

Annual Review 2021







■ BJÖRN ZOËGA, CEO. PHOTO: RICKARD KILSTRÖM

Karolinska does it again

Someone at the hospital once said: 'Karolinska is an unstoppable force'. In 2021, this has been truer than ever. We have saved lives, relieved suffering and brought security to our patients and communities while the pandemic has held the world in its grip. We are the ones who have held patients' hands and said a final goodbye when family members have been unable to be at a loved one's side, we are the ones who have come through, who have taken extra shift after extra shift because there are so many patients who need us, or because our colleagues are sick. We are the ones who have stepped in and stepped up. We always will. But now is also the time to break away from other things. It is the time to shift power to those of us who care for our patients. To those who know what works, and who have dreams and ideas for a different kind of healthcare. Healthcare shaped entirely according to the patient encounter. We see how this shift in power is changing our hospital bit by bit. New collaborations are taking shape, decisions are being made faster, and by those who see our patients. That's how we unleash the unstoppable force in Karolinska.

Björn Zoëga
CEO
Karolinska University Hospital



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VISION

We will **cure** and **relieve** tomorrow
what no one can cure and relieve today



MISSION

We're the **best at the most difficult**.
We take **responsibility** for
our common resources.



VALUES

Responsibility
Compassion
Holistic Approach

Another Strong Year for Karolinska University Hospital

The pandemic has strongly impacted Karolinska throughout 2021. In each wave, the hospital has in a fantastic way adapted our operations to meet the situation. When we've been in the troughs of the pandemic, we've quickly caught up with care that had to be postponed. An unprecedented surge in pediatric infectious disease admissions meant we had to take extraordinary measures to cope with the exceptional influx of children. Our laboratory operations have managed the massive fluctuations in demand for COVID-19 PCR tests. Just like in all our different divisions, the ability to adapt has been impressive. Our efforts can be captured in numbers. During 2021, Karolinska overdelivered vs Region Stockholm's commission, 102.1 per cent. We have cared for more patients from other regions than in previous years and testing for COVID-19 has been extensive. Overall, this has translated into a financial surplus of SEK 740 million for 2021. Stable finances provide the conditions to invest in equipment and staff.

What Karolinska has achieved in 2021 is remarkable and would not have been possible without staff who are among the very best in the world. However, for every individual to be the best at what they do is not enough. Excellence requires use of the full spectrum of experience and skills, as well as ensuring clinical staff have adequate influence over key decisions and collaborate extensively. To this end, we in late 2019 introduced a new strategy to simplify our processes, shift responsibility and authority to those who care for our patients and reduce bureaucracy. This transition is far from complete and will never be fully completed. A university hospital must always evolve, and we must always focus on what we are here to do: care for patients, conduct research, and educate. Everything else that happens at the hospital aims to support these three tasks and make the working day run as smoothly as possible for those who care for our patients.

What we have achieved together has reverberated in Sweden and the world. We see in the media and on social channels that the outside world sees more clearly all that we contribute. For the second year running, prestigious magazine Newsweek has ranked Karolinska as one of the world's top ten hospitals; we are ranked seventh in the world and second in Europe.

Being at the front line of a pandemic while caring for all other patients and continuing to be a leader in research and education is probably the most difficult task our hospital has ever faced. Many of us have worked extremely hard over the last two years.

At Karolinska, we will always work hard – it comes with our mission to be the best at the most difficult. But we must always be ready because our patients will need us tomorrow too. That's why we're now aiming to provide even better support to those of us who are struggling and need help. We will soon open a wellness center for our employees, similar to those found at some US hospitals. We will also have four additional recovery days that can be taken in 2022.

Our efforts in 2021 will go down in history. We did a fantastic job, and we did it together.

Karolinska's Year in Numbers

Percentage of Region Stockholm care assignment delivered:

102.1 per cent

Average number of beds:

1,086 (+11 per cent from 2018)

Number of patient visits (inpatient and outpatient): **1.4 million**

Number of PCR tests (performed/coordinated): **2.1 million**

Ongoing clinical studies: **1,300**

Net income: **MSEK 740**

One University Hospital in Two Locations



Karolinska University Hospital is Region Stockholm's university hospital with special responsibility for secondary and tertiary healthcare. Karolinska also receives patients from other parts of the country, and from other countries. The assignment also includes primary responsibility for the Stockholm Region's research and student education alongside the Karolinska Institute and other higher education institutions.

The hospital employs around 15,400 people, across some 150 professional categories.

Operations are mainly run at the hospital's two sites, in Solna and Huddinge respectively.

The hospital is organized according to patient pathways, in six theme areas and three functions, as well as central administrative functions supporting core clinical operations.

Theme areas and Functions:

- Emergency Medicine and Reparative Medicine
- Children
- Cancer
- Heart, Vascular and Neuro
- Inflammation and Ageing
- Women's Health & Allied Health Professionals
- Medical Diagnostics Karolinska
- Perioperative Medicine and Intensive Care
- Perioperative Medicine and Intensive Care – Children

The hospital's themes and functions have significant freedom to structure their organizations according to their respective needs. Several have opted for a so-called two-legged structure, with one Head of Department, often a physician, and one Head of Care Unit, often a nurse, responsible for nursing operations, instead of the traditional model with one Head, often a physician.

Leadership From Within the Operations – Based on Data

Karolinska University Hospital is governed from where the actual care for patients is provided – this is where the right expertise for making crucial decisions that affect care exists. The hospital's central administrative functions provide support. This decentralized governance model requires a high level of collaboration across departments and an approach where we help each other to find solutions. During 2020, a new production and financial governance model was introduced. It provided a greater mandate and responsibility for Department Heads, as well as clearer production assignments that are agreed on and followed-up frequently to allow for rapid calibration and measures

to ensure that they are met. This governance model helped to enable the forecast-driven management of the first stages of the COVID-19 pandemic. In 2021, further changes have been made to refine governance. In February 2021, the number of Themes/Functions was reduced while the mandate and responsibility of Department Heads were increased. In the spring, the role of COO was removed and additional responsibility for operational management was allocated to the departments. During the fall, a dialogue was initiated with all managers to further clarify their mandate and responsibility in the decentralized governance model used by the hospital.

Together as ONE Hospital

Leadership from within the operations – Acting Across the Mandate

Simplification and Reduced Administration

'Saying YES' and Finding Solutions

Medical Diagnostics Karolinska

The merging of Medical Radiology and Nuclear Medicine with Clinical Laboratory Medicine to form Medical Diagnostics Karolinska creates a center for diagnostics, intervention and treatment that is at the forefront in terms of both competence and technology, to meet the needs of patients – today and in the future. The key words for the merger are patient synergies, operational synergies, and shared infrastructure.

3,500 employees

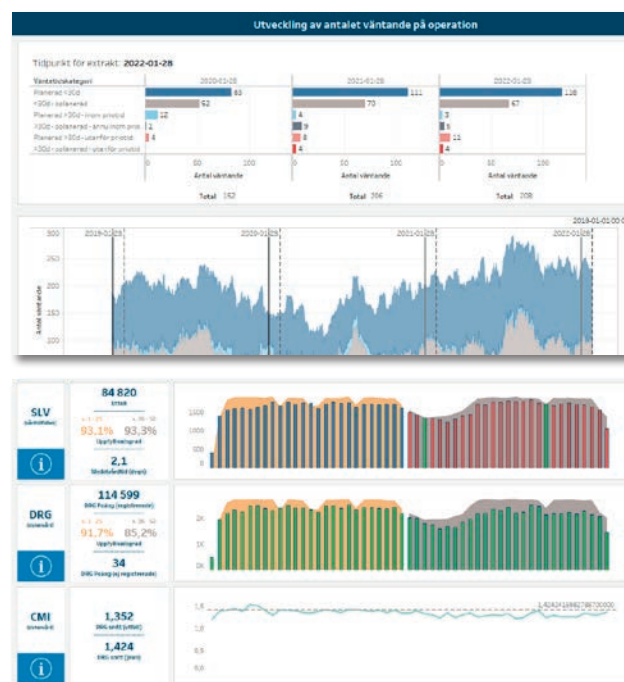
327,882 radiology examinations

Nearly **29 million** tests and analyses

50 testing points

– from Hallstahammar to Nynäshamn

Financial and provision governance has been further refined, with a focus on effective follow-up and better KPI dashboards.

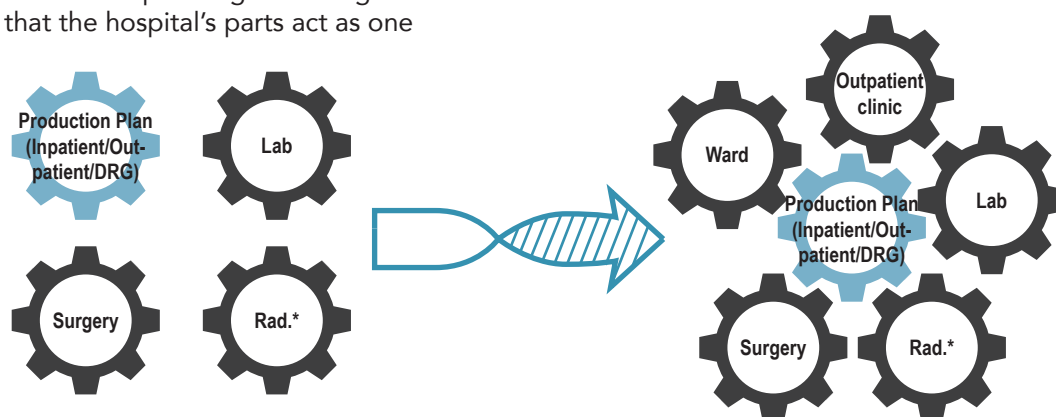


Two examples of follow-up that facilitates effective governance.

Karolinska's production planning process is refined continuously. In 2021, the systematic planning process has been expanded to include nursing as well as medical operations. Administrative support has been strengthened and further developed to ensure the best possible foundation for the preparation and follow-up of production assignments, and improved data dashboards have been developed. The overall responsibility for the hospital production planning process now resides with a theme manager, in line with the hospital's efforts to ensure that responsibility for important hospital-wide processes is placed close to healthcare operations.

Karolinska's surgery planning process has also been developed, in parallel with the work with extra surgeries carried out during the year. The surgery planning process will be further developed in 2022.

Production planning is the engine that ensures that the hospital's parts act as one



Two-legged organization

'It's about improving and clarifying nursing throughout Karolinska. An important and fundamental aspect of this is to ensure strong mandates and shift power closer to the actual care. The 'two-legged' organization, in which each organization has one manager with medical responsibility, and one for nursing, was created.'

Ewa Börjesson, Head of Care Unit, Nursing Unit Inflammation at Karolinska

Simplify and Reduce Administration – Top Priority

Simplifying and reducing the amount of administration, both in terms of the administrative burden for clinical employees and in terms of the size of the administrative organization, is one of the hospital's most important challenges.

