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Transforming Healthcare Delivery at Karolinska University Hospital

In my first year here, people always said, "We are tired of change." How can you be tired of change? It is the change that moves us forward.

— Björn Zoëga, CEO, Karolinska University Hospital

In 2023, Karolinska University Hospital (Karolinska) CEO Björn Zoëga sat in his office in Solna, a neighborhood of Stockholm's city center, Sweden. In just a few days he would negotiate the hospital's assignment contract for the next four years with the Stockholm Regional Council, which defined its future budget. Zoëga expected to face increasing downward pressure on the hospital's costs. At the same time, the demands on the hospital were increasing, largely due to a growing elderly share of the population and the ripple-effects of the recent COVID-19 pandemic, which had led many patients to delay seeking care and worsened their health conditions. Continuing to deliver high quality of service for a patient population growing in size and complexity, while remaining financially sustainable with less available resources would require new and creative solutions. Zoëga had fostered change and continuous improvement as key tenets of the Karolinska's organizational culture. The time to test its effectiveness was approaching at fast pace.

Founded in 1940, Karolinska was Sweden's first teaching hospital and Europe's largest one. Affiliated with the nearby research-led medical university, Karolinska Institutet, Karolinska was renowned for providing excellent medical education and high-quality healthcare. However, in the 2010s, Karolinska attracted criticism for its transformation project aimed at implementing an innovative, patient-centered care delivery model inspired by the value-based healthcare framework. Karolinska's transformation included moving to a new, state-of-the art facility that would replace the existing location in Solna. Critics called the project a failure and highlighted its high costs, the dissatisfaction among the staff, and the growing waiting lists. The hospital became a topic of discussion in local elections, and the phrase "value-based healthcare" acquired a deeply negative connotation.

In 2018, CEO Melvin Samsom, who had been hired in 2014 to lead the transformation, stepped down. Zoëga, his successor, inherited a thorny situation. The hospital's budget was in the red, the IT

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system was not equipped to support the hospital's operations in the new care-delivery model, and the staff displayed general discontent, criticizing the new organization, the adoption of the value-based health care approach, and the move to the new building.

By 2023, Karolinska ranked in the top 6 of the 2,200 international hospitals surveyed by Newsweek.[1] The hospital employed around 15,400 people across its two locations.[2] Its budget was once again positive and the hospital had delivered more than 100% of its production assignment for three years in a row. Zoëga looked at the rooftops from his office window. He had worked hard to repair the organization and rebuild the prestige of the Karolinska hospital. He was very proud of his team, but he also knew that the organization had gone through a lot. Would Karolinska be able to continue adapting to the ever-changing conditions in the healthcare sector while remaining financially sustainable?

The Swedish Healthcare System

Sweden was a wealthy country with a largely knowledge-based economy, and a generous welfare system. The country was often praised for the efficiency of its public sector and institutions. It also reported a high life expectancy (at 81 for men and 84 for women), and one of Europe's largest elderly share of its total population (see **Exhibit 1**).[3] Behind such longevity was the overall wealth of its population, as well as a robust social safety net and high levels of education, which was free from the first grade to university. Additionally, Sweden had high income equality, with a Gini coefficient of 0.286 in 2021 on a scale from 0 representing complete equality to 1 representing complete inequality.[4]

In 2022, healthcare spending constituted close to 11% of Sweden's GDP (among the highest in the EU) amounting to $62.5 million (see **Exhibit 2** for details).[5] Public funds covered 85% of total health spending (out of an overall government spending of $282 million in 2022), 14% was out of pocket, and 1% came from voluntary health insurance.[6]

Sweden's healthcare system was government-funded and universal, covering all Swedish residents regardless of nationality.[7] The Ministry of Health and Social Affairs set the overall health policy, while local governments and 21 geographical regional Councils financed, managed, and delivered healthcare services (see **Exhibit 3**). Regional funding came from local tax collections, complemented by central government and funds. Sweden's 290 municipalities were in charge of rehabilitation care of the elderly and people with disabilities, basic healthcare services in schools, and long-term care for psychiatric patients.[8] Some healthcare services were provided without charge (e.g., child and school healthcare) while for others (such as hospitalization) patients paid a small fee or a minimal co-payment, which varied across regions.

Funding models for healthcare providers differed by region. Primary care funding combined government funded capitation (about 80% of the funding received by the healthcare provider)[a] and performance-based compensation (about 5%), as well as out of pocket payments by the patients (up to 14%) and optional health insurance (about 1%).[9] Hospitals generally received a fixed budget plus production-related payments based on a diagnosis-related group (DRG)[b] price list. Despite being largely government-funded, healthcare was provided by both public and private healthcare centers

[a] In a capitation model, healthcare providers received a fixed, predetermined amount per patient, regardless of the actual services provided.

[b] In a DRG system, hospitals are funded based on a predefined payment rate for patient groups with similar conditions and treatment needs.

and hospitals.[10] Private providers under a state contract had to follow the same rules and received the same fees set by the government and regions.[11]

Sweden was a global leader in the systematic collection of healthcare quality data, which was used to study long term trends to answer important public health questions. Swedish National Health Registers contained health data such as epidemiological statistics, incidence of disease, occurrence of diagnosis codes (ICD-10) within inpatient settings, prescription medication information, and general health statistics. Specialty societies had developed several National Quality Registries, such as the National Diabetes Register, the Swedish Rheumatology Register, and the cardiac register named SWEDEHEART.[12] Data collection leveraged a national citizen ID number system. Participation rates in the registers were often greater than 90%, despite challenges arising from low interoperability between hospital electronic medical records (EMR) systems. The Swedish population had high levels of trust in broad public health collection of data and its usefulness for research. [13]

The Karolinska Hospital

Origins and Early Years

The history of the Karolinska University Hospital could be traced back to 1810, when King Carl XIII inaugurated the Karolinska Institutet (KI), Sweden's first university focused exclusively on medicine, in Riddarholmen.[14] By 1940, the Karolinska Hospital had been built in Solna, and KI soon relocated to the same area.[15] In 1972, KI and the Stockholm Regional Council built an additional research and teaching hospital in Huddinge.

On January 1, 2004 the merger between Karolinska and Huddinge gave rise to a joint organization, the Karolinska University Hospital.[16] The two structures were to operate as one entity, under the slogan "one hospital, two locations" and remained affiliated with the KI to train students and develop research. Chief Executive Officer of the Health Services Group at the Stockholm Regional Council, Mikael Ohrling said, "As soon as [the two hospitals] merged, it became clear that the Solna building needed important renovations and the Region decided it was easier to develop a new building rather than repair the existing one."

