

Annual Review 2022



■ PHOTO, FRONT COVER: MALIN BOMAN

■ PHOTO, THIS PAGE: SARAH JEVREM



■ DR. BJÖRN ZOËGA, CEO.
PHOTO: RICKARD KILSTRÖM

We Make the Impossible Possible

When we decided to make Karolinska the first university hospital in Sweden without undue waiting times, plenty of people on the outside looking in shook their heads and told us it could not be done. But yet again, just like during the pandemic, we made the “impossible” possible. Our strategy working together as one hospital, allowing those close to the actual patient meeting to lead, simplifying and reducing administration, as well as identifying new solutions provides us a platform that allows our staff to function at full capacity. When staff can put their knowledge and their commitment to use both in their contact with patients and students and in research, that is when a university hospital can move forward. That is why we can develop new methods and invest in the latest technology. That is how we create change and make a difference.

That is how we move closer to Karolinska University Hospital’s vision:
“We will cure and relieve tomorrow what no one can cure and relieve today.”

Dr. Björn Zoëga
CEO
Karolinska University Hospital



Contents

Together We Are Karolinska	6
A Year with World-Class Results for Karolinska University Hospital.....	7
One University Hospital Operating in Two Locations.....	8
High Production Led to a Budget Surplus.....	10
“Queue-Free Karolinska” – A Karolinska Without Undue Waiting Times	14
Karolinska a Leader in Cardiac Care	20
Leading Karolinska	22
World-Leading Competence	24
Research, Education and Innovation	26
Leaders in Precision Medicine and Virtual Hospital	30
Safe Healthcare of the Highest Quality	32
Karolinska: A Global Resource	34
IT and Digitalization: The Smart Hospital Getting Even Smarter	42
Full Steam Ahead for Karolinska	45
International Recognition of the Karolinska	
Comprehensive Cancer Center	46
Awards 2022.....	47

Together We Are Karolinska



VISION

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



MISSION

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



VALUES

Responsibility
Compassion
Holistic Approach

OUR PRINCIPLES

- A. Together as ONE hospital
- B. Empowering local leaders
- C. Simplifying and reducing administration
- D. "Saying YES" and finding solutions

OUR FOCUS AREAS

1. Karolinska – a global provider
2. Capacity and access – at all times
3. World leading competence
4. Best quality and patient safety
5. From research to patient benefit
6. The smartest hospital

A Year with World-Class Results for Karolinska University Hospital

Karolinska University Hospital wrapped up a strong year. For the third year in a row, the hospital has delivered an economic surplus with a result of +18 million SEK – despite challenges such as high levels of covid-related sick leave resulting in lower production during the first and last months of the year.

At the end of summer 2022, Karolinska set the goal of becoming the first hospital in Sweden without undue waiting times, defined as no patient having to wait longer than 90 days for surgery and no longer than 30 days for their first consultation. It is important, naturally, to put this initiative into the context of increased waiting times across Sweden, as well as internationally, due to the pandemic when care that could be postponed had to wait. A structured approach and hard work has paid off: During the fall, 82 of 88 surgery waiting lists were cleared, and the share of patients who have waited more than 30 days for a primary consultation decreased significantly. These noteworthy results are explained by improved planning and coordination of existing resources, as well as extra evening and weekend efforts.

Karolinska University Hospital is a national and global resource. In the past year, Karolinska actively took on the work of relieving other healthcare providers' workload. The hospital also introduced a system of receiving digital self-referrals from across the country for outpatient care. During 2022, Karolinska was given a national license to provide highly specialized health care within several new areas, bringing the total of such mandates to 24. The number of outpatient/inpatient episodes provided to other regions and other countries increased by 17 percent compared to 2021. These contacts were also increasingly of a more serious nature, which contributed to a 21 percent increase in turnover from other regions/countries. These figures are the result of a conscious commitment to taking responsibility for Sweden's need to effectively organize the provision of highly specialized healthcare, and offering more patients access to the hospital's expertise. Karolinska also made a contribution to helping patients from Ukraine. Last year, Karolinska provided healthcare to more persons from Ukraine than any other hospital in Sweden.

Karolinska provides high-quality care. Within open heart surgery, Karolinska's results are at the top in global comparisons when measured by 30-day mortality rates. In Sweden's most extensive national quality register for cardiac care, Swedeheart, Karolinska's Huddinge site was the runner-up, sharing second place with another hospital. The share of stroke patients who are immediately admitted to the stroke ward has increased, as has the proportion of patients with hip fractures that undergo surgery within 24 hours. To increase transparency around outcomes and quality, the hospital has begun to publish more and more quality data on its external web site. To make follow-up of patients' experiences easier, patient satisfaction surveys have been digitalized, enabling us to introduce more surveys and increasing the number of responses. Among those who responded, 94 percent rated their care as "very good" or "good".

Karolinska's Year in Numbers

Percentage of Stockholm Region care commission: **104.2 percent**

Number of inpatient episodes: **85,908**

Number of outpatient visits: **1,390,519**

Number of operations: **57,377**

Ongoing clinical studies: **more than 1,500**

Net income: **+ 18 million SEK**

Karolinska's continued focused development, in combination with the extraordinary level of staff skill and ambition, again drew international attention in 2022. In the only global ranking of its kind, "The World's Best Hospitals" compiled by the current-affairs magazine Newsweek, the hospital ranked eighth globally and third in Europe.

Karolinska remains strong in our two additional core assignments: research and education.

Supported by its clear strategic direction, Karolinska has continued to actively improve. The hospital's vision, mission and core values provide the foundation, as do the four guiding principles – Together as ONE Hospital, Leadership from Within the Operations – Acting Across the Mandate, Simplified and Reduced Administration, and Saying YES and Finding Solutions.



One University Hospital Operating in Two Locations

Karolinska University Hospital is Stockholm Region's appointed university hospital with a specific task of providing specialized and highly specialized healthcare. Karolinska also treats patients from other regions and from other countries. Karolinska has been given the primary responsibility in the region to undertake research and to educate students in cooperation with the Karolinska Institute and other higher-education institutions and universities.

The hospital has some 15,600 staff across approximately 150 professional occupations. Services are provided primarily in two locations: Solna Municipality just north of Stockholm city center and Huddinge Municipality to the south.

The hospital organization, divided into six theme areas and three functions, has been designed to follow the patient's path through the healthcare process. Central administrative functions support core clinical operations.

Theme Areas and Functions:

- Emergency Medicine and Reparative Medicine
- Pediatrics (Astrid Lindgren Children's Hospital)
- 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 – Pediatrics

In each of these theme areas and functions, there is significant freedom to employ an organizational structure that meets specific needs. Several have chosen what is known as a two-legged structure: instead of having a traditional set-up with just one head of department, often a physician, this role works in tandem with the person, usually a nurse, who heads the care unit and is in charge of nursing

One of the World's Best Hospitals According to Newsweek

"It is a sign of strength that Karolinska for three years running has been named as one of the world's best hospitals. In 2019, we did not make it into the Newsweek ranking, and now we have established ourselves in the top ten. This stands as testament to our successful improvement efforts, which have been made possible by all our staff."

Dr. Björn Zoëga, CEO Karolinska University Hospital

For the third year running, the current-affairs magazine Newsweek included Karolinska in its top-ten list of the best hospitals in the world. Newsweek ranked Karolinska eighth in the world and third in Europe.

During the year, Newsweek also identified which hospitals put advanced technology to best use, compiling a new list entitled "The World's Best Smart Hospitals". In ninth place, Karolinska was the only hospital outside the US to make the list, with a special nod to the use of artificial intelligence. The high rating in this category confirms the hospital's leading position in data-driven decision making.

In the separate ranking of "The World's Best Specialized Hospitals 2023", Karolinska University Hospital was named the leading hospital in the Nordic Region within eight of ten categories. Since the last round of rankings, Karolinska has not only held its position as a leading hospital but also made improvements in the areas of cardiology, gastroenterology, neurosurgery, neurology, oncology and orthopedics.



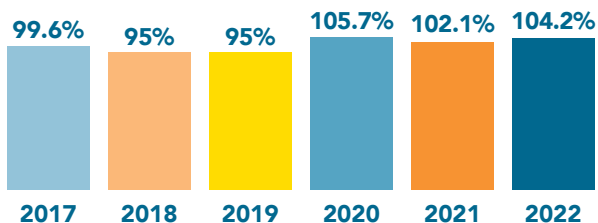


High Production Led to a Budget Surplus

For the third year in a row, Karolinska University Hospital delivered more healthcare than specified by the regional mandate, and again ended the year with a budget surplus. Despite high demand and covid-related staff shortfalls at the start and at the end of the year, as well as a record high influx of children with infectious diseases, the hospital managed to meet and to exceed its delivery requirements. Simultaneously, the hospital provided care to more patients from other regions and countries than the previous year.

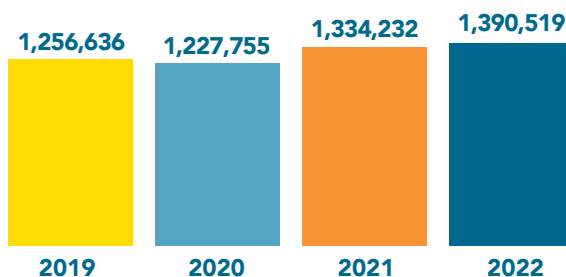
The number of outpatient contacts increased by 10 percent between 2019 and 2022 and there has also been an increase in inpatient care.

