15 years' time than they are today. Three developments are particularly relevant:

→ Source of progress in diagnostics and therapy

The digital availability and linking of data will lead to new methods and better results both in patient care and in research. Examples include the linking of relevant medical data for prevention and diagnosis, the use of machine learning in pathology, radiology and genetics, and the algorithm-based evaluation of data from digital devices used by chronically ill patients. The use of digital technologies will become a basis of quality and innovation.

→ Decoupling of place and person

Thanks to digital technologies, a greater proportion of patient-physician contacts will no longer take place in the same physical location. This decoupling will change the way healthcare provision is organized. Enriched by automated assistance systems, algorithm-based diagnostic tools, or everyday devices such as smartwatches, this development will lead to the establishment of digital treatment forms as a third pillar, alongside outpatient and inpatient care.

→ New competitors and partners

As in other branches of the economy, the use of digitalized data in the healthcare sector depends on the establishment of a critical mass. Examples of this include central biodatabases, standardized electronic treatment files and telemedical platforms for healthcare services. These critical-mass and platform effects will lead to massive changes in competition and the entry into the market of global technology corporations, both nationally in the area of healthcare provision and internationally in the area of science. In the long term, either monopolistic structures or network groups will prevail.

1.4. Future of the world of work

There are many indications that the comprehensive work-related changes already evident within the healthcare sector will fully take hold over the coming years. This change is especially being driven by the effects of technological developments such as digitalization and the possible applications of artificial intelligence. In addition, fundamental developments in social coexistence lead to new challenges – including:

→ A shortage of skilled workers due to demographics

The number of working-age people will decrease. Even if this will be less evident in Berlin than in Germany as a whole, the region cannot decouple itself from this development. By 2040, more people will leave the German labor market than new workers will join. Well-trained professionals will be critical to the performance and competitiveness of healthcare providers.

→ Change of job descriptions

In the coming years, the rapid increase in available knowledge and methods, digitalization and a changed division of labor will radically change job descriptions in the healthcare sector and, by extension, education in the field of healthcare. New technologies such as artificial intelligence will have a major impact on daily work life in most healthcare professions. The COVID-19 crisis has shown how urgently adjustments might need to be made, and how quickly they can be carried out.

→ Strong orientation towards values

It is becoming apparent that social values beyond economic orientation will have a stronger influence on individual as well as political decisions. Employers will have to react to this by adapting mechanisms of organization and control, and by providing transparent justification of their actions.

The consolidation of the described developments will result in extensive changes to the healthcare and science systems in Germany.

Charité
at a glance

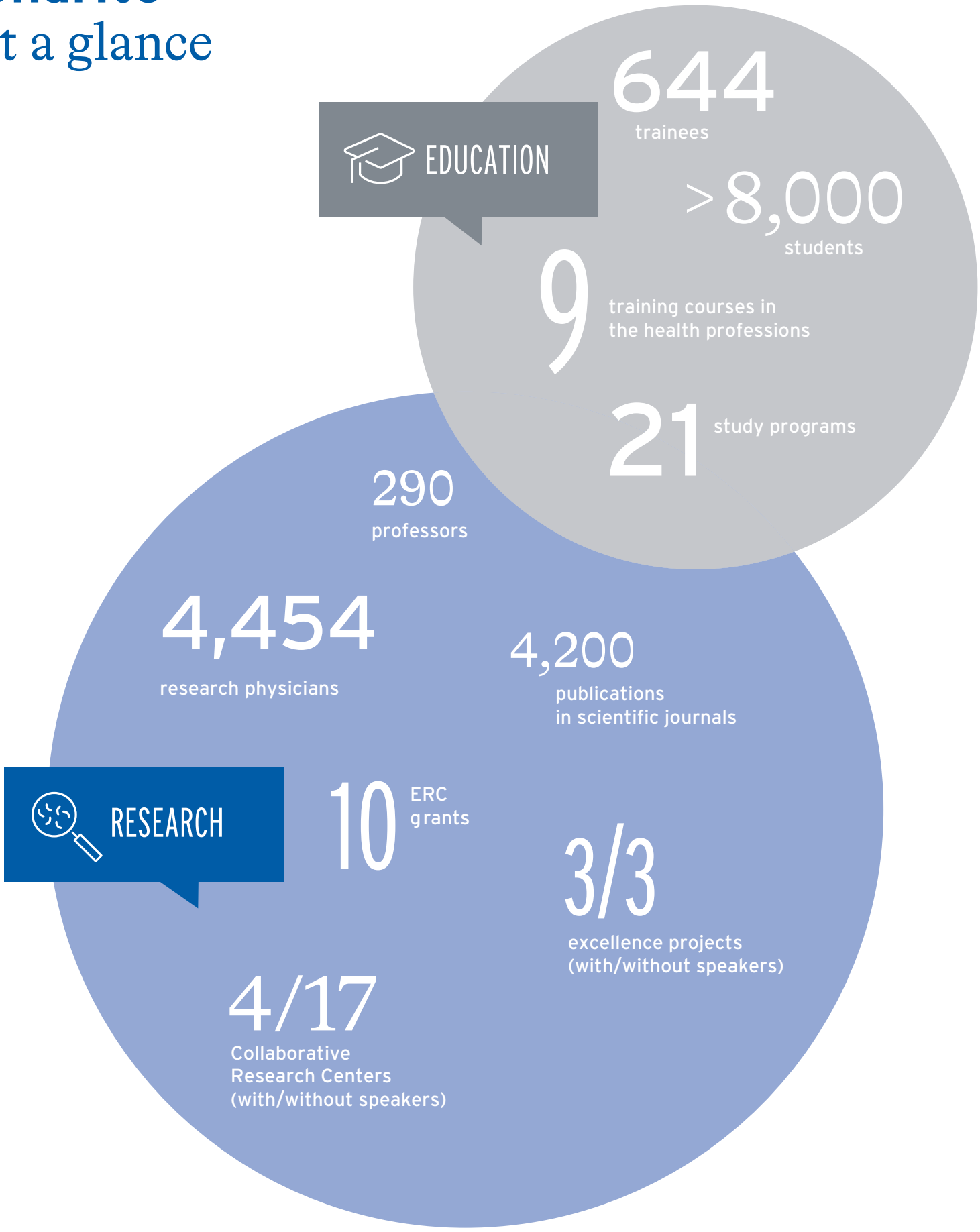


Figure 1: Charité key figures, as of 2019[2]

2 Employees and students: in number of persons; inpatient cases: excluding out-of-budget cases; beds: according to the hospital plan.

HEALTHCARE

4,553 nurses

154,261 inpatient cases

700,819 outpatient cases

TRANSLATION THROUGH BIH

491 employees BIH

26 working groups BIH

€80 million budget BIH

TOTAL

€179 million third-party funds

€0,1 million annual surplus

3,001 beds

€2 billion total revenue

18,700 group employees from 111 nations

>100 clinics and institutes

2 Charité Today

Charité is one of the leading institutions in biomedical research in Europe and one of the best-known hospitals in the world. Charité has assumed a central and coordinating role for medical care in Berlin; it is also a hub in the science and start-up landscape of Berlin. By integrating its areas of activity, Charité lays the foundations for translation and provides science-based knowledge to decision-makers. Charité is one of the largest educational centers for physicians and healthcare professionals in Germany. Various development needs have been identified for the future of Charité, in particular more broadly connecting with top international research institutions and developing a competitive infrastructure.

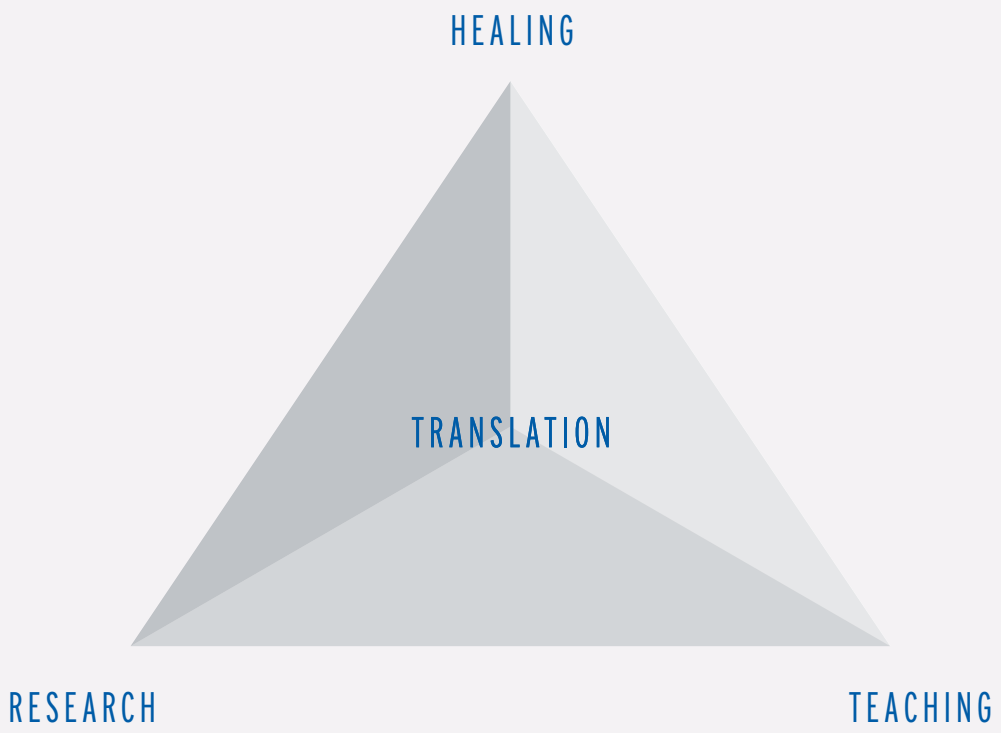
2.1. Charité as a university medical center

Charité – Universitätsmedizin Berlin integrates research, translation and healthcare provision as well as basic, advanced and continuing training (Figure 2). The combination of these areas of activity forms the basis for implementing research findings in clinical practice and for conveying knowledge to physicians, healthcare professionals and society. The structural basis for this translation (including knowledge transfers) is a central feature of Charité. By combining its areas of activity, Charité differentiates itself from other healthcare and biomedical institutions.

→ Further developing the link between research and healthcare provision

The transfer of scientific knowledge from basic research to clinical research and the treatment of patients cannot be implemented as seamlessly in any other form of organization as it can in university medicine.

Figure 2: Charité's areas of activity



In their daily work, clinically active Charité scientists encounter the need for new forms of therapy, and can derive research questions from their scientifically oriented patient care. The intensity of the translation between science and care is a key differentiating factor at the Berlin University Medical Centre. Charité benefits from the integration of the Berlin Institute of Health (BIH) and from its size and diversity, as well as from the multitude of specializations, while patients receive prompt access to innovations that correspond to the international state of research and are adapted for treatment here in Berlin. This is especially true for severe, complex and rare diseases. At the same time, Charité is increasingly committed to the transfer of knowledge to society to promote health.

→ Further developing the connection between research and the transfer of knowledge and skills

The students, physicians in advanced and continued training, and trainees in the health professions at Charité are taught skills in an institution that is constantly adapting medical care in light of new scientific findings.

Cutting-edge research meets some of the best students and trainees of their class and benefits from interprofessional and interdisciplinary approaches that only a large educational site like Charité can create.

→ Further development of the connection between healthcare provision and the transfer of knowledge and skills

As one of the largest institutions for education and for advanced and continuing training in the German healthcare system, every year Charité trains urgently needed healthcare professionals. This training takes place in an environment that guarantees healthcare provision at the highest international level. In addition, Charité offers broad access to specialist medical fields. Graduates of Charité, in turn, set the standards as nurses, resident physicians or senior hospital consultants in many areas of the healthcare system. Charité itself benefits from this extraordinary pool of talent.

→ The future of university medicine in Germany and the role of Charité

In addition to the tasks described above, university medicine in Germany assumes responsibility in many areas in order to help shape supply structures in national and international networks. This was recently quite apparent during the COVID-19 pandemic, but has also been evident for many years in the establishment of telemedicine infrastructures, the coordination of oncological networks, in tiered emergency care concepts, and in pediatrics. Charité has taken on a formative role here in Berlin and, as part of the network of German university medical centers, offers science-based foundations for political decision makers in a national and international context.

3 Authorship of the top 10 percent of the internationally most cited articles in the research areas relevant to Charité (relative citation ratio).

2.2. Charité as a driving force in the science and health network

Charité is of central importance for the scientific and medical community of Berlin. In biomedical science, Charité has strong links with regional associations and partnerships. In addition to its close cooperation with the Humboldt University of Berlin, the Free University, and the Technical University (Berlin University Alliance), this includes partnerships with the Max Delbrück Center for Molecular Medicine (MDC) in the Helmholtz Association, the institutes of the Max-Planck and Fraunhofer Societies, the Leibniz Association and the Robert Koch Institute. In cooperation with the Charité Foundation, it has also been possible to promote the transfer of research in Berlin through innovative formats. The local concentration of this scientific community is unique. With over 18,000 employees, Charité is an innovative driving force in many areas and a mainstay of the Berlin health sector start-up scene.

2.3. Research

Research at Charité is already at the forefront in some areas, both within Europe and internationally. In the QS World University Ranking 2019, Charité ranks 33rd as the best German medical school, and 44th in the Times Higher Education Ranking 2020 as the second best German university medical center. There are two dimensions that illustrate this best:

→ Highly relevant research results

Today, Charité is one of the leading German institutions in biomedicine. In 2017, for example, the publications of Charité scientists were the most frequently cited in other articles in their field in a comparison of German university hospitals.[3] In recent years, Charité has increasingly succeeded in catching up with the top institutions in Europe. However, the world's leading international institutions, especially from the Anglo-Saxon region, still clearly outperform Charité.

→ High level of third-party funding

Over the past ten years, Charité has increased its third-party funding by 30 percent. With a ratio of 1.0:0.8 between third-party financing and state subsidy, Charité's funding reached an all-time high in 2018. Hardly any other institution from the group of German university medical centers can demonstrate higher leveraging of basic funds versus third-party funds. In the last three years, the proportion of research funds from the German Research Foundation (DFG) and the federal government has increased. In terms of total funding, Charité leads DFG's funding atlas in first place by a wide margin. Even when adjusted for size, Charité still occupies one of the top spots. With regard to some funding formats such as Collaborative Research Centers with speakers or Advanced European Research Grants (Advanced ERC), Charité can develop its position even further in the future.

Internal analysis[4] of the research at Charité shows that its particular strengths are direct access to healthcare provision, a globally established reputation, excellence in certain content areas, very strong ties to other academic institutions, and scientific freedom of design. The main challenges for the future are achieving a more defined profile and advancing itself in even more research fields from national to international prominence. In addition, the decision to integrate the Berlin Institute of Health (BIH) into Charité – as the third pillar alongside patient care and the medical school – is considered to be a ground-breaking development for the future direction of research.

2.4. Duties in the imparting of knowledge and skills

The basic and advanced training of physicians and health professionals is a core task of Charité. As one of the largest training institutions in the German healthcare system, it bears a special responsibility, and not just because of its mandate under public law. A significant proportion of all doctors in Berlin have completed part of their basic or continuing education at Charité. A disproportionate number of employees in nursing and other health professions were also trained at Charité. According to an internal analysis[4], the Revised Medical Curriculum initiative, the quality of the graduate schools, the Clinician Scientist program and the new joint education campus with Vivantes are considered to be strengths in teaching and education. A need for action is seen in relation to the further development of the Revised Medical Curriculum, the organization of advanced medical education and the differentiation of occupational profiles in nursing. Two aspects are briefly highlighted below:

→ Modernized and in-depth study programs

Over 6,000 students were enrolled at Charité in the 2019 summer semester, of which more than 4,700 in human medicine and a little over 500 on the dentistry program. Another nearly 800 students are distributed primarily across specialized master's study courses such as public health, molecular medicine and epidemiology. With this range of programs, Charité makes a significant contribution to graduate training in biomedicine and, in terms of the number of students, is one of the largest medical schools in Germany. Over the past few years, Charité has taken a leading role in modernizing the human medicine course and dedicated great effort to developing a Revised Medical Curriculum for the requirements of today's medical profession. This skills-oriented modern curriculum in human medicine must also be dynamically adapted to the medical and scientific requirements of the future.

4 Results of analysis from discussions with over 200 Charité executives and external experts.

→ Major training institution for health professions

Charité is currently responsible for the training of a total of 600 students in over 40 professions. For more than 550 of them – including almost 350 in nursing – the focus here is on the health professions. In early 2020, Charité and Vivantes merged their respective healthcare colleges into a joint educational campus: the Berliner Bildungscampus für Gesundheitsberufe. The objective of this alliance was to create a modern educational campus that would be attractive for teachers and students alike, and to increase capacity from the current level of around 1,700 places to around 3,000 by 2025.

2.5. Medical care

Charité generates most of its income through proceeds from patient care. Charité has an excellent reputation for medical care. For example, it is listed as the fifth-best hospital worldwide in the Newsweek ranking for 2019 and was ranked no. 1 in a Germany-wide comparison by Focus magazine. In recent years, Charité has cared for an increasing number of patients, both on an outpatient and inpatient basis (annual growth rate since 2016 +0.8 percent and +1.7 percent).