The efforts to improve and standardize the hospital's administrative processes and reduce unnecessary bureaucracy to make things easier for clinical staff has continued in 2021, both in care units as well as central functions. The hospital aims to capture the lessons of the pandemic, where it became clear how much could be achieved in a short time, with reduced bureaucracy.

'We have come some way, but we will continue to simplify. When our healthcare units and wards themselves make the important decisions and drive change, nothing can stop us.'

Björn Zoëga, CEO,
Karolinska University Hospital



'2021 has been a different kind of year. We have had to adjust again and again because of the pandemic, just like the year before. It has been tough for our staff, but I am very proud of what we have achieved, and the incredible care we have been able to provide patients with.'

Christa Olovsson, Care Team Manager, MAVA/MIMA (Medical Emergency Care Department/Medical Intermediate Care Department), Huddinge



■ MIMA IN HUDDINGE. PHOTO: MALIN JOCHUMSEN

COVID-19: Karolinska Researches and Manages the Pandemic

Karolinska has continued to manage the pandemic in 2021 and COVID-19 has become part of the hospital's regular assignment. We have been able to receive all COVID-19 patients who have needed our care, while providing as much other care as possible to minimize queues.

Karolinska has had 4,700 patient visits and performed/coordinated 2.1 million PCR tests for COVID-19 during the year. Capacity in each wave has been adapted to the changing needs with rapid changes in both directions.

The hospital has been at the forefront of using clinical data and research findings to rapidly change and improve care.

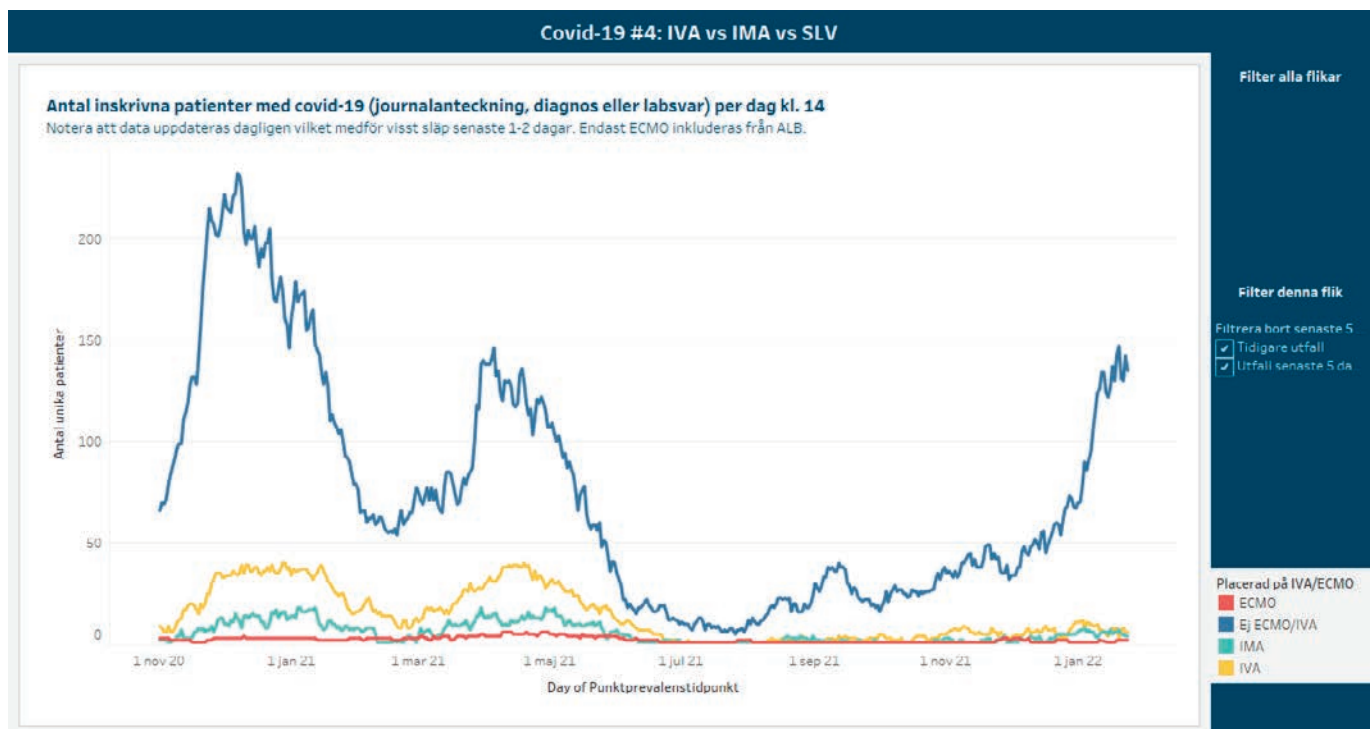
Regular Governance Best

The number of patients treated for COVID-19 has fluctuated a lot throughout the year. The hospital's well-established procedures and detailed contingency plans, with clarity concerning patient reallocation, have enabled the hospital to manage these fluctuations in an orderly manner. Karolinska's complex operations are best managed in regular governance, with decisions taken close to where the actual care is provided, and the hospital has only during short periods of major uncertainty and particularly high pressure activated the more centralized crisis governance protocols, with

green or yellow alert levels. The hospital entered 2021 on yellow alert, during the extensive second wave. On the 1st of February, the hospital went to green alert, and on the 12th of February, back to regular governance. On the 26th of March, with a sharp influx increase during the third wave, the hospital went back to yellow alert, only to go down to green alert on the 20th of April, and back to regular governance on the 27th of April. The hospital's focus on maintaining as high a level as possible of regular care production in parallel with COVID-19 care and using forecast modelling to avoid unnecessary reduction of other care 'just in case' has been a major contributing factor to avoiding, to such a large extent, longer waiting times for surgery, for instance.

'2021 was characterized by the pandemic and the impact of the strain on intensive care in 2020 – but by 2021 we had learned a lot, we knew how to best treat patients, and how to better manage the increased workload.'

Björn Persson, Head of Department, ICU

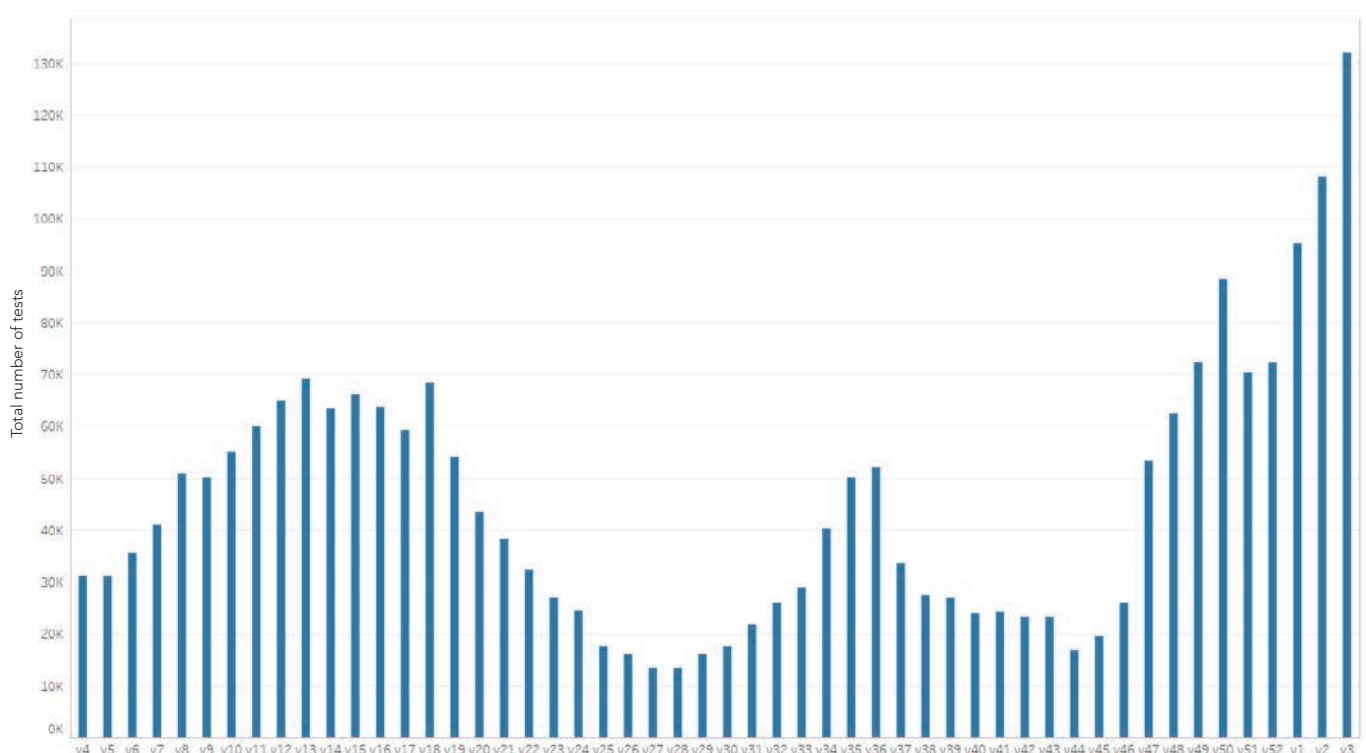


Number of admitted COVID-19 patients

PCR Testing and Vaccination

In addition to caring for critically ill COVID-19 patients, Karolinska has conducted and coordinated 2.1 million PCR tests in the region in 2021, at times 70,000 tests or more per week. The hospital now has the overall responsibility for all testing, analysis and distribution within the Stockholm region. The need for PCR testing has fluctuated greatly during the year, with Karolinska performing over 15,000 tests per

week at the lowest points, and almost 90,000 at the highest. The hospital has scaled capacity and staffing up and down at short notice to meet demand, while avoiding inefficiencies in the form of unused capacity. Karolinska has also carried out 300,000 vaccinations, mainly of staff in societally critical functions and select patient groups.



PCR tests performed per week



■ PHOTO: MALIN JOCHUMSEN

COVID-19 Research at Karolinska

While Karolinska University Hospital has been managing the care of severely ill COVID-19 patients, the hospital's researchers have been leading the way in researching the new disease alongside researchers from the Karolinska Institute. For 2020–2021, approximately 150 applications with a link to Karolinska University Hospital have been submitted to the Swedish Ethics Review Authority (Region Stockholm 290, Region Västra Götaland 76, and Region Skåne 46).

'Collaboration and a solution-oriented approach have been the success factors in responding to the great need for large-scale COVID-19 testing in Region Stockholm.'

Roine Hernbrand, Large-Scale Testing Coordinator, Medical Diagnostics Karolinska

Astrid Lindgren Children's Hospital at Karolinska Leads the Fight Against Severe Hyperinflammation in Children

MIS-C is a very rare but potentially life-threatening condition that mainly affects previously healthy children. It appears 1–2 months after the child is infected with COVID-19, often unnoticed. Pediatric rheumatology at Astrid Lindgren Children's Hospital took early national leadership in the care of children affected by MIS-C by compiling a care program that is now used in large parts of the country. They have also ensured the creation of a specific "MIS-C tab" in the Swedish Pediatric Rheumatology Register, where all children with MIS-C in the country are registered to ensure follow up.