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

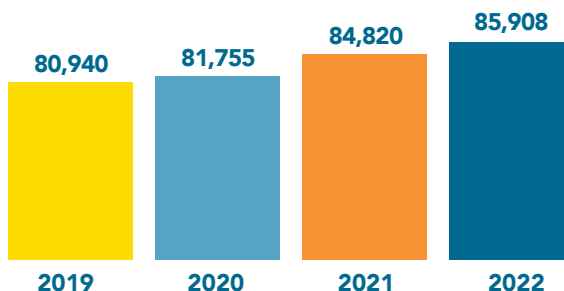


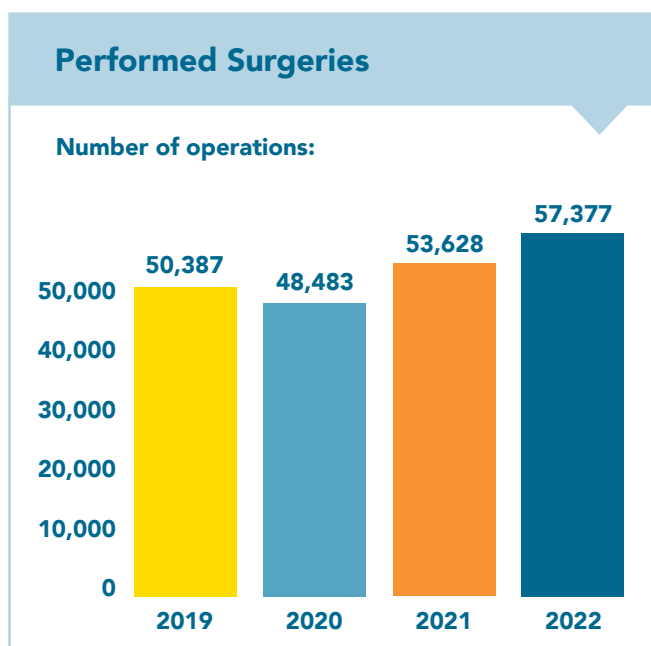
Increased provision of both inpatient and outpatient care compared to the previous year

Number of inpatient episodes:

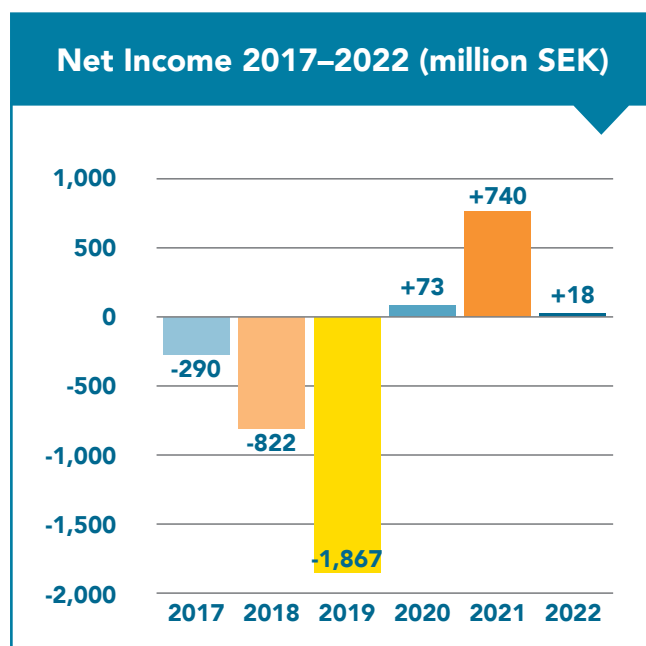


Number of outpatient visits:





The number of operations has increased compared to previous years, in part due to a special focus on performing more surgeries and the work to reduce waiting times (page 14).



Karolinska University Hospital's net income in 2022 was 18 million SEK.

Tough Financial Years Ahead

Despite recent years' high production and stable finances, Karolinska and many other hospitals will face significant financial challenges in the coming years. Increased pension costs and facilities costs, in addition to inflation-driven salary increases, will put a strain on the hospital's finances. Staff numbers have also been increased in order to manage the pandemic and, afterwards, to tackle the waiting lists, and also in order to secure a sustainable working environment long-term that includes the possibility for rest and recuperation.

Financial Steering

During 2022, Karolinska continued to improve its financial steering in order to, to an even greater extent, be able to make necessary changes on an ongoing basis during the year, as well as simplifying and reducing administration.

Already in 2021 the hospital stopped using the annual internal budgeting process, and instead focus on rolling 12-month results, prognoses, trends and key performance indicators. Discussions have shifted from budget deviations to how to improve trends and results over time. Managers are now able to increasingly focus on key performance indicators and how production and finances correlate, instead of financial statements.

■ PHOTO: JENS DAHLBORG







■ PHOTO: JEANETTE AMMILON SLIM

Pediatric Emergency Care Under Pressure

Since May 2021, the pediatric emergency care unit in Solna has at several times received an unusually high number of patients. A longer than usual infectious-diseases season combined with season-related fractures increased the pressure during the spring of 2022. The last quarter of 2022 also saw high pressure on the pediatric emergency care unit as there were several outbreaks of diseases around the same time. Respiratory Syncytial Virus spreading more widely and earlier than usual, coinciding with the start of the influenza season, and continued spread of covid-19 meant that many young children needed care at the same time.

Karolinska responded to the situation in several ways. Physician and nurse staffing was increased, and ward assistants were added as extra support. On weekends during especially intense periods, the hospital had food and beverages delivered for staff. To free up beds for infectious-diseases patients, the hospital rescheduled some elective surgery and treatment. In the pediatric emergency care unit, staff with educational, development or administrative assignments were temporarily

reassigned to clinical work. Where possible, staff were reassigned from adult to pediatric care.

To support children and their parents, play therapists visited the emergency unit's waiting room during the afternoons, which proved to be appreciated during long hours of waiting.

"On days when we were under-staffed due to illness, doctors and nurses loyally covered for ill colleagues. Senior consultants stayed late and supported wards and the emergency room," says Dr. Malin Ryd Rinder, Head of the Pediatric Emergency Care Unit at Astrid Lindgren's Children's Hospital. "I really want to thank everyone who has gone the extra mile to make sure we can provide good care for our patients despite the pressured situation."

"All units worked hard to keep beds available."



Five Facts About Reducing Waiting Times 2022

- ✓ 82 of 88 surgery waiting lists are gone, which equals 93 percent.
- ✓ The number of patients who have waited more than 90 days for surgery decreased from 1,680 to 488.
- ✓ The number of patients waiting for a first consultation has gone down from 6,037 to 2,820.
- ✓ 15,600 staff members have reduced waiting times for 5,300 patients (the decrease in the number waiting for a first consultation or surgery).
- ✓ In the fall of 2022, additional weekend surgeries were performed on a total of 14 Saturdays.



■ PHOTO: JOAKIM LINDBERG

“Queue-Free Karolinska” – A Karolinska Without Undue Waiting Times

Karolinska set an ambitious goal when deciding that in 2022 it would become the first hospital in the country without undue waiting times. Being able to provide care at the right time is an important quality indicator. Unnecessary waiting creates anxiety and suffering, even though medical prioritization is always done to ensure medical risks are avoided. The administration of waiting lists takes up the staff's time, time that instead should be dedicated to caring for patients. Administration of waiting lists also negatively impacts the working environment.

The initiative with additional operations on Saturdays began already during 2021 and spring of 2022, to alleviate the “healthcare debt” racked up as waiting times became worse during the pandemic. After the summer, the initiative intensified under the new slogan “Köfritt Karolinska” – literally “Queue-Free Karolinska”. A Director of Production was appointed to ensure full focus from management and across the organization.

The initial goal was to eliminate all waiting lists that exceeded the terms of the national healthcare warranty, which sets limits on waiting times for primary consultations and for surgery. To reduce waiting times to zero was never the goal: Karolinska performs surgery on some 1,200 patients per week and to ensure effective planning there should at any given time be about 4,500 patients waiting for an operation. Instead, focus was on avoiding unnecessarily long waiting times.

Cutting the queues down to size had to be done with an eye on sustainability in order to avoid temporary solutions.

The work has mainly been done at operative level, in all parts of the organization, with centralized support. New data tools were introduced, such as the “room booking overview”, and simplified overviews of the current state of waiting times. The importance of using all the hospital's combined resources has been emphasized. The core message, that there should not be any slots left unused, has been repeated until it became a mantra. Many patients who had already been in the queue for a long time have been offered dates for surgery.

Extensive work has gone into ensuring the quality of the information in Karolinska's waiting lists. Surgery schedule planners and new-consultation bookers meeting amongst themselves to exchange knowledge and insights and to together find solutions when specific questions about the handling of waiting times came up. The hospital's waiting lists should always be up to date and fully accurate. This decreases the administrative burden and allows planning based on correct information.

In addition to all these measures, extra Saturday surgeries were done during the fall. The initiative to reduce waiting times will continue during 2023 and will also be expanded to include follow-up appointments and emergency room waiting times. In the longer term, “Queue-Free Karolinska” will expand even further to include other types of waiting times and lead times – all in pursuit of minimizing unnecessary waiting.



■ PHOTO: JOAKIM LINDBERG

"We pooled all of the hospital's combined resources and based our efforts on the principle that there should be 'no slots left unused' for surgery. If a patient cannot make their appointment, you have to contact the next patient on the waiting list to make sure that operating theaters are not empty when the skills and resources needed to use them are available."

Dr. Caroline Hällsjö Sander, Director of Production



■ DR. CAROLINE HÄLLSJÖ SANDER.
PHOTO: MARCUS HAGSTRÖM

Saturday Surgeries

To help the hospital cut waiting times, elective surgeries were performed also on Saturdays during the spring and fall of 2022. Surgery on Saturdays is not new; emergency surgery is performed around the clock, but elective surgery has previously not been scheduled on weekends.

Saturday surgeries were based on staff volunteering to put in extra effort in tackling the waiting lists. Anesthesiology nurse Anette Di Leo Falk at the Peri-operative Medicine Unit in Huddinge, was among the staff who decided to help.

"For me it was important to pitch in so that patients could have their surgeries," she says. "There is a big need for this, so if I can help I'm happy to."

Dr. Caroline Hällsjö Sander, Director of Production, credits the staff's efforts. "It is important for the entire hospital to get involved, everyone is part of this," she says.

"To be able to perform extra surgeries in this way on the weekend, several stakeholders need to collaborate, such as sterile services and logistics and patient transportation staff."

How Gynecology Got Rid of Waiting Lists

One of the clinics which succeeded in, at the end of the year, having no patients with a waiting time for surgery exceeding 90 days was Gynecology and Reproduction. To work through the queues in a structured way, emphasis was put on surgery planning, allocation of more operating theater time and improving logistics.

"This has meant extra work but at the same time we tried, as far as possible, to not rely on Saturdays and overtime more than absolutely necessary," says Head of Department Dr. Sebastian Brusell Gidlöf. "We are much

more in favor of introducing long term improvements in our methods and organization, so that we can work at a stable pace and avoid periods during which we have to gear up significantly."

"Given how long the queue was just after summer and the significant patient inflow, I am incredibly proud and happy to say that we managed to work our way through the waiting lists without relying on too much overtime," he says. "We have knowledgeable and wise staff at each stage of the process who are capable of identifying solutions."



■ DR. SEBASTIAN BRUSELL GIDLÖF, NURSES MADELEN WOLFFELT AND CHRISTINE LINDBERG, MEDICAL UNIT GYNECOLOGY.
PHOTO: JOSEFINE FRANKING

Endocrinology Nurses Got on Top of The Queues

Endocrinology in Huddinge was one of the units that reached the target of having no undue waiting times. At present, there is no waiting time at all for a primary consultation with one of the six specialized nurses, thanks to persistent efforts over a longer time period at the unit. Using a color-coded planning system for each working day was one component, as were dealing with administration in the afternoons and re-assigning patients between nurses. One day a week was set aside for video conference calls. Making it possible for the assistant nurse in reception to book in the patients proved to be a significant contribution.