In discussions with over 200 Charité executives and external experts, strengths in the area of medical care were identified as the multitude of high specializations, innovative and interdisciplinary treatment concepts, the importance of the clinical locations for local care in Berlin, and the excellent staff. Inadequate outpatient capacities, a high need for infrastructure investment, and previously underutilized potential in the area of focus development and integration were cited as challenges for the coming years. Particularly noteworthy is the role of Charité in three respects:

→ System-relevant supplier for Berlin

With around 3,000 beds (including almost 450 intensive care beds), over 60 central operating theaters and their diagnostic and therapeutic infrastructure, Charité provides care for over 154,000 inpatient cases every year (Figure 1). Every sixth person in Berlin who needs full or part-time inpatient treatment comes to Charité. This proportion is significantly higher in particularly severe and complex cases; for some indications, such as oncological diseases, more than a third of all Berlin cases are treated at Charité. After Vivantes, Charité is the city's largest provider of medical care, and it handles a growing proportion of severe cases. As a public healthcare provider, Charité is furthermore responsible for system-relevant tasks such as the organization and implementation of the COVID-19 testing strategy for Berlin and ensuring medical care for refugees.

→ High-performance medicine and standard care

Charité has distinguished itself as a maximum care facility. Charité's case mix now consists of 52 percent maximum care. More than half of the services at Charité are thus geared towards caring for severe, complex or rare diseases. These comprise only 20 percent of cases, while 80 percent are categorized as standard care. Standard care for common diseases is relevant for basic and advanced training in many medical professions as well as for subareas of research at Charité, for example for research into health provision. In a nationwide comparison of university hospitals, Charité has a case mix index (CMI) of 1.57, which is slightly above the average.[5] These key figures illustrate the conflicting priorities under which Charité operates – as a specialized provider of care with simultaneous responsibility for standard care provided close to the patient's place of residence.

5 According to comparative figures from the Association of German University Hospitals for 2018.

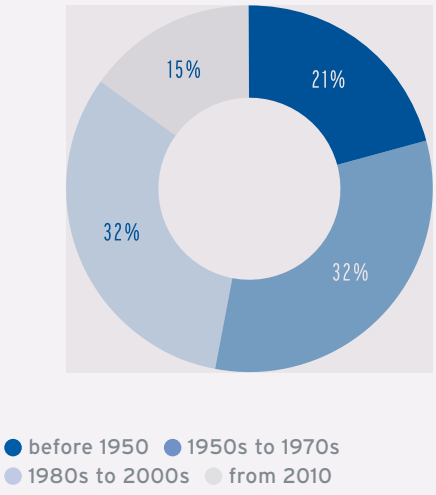
→ Specialization with national and international importance

Almost 20 percent of inpatients at Charité travel for diagnosis and therapy, either from the more distant surrounding areas, from all over Germany, or from abroad. They come to Charité with severe, complex or rare illnesses in above average numbers. For example, over 60 percent of all patients who are treated at Charité for malignant neoplasms of the eye, the brain or other parts of the central nervous system come from outside Berlin. In the treatment of congenital malformations of the musculoskeletal system, the proportion of patients traveling to Berlin from elsewhere is almost 50 percent.

2.6. Infrastructure

Charité's buildings, with a usable area of almost 500,000 m² spread over four main locations, are characterized by great heterogeneity and a variety of architectural styles and periods. More than half of the buildings were built or renovated prior to the 1980s (Figure 3).

Figure 3: Distribution of the year of construction or the year of the last major renovation for all Charité buildings



The need for renovation is therefore very high. Only 15 percent of the spaces are as new or renovated to as-new condition, meaning that they have been in use for fewer than ten years since their construction or renovation.

Many buildings are listed historic buildings. This leads to special challenges in dealing with a largely historic building stock, such as above-average maintenance and other operating costs, caused, for example, by long transport routes and the cleaning of high-traffic areas. In addition, significant modifications to basic building structures are needed – insofar as these are permitted under monument protection laws – in order to adapt building structures to the requirements of modern healthcare, research and teaching processes. This concerns, for example, insufficient room size for patients or equipping rooms with sanitary facilities, but also clinical functional areas and research laboratories that no longer meet today's safety standards. The use of space is currently designed in such a way that the buildings of above-average structural condition are increasingly utilized as wards and highly equipped research areas. Outpatient departments, teaching rooms and administrative areas are to a greater extent housed in older buildings, in which the lower technical requirements can still be met.

The new construction of the CharitéCrossOver research and teaching building as well as the renovation and partial new construction of the high-rise complex on the Charité Mitte campus were a prelude to urgently needed structural renovation. The renovation of wards on the Benjamin Franklin campus and the construction of a cardiology center on the Virchow-Klinikum campus are further steps towards the "New Charité."

3 Charité 2030 Vision and Objectives

3.1. Vision

In the coming decade, Charité aims to be the driving force behind the value-oriented further development of healthcare provision and to position itself as the leading university medical center in education, research, translation and medical treatment. At the center of this goal is the vision Rethinking Health – medicine of the future, that is being developed on the basis of three value-defining premises.

→ Human Ecosystem

For an expanded concept of health, Charité systematically records people from their molecular makeup to their personal environment and allows these individual dispositions and preferences to be included in results-oriented medical treatment. A person's health – whether in their private or work environment, for example – is determined by a combination of genetic, physical, mental, family, professional, socioeconomic or geographical traits. The scientists at Charité focus their research on relevant influencing factors of the Human Ecosystem, in order to utilize them specifically for maintaining health. Therapeutic approaches in personalized medicine are further developed and used to treat relevant conditions, but preventive and regenerative approaches to maintaining the health of Charité employees are also being developed. With this approach, Charité aims, among other things, to provide multidimensional services that enable healthcare provision independent of physical locations or sectoral and organizational boundaries. Only this form of immersion in a healthcare organization will be able to meet people's demands for healthcare provision in the future.

→ Exploring Boundaries

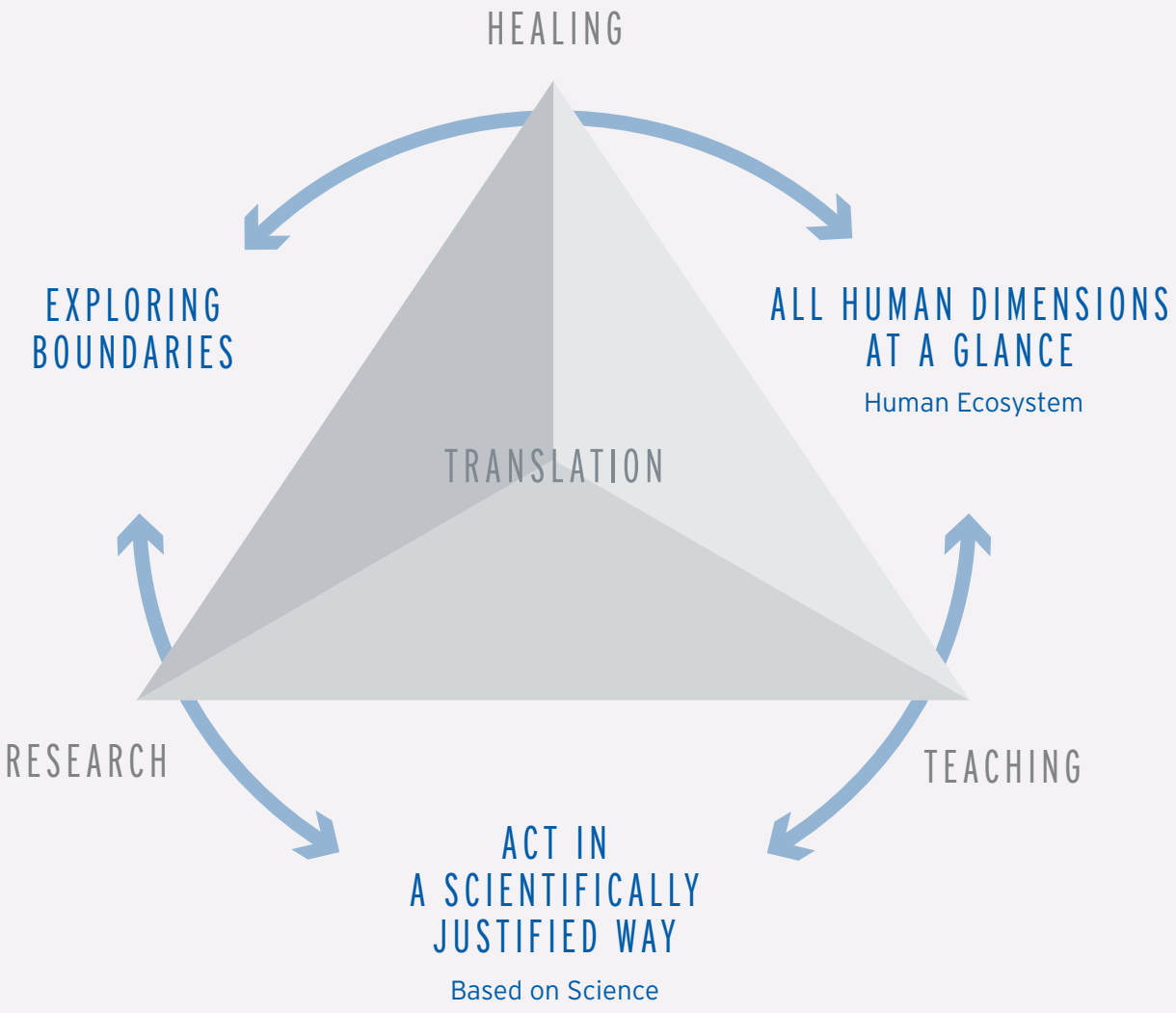
The potential for solving the major challenges of medicine lies at the interfaces between subjects, disciplines, institutions, sectors and professions. Charité strives to remove or shift existing obstacles and limits in today's healthcare system and thus to open up new room to maneuver. It breaks away from the prevailing concept of illness as an organ defect and thinks of healthcare systemically. This opens up opportunities for scientific breakthrough, new diagnostic and therapeutic options, and comprehensive treatment for patients. Digitalization and closer cooperation between academia and industry strengthen and accelerate these developments. During the COVID-19 pandemic, it became clear what can be achieved when overarching goals are pursued in partnership – across visible and invisible borders. Making this a principle of action in the future is part of Charité's vision.

→ Based on Science

Excellent science is the foundation for transferring ideas from basic research through clinical research into application. Courageous, innovative research approaches are directly stimulated by clinical questions. Charité establishes and promotes a research environment in which the approaches become more robust and the results more reproducible. Charité is committed to scientific evidence as a reliable basis for assuming responsibility for the further development of biomedicine and healthcare provision and for communicating scientific knowledge to society. Diverse partnerships with research organizations and innovative companies as well as start-ups are a prerequisite here. The key to this culture of science and innovation lies in the people at Charité – from patients to students and trainees to employees in all areas and structures.

The interaction of these three premises creates the basis for the strategic content development of Charité in the coming decade (Figure 4).

Figure 4: Rethinking Health



3.2. Objectives

Rethinking Health

We are the driving force behind the value-oriented development of healthcare provision.

→ We see ourselves as following in the footsteps of Rudolf Virchow and overcoming disciplinary, conceptual and structural boundaries in order to improve healthcare provision. We combine science and care, and understand people in the context of their environment and diversity.

→ We develop targeted therapy and prevention concepts that reach as many people as possible. We actively involve our patients and our employees in becoming and staying healthy.

→ We aim for robust and relevant research results and are committed to building trust in scientific knowledge. We boldly implement new developments and view setbacks as part of innovation.

→ We improve clinical care by sharing scientific knowledge and skills across all career levels, professions and disciplinary boundaries.

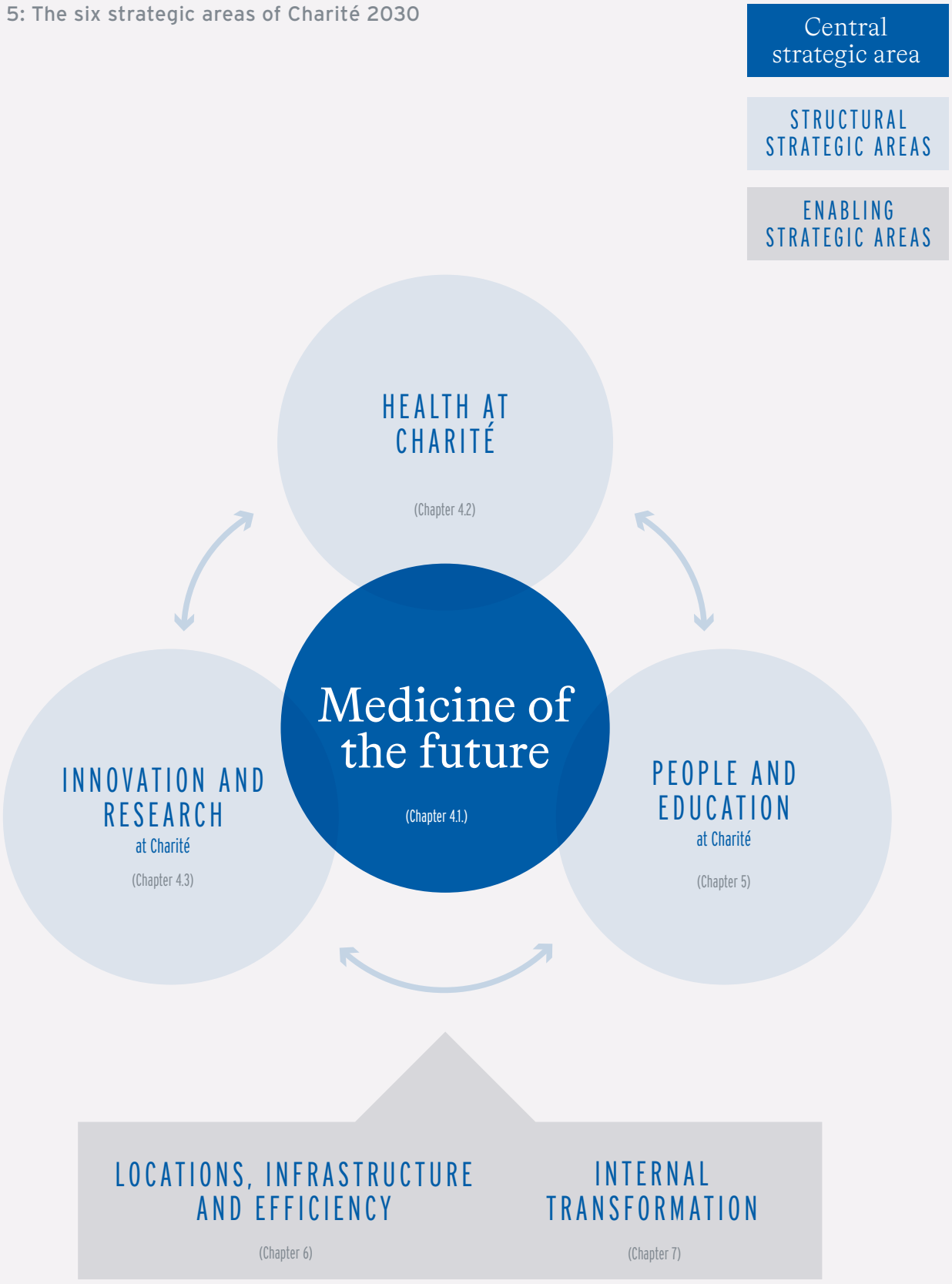
→ We are shaping Berlin as a region of the future for healthcare provision. To this end, we integrate science and the healthcare industry and combine public services with sustainable, entrepreneurial action.

3.3. Overview: The strategic areas

To implement its vision, Charité has formulated strategic goals in six strategic areas. The central strategic area is development of the medicine of the future. This is supported by activities in three strategic areas from the core fields of responsibility for university medicine. The essential prerequisites for further strategic development are created in two enabling strategic areas (Figure 5).

In order to achieve the strategic goals, resources have to be prioritized and the attention of the organization has to be focused. Further planning for implementation and investments are linked to each of the strategic goals described. Some implementation tasks – such as infrastructure and recruitment of personnel – are of overriding relevance and are centrally initiated and controlled as strategic areas of action (summarized in Chapter 8).

Figure 5: The six strategic areas of Charité 2030



4 Strategic Areas in Healthcare Provision and Biomedicine

Charité formulates its goals in healthcare provision and research in three of the six strategic areas. In the strategic area of medicine of the future, Charité will become the reference center for unmet medical needs. It focuses on interdisciplinary approaches, understands that health is an active process of adaptation with consequential innovative strategies for prevention, and relies on benefit-oriented medical care as a leitmotif. In the strategic area of healthcare provision, Charité is developing a medical strategy, shaping digital university medicine and establishing itself at the core of a network of care. The strategic area of innovation and research focuses on translation, strives for a clearly identifiable research profile, and formulates a commitment to responsible and robust science.