Children with MIS-C are often very sick. Many need intensive care, and the ones who do not still often need a great deal of care with frequent checks, monitoring and extensive pharmacological treatment.'

Karin Palmblad, Head of Section, Pediatric Rheumatology



■ INFECTIOUS DISEASES, HUDDINGE. PHOTO: MALIN JOCHUMSEN

Vaccelerate

Vaccelerate is an EU-funded research network that aims to develop the Union's capacity for clinical vaccine studies – for both COVID-19 and future pandemics. With over 400 registered study centers across Europe, providing a single point of entry for pharmaceutical companies and academic institutions, Vaccelerate provides rapid access to the right kind of infrastructure, facilitating the performance of large vaccine studies. Sweden's participation is coordinated by Pontus Naclér, Infectious Diseases Physician at the Infectious Diseases Department at Karolinska University Hospital, and Associate Professor at the Karolinska Institute.

Post-COVID

To better understand why long-term complications after COVID-19 occur, Soo Aleman, Consultant infectious disease physician and Head of Section at the Infectious Diseases Department, is conducting a study at the post-COVID clinic at Karolinska University Hospital, in collaboration with Nyköping Hospital. The participants will undergo either a bronchoscopy, colonoscopy or lumbar puncture, based on their symptoms. The study will compare participants with a confirmed post-COVID diagnosis with participants who do not have a post-COVID diagnosis (with or without a prior COVID-19 diagnosis). The study application to the Swedish Ethical Review Authority has been submitted and is awaiting approval.



■ ICU CARE. PHOTO: MALIN JOCHUMSEN

ReCov

Malin Nygren Bonnier, in charge of R&D at Women's Health and Allied Health Professionals and Associate Professor and Senior Lecturer at the Karolinska Institute, leads the comprehensive ReCov research project, which involves a large group of researchers, doctoral students and Allied Health Profession clinicians. The project examines many different aspects of COVID-19: factors influencing patients' recovery from illness and their experiences of rehabilitation, family members' experiences of care and psychosocial support, and the mental health of healthcare workers as well as their experiences of working in emergency care during a pandemic. The knowledge that the project is expected to generate can be used to develop care for patients and their families, and to tailor future interventions to improve the mental well-being of healthcare staff.

OpenCorona

OpenCorona is an EU-funded project led collaboratively by KI and Karolinska University Hospital, aiming to develop a new type of COVID-19 vaccine that is DNA-based. Unlike the vaccines already on the market, OpenCorona contains parts of the genome that do not mutate as frequently as the spike protein code. The vaccine could therefore potentially be effective against both new variants of COVID-19 and future coronaviruses. The vaccine will be evaluated as a booster dose following vaccination with two doses of commercially available vaccine. Production of the vaccine is currently underway, and a phase 1 trial is planned at Karolinska University Hospital during 2022. The work is led by Soo Aleman, Karolinska University Hospital, and Matti Sällberg, Karolinska Institute.



■ EMERGENCY DEPARTMENT.
PHOTO: MALIN JOCHUMSEN

Care Production and Finances: High Production Levels Have Led to a Surplus

Despite the pandemic, a unique event that has placed great strain on the hospital, Karolinska University Hospital has managed to deliver more care than its specified assignment for the second year running as well as reaching a financial surplus. The good financial outcome is a result of high levels of production. The hospital has managed to care for and diagnose more patients than planned, repeatedly adjusting capacity and operations up and down under pressure to manage and mitigate the effects of the pandemic (see pages 11–12).

Care Production

Karolinska has managed to maintain a very high level of production and capacity in 2021, despite the challenges posed by the pandemic. As in 2020, the hospital has delivered more care than the assignment specifies. The hospital has completed 6 per cent more patient visits in 2021 than in 2019, and inpatient care has seen a growing trend since 2019.

The trend of increasing hospital bed numbers continues, with the average number of beds increasing by 11 per cent since 2018.

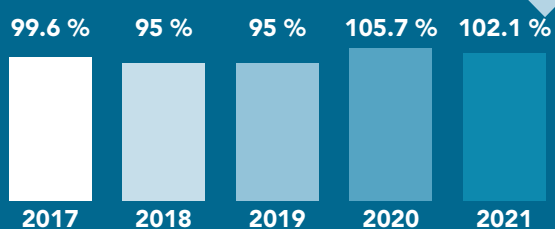
More surgeries have been performed than in previous years, thanks to the special focus on extra surgeries (see next spread).

In the fall of 2021, a total of around 950 children were admitted to Astrid Lindgren Children's Hospital due to respiratory infections (such as the RS virus), compared to around 150 children a 'normal' fall. During the same period, some 30,600 visits were registered to the pediatric emergency department, compared to the planned 16,000.

'The RS season started unexpectedly early in the fall with a large influx of pediatric patients. We had to work together at a fast pace to educate colleagues without RS experience. For example, we did scenario exercises and helped each other across professions. Despite the pressure and hours of overtime, the atmosphere was good, but many people are still tired.'

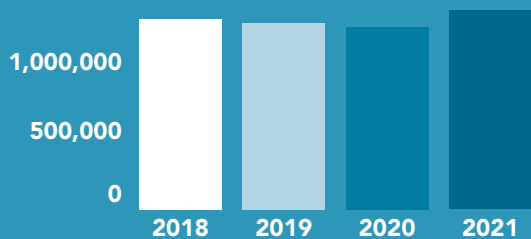
Nina Bomaeus, Specialist Nurse, Pediatric Emergency Department, Huddinge

Fulfillment of regional commission (Transition agreement 2016–2019, Hospital agreement 2020–2023)



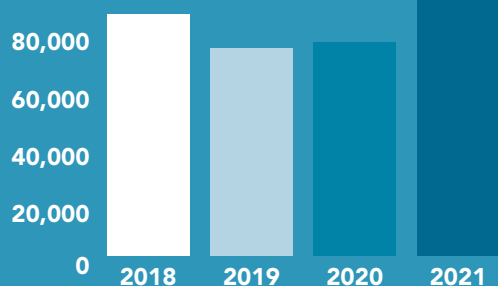
Outpatient visits up **6 per cent** from 2019

Number of patient visits

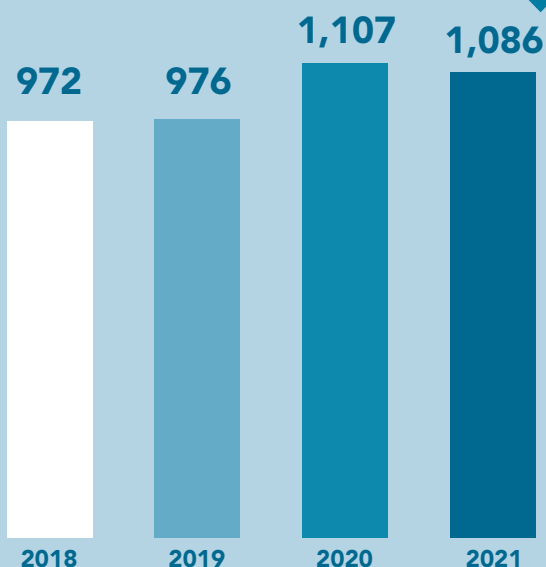


Inpatient stays up close to **5 per cent** vs 2019

Number of patient visits

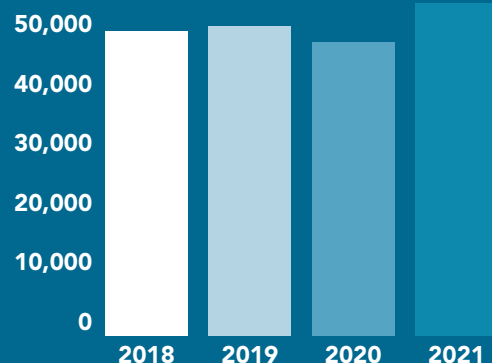


Average number of beds



Surgeries up **5 per cent** vs 2019

Number of surgeries



Major Initiative Ensured 1,497 Waiting Patients Received Surgery Sooner

Postponed surgeries due to the pandemic prompted Karolinska to launch an initiative with the aim of carrying out 175 extra surgeries before the summer, and 1,000 extra surgeries on top of the regular plan in the fall. As many as 1,497 extra patients have received surgery thanks to the initiative, which has also freed up space for more complicated surgeries that can only be performed during regular working hours.

'The surgeries performed have mainly been cancer surgeries, but also been other types of surgeries that we have not been able to prioritize during the pandemic, such as corrective procedures connected to birth injuries, orthopedic patients or plastic surgery patients where there is no danger to life, but where there is still suffering,' says Caroline Hällsjö Sander, Head of Department at Perioperative Medicine (PMI), who is coordinating the initiative.

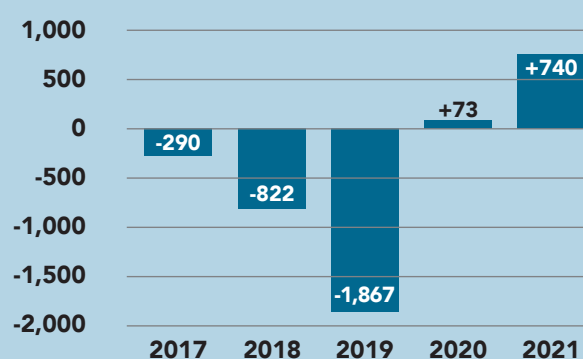
Units throughout the hospital have contributed to surgeries being performed at evenings and weekends. Planning has involved close collaboration between PMI, wards, coordinators, surgeons, transporters and several other key functions, such as pathology and sterile technology.

Net Income

Karolinska University Hospital's net income in 2021 amounts to MSEK 740, which is MSEK 657 higher than the Region Stockholm requirement of MSEK 83.

Karolinska has provided more care to the inhabitants of Stockholm than commissioned by Region Stockholm, and despite the pandemic making it more difficult to provide care to other countries and regions, this care has also been more extensive than in the previous year. The result was also affected by income from extensive PCR testing for COVID-19. The hospital has received reimbursement for additional costs for COVID-19, which amounted to MSEK 642. During the year, wage costs increased by 3.8 per cent, and the cost for temporary agency staff decreased by 11.4 per cent.