"We still need to address the availability of doctor's appointments at the Endocrinology Unit in Huddinge," says Nina Holst Plym, Head Nurse. "So we introduced evening appointments on Tuesdays and Thursdays during the fall and the specialized nurses were, naturally, also on hand at those times."



■ NINA HOLST PLYM, MALIN ERIKSSON AND CANAN GÖRGÜLÜ, MEDICAL UNIT ENDOCRINOLOGY, HUDDINGE. PHOTO: JOAKIM LINDBERG

Simplifying Scheduling

During the course of the year, Karolinska has been working on a hospital-wide initiative to simplify and standardize the scheduling process. The purchase of a new support system was put out to tender, after which the hospital's operative needs were taken into account in ensuring a system that worked for all. New, common, processes for scheduling have been developed. The goal has been to simplify the work of both supervisors and other staff, to reduce administration, to improve coordination with regards to staffing across the hospital, and to contribute to good working conditions. Extensive beta tests are underway to make sure the processes are workable for all the hospital's units and to thus ensure functionality at the desired level. The hospital plans to initiate a broad roll out during 2023.

"The feeling has been that the system is easily workable, highly flexible, and offers several options."

Participant in the evaluation process.

"The healthcare system is complex. You have to trim and tinker in the right place."

Dr. Fredrik Karlsson, Senior Consultant, Department Head, Breast, Endocrine Tumors and Sarcomas.

Improved Production Planning

Steering such a large and complex healthcare organization such as Karolinska relies on clarity and predictability. In 2020, Karolinska implemented a new production and financial steering model that gave department heads greater responsibility and included clearer production mandates, which are agreed upon and followed-up frequently. This enables frequent calibrations and adjustments in order to fulfill the production mandate. The model is under constant evaluation and development.

During 2022, focus was on increasing joint cross-hospital planning. To be of benefit to

the patients, all the hospital's resources, such as staff functions, facilities and equipment, need to be coordinated. The production planning process, with clear weekly unit-level production assignments, is the very foundation of ensuring this coordination.

Digital information overviews have been simplified and made more easily accessible during the year, to make it easier for department heads to keep abreast of their respective unit's operations and results.





ALS Research Moving Forwards

The disease ALS has received a lot of attention and there are several organizations supporting research. Dr. Caroline Ingre, Senior Consultant and researcher at Karolinska University Hospital, has specialized in ALS and is now receiving several donations to further strengthen the research. The Bissen Brainwalk foundation donated 250,000 SEK in October and the Stoppa ALS (Stop ALS) gave Dr. Ingre two million SEK collected via Neuro.

"Even though we at present do not have a cure for ALS, there is research into medication that will slow down its progression, increasing life expectancy and slowing the onset of symptoms," she says. "That means we can expect the approval of more and more medicines to treat ALS, perhaps not to cure it but to more actively slow it down."



■ DR. CAROLINE INGRE. PHOTO: JOAKIM LINDBERG

Karolinska a Leader in Cardiac Care

Lowest Heart Surgery Mortality

During the past five years, heart surgery mortality rates at Karolinska University Hospital have decreased significantly, while the number of surgeries has increased. Karolinska has the lowest mortality rates from heart surgery of all hospitals in Sweden, according to national data from Swedeheart's quality index compiled in April 2022.

"We can now show results that put us in top tier globally," says Dr. Peter Svenarud, Senior Consultant and Head of Karolinska's Cardiothoracic Surgery Department.

"One important factor is the number of procedures per surgeon. At Karolinska, each of our specialists performed at least 100 procedures annually. The surgeon with the highest number performed 222 procedures, while I as head of the department performed 121."

"We do more than 1,000 heart surgeries every year and preliminary full year figures for 2022 show a mortality rate of only 0.4 percent," Dr. Svenarud says. "That is lower than Cleveland Clinic, which for 30 years in a row has been rated as the best in the US."



■ PHOTO: CARIN TELLSTRÖM

Heart Surgery Mortality 2021

Center	No. heart surg.	30-day mortality
Stockholm	1,035	1.4%
Lund	1,116	1.5%
Cleveland Clinic	4,600	1.6%
Linköping	564	2.0%
Uppsala	594	2.4%
Karlskrona	213	3.3%
Gothenburg	944	3.3%
Umeå	613	3.6%
Örebro	364	3.6%

Top Place Again in the Swedeheart Report

Swedeheart is Sweden's biggest quality register for cardiac care. Karolinska in Huddinge was awarded 8.5 of a maximum of 11 quality index, sharing second place with hospitals in Alingsås, Danderyd, Falun, Umeå and Västerås. The best performing hospital in the country, Capio Sankt Göran, was awarded nine index points. The quality index includes 11 variables, including emergency care and follow-up of patients with acute myocardial infarction as well as patient-group coverage.

In 2021, Swedeheart raised target levels, which made it more difficult to achieve the maximum of points. Dr. Linda Mellbin, Head of Karolinska's Coronary Artery Disease patient flow, explains that the raised target levels have contributed to continuous improvements.

"We are happy and proud that we continue to provide myocardial infarction care of high standards," she says.

"The right care is of course important at the emergency stage but also during follow-up, during which we work with secondary prevention such as providing incentives to stop smoking and treatment of blood pressure and blood lipids."

Dr. Mellbin underscores that doctors, nurses, nurse assistants and physiotherapists working together as a team plays an important role. Adapting care for the individual patient is also an important piece of the puzzle.

"We constantly try to improve care together and in consultation with the patient in order to offer individualized care," she says.



■ DR. LINDA MELLBIN.
PHOTO: JOSEFINE FRANKING



■ HEAD NURSE CAROLINA KLING. PHOTO: JOAKIM LINDBERG

Large Share Upper Abdominal Robotic Surgery

Twelve specialist doctors work at the section for liver and pancreatic surgery within Karolinska's Theme Cancer at Huddinge. Some 500 major surgeries are performed per year. There is a clear strategy in place to treat patients with tumors in the liver, bile ducts and pancreas: Perform as many minimally invasive, robot-assisted surgeries as possible.

"By opting for robot-assisted surgery instead of open surgery we reduce both hospital stay and recovery times. We do not want capacity shortfalls to force us to deselect minimally invasive surgery," says Dr. Stefan Gilg, Senior Consultant and Head of the Section for Liver and Pancreatic Surgery.

The addition of another robot to Huddinge in January 2022 was the first step towards increased capacity. At the same time, investments were made in training enough surgeons in using robots in order to meet present demand and, above all, to meet future demand.

"For certain liver, bile duct, and pancreatic cancers, the proportion of surgeries that were minimally invasive increased from ten percent to 60–70 percent," says Dr. Gilg.

"It has been important for us to be able to offer this technique to as many patients as possible because with cancer, initiating treatment quickly, as well as recovery time, are important factors," he says. "Now that we have the capacity and competency to perform more operations, we are ready to take the next step towards developing further in more complex robot-assisted surgery."

"I am convinced developments in this field will continue at a high pace and our goal is to stay at the forefront," says Dr. Gilg. "That is why I am so proud of what we have achieved so far, and I am convinced that this surgical method will increasingly benefit our cancer patients in the future."



■ PHOTO: DANISH SAROEE



Leading Karolinska

To function optimally Karolinska has to work as ONE HOSPITAL, despite its two locations, and get the most out of the commitment of managers and all staff, which is critical for the development of the healthcare of the future.

Under the auspices of a program entitled “Leading Karolinska,” all 700 managers, at all levels of management, have convened, in different constellations, for two to four-hour meetings to discuss some of the hospital’s most important strategic challenges. The program is headed by Karolinska’s CEO, with extensive top management participation in each session.

There were four rounds of consultations during 2022, with plans to continue these meetings during 2023.

“It’s clear that changes are made in exactly the areas that we have discussed.”

Participant feedback

Themes Addressed During the Four Consultations in 2022

- How do we lead Karolinska in the desired direction?
- Which parts of the administrative processes cause the most frustration?
- How do we best use key performance indicators?
- “Queue-Free Karolinska” – A Karolinska without undue waiting times
- ONE hospital: How do we reach ALL staff?
- The best-possible quality and safety of care: How do we together make the care at Karolinska even better?
- Healthcare of the future: How can we future-proof our approach to delivering healthcare in a world of ageing populations and workforce shortages?

“It’s highly valuable for us to meet other managers from parts of the hospital that are completely different to ours.”

Participant feedback

Simplifying and Reducing Administration

To continuously simplify and reduce the administrative burden for our staff is one of Karolinska's core principles. The hospital always aims to reduce the amount of time that healthcare staff spend on administration and to increase the amount of time dedicated to healthcare provision, research and education. It is an enormous challenge!

A second task is to reduce the number of staff members who work exclusively with administration, but doing so without placing an additional administrative burden on the shoulders of healthcare staff. The only way to achieve this is by simplifying our systems and our working methods.

Identifying which parts of the administrative process are the biggest time wasters and cause the greatest frustration was in focus during one of the "Leading Karolinska" meetings in the spring of 2022. The discussion between all of the managers across the hospital identified eleven problematic parts of the process, including specific hurdles and system problems. Addressing this list is a priority area for management who are investigating solutions. Some points will be challenging and will likely require efforts over several years.

Structured Work to Remove Administrative Hurdles

		Description	Status January 2023	
1	Practical Aspects of New Recruitment	Need to simplify onboarding processes, for example issuing ID and access cards	Ongoing and prioritized by HR	
2	Digital Signatures	Need to expand broadly	Implementation of electronic signatures, began in Dec	
3	Incident and risk system	A desire to replace the system	Ongoing dialog	
4	HR system	A desire to replace the system and, during the process, improve support and user training	Dialog continues	
5	Scheduling	Need for better IT support and improved coordination	A new tool called Tessa was tested broadly and roll-out will start during Q1 2023	
6	Bookings and Patient Notifications	A desire for improved support and processes	A project has been launched	
7	Dictation	A desire for a voice-to-text tool	Tender process will be completed; roll-out to follow	
8	Hospital intranet	A desire for easier navigation in particular to find clinical guidelines	A new file management program has been introduced. Ease of navigation will be assessed during 2023	
9	Invoicing	Time consuming process, invoices shuffled back and forth	A new purchasing system will be tested during spring to connect invoices, orders and deliveries	
10	Purchasing	Perceived as complicated	Work ongoing to simplify process, including information available on intranet	
11	Meetings	A desire for standardized guidelines for "meetings etiquette" including time slots	From November, bookings via Outlook automatically sets meeting time to 25 minutes	



"My ambition is to become the best at treating balance disorders."