The New Karolinska Hospital Building

In April 2008, the Stockholm Regional Council announced that it would replace the Karolinska building in Solna with a new, more modern one in the same area. The new building was to be developed and owned by a private operator following a tendering process. Once built, the Regional Council would pay rent for the building. The tender procedure began in March 2009. In May 2010, the Stockholm Regional Council tasked a consortium formed by the Swedish construction group Skanska and the British investment company Innisfree with the construction of the new building.[17]

The Stockholm Regional Council had decided that the design of the new building in Solna would not be led by the Karolinska leadership team but instead by a group of experts, reporting directly to the Region. To define the new hospital's structure, Ohrling explained, "The Region looked for inspirations from abroad, including the Cleveland Clinic, a hospital known for its value-based healthcare approach, even though the Region concluded that such model would not fully fit our needs."

The new hospital was going to be highly specialized, dealing only with complex patients. For this reason, the new hospital building was smaller, with 25% fewer beds than the old one. Care that did not

typically require highly specialized inpatient assistance (e.g., dermatology, rheumatology) was moved to other hospitals and care centers in the area. Additionally, the emergency department became a "closed ER", meaning that it only treated Karolinska patients or hospital transfers and there would no longer be general walk-in access. Other hospitals in the region had to absorb the remaining demand for emergency department care. Ohrling said, "This created a lot of work around in the region. How should we accommodate the volumes that have to be shifted from the Karolinska hospital out to other hospitals or clinics? There were a lot of practical considerations that forced the region to decide for a new way of taking care of patients."

The new building attracted media criticism, especially regarding the high construction costs and the Council's choice to leverage a public-private partnership and allow the building to be owned by a third party. In addition, only one company had really participated in the tendering process as the other bidders dropped off. As costs increased, corruption suspicions increased too. In this context, in 2014, Karolinska's board appointed Samsom, former CEO at Radboud University Medical Center in The Netherlands, as the new CEO of the Karolinska University Hospital.

Samsom's Reorganization

Trained as a gastroenterologist, Samsom had quickly climbed the administrative ladder. At Radboud, he had successfully managed a turnaround of the hospital after it had made headlines for poor cardiac care outcomes (mortality rates were triple the national average) resulting in the temporary closure of Radboud's cardiothoracic services.[18] Per Båtelson, chairman of the board of Karolinska in 2014, justified hiring Samsom as CEO by highlighting his "outstanding ability to manage change processes in the interest of patients."[19] Samsom's mission was to transform the Karolinska's Solna hospital into a highly specialized patient-centered organization focused only on complex patients, move the operations to the new building, and fix the budget deficit and hospital inefficiencies in both the Solna and Huddinge sites. There was little time to plan and execute these changes. Samsom explained:

> The new building was a blessing and a curse. It was a blessing because it initially helped to explain the patient-centered approach, since it was designed for a thematic way of working. The curse was that the commission of the building really prescribed a very high tempo for the move and transition. I wanted the organizational change to be ready prior to the move, which was planned for 2016. If I had joined Karolinska two years before 2014, I would have had the time I needed to fully plan this transformation journey.

Transitioning to a Thematic Organization

In his first days in office, Samsom had noticed dysfunctions in the organization. He described, "Access to healthcare was an issue due to a growing and aging population. The assets were outdated. Karolinska couldn't keep doctors and nurses long enough, so the turnover was high. And there was a substantial cost increase at the hospital level, which caused a deficit on a yearly basis." Internally, clinical departments worked in silos, with very limited collaboration. "This was particularly true for surgery, anesthesia and also intensive care," said David Konrad, managing director for the Perioperative Medicine and Intensive Care function. For example, operating room nurses and nurse anesthetists were confined to their department. Konrad added, "From a productivity perspective, that was horrible. Since the departments were protecting their own staff, there was no real incentive for cooperation, and staffs' skills were not efficiently used." Samsom decided that he needed to do something radical to make Karolinska a more effective organization. He enlisted Boston Consulting

Group (BCG) to assist with designing Karolinska's new organizational structure,20 while BCG and other consulting firms assisted with the planning of the physical move into the new building.

Samsom and his team redrew the organization chart, which was previously structured around traditional clinical departments (see **Exhibit 4**). The new design aimed to reflect a patient-centered care delivery model, where functions and services were organized in accordance with the path that patients followed throughout their complete care cycle. Thus, instead of specialties and service lines, the new organization chart was based on themes reflecting groups of patients with similar conditions and needs. The new building offered an opportunity to implement this concept. Stefan Larsson, then senior partner at BCG, explained, "When the Region designed the building, they did not openly refer to value-based healthcare, but they agreed that it should be built around patient themes (or patient groups), which are at the core of value-based healthcare." He added, "BCG had been tasked to help design the new building's operations and used the patient groups as the analytical lever, something that had not been done in the Nordics before."

On June 3, 2016, Karolinska officially became a thematic organization. Patient care was organized at the highest level into seven medical themes (cancer, heart and vascular, children's and women's health, neuro, inflammation, aging and trauma), and five functions (perioperative, emergency, laboratory, imaging, and allied health professionals). Themes and functions constituted a matrix, where themes followed their patients' journey longitudinally, and functions supported each theme transversally. Each theme was divided into patient areas, which comprised several patient flows. Similarly, function areas were split into smaller function units (see **Exhibit 5**).[21] Frieder Braunschweig, department head of cardiology in the Heart, Vascular, and Neuro theme, was enthusiastic about this change. He stated:

> For cardiology, the idea of working in patient flows is actually attractive. We have five major subspecialties within cardiology: ischemic heart disease, heart failure, arrhythmia, congenital heart disease, and valvular heart disease. It made sense for us to organize ourselves along these patient flows within the new organizational structure.

To aid in the coordination around patient care need, Samsom introduced regular "oval table meetings" within each theme. Braunschweig described, "Depending on the patient flow, these meetings would involve representatives such as clinical researchers, cardiac surgeons, anesthesiologist, physiotherapists, psychologists, dieticians, and a patient representative." These meetings provided some staff categories with a stronger voice in the organization. Katarina Meijers, director of nursing in the Acute and Reparative Medicine theme, stated, "Previously, you had a tradition of hierarchy based on the structure of the medical specialties. By forming these tables around the patient flow, at the table were also nurses and health professionals. That was a change in the hierarchy that helped the autonomy of those professions."

The matrix organization required changes to the managerial structure. Konrad explained, "In 2015, I was appointed Ambassador for change in the transformation. We had a vision in five years' time on how the hospital should be organized, but to reassure people, we appointed many interim managers who acted as spokespersons for their coworkers." Samsom described, "Physician theme managers led the themes, and physician function managers led the function. Patient flows were led by patient flow managers, who were the lowest grade of manager. They were physicians, responsible for designing, managing, and continuously evaluating each patient flow." In total, Samsom appointed 960 managers.