Result 2017–2021 (MSEK)



Profit and Loss Statement 2021

Results*	Outcome	Budget	Variance vs budget	Change in outcome vs previous year
Patient fees	107	104	3	19.7 %
Primary services sold	17,710	18,165	-455	1.7 %
Other services sold	4,530	2,174	2,356	30.7 %
Grants received	1,539	850	689	-42.2 %
Other income	1,218	1,010	208	-6.3 %
Operating revenue	25,104	22,304	2,800	0.7 %
Staff costs incl. temporary agency staff	-12,575	-11,355	-1,220	3.6 %
- of which refers to temporary agency staff	-366	-268	-98	-11.4 %
Purchased primary healthcare services	-292	-192	-100	-8.9 %
Purchased operation-related services	-735	-110	-625	4.6 %
Pharmaceuticals	-3,255	-3,367	112	2.7 %
Cost of materials	-1,950	-1,630	-320	-36.5 %
Cost of premises and property	-2,240	-2,165	-75	3.1 %
Other costs	-2,521	-2,680	159	-0.3 %
Operating expenses	-23,567	-21,499	-2,068	-2.2 %
Depreciation	-781	-697	-84	6 %
Net financial activities	-16	-25	9	-19.8 %
Pension adjustment, etc.	0	0	0	
Result**	740,1	83	657,1	

* MSEK

** Refers to profit or loss before adjustments. This result includes the impact of the change to the discount rate in the pension liability.



■ PHOTO: ANDERS NORDEMAN

Quality and Patient Safety: Safe Care of the Highest Quality

All patients at Karolinska should receive safe care of the highest quality. Continuous improvement, based on learning and data, helps us to constantly challenge ourselves, and improve the quality of care.



The hospital's approach to driving systematic improvement in quality and patient safety has further evolved during 2021, with a special focus on increased transparency regarding results, and automated reporting of quality data. A new leadership role – Quality and Patient Safety Director – has been created to further strengthen the quality agenda.

Efforts to strengthen the provision of information on quality indicators have resulted in real-time dashboards where departments can monitor indicators, such as risk assessments for falls, nutrition and pressure ulcers, on an ongoing basis. The use of digital solutions via a regional web site, 1177, has been developed for patient complaints and feedback, as well as for patient surveys.

Säng	Kön	Ålder	Inskrivningstidpunkt	Vårdtid	Fall	Trycksår	Undermåring
Nu8	K	60	2022-03-25 16:33	02:23:27:00	●	●	●
1:2	K	65	2022-03-27 12:32	03:03:28:00	●	●	●
3:1	K	50	2022-03-28 04:38	00:09:22:00	●	●	●
3:2	K	68	2022-03-15 23:35	12:14:25:00	●	●	●
4	M	73	2022-03-25 23:03	02:14:57:00	●	●	●
5	M	91	2022-03-22 05:38	06:06:22:00	●	●	●
8	M	82	2022-03-24 23:48	03:14:12:00	●	●	●
9	M	65	2022-03-24 21:26	03:16:34:00	●	●	●
A1:2	M	74	2022-03-26 18:58	01:19:02:00	●	●	●
A2:1	M	21	2022-03-23 06:20	05:07:40:00	●	●	●
A3:2	K	45	2022-03-27 00:18	01:13:42:00	●	●	●
A4	K	71	2022-03-20 05:30	08:06:30:00	●	●	●
A5	M	78	2022-03-19 17:59	08:20:01:00	●	●	●
					Fall	Trycksår	Undermåring

● Riskbedömning på gessoft ● Riskbedömning gessoft (ingen risk) ● Riskbedömning gessoft (hög risk)

Example of real-time dashboards enabling tracking of individual patient risk factors and risk assessments.

Quality encompasses many aspects. The concept of Good Care was launched by the Swedish National Board of Health and Welfare in 2005, and highlights six important aspects, and the care provided at Karolinska must meet all of these:

- Evidence-based and appropriate
- Safe
- Patient-focused
- Efficacious
- Equal
- Provided in a timely manner



■ PHOTO: MALIN JOCHUMSEN

Medical outcomes

Karolinska continues to deliver world-class medical outcomes:

Top Swedeheart ranking for Huddinge

In the spring, results from the Swedeheart (the comprehensive national quality registry) 2020 annual report*, in which Karolinska University Hospital in Huddinge was top ranked in acute myocardial infarction, were released. Significant progress has been made in secondary prevention after acute myocardial infarctions, for instance, and more patients have come for follow-up appointments, and quit smoking.

'One success factor is that we work in multi-disciplinary teams. The teams include expertise from different areas, and each patient receives more comprehensive and personalized care,' says Linda Mellbin, Head of Coronary Disease Patient Flow.



■ LINDA MELLBIN. PHOTO: ULRICA MESSO

Karolinska Achieves Top Open Heart Surgery Results

In February 2021, 2020* 30-day mortality figures for open heart surgery were reported; the best ever at Karolinska, perhaps in the world. Only 1 per cent (1.06) of patients who underwent open heart surgery did not survive. Five years earlier, Karolinska had a rate of 2.7 per cent, and a dedicated effort is behind the improved results.

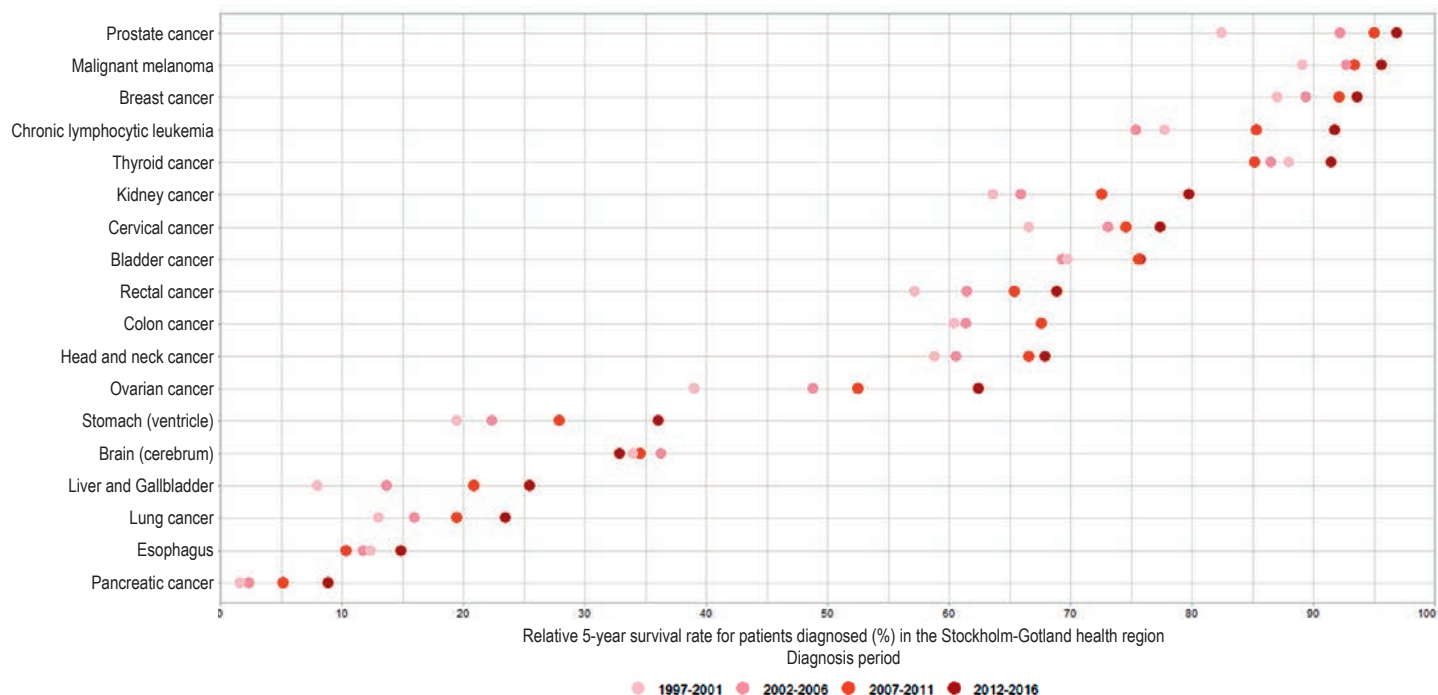
'The four most important changes have been that there are fewer surgeons, with each one performing more surgeries, which gives more experience, routine and skill, which in turn gives better results and higher quality. We have also divided into sections, and started to tailor care and development at the ICU and throughout the care chain,' says Peter Svenarud, Head of the Thoracic Surgery Department.

Best Open Heart Surgery Survival Rate

Center	Number of open heart surgeries	30-d mortality (%)
Stockholm	1,026	1.1 %
Cleveland Clinic	4,500	1.3 %
Lund	1,018	1.5 %
Umeå	576	1.6 %
Linköping	511	2.4 %
Örebro	397	2.5 %
Göteborg	908	2.7 %
Uppsala	531	3.7 %
Karlskrona	186	3.8 %

* 2021 results not yet available. Karolinska is working towards being able to publish more of its own results.

Relative 5-year Survival for Patients Diagnosed in the Stockholm-Gotland Region



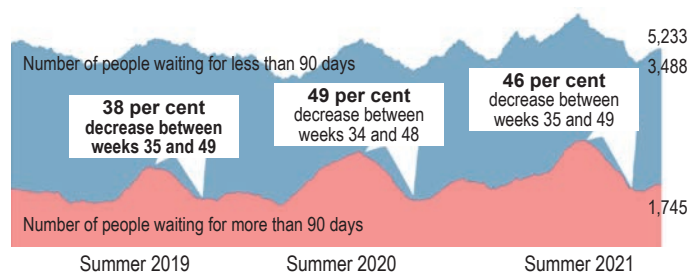
Improved Cancer Survival

Improved 5-year survival is seen for a majority of cancers for patients diagnosed in the Stockholm-Gotland region, according to figures produced by the Regional Cancer Center. Some patient groups, such as breast cancer, colorectal cancer and prostate cancer, are treated at several different hospitals in the region, while others are treated only at Karolinska University Hospital. The improved survival rates can be explained by several factors, including improved diagnostics and treatment. The results will be presented and discussed in more detail in the Karolinska Comprehensive Cancer Center annual report, which will be published in March.

Waiting times

Waiting times, such as waiting times for surgery and lead times in hospital emergency departments, have been greatly affected by the pandemic. Through careful planning and extra efforts, Karolinska has managed to keep waiting times for surgery down despite the pandemic. Special focus has been placed on ensuring short waiting times for essential surgery, especially cancer surgery. The number of patients waiting for pediatric surgery was stable in the spring of 2021 despite the pandemic but grew again in the later part of the fall as hospital beds had to be reprioritized due to a very severe infectious disease season.

The proportion of patients whose visits are completed within 4 hours at hospital emergency departments has been too low. At times of increased COVID-19 inflow, processes were delayed by the need for testing. In the fall of 2021, with lower COVID-19 pressure, the share of patients who waited for 4 hours was unchanged, but during the same period, total emergency department admissions increased by about 30 per cent, suggesting better throughput. In 2019, the hospital started a geriatric emergency department in Huddinge, to facilitate faster admission of the oldest patients. In 2022, after focusing on COVID-19 care in 2020 and 2021, further development of the modus operandi is planned.



Number of people waiting for surgery

Patient Safety

Karolinska marked WHO's World Patient Safety Day in September, including through two films by patient safety experts at the hospital, which were distributed nationally. The hospital has also continued the patient safety dialogues initiated during the pandemic an important tool for identifying and addressing patient safety risks.