World-Leading Competence

Karolinska is the sum of the staff's knowledge, skills and hard work. Karolinska should be the natural place to be for world-class competencies today and tomorrow, an ambition that places high demands on the hospital. Creating a good workplace environment for healthcare staff and making Karolinska an attractive employer are among our biggest challenges at present and will continue to be so in the future. A difficult task ahead is the re-adjustment needed to cope with demographic challenges, as fewer people will need to care for more patients.

At the start of the year, with the extensive spread of covid-19, the rate of sick leave was high. Again in the summer we saw significant staff absences due to illness, when compared to previous years. There was also an increase in the other categories of paid leave, such as vacation days and parental leave, due in part to the need for rest and recuperation following the high pressure on the hospital during the pandemic.

*In 2022, a total of **192** nurses embarked on salaried training to qualify as specialist nurses or midwives. **159** nurses completed their training during the course of the year.*

The Supply of Skills and Competencies

Working strategically to secure the supply of skills and competencies is one of our most pressing challenges, and skill and staffing shortages represent one of the hospital's most serious risks over time. The hospital has implemented several additional initiatives to shore up supply, such as continued cooperation across the region to set shared criteria in defining specific levels of competencies. A central hospital support function is under construction to improve support for the clinics in need of securing skills and competencies. With the support of the regional authorities, nurses are offered paid training to specialize or to qualify as midwives.

Creating an Alumni Network

Karolinska is fortunate to be able to offer residency programs and specialized training to a large number of doctors and nurses. They all have key roles in developing university hospital healthcare and they are a resource to us as we face future challenges in Sweden as well as globally. We also see them as ambassadors for Karolinska. The hospital is currently setting up an alumni network to enable networking and collaboration to fully leverage commitment and engagement. During the fall, several steps were taken to set up the network, which will be up and running early 2023.

The Wellness Center – A Unique and Holistic Approach to Promoting Staff Wellbeing

For several years, Karolinska has promoted staff wellbeing through a support program, which was significantly expanded to mitigate the impact of the pandemic. The Wellness Center was set up in 2022 to further improve the existing support system and to prioritize staff wellbeing by putting the issue of workplace environment permanently at the top of the agenda. Additionally, several new initiatives were put in place with a particular focus on mental health.

“We, like many other organizations, worked reactively for a long time when it came to sick leave and the workplace environment. The Wellness Center gives us the strength we need to make the shift from reactive to proactive, to working systematically across units and sections, and in collaboration with representatives,” says Magnus Flodberg, Head of the Wellness Center.

Occupational health and safety specialists and rehabilitation professionals work within the Wellness Center, as well as experts in ergonomics and health educators who cooperate to promote proactive improvements of the workplace environment. These healthcare

professions have been part of the hospital's workforce for a long time, but bringing them together in a centralized effort is a powerful tool. The Wellness Center has a particular focus on the organizational and social components of the workplace, as well as promoting good mental health among all of Karolinska's staff.

Last year, the Wellness Center coordinated a regional initiative for sustainable and healthy workplace environments, which gave Karolinska additional resources. Across Karolinska, 25 million SEK were used for 102 projects and training programs.

Seminars, workshops and training programmes covered areas such as wellbeing in the workplace, stress management, job fulfillment, leadership, teamwork, rest and recuperation, ethics, and communication. In Medical Diagnostics, Karolinska created a program for sustainable leadership and a development program to strengthen health-promoting behaviors in the organization. In Pediatrics, a strategy was developed and a program set up to secure rest and recuperation and to retain staff.

Sustainability – For People, Resources and the Climate

Karolinska has divided its proactive sustainability work into four main areas: social sustainability, workplace environment sustainability, environmental sustainability and financial sustainability. Last year saw the introduction of a steering document for 2023–2027.

Social sustainability at Karolinska rests on the principle of everyone's equal worth. It includes ethics, public health, human rights, equality, security, children's rights, the inclusion of minorities, HBTQ+ persons, and the participation of persons with disabilities.

Environmental issues have been a focus area for many years. Already in 2005, Karolinska gained its ISO 14001 certification. Aided by the certified system for environmental steering, the units

and sections work daily to decrease their impact on the environment and the climate, while the hospital in its entirety aims to make continuous improvements across the board.

There are some 500 environment and sustainability officers who provide information and support to the staff across the organization.





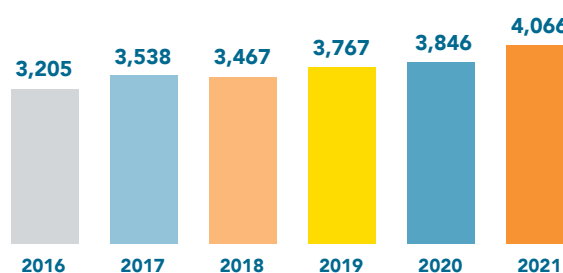
Research, Education and Innovation

Research, education and innovation form Karolinska's tripartite university hospital mission. Working with academia and the private sector enables Karolinska to speed up development and innovation throughout the process, from the idea stage to the implementation of solutions in daily clinical work to benefit patients. Part of Karolinska's mandate is to educate the healthcare professionals of the future.

During 2022, efforts to support research and development continued along prioritized areas in the hospital's R&D strategy. Some initiatives of note:

- A new contract establishing a framework for the collaboration of the Karolinska Institute (KI), the Stockholm Regional Authority, and Karolinska University Hospital in creating a joint bio-bank infrastructure, which is critical to making the Stockholm Region a world-leader in Life Sciences.
- In 2022, Karolinska's Research, Development & Education committee strategically invested 10 million SEK in various projects.
- To encourage clinical studies, doctorate students without clinical-studies experience were offered courses in Good Clinical Practice (GCP) and took part in Investigator School (doctoral training provided together with KI).
- Earmarked support for innovation at unit level. Strategic areas: precision medicine and virtual hospital.

The number of academic articles published together with KI remained higher than before the pandemic



Foot note: The figures for 2022 are compiled later this year.

2,428 Active Researchers

1.8 Citation Rate

2.3 Billion SEK External Research Funding in Collaboration With KI

More Than 1,500 Ongoing/Planned Clinical Studies (December 2022)

Innovation

Being able to deliver world-class care hinges on innovation, which is undertaken across Karolinska's departments and wards in accordance with their respective needs and the needs of their patients. Adhering to international innovation-leadership standards and best practices allows Karolinska to create the best conditions for further developing its innovation support. As does strengthening the systemic exchange of knowledge.

New Measurement Methods for MS Diagnostics

Dr. Tobias Granberg, Section Head at the Neuroradiology Department, has further developed the examination of multiple sclerosis (MS) patients and introduced new diagnostic methods that are now used for the majority of brain MRI examinations for MS at Karolinska.

"With my research team, I am working on developing and evaluating new techniques for image capture of the myelin, the insulating layer around the nerve fibers that is damaged by MS," Dr. Granberg says.

"The next frontier in MS research is trying to find reparative mechanisms so that the myelin can be reformed around the nerve fibers," he says. "Having solid follow-up methods to measure the amount of myelin in the brain will be key to investigating the efficacy of new treatments."

Innovation is often successful in collaboration with other actors. In order to stay at the frontline, Karolinska has strategic innovation cooperation with patients, enterprises, researchers, the public sector and other healthcare providers. Karolinska also collaborates with fellow university hospitals to enable future innovation and participates in the European University Hospital Alliance. Thanks to a European education initiative the Healthcare Transformation Academy – healthcare staff are given opportunities to take charge of developing the healthcare of the future.

Further, more than 375 supervisors and staff members have taken innovation courses held at the hospital, in the Stockholm region or in other locations in Europe.

Researchers Have Mapped the Origin of Serious Illness in Children

Langerhans cell histiocytosis (LCH) is a serious cancer-like disease that primarily affects children and can be fatal in the most serious cases. Annually, between five to ten children in Sweden are diagnosed with the disease, which usually presents before the age of ten. Researchers at Karolinska and KI have mapped the origin of LCH. Their discoveries could lead to targeted treatment to eliminate the pathological cells that cause the disease.

Swedish artist Danny Saucedo visits the Astrid Lindgren's Children's Hospital



Karolinska Cell Therapy Center (KCC) in Huddinge

Core facility KCC expedites the development of new treatments with Advanced Therapy Medicinal Products (ATMP) and cells for transplantation. The center supports and gives guidance to researchers, care providers and enterprises during the development process from research product to quality-assured product. Vecura, a KCC production unit, offers expertise within Good Manufacturing Practice (GMP), clean room practice, quality analyses, and regulatory issues. Sweden's Medical Products Agency has approved the production of cell therapy products for clinical testing at Vecura, which was also given license to handle cells and tissues by The Health and Social Care Inspectorate. KCC serves hospitals, universities, and biotechnology companies in Sweden and in other European countries.

"For the hospital to realize its vision, we have to work with innovation. And sure, we are already investing in innovation but at the moment it is neither as visible or as well-structured as our research. Karolinska has a lot of star employees, but we could be working with even more of them, and that is why we want to create a culture that is attractive to them and which will contribute to the bigger picture of our innovation work."

Alireza Malakuti, Operative Director of Women's Health and Healthcare Professionals, who alongside Elisabet Rydwik, Head of Research, Education, Development & Innovation at Women's Health and Healthcare Professionals, is in charge of "Innovationskraft" (The Power of Innovation).

Videos Showcasing Karolinska Medical Innovations

Ever since Karolinska was founded, the hospital staff's inventions, methods and treatments have changed the lives of patients across the world. A new series of videos show several generations of researchers whose contributions made healthcare what it is today.

The first episode is dedicated to Prof. Kerstin Hagenfeldt and Prof. Kristina Gemzell Danielsson who over the years helped to improve the lives of millions of women, including the development of medical abortions, the copper coil, and international contraceptive guidelines.