In October 2016, the first medical groups transferred to the new hospital building. "The Perioperative Medicine & Intensive Care function (PMI) was among the first group to move in," described Konrad. "In the old organizational structure, we had seven departments under the PMI

umbrella. In June 2016, we had 15 functional areas." The PMI function was followed by the Heart and Vascular theme and Pediatrics patient area. By October 1, 2017, all Karolinska's care operations had completed their move to the new building and were now fully organized in themes and functions.[22]

Turbulence

Adapting to the new organizational structure and building gave rise to frustration among doctors and nurses, often resulting in resistance from staff to move into the new premises. Frictions emerged from the new organizational system, which had introduced an extensive number of patient flows. "One of the problems in the original thematic organization was that we made it too granular," recalled Patrik Rossi, managing director for the Cancer theme. "The patient flow organization and approach were presented to us in a very rapid way. It was difficult to grasp what it signified and how it should work, which left many of the staff confused." Along the same lines, staff struggled with understanding their new roles. Theme manager of the Inflammation and Aging theme, Carina Metzner, said, "Nobody really understood who does what. It was especially difficult to understand the exact responsibilities of the patient flow managers. I was responsible for the Frailty patient flow, and there are a lot of frail patients all over the hospital, not only in one flow."

Some doctors in departments where two or three specialties were combined within one flow experienced a loss of identity. Kalle Conneryd Lundgren, COO between 2019 and 2021, said, "I think the reaction of some doctors was severely underestimated. A clinician who has trained for 30 years in a specialty and takes pride in calling themselves a cardiologist was now going to be called a heart disease flow manager. Many doctors did not like that at all."

To implement the new structure, Samson had asked the staff to apply for the new managerial positions. He said, "I asked about 1,000 physicians and staff to go through the application process once again. I knew that as soon as this started, opposition would arise. Since we decided to leave the classical organizational structure of divisions and departments and started working with patient flow captains, and theme and functions directors, all people that were appointed to a leadership role in the previous organization, or about 750 managers, would lose [their old role]." In addition, in the new structure, each manager had a smaller team and budget than before.

The difficulty in executing the new organizational structure was accentuated by the fact that the importance of the IT and data systems was not fully appreciated early on. Head of business development and IT since 2022, Madeleine Nordström, recalled, "We were too late with asking the correct questions. At that time, we had a very underdeveloped IT department, and it was as if in the last minute we realized: 'Oh, we are going to do these big changes. Maybe we should have IT with us.' But we didn't have the appropriate IT capacity." Hence, the shift from larger medical departments to smaller units resulted in an inability to align budgets and performance accurately. Conneryd Lundgren stated, "The IT system and the master data weren't able to give information on the [patient] flow basis. That meant that a department couldn't follow and match their economy to their production because the patients were [affiliated with] an old department that didn't exist anymore." Consequently, analyzing the hospital's financial performance became a top-level exercise, leaving operational units in the dark about budgeting, expenditures, and performance. Håkan Nilsson, who became CFO at Karolinska in 2022, recalled, "We had a lot of financial problems when I became a board member in 2018. We lost a lot of money. We couldn't really manage the hospital because our managers didn't see the numbers. We couldn't see the budget and couldn't see the actuals from that. And that was a real problem because if you can't see what you are doing, you become lost."

To make things worse, Swedish media described the new Karolinska as the most expensive hospital ever built. In 2018, costs stood at 22.8 billion SEK ($2.1 billion). Rossi added, "Some staff were

suspicious regarding the involvement of players that could be regarded as potentially having commercial interest. That was something that we weren't used to." As a result, Karolinska put an end to its consulting partnerships.

In May 2018, most of the hospital's board, including the chairman and vice chairman, was replaced. The new board initiated an assessment of the reorganization, led by board member Professor Kjell Asplund. Chairman of the Board Håkan Sörman, said, "The assessment highlighted the lack of functioning information systems, the fragmented organization, and the fact that the organization was too manager heavy." In September, Samsom announced that he would resign. He explained, "I took myself out of the equation after four years deliberately, because that was the time that it really took to do this difficult change journey. I was the focal point of the change journey, so when I resigned, the whole discussion about the change reduced exponentially." Konrad added, "If you want to do a major change, a major transformation, you might need a very wide swing of the pendulum. Just to make everybody rethink what they think they know today. And that I think is what [the external consultants] and Melvin Samsom introduced, a wide pendulum change."

While initially the plan was to keep Samsom in his role until the Spring of 2019,[23] he left the organization a few weeks after the announcement. Annika Tibell, transplant surgeon and deputy director, was named Acting Hospital Director. She inherited a very difficult situation, as some could have seen Samsom's departure as an opportunity to go back to the old ways. In an interview to the British Medical Journal (BMJ), she clarified that was not the direction she intended to take, "The transition to my new role as acting director came rather quickly, but I see it as an honor to be entrusted with this responsibility. We need to remain focused and to complete the process we have started. Without the strong leadership of Melvin in the past four years we would not be where we are today."[24] Describing the challenges associated with the transformation, Tibell recalled, "One of the most challenging things for me was to distinguish what was unwillingness to change and what were true concerns and problems that we needed to solve."

In April 2019, Björn Zoëga, an Icelandic orthopedic spine surgeon, who had previously headed the National University Hospital of Iceland, took over the role as CEO of Karolinska. With a no-nonsense approach and non-corporate image, Zoëga was well positioned to rebuild the staff's trust. Sörman described him as a highly regarded physician and a good communicator who was "deeply rooted in the medical profession and more eager about doing than talking." His leadership style was to empower his team to deliver solutions, but he was not afraid to step in when needed to make key decisions.

Zoëga was well aware of what he was getting into. "When I accepted the job, many thought I was suicidal," he joked, "My goal was not to go back to the old system, but simplify and make people comfortable."

Managing the Crisis: Zoëga's Leadership

In 2019, a year after the official inauguration of the building, the hospital incurred a loss of 1.867 million SEK ($179,515) (see **Exhibit 6** for net income of Karolinska University Hospital, 2017-2022). Zoëga appointed a small team – among which Conneryd Lundgren who was appointed as the new COO – to study the situation and decide next changes.

To ensure that decisions could be made quicker, and solutions implemented more efficiently, several staff functions, including IT and technology, and production management, were incorporated under the umbrella of the COO. The team convened on a regular basis to discuss progress and how to improve the financials. Conneryd Lundgren said, "We spent the first couple of weeks to months

putting down our solutions on paper. What's the economical steering model for the hospital? How is production going to be distributed across departments? What are the numerical targets and KPIs for everyone to reach?"