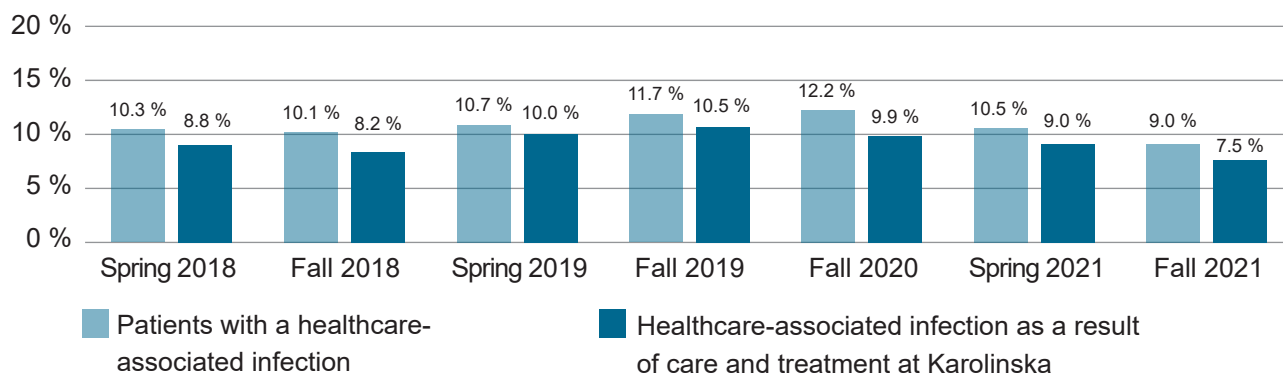
The incidence of healthcare-associated infections is showing a decreasing trend. The point prevalence measurement in the spring was 10.5 per cent, and 9.0 per cent in the fall, a positive development compared to previous years. Karolinska cares for patients with an increased susceptibility to infections, such as those with

multimorbidity and the immunocompromised, which increases the risk of healthcare-associated infections. Increased focus on risk factors for infection in cancer care, for example, has contributed to a positive trend. The hospital also uses the national EHR-based tool "Infektionsverktyget", and is actively working to improve data quality for continuous automated measurement.

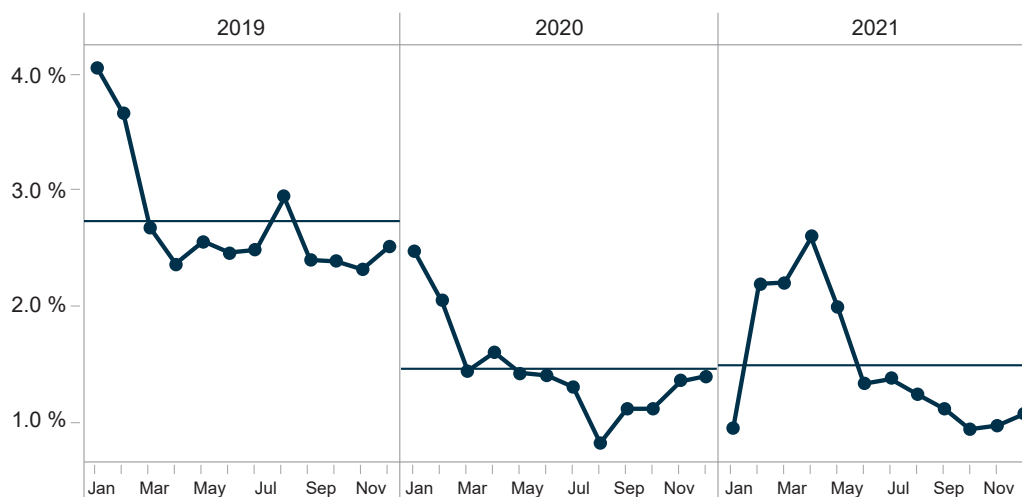
Placing patients outside of the correct ward (outlying patients) is a known patient safety risk, and Karolinska is actively working to reduce its occurrence. The number of patients placed in wards outside of the correct Theme shows a downward trend at Karolinska.

'When it comes to patient safety, we don't just talk the talk; we walk the walk too. In hospitals that are actively working with patient safety, this is obvious in the day-to-day work, in the form of shared habits, things you do every day. Patient safety is part of almost every aspect of our work, really.'

Kiku Pukk Härenstam, Associate Consultant Physician,
Pediatric Emergency Department



Development of outlying patients (outside correct Theme) by month and year





■ PHOTO: SANNE JONSSON

Research, Innovation and Education – for Tomorrow’s Patient

Research

Research is one of Karolinska University Hospital’s core missions, and a natural part of what it means to be a university hospital. Karolinska produces world-class research, in close collaboration with the Karolinska Institute.

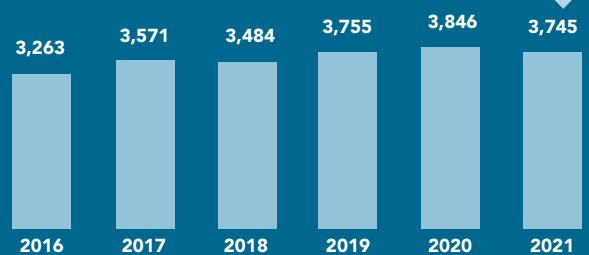
2,600 researchers

Crown factor 1.8

SEK 2.3 billion in external research grants in collaboration with KI

1,300 ongoing clinical studies, 60 per cent academic and 40 per cent industry-sponsored

Number of Scientific Articles in Collaboration with KI Still Higher than Before the Pandemic



International Research

Karolinska University Hospital has, alongside KI, been granted project funding from the National Institutes of Health (NIH) in the US for the first time. The hospital also participated in some 40 EU-funded projects during the year, and in a total of 20 EU applications.

Efforts to Promote and Facilitate Clinical Research

30 research nurses trained in newly established Research Nursing Program
Competence ladder for research nurses launched

14 participants in Investigator School (doctoral training provided with KI)

35 participants in the "Docentprogrammet" – course designed to help researchers qualify as Associate Professors

678 employees have participated in Good Clinical Practice (GCP) courses

'During a clinical trial, the research nurse is the indispensable nerve center, coordinating patients, companies, investigators and administration – and a basic requirement for clinical research,' says Helene Sjö, course leader and Education Coordinator at Karolinska Trial Alliance.

First in the World to Give Stem Cells to Fetus with Severe Osteoporosis

The severe form of osteoporosis, osteogenesis imperfecta, is very rare. In Sweden, about five children are born every year with this disease. Without treatment, they can suffer hundreds of fractures in their lifetime, as well as extreme hyperextension of ligaments, compressed vertebrae and severe pain.

In November, the first prenatal bone-forming stem cell transplant was performed in a patient with severe osteogenesis imperfecta. The family came to Karolinska from Germany as part of the EU BOOSTB4 collaboration.

'The reason why we want to give the stem cells even before birth is that fewer of the cells are filtered out by the lungs, as fetuses have a different kind of blood circulation, and have not yet started breathing. Treatment is therefore likely to be more efficacious. Being able to influence the child's bone formation as early in life as possible is, of course, also beneficial,' says Eva Åström, Physician at Astrid Lindgren Children's Hospital, and Principal Investigator in the BOOSTB4 study.

Karolinska to Find at Least Half of Patients with Hereditary Lipid Disorders

For two years, Karolinska University Hospital has been developing a digi-physical care chain for the diagnosis of hereditary lipid disorder familial hypercholesterolemia, which causes high cholesterol levels and an increased risk of myocardial infarctions, for instance. The new approach is based on an interactive web platform, and enables screening of large cohorts using relatively little resources. First-degree relatives of patients already diagnosed with familial hypercholesterolemia, as well as high-risk patients with coronary disease, are screened.

'Early medical treatment for hypercholesterolemia can be crucial. Most people carry the disease unaware, so it's important that we can screen risk groups to find the patients,' says Jonas Brinck, Consultant Physician in the Diabetes and Metabolism Unit.



■ JONAS BRINCK AND KARIN LITTMANN.
PHOTO: CATARINA THEPPER

World's First Photon-Counting CT Scanner in Clinical Use

The world's first clinically approved photon-counting CT scanner has been inaugurated at Karolinska in Huddinge. The technology improves image quality to such an extent that the radiation dose can, in many cases, be halved. It will also be possible to perform advanced lung examinations in patients who have had severe COVID-19.

'The resolution is so good that it will be possible to detect blood clots and signs of inflammation in very small vessels in the brain, vessels that we cannot see with a standard CT scan,' says Tobias Granberg, Head of Section, Neuroradiology.



■ CHRISTIN EKESTUBBE AND TOBIAS GRANBERG
PHOTO: CATARINA THEPPER

World's First Silicon-Based Photon-Counting CT Scanner Tested at Karolinska University Hospital

The world's first silicon-based photon-counting CT scanner is being tested at BioClinicum in Solna. The technology enables further reduction in radiation dose, and improved image quality, and can thus improve diagnostics in areas such as cancer and cardiovascular disease. The project is the result of close collaboration between healthcare, academia, and businesses through the interdisciplinary MedTechLabs center, funded by Region Stockholm, the Karolinska Institute, and the Royal Institute of Technology.

Clinical Trials Database – Overview Unique in Sweden

In 2021, Karolinska was the first hospital in Sweden to launch a comprehensive database for clinical studies. The database is both a tool for each research project and provides an overview of all studies. The database was developed by the IT organization at Karolinska in close cooperation with staff from the Research, Development, Education and Innovation function.

'I was among the first to use the database and have been able to follow its development from the start. It's not just easy to use, it sets a standard for all clinical studies at the hospital. It ensures compliance with both legal requirements and internal guidelines, which will ultimately increase security for our patients.'

Fredrik Bäckrud – Unit Manager, Center for Clinical Cancer Studies

'The database is crucial for monitoring and developing our research activities. We see where the studies are being conducted, how many there are, what stages they are at, and, above all, how many patients are participating. Demonstrating our ability to include patients is a prerequisite for us to increase our R&D funding and continue to be an attractive partner for both international academia and industry.'

Patrik Rossi – Head of Theme Cancer

Innovation

Innovation is a prerequisite for the continued development of healthcare and for continuing to deliver world-class care. Innovation must take place where the actual care is delivered, based on the needs of patients. To create the best possible conditions for innovation, Karolinska has further developed the central support available to its departments. Strategic areas have been precision medicine and location-independent care, as well as industry collaboration based on healthcare needs. This year's innovation courses attracted 429 participants from the hospital, the region and Europe. Final reports have been submitted for two EU projects, Nightingale and Live Incite, and the regional I-AID project. These have contributed to the development of remote solutions and the implementation of AI in healthcare.

Remote Monitoring in Heart Failure

Karolinska is leading a new regional project where patients with for instance heart failure are monitored after discharge to report health status data from home. The aim is to detect deterioration earlier and reduce the risk of acute relapse. Blood pressure, heart rhythm, body weight and symptoms reported using a symptom scale are sent to the clinic every day. Algorithms will be developed to assist in the interpretation in long-term data analysis.