4.1. Medicine of the future

This strategic area will be Charité's central focus in the coming decade. The four strategic goals in this strategic area are aimed at shaping the medicine of the future. What they have in common is the principle of utilizing the translation of scientific knowledge into clinical care and the imparting of health-promoting knowledge to society as a driving force for shaping healthcare provision in the coming years.

4.1.1. Reference point for unmet medical needs

Unmet medical needs are the drivers of medical research. Gaps between the available and needed forms of therapy and treatment structures are often the driving force behind research programs and the development of medical innovations. From an individual and societal point of view, the frequency and severity of diseases are often used for calibration of needs and availability (Figure 6). The benefit of a treatment approach must be demonstrated by fulfillment of the need.

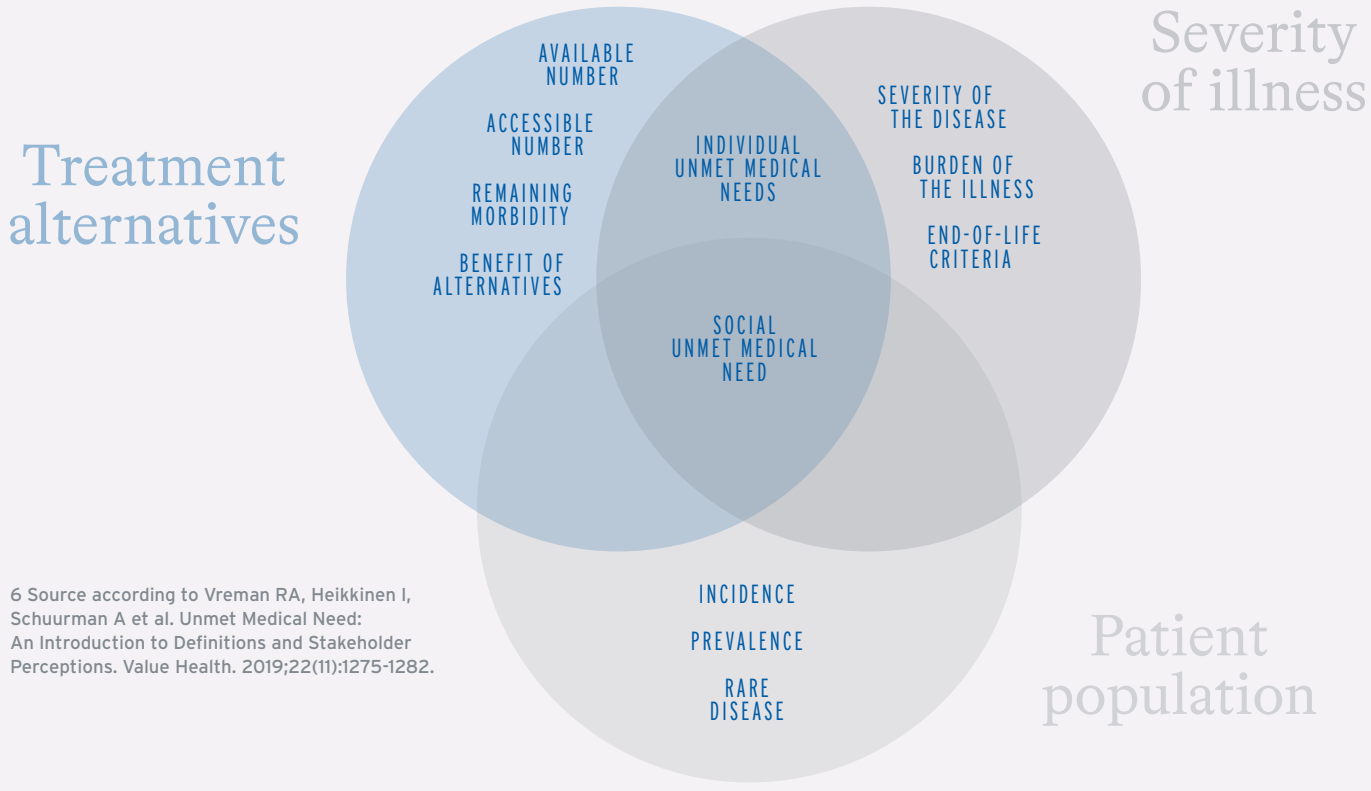
Charité aims to measure gaps in provision more effectively and systematically than at present, and to contribute to a comprehensible and transparent assessment of diagnostics and therapy.

For this, the patient's perspective should be taken into account in research and when designing provision more strongly than it is today. As a counterpoint to private-sector companies, this requires stakeholders like Charité who can participate in this discourse transparently, scientifically, and without dominant commercial interests, and who can provide orientation. In view of the challenges facing the healthcare system, such voices will become more important for decision makers and patients in the coming years. As a public institution, Charité – Universitätsmedizin Berlin aims to become actively and effectively involved on behalf of society.

Concrete realization by 2030

- → Development of online monitoring formats for identifying medical needs
- → Development of structures in research and healthcare for unmet medical needs, e.g. the Clinician Scientist Program, Patient-Reported Outcomes initiative, patient participation formats, industry-independent clinical trials (IITs)
- → Development of think tanks on unmet medical needs
- → Expanding public health approaches to assess unmet medical needs
- → Establishing a profile in international discourse together with stakeholders from science and politics on the definition of unmet medical needs and associated programs

Figure 6: Unmet medical needs[6]



6 Source according to Vreman RA, Heikkinen I, Schuurman A et al. Unmet Medical Need: An Introduction to Definitions and Stakeholder Perceptions. Value Health. 2019;22(11):1275-1282.

4.1.2. Focus on interdisciplinary approaches

For Charité, Rethinking Health also means questioning and pushing the traditional boundaries between disciplines and organ systems. New findings in biomedicine currently have a high potential for innovative treatment approaches if the focus is on communicating organ systems (including gut–brain or heart–brain) and (patho-) biological processes such as inflammation, cell death or regeneration.

Charité's aim is to further develop these interdisciplinary and systemic approaches in relation to both science and patient care.

Regarding science, it is important to promote interaction between different fields, for example when researching different organ systems (gut, brain, joints, cardiovascular system, lungs, bones) in the interdisciplinary research area of immunology. There are already a number of approaches to this at Charité and the Berlin Institute of Health (BIH). This systemic approach is both promising and challenging for clinical practice. If representatives of several disciplines consider a case together, this is in the best interests of the patient, as the treatment options can be competently discussed from different perspectives. At the same time, such approaches are more complex and tend not to be mapped in the DRG system. For the well-being of its patients, Charité aims to overcome these challenges.

Charité associates concrete expectations of results with this objective: for research, the acquisition of new knowledge about the relationships in healthy and diseased organisms, and holistic treatment strategies for patient care. These goals justify further development of Charité's organization.

Concrete realization by 2030

- → Development of research priorities with a focus on the boundaries between disciplines
- → Setup and further development of interdisciplinary centers, wards and treatment concepts
- → Internal: change of control and incentive mechanisms

4.1.3. Health as an active process of adaptation and prevention

In the medicine of tomorrow, the mandate of research and care will go far beyond the previous strong focus on interventions in the event of illness. Health-promoting processes of adjustment to the environment (adaptation) around events with pathological potential such as mutagenic factors (radiation, food components), infections, changes in microbiome, improper nutrition and harmful climatic influences all play a central role. A better understanding of these complex and continuous processes of adaptation is a basic requirement for the development of innovative prevention strategies and new treatment concepts. Charité aims to research and understand such concepts more intensely than today in order to a) identify diseases before symptoms arise and thus treat them earlier and more successfully (interception), and b) increase resilience to disease. Adaptation processes for maintaining health are also relevant in the context of c) disease tolerance, opening up a new, important area of research (Figure 7). In the coming decades, this should result in pioneering approaches for medicine. The avoidance of future diseases can then be achieved through d) the personalized reinforcement of resilience to disease and disease tolerance programs, for example on the basis of cross-cell molecular data analyses. Digital approaches, through which people are increasingly responsible for their own health and are able to influence it, will contribute to the application of these concepts.

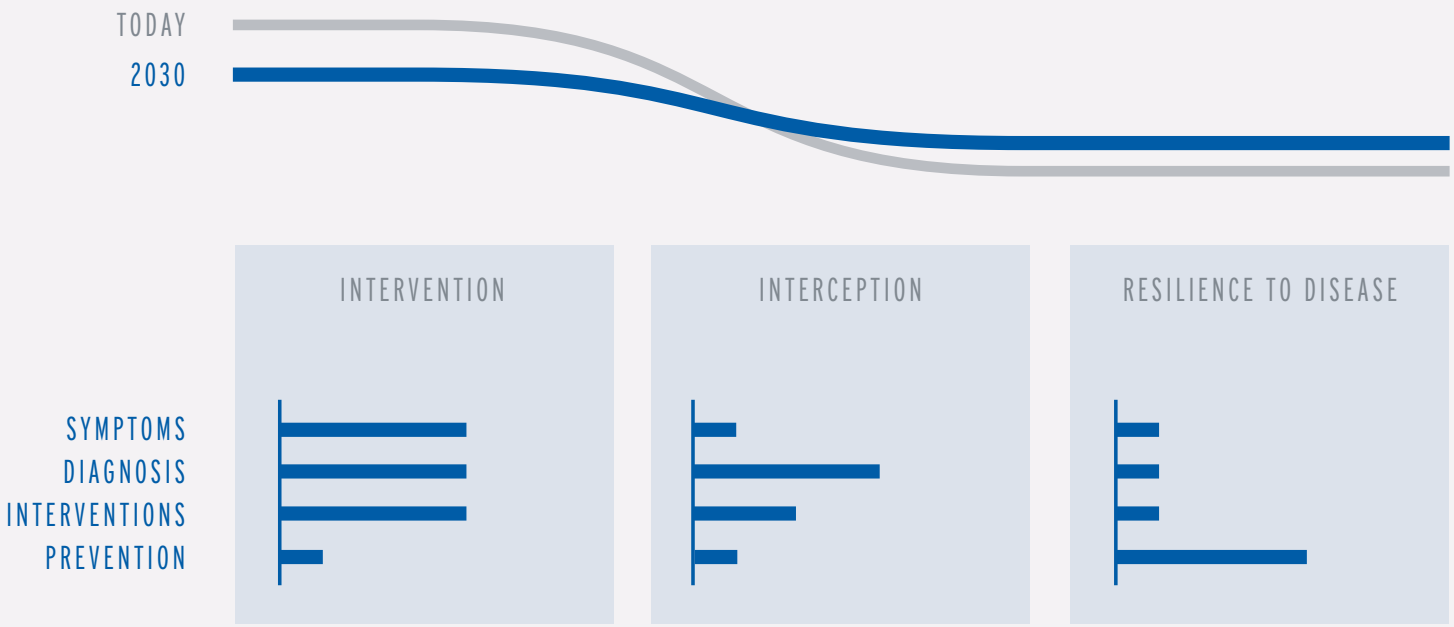
With this, Charité aims to offer the population individually effective prevention and treatment, and increase lifespan and quality of life in the long term through the early detection, prevention or specific treatment of diseases.

Many prerequisites and approaches for achieving this objective in terms of content and structure are already in place at Charité. They include a number of funded research programs as well as innovative offers in the university outpatient departments.

Concrete realization by 2030

- → Development of a research focus on health maintenance and prevention
- → Establishment of a Life Science Campus in the southwest of Berlin for this area of focus
- → Development of prevention strategies for broad sections of the population

Figure 7: Shift of Charité's areas of responsibility



4.1.4. Benefit-oriented medical treatment as a leitmotif

Despite many approaches to the problem, the well-being of patients in inpatient and outpatient care is difficult to assess beyond the interventions themselves. For example, the patient's recovery after discharge from the hospital is not systematically asked after, and there is no feedback on medium- and long-term consequences of the illness or other treatments. Failure to benefit from medical treatment due to over- or underprovision is usually not systematically determined. Often only surrogate parameters, such as the structure and process quality of the suppliers, are collected in order to manage resources; on the other hand, the quality of the results of a treatment has only a very minor impact. Ultimately, this leads to the treatment result having no impact on the remuneration for services, to rewards for high occupancy rates instead of high quality, and to gaps in information for physicians about long-term treatment results. The healthcare system in Germany, which is mainly financed on the basis of solidarity, will increasingly reach the limits of financial feasibility with this management system.

Charité has set for itself the goal of contributing to forms of care in the coming decade in which the quality of medical treatment is the focus and is remunerated accordingly.

High quality can be expressed, for example, in fast, precise and economical diagnosis or in efficient treatment that is as cost-effective as possible. In this way, Charité will make a contribution to a continuously developed healthcare system that is not primarily controlled by inputs (costs, quantities, structure and process specifications), but also by results (outcome = benefit for patients). Concrete starting points for this are, for example, the systematic establishment of Patient Reported Outcome Measures (PROMs), the establishment of Integrated Practice Units (IPUs) and remuneration incentives aimed at providing a benefit for patients. To this end, Charité will seek to establish partnerships with many other institutions such as other providers, funding agencies or regulatory bodies. It will continue to pursue this goal with great energy through its own projects, for example by expanding already established approaches to a management system that focuses on patient benefit, including within the framework of its integration into international networks.

Concrete realization by 2030

- → Establishment of studies and key figures for management according to patient benefit, led, among others, by a new center for Healthcare Outcome Research
- → Initiation of patient benefit-oriented model agreements with funding agencies
- → Participation in a benchmark initiative of European university hospitals
- → Contributions to the political discourse on the remuneration of health services

4.2. Healthcare provision of Charité 2030

With its research, patient care and the transfer of knowledge and skills, Charité is committed to patient well-being. It advocates for a more humane and science-based form of recovering and maintaining good health. To this end, it develops forms of care and medical innovations as part of its strategy, all of which is intended to pursue the goal of improving healthcare provision for people in Berlin, in Germany and beyond.

4.2.1. Profiling through a sustainable medical strategy

With its three large clinical locations, Charité is a relevant part of daily healthcare provision for people in Berlin and the region, and even beyond for specialized fields. At the same time, Charité aims to offer top-quality university medicine at an international level in many areas. For this purpose, Charité relies on a complementary focus concept:

→ Top-quality university medicine

Charité offers top-class medicine. Care is aimed above all at particularly severe, complex or rare diseases. The medical service portfolio differentiates itself from the competition through a high degree of specialization, interdisciplinary approaches and the close connection to clinical research, which guarantees access to effective and safe innovation. For this part of the service portfolio, Charité is developing more medical centers of excellence than ever before. The expertise and quality in these centers of excellence, both in terms of staff and infrastructure, is bundled at one of the three locations. The locations will be associated with these focus areas on a long-term basis and in terms of content. Charité will also diversify with innovative forms of treatment and improve its revenue situation. To do this, innovation management needs to be set up in the hospital, so that in the future even more unique services than are possible today can be offered beyond the regional catchment area.

→ Maximum provision close to home

The second thrust of the medical concept focuses on the role of Charité as a provider of maximum care close to patients' homes. Charité is responsible for the care of patients in their neighborhoods with the full breadth of its disciplines at all three locations. This is organized in close coordination with Charité's partners (see also Chapter 4.2.3.). The provision of maximum care close to home includes above all emergency care, but also some standard care services that can be provided by Charité with a particularly high level of quality. Here, the range of services offered by Charité is differentiated by its close links with specialized medical centers, a connection with emergency care, and supply contracts that no other facility can or wants to cover. Structures that build bridges in outpatient care, such as special outpatient clinics or day clinics, will play a greater role here than they do today.

This focus on specialized medical centers and maximum care close to the patient's home, together with regional network partners, will also provide the long-term, stable foundation for shaping the university teaching duties at Charité.

The medical strategy lays the foundations for offering Berliners broad access to future developments in medicine at the highest international level.

To this end, medicine will be benefit-oriented and interdisciplinary. Continuous digitalization, which enables location- and sector-independent care in the Charité network (immersion), will characterize the forms of provision at Charité. The range of medical care is geared towards people's needs and will be aimed at closing gaps in provision. Services for interception, prevention and strengthening of resilience and tolerance to disease will become an integral part of the portfolio.

Concrete realization by 2030

- → Establishing medical focus areas at the three clinical locations
- → High proportion of maximum provision in the service portfolio
- → Expansion of the national and international catchment area for highly specialized, innovative services
- → Establishing and strengthening partnerships with other providers to interlink the provision of services

4.2.2. Digitalized university medicine as a future-oriented task

In the next 15 years, the digitalization of medical data will change the way in which diagnosis and treatment are performed. In most areas, this change will be very extensive, and in some cases radical. In addition to inpatient and outpatient medicine, digital medicine will establish itself in the form of algorithm-based applications and telemedicine options. Technology corporations will expand their services far into the current tasks of inpatient and outpatient care providers. Not only the form of medicine but also the content will change: early prevention and long-term monitoring of health maintenance will be possible and in greater demand. Participation in this form of medicine can extend life and improve quality of life.

Charité aims to support all processes in healthcare provision and administration completely digitally by 2030 and to use the opportunities offered by the availability of digitalized data in medicine comprehensively and in accordance with data protection rules.