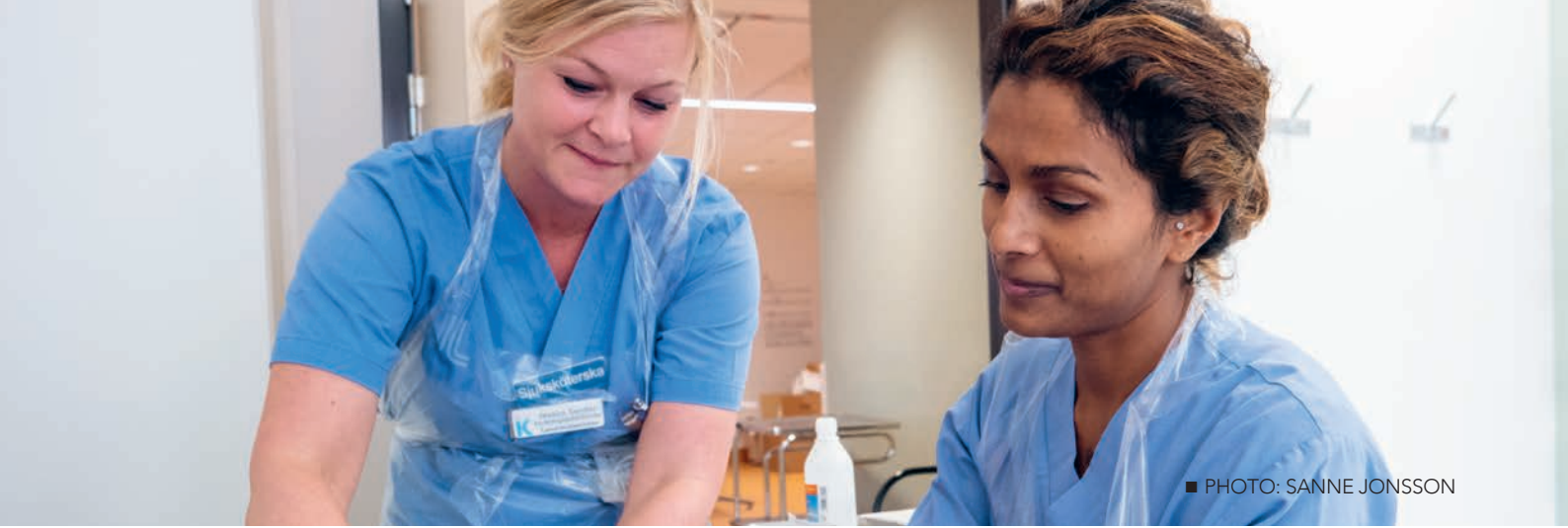
The second episode looks at Prof. Nanna Svartz and Prof. Johan Askling's contributions to rheumatology, including the discovery of sulfasalazine and Prof. Askling's epidemiological research on medical-product safety which helped improve survival and quality of life for patients with these diseases. There are more episodes to come, which will be published online on the hospital's website.



■ PROF. NANNA SVARTZ

Simulations for Medical Students

Medical-course manager Dr. Agneta Månsson Broberg in Huddinge leads a project to better prepare medical students for clinical course work. Staff at the Clinical Training Center (KTC) also take part. Karolinska's cooperation with higher-learning institutions is important to further optimize clinical education, to enable students reaching set clinical goals, and to prepare them for clinical practice.



■ PHOTO: SANNE JONSSON

Education

In 2022, Karolinska University Hospital ran 36 clinical education programs across several levels – from upper secondary school to advanced higher education as well as the education of interns, residents and doctors in basic training. Focus has been preparing for the new and updated six-year medical program, the capacity and use of educational facilities, and the assessment of clinical rotations, where a standardized survey to be used across

the hospital has been developed. There have been targeted initiatives for supervisor training in select departments, as well as developing digital supervisor training, which Karolinska will continue working on in 2023. During 2022, Karolinska increased the number of undergraduate students and interns. A total of 145 doctors qualified as specialists during the year.

33,847 Student Weeks at the Hospital in 2022

The CAMST Simulator Center, Karolinska Huddinge

At the CAMST Simulator Center, advanced simulators allow students and healthcare professionals to practice their skills, including the ability to cooperate, which benefits patient safety and reduces the risk of error. Inaugurated in 2002, CAMST is Sweden's first simulation center. It was founded to meet the requirements for systematic and evidence-based training in high-technology healthcare with a special focus on human-machine interaction in healthcare.

CAMST was accredited as a Comprehensive Education Institute by the American College of Surgeons in 2008 and by the Network of Accredited Skills Centers in Europe in 2018.

"We have high standards regarding course quality, long-term strategies, and the relationship between education and research. CAMST also has many experienced instructors who contribute with continuity and quality," says Prof. Li Felländer Tsai, Director of CAMST.

The Collaboration in Science Conference

On 6–7 October 2022, more than 400 researchers gathered at Campus Flemingsberg in Huddinge to participate in The Collaboration in Science conference intended to strengthen translational research. With representation from a broad range of research fields, the conference builds bridges between preclinical and clinical research at Karolinska University Hospital and the Karolinska Institute (KI).

In collaboration with the Dean of KI South, Karolinska's Prof. Annika Bergquist, Senior Consultant at the Department of Upper Abdominal Diseases and R&D site manager in Huddinge, arranged the conference:

"We chose to take a broad approach to the conference in order to be able to give a clear picture of the research going on at the hospital and at KI," she says.

"Our goal is to make Collaboration in Science a recurring activity to stimulate more collaborations and to develop translational research. In the long term, we may also be able to invite more universities."



■ PHOTO: MALIN JOCHUMSEN



Leaders in Precision Medicine and Virtual Hospital

Precision Medicine

The adaptation of diagnostics, treatment and follow-up to the patient's individual needs is referred to as precision medicine. Karolinska University Hospital, the Karolinska Institute (KI) and the Stockholm Regional Authorities are working together to increase the pace of implementation of precision medicine. In 2022, the Precision Medicine Center at Karolinska (PMCK), Karolinska University Hospital and KI made a joint effort to speed up the development and introduction of precision medicine in day-to-day clinical practice and continued to work for a seamless collaboration between academia, research and healthcare.

Precision medicine involves large amounts of health data that needs to be handled safely. Last year, a collaboration with SciLifeLab, which does whole genome sequencing, made it possible to share data with healthcare providers,

which means that new technologies can be applied to more areas of healthcare.

“Clinical whole-genome sequencing has proven to be of huge importance, including the area of rare diseases,” says Prof. Anna Wedell, Director of PMCK.

“When it is used in the right way, tailored to each patient's individual health profile, new groups of patients can receive a correct diagnosis and the correct treatment in a way that was not previously possible,” she says.

“In diagnostics – for example using AI in image diagnostics, there is significant progress in making safer diagnoses with greater precision. Precision medicine allows us to truly push the boundaries of healthcare.”

Great Advances in Leukemia Research

In a recently published study, Dr. Nikolas Herold and Dr. Martin Jädersten from Karolinska University Hospital explained a method that can make the treatment of acute myeloid leukemia more effective – with medicine that is already in use.

“Thanks to being able to re-use a proven drug already on the market, the additional cost per patient comes in at around a couple of hundred SEK, approximately the equivalent to the price of a packet of headache pills,” says Dr. Herold. “It also makes the treatment available in countries with fewer resources.”

“Hydroxyurea has been used as a suppressant in the treatment of leukemia, but we are now using it as a modern precision medicine for new purposes,” says Dr. Herold before explaining in detail that:



■ DR. NIKOLAS HEROLD AND DR. MARTIN JÄDERSTEN.
PHOTO: JOSEFINE FRANKING

The HEAT-AML trial exploits SAMHD1 as a new target for precision medicine. Some leukaemias express high levels of SAMHD1 which makes leukemic cells resistant to standard treatment with cytarabine. Using the SAMHD1 inhibitor hydroxyurea, the trial evaluates targeted inhibition of SAMHD1 that hopefully will become standard-of-care for AML patients with high leukemic expression of SAMHD1.



■ PHOTO: CATARINA THEPPER

Virtual Hospital

Having made several investments in this area, Karolinska is paving the way in being able to remotely monitor patients before, during and after a hospital stay. This work has laid the foundation which, going forward, will enable faster development of new solutions. Using remote monitoring to provide care in the home is one of the hospital's strategic investment areas and there is a range of development initiatives underway across several departments.

In a cardiac-care pilot project, patients at risk of heart failure use a blood-pressure monitor, scales and a mobile phone to send in daily updates on their blood pressure, heart rate, and body weight, which provides data for risk assessments.

"Remote monitoring allows us to provide individualized care and to detect serious disease progression at an earlier stage, helping us prevent patients from getting worse," says Prof. Frieder Braunschweig, Head of Karolinska's Cardiology Department.

"At the same time, if we notice that the patients are doing well and that their health is stable, we do not need to ask them to come in for check-ups."

Hematology Has Made Great Strides in Precision Medicine

Precision medicine has been a routine part of hematology for several years. All patients with acute leukemia or myelodysplastic syndrome are analyzed with panel sequencing and the results are part of diagnostic scores and in some cases determine the choice of treatment. In certain patient groups, whole genome sequencing is

performed, which could probably come to replace several analysis methods, including chromosome analysis. There are a number of ongoing projects looking at both acute leukemia and lymphoma on drug sensitivity analysis of tumor cells in patients who do not respond well to standard treatment.



■ PHOTO: DAVID LINDGREN

Safe Healthcare of the Highest Quality

All of Karolinska's patients should receive safe healthcare of the best quality. Continuous improvements, based on a learning culture and data, help us push ourselves harder to improve the quality of healthcare.

What do Our Patients Think?

The hospital has automated the sending out of patient surveys (PREM; Patient Reported Experience Measures), sent to patients after outpatient, day surgery and inpatient care. The patients can access the survey via the regional authorities' centralized care platform, called 1177, by either using a computer or a cell phone, which makes it easy to answer questions about, for example, how they were treated by the staff, whether they felt like active participants in their healthcare, and whether they were given adequate information. The response rate is 40 to 45 percent, and with the new automated system, the hospital last year collected 56,000 responses, a number that should increase during 2023. Automatization reduces the administration for healthcare staff and increases the number of surveys sent out to patients.

Digital Reports on Various Quality Indicators

The hospital continued to focus on increased transparency of results and on automated reporting. Monthly digital reports containing quality indicators allow both the board and operational management to follow developments and take actions. We are continuing our efforts to make it easier for patients and the general public to access medical outcomes and quality measures.

Increased Patient Involvement and Influence

The patient is an active partner in their own care at Karolinska, something that is under further development at several levels of the organization. The hospital's departments and wards are actively engaging in promoting person centered care. Patient representatives take part in development projects and department management meetings. In the coming year, a training program for patient representatives will be developed.

One important quality aspect is waiting times, not having to wait longer than necessary for care, as outlined on page 14.

However, patients still wait too long in the hospital's emergency departments. This is a complex, multi-factor problem involving a large number of actors. In 2022, Karolinska put considerable effort into addressing this challenge, testing several new methods across the chain of care, such as: individual emergency unit's respective ways of working, the waiting time for radiology, the possibility to provide care in a day care setting, and cooperation along the care chain. The hospital will intensify its efforts in this area during 2023 and put even more new methods to the test.