Zoëga revamped the IT system. He recalled, "People were living in old numbers and old Excel files. So, I cancelled the project that had been started two years earlier and put together a group of clinicians and IT staff. We did an in-house version of the IT system and got the numbers and everything ready in about four or five months." The fact that the new IT system was developed and managed in-house was a big deal. Nordström said, "If you take one big vendor, you won't have the most efficient software. We looked for a solution that we can control as we need to own the data."

A Simplified Organizational Structure

One of Zoëga's highest priorities was to resolve confusion and simplify the organization chart. "The number of managers was reduced by approximately 40%, and almost 500 administrators were laid off," Conneryd Lundgren said. He clarified, "We were not going back to the old system. In fact, we went a bit further, but we were simplifying and doing things that people felt comfortable with."

The new organization chart reduced the number of themes and functions. Karolinska was now divided into six themes and three functions (see **Exhibit 7** for the simplified organization chart). Themes and functions that were either too big or had insufficient overlap were rearranged. For example, the Women's Health theme was separated from the Children's theme. Zoëga explained, "The Women's and Children's themes had nothing in common, and it affected them badly. So we are still working with the problems in the Women's theme from 2016 because they haven't had their air time. They haven't had their own identity without the children's theme for long enough." In addition, Zoëga allowed function and theme directors to change the names of patient areas and flows. As a result, some names reflected once again the associated medical specialty.

Zoëga wanted to shift control and ownership back to the hospital's physician leaders. Conneryd Lundgren recalled, "[Initially,] we had strongly centralized command. Once we got [the hospital] in better order, we started to distribute [authority] again to the management team so that it would have some sort of longevity and not be dependent on a small group." To foster decentralization and empowerment, the role of COO was removed, and the mandate and responsibility for operational management was assigned to the departments.[25] Sara Ekeblad Lien, senior strategy aide to Zoëga, explained, "Several heads of departments referred to how Björn immediately made it clear that 'you are responsible, it is up to you' as one of the key reasons they trusted him to turn around Karolinska."

Additionally, Zoëga introduced the role of head of nursing, tasked with working in tandem with the physician head of department and representing nurses' interests and perspectives at Karolinska's highest leadership levels. Previously, physician department heads had been in charge of nurses. Zoëga felt that creating a parallel leadership structure for nurses, where they would be empowered to manage themselves, would benefit both physicians and nurses. Sara Schulz, deputy department head of nursing in the Acute and Reparative Medicine theme, worked together with three physician managers, which enhanced her capacity to influence decisions. She said, "As soon as I took on this role, I felt like I could have more to say about strategic questions for the theme."

Some themes and functions operated across the Solna and Huddinge sites, which required physicians to split their time between the two locations to avoid staff duplication. Director of the Upper Abdominal Diseases medical unit, Ernesto Sparrelid, explained, "If we have a patient needing a synchronous operation, for example, for a bowel tumor and liver metastasis, then either the patient will be in Huddinge or in Solna. So, the surgeons move between the sites." Despite the logistical

burden, physicians generally responded positively to the rotation. One reason was that the Solna building was now the more modern one, and some considered it prestigious to work there, even if occasionally.

Collaboration

The phrase 'one hospital' had been traditionally used to communicate that the Solna and the Huddinge sites were part of one organization. However, for Zoëga, being 'one hospital' also meant increasing coordination, collaboration, and flexibility across units and professions *within* sites.

The management team placed a renewed emphasis on the oval tables, while, at the same time, gave themes, functions, and medical units the freedom to adapt the meetings' format according to their needs. Head of the Gynecology and Reproductive Medicine medical unit, Sebastian Gidlöf, described, "In the past, any meeting involved many people around the table. Gradually, we transformed it into a smaller meeting with a few key people who, when required, invited other professionals. Now we have six or seven participants instead of 20 participants every time." On occasions, a patient representative was invited. Gidlöf highlighted, "I think that the patient representative really adds a different perspective that the rest of us would miss, because we are so much involved already, or we see just one side of the problems." Whilst oval table meetings discussed more general questions about how to deliver care, multidisciplinary meetings focused more narrowly on individual patients. Braunschweig described the case of cardiology, "We have regular multidisciplinary conferences were therapy decisions are made by the consensus of experts from different specialties, such as cardiologists, cardiac surgeons, clinical physiologists, cardiac imaging, and others."

Ekeblad Lien added, "To strengthen the culture of collaboration, we had to build one cohesive leadership, and an important component was the program 'Leading Karolinska,' which helped managers align on strategic priorities and encouraged networking. The program required Karolinska's 600 managers to gather every quarter, in groups of 150. These meetings included small-group discussions covering different topics with the goal of generating solutions to present back to the plenary session." Many ideas emerged from these meetings.

Communication

Zoëga put a strong emphasis on communication right from the start. He recalled, "For example, on my second week in the job, I put in place an open suggestion email box where all staff could leave their ideas and suggestions. Buy-in doesn't come where everybody agrees, but rather when staff feels that they can say what they think." Zoëga also set up workshops and open meetings, where anyone could join and build upon positive aspects of the new system. "Participants were asked to focus on pragmatic solutions. The focus was on what worked well, and what aspects we should keep," stated Zoëga. He also put out weekly all-staff emails.

To fine tune his communication strategy, Zoëga hired experienced communication director Henrik Kennedy, who was involved in all key leadership meetings. Hospital meetings, whether at higher management level or between clinicians, often began with a slide presenting Karolinska's strategy, vision and slogan: "Together we are Karolinska" (see **Exhibit 8** for the slide mentioned). "The opening slide is displayed when staff are settling down before any type of meeting," said Zoëga. "What I try to do in my leadership is to emphasize that change moves us forward. As a second slide, I use [former U.S. President Barack] Obama's slogan from his first election campaign: 'Change you can believe in.' It's simple things, but it works."

Simplification was another recurring theme in Zoëga's communication. Ekeblad Lien said, "He relentlessly hammered home the message of simplification and reducing admin, telling people 'if it does not add value, just don't do it.' One measure with strong symbolic value was the shortening of the organization's standard meeting duration to 25 minutes, a rule by which he obsessively abided himself; no more one-hour meetings."

Managing Operations and Measuring Outcomes

Under Zoëga's leadership, Karolinska went from a traditional production model aimed to maximize the utilization of available capacity and staff, to planning operational capacity based on volume targets. Every year, the Stockholm Regional Council set targets which defined the volume of healthcare services that Karolinska should deliver. Additional volumes (including emergency and elective procedures) were projected based on an analysis of the population's healthcare needs. Chief Production Officer, Caroline Hällsjö Sander, recalled, "2018 was a rough year: we underproduced, we had long waiting lists among certain groups of patients and our finances were in red. But this is also when we started planning."