Charité will pursue this objective primarily by way of three approaches:

- → Digital support of clinical processes by bringing together and providing all relevant information and evaluating it to aid in making medical decisions. This enables more efficient processes, ensures and extends the quality of treatment, and relieves the workload on employees.
- → Better coordination with and integration of external supply partners through digital networking, especially to overcome intersectoral boundaries. In the long term, patients at Charité should receive the best-possible

services along the entire supply chain without any interruptions in information, largely irrespective of location or organizational and sectoral boundaries (immersion of the patients in a care system that is to be developed at Charité).

→ Provision of care data for research, with the aim of establishing a learning healthcare system for the long term and laying the foundation for the continuous translation of innovative care services into practice.

Charité is also aiming to play a key role in shaping the digitalization of medicine in Germany.

Establishing networks and platforms is crucial for success. To implement this policy, Charité is building on a number of prerequisites by which it defines its role: medical expertise, cooperation with the Digital Health Hub of the Berlin Institute of Health (BIH), close connection with research institutions such as the Technical University of Berlin (TU) and the Fraunhofer Society, various ties to the Berlin start-up scene, and Charité's ability to act as an equal partner for cooperation with large technology and industrial enterprises. These developments will also gradually be reflected in the change in job profiles in the healthcare system and in the training of doctors, nurses and other health professionals.

Achieving this will be a great challenge – despite excellent conditions. Considerable investment in infrastructure and research projects will be needed. Implementation is supported by a centrally initiated strategic action area (#2).

Concrete realization by 2030

→ Positioning of Charité as a trustworthy brand for innovations and standards in digitalized medicine

→ Development of a health data platform (HDP) that will be independent of the hospital information system

→ Establishment of telemedical care offers with a wide reach beyond Charité's inpatient treatment

→ Operation of a joint solution with Vivantes and other regional partners in Berlin (platform concept)

4.2.3. Establishing Charité as a driving force behind an innovative supply network

In an internationally competitive environment, Charité is up against growing, academically informed networks of service providers who often operate regionally and across all levels of care, for example Johns Hopkins Medicine or the Cleveland Clinic. These have competitive advantages over Charité, for example in managing patients or generating data for research. In Germany as well, increasingly larger networks of service providers are being developed, by private hospital corporations for example.

Charité's conversion from a large hospital with three locations to the core of a supply network therefore has great potential for development.

The goal is a greater range of quality-checked and innovative care as a lever for strength in research with greater international visibility.

The advantages of such a network for the population in and around Berlin and beyond are far-reaching. Charité can take a holistic view of healthcare provision across the network. Chronic or complex diseases can – if this is reasonable from a medical standpoint – also be supported by a university medical center with regard to the coordination of diagnosis and treatment across the entire supply chain. Patients are directed more specifically to where they can find the right offer for their care needs. Provision services are organized around the needs of patients, relieving them of the burden of having to navigate their own path through an often confusing healthcare system. The structures of healthcare provision, including public healthcare, could be evaluated with broad-based healthcare research, and gaps in care could be closed by means of innovative care models. All of this is currently underdeveloped in Germany due to the fragmented healthcare system and a lack of coordinating bodies. Improvements in these areas can help to close research gaps, improve patient care and, in the medium to long term, create the basis for population-related optimization of healthcare provision.

For the core of a provision network, Charité sees great potential in close coordination and cooperation with Vivantes. The state of Berlin is the sponsor of both Charité and Vivantes, the largest municipal hospital group in Germany. Together, these two public institutions are in charge of around 40 percent of all inpatient beds in Berlin. This set of circumstances offers unique opportunities for increasing the quality of care for Berliners through a partnership and for increasing the range of science and innovation. This partnership can encompass a wide range of different formats, such as the coordination of service provision, the establishment of joint digital platforms or the structural interlinking for certain tasks. The first projects for this are in the preparation phase.

Concrete realization by 2030

- → Partnerships with regional inpatient and outpatient providers (also strategic action area #3)
- → Stronger structural integration with Vivantes for care provision in Berlin
- → Growing recruitment of participants for clinical studies, especially IITs
- → Further developing the central coordination function for special issues in medical care

4.3. Innovation and research at Charité 2030

Outstanding research and trust in science-based knowledge and innovation are the foundation of Charité 2030. They legitimize Charité's claim to participating in discourse on the design of the science and healthcare system and implementing scientific knowledge in clinical care.

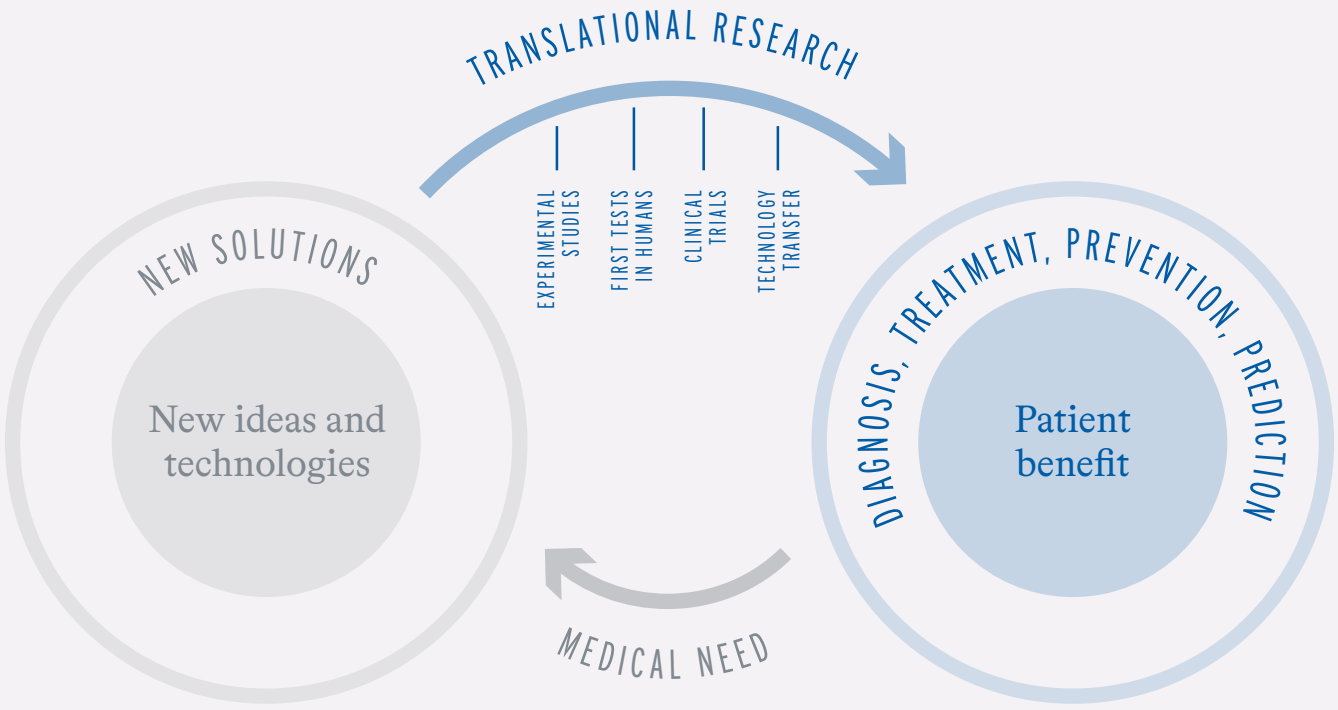
4.3.1. Translation as a central feature of Charité

A large number of organizations around the world are involved in developing innovative treatments and diagnostic procedures, as well as promoting health awareness in society. Findings from biomedical research are transferred into new approaches for prediction, prevention and treatment, and made available to patients and their environment (Figure 8). Societally, this transfer of knowledge into care is of very high importance for increasing the survival rates for serious illnesses and for developing less invasive treatments. However, the speed and effectiveness of translation is not satisfactory, and the opportunities offered by modern technological and scientific developments are not being sufficiently utilized. The main reasons for this are the complexity of the processes along the translational value chain – from ideas to medical options – and the very different objectives of the organizations involved – from basic science to hospitals to industry and other representatives of the healthcare system.

Charité is tackling these problems together with the Berlin Institute of Health (BIH), which will be integrated into Charité as a third pillar alongside research and healthcare provision.

Based on this unique structure, translation will become a central feature of Charité's overall positioning.

Figure 8: Shift of Charité's areas of responsibility



In order to achieve better quality in the transfer of translational concepts into medical practice, the BIH and Charité are establishing a translational ecosystem in which physicians and scientists will work closely with innovators and healthcare system experts. The translation cycle "bench to clinical reality" and "clinical challenges to bench" is also being promoted through the establishment of joint technology platforms that can map the main drivers of the current upheavals in medicine: digitalization, cell therapy and omics procedures. In addition, translation catalysts are being established that impart translational competence to those involved, support them with the various challenges along the value chain, promote the quality and robustness of all approaches and continuously verify and utilize transfer options.

In this translational ecosystem, the meeting of unmet medical needs and innovative scientific ideas creates new medical options. The objectives and the methodology of translation are imparted to the students and employees as early as possible, and, from an interdisciplinary standpoint, in as well-founded a manner as possible, in order to enable them to help shape the innovation cycle. Dedicated clinical researchers are encouraged to pursue their ideas, embark on new, translational career paths, and increase the number and quality of non-commercial clinical trials (Investigator Initiated Trials, IITs). Technology platforms, clinical research centers and the Clinician Scientist program have already been launched for this purpose. The privileged partnership with the Max Delbrück Center for Molecular Medicine, a member of the Helmholtz Association (MDC), is also a central component in this translational orientation of Charité.

Charité will benefit from the integration of science and clinical practice. Thanks to a newly established innovation management system, patients will benefit from new treatment methods, and Charité's position will be sustainably strengthened through constant innovation in care.

Charité is thus establishing a core for crystallization in the translational ecosystem of the scientific and healthcare region of Berlin and is pursuing the goal, together with its partners, of becoming a driving force in the transfer of scientific knowledge into innovative diagnostics and therapy in Europe.

Concrete realization by 2030

- → Developing a translational ecosystem with the Berlin Institute of Health (BIH)
- → Expanding translational career paths and developing a "translational mindset"
- → Introducing new preventive, diagnostic and therapeutic procedures in clinical practice
- → Transferring health-promoting knowledge to society
- → Expanding proof of principle and first-in-human studies and IITs
- → Further developing the partnership with the MDC of the Helmholtz Association

4.3.2. Systematic design and promotion of research areas

Charité continuously competes nationally and internationally for highly qualified scientists and funding. Visible formation of a profile – in addition to continued diversity – and the concentration of internal resources are powerful instruments for this competition. The systematic design and promotion of strategic research areas is a central means of organizing both processes.

Charité aims to have a clearly identifiable research profile in 2030. To this end, strategic research areas are defined using a structured process.

The research areas are developed in a transparent, competitive process and funded financially and structurally by Charité. The selection criteria are based on the objectives of the Charité 2030 strategy: excellent research quality based on robust results and a constructive error culture is of central importance. Interdisciplinarity and innovation, the ability to translate, and the promotion of young talent and diversity also play important roles. Knowledge transfer into healthcare and the communication thereof to the public, as well as partnerships between Charité scientists and other research institutions and universities in Berlin, are additional relevant criteria.

To implement this approach, Charité is introducing a step-by-step model for priority development. Depending on the stage of development, the stages increasingly contribute to Charité's academic profile and are supported by internal resources structurally, administratively and in terms of communication. Charité's priorities should be internationally competitive and, when viewed from the outside, be clearly understandable and contribute to building Charité's profile. Assignment to the various stages is defined based on transparent criteria and is evaluated on a regular basis. This enables Charité to dynamically develop new, innovative areas and to promote the diversity of content and establishment of priorities in a transparent process.

In terms of content, the research foci are tied to Charité's key differentiating features. This primarily includes the translation potential. To this end, new benchmarks for evaluating success in research are being developed, including with regard to the social relevance of scientific knowledge, translation and innovation performance (for example in the form of IITs), as well as the transparency and robustness of the research results. With the BIH QUEST Center for Transforming Biomedical Research, Charité already has a powerful and leading international stakeholder for the design of new assessment standards. New forms of interaction with non-university partner organizations and close cooperation with innovative start-ups or our own spin-offs are also becoming an important lever for expanding the translation potential of Charité's research foci.

Concrete realization by 2030

- → Establishing internationally visible research priorities by 2030
- → Establishing and structuring the content of the tiered internal model
- → Developing mechanisms for promoting and profiling research priorities
- → Development of new forms of interaction with partner organizations, start-ups and spin-offs

4.3.3. Responsible science as the basis for sustainable innovation

Responsibility for scientific methods and results is highly relevant for a successful translation that generates real added value for patients and society. In the translation process, every step along the value chain builds on the scientific and operational results of the previous steps. From one step to the next, responsibility increases, and often the utilization of resources increases as well: from tests in cell cultures to animal experiments, followed by the first test on humans, to trials with thousands of participants.

Only robust and responsible science that is committed to gaining knowledge and translating it into medical practice as independently as possible from other incentives can survive here.

Therefore, Charité aims to strengthen trust in science in the long term and pursues the following principles in its actions:

→ Robust and trustworthy results

Trustworthy research at Charité includes safeguarding clinical trials against possible biases by means of randomization and blinding, safeguarding the informative value of sufficiently high case numbers (statistical power) and the repeatability (replication) of important findings.

→ Transparent and relevant research

The benefit for science is increased by registering studies before they begin, documenting the work in electronic laboratory records and publishing results promptly regardless of whether the initial hypothesis is confirmed. Additional principles are a) Open Access (freely accessible publication), b) FAIR (Findable-Accessible-Interoperable-Reusable) and c) Open Data. If possible, the translational benefit should be taken into account before planning clinical trials.

→ Ethical considerations

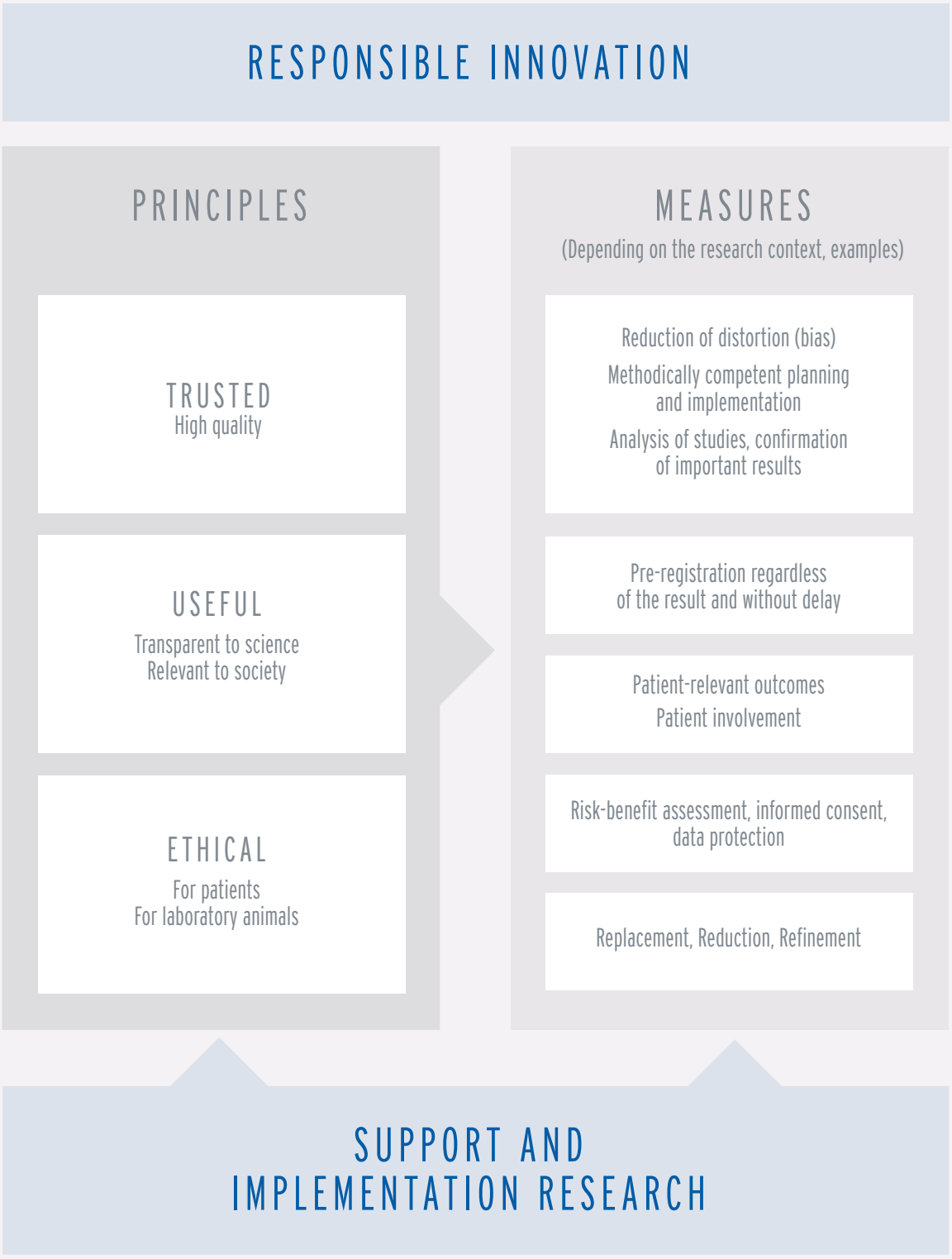
Ethical principles are central to biomedical research in humans and animals. Procedures for weighing the benefits and harms are adapted to the constantly changing techniques and approaches to research. Charité's 3R Center supports all scientists in optimizing animal welfare under housing and study conditions as well as the informative value of experimental approaches, and in energetically promoting the development of alternatives.