'Remote monitoring allows for individualized care. Serious disease progression can be detected earlier than today and we can stop patients deteriorating. At the same time, we don't need to call patients in for check-ups if we see that they are stable and doing well,' says Frieder Braunschweig, Professor and Head of the Cardiology Department.

One After Hours Number for All Cancer Patients

Many cancer patients need to contact Karolinska out of office hours, and to provide increased support, advice and a clear contact route, Theme Cancer have started 'One Number'; one evening/weekend telephone number open to all cancer patients undergoing treatment. The telephone line is staffed by around 20 liaison nurses. Several patient associations have been involved in the creation and have been able to comment on suggestions.

Education

Education is one of Karolinska's three core assignments. The hospital contributes to the education of a variety of healthcare professions, but as in previous years, the medicine and nursing programs account for the vast majority of students. Karolinska continuously strives, in close collaboration with the Karolinska Institute, to ensure the best possible conditions for students. Conditions for education has been affected by the ongoing pandemic, but it has been possible to deliver education according to plan, with increased use of digital education formats. The number of student weeks has increased in some student categories, such as specialist nursing students in surgery, intensive care, and in some semesters in the medicine program.

34,000 student weeks per year

24 health care education programs

1,700 placement weeks per year

7 universities

**7 higher vocational
education institutions**

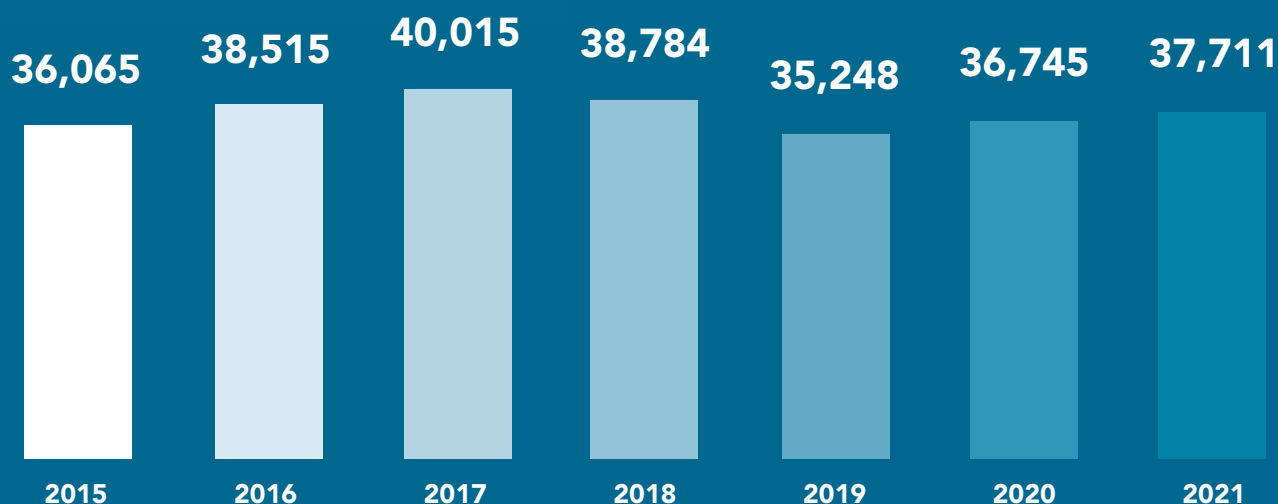
30 upper secondary schools

National Project for Faster Eradication of HPV and Cervical Cancer

The main cause of cervical cancer is the Human Papilloma Virus (HPV). Effective HPV vaccines are offered in schools and effective HPV screening tests are offered regularly to adult women. A national project based at Karolinska University Hospital's Center for Cervical Cancer Prevention is now testing whether the eradication of cervical cancer in Sweden can be achieved more quickly by offering all young women both HPV vaccination and HPV screening, free of charge, at the same time. All women born in 1999–1994 are welcome to participate – appointments are booked at Karolinska through the app Alltid Öppet, or at a local midwifery clinic (www.hpvcenter.se/utrotning).

'The WHO has set the eradication of cervical cancer as a global health priority. The national eradication study is now testing whether the eradication target can be reached more quickly by offering all young women simultaneous vaccination and HPV screening,' says Joakim Dillner, Head of R&D at Medical Diagnostics Karolinska.

Number of Student Weeks Increases for Third Year Running





■ PHOTO: JENS DAHLBORG

Employees: World-class Competence

Karolinska is the sum of our employees' skills and experience; together we are Karolinska, delivering world-class healthcare. Ensuring good conditions and possibilities for development for all employees is therefore one of the hospital's most important tasks.

Employee Conditions and Well-Being

Healthcare workers have made heroic efforts during the pandemic. Many have worked extended shifts, in new departments, and with new tasks. This has come at a price. We know that many are struggling, and more still are fatigued. In 2021, Karolinska has continued to provide a range of crisis support services initiated during the first year of the pandemic. Through careful planning, the hospital also managed, despite a challenging situation, to provide four con-

In the fall, a comprehensive wellness initiative was launched, with the establishment of a Wellness Center with an associated wellness officer reporting directly to the hospital management.

'MSEK 5 have been allocated for 2022, but we are prepared to invest more if necessary.'

Björn Zoëga

secutive weeks of summer holidays, and avoided, to a large extent, cancelling time off during the Christmas holidays when there was another COVID-19 influx.

The pandemic has made it even clearer, if possible, that the situation of our employees' conditions are of the utmost importance in securing the healthcare of the future. Karolinska has increased, and will continue to increase, management focus on our employees, and their development and possibilities to provide world-class care.

In addition, next year, the extra days of "COVID leave" that each employee receives will be increased from two in 2021 to four in 2022, and the so called wellness allowance each employee can use to pay for e.g. physical exercise will be doubled.

Efforts are also ongoing to further strengthen the hospital's systematic work environment efforts.

Patient and Family Advisory Council

The Strategic Patient and Family Advisory Council operates at the hospital level with a strategic perspective, in dialogue with top management. The members of the Council are included based on personal qualities, experience and skills. Together, the members should represent a wide range of skills, and reflect the composition of society at large. Members do not represent a specific patient group but participate based on their own experience and competence.

Crisis Support Measures

- Leaflet for employees "Considerations on wellbeing before your vacation"
- Leaflet for managers after the first wave of the pandemic "Recommendations for supporting staff wellbeing"
- Advice to avoid burnout and improve resilience
- A guide to improve wellbeing and resilience
- Workplace meeting materials "Strategies for sustained performance and wellbeing"
- Checklist for those leading an After Action Review
- Facilitating After Action Review meetings
- Resources to support psychosocial health and wellbeing:
 - Pocket-size card "Take care of yourself, take care of each other"
 - Poster "Before you go home"
- Crisis support and counselling COVID-19
- Multimodal groups at the Hospital Church
- Various thematic lectures to support wellbeing
- Inhouse rehab-consulting to develop strategies for improved work environment and wellbeing
- Supporting and spreading ongoing research on staff mental health and wellbeing

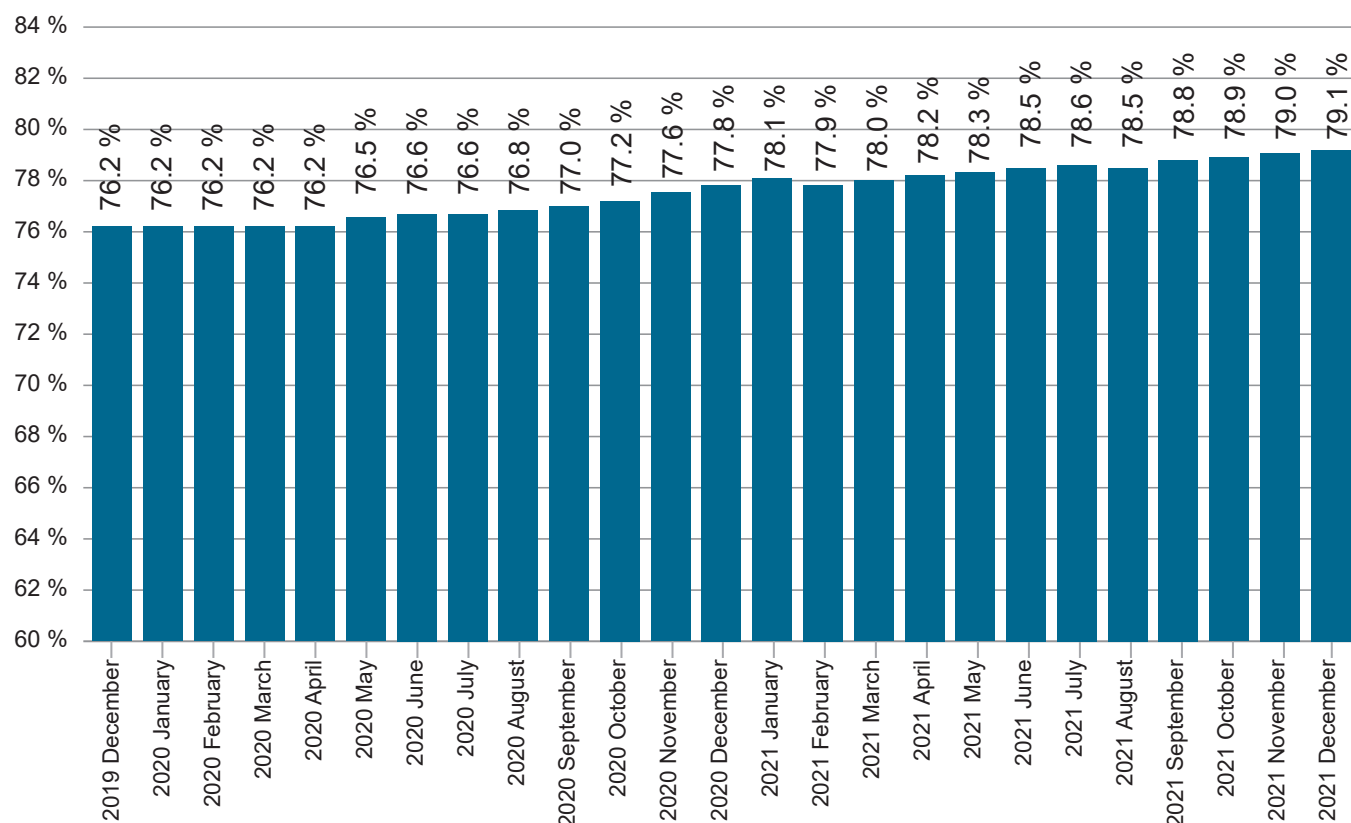
Increased Retention and Interest in Karolinska

Despite the challenges of the pandemic, there are encouraging trends. The two-year retention rate is at its highest level since January 2017 (data not available further back), and interest in working at Karolinska has increased.