Hällsjö Sander explained, "In our production plan, we break down the assignment from the Region and the predicted out-of-region's volumes into number of outpatient and inpatient stays per week." Lina Grännö, Head of Central Production Planning, added, "We know exactly what we need to do each week, which OR resources to use, number of beds to provide, and staff to schedule. This also helps managers to plan and authorize staff vacations." Hällsjö Sander added, "Our first focus was the operating room, as it was an important bottleneck. By planning, we have increased the number of surgeries by 20%. We built this production planning system in-house and now the Region of Stockholm wants to use it for other hospitals as well."

At the core of the planning process was an in-house built data warehouse. A team of five analysts worked at cleaning the data and had a close dialogue with relevant physicians and nurses in order to ensure correct data. Each theme and function had a single point of contact who could answer data-related questions for specific patient groups. Grännö said, "When I joined, back in 2017, we first of all had to agree on common definitions so that we could clean the data. What falls into the definition of surgery? How do we classify patients with multiple diseases? Then we started developing tools and reports to easily interpret the data." This information allowed the hospital to define the typical surgery times, type of health services needed, and number of visits for each potential patient.

Karolinska provided its physicians and nurses with easy access to the data. Grännö, said, "The goal was to put some order in the data and create one truth that everyone would trust. It was important that it was easy to use and accessible to all." Grännö's team developed dashboards using Tableau (a platform for dynamic data visualization),[26] which allowed users to visualize performance data at the aggregated hospital level and drill down to granular themes and function levels. Users could easily build charts and graphs and obtain performance statistics relevant to their scope of operation.

Each head of department agreed to the production plan and accepted responsibility for executing the plan. Gaps between the production plan and the actual production were closely monitored. Grännö continued, "Everyone can see what the plan was and how they are performing in terms of patient contacts and filled beds, for example. If something is not going according to plan, they can consult [the data] and try to understand what is wrong."

Karolinska enforced a systematic use of patient reported outcome measures (PROM) and patient reported experience measures (PREM). PROM were collected via surveys that captured individual patients' perceptions of their health, and were used for pre-assessment and post-treatment evaluation.

Department head of Gastroenterology, Dermatology, and Rheumatology, Jon Lampa, described, "Within rheumatology, patients consistently assess their pain levels, fatigue, and functional capabilities through user-friendly dashboards. The patient report is combined with the physician's assessment to provide the appropriate care and treatment." About 90% of rheumatology patients' data were then recorded into the National Rheumatology Registry. In contrast, PREM surveys were anonymous, and collected data on patients' experience after the hospital visit. Director of quality and patient safety Ylva Pernow stated, "In 2022, we automatized the PREM survey and the patient now receives the survey by SMS after having visited the hospital. This greatly increased the number of responses." The total number of responses increased from 12,000 per year before the COVID-19 pandemic, to approximately 100,000 in 2022.

Sources of Revenues

Every four years, Karolinska negotiated and signed an agreement with the Stockholm Regional Council setting annual healthcare delivery targets and payments. CFO Håkan Nilsson said, "The [total annual] payment is calculated by multiplying the target volume times the DRG rates." DRG prices for Karolinska were higher than for other hospitals in the country to account for the higher complexity of the patient mix. Nilsson continued, "Part of [the total annual payment] is given as a fixed amount, while the rest will be paid based on production." For example, in the agreement for 2020 to 2023,[27] the fixed amount constituted 54% of the total payment; 40% was production-related, while the remaining 6% was quality-related.

While Karolinska routinely exceeded its target assignments, the volume-based payments were capped. Hällsjö Sander explained, "In the past few years, we produced more than the assignment" (see **Exhibit 9** for Karolinska's production over time). Karolinska received partial payments (i.e., about 80% of the DRG price) only for 4% of excess production. Nilsson explained, "Essentially, if you overproduce past 4%, you work for free." International patients, however, paid Karolinska the full DRG price and did not count toward the target volumes set by the Region. Other agreements determined the prices paid by patients outside the Region. Karolinska received additional support from the Region to fund special initiatives. For example, between 2016 and 2019, "The hospital exceptionally received a payment in the form of 100% fixed payment, no matter the hospital performance, to cover the transition," said Nilsson, referring to the costs associated with the move to the new building.

Quality-related payments were based on approximately 30 quality indicators for which the Region set targets. Some, such as patient safety and waiting times, were the same across all hospitals. Others were specific to the highly specialized care performed at the Karolinska. Pernow said, "There is no monetary compensation for performing at a higher quality than requested by the Region. But there is a lot of talk about who are the best, which gives the hospital and its staff an incentive to push for better performance." Doctors in Sweden received a fixed salary, negotiated with the hospital at the beginning of their employment. However, working for a high-performing hospital was a strong motivator. Zoëga stated, "If their medical unit is performing well, the staff is proud and do not talk about money all the time. This makes them more focused on their jobs."

Internally, resources were allocated across themes based on their respective volume targets. Themes paid the functions based on the services used. Nilsson explained, "If a theme needs physical therapy (a function) for their pathway, they have to buy the time from the function that owns physical therapy. They pay an hourly rate based on a pre-determined cost [rate]."

Signs of Success

Zoëga kept a close eye on how the transformation impacted patient outcomes and quality of care. "We looked everywhere, and we could not find any sign of deterioration in quality," he declared, "I was skeptical, because it seemed too good to be true." In contrast, the Quality Registries' data offered strong evidence of quality improvements. Zoëga recalled "Outcomes for cardio-thoracic surgery patients went from being the worst in Sweden to leaders in the world. And this is a register that accounts for patient acuity measures, while others do not, so this was very credible. We have more sick patients than other hospitals and they do better here. We saw the same in hip and knee, hospital acquired infections, etc. There were so many stories like that, but we could not find stories that said we were doing worse"(see **Exhibit 10**)

In 2020, Karolinska's responded to the COVID-19 pandemic. Zoëga said, "We expanded our intensive care beds from 38 to around 190 in a few weeks, literally pulling down walls to allow treating more patients at the same time. We received patients transferred from other hospitals and regions, and took on more patients than any other hospital in the country."[28] The hospital leveraged its IT system to manage the logistics associated with the surge of patients. Conneryd Lundgren explained, "We could handle the patients digitally and send COVID patients to, for example, the orthopedics, or any department [that had beds] available." During the same time, Karolinska increased cancer surgery volumes by 40%.

In 2021, Karolinska attained an economic surplus with a result of +740 million SEK ($71 million). Zoëga explained, "During the COVID pandemic of 2020-2021, we received extra funding and got paid for the 3.5 million PCR tests that we performed. We also had very high production levels." Although the boost in funding from COVID reduced in 2022, Karolinska attained a result of +18 million SEK in 2022 ($1,730,729) (see **Exhibit 6** for net income of Karolinska University Hospital, 2017-2022).[29] During fall of 2022, 82 of 88 surgery waiting lists were cleared, and a considerable decrease was seen in the proportion of patients who had to wait more than 30 days for a primary consultation.[30] In addition, for the third year in a row, Newsweek ranked Karolinska among the top ten medical facilities worldwide in 2022.[31] "In 2019, Karolinska did not feature in the Newsweek rankings, but we are now established amongst the very best," said Zoëga.