These principles for action are anchored in all components of research and training, especially in academic teaching (Figure 9).

Concrete realization by 2030

- → Establishing indicators to measure the performance of responsible research and innovation
- → Implementation of the 3R approach: Replacement, Reduction, Refinement
- → Early inclusion of patients and their representatives in study designs
- → Conveying methodological competence for responsible science

Figure 9: Responsible science as the basis for sustainable innovation



5 People and Education

In the strategic area of people and education, the focus is on diversity, equal opportunities and development opportunities at Charité. Scientific focus and personnel development at Charité are described as central elements of further strategic development, and the goals for the study and training for medicine of the future are formulated.

The people working and learning at Charité are the ones who shape Charité. They make Charité what it is. The working world in the healthcare system will change drastically in some respects over the coming years. New technologies affect the roles and responsibilities of the healthcare professions. The need for flexible and individual development opportunities beyond the classic continuing and advanced education paths will increase. Changes in societal values will also have a major influence on the collaboration and work methods of employees at Charité. Charité as an institution can only reach its full potential and shape the university medicine of the future if the needs of its employees and students are taken into account.

5.1. Diversity, equal opportunities and development opportunities

Charité is a magnet for talented people from a variety of very different backgrounds. There is not only diversity in terms of employees across different professional groups as well as students and trainees, but also in terms of cultures, gender identities and life perspectives. It is Charité's aim to support people in their diversity and to implement equal opportunities, diversity and inclusion. This is primarily a responsibility of the management. Four goals are associated with this aim:

→ Continually improving the ability of employees to perform their tasks in research, teaching, care and administration roles

One of Charité's aims is to understand people in their environment in order to maintain health and promote quality of life. This approach starts with the people who study and work at Charité every day. The well-being of the employees and students in all their diversity forms the basis for the excellent performance of the entire institution.

→ Diversity as a strength and quality feature

Innovation in university medicine benefits from the diversity of the stakeholders involved. Charité perceives the diversity of different life situations and backgrounds as a potential force to promote innovative approaches to thought and deed. This enables the organization to focus on the needs of different target populations. In this way, the excellence of medical science and the health professions can thus reach their full development potential, regardless of gender, ethnic origin, age, sexual orientation or identity, health impairment or disability, social origin or religion.

→ Equal rights and the compatibility of work and family responsibilities

Charité will pay particular attention to ensuring that all Charité employees, regardless of their gender and other individual characteristics, can realize their full potential and contribute their skills. A declared objective is to get more women into management positions and to enable all employees, regardless of gender, to take advantage of family time. To this end, the needs of young families and older employees, as well as colleagues and students with relatives in need of care, are taken into account equally.

→ Systematic offers for further individual development

The extensive changes in the working world require new, innovative offers for the individual development of employees. Digitalization, in particular, offers the potential to develop skills and new roles beyond traditional advanced and continued training programs. Charité promotes individually tailored development opportunities. In the context of digitalization in particular, it pursues the overarching goal of more people having more time to work directly with people, for example by using digitally supported processes to relieve them of tasks that are remote from the patient.

Concrete realization by 2030

- → Development of life-phase-oriented concepts of working hours (also as part of the strategic action area #4)
- → Promotion of the presence of women in management positions
- → Institutional anchoring of equality and diversity through representatives and counselling centers, and on committees
- → Inclusion of gender considerations in education, teaching and research
- → Expansion of offers for individual development

5.2. Scientific focus and personnel development at Charité

It is crucial for Charité's success that it is able to win over and motivate the best scientists and specialists. The main differentiating feature of Charité's strategy for personnel development is the establishment of a strong scientific culture. Charité understands that science involves cross-professional, interdisciplinary teamwork. wIn this, every employee knows and understands their own work as a contribution to the search for new knowledge and innovations for the health and healing of patients – and is constantly strengthened in this task. This objective is pursued in three sub-objectives:

→ Establishing a culture of science in all areas

Charité's activities focus on science (Research Consciousness). The aim is to establish a scientific culture in all areas, from research, teaching, medical care and administration to technology and infrastructure. Charité's scientific culture promotes commitment, curiosity, creativity, a constructive error culture and intellectual and intercultural exchange at all levels.

→ Personnel development and qualification

Acquiring and retaining qualified staff will be one of the most important tasks for both the medical school and the hospital in the years to come. Recruiting and retaining staff is based on three pillars: a) a broad and varied Charité-owned education program, including in new, interprofessional occupational profiles. This also includes agile education and training structures that can adapt quickly to the challenges of the environment and technological developments; b) active recruiting of skilled workers through targeted talent scouting and international marketing, even beyond traditional personnel acquisition formats; c) long-term retention of skilled workers through good working conditions and life phase-oriented career options.

→ Career paths and interprofessional collaboration

The diversity of the various professional areas and career paths at Charité offers the potential for fulfilling and successful careers. With the expansion of the Clinician Scientist program and the planned range of career paths for medical scientists and medical educators, exemplary personnel development opportunities are being created. The nursing career path concept at Charité – the specialized, scientific, educational and management career path – is already setting standards today. The goal for the future is to expand and combine these strengths and create integrative concepts that promote interprofessional collaboration.

Concrete realization by 2030

- → Establishing structures to promote a welcoming culture with an emphasis on science
- → Anchoring a scientific focus in target agreements
- → Expansion of the Clinician Scientist program
- → Expansion of professional education capacities
- → Expanding structured, interprofessional career paths in all areas
- → Further developing human resources development (strategic action area #4)
- → Expanding graduate and postgraduate schools

5.3. Education for the medicine of the future

Occupational profiles and competencies of students and trainees must be aligned with the medicine of the future. Charité aims to continue to play a leading role in the development and implementation of innovative teaching methods and content. The focus is on the establishment of interprofessional structures and the academicization of the health professions, digitalization in medicine and the inclusion of international considerations in teaching content. From this, the following objectives can be derived:

→ Establishing interprofessional structures by academicizing the health professions

In view of demographic and epidemiological change, academic education in the health professions and especially in nursing is of great importance for the future safeguarding of

healthcare provision in Germany. Academicization offers an opportunity to make apprenticeships attractive for young people, to present innovative educational offers that do justice to the complexity of future tasks, and to open up future-proof academic occupational areas for nurses. A central goal of academic nursing training is to improve the quality of nursing and contribute to evidence-based professional action.

→ Preparation for digitalized medicine and interdisciplinarity

Digitalized medicine will permanently change all health professions. The digital change in society as a whole must therefore also be reflected in the adapted teaching content of the study programs and training occupations in medicine. Only in this way can Charité achieve its goal of training digitally competent and ethically reflective young professionals in all degree courses and apprenticeships by 2030. In addition, employees in the health professions of tomorrow will also have to demonstrate interdisciplinary and interprofessional perspectives and skills. This will also lead to further development of the medical professions.

→ Taking on new tasks in healthcare

The increasing mobility of people as well as global exchange relationships in economic, socio-political and cultural terms will have a decisive influence on the medicine of tomorrow. As in the past, changes in health and illness are a logical consequence. Charité has positioned itself in this area with the World Health Summit, Charité Global Health and the existing study programs in International Health. Charité has set for itself the task of imparting to students of all health professions the skills required to cope with new, even unexpected tasks in healthcare. These include, for example, the basic principles of global health, and dealing with the health consequences of changed climatic conditions or pandemic situations. With this, Charité will further strengthen its importance as a hub for local and international networking and its role as an expert partner in global health policy.

Concrete realization by 2030

- → Expansion of the range of study programs offered in the health professions
- → Implementation of interprofessional teaching and learning formats
- → Integration of digital health considerations in education and training programs
- → Inclusion of global health aspects in all study programs

6 Locations, infrastructure and profitability

Charité is developing a differentiating profile for each of its clinical locations in Berlin. Each of these profiles fits into the overall concept for achieving Charité's strategic objectives. Each location is still a maximum care hospital. This profile development forms the basis for the targeted structural development of the locations. Excellent areas of content development are interconnected with new physical structures. Together with the modernization of the IT infrastructure and cooperative structures, the basis for a long-term, economically sound organization is laid.

On the following pages, the four Charité locations are characterized in terms of their starting position and future orientation. For the three leading locations in terms of bed capacity, the starting position is represented by key figures and their development over the past five years.

The key elements of construction plans are innovative content-based areas of development and the way in which they are structurally interconnected. Examples of interconnection include:

→ The outpatient, translation and innovation center of the BIH on the Mitte campus directly at the Main Ward Building (under construction).

→ A leading international heart center (German Heart Centre of Charité, DHZC) on the Virchow-Klinikum campus (planned).

→ A new, internationally visible children's hospital on one of the Charité campuses (vision).

Additional examples can be found on the following site pages. Both innovations and renovation needs are highlighted for each campus. Charité is currently running ideas workshops on the construction development. This means that the arrangement of the buildings in the 2020/2021 plans will change. The estimates of investment needs for each campus are also shown, broken down over the next three decades. The further development of the physical infrastructure is contained in strategic action area #1.

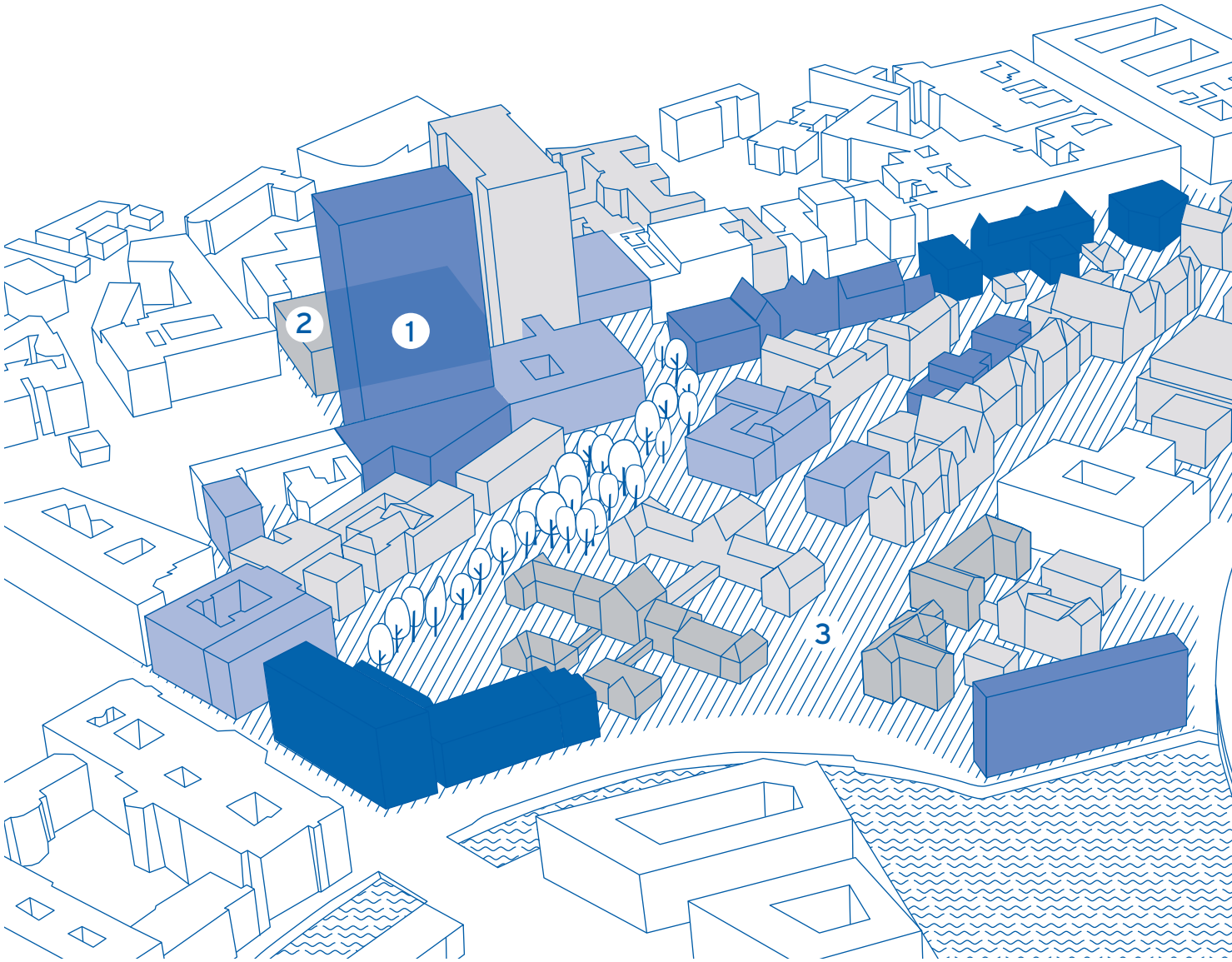
The Charité **Campus**

6.1. Charité Mitte campus (CCM)

Starting position	2019	Development since 2014
Inpatient cases	46,816	↗ +19%
Beds	873	↗ +9%
Outpatient visits	385,673	↗ +12%
Proportion of cases from the central emergency department	25%	↗ +12%
Operations per year	21,005	↗ +4%
Average case mix index	1.35	↘ −4%
Average length of stay in days	5.97	↘ −7%
Proportion of maximum provision	15%	↘ −6%
Employees (full-time)	4,568.6	↗ +21%
including nursing staff	1,176.6	↗ +10%
including professors	134.3	↗ +16%
including physicians	737.3	↗ +23%

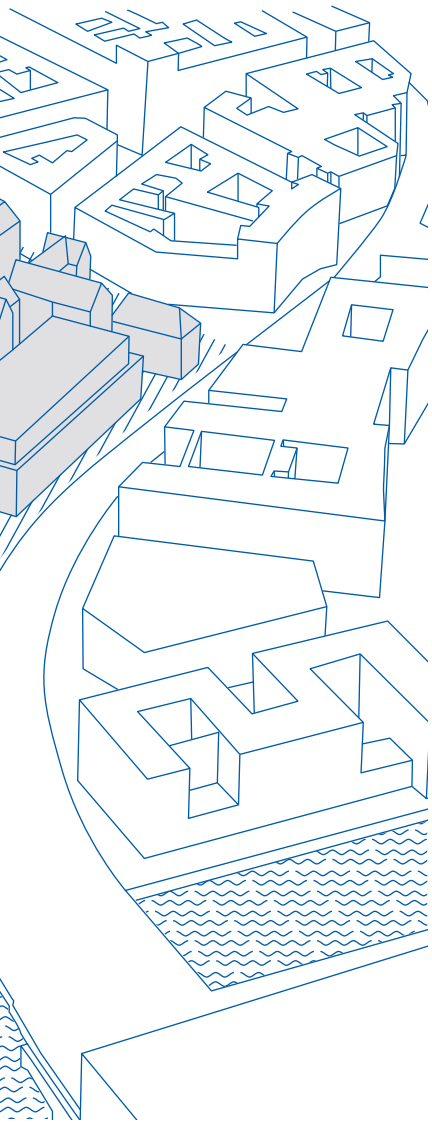
The main Charité site was formed around the Pesthaus (plague house), built in 1710, to the west of Luisenstraße, making it one of the oldest hospital facilities in Germany. Over the course of three centuries, the campus has undergone profound changes, including extensive expansions and additions, war damage and reconstruction. At the end of the 19th century, at the instigation of the Prussian Ministerial Director Friedrich Althoff, a general plan for the expansion of the campus was developed and implemented. In the 1980s, development in Luisenstraße was expanded to include the Main Ward Building and other buildings. With the core renovation of the Main Ward Building, completed in 2016, the cornerstone for renewal of the campus was laid.

Utilization of surface area



Development path at the Campus Charité Mitte

① Health Tower*	Construction of a second main building for concentrating clinical care on state-of-the-art equipment, including a top neuromedical center, the Charité Brain Center, and the Center for Dementia Research and Care (strategic vision)
② ATIZ BIH/Charité	Integration and communication platform for clinical research, digital development and groundbreaking innovation: the outpatient, translation and innovation center of Charité and BIH (ready for occupancy in 2022)
③ Concentration of administration and public dialogue	Use of the free space after the construction of the Health Tower to bring Charité administration together in one place. Establishment of the learning, teaching and communication center on Alexanderufer and expansion of Charité's Berlin Medical History Museum into a meeting place for science and society (strategic vision)



We are helping to design the Brain City Berlin and concentrate clinical neurosciences in a building that shapes the cityscape.
The Berlin Institute of Health (BIH) has unique translation areas right next to the central hospital building. Our research partner is the Humboldt University of Berlin.