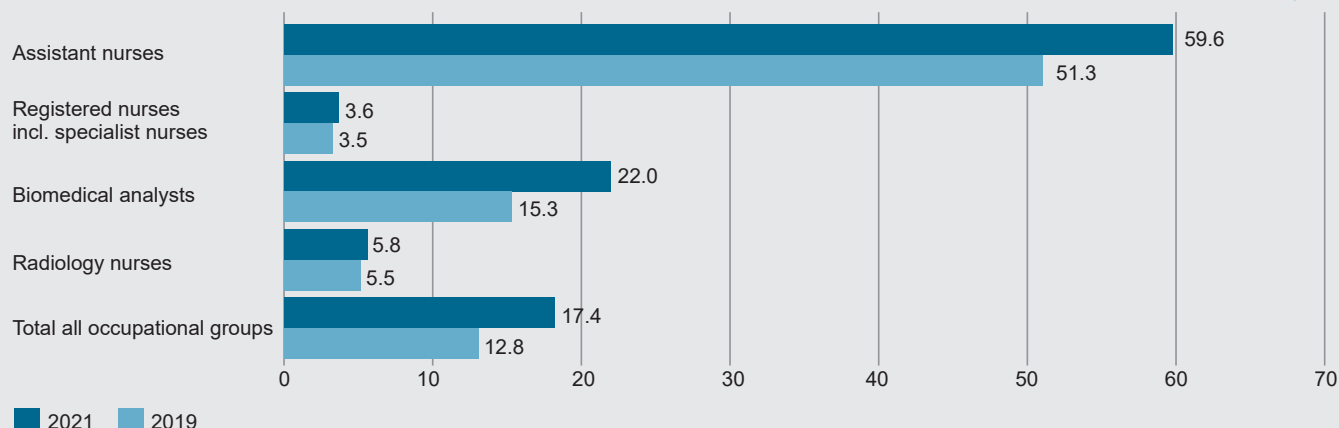
Positive two-year retention trend since July 2019

79.1 per cent is the highest level for Karolinska since records began (January 2017).

Percentage of permanent employees remaining at Karolinska after 24 months



Average Number of Applications per Job Advert



Strategic workforce planning

An important challenge for Karolinska, like other hospitals, is to ensure access to the right people with the right skills. Challenges exist in different areas and in many professional categories, but the greatest challenge continues to be specialist nurses, especially in inpatient care, surgery and anesthesia, as well as midwives. In 2021, Karolinska has continued its efforts to ensure access to the right skills, including over time. Implementation of so called competence ladders, and efforts to increase salary level distributions have continued. Paid training to become a specialist nurse or midwife is offered with support from the region.

'We have seen a need to strengthen geriatric expertise in care and discharge assessment throughout the hospital. So, we started the geriatric team, which has been working to help emergency departments, for example, to ensure patients are treated at the right level of care.'

Alexandre Bonnard, Physician, Chief Consultant, Theme Inflammation and Ageing

Focus on Leadership

The hospital's managers have a key role in ensuring good conditions for all staff, and in developing the hospital and the care that we provide. In 2021, Karolinska has continued its efforts to develop our leadership, including through leadership training and support for front line managers.

A comprehensive effort to deepen and expand the strategic dialogue around the hospital's development and direction with managers from all levels was launched in the fall of 2021. The "Leading Karolinska" program will continue in 2022.

In 2021, 95 nurses have started and a total of 150 have completed, paid training as a specialist nurse or midwife.

Karolinska Ranked World's Seventh Best Hospital, and Europe's Best Hospital in Smart Technology and Data Management

Prestigious magazine Newsweek has listed the world's best hospitals for the third year running. Newsweek's ranking covers 2,000 hospitals in 25 countries. Hospitals are ranked according to three criteria: medical outcomes, patient survey results, and recommendations from experts, such as physicians and healthcare managers. Karolinska University Hospital* is ranked seventh best hospital in the world. The hospital is the highest ranked in Scandinavia, and the second highest in Europe.



KAROLINSKA
UNIVERSITETSSJUKHUSET

★★★★★

RANKED 7 GLOBALLY & RANKED 2 IN EUROPE

★★★★★

Top 10 in the world – two years running

Rank	Hospital	Country	City
1	Mayo Clinic - Rochester	United States	Rochester
2	Cleveland Clinic	United States	Cleveland
3	Massachusetts General Hospital	United States	Boston
4	Toronto General - University Health Network	Canada	Toronto
5	The Johns Hopkins Hospital	United States	Baltimore
6	Charité - Universitätsmedizin Berlin	Germany	Berlin
7	Karolinska Universitetssjukhuset	Sweden	Solna
8	Singapore General Hospital	Singapore	Singapore
9	Coxs Hospitalier Universitätsklinikum	Switzerland	Lucerne
10	Shinva Medical Center	Israel	Ramat Gan
11	AP-HP - Hôpital Universitaire Pitié-Salpêtrière	France	Paris
12	Universitätsspital Zürich	Switzerland	Zürich
13	Stanford Health Care - Stanford Hospital	United States	Stanford
14	Universitätsklinikum Heidelberg	Germany	Heidelberg
15	Rigshospitalet - København	Denmark	København
16	The University of Tokyo Hospital	Japan	Tokyo
17	Ronald Reagan UCLA Medical Center	United States	Los Angeles
18	St. Luke's International Hospital	Japan	Tokyo
19	The Mount Sinai Hospital	United States	New York
20	AP-HP - Hôpital Européen Georges Pompidou	France	Paris
21	Medicine University Hospital	Poland	Warsaw

The ranking refers to Karolinska University Hospital as a whole, not just the Solna site.

■ PHOTO: MALIN JOCHUMSEN



IT and data-driven transformation: A Smart Hospital Becoming Even Smarter

In June 2021, Karolinska University Hospital was ranked the 8th smartest hospital in the world, and number 1 in Europe, by the magazine Newsweek. Part of the rationale was the hospital's data-driven management during the pandemic.

In 2021, we have continued and accelerated our IT and digitalization efforts. One important part is data-driven governance, described on pages 9–10. Another key component is a comprehensive modernization of the healthcare information environment. The ambition is to provide better and simpler interfaces for our staff, simplifying work, and to facilitate the use of new analytical, diagnostic and treatment modalities requiring management of new and sometimes very large amounts of data, by ensuring a modern, well-functioning IT environment.



IT at Karolinska

During 2021, Karolinska has built an IT organization that, in addition to maintenance and operations of systems, is developing new solutions. An agile way of working as well as recruiting developers and informaticians are key components in moving towards becoming a development organization. In parallel, the operations and maintenance of the hospital's hundreds of different IT systems have been improved and made more cost-effective.

Big Data

The healthcare and research of the future are data-driven. Good decisions in healthcare require all employees and decision-makers, as well as patients, to have access to the right data. We need to be able to manage new types of data, in very large amounts, including streaming data from medical devices in the hospital or in patients' homes. For example, the development of precision medicine is based on the ability to analyze the entire genome, which generates very large amounts of data. Karolinska sees a need for storing capabilities of up to 50 PB of data.

Alongside the increased storage capability, clinical data needed to create clinical decision support, supporting management benchmarking, research and precision medicine, must be made accessible through standardized APIs.

Healthcare Data Platform

In 2021, the technology upgrade of the existing *data warehouse* has been completed, and new data sources have been added. The future also requires a robust and modern *storage solution* based on technology that is infinitely scalable, cost effective and reliable. Development of the storage solution was started in 2021, and it will become operational in the first half of 2022.

On top of the storage solution, an *integration platform solution* is needed. This platform allows us to easily build our new, coherent health information environment module by module, thus reducing dependency on old systems, and introducing new ones with less disruption to healthcare operations. The solution is based on open standards, enabling interoperability and integrated care pathways. One key component of our platform solution, delivered in 2021, is a *clinical data repository*, based on an open standard, openEHR. All in all, we call this the *healthcare data platform*.

The groundwork is done. Now, with the healthcare data platform as the foundation, we will develop and modernize the IT-environment at a pace not seen before, both at Karolinska and for Region Stockholm.

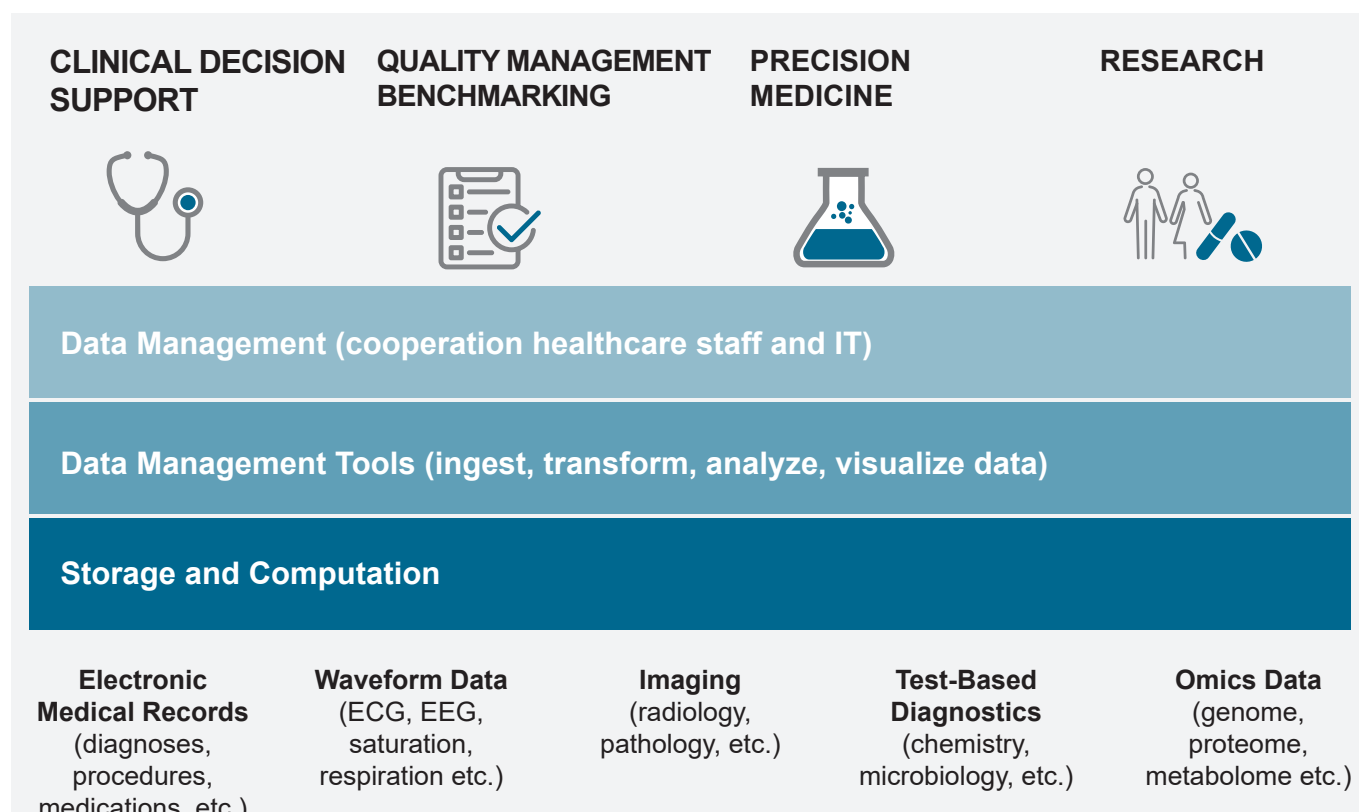
Internal Control, Environment and Sustainability

The hospital has taken steps to further strengthen its internal control and compliance function. Processes for overall hospital governance have been clarified, and all hospital governing documentation such as policies, procedure and delegations of authorities have been updated and communicated. Rules on outside employment and participation as an expert in various external councils and contexts have been clarified. The process for receiving donations and regulations of conflicts of interest have been clarified and communicated.