Zoëga attributed these successes to a collection of small improvements. "When I am asked 'how did you do it? What was the turnaround?' I say 'it is lots of small things.' It is not one thing that we turned on or off."

Looking Ahead

As the regional mandate was coming to an end in 2023, Karolinska's management team prepared to negotiate the next four-year contract. There had been a shift in the political landscape in the region, from a right-middle leadership to a middle-left. The Social Democrats, the Center Party, and the Green Party had been elected to govern the Stockholm Regional Council and entered a collaboration with the Left Party.[32] This change was likely to increase downward cost pressures for Karolinska. A recent change in Sweden's pension system was likely to further add funding pressure.

In parallel Karolinska projected increasing demands and patient complexity. Sweden's population was anticipated to reach 11 million in 2025, and the proportion of people aged 80 and older was predicted to increase by 50%.[33] Karolinska would likely receive more patients, but hiring additional staff did not seem to be an option in light of the possible budget tightening and decreasing market availability of specialized nursing staff.[34]

Zoëga stated, "We might have to move more of our treatments outside the hospital. We are working on a plan to take 10% of our usual care and put [it] into the patient's hands or move it to their home, with the help of digital solutions." While this was easier said than done, Zoëga trusted that innovative ideas would emerge. "People don't say any more 'I am tired of change.' The ideas will come." Thinking about patients in an integrated way was going to help, "The patient pathways are where the ideas come from, and the themes are ways to enhance collaboration," he stated.

As he left his office to get into the transparent elevator overlooking the modern inner courtyard, Zoëga said to himself, "Karolinska will continue to work hard. Being best at what's difficult is part and parcel of our mission."

Exhibit 1 Demographics of Sweden, 2019-2022

	2019	2020	2021	2022
Population on 31 December	10,327,589	10,379,295	10,452,326	10,521,556
Men	5,195,814	5,222,847	5,260,707	5,298,324
Women	5,131,775	5,156,448	5,191,619	5,223,232
Number of persons, 0-17 years	2,180,508	2,189,403	2,198,240	2,194,785
Persons aged 0-17 years in % of total population	21.1	21.1	21.0	20.9
Number of persons, 65 years and above	2,065,367	2,088,086	2,118,766	2,147,137
Persons aged 65 years and above in % of total population	20.0	20.1	20.3	20.4
Births	114,523	113,077	114,263	104,734
Crude birth rate (per 1000)	11.1	10.9	11.0	10.0
Total fertility rate	1.70	1.7	1.7	1.5
Deaths	88,766	98,124	91,958	94,737
Crude death rate (per 1000)	8.6	9.5	8.8	9.0
Life expectancy, men	81.3	80.6	81.2	81.3
Life expectancy, women	84.7	84.3	84.8	84.7
Infant mortality rate (per 1000)	2.07	2.4	1.9	2.2
Population growth	97,404	51,706	73,031	69,230
Population growth per 1000 inhabitants	9.5	5.0	7.0	6.6

Source: Compiled from "Summary of Population Statistics 1960–2022," Statistiska Centralbyrån Database at https://www.scb.se/en/finding-statistics/statistics-by-subject-area/population/population-composition/population-statistics/pong/tables-and-graphs/population-statistics---summary/summary-of-population-statistics/, accessed November 2023.

Exhibit 2a GDP in Sweden, 2019-2022 (in millions USD)

	2019	2020	2021	2022
GDP	579 773	581 248	629 081	683 297
GDP per capita	56 404	56 141	60 397	65 157

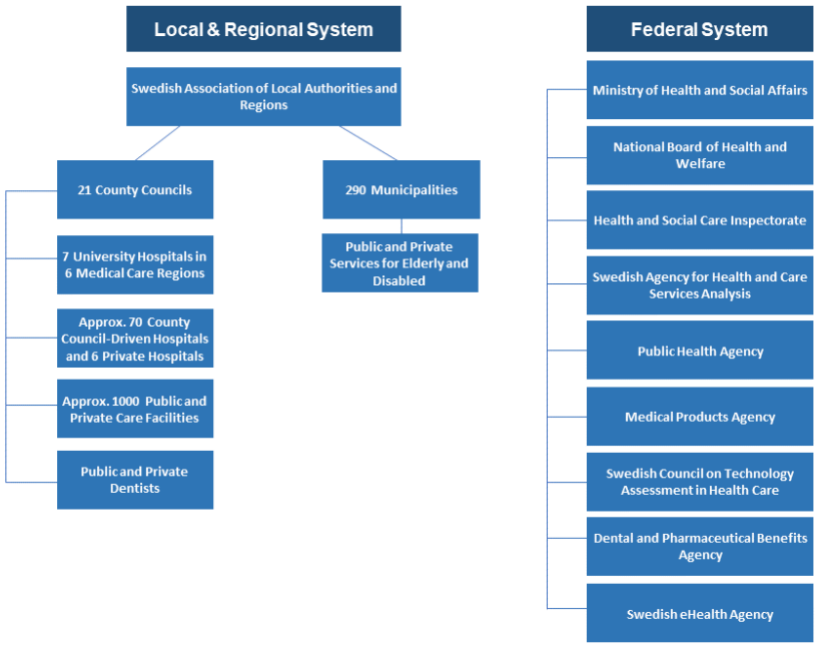
Source: Compiled from "GDP and Spending - Gross Domestic Product (GDP) - OECD Data," OECD database, at https://data.oecd.org/gdp/gross-domestic-product-gdp.htm, accessed in November 2023.