- building stock
- already funded
- by 2030
- by 2040
- by 2050

* Prospective space requirement of the City of Health 2030/2040

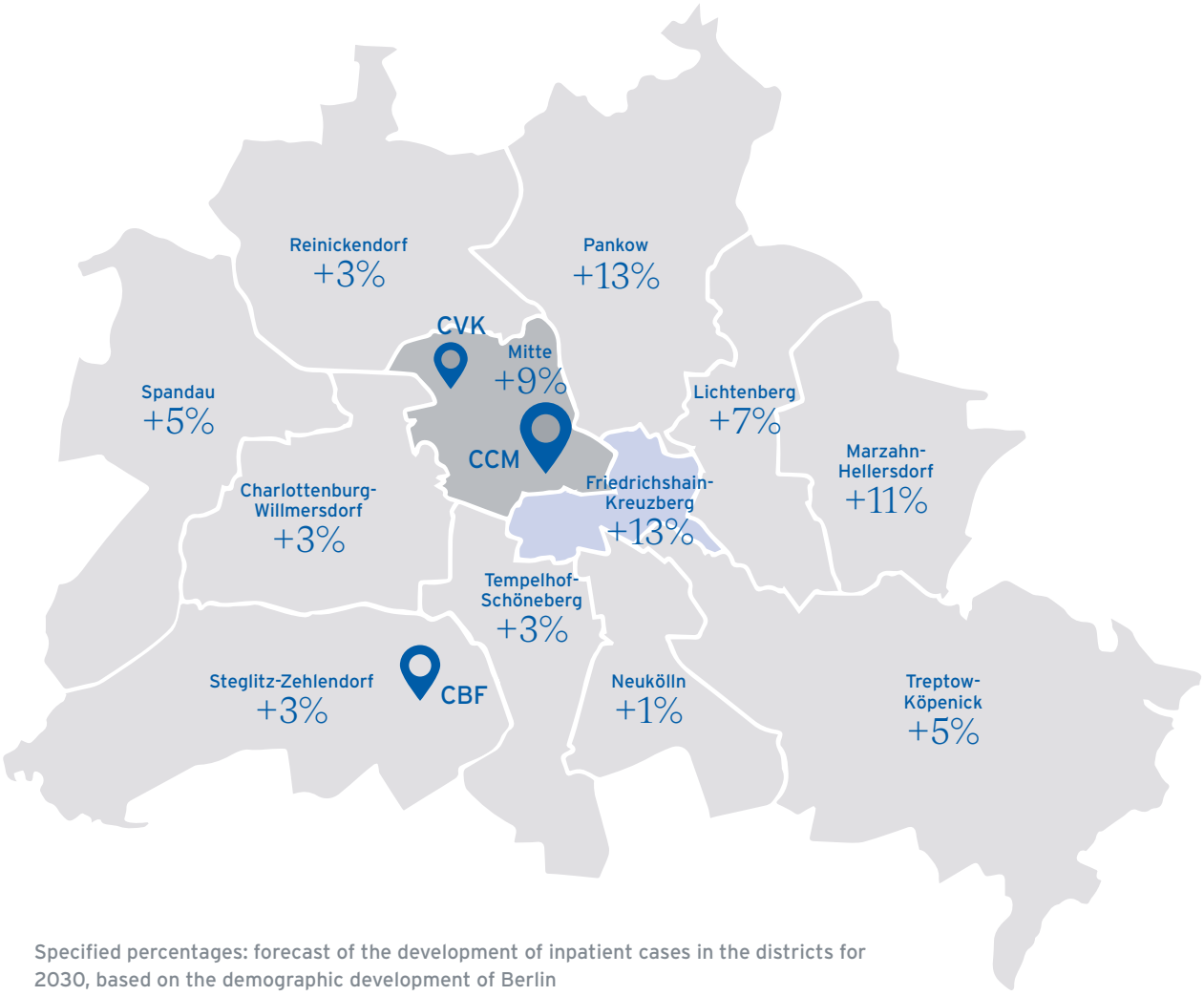
Estimated investment required

by 2030	€ 370 million
by 2040	€ 1,140 million
by 2050	€ 1,770 million

Projected development for 2030

Inpatient cases	↗ +1,740
Beds	↗ +41

The forecast increase in inpatient cases is derived from the demographically related growth in cases in the Berlin districts for 2030.



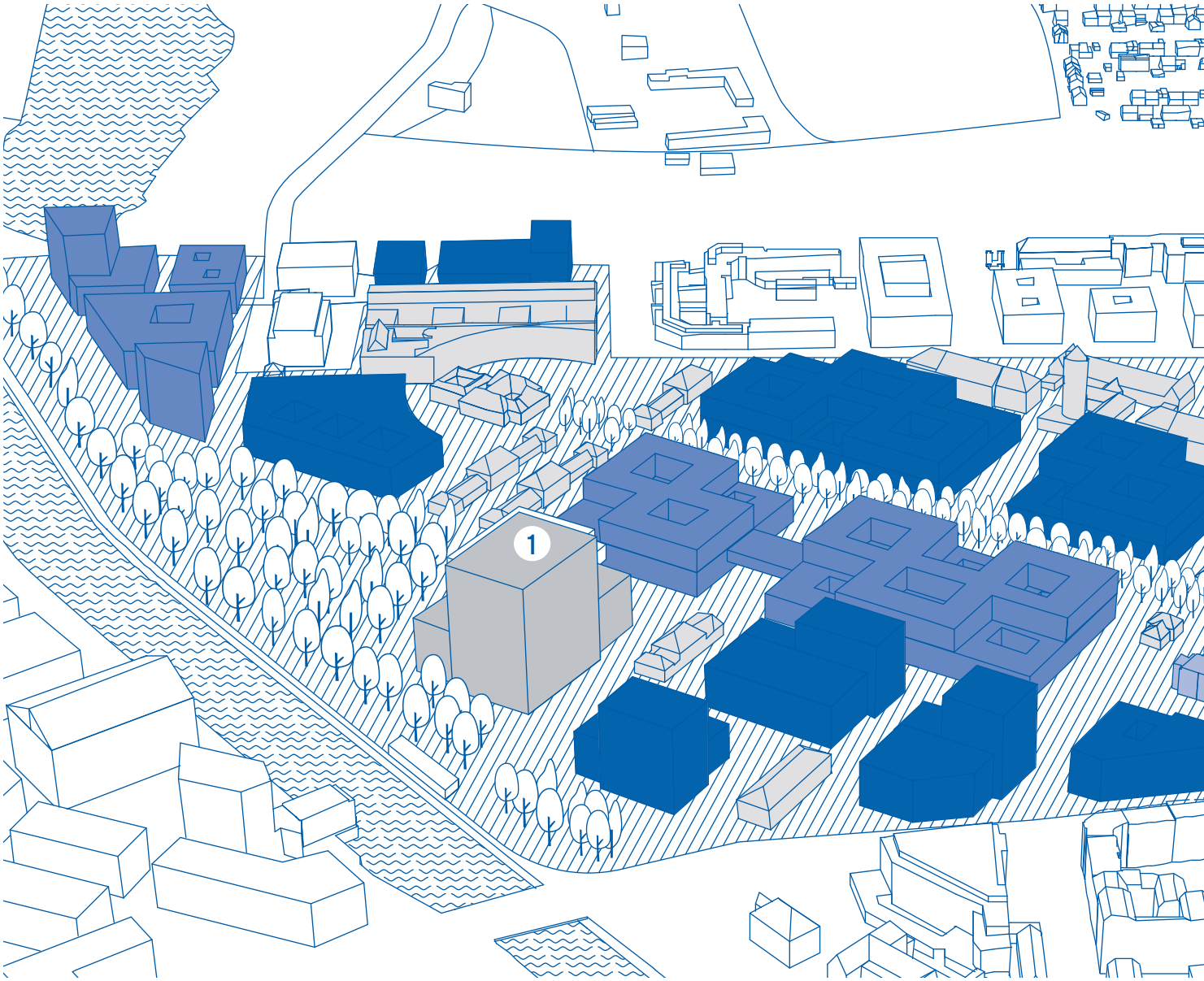
Specified percentages: forecast of the development of inpatient cases in the districts for 2030, based on the demographic development of Berlin
Color coding: proportion of Charité's Mitte campus in the provision of inpatient cases in 2017 in the districts (light gray <5%, blue 5–10%; dark gray >10%)

6.2. Virchow-Klinikum campus (CVK)

Starting position	2019	Development since 2014
Inpatient cases	69,450	↗ +6%
Beds	1,227	↘ –5%
Outpatient visits	533,234	↗ –9%
Proportion of cases from the central emergency department	27%	↗ –1%
Operations per year	34,938	↘ –7%
Average case mix index	1.55	↗ –4%
Average length of stay in days	5.96	↘ –5%
Proportion of maximum provision	24%	→ 0%
Employees (full-time)	5,511.4	↗ +10%
including nursing staff	1,710.8	↗ + 4%
including professors	92.7	↗ +10%
including physicians	922.5	↗ +11%

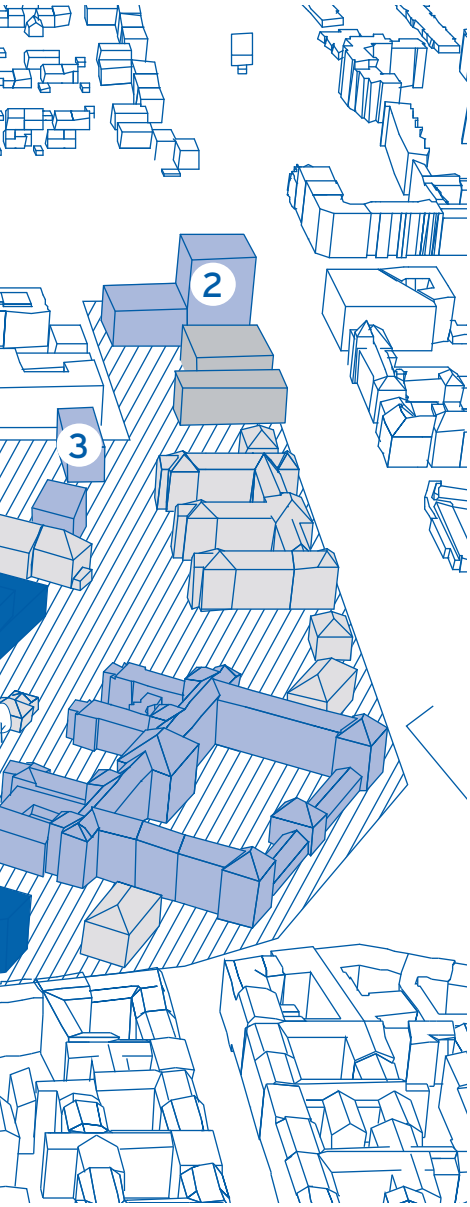
The hospital, which opened in 1906, was named after the Charité professor and health policy expert Rudolf Virchow, who died in 1902 and who had worked all his life to ensure basic medical care for broad sections of the population. Today's Virchow-Klinikum campus fulfilled this function as intended, by construction of a modern, garden-city-like hospital in an extremely densely populated residential area characterized by industrial employment. As before, the campus is still characterized by a central avenue lined by the nursing pavilions. The relaxed and greenery-filled overall facility designed by Berlin city planning director Ludwig Hoffmann is impressive owing to the consistency with which the planning took various environmental influences into account, as well as requirements for protection from infection and the promotion of general health. Even with the future renovation of the campus into the Healing City, the Virchow-Klinikum campus will remain committed to the guiding principle of the historic hospital complex.

Utilization of surface area



Construction projects in the next ten years (selection)

① German Heart Center of Charité (DHZC)	Founding of the German Heart Center of Charité (DHZC) as a leading international center for cardiovascular medicine in research and patient care (planned)
② National Tumor Center (NCT)	Establishment of a National Tumor Center (NCT) focusing on personalized medicine (precision oncology, cellular immunotherapy), prevention and innovative diagnostics (strategic vision)
③ New building for pharmacy, CTC and radiopharmacy	Construction of a new pharmacy for the most up-to-date production of preparations for pharmaceutical and cellular therapy as well as for radiopharmacy (strategic vision)



We develop specialized centers for university medicine in cardiology, oncology and surgery. Together with external partners, we are shaping the future of medicine with cell-based approaches. With the Technical University of Berlin, we are researching new organ models based on human models.

- building stock
- already funded
- by 2030
- by 2040
- by 2050

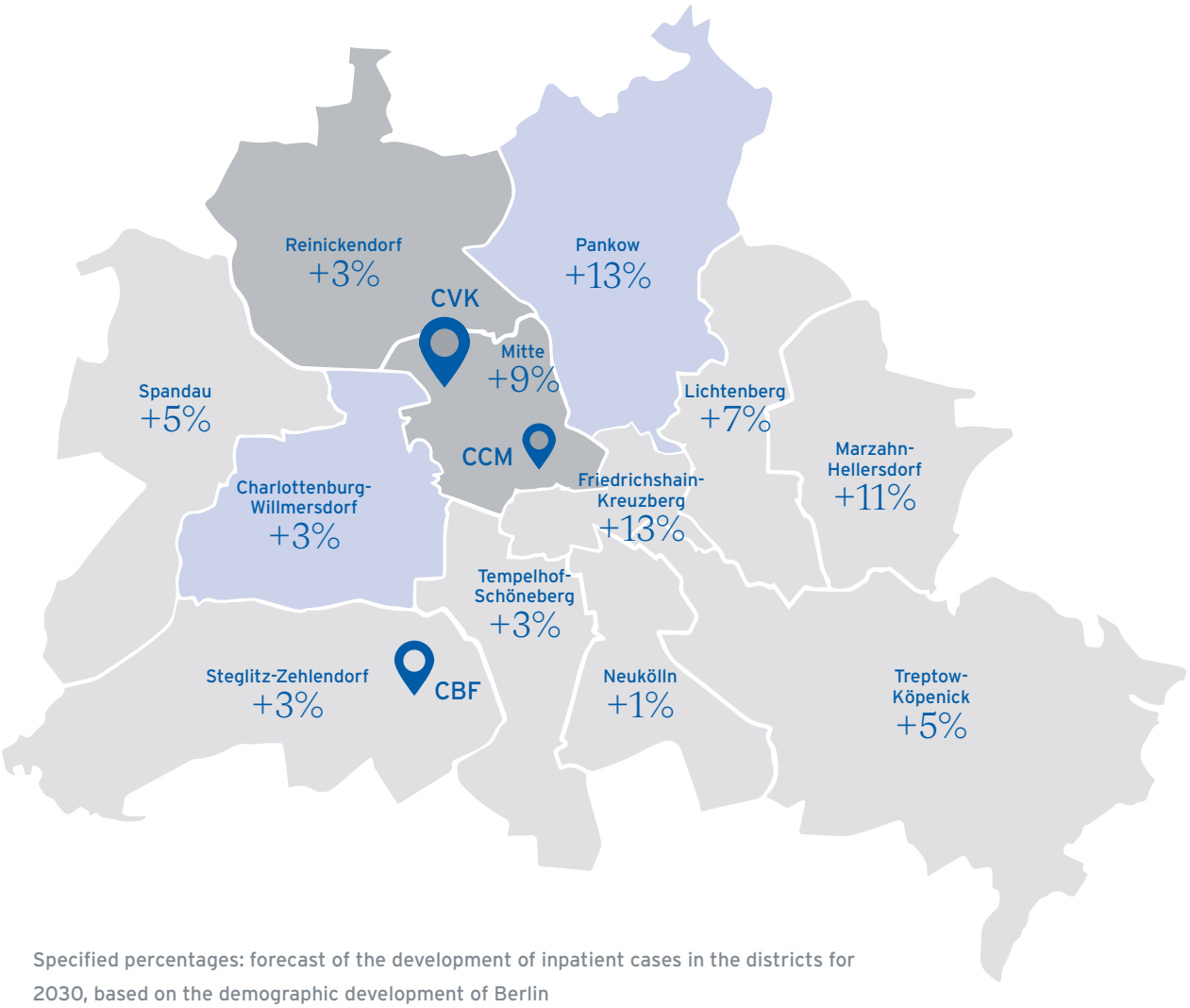
Estimated investment required

by 2030	€ 300 million
by 2040	€ 1,550 million
by 2050	€ 3,530 million

Projected development for 2030

Inpatient cases	↗ +2,754
Beds	↗ +61

The forecast increase in inpatient cases is derived from the demographically related growth in cases in the Berlin districts for 2030.