In September, Karolinska marked the WHO Patient Safety Day through a poster campaign that presented 32 successful practices from various parts of the hospital.

The hospital has expanded its patient safety dialogues at the level of medical units and nursing units, addressing patient safety risks and sharing best practices.

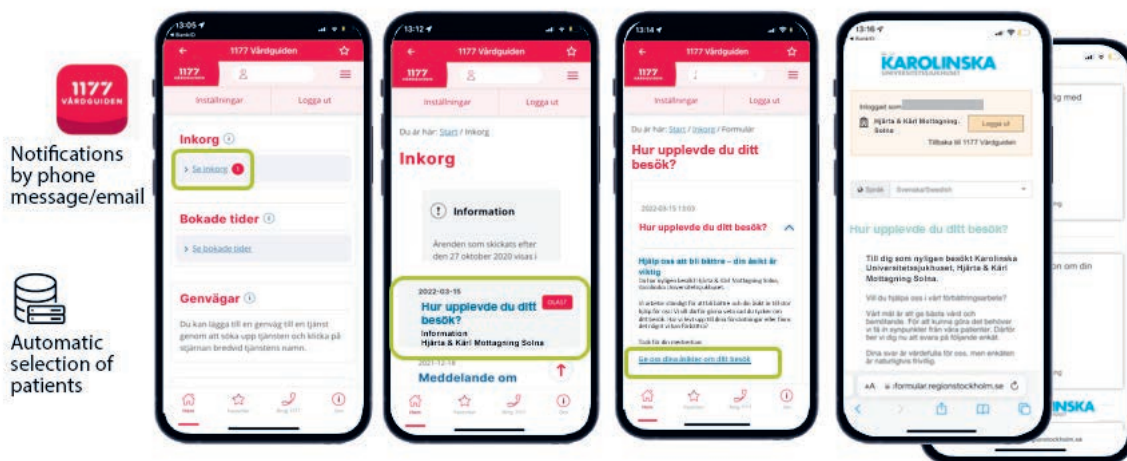
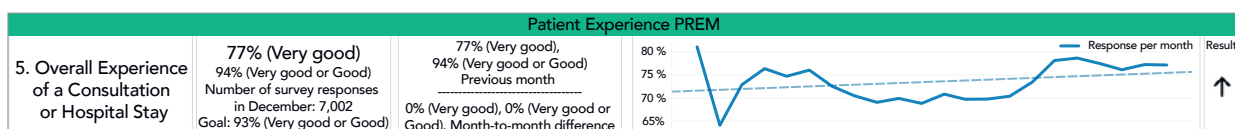
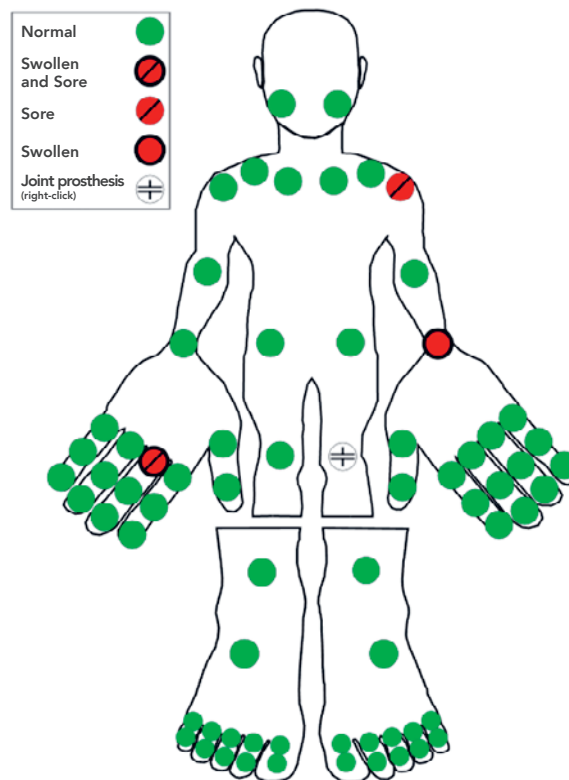
PREM – Patient Reported Experience Measure

The transition to automated PREM survey send-outs began in the summer of 2022. The surveys, which have the same design across the hospital, were automatically sent to adult patients who had received outpatient, day or inpatient care.

PROM – Patient Reported Outcome Measure

Patients' own perception of their own health and functioning is a key component of follow-up. Sweden leads the field in the use of PROM, which is often included in national quality registers. Karolinska takes an active role in the development of technical solutions that can simplify the use of PROM, which has become a natural and valuable tool in treating patients. There have been noteworthy advances in Karolinska's lung cancer, brain tumors and rheumatology patient flows. In these fields, PROM has become a standard component of follow-up.

In rheumatology, patients assess their pain level and functional level and this information is now regarded as an important component of treatment. There is active use of the Swedish Rheumatic Quality Register (SRQ) and healthcare providers rely on PROM in most patient consultations and treatment appointments. Information about pain, fatigue and functional level can be followed over time in easy-to-use dashboards, and treatment can thus be evaluated. In the spring of 2022, the survey response rate reached 74 percent, which is regarded as a considerably high rate.





Karolinska: A Global Resource

During 2022, it was evident that Karolinska is and will continue to be a resource at a national and global level. During the last year, the hospital's stayed on course with its ambition to have Karolinska's expertise benefit even more patients, also outside the region. Expanding access to patients allows the hospital to attain international excellence, which feeds back into the region and thus benefits the patients in the hospital's immediate catchment area (Region Stockholm).

Improving systems and processes to establish contact and communicate between patients and healthcare staff, and improving the referral system, is critically important to our ability to provide healthcare outside Stockholm.

Contacts with Other Regions and Countries – Increase Compared to 2021

Inpatient care: **+13 percent**

Outpatient care: **+17 percent**

Remote care in 2022:

18,514 appointments, +166 percent since 2019

Turnover (national/international):

1.67 billion SEK, +21 percent compared to 2021

A Hospital for All of Sweden

In 2022, Karolinska strengthened its cooperation with healthcare providers in other regions, helped on by its successful steps towards becoming a queue-free hospital. During summer, Karolinska performed some 190 operations for the northern region of Norrbotten, primarily cancer surgery.

Self-Referrals

By law, patients in Sweden have the right to access outpatient care anywhere in the country. Last year, Karolinska introduced a digital solution for self-referrals to all its clinics via the region's healthcare portals Alltid öppet ("Always open") and 1177. The goal is both to make the process easier for patients and to increase the quality of incoming referrals.

PREM for Patients from Other Regions

It is important to understand the experience of our patients, including patients from other regions. Karolinska has provision of care agreements with several hospitals in other regions, who last year joined forces with Karolinska to develop patient surveys. The aim was to add questions that make it easier to understand how Karolinska can further simplify its contacts with patients from other regions.

National Specialized Medical Care

During 2022, Karolinska was granted several new National Specialized Medical Care licenses, bringing the total of national-practice licenses to 24.

- Anorectal and urogenital malformations and Hirschsprung's disease
- Treatment of children with inner ear malformations with cochlear implants
- EXIT
- Fetal therapy (incl. intrauterine treatment)
- Intensive care when there are indications of liver transplantation
- Liver transplantation
- Cervical cancer
- Congenital diaphragmatic hernia
- Malformations of the esophagus
- Moyamoya
- Neuroendocrine tumors in the abdomen and advanced adrenal tumors
- Neuromuscular diseases
- Prolapse and urinary incontinence
- Preimplantatory genetic diagnostics (PGD)
- Primary sclerosing cholangitis (PSC)
- Spinal cord injuries
- Transjugular intrahepatic shunt (TIPS)
- Trophoblastic diseases
- Osteogenesis imperfecta (OI)
- Stem cell transplantation at systemic sclerosis
- Severe chronic lung diseases in children
- Cytoreductive surgery combined with heated chemotherapy in the abdominal cavity for patients with disseminated cancer in the peritoneum (HIPEC)
- Retroperitoneal lymph node evacuation in testicular cancer
- Curative treatment of cancer of the vulva
-

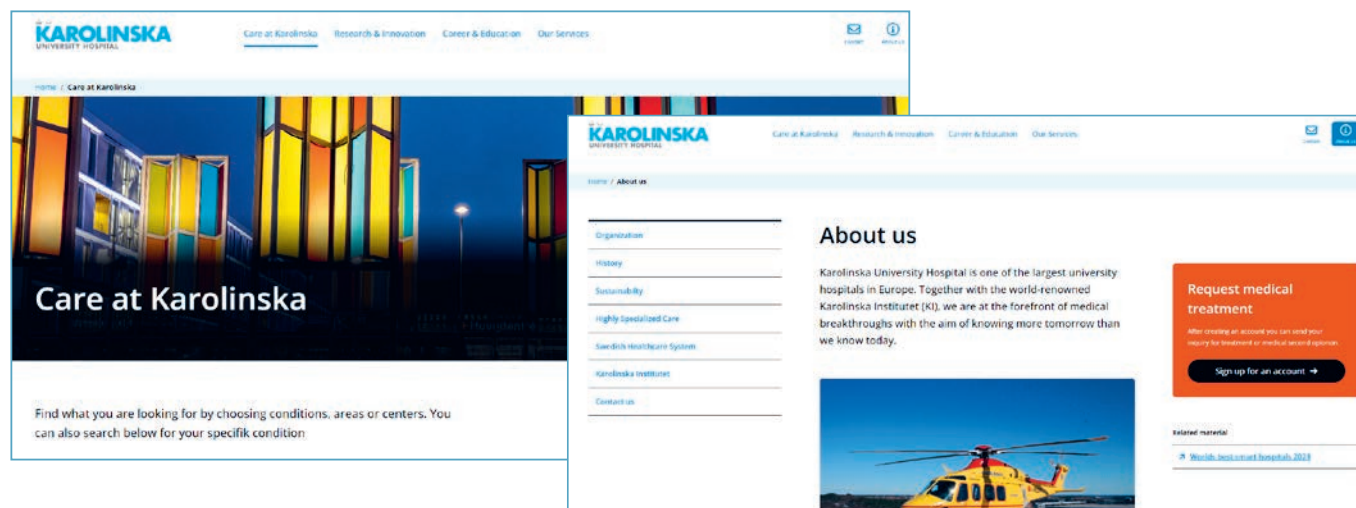
Easier Access for Foreign Patients

Karolinska has launched a new English-language website – karolinskahospital.com – designed to make it easier for patients and care-givers from other countries to get in touch with the hospital.