Exhibit 2b Health Expenditure in Sweden, 2019-2022

	2019	2020	2021	2022
Current Health Expenditure as share of GDP (%)	10.8	11.3	11.2	10.7
Current Health Expenditure (in million USD)	57,831	61,997	71,625	62,501
Current Health Expenditure per Capita (in USD)	5653	6003	6901	5980

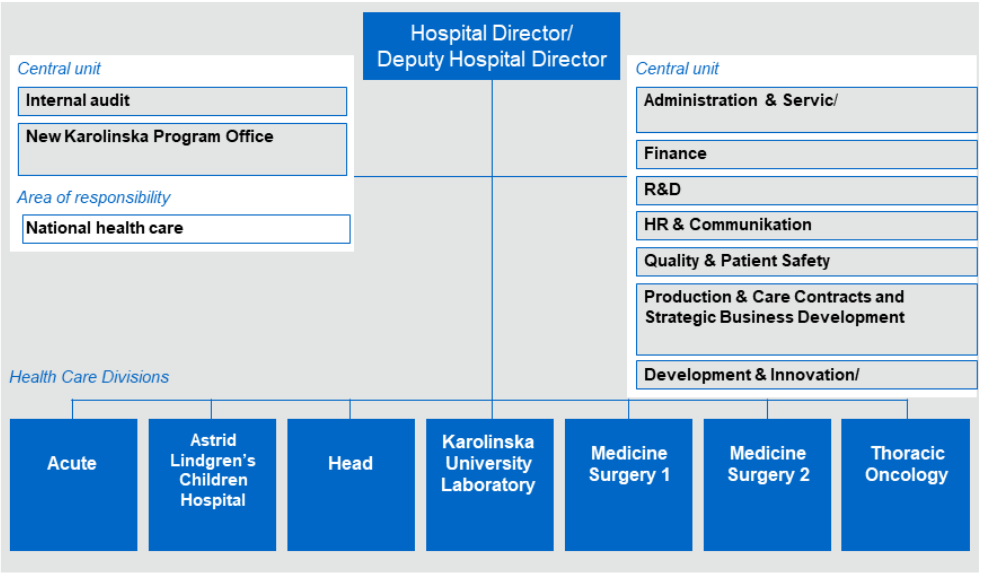
Source: Compiled from Health spending (total USD/capita): https://data.oecd.org/healthres/health-spending.htm, accessed in December 2023; WHO, "Global Health Expenditure Database," Who.int, 2023, https://apps.who.int/nha/database/ViewData/Indicators/en., accessed in December 2023

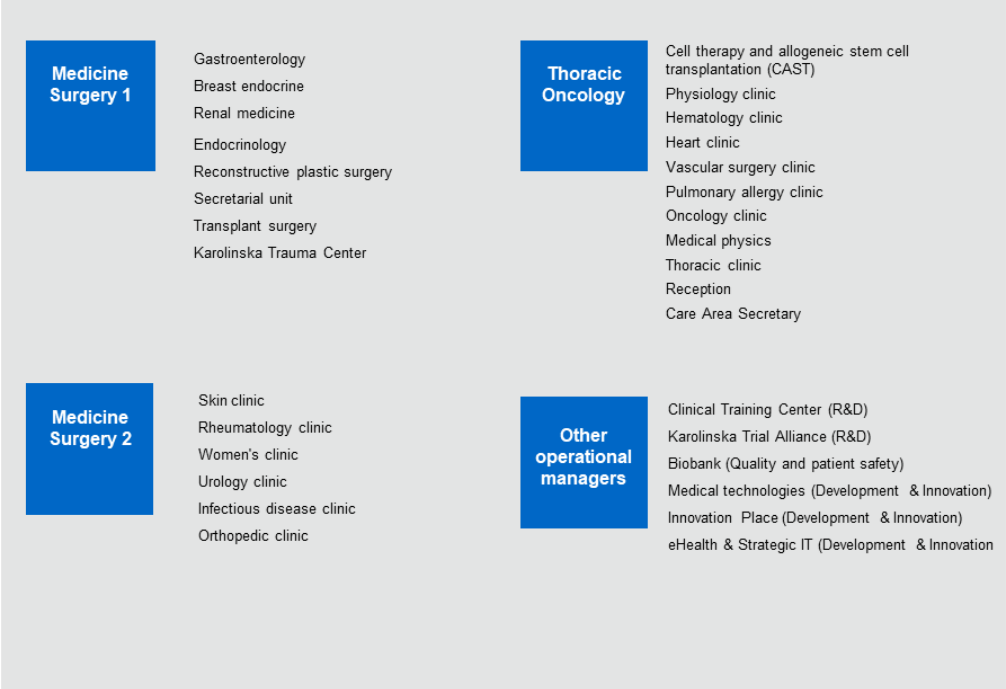
Exhibit 3 Organization of the Health System in Sweden



Source: Compiled by casewriters from Roosa Tikkanen, Robin Osborn, Elias Mossialos, Ana Djordjevic, George A. Wharton. "Sweden," The Commonwealth Fund, June 5, 2020. https://www.commonwealthfund.org/international-health-policy-center/countries/sweden, accessed July 2023.

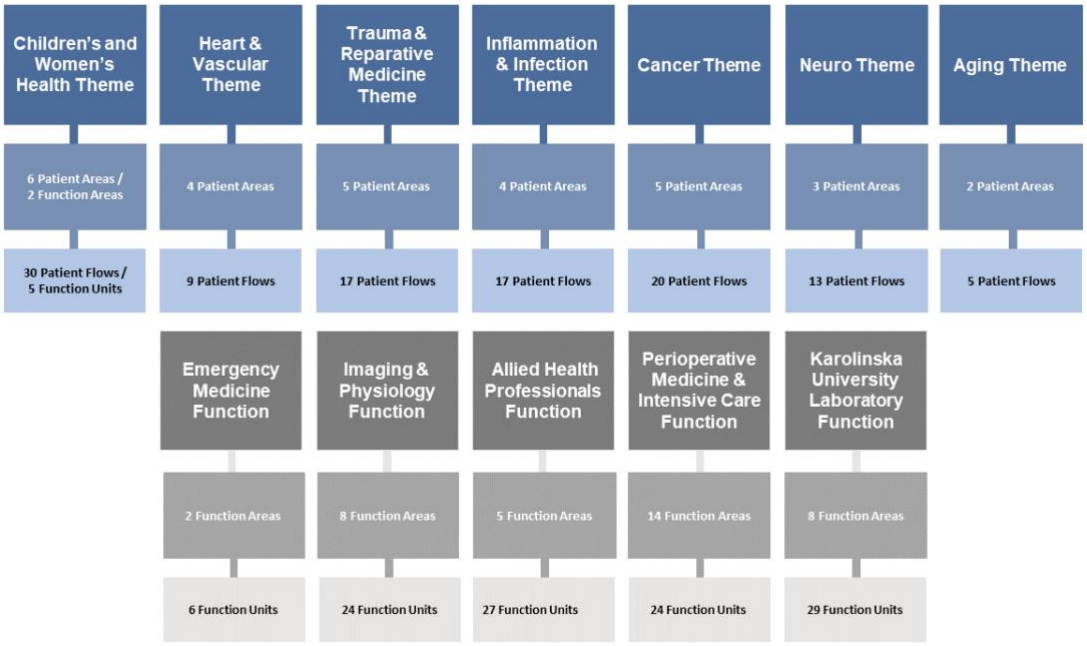
Exhibit 4 Organization Chart of Karolinska University Hospital, 2013





Source: Hospital documents.