Specified percentages: forecast of the development of inpatient cases in the districts for 2030, based on the demographic development of Berlin

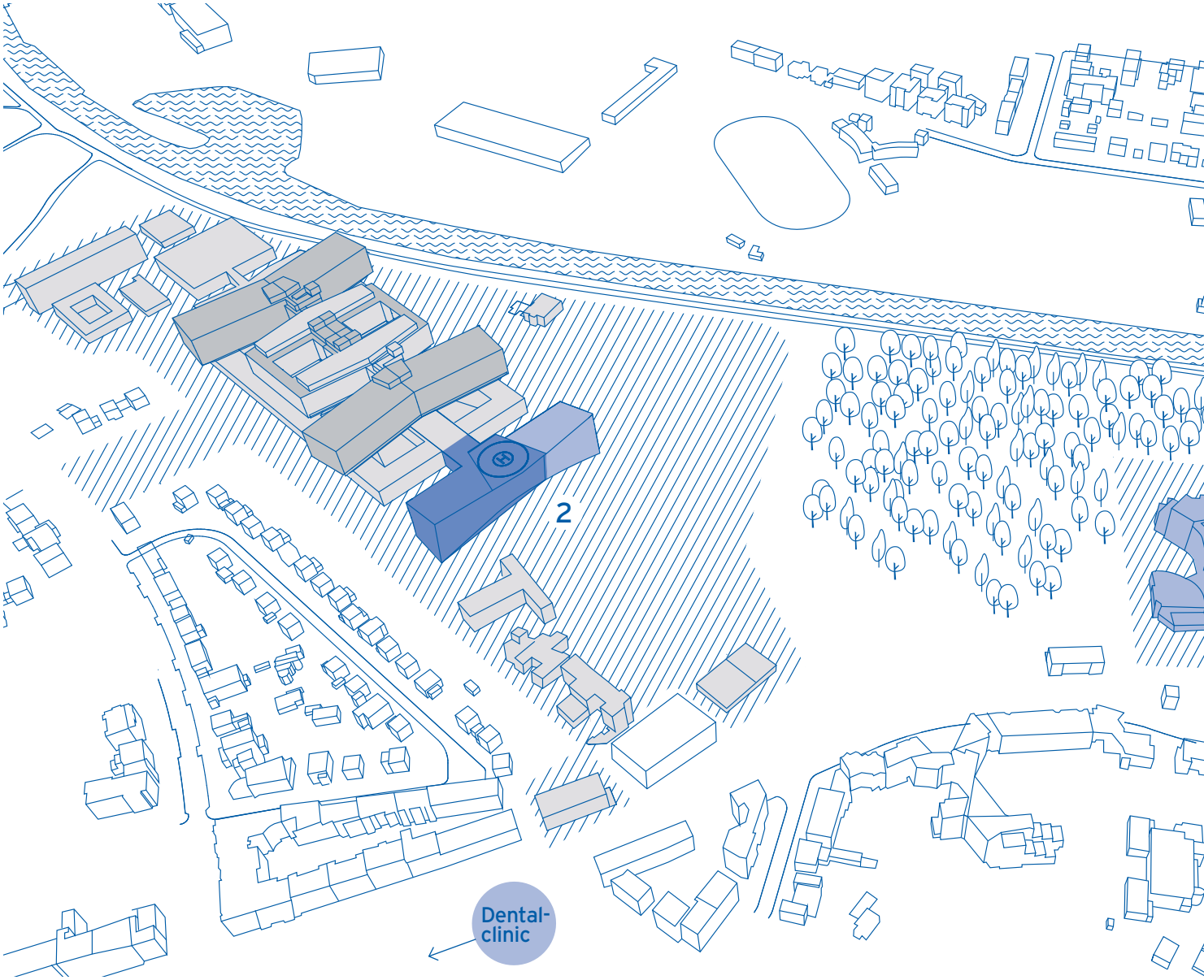
Color coding: proportion of the Virchow-Klinikum campus on the provision of inpatient cases in 2017 in the districts (light gray <5%, blue 5–10%; dark gray >10%)

6.3. Benjamin Franklin campus (CBF)

Starting position	2019	Development since 2014
Inpatient cases	39,494	↗ +7%
Beds	901	↘ –2%
Outpatient visits	231,114	↘ –3%
Proportion of cases from the central emergency department	43%	↗ +10%
Operations per year	15,688	↗ +5%
Average case mix index	1.40	↗ +7%
Average length of stay in days	6.13	↗ +3%
Proportion of maximum provision	19%	↘ –6%
Employees (full-time)	2,769.4	↗ +5%
including nursing staff	954.1	↗ +9%
including professors	52.3	↗ +4%
including physicians	532.5	↗ +7%

When it opened in 1968, the Benjamin Franklin University Hospital was considered a model hospital due to its innovative concept, and it became a model for all of Europe. According to the motto "Everything under one roof," for the first time a modern university clinical center was built in Germany, combining healthcare, research and teaching in one building. Today it is one of the world's most important post-war hospital buildings. The Benjamin Franklin campus as a whole has been a listed historic building since 2012.
Two of Charité's other special buildings are located at neighboring sites about 500 m away: the research facility for experimental medicine, known as the "Mouse Bunker" in Berlin, and the Institute Building for Hygiene, Microbiology and Virology. Both buildings are examples of an architectural era of the 1960s and 1970s that is now referred to as "brutalism."

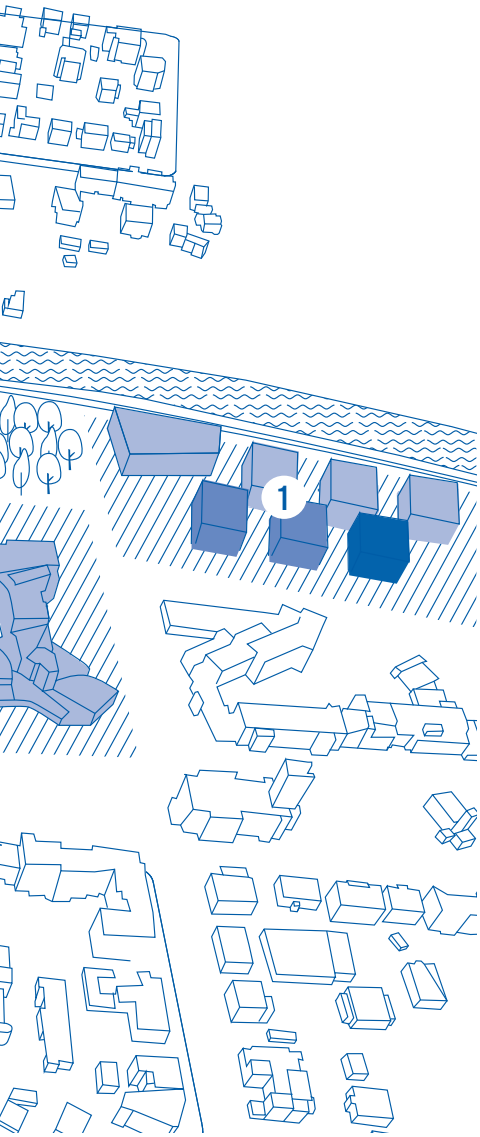
Utilization of surface area



Combining new medical concepts of the future with outstanding historical architecture

① Life Science Campus	Establishment of a research cluster for health maintenance and prevention together with the Free University of Berlin and other national research partners (strategic vision)
② Architectural development	Renovation of Europe's first compact university hospital building to create a modern health campus, while respecting the historical heritage (International Ideas Workshop)

We are developing the Life Science Campus of the future for health maintenance. With our partner, the Free University of Berlin, we are studying the immunological mechanisms of disease tolerance and disease resilience in order to create access to new treatments.



- building stock
- already funded
- by 2030
- by 2040
- by 2050

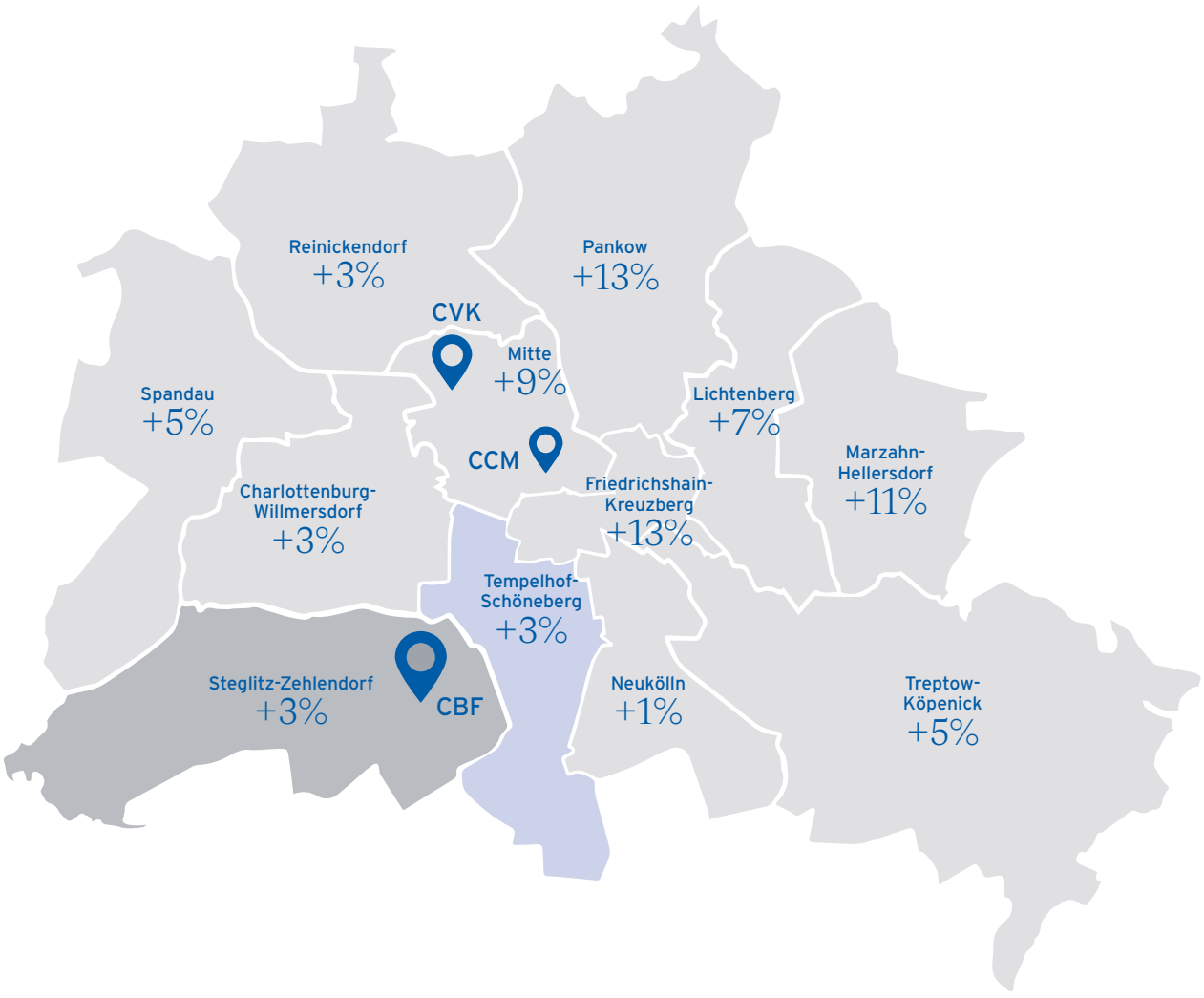
Estimated investment required

by 2030	€ 330 million
by 2040	€ 910 million
by 2050	€ 1,330 million

Projected development for 2030

Inpatient cases	↗ +1,828
Beds	↗ +45

The forecast increase in inpatient cases is derived from the demographically related growth in cases in the Berlin districts for 2030.



Specified percentages: forecast of the development of inpatient cases in the districts for 2030, based on the demographic development of Berlin
Color coding: proportion of the Benjamin Franklin campus in inpatient care cases in 2017 in the districts (light gray <5%, blue 5–10%; dark gray >10%)

Explanation of the key figures on the site pages

Starting position for key figures

Inpatient cases	All inpatient DRG and psychiatry cases
Beds	Number of beds according to the hospital plan
Outpatient visits	Total of visits for all outpatient cases
Proportion of cases from the central emergency department	Proportion of inpatient DRG cases that were admitted via the central emergency department at the location
Operations per year	Surgical procedure within the meaning of OPS chapter 5 in the respective central OP
Average case mix index	Based on the inpatient DRG cases
Average length of stay in days	Length of stay of inpatient DRG cases
Proportion of maximum provision	Allocation of inpatient DRG cases to maximum or standard provision according to the definition of the Association of German University Hospitals
Employees (full-time employees)	Average active full-time staff (rounding differences in the total are possible), including nursing staff: Nursing and functional service

Key figures forecast trend for 2030

Inpatient cases and bed requirements	Forecast for 2030 based on official population forecasts and the extrapolation of the inpatient case numbers for Berlin from 2017, assuming that Charité's market share remains constant

6.4. Berlin Buch campus (CBB)

On the Berlin-Buch campus in northeast Berlin, Charité operates clinical research facilities and, together with its partners, the Max Delbrück Center for Molecular Medicine (MDC) and the Leibniz Research Institute for Molecular Pharmacology (FMP), promotes translation in the area of basic research.

Together with the MDC, Charité operates the Experimental and Clinical Research Center (ECRC) on campus as a translational clinical research center, with the aim of acquiring basic scientific knowledge – in particular on cross-disease mechanisms in the development of cardiovascular, oncological, neurological and immunological diseases, including the role of the gut microbiome as an "interface" between exogenous factors and endogenous processes – and applying this more quickly in clinical practice. The BIH is also working closely with the ECRC to develop a research focus in vascular biomedicine on the Buch campus. In addition, at the Buch location Charité is part of the biotechnology park and thus one of the largest centers for biomedicine in Germany. The biotechnology park provides more than 60 companies and start-ups in the area of biomedicine and biotechnology with laboratory and research space, and is therefore an essential partner of Charité in the area of technology transfer and translation.

→ New research infrastructure for the Berlin Buch campus

Numerous new infrastructure projects are planned on the Berlin Buch campus by 2030:

- → New construction of the cryo-electron microscopy facility together with the Max Delbrück Center for Molecular Medicine (MDC)
- → Expansion of the research area together with the Berlin Institute of Health (BIH) to establish a new research focus in Translational Vascular Biomedicine
- → Expansion of the transdisciplinary university outpatient department, particularly in the areas of vascular medicine, metabolism and oncology

6.5. Profitability and investments

Economic viability is not an end in itself, but the basis for sustainable, high-quality service provision in healthcare, research and teaching at Charité. A sufficient rate of investment creates the infrastructure framework needed to guarantee this efficiency. Investment needs range from buildings and medical technology to digital infrastructure. The framework of dual financing in healthcare via health insurance companies (for operating costs) and the federal states (for investments and, in the case of university medicine, also for research and teaching) is subject to dynamic change, but is also becoming increasingly narrow. This requires a continuous process of adjustment from institutions that want to assert themselves in this market environment. Charité is one of the care provision and scientific institutions that are facing this challenge and striving for long-term balanced, economic operating results. This is closely linked with a sustainable increase in the efficiency of the overall organization and the further development of internal organizational and control mechanisms (Chapter 7.2.).

Charité primarily pursues this goal not through short-term cost-cutting measures, but through targeted expansion and by promotion of its strengths. For this purpose, the available resources are specifically allocated to the areas in which opportunities and strengths are identified. Charité accepts that not all areas can be equipped equally. The promotion of strengths focuses not only on the areas that are economically strong, but above all on areas of clinical and scientific excellence, as well as on the prioritized areas of strategic focus. Charité pursues the goal of ensuring sustainable, healthy profitability in the long term through the selective and equally consistent pursuit of excellence and competence.

As a facility in the integration model, Charité also aims to achieve a balance in its economic management between healthcare, research and teaching, especially considering the scarcity of investment funds.

Clinical and scientific output correlate with the availability of adequate infrastructure. In view of a huge investment backlog in all areas and across all campuses, Charité is pursuing a

systematic development process, in order to create a modern and high-performance infrastructure, in line with the strategic focus on content in healthcare, research and teaching.

Although Charité has been granted noticeably higher investment volumes in recent years by the state of Berlin and also by the federal government, the available investment funds by no means cover the defined needs. The dynamic innovation cycles in medical technology also accelerate demands placed on the equipment inventory by maximum provision and science.

Charité therefore feels that it has the responsibility to solicit further investment allocations from the public sector.

6.6. Ecologically sustainable infrastructure

In order to develop its infrastructure further, Charité is pursuing the goal of making its energy use, water consumption and waste management largely ecologically sustainable.

Overall, Charité aims to significantly reduce its CO_2 emissions over the next 15 years.

For this purpose, Charité signed a climate protection agreement with the state of Berlin in 2019. In this document, it was agreed that Charité's CO_2 emissions would be reduced by 20 percent by 2028 compared to 2018. This corresponds to over 25 thousand tons of CO_2 per year. To this end, from 2020 onwards Charité will issue annually a separate report on its CO_2 emissions. Planned measures include structural and technical changes, the use of renewable energies, green IT and mobility as well as organizational measures. In addition to this agreement, Charité will aim to consistently include the ecological design of the infrastructure in all future plans for new buildings and renovations. The two biggest challenges for Charité are the high resource requirements of hospital operations and the historic building stock. More than half of Charité's infrastructure was built or renovated well before the 1980s; most of the buildings are listed. A comprehensive ecological sustainability strategy involves high additional investment costs. Both challenges will require long-term and gradual transformation. The focus of the measures is on the energy efficiency of buildings, the efficient use of water and sustainable construction planning. With shorter lead times, measures to reduce materials and resources or their environmentally friendly procurement and sustainable waste management are being implemented. On a higher level, the ecologically sustainable design fits into the overall vision of Charité for recovering and maintaining the health of both patients and employees (Human Ecosystem).