Karolinska continues to apply strict controls on the use of consultants. This year's consultancy costs, MSEK 31, represent a significant decrease compared to 2019 (MSEK 80) and 2018 (MSEK 134).

The hospital continues its systematic work in the areas of environment and sustainability and has begun work to meet the upcoming sustainability policy of Region Stockholm. Work on risk management and risk mitigation, based on the updated process of Region Stockholm, is ongoing, and also includes the robust hospital.

The Healthcare Data Platform Enables Data-Driven Care and Research




A Global Resource

Karolinska University Hospital is a resource for the entire Stockholm Region, Sweden (and the world) – our expertise and experience should benefit many patients.

On January 1st 2021, a Department for National and International affairs was created at Karolinska University Hospital through a merger of the hospital units managing patients from other Swedish regions and overseas with Stockholm Care AB, Region Stockholm's healthcare export organization. Karolinska University Hospital now coordinates the entire Stockholm Region's healthcare exports. Despite the negative effects on travelling and patient flows caused by the pandemic, Karolinska's provision of care (i.e., number of patient visits) to other regions and countries has increased compared to 2020.

During the year, Karolinska has supported Region Östergötland in essential thoracic surgery, and offered support to all contracted regions in shortening queues for cancer surgery.

Inpatient care up 13 per cent 
Outpatient care up 11 per cent

Healthcare exports from Region Stockholm:
approximately MSEK 30
(of which over MSEK 29 Karolinska)

National / international revenue:
SEK 1.4 billion,
up 5 per cent vs 2020

New Collaboration Agreements:

Region Dalarna

Region Gävleborg

Renewed Collaboration Agreements:

Region Sörmland

Region Västmanland

The Northern Healthcare Region Association (Region Västernorrland, Region Västerbotten, Region Jämtland-Härjedalen and Region Norrbotten)

National Tertiary Care at Karolinska

In 2021, Karolinska has been awarded seven new licenses to provide national tertiary care, and now holds a total of 16 licenses, which is the highest number in the country.

Tertiary care licenses:

1. Anorectal and certain urogenital malformations and Hirschsprung's disease
2. Treatment of children with cochlear implants
3. EXIT
4. Fetal therapy
5. Acquired spinal cord injuries
6. Intensive care where liver transplantation may be indicated
7. Intrauterine treatments
8. Liver transplantation
9. Congenital diaphragmatic hernias
10. Malformations of the esophagus
11. Moyamoya
12. Preimplantation genetic diagnostics
13. Primary sclerosing cholangitis
14. Prolapse and urinary incontinence
15. Transjugular intrahepatic shunt, TIPS
16. Trophoblast diseases



Helicopter

In the fall, Karolinska signed a contract for a new helicopter that enables airborne intensive care. The helicopter has all-weather capabilities, allowing use in severe weather conditions including sub-zero temperatures and in full darkness.

‘Karolinska will be the first hospital in Sweden to have this type of helicopter, which is unique as it enables providing the most seriously ill patients with on-board medical care in a way that has not been possible until now, such as ECMO care,’ says Lars Falk, Head of Department, Intensive Care and Transport.

European Reference Network

Karolinska is a member of a total of 20 ERNs. New in 2021 were Rare and Complex Connective Tissue Diseases (ERN ReCONNET) and Rare Neurological Diseases (ERN RND).



Karolinska's Partners



European University Hospital Alliance

Karolinska completed its semester as chair of EUHA in May 2021, and handed over to Vall d'Hebron in June. Karolinska's motto during the chairmanship was 'Leading by Doing', which emphasizes the importance of actively performing care, clinical research and education in order to be a leading university hospital. In 2021, the members of the EUHA have continuously exchanged experiences and knowledge about COVID-19, which has been valuable.



Precision Medicine

Karolinska University Hospital, the Karolinska Institute and Region Stockholm are working together to increase the pace at which precision medicine, which, in short, means diagnostics, treatment and follow-up at the right time, tailored to the patient's individual needs, is introduced into clinical practice.

In 2021, the Precision Medicine Center Karolinska was established to promote seamless collaboration between academia and healthcare in diagnostics, treatment, development and research. The center will also consolidate and broaden the already successful collaboration that has developed over several years between SciLifeLab and the Karolinska University Laboratory, a collaboration that has resulted in the implementation of whole genome sequencing for clinical diagnostics of rare hereditary diseases.

Long term, the aim is to gradually expand to more technology and disease areas.

'Clinical sequencing of whole genomes has had a huge impact in the field of rare diseases. Used in the right way, targeting each patient's individual disease profile, new groups of patients can receive the correct diagnosis and treatment in a way that was not previously possible. The value of rapid analysis is particularly evident in certain disease areas, such as inborn metabolism errors or epilepsy, where the right treatment can prevent serious complications, while the wrong treatment can worsen symptoms,' says Anna Wedell, Director of the Precision Medicine Center Karolinska.

Precision Medicine Karolinska is part of a broader initiative; 'Task Force for Accelerated Implementation of Precision Medicine,' which is led by the Karolinska Institute's Dean North, Professor Anna Martling.



■ ANNA WEDELL, PROFESSOR AT THE DEPARTMENT OF MOLECULAR MEDICINE AND SURGERY AND MEMBER OF THE NOBEL COMMITTEE FOR PHYSIOLOGY OR MEDICINE.
PHOTO: STEFAN ZIMMERMAN

Precision Medicine in Cancer Can Tailor Treatment

An example of how precision medicine can improve diagnostics and treatment is the Reflex Testing Project. It includes patients being investigated for colorectal cancer and involves an expanded diagnostic procedure where a biopsy is sent for extensive gene sequencing that, in addition to other routine diagnostics, provides information on the optimal type of treatment.

'The fact that we can tailor treatment to each patient, and also prevent other forms of cancer, will lead to better survival rates and less aggressive treatments,' says Annika Sjövall, Associate Professor and Consultant Physician at the Colorectal Section, and leader of the Reflex Testing Project.



■ ANNIKA SJÖVALL, ASSOCIATE PROFESSOR AND CONSULTANT PHYSICIAN



Always Moving Forward

'Our vision represents a commitment. We are going to cure and relieve tomorrow what no one can cure or relieve today. We will continue to be the best at the most difficult, and take responsibility for our common resources.'

Karolinska University Hospital will continue to deliver world-class care, continue to develop the care of the future, and train the skilled healthcare professionals of the future.'

Björn Zoëga

In 2022, we will continue our transformation, with a further increased focus on the long term and sustainability. We will not become complacent or slow the rate of change, but the improvements we achieve must be sustainable over time. We will:

- Continue to simplify and clarify and ensure that key decisions are taken where the actual care is delivered.
- Invest in our staff, their conditions and development.
- Continue to maintain our high capacity and level of production.
- Further improve the quality of care and present our results openly.
- Make even greater efforts to accelerate the translation of research progress into patient benefit.
- To an even greater extent be a national resource.
- Become an even 'smarter' hospital, taking full advantage of the possibilities offered by technology and information.

Karolinska has already begun the development in a number of areas that will play a crucial role for tomorrow's patients. By continuing to drive and challenge the state of knowledge in areas such as precision medicine, cancer care and data-driven care and research, we can give patients, both local and around the world, the best chance of a healthier life in the future.

AWARDS 2021

JANUARY

Anna Martling: Cancer Researcher of the Year by the Swedish Cancer Society.

FEBRUARY

Jimmy Stenmark: The Golden Apple Employee Award.

MARCH

Karolinska University Hospital: seventh best hospital in the world, according to Newsweek magazine.

APRIL

Adrian Elmi Terander, Oscar Persson, Erik Edström and Gustav Burström: Medtech4Health Innovation Award for augmented reality in surgery.

Region Stockholm's Command Center: Logistics Award.

PostNord's Logistics Award.

MAY

Sara Lindholm Larsson and Martin Tegnér: Change Leader of the Year 2020.

Helena Sundén: Governance, Risk and Compliance Profile of the Year.

Mandana Rostampour: nominated for Best Practice Leader of the Year.

JUNE

Endocrinology medical unit: nominated for SveaPriset Award 2021.

Karolinska University Hospital: ranked Europe's best hospital for smart technology and data management by Newsweek magazine.

Region Stockholm's Environmental Awards: Kristina Kinneholm won the Environmental Award, Sandra Erlund won "Årets eldsjäl", and Geeta Shrestha received the Honorary Award.

Hedvig Engberg: Supervisor of the Year Award from the Swedish Medical Association Student Stockholm.

JULY

The new hospital building in Solna: verified certification according to Green Building Gold.

SEPTEMBER

Karolinska University Hospital: top in the Nordic countries, and at the forefront in Europe and globally in Newsweek's ranking of the world's best specialist hospitals.

Helene Alexandersson: Nanna Svartz Scholarship 2021.

Theme Neuro: the Together Award from the Patient Advisory Committee of Region Stockholm.

Malin Nygren-Bonnier: Physiotherapist of the Year.

Karolinska Library: nominated for Library of the Year.

O-house in Huddinge: award for good audio environment by the Swedish Acoustic Society.

OCTOBER

Miia Kivipelto: the Melvin R. Goodes Prize for innovative research.

Ingrid Berggren and Therese Lindberg: Occupational Therapists of the Year Award for their work in emergency and intensive care for patients with COVID-19.

Karolinska Trauma Center: Plaque from the National Task Force.

Frieder Braunschweig: finalist in the Hero of the Year category at the Future Gala.

NOVEMBER

O-house in Huddinge: the 2021 Healthcare Building Award.

Resident doctor supervisors and medical units in Solna and Huddinge respectively, for 2021: award from Karolinska Resident Doctors.

Ulrica Nilsson: the Swedish Association of Health Professionals' Award at the Healthcare Gala.

DECEMBER

Pediatric Medicine Group at Astrid Lindgren Children's Hospital/Central ePed Office: the Swedish Pharmaceutical Society's Award for Best Patient Information.

Mai-Lis Hellenius and Tommy Cederholm: prize from the Gourmand Cookbook Award.



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