A new software solution (NAIA) for receiving queries from foreign patients was also launched during 2022. The advantages of the new system include being able to provide patients with assistance faster and more smoothly, increased accessibility, secure transfer of patient data, and reduced administration for healthcare staff.

At present, the hospital is working on clear and simple routines and processes that will be of help when managing an increased number of patients from other regions and countries.

Last year, Karolinska signed new agreements with care providers in Iceland within the areas of neurosurgery, reproductive medicine, and fetal medicine.



■ KAROLINSKAHOSPITAL.COM



European University Hospital Alliance (EUHA)

The university hospitals across Europe have a special role to play in the healthcare systems, with their combined responsibilities to provide care, engage in research, and provide education. Having similar responsibilities means the hospitals face similar challenges. Karolinska is a member of the European alliance EUHA, which brings together 220,000 healthcare professionals working together to improve the quality of care by sharing experiences and processes. EUHA also provides a shared platform to influence decision-makers, industry and enterprise, as well as other actors. Nine leading university hospitals founded EUHA in 2017. Last year, Århus University Hospital was admitted as a member.

Karolinska participates in all of EUHA's networks and coordinates three of them: The Rare Diseases & ERN Network, the Human Resources Directors Network, and the Innovation Network. Two new EUHA networks have been created: The Nursing Network with the dual goals



of creating a knowledge- and experience-sharing platform and of promoting the development of nursing professions. The Innovation Network, the second addition to the EUHA, has two focus areas: Funding & Valorization and Culture & Implementation.

An agreement on research-assessment reform was signed during 2022, leading to EUHA joining the Coalition for Advancing Research Assessment (CoARA). Other developments during the year were preparations for a breast-cancer benchmark between member hospitals and several meetings with the EU Commission to discuss skill shortages, which is a high-priority issue for EUHA demanding a clear long-term strategy.

European Reference Networks (ERN)

Karolinska is a Member of the following ERN:s:

Pediatric transplantations – ERN TRANSPLANT-CHILD

Solid extra-cranial tumors in children – ERN PaedCan

Rare endocrine diagnoses – Endo-ERN

Rare gastrointestinal diagnoses – ERNICA

Rare gynecological tumor diseases – ERN EURACAN

Rare hematological diseases – ERN EuroBloodNet

Rare immunodeficiency and immunological diseases – ERN RITA

Rare craniofacial diagnoses – ERN CRANIO

Rare vascular diseases – ERN VASCERN

Rare liver diseases – ERN RARE-LIVER

Rare lung diseases (cystic fibrosis) – ERN-LUNG

Rare congenital metabolic diseases – MetabERN

Rare congenital urogenital diagnoses – ERN eUROGEN

Rare neurological diseases – (ERN RND)

Rare neuromuscular diseases – ERN EURO-NMD

Rare kidney diseases – ERKNet

Rare and complex connective tissue diseases – (ERN ReCONNET)

Rare skeletal diagnoses – ERN BOND

Rare Malformation Syndromes, Intellectual and Other Neurodevelopmental Disorders – ERN ITHACA

Hereditary cancers – ERN GENTURIS



European
Reference
Network

International Dialogue

Beyond the European networks, Karolinska maintains international dialogues, exchanges and collaborations with hospitals and organizations across the world – and in addition to all the international research and innovation collaborations run by several of Karolinska's different departments.

During fall 2022, Karolinska welcomed several large groups of international visitors. They visited the hospital for different reasons but they all shared the same curiosity about the recent development of one of the world's ten best hospitals. Discussing how Karolinska deals with challenges such as the pandemic and the increasing demand for healthcare was on the agenda, as were questions about leadership, organization and the digitalization of decision support.

Conferences Returned After the Pandemic

Mayo Clinic, Karolinska University Hospital and KI

The conference held jointly by the Mayo Clinic, Karolinska University Hospital and the Karolinska Institute (KI) took place on September 26–27. This year's theme covered how to engage, inspire and retain staff while providing the best possible care.

BioClinicum Day

After being put on pause for a couple of years, BioClinicum Day welcomed more than 200 researchers to the Sune Bergström Auditorium on September 20 for an afternoon sharing the latest research and knowledge and a poster presentation. Attendees were given a presentation about developments in endovascular care and how an inversion of the Seldinger* can create new possibilities in sampling and delivery of cells.

** Sven Ivar Seldinger was a Karolinska radiologist who developed the catheter technique that is now used worldwide and who helped to revolutionize the use of catheters, as well as laying the foundation for the development of interventional radiology.*

Excellent FDA Inspection Results

Inspections by the American Food & Drug Administration (FDA) is relatively unusual in Sweden, but since an American sponsor was involved and the application for US market approval was imminent, the FDA wanted to inspect the quality of the clinical drug trial across several locations worldwide, including the Infectious Diseases Department at Karolinska University Hospital in Huddinge. After the inspection in February 2022, the FDA reported excellent results without remark. In assessing trial execution and regulatory compliance, the inspector deemed that quality was in the top 10 percent worldwide.

Collaboration with Brigham and Women's Hospital/Harvard Medical School

In 2022, Karolinska began a cooperation with the prominent American hospital Brigham and Women's Hospital and Harvard Medical School. Among other initiatives, a European-American consortium (NETMEE) in network medicine was set up in order to improve and further individualize the treatment of cardiometabolic diseases.



Some of Karolinska University Hospital's Partners



Karolinska Supports Ukraine

The world had barely made it through the worst of the pandemic before the war in Ukraine began. For Karolinska University Hospital it was self-evident to offer help in any way possible. Initiatives were launched almost at once, both at management level and by staff members who, for example, started collections. There were donations of medicines, medical equipment and other necessities. Soldiers from Ukraine who were injured in battle received care, while the hospital also performed surgery on children with cancer who had fled Ukraine. Of all hospitals in Sweden, Karolinska has treated the highest number of patients from Ukraine.

"We have extensive experience in helping families who are in crisis because their children have life-threatening diseases," said Dr. Pernilla Grillner, Section Head in the Pediatric Oncology Department at the Astrid Lindgren Children's Hospital, during an interview in April 2022 after the first round of operations on cancer-stricken children from Ukraine. "However, taking care of families who have both fled a war and at the same time have children with cancer, that is new," Dr. Grillner said at the time.

Cultural Efforts for Ukrainian Children

In 2022, the Astrid Lindgren Children's Hospital received additional resources when the regional authorities culture committee earmarked funds for programs promoting the inclusion of refugees from Ukraine. The hospital's Educational Resource Center helped to coordinate and administer the support given both to children receiving healthcare and to children whose adult caregivers needed treatment.



■ PATIENTS ARRIVING FROM UKRAINE.
PHOTO: HENRIK KENNEDY



New Helicopter for Mid-Air Intensive Care

In 2022, Karolinska procured a helicopter that enables intensive care in the air. The helicopter can fly in difficult weather conditions and therefore, unlike ordinary helicopters, will not be grounded by bad weather, freezing temperatures or darkness.

"Karolinska's new helicopter is the first of its kind in Sweden," says Dr. Lars Falk, Head of Karolinska's Department of Intensive Care and Transport (ITC).

"Until now, the hospital has not been able to provide on-board medical care, such as ECMO, for the most seriously injured or sick patients."

Four ITC teams use the helicopter:

- ANTS (Acute Neonatal Transport Service)
- PETS (Pediatric Emergency Transport Service)
- AITT (Advanced Intensive Care Transport Team)
- ECMO Transportation



■ NEONATAL. PHOTO: AGNES LINNÉR

Successful Neonatal Care for Increased Survival

The Karolinska neonatal unit, which operates across three locations (Solna, Huddinge and Danderyd), is one of the largest of its kind in northern Europe. The unit provides high-tech, highly specialized intensive care to seriously ill and premature newborns. In addition to intensive care, the neonatal care chain includes services ranging from a highly specialized neonatal transport team (ANTS) to neonatal care in the home. Annually, there are some 2,400 inpatient and 800 home care episodes.

While neonatal care is a highly specialized area, the neonatal unit prioritizes skin-on-skin contact between the child and the parent.

"Skin-to-skin contact is especially helpful in the premature baby's adjustment from fetus to newborn. It keeps the baby warm, facilitates breastfeeding and helps the child and the parent to form a bond," says Dr. Lars Navér, Head of the Neonatal Department at the Astrid Lindgren Children's Hospital.

"We integrate skin-to-skin contact in neonatal intensive care because it lends strength to medical interventions, which in turn contributes to improved well-being in the long and short term," he says.

New non-invasive methods for respiratory support such as rPAP, which Karolinska helped develop, lessens the need for respiratory care and also enables skin-to-skin contact immediately after birth because the child does not have to be separated from its parent.

An international study, inspired by Karolinska's provision of neonatal care, found that immediate skin-on-skin contact reduced neonatal mortality by 25 percent compared to currently conventional care of low-birth weight newborns. These findings led to the World Health Organization introducing a recommendation that the method be integrated worldwide in the care of children with low birth weight.

Catheter Ablation with a Focus on Advanced Methods

Karolinska operates the Nordic region's largest center for ablation treatment of cardiac arrhythmias. In 2022, a total of 1,671 procedures were carried out at the hospital's four high-tech electrophysiological laboratories in Solna and Huddinge. The unit's staff, including 14 doctors and 30 nurses, offer the full spectrum of modern electrophysiology treatment – from cardiac arrhythmias in children and patients with congenital heart disease, to life-threatening ventricular arrhythmias in patients in cardiogenic shock who require ECMO.

"We have seen remarkable developments in recent years. Today, our skilled operators can handle cases that just a few years ago could not be treated," says Dr. Frieder Braunschweig, Head of Karolinska's Cardiology Department.

The department specializes in complex atrial arrhythmias, and is at the helm of a multicenter study looking at the benefits of a new ablation concept in atrial fibrillation. Recently, a method was introduced to treat severe arrhythmias by injecting alcohol in a small branch on the exterior of the atrium. Ten patients have already been treated with good effect. According to Dr. Braunschweig, ablation therapy is still an underutilized method.

"Our teams are working to ensure that our resources and knowledge can benefit more patients," he says.