6.7. Modernization of the IT infrastructure

Digitalization is a key element in shaping the coming decade at Charité. A modern and well-equipped IT infrastructure is the prerequisite for achieving many strategic goals. These include the development of digitalized university medicine, the acceleration of translation and establishing a profile in a regional as well as national and international care network. Specifically, this means, for example, supporting the work of clinical colleagues in the areas of both medicine and nursing with needs-specific digital solutions, for example through the situation-dependent visualization of medical data. The development of the first digital services for patients has already begun – these include an online appointment arrangement system integrated into the Charité website and more than 100 established video consultation hours.

In this context, a digital index to measure patient-centeredness is being developed. This maps the need for digital services in hospital treatment from the patient's perspective. This approach aims to set standards for healthcare in Germany even beyond Charité. The aim is to provide digital support to patients before, during and after their hospital stay.

A high-performance IT infrastructure is a basic requirement in order to catch up to the best international medical locations. Today, however, due to the previous framework conditions, Charité's IT infrastructure is still a long way from this competitive state – especially when compared to top international medical institutions.

In terms of modernizing its IT infrastructure, Charité has three objectives:

→ Conception of a digitalization strategy 2030

Among other things, this planning will focus on the development of data integration platforms, since the sharing of structured data in real time is an essential feature of data-driven digital medicine. In this regard, the establishment of a common, central data platform (HDP – Health Data Platform), which is to be independent of the hospital information system, has already begun, through which the first Charité-wide algorithms for supporting patient care have already been implemented. In addition, following the now completed launch of the gematik telematics infrastructure, and in particular through the further expansion stages already specified by the Federal Ministry of Health, a national health data ecosystem for digital health services will be created, which is to be included in the strategic planning of Charité.

→ Long-term investment in information technology

Charité strives for a permanently secured investment rate of 4 percent of its annual revenue for operational costs and the development of its information technology. In this way, Charité orients itself to the benchmarks of competing international hospital groups and university clinical centers. These investments are necessary in order to be able to digitalize the supply processes according to international standards. The goal is a degree of maturity of process digitalization comparable to HIMSS EMRAM level 7.

→ Development of competencies internally and in networks with industrial partners

To accomplish this, the organizational options of a public institution must be exhausted beyond the usual extent, so that Charité can afford its own top staff and innovative, high-performing partners. Examples of this are established positions which, among other things, are responsible for developing ties to structures and providers in the healthcare system, as well as the digitalization of processes in healthcare and the associated process management. To this end, measures in the strategic action areas for digitalization (#2) and partnership with industry (#3) have been summarized.

7 Internal Transformation

Charité is committed to the integration model and will continue to strive for an economically balanced annual result in the future. In order to achieve the 2030 target, Charité is paying particular attention to the internal transformation process. This includes redesigning organizational and control mechanisms and expanding its role as a partner for discussions with political actors and society. In addition, Charité is striving to improve its communication and develop its brand further. The culture at Charité should be characterized by appreciation, partnership and personal responsibility.

Critical prerequisites for success were identified in order to achieve the strategic objectives by 2030. For these prerequisites, Charité formulates its own goals that are aimed at increasing internal performance or establishing the necessary structures at Charité.

7.1. Principles for further development of the organization

Charité executives at the various levels of the medical school and clinical center have the task of balancing academic principles such as freedom of research and teaching with the requirements of managing a large clinical center with three locations. The implementation of this task is based on the conviction that the integrative organization of Charité is advantageous, regardless of the associated challenges, in order to fulfill the mission of Charité – Universitätsmedizin Berlin.

The integration model enables research, teaching and healthcare to be determined based on common strategic goals and thus to generate long-term added value for the scientific and healthcare system.

It is the optimal model for achieving an effective translational ecosystem. The common legal framework also offers binding – and at the same time flexible – regulatory mechanisms, should conflicts of interest between the medical school and the clinical center ever arise.

For implementation of the strategic goals, it will be of crucial importance in the further development of its organization that Charité implement constitutive principles for a functioning model of integration. An essential orientation point in Charité's organization is the aspect of responsibility at all levels of management. The interests in the organization, which are not always congruent, must be balanced, so that the interests of the individual areas fit into the overarching goals as well as the requirements of the organization overall. Six aspects form important principles for the responsible management of Charité (part of strategic action area #4):

- → Being results-oriented
- → Contribution to the whole
- → Concentration on a few, but essential, items
- → Orientation to its own strengths
- → Development and maintenance of a culture of trust
- → A positive understanding of opportunities and possibilities

7.2. Mechanisms of organization and control

Demographic and technological change, the increasing complexity of legal requirements, as well as the competition not only for qualified workers but also for patients, require an adjustment of the principles of organization and control. Other forms of division of labor, new job descriptions, technological solutions and Charité's organizational and management culture will be important elements of the organization. A powerful and efficient administration forms Charité's backbone for this purpose. It ensures compliance with legal obligations and, as an internal service provider, supports tasks in research, education, advanced and continued training, and medical care. This is crucial for the competitiveness of the entire organization.

Charité's aim is to align the organizational elements of administrative activities – the design of the organizational structures, the operational processes and the mechanisms of control – as well as development of the management culture to the requirements of the coming decade.

To this end, personal responsibility must be strengthened, partnership promoted and the relationship between the competencies of decentralized and centralized structures readjusted.

The implementation is summarized in a strategic action area (#6). Charité pursues the following sub-objectives:

- → Linking the internal mechanisms of control with the strategic objectives
- → Expansion of cooperative organizational structures with a focus on the reorganization of Charité Centers, and the expansion of department models and interdisciplinary centers
- → Administrative reform with alignment to the core processes, the measurement of promised internal performance and the digitalization of operational processes
- → Gradual spatial centralization of the administrative facilities in the Mitte campus
- → Expansion of the human resources development program for managers

7.3. Partner for discussions with political and societal stakeholders

Teaching and patient care are highly regulated. In many cases, progress and further development can only be achieved through simultaneous change in the regulatory framework. The legal, financial and structural framework conditions must also change if there is to be concrete implementation of some of Charité's strategic goals, such as alignment of remuneration with the benefit for the patient and the transfer of innovations into clinical practice. Constant dialogue with politicians and other stakeholders in society is an essential prerequisite if this is to be successful.

Charité aims to be a discussion partner for health and science policy decision makers in the political and societal arena.

To this end, Charité is positioning itself as a professionally and scientifically sound reference facility in biomedicine. It wants its daily work to be able to provide guideline values for making decisions on resource allocation and incentives in the scientific and healthcare systems. With its strong practical relevance, it serves as a

laboratory of the future for developing solutions that will meet political and regulatory challenges. It is a place where political stakeholders can try out new things in a safe environment.

This objective has consequences for the further development of the entire organization. The establishment of structures for coordinating an overarching agenda, internal prioritization of projects brought to Charité from the political side, the development of administrative resources in political communication, internal rules for dealing with policy-related processes, as well as centrally mandated external representation are required for implementation.

7.4. Point of intersection for horizontal and vertical integration

Its role in healthcare provision and research offers Charité opportunities for integration along both a clinical and a scientific axis. In addition to the direct advantages of bidirectional partnership with individual institutions, here Charité is particularly well-positioned for bringing together the advantages and perspectives of both axes at the interface between research and healthcare provision. This is how Charité differentiates itself as an attractive partner for cooperation.

This position allows Charité to open up opportunities for an integrated and innovative health region to top scientific institutions.

The basis of the scientific integration is the Berlin University Alliance (BUA), the joint association of the three universities in Berlin and Charité. Opportunities lie in access to the data of large cohorts of patients – even in highly specialized segments – and access to particularly attractive scientific specializations and platforms. In order to take advantage of these opportunities and provide an impetus for innovation, collaboration with the Charité Foundation will be further intensified. Along the clinical axis, Charité positions itself as the scientific core of an innovative health region in Berlin.

7.5. Branding and communication

Charité has developed a prominent position among university medical centers and in society.

With a consistent strategy, the Charité brand must be aligned with the vision and target image – Rethinking Health.

We work in partnership with the Charité Foundation. The aim is to give the entire organization a uniform appearance and thus to portray the image of a unified whole (part of strategic action area #5). To accomplish this, a careful relaunch of the corporate design will take place.

Externally, the branding strategy will create orientation and recognition. To this end, we are working on a concept for addressing specific target groups, for example for the development of a standard for multilingual, easily understandable information that can be offered to patients. For international positioning, future communication will increasingly be in English. In order to continue to attract the best minds to all of Charité's areas, Charité's brand as an employer is being further professionalized.

Internally, the new brand strategy is intended to strengthen Charité's identity and sense of community. This will be achieved not only through a new corporate design, but also through revision of internal communication formats.

This includes the development of cascading communication processes, lively formats for feedback, strengthening of the culture of service, and a modern intranet as the core medium.

7.6. Culture of the organization

With the goals as expressed in the strategy, Charité is facing a decade of major changes. This effort will only succeed if as many Charité employees as possible actively support the organization's goals and if external stakeholders and cooperation partners can be given a clear picture of the path that Charité intends to take.

Charité strives for a culture of collaboration characterized by appreciation, partnership and personal responsibility.

Managers with responsibility for personnel are facing a particular challenge here.

Charité's organizational culture is a valuable asset and part of its DNA. Charité strives for an organizational culture that is better able to take people's needs into account. To this end, appreciation and cooperation on equal terms are encouraged. Charité supports this objective by promoting cross-professional, interdisciplinary teamwork. The aim is to ensure that every employee is able to contribute their skills as best they can (strategic action area #5).

8 Summary and Outlook

Biomedical progress, digitalization and demographic and other developments affecting society as a whole will present Charité with major challenges over the coming decades. In a one-year strategy process, the Executive Board, managers and numerous other employees worked together to find out how this can be successfully managed and how it can be used as an impetus for further development. Charité has set itself ambitious goals in order to become the driving force behind the value-oriented further development of healthcare provision. To this end, it is helping to shape patient care and the biomedical science of the future, and continues to develop as an organization with – and for – its employees.

At the core of its strategy is Charité's vision for the medicine of the future: Rethinking Health. This is based on the medical needs of society and the benefits of diagnostics, treatment and prevention for the individual. To this end, Charité is broadening its view of people in all their dimensions (Human Ecosystem), pushing the boundaries of specialist areas and care sectors (Exploring Boundaries) and justifying its actions scientifically (Based on Science). The translation of scientific knowledge into clinical care in order to meet people's medical needs is the central driving force for this effort. Charité as a university medical center with the Berlin Institute of Health (BIH) is in a particularly good position to help shape these developments and to become the leading institution in Germany for translational health issues of high social relevance. To this end, it will combine excellent competencies in biomedicine with an exceptional infrastructure, as has been achieved with the German Heart Center of Charité (DHZC), for example.

Berlin as a scientific and healthcare region offers unique conditions for meeting this objective. Charité has the opportunity to link a large number of outstanding cooperation partners and innovative start-ups at the interface between science and research, and thus position itself as a translational stakeholder with international visibility. Within the healthcare sector, there will be an extraordinary opportunity in the coming years to work together with the Vivantes municipal hospital group to develop Berlin into a metropolitan region with future-oriented healthcare provision. Access to digital data and its application using digitally supported technologies is an essential component of the strategic alignment. Achieving these goals requires highly qualified and motivated employees. Charité will contribute to the further development of the job profiles and training content for the medicine of tomorrow and, as an employer, will constantly refocus on attracting and retaining employees.

Achieving these objectives requires the best-possible conditions for their implementation. Therefore, above all, structures and processes for enabling realization of the strategy must be created. The necessary areas of action were identified in the strategy process (Figure 10). Some of these areas of action can be implemented independently by Charité. Others need active support from its partners in the realms of politics, science, healthcare and business.

The following six areas of action are to be regarded as key to the successful implementation of the strategic goals described in this document. The implementation will be prepared in the coming months.

Figure 10: Areas of action derived from the Charité 2030 Strategy

1

Further developing the physical infrastructure at Charité locations

2

Development of high-performance information technology and construction of digital platforms for research and healthcare provision

3

Integration with healthcare facilities in Berlin, especially with our partner Vivantes, as well as partnerships with industry

4

Systematic personnel development and promotion of a cooperative culture of transformational leadership

5

Further developing the organizational culture, communication and branding

6

Reorganization and strategy-conforming alignment of structures, processes and mechanisms of control, including in the form of administrative reform

Glossary

3R (Replacement, Reduction, Refinement)	Animal experiments are indispensable in biomedical research, but, according to the 3R principle, should be reduced to a necessary minimum. 3R stands for *Replacement* (replacing animal experiments with another method), *Reduction* (as many experiments or animals as necessary, but as few as possible) and *Refinement* (minimizing the stress on animals).
Berlin Institute of Health (BIH)	Starting in 2021, the *Berlin Institute of Health* will be integrated into Charité as a third pillar, in addition to healthcare and the medical school. The BIH transfers findings from biomedical research into new approaches for personalized prognosis, prevention and treatment, and develops new approaches to research based on clinical observations.
Case Mix Case Mix Index	The *case mix* describes the sum of the weighting ratios for all treatment cases according to the case flat rate system (DRG). Weighting ratios make it possible to measure the effort required to treat a specific inpatient case in comparison to all other inpatient cases. The higher the weighting ratio, the more complex, i.e. the more difficult, more special or more resource-intensive, the treatment was. The *case mix index* indicates the average severity of the case. For this purpose, the case mix points of all cases are divided by the number of cases according to the DRG system. CMIs above 1.0 indicate a case portfolio that is more severe or more complicated than average.
Clinician Scientists	*Clinician scientists* are physicians in specialist training who work equally in clinical practice and research.
First-in-Human Study	Also known as a Phase I study, it describes the stage in drug development at which an active ingredient is tested *in humans for the first time*.
Global Health	*Global health* encompasses research, concepts and interventions for improving public health and fighting disease in a globalized world.
HIMSS EMRAM (Stage 7)	The *Healthcare Information and Management Systems Society* (HIMSS) has developed the *Electronic Medical Record Adoption Model* (EMRAM). This describes the degree of digitalization in hospitals in *seven stages*.

IITs	*Investigator initiated trials* (IIT) are clinical trials that are initiated by academic researchers and which aim to acquire scientific knowledge in order to improve patient treatment.
Integrated Practice Unit (IPU)	In *integrated practice units*, complex medical needs are organized in one place throughout the treatment cycle, including inpatient, outpatient and rehabilitative care, as well as support services for all patients.
Integration Model	The *integration model* describes a form of organisation within the university medical center,, which provides for the joint management of the entire range of tasks from research, teaching, patient care and business management, into a single organizational and legal unit by the clinical center and medical school.
Interception	The concept of *interception* means to identify illnesses before symptoms arise and thus be able to treat them earlier and more successfully. This approach places primary emphasis on maintaining health.
Tolerance to Disease	*Tolerance to disease* is one of the host organism's defensive strategies against infectious diseases, and is based on the activation of special mechanisms of the immune system. Tolerance promotes the health of the host and at the same time has a neutral to positive influence on the pathogen.
Medical Educator	*Medical educators* are physicians and researchers in the basic sciences who, in addition to their clinical and/or scientific work, focus on the teaching of medicine and on continued training.
Medical Need Unmet Medical Need	In our definition, *medical need* includes the frequency and severity of illnesses, both from an individual and societal point of view, as well as the available and required forms and structures of treatment. The term *unmet medical need* describes medical needs that cannot (yet) be adequately provided for.
Medical Scientists	*Medical scientists* are social, natural and life scientists who are active in biomedical teaching and research.

Omics	The term comes from the research area of biology and serves as a generic term for molecular biological methods ending in *-omics,* such as genomics, proteomics and metabolomics.
Open Access	*Open access* to scientific research results enables scientific publications to be accessible to the public worldwide and free of charge on the Internet.
Open Data	*Open data* is freely accessible online for everyone and can be used, reused and disseminated, provided that the source of the data is cited.
Patient Reported Outcome (PRO) Patient Reported Outcome Measures (PROMs)	*The therapeutic success reported by the patients themselves* (Patient Reported Outcome, PRO) supplements the assessment of a therapeutic measure with the patient's subjective point of view. The *instruments used to measure and record PROs* are known as Patient Reported Outcome Measures (PROMs).
Predictive medicine	As a branch of individualized medicine, *predictive medicine* aims to offer patients customized prognoses and interventions. It is based on the knowledge that, due to their individual biological-genetic makeup, people have different risks of disease, that drugs or other treatments may not have the same effect on everyone, and that there are subgroups of diseases.
Proof of Principle	In the context of drug development, preclinical studies can provide *proof of principle* of the efficacy of a potential drug at an early stage and serve in the preparation of clinical trials.
Public Health	The application-oriented specialist area of *public health* deals with the mental, physical, psychological and social aspects of health and illness and the systemic connection between the two.
Translation	In this context it refers to the transfer of research results into clinical application for the benefit of the patient.
World Health Summit	*The World Health Summit* was founded at Charité in 2009 and is now one of the most important international forums for global health issues, strategic developments and decisions in the health sector.

Legal Notices

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