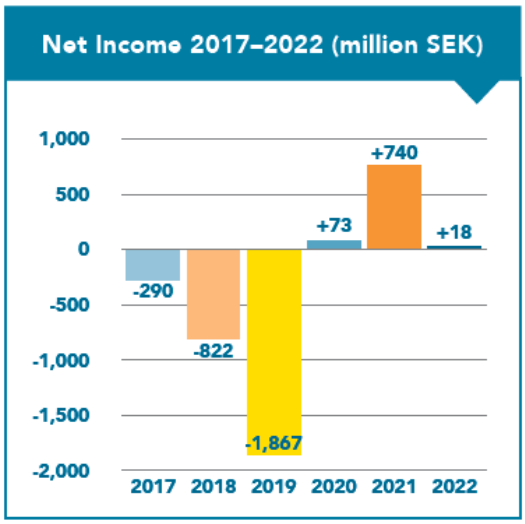
Exhibit 5 Organization Chart of Karolinska University Hospital, 2016



Source: Hospital documents.

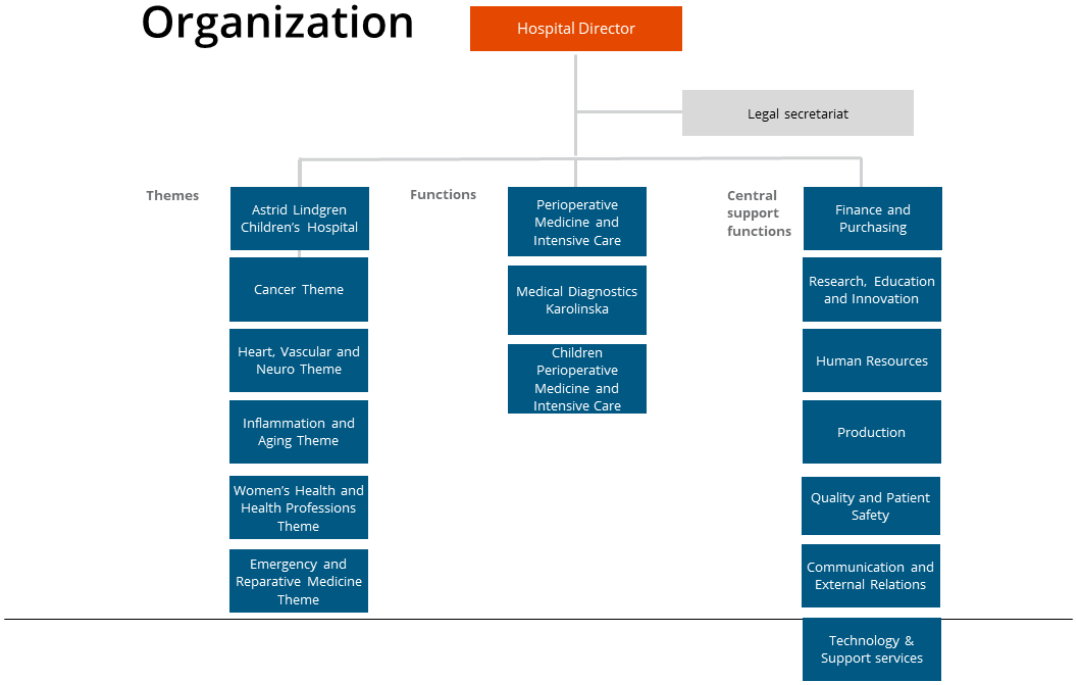
Note: The organization chart has been simplified to provide a clearer overview of the structure. Please note that certain additional units might not appear in this exhibit.

Exhibit 6 Net Income of Karolinska University Hospital, 2017-2022 (SEK millions)



Source: Karolinska University Hospital. 2022 Annual Review. https://www.karolinska.se/48fdcc/globalassets/global/3-staber/stab-kommunikation/nyheter/dokument/1847-kar-arsberattelse-2022_en04_a_tillganglig.pdf, accessed June 2023.

Exhibit 7 Organization Chart of Karolinska University Hospital, 2023



Source: Hospital documents

Exhibit 8 Karolinska University Hospital's vision, mission, and value statement

Source: Hospital documents.

Exhibit 9 Karolinska University Hospital's fulfillment of the regional mandate over time, 2017-2022

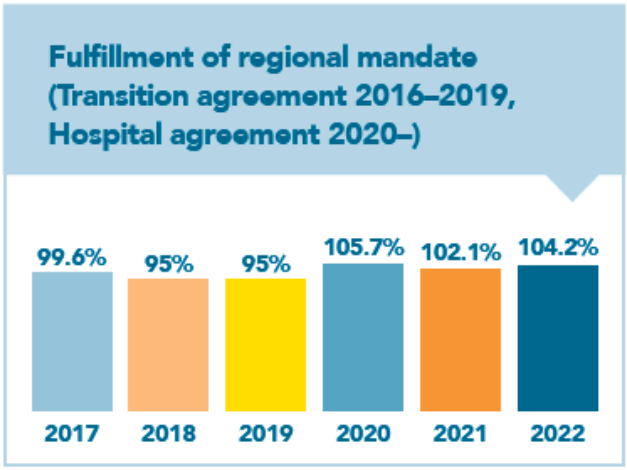


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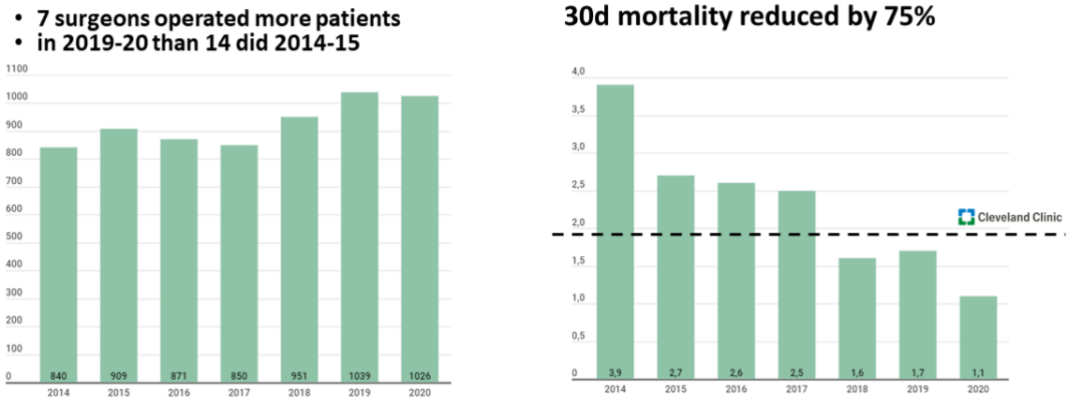
Exhibit 10 Thoracic Surgery Productivity and Mortality Improvement at Karolinska University Hospital, 2014-2020



Source: Hospital documents.

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