IT and Digitalization: The Smart Hospital Getting Even Smarter

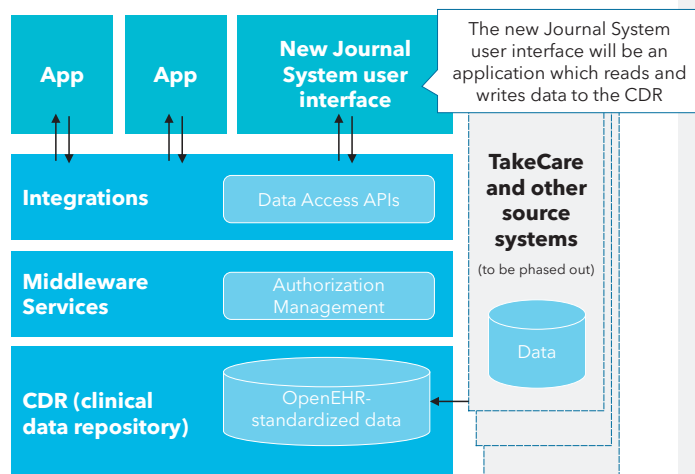
During 2022, Karolinska has continued to accelerate its investment in IT and digitalization. In order to take advantage of the continuous modernization of healthcare information standards, Karolinska has begun the development of a healthcare data platform to create new opportunities for data-driven care and research. Karolinska's modern healthcare data platform will collect, harmonize, and provide data from multiple systems in order to provide IT support to the various units and sections of the hospital. This will increase efficiency and productivity, reduce administration, raise quality, and provide better support for research.

The healthcare data platform will consist of a number of cohesive platform services which will store and provide all of the information necessary to enable data-driven

clinical decision support, to support production and quality management, and to better provide health care data for research. Functionality in existing systems will gradually be replaced by standardized modules running in the new platform; a shift that will provide a flexible and adaptable solution that can also integrate new applications developed in the future. Karolinska is building this new healthcare data platform in-house with close cooperation from the hospital's many clinical departments. In the fall of 2022, Region Stockholm's elected assembly decided that Karolinska's new healthcare platform should be successively rolled out and tested for use across the entire Region Stockholm. Development of the system as well as preparations for its testing are now underway.

Karolinska is building a new open and modular healthcare data platform

Target vision for our new healthcare data platform



What will this new platform vision enable

-  **Development of standardized regional applications** for the latest and most important modern use cases in healthcare, driven by caregivers across Region Stockholm
-  **Modular architecture** which will make it possible to easily integrate new solutions **in-house** with minimal dependencies on external vendors
-  **Successive and flexible expansion** with improved cost control, faster deliveries, and lower risk
-  **Repeatable and reliable processing of data using Data Products** defined and reusable within Region Stockholm
-  **Common and shared technical platform** which can be used by and provide support to all care providers within the region
-  **Common shared standards and collaboration** for applications, data, and technology

New and Simpler Document Management System

During 2022, the new document management system Centuri was introduced and replaced the older system DominoLis. Centuri provides safer and easier document management. Centuri will be used by Karolinska's employees to create, edit and delete documents or guidelines of various kinds.

Pilot Study on Speech Recognition

During the spring of 2022, Karolinska University Hospital and Stockholm South General Hospital (Södersjukhuset) took part in a pilot study, with 95 participants testing a speech-recognition program. The aim is to increase patient safety, improve working conditions and reduce time spent on administrative tasks. According to the plan, speech recognition will be used across the many different systems that staff use on a daily basis at Karolinska.

Karolinska in Huddinge Turned 50!

In 1972, what was then known as Huddinge Hospital welcomed its first patients. This year, 50 years of healthcare provision at Huddinge deserved to be recognized! In November 2022, celebrations took place during several days. Staff received gifts, cake was eaten, and in addition to an exhibition showing photos from the past, staff could go on guided tours to see the hospital's artworks.



■ PROFESSOR EMERITA ULLA BERG



■ HANDLING TEXTILES



■ INTENSIVE CARDIAC CARE NURSES

Updating Our Code of Conduct

Karolinska launched the updated version of its code-of-conduct document, known as Vägvisaren ("Pointing in the Right Direction"). The document's purpose is to help employees to do the right thing in accordance with rules, regulations, and laws. The area of conflicts of interests, for example, was one of the sections that went through the revision process.

"We at Karolinska must be neutral and objective and we must not put ourselves in a situation where anyone could even raise a question about our impartiality," says Helena Sundén, Head of the hospital's Legal Office.

"We are part of the Stockholm Region [governed by an elected regional assembly], which means that our ways of working must nurture the trust of the public," she adds.





Full Steam Ahead for Karolinska

There will be no shortage of challenges in the coming years, not just for Karolinska but for all healthcare providers. The impact of an economic downturn, for example, and the specialized-labor shortages that pose a serious threat to the supply of skills and competencies. However, Karolinska meets the future with confidence. In the last few years we have been able to show the enormous potential of truly pulling together and working collaboratively towards common goals. There is yet more to be done here!

- As medical and technological developments continue, Karolinska must retain its position as a leader in developing and implementing the care of the future. Our vision is clear: We will cure and relieve tomorrow what no one can cure or relieve today. There are improvements to be made in this area, such as making it easier both to develop and to implement new solutions in day-to-day clinical practise.
- Karolinska must continue to simplify and clarify its administrative process, making them less cumbersome and easing the burden on the staff. This is one of our biggest challenges. We will continue to do everything we can to untangle the system. A key component is the use of wise digitalization, making the staff's day-to-day work easier (rather than complicating matters further!).
- “Queue-Free Karolinska”, with focus on waiting times to surgery and initial appointments, was a success, which has been beneficial to our patients and also improves working conditions. We will plough on with removing waiting times, also in other parts of the patient flow, not least how long patients have to wait in the emergency-care units.

- Karolinska will continue to invest in quality and transparency. The hospital must make sure that its results are clear and accessible to everyone and we must challenge ourselves to become better in all associated areas.
- Demographic changes necessitate of us developing ways of caring for more patients, not just from this region but also from the rest of Sweden and other parts of the world. At the same time, we must ensure that healthcare staff have the best possible working conditions, offering professional development opportunities and job satisfaction. Only then can we continue to deliver the world-class care that Karolinska is known for.

2023 will be the year when Karolinska pushes itself to the next level. We will continue to deliver world-class care and continue our structured development efforts where all employees have a role to play. The key word is “together”.

“Karolinska’s task is to every single day make life better for people through healthcare, education and research. The vast majority of our patients will always be from the Stockholm region, but our task is universal. Karolinska’s staff are among the best in the world. Our strategy empowers them to work at peak ability.”

Dr. Björn Zoëga, CEO, Karolinska University Hospital



International Recognition of the Karolinska Comprehensive Cancer Center

The Karolinska Comprehensive Cancer Center (Karolinska CCC), a joint venture with the Karolinska Institute (KI), brings together excellence in basic research, clinical research and highly specialized cancer care. Having met the high quality requirements in cancer care, research and education set by the Organization of European Cancer Institutes (OECI), the center became the first accredited Comprehensive Cancer Center in Sweden.

In 2022, a total of 66,049 patients received care at the center, which treats all types of cancer. There were 382,666 outpatient appointments and more than 200 available hospital beds.

- One of last year's highlights was a visit by the Scientific Advisory Board, an international body with nine highly specialized researchers who, using their combined experiences and broad cancer-research expertise, evaluated Karolinska CCC progress so far and gave recommendations on reaching the next level of research excellency.
- In the spring of 2022, the first Karolinska CCC day was organized to celebrate and inspire staff and to promote research and development in the area of cancer care.
- Karolinska CCC took the first steps in establishing a national network with representatives from the three other centers in Sweden that have been accredited as Comprehensive Cancer Centers (CCC). The network aims to enable the sharing of experiences

and information and to create the conditions for development and cooperation within the framework of the CCC mission.

- Karolinska CCC also actively participates in a Nordic CCC network where we have identified strategic areas for collaboration and coordination of projects and initiatives within the region and in the rest of Europe.
- The OECI has published three reports on "excellent practices" from Karolinska CCC: "The Oval Table – A Multi-Professional, Team-Based Working Method", "Contact Nurse" and "My Care Plan". Following these publications, several centers in Europe turned to Karolinska for support in their own accreditation process.
- Karolinska CCC has been awarded two "EU Cancer Mission" grants that will be put to use starting 2023. The grant has strengthened Karolinska CCC's position as a partner to the European Commission in achieving its goal to improve the lives of more than three million people by 2030, through preventing, curing and offering relief to patients affected by cancer, also including their families.



**Karolinska
Institutet**



Karolinska Comprehensive Cancer Center

AWARDS 2022

JANUARY

Maria Ahlsén & Jessica Norrbom: People's Educators of the Year Award from the Swedish Skeptics Association

FEBRUARY

Richard Rosenquist Brandell: Cancer Networker of the Year 2022 Award from the Network Against Cancer

MARCH

Karolinska University Hospital: Tenth Best Hospital in the World, according to Newsweek Magazine

Annika Kits: The Golden Apple Employee Award

APRIL

Josefin Fernebro: Enthusiast Award 2022 from the Network Against Gynecological Cancer

Pauline Koch & Peter Stålmarch: Mentors of the Year 2021 at the Perioperative Medicine and Intensive Care Function

MAY

Rebecca Moborn: The Daisy Award for Extraordinary Nurses

JUNE

Mathias von Beckerath: Mentor of the Year Award from the Stockholm Medical Association

AUGUST

Sophie Bensing: Rising Star Award from the European Journal of Endocrinology

SEPTEMBER

Karolinska University Hospital: #9 World's Best Smart Hospitals 2023 according to Newsweek

Karolinska University Hospital: The Nordic region's Best Specialized Hospital according to Newsweek Magazine

Lars Egevad: Appointed as an Honorary Fellow at the RCPA (Royal College of Pathologists of Australia) and recipient of an RCPA gold medal

OCTOBER

Stratipath: Trade newspaper Dagens Medicin's Athena Award

The organization of Genomic Medicine Sweden for Pediatric Cancer Patients: The Swedish Pharmaceutical Insurance Organization's Golden Pill Award

NOVEMBER

Pernilla Pergert: Nursing Leadership Award 2022

DECEMBER

Clara Svenberg Lind: Mentor of the Year at the ENT Department

The Karolina Awards 2022

The Karolinska University Hospital Annual Employee Awards

Jaana Ylönen

Eva Karltorp

Pernilla Jerad

Ali Babaie Khojini

Lizette Karlsson

Ewa Henckel

Ebba Neppelberg

Pernilla Forsberg

Catarina Charlton

Silvia Mousa Bunduki

Klara Arvidsson

Mariette Aderö

Anna Berglund Werner

Shakhnoza Ismailova

Catrin Carlenstein

Subeda Osman

Hannele Walker

Nida Khan



■ DESIGN AND PRODUCTION: LUXLUCID, STOCKHOLM, 2023

■ PHOTO: NINEKA MAGNUSSON